> # SC5000

System Controller

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SC5000 System Controller Reference Manual

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CONTENTS

REFERENCES

REFERENCE DOCUMENTATION

The documentation related to the SC5000 is listed below:

- PWR-480B

- Guide to Installing a Redundant System

SUPPORT THROUGH THE WEBSITE

Datalogic provides several services as well as technical support through its website. Log on to **www.datalogic.com** and click on **PRODUCTS** and **SUPPORT & SERVICES** links for further information:

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COMPLIANCE

FCC COMPLIANCE

Modifications or changes to this equipment without the expressed written approval of Datalogic could void the authority to use the equipment.

This device complies with PART 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference which may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

POWER SUPPLY

This product is intended to be installed by Qualified Personnel only.

CE COMPLIANCE

CE marking states the compliance of the product with essential requirements listed in the applicable European directive. Since the directives and applicable standards are subject to continuous updates, and since Datalogic promptly adopts these updates, therefore the EU declaration of conformity is a living document. The EU declaration of conformity is available for competent authorities and customers through Datalogic commercial reference contacts. Since April 20th, 2016 the main European directives applicable to Datalogic products require inclusion of an adequate analysis and assessment of the risk(s). This evaluation was carried out in relation to the applicable points of the standards listed in the Declaration of Conformity. Datalogic Automation products are mainly designed for integration purposes into more complex systems. For this reason it is under the responsibility of the system integrator to do a new risk assessment regarding the final installation.

WARNING: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

GENERAL VIEW

SC5000 Controller
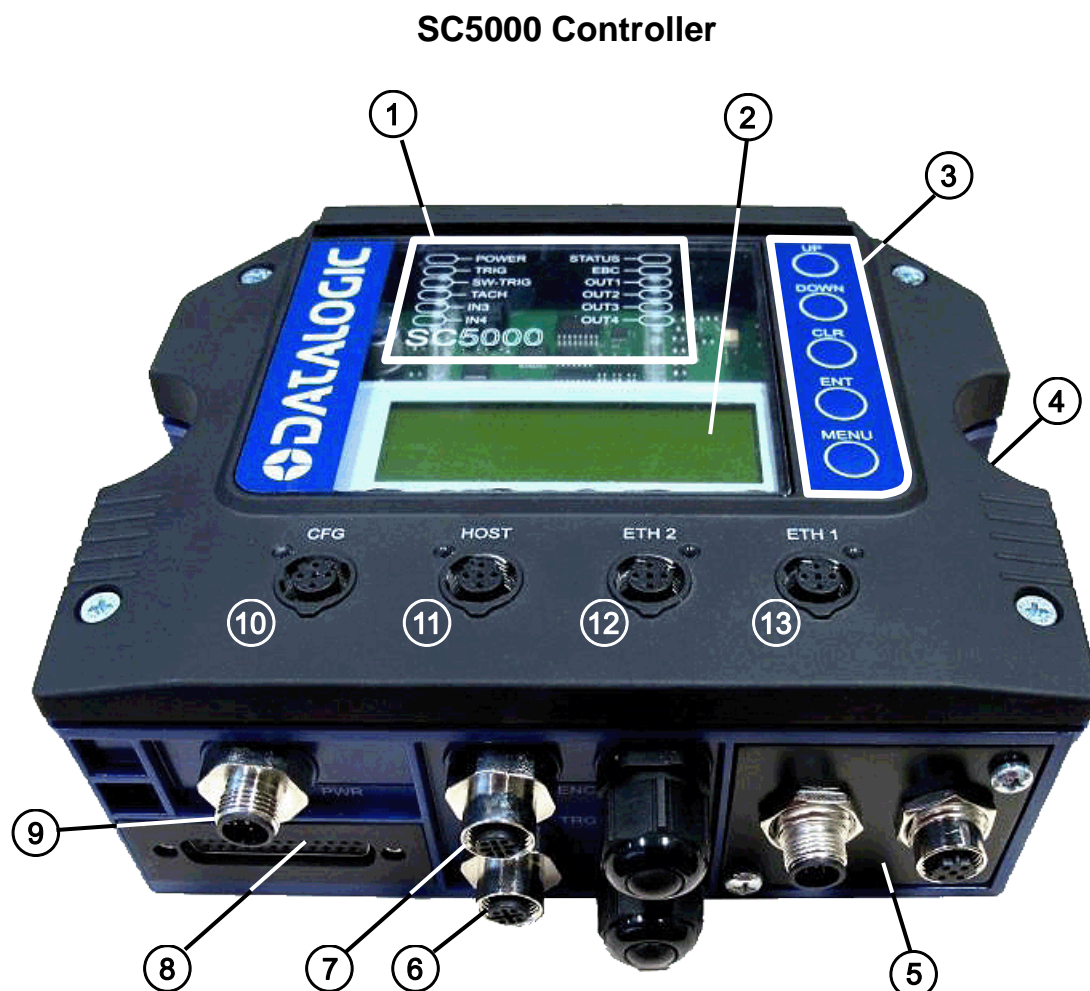
Figure A - General View

1	Indicator LEDs	8	SC5000 to CBX510 Connector (for Serial Host and I/O) (with IP65 protection cap not shown)
2	Display	9	Power Connector
3	HMI 5-Key Keypad	10	Ethernet Configuration Connector
4	Mounting Holes (2)	11	Ethernet Host Connector
5	Host Interface Panel (Fieldbus Models)	12	EBC Scanner Network Connector
6	Trigger Input Connector	13	EBC Scanner Network Connector
7	Encoder/Tach Input Connector	14	Front Panel Connector Guard (not shown)

GUIDE TO INSTALLATION

The following can be used as a checklist to verify all the steps necessary to complete installation of the SC5000 Controller.

1. Read all information in the section "Compliance" at the beginning of this manual.

2. Correctly mount the SC5000.

3. Connect the SC5000 Controller to the PWR by means of the appropriate accessory cables (see section 1.4).

4. Provide correct and complete system cabling according to the signals (Ethernet, EBC cluster, encoder P.S., etc) necessary for the layout of your application. (See subparagraphs under sections 2.3 and 2.4. See also the PWR-480B Installation Manual).

5. Configure the SC5000 Controller by connecting a PC to the SC5000 CFG port.

   For configuration of a cluster of DS8110 or DX8210 scanners or both, *see section 2.4.1.*

6. Execute the Backup procedure described in section 3.8.1.

7. Exit the configuration program and run your application.

The installation is now complete.

> **NOTE:** If required mount the cable protection bracket onto the SC5000 front cover.

SETTING UP A REDUNDANT (REDS) SYSTEM

If you need to set up a redundant (REDS) system requiring Two SC5000 Controllers, use the following checklist.

1. Build the internal EBC network (see section 2.4.2).

2. Configure the topological role of the two SC5000s (see section 3.5.12).

3. Do the network discovery (see section 3.4).

4. Configure the Working controller.

5. Perform system backup (see section 3.8.1.)

1   INTRODUCTION

1.1   PRODUCT DESCRIPTION

The SC5000 Controller offers all the necessary functions to make the phases of installation, setup, testing, and maintenance of the omnidirectional reading tunnel easy and quick.

The SC5000 Controller key functions are:

- Bus Controller: cluster management and Host interface of a multisided reading tunnel based on EBC (Ethernet Based Communication) bus;

- Automatic replacement procedure: automatic procedure for scanner and bus controller replacement;

- Diagnostic indications on the reading station status, simple to be detected without any PC needed. These indications, based on LEDs and display, provide the maintenance staff with all the necessary information;

- Easy remotization of all the reading station information, thanks to built-in Ethernet (all models) and fieldbus (Profibus or Profinet models) connectivity;

- Single and Redundant System configurations;

- Integration with Dimensioners and Vision Systems; SC5000's efficiency in hybrid solutions represents a crucial competitive advantage for challenging application requirements.

- Auto PackTrack Calibration procedure from SC5000 Menu using the onboard Keypad and Display.

- Energy Saving allows turning on/off the motors and lasers of all network scanners according to the selected digital input, encoder, or communication channel. The time required to restart the system is less than 1 minute independently from the number of scanners connected. It is suggested to use this parameter for example when the conveyor is stopped for a lengthy period.

- Three Inputs (Trigger, Encoder/Tachometer, IN3), three Outputs (OUT1, OUT2, OUT3), one configurable I/O Port (IN4/OUT4). *See GENERAL VIEW.*

The SC5000 Controller is divided into two parts:

- The upper part (alloy case) contains the Controller's digital section; here you can find the four Ethernet M12 connectors, the removable SD-Flash memory, the display, the keypad and the LEDs.
- The lower part (plastic case) contains the connection board, the place for the optional Fieldbus modules and the connectors panel.

NOTE: The SC5000 should be open only by authorized personnel.

The simple and sturdy mechanical structure makes the SC5000 Controller the ideal solution for industrial environments.

The SC5000 Controller is fully compatible with DS8110 and DX8210 scanners.

The SC5000 Controller allows connection to the Trigger and Encoder/Tach. PNP inputs are available via M12 circular connectors, placed on the lower front panel.

This configuration covers a great part of all the possible user's needs.

You can get access to all the Inputs and Outputs, in both PNP and NPN polarity, using the optional CBX510 connection box accessory; in this case you must connect the box to the controller using the CAB SC5000 TO CBX510 accessory cable *(see section 1.4).*

CAUTION: The Trigger and Encoder signals must be supplied to only one device, that is, if you connect the Trigger or the Encoder to the SC5000 M12 connectors you must not connect another Trigger or Encoder source to the CBX510!

1.2 MODEL DESCRIPTION

The SC5000 Controller is available in the following versions:

Model	Description	Part Number
SC5000-1000	Standard Controller version	935750001
SC5000-1100	Profibus Controller version	935750002
SC5000-1200	Profinet Controller version	935750003

1.3 LED INDICATORS
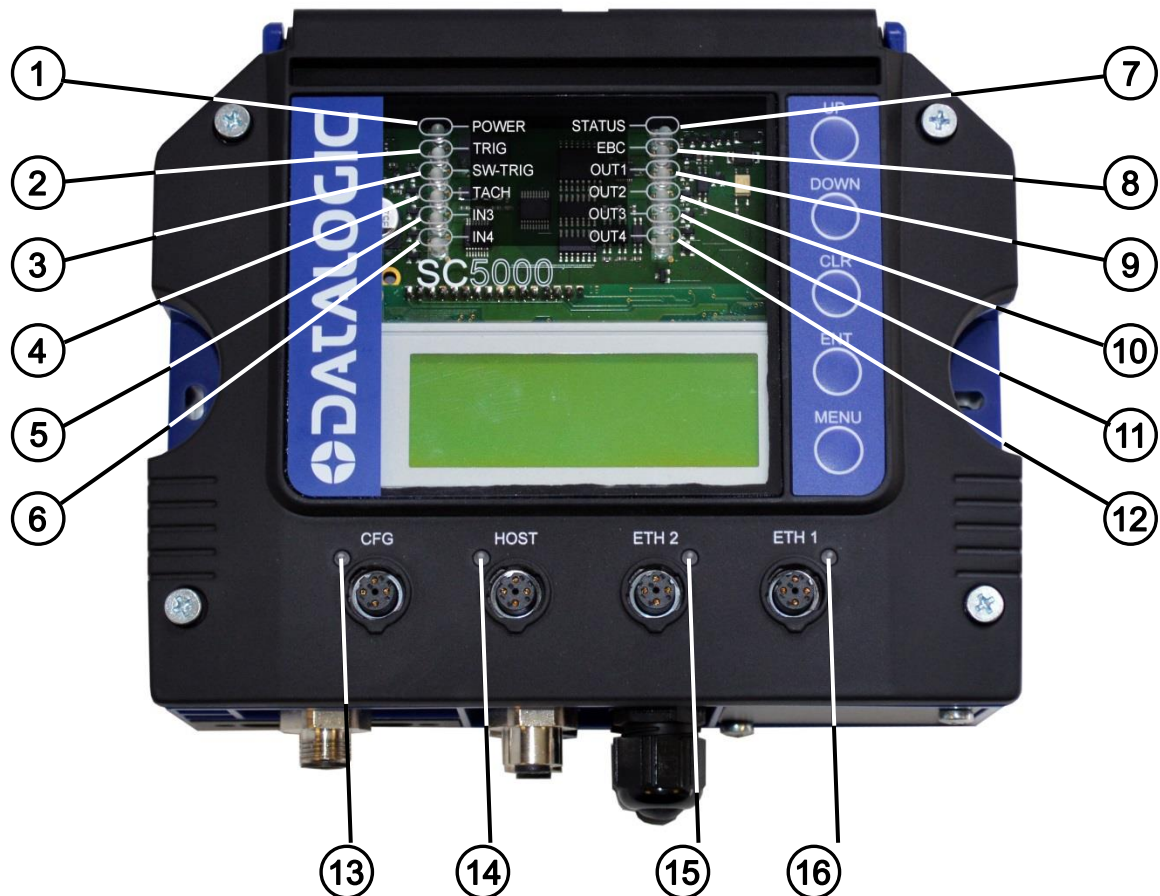
Figure 1 – LEDs Description

System Signal LEDs

#	Name	Color	State	Function
1	**POWER**	**BLUE**	ON	SC5000 Powered
			OFF	No Power
2	**TRIG**	**GREEN**	ON	Photoelectric Sensor Active
			OFF	Photoelectric Sensor Not Active
3	**SW-TRIG**	**GREEN**	ON	Software Trigger Acknowledge Active
			OFF	Software Trigger Acknowledge Not Active

NOTE: Activity on Input 1 causes both the TRIG and SW-TRIG LEDs to activate simultaneously.

The SW-TRIG LED is driven by a Fieldbus Host when **Start Input from Bus** is enabled.

#	Name	Color	State	Function
4	**TACH**	**GREEN**	Blinking	Encoder Active
			OFF	Encoder Inactive
5	**IN3**	**GREEN**	ON	Input 3 Active
			OFF	Input 3 Inactive
6	**IN4**	**GREEN**	ON	Input 4 Active
			OFF	Input 4 Not Inactive

#	Name	Color	State	Function
(9)	**OUT1**	**YELLOW**	ON	Output 1 Active
			OFF	Output 1 Inactive
(10)	**OUT2**	**YELLOW**	ON	Output 2 Active
			OFF	Output 2 Inactive
(11)	**OUT3**	**YELLOW**	ON	Output 3 Active
			OFF	Output 3 Inactive
(12)	**OUT4**	**YELLOW**	ON	Output 4 Active
			OFF	Output 4 Inactive

System Event Status LEDs

#	Name	Color	State	Function
(7)	**STATUS**	**GREEN** / **RED**	ON Green	Controller Status OK
			ON Red	Scanner Cluster Failure
			OFF	Controller Not Ready
(8)	**EBC**	**GREEN** / **YELLOW**	ON Green	EBC Network OK
			ON Yellow	EBC Network Warning
			OFF	EBC Network Not Ready

Ethernet Status LEDs

#	Name	Color	State	Function
(13)	**CFG**	**YELLOW**	Blinking	Ethernet CFG Port Activity
(14)	**HOST**	**YELLOW**	Blinking	Ethernet HOST Port Activity
(15)	**ETH2**	**YELLOW**	Blinking	EBC Port 2 Activity
(16)	**ETH1**	**YELLOW**	Blinking	EBC Port 1 Activity

1.4 ACCESSORIES

The complete list of reading station accessories are presented here and are available on request. Not all accessories are relevant to building a reading station based on the SC5000 Controller.

Category	Description	Part Number
Cables and Terminators		
Ethernet Cables	ETH CABLE M12-M12 1M (straight-straight) Scanner ETH1 or ETH2 straight to Scanner EBC ETH1 or ETH2 straight	93A050065
	ETH CABLE M12-M12 3M (straight-straight) Scanner ETH1 or ETH2 straight to Scanner EBC ETH1 or ETH2 straight	93A050066
	ETH CABLE M12-M12 5M (straight-straight) Scanner ETH1 or ETH2 straight to Scanner EBC ETH1 or ETH2 straight	93A050067
	ETH CABLE M12-M12 1M (straight- 90°) SC5000 ETH1 or ETH2 90° to Scanner EBC (ETH1 or ETH2) straight	93A050068
	ETH CABLE M12-M12 3M (straight- 90°) SC5000 ETH1 or ETH2 90° to Scanner EBC (ETH1 or ETH2) straight	93A050069
	ETH CABLE M12-M12 5M (straight- 90°) SC5000 ETH1 or ETH2 90° to Scanner EBC (ETH1 or ETH2) straight	93A050070
	ETH CABLE M12-RJ45 5M (90°-RJ45) SC5000 CFG 90° to Laptop RJ45 for setup or to SC5000 HOST 90° to Ethernet Host RJ45	93A050088
	CAB-ETH-M01 M12-IP67 1M (straight- RJ45) Scanner to the Host or Configuration PC	93A051346
	CAB-ETH-M03 M12-IP67 3M (straight- RJ45) Scanner to the Host or Configuration PC	93A051347
	CAB-ETH-M05 M12-IP67 5M (straight- RJ45) Scanner to the Host or Configuration PC	93A051348
	ETH CABLE M12-M12 2mt LENGTH (90°- 90°)	93A050106
	ETH CABLE M12-M12 5mt LENGTH (90°- 90°)	93A050107
REDs Cables	ETH CABLE M12-M12 1M (90°- 90°) SC5000 Working ETH1 or ETH2 90° to SC5000 Protecting ETH1 or ETH2 90°	93A050087
	REDS POWER ALARM CABLE 5M PWR-480B to CBX510 power alarm connections	93A050086
EBC Patch Cable	ETH CABLE M12-M12 0.5M (straight-straight) Female to Female EBC patch cable; close the EBC when a scanner is sent to repair, only for Master/Slave	93A050085
Interface Cable	SC5000 to CBX510 for Serial or I/O connections	93A050071
CBX Cables	CAB-DS01-S M12-IP67 1M Scanner to CBX for Serial or I/O connections	93A050058
	CAB-DS03-S M12-IP67 3M Scanner to CBX for Serial or I/O connections	93A050059
	CAB-DS05-S M12-IP67 5M Scanner to CBX for Serial or I/O connections	93A050060
AS-I Terminal	AS-I CABLE TERMINAL for AS-I branch topology wiring	93ACC0083

Category	Description	Part Number
Power Cables	PWR CABLE, AS-I, 2 Wires, 10M (Backbone with caps)	93ACC0081
	PWR CABLE, AS-I, 2 Wires, 25M (Backbone with caps)	93ACC0082
	PWR CABLE M12- ASI standard 1M (Node)	93ACC0067
	PWR CABLE M12- ASI standard 2M (Node)	93ACC0068
	PWR CABLE ext. M12 Male-M12 Fem 3M for PG-240	93ACC0149
	PWR CABLE ext. M12 Male-M12 Fem 5M for PG-240	93ACC0150
	PWR CABLE, CAB-LP-05 M12 Female-Free Wires 5M for alternative power connections	93A050037
Connection Boxes		
	CBX100 Compact	93A301067
	CBX100 Compact All in One (includes BM100)	93A301076
	CBX510 Modular	93A301087
	CBX510 Modular All in One (includes BM100) + BA200	93A301091
Backup Module	BM100 Backup Module	93ACC1808
Mounting Hardware	BA200 Mounting Adapters (to Bosch or 80/20 Frames)	93ACC1822
Fieldbus Modules	BM300/310 Profibus Module STD/IP65	93ACC1810, 93ACC1811
Fieldbus Modules	BM700/710 Profinet Module STD/IP65	93ACC1816, 93ACC1886
Controllers		
	SC5000-1000 Standard System Controller	935750001
	SC5000-1100 Profibus System Controller	935750002
	SC5000-1200 Profinet System Controller	935750003
Mounting Hardware	BA200 Mounting Adapters (to Bosch or 80/20 Frames)	93ACC1822
Mirrors		
	GFC-8110 Close Distance Mirror	93A251034
Power Supplies		
	PG-100-K03 POWER SUPPLY 60W KIT (US) w/ M12 cable	93ACC0058
	PG-100-K01 POWER SUPPLY 60W KIT (EU) w/ M12 cable	93ACC0059
	PG-100-K02 POWER SUPPLY 60W KIT (UK) w/ M12 cable	93ACC0060
	PG-240-K03 POWER SUPPLY 240W 8 Port M12 (US) w/o M12 Cable	93ACC0144
	PG-240-K01 POWER SUPPLY 240W 8 Port M12 (EU) w/o M12 Cable	93ACC0145
	PWR-480B POWER UNIT 110/230VAC 24V	93ACC0076
Sensors		
	MEP-593 PHOTOCELL KIT PNP (PH-1) with Free Wires	93ACC1791
	MEP-604 PHOTOCELL KIT PNP M12-M12 Photocell with M12 connector for SC5000	93ACC0140
Encoders		
	OEK-2 OPTICAL ENCODER KIT (CAB 10M +SPRING)	93ACC1770
	OEK-4 ENC KIT PNP 250PPR + M12-M12 CABLE	95B082040
	OEK-4 ENC KIT PNP 250PPR + M12-FREE CABLE	95B082050
Field Mount Connectors	FMC-5000 2xM12 TRIG+ENC INPUT KIT Connectors for PLC signal to SC5000 (Tilt-Tray or Cross-Belt applications)	93ACC0181
Mounting Brackets		
L-Bracket	DS8110 L-shape Mounting Bracket	93ACC0080
Miscellaneous		
Air Cleaning System	ACS-DS8110 Air Cleaning System for DS8110	93ACC0084

2   MECHANICAL INSTALLATION

To install the system follow the given procedure:

1. Select the mounting location and mount the SC5000 Controller.
2. Select the preferred power source to power the SC5000 through the M12 Male 5p. connector *(see GENERAL VIEW).*
3. Proceed with system electrical connections.
4. Connect to the Configuration PC and modify the configuration parameters.

2.1   PACKAGE CONTENTS

Verify that the SC5000 Controller and all the parts supplied with the equipment are present and intact when opening the packaging; the list of parts includes:

- SC5000 Controller
- Protection guard for the Ethernet connectors, with its fixing screws
- SC5000 Quick Reference Guide
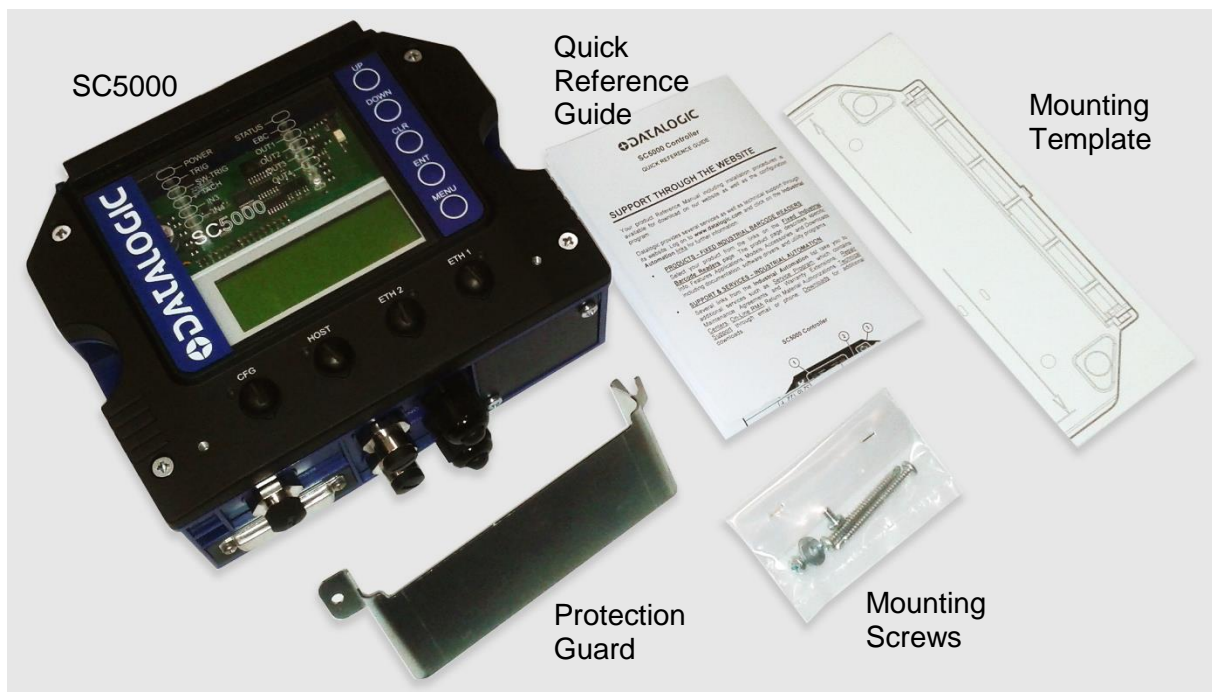- Mounting template
- Mounting screws

Figure 2 – SC5000 Package Contents
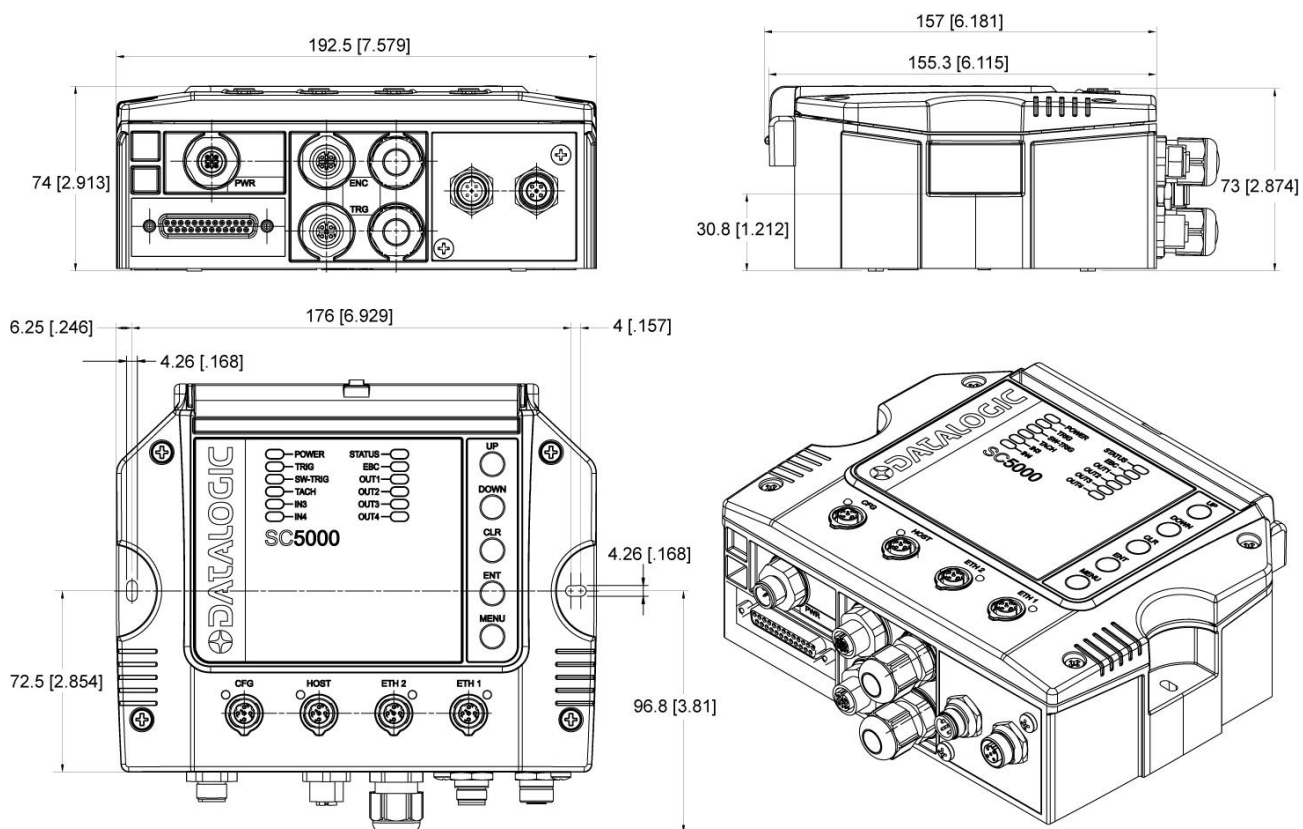
Overall Dimensions

Figure 3 – SC5000 Overall Dimensions

2.2 MECHANICAL MOUNTING

SC5000 can be mounted to various wooden or plastic surfaces using two self-threading screws (3.9 x 45 mm) and washers.
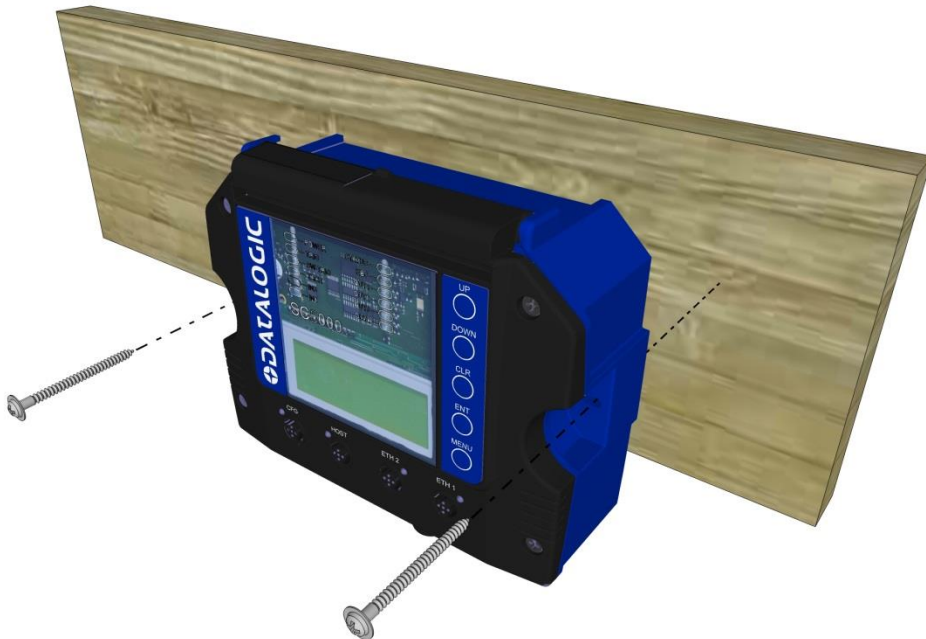
Figure 4 – Mounting to wood surface

Mounting to other surfaces such as concrete walls or metallic panels requires appropriate user-supplied parts (screws, screw anchors, nuts, etc.).

SC5000 can also be mounted to a Bosch frame or 80/20$^{®}$ frame using the following mounting accessories: BA200 (93ACC1822).
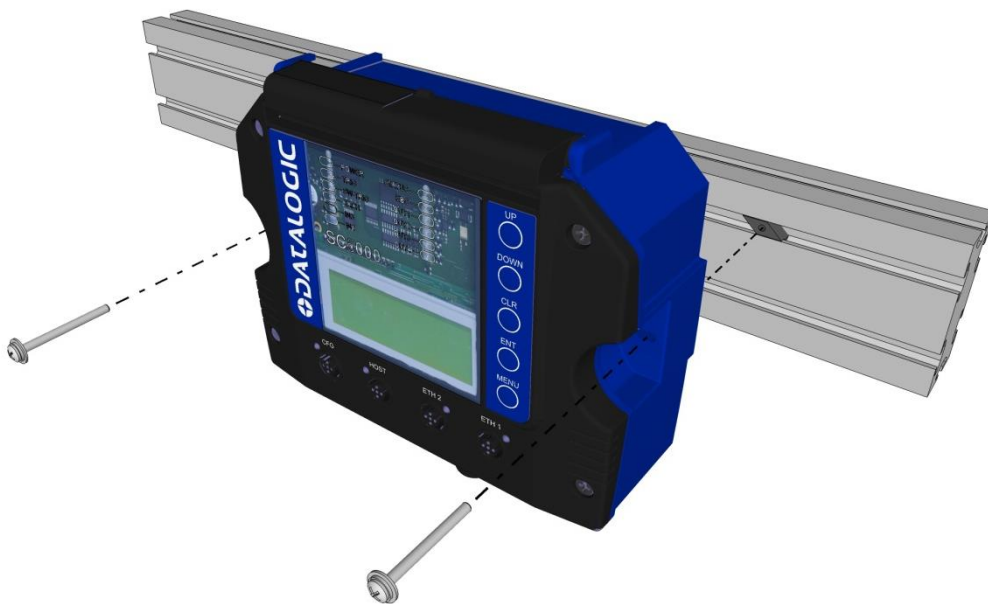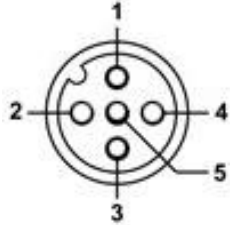
Figure 5 – Mounting to extrusion

2.3 ELECTRICAL CONNECTIONS

The connectors available for each controller model are the following:

Controller Model	Connector	Type
All models	Power	M12 Male 5p. A-Coded
	Serial and Extended I/O	25-pin female
	Trigger	M12 Female 4p. A-Coded
	Encoder/Tachometer	M12 Female 5p. A-Coded
	Ethernet (x4)	4x M12 Female 4p. D-Coded
SC5000-1100	Profibus (x2)	M12 Male 5p. B-Coded + M12 Female 5p. B-Coded
SC5000-1200	Profinet (x2)	M12 Female 4p. D-Coded + M12 Female 4p. D-Coded

2.3.1 Power Connector Pin-Out Table

A recommended power supply and cabling is available with the SC5000 Controller. However, if your installation requires custom power supply wiring, the pin-outs of the unit power connector are provided below for your convenience.

24V - - - 4A MAX		POWER Input	
		Unit Connector (shown)	Mating cable connector
		5-PIN M12-TYPE MALE	5-PIN M12-TYPE FEMALE
MALE 5-PIN M12-TYPE	Pin	Function	
	1	+24 VDC	
	2	n/c	
	3	dc return	
	4	n/c	
	5	protective earth (chassis)	

NOTE: If a CBX510 connection box is connected to the SC5000 controller, it obtains power directly from the SC5000 controller through the 25-pin to 25-pin cable.

NOTE: In cases where the AS-I cabling is not used, the alternative CAB-LP-05 cable can be used to connect the power supply to the scanner. Connect the Brown/White pair to +24 Vdc and the Blue/Black pair to 0 V- (GND).

2.3.2   Main Interface

This interface is available exclusively through the CBX510 connection box accessory. Use the CAB SC5000 to CBX510 accessory cable to connect the CBX510 to the SC5000.

The optocoupled main serial interface is compatible with the following electrical standards:

- RS232
- RS422 full-duplex

RS232 Interface

The main serial interface is used for communication with the Host computer and allows transmission of code data.

It is always advisable to use shielded cables. The overall maximum cable length must be less than 15 m (49.2 ft).

The following positions of the CBX510 spring clamp connector (row 4) are used for RS232 interface connection:

Name	Function
SGND	Signal ground (isolated)
TX	Transmit
RTS	Request to send
RX	Receive
CTS	Clear to send

As suggested above, the cable shield should be connected in the 'Shield' position.

The RTS and CTS signals control data transmission and synchronize the connected devices. If the RTS/CTS hardware protocol is enabled, the scanner activates the RTS output to indicate a message can be transmitted. The Host must activate the CTS input to enable the transmission.

IMPORTANT: RTS/CTS lines should only be connected if the Main serial port handshaking is configure for **Hardware (RTS/CTS)** *(see section 3.5.4).*
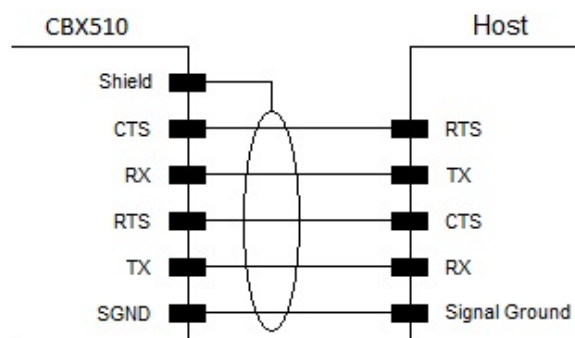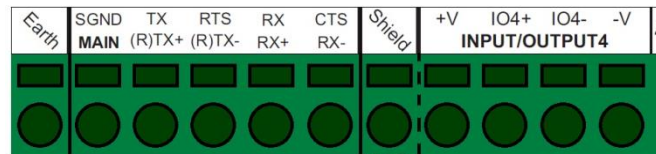

Figure 6 - RS232 Connections: Host – CBX510

RS422 Full-Duplex Interface

The RS422 full-duplex interface is used for non-polled communication protocols in point-to-point connections over longer distances (max 1200 m / 3940 ft) than those acceptable for RS232 communications or in electrically noisy environments.

The following positions of the CBX510 spring clamp connector (row 4) are used for RS422 full-duplex interface connection:

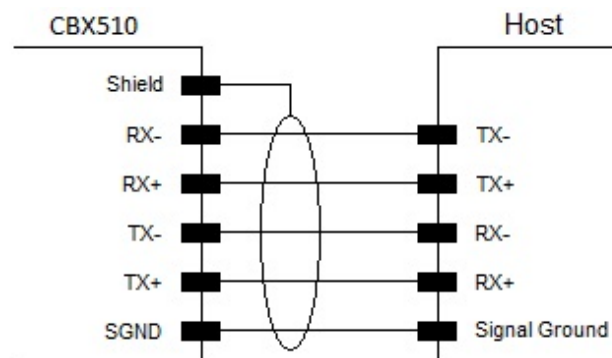| Name	Function
SGND	Signal ground (isolated)
TX+	RS422 output (+)
TX-	RS422 output (-)
RX+	RS422 input (+)
RX-	RS422 input (-)

Figure 7 - RS422 Full-Duplex Interface Connections: Host – CBX510

⚠ **IMPORTANT:** For applications that do not use RS422 RX signals, do not leave these lines floating but connect them to SGND as shown below.
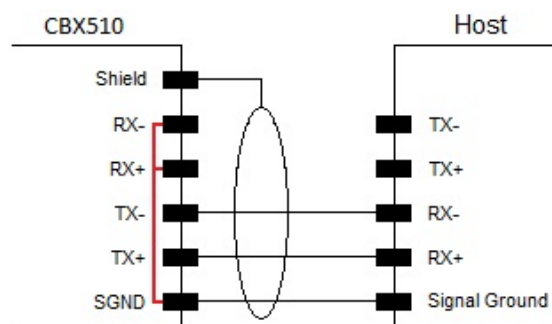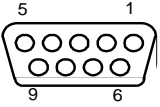

Figure 8 - RS422 Full-Duplex Interface Connections Using Only TX Signals: Host - CBX510

2.3.3 Auxiliary Interface

This interface is available exclusively through the CBX510 connection box accessory. Use the CAB SC5000 to CBX510 accessory cable to connect the CBX510 to the SC5000.

The auxiliary serial interface is equipped with RS232 interface connections. In addition to being an alternative serial interface, it can be used to connect a hand-held reader to the reading station in a pass through configuration. Data Transmission can be enabled or disabled on this interface through the configuration parameters.

The following pins of the 9-pin D-Sub Female connector inside the CBX510 are used for RS232 interface connection:

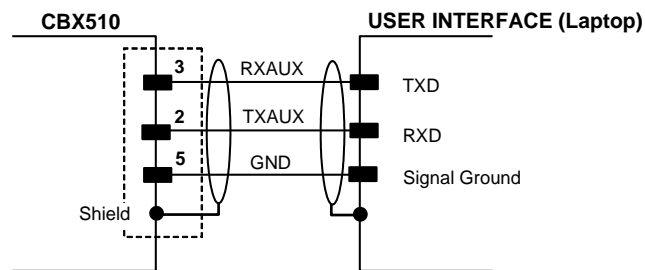| 9-pin D-sub Female Connector Pinout			
Pin	**Name**	**Function**	
2	TX	Transmit	9-pin D-sub Female Connector
3	RX	Receive	
5	GND	Ground	

Figure 9 – RS232 Auxiliary Interface Connections

The 9-pin. connector is normally used for quick/temporary connection. For a more permanent connection you can also use the CBX510's spring clamp connectors, in particular the positions labeled as RX AUX, TX AUX and SGND AUX.

2.3.4 Ethernet Interface

Four standard M12 4-pin D-Coded female connectors are provided on the SC5000's upper metal cover for the Ethernet connections: CFG, HOST, ETH2 and ETH1.

CFG is used for configuration purposes; HOST is used to connect the SC5000 to an Ethernet Host; ETH2 and ETH1 are reserved for building the EBC cluster; typically the cluster members are DS8110/DX8210 scanners.

This interface is IEEE 802.3 10 BaseT and IEEE 802.3u 100 BaseTx compliant.
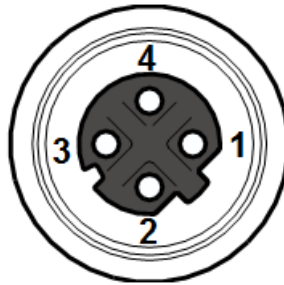
Figure 10 - M12 4-pin D-Coded Female Ethernet Network Connector

Ethernet Network Connector Pinout		
Pin	**Name**	**Function**
1	TX +	Transmitted data (+)
2	RX +	Received data (+)
3	TX -	Transmitted data (-)
4	RX -	Received data (-)

2.3.5 Profibus Interface

The Profibus interface is only available in the SC5000-1100 Profibus model and allows inserting the controller in a Profibus network.

A pair of Male and Female M12 5-pin B-Coded connectors are provided on the SC5000's rightmost front panel for Profibus connections.

PB-IN (Profibus In) M12 5P Male (B-coded)		
Pin	Function	
1	+5V Bus	
2	A Line (-)	
3	GND Bus	
4	B Line (+)	
5	Shield	

PB-OUT (Profibus Out) M12 5P Female (B-coded)		
Pin	Function	
1	+5V Bus	
2	A Line (-)	
3	GND Bus	
4	B Line (+)	
5	Shield	

Figure 11 – Profibus M12 5-pin B-Coded Male and Female Connectors

The Profibus interface is used for communication with a PROFIBUS DP Host and allows expanding the networking and remote diagnostic capabilities of the controller.

Figure 12 – Profibus Connectors

2.3.6 Profinet Interface

The Profinet interface is only available in the SC5000-1200 Profinet model and allows inserting the controller in a Profinet-IO network.

Two standard M12 4-pin D-Coded female connectors are provided on the SC5000's rightmost front panel for Profinet connections.
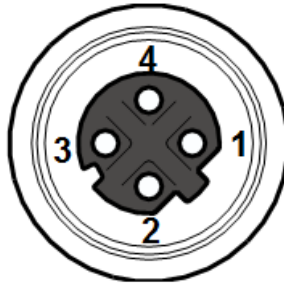
Figure 13 - M12 4-pin D-Coded Female Profinet-IO Network Connector

Ethernet Network Connector Pinout		
Pin	**Name**	**Function**
1	TX +	Transmitted data (+)
2	RX +	Received data (+)
3	TX -	Transmitted data (-)
4	RX -	Received data (-)

The Profinet interface is used for communication with a PROFINET-IO Host and allows expanding the networking and remote diagnostic capabilities of the controller.

Figure 14 – Profinet Connectors

2.3.7 PLC Signal Connections through SC50000 Connectors

If the Presence Sensor and Encoder signals are provided by a PLC, two accessory field connectors can be wired on site. The two connectors are contained in the FMC-5000 accessory, 93ACC0181.

Open the SC5000 and make the following changes on the Trigger and Encoder connections:

SC5000 WIRING CHANGES

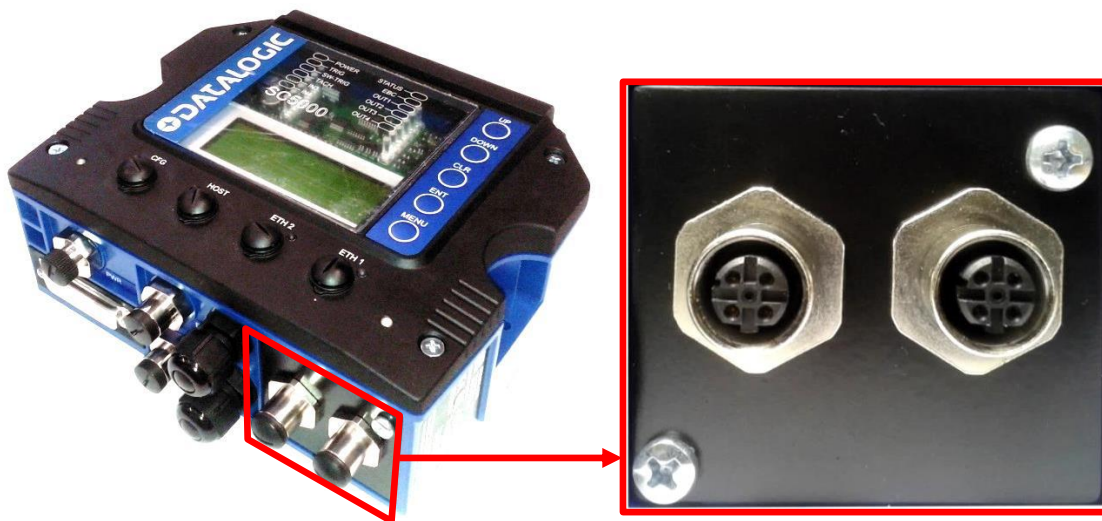1. Disconnect the white jumpers:

   - Encoder from -V to ENB
   - Presence Sensor from -V to I1B

2. Change the position of the brown wires:

   - Encoder from +V to ENB
   - Presence Sensor from +V to I1B
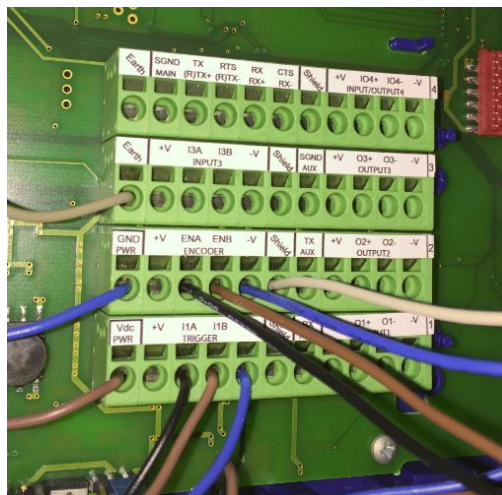
Figure 15 – SC5000 Wiring Changes

PLC TO FMC-5000

1. Wire the Presence Sensor and Encoder signals coming from the PLC to the FMC-5000 connectors referring to the diagram on the connector packages and the wiring tables below..

FMC-5000	Presence Sensor Signal		
M12 4-pin Male Connector (front side)	**Pin**	**PLC signal**	**SC5000 signal**
	2	nc	nc
	3	nc	-V
	1	**Reference**	I1B
	4	**Signal**	I1A

FMC-5000	Encoder Signal		
M12 5-pin Male Connector (front side)	**Pin**	**PLC signal**	**SC5000 signal**
	2	nc	nc
	3	nc	-V
	1	**Reference**	ENB
	4	**Signal**	ENA
	5	Shield (optional)	Shield

2. Connect the FMC-5000 connectors to the relative SC5000 connectors *(see GENERAL VIEW)*.

2.3.8 Grounding

In order to avoid any problems with electrical noise that could negatively affect system function, make sure that:

1. The AC power cable coming into the PWR box is always provided with a Ground and connected to the proper connector (Protective Earth - PE).

2. The structure where the readers, controllers, encoders/tachometers, and photoelectric sensors are mounted is grounded to the conveyor or to the PE terminal inside the PWR.

3. The Shield wires from the Encoder/Tachometer and photoelectric sensor cables are connected to the proper *Shield* terminal in the CBX box.

4. Normally, steps 1 through 3 will guarantee proper function. In case of problems such as transmission of strange or wrong characters, devices stop working without any reason, or other unexpected behavior, try connecting the CBX or Controller Earth terminal to the PE terminal inside the PWR box.
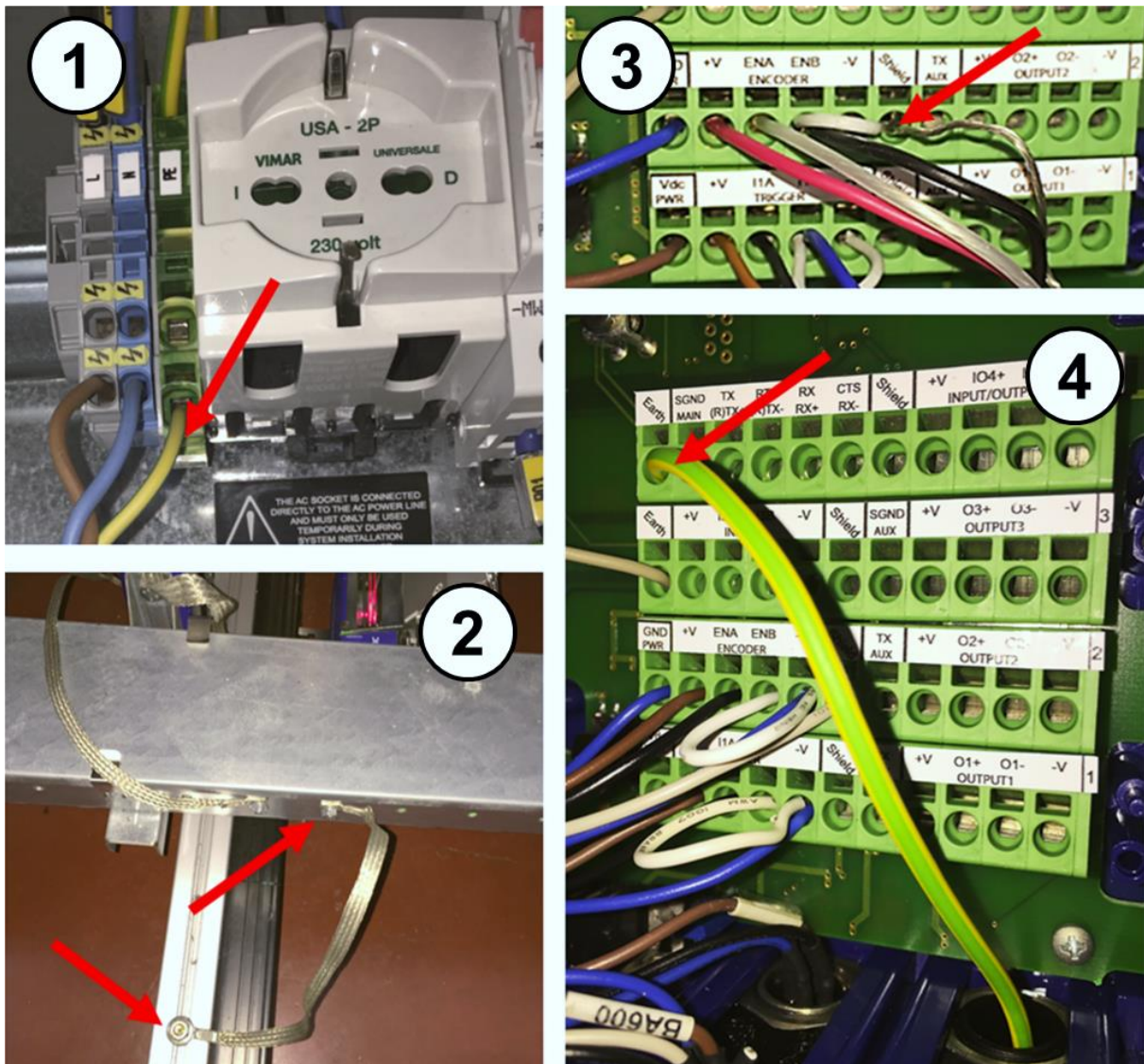

Figure 16: Grounding Examples

2.4 TYPICAL LAYOUTS

The following typical layouts refer to system hardware configurations, but also require the correct setup of the software configuration parameters

Other layouts require the use of a specific SC5000 Controller model.

The accessories and cables indicated in the following figures are Datalogic products. We suggest their use to guarantee the correct system functioning.

2.4.1 Large Synchronized Network Layout

When building a large local EBC (Ethernet Based Connectivity) network, an SC5000 Controller should be used together with a PWR-480B power supply unit. In this case the SC5000 unit acts as the system master and is connected to the host through one of its interfaces.

- The SC5000 can be connected to the Host in several different layouts depending on the controller model.

  The SC5000 Standard models provide both Ethernet connections (direct or through a Hub/Switch) and point-to-point connections on the Main interface using either RS232 or RS422 full-duplex;

  Fieldbus models, additionally provide the model specific Fieldbus: Profibus, Profinet;

- All scanners act as slaves and are connected to the SC5000 through the EBC interface.

External devices such as a presence sensor and an encoder are all connected either to the SC5000 through its M12 circular connectors, or to the CBX510 connection box (connected to the Controller), wiring the signals through the CBX510 compression connectors.

SC5000: Basic Layout: Ethernet TCP/IP to Host
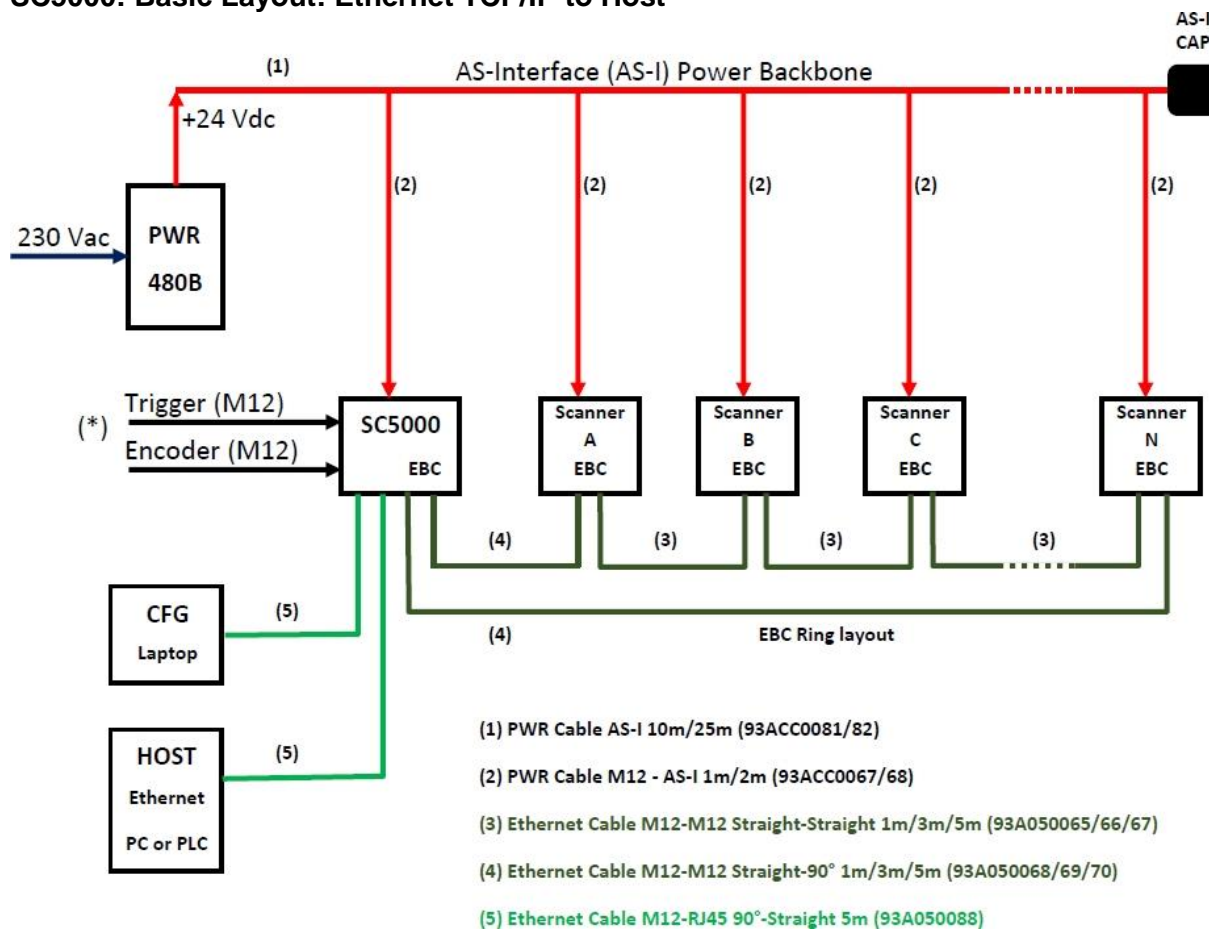
Figure 17 – Large Synchronized Network with DS8110/DX8210 Scanners, Ethernet TCP/IP to Host

(*) If you prefer an alternative wiring connection, rather than the M12 connection type, use the CBX510 accessory, as shown below.

(6) CAB SC5000 TO CBX510 (93A050071)
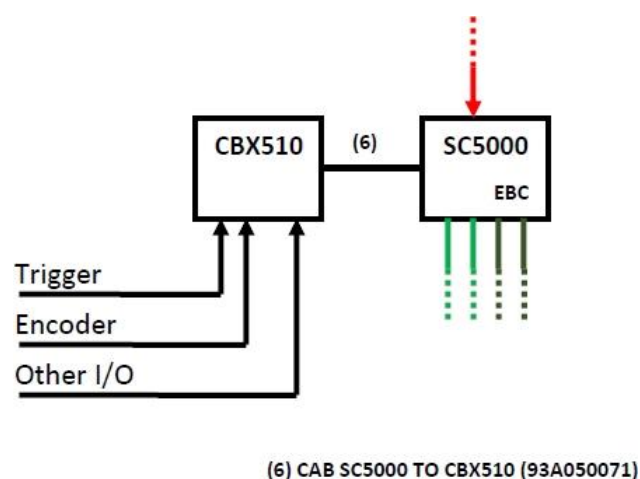
Figure 18 – Large Synchronized Network using CBX510

SC5000: Basic Layout: COM to Host

If the Host supports a COM communication type (RS232 or RS422) rather than the Ethernet one, use the CBX510 accessory, as shown below.

The remaining part of the layout (scanners, PWR etc) does not change.

As already mentioned, the CBX510 can also be used to wire the Trigger and Encoder signals (and other I/O) as an alternative to the M12 connection.
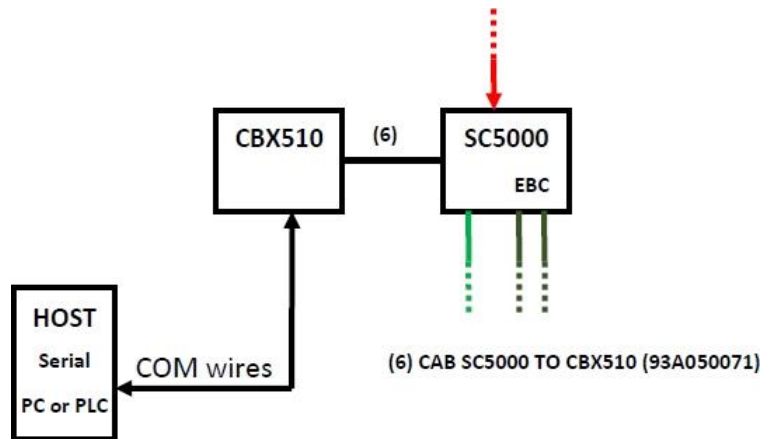
Figure 19 – Large Synchronized Network with COM to Host using CBX510

SC5000: Basic Layout: Fieldbus to Host
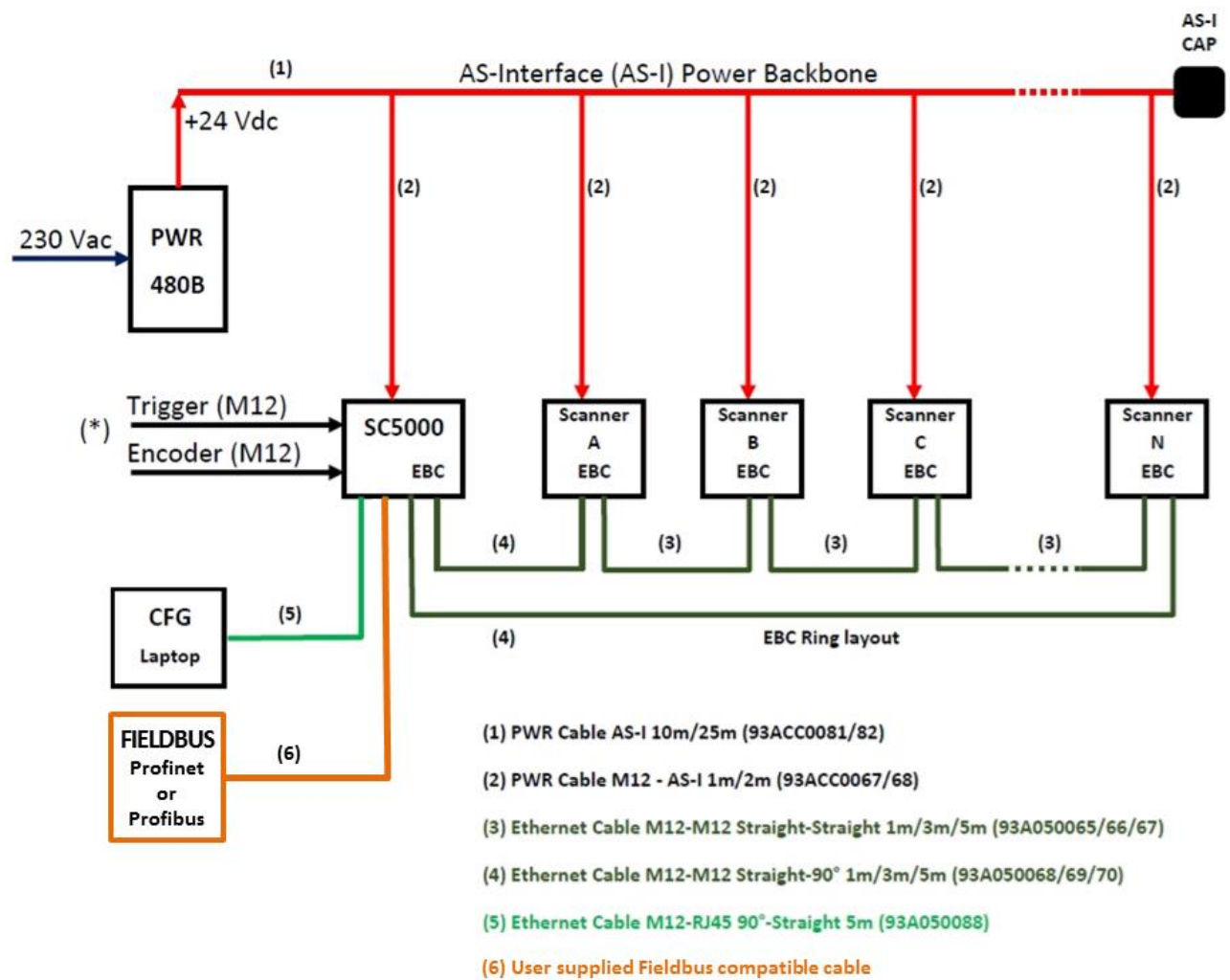
Figure 20 – Large Synchronized Network with DS8110/DX8210 Scanners, Fieldbus to Host

NOTE: In Fieldbus to Host layout, the SC5000 is a dedicated Fieldbus model (Profinet or Profibus).
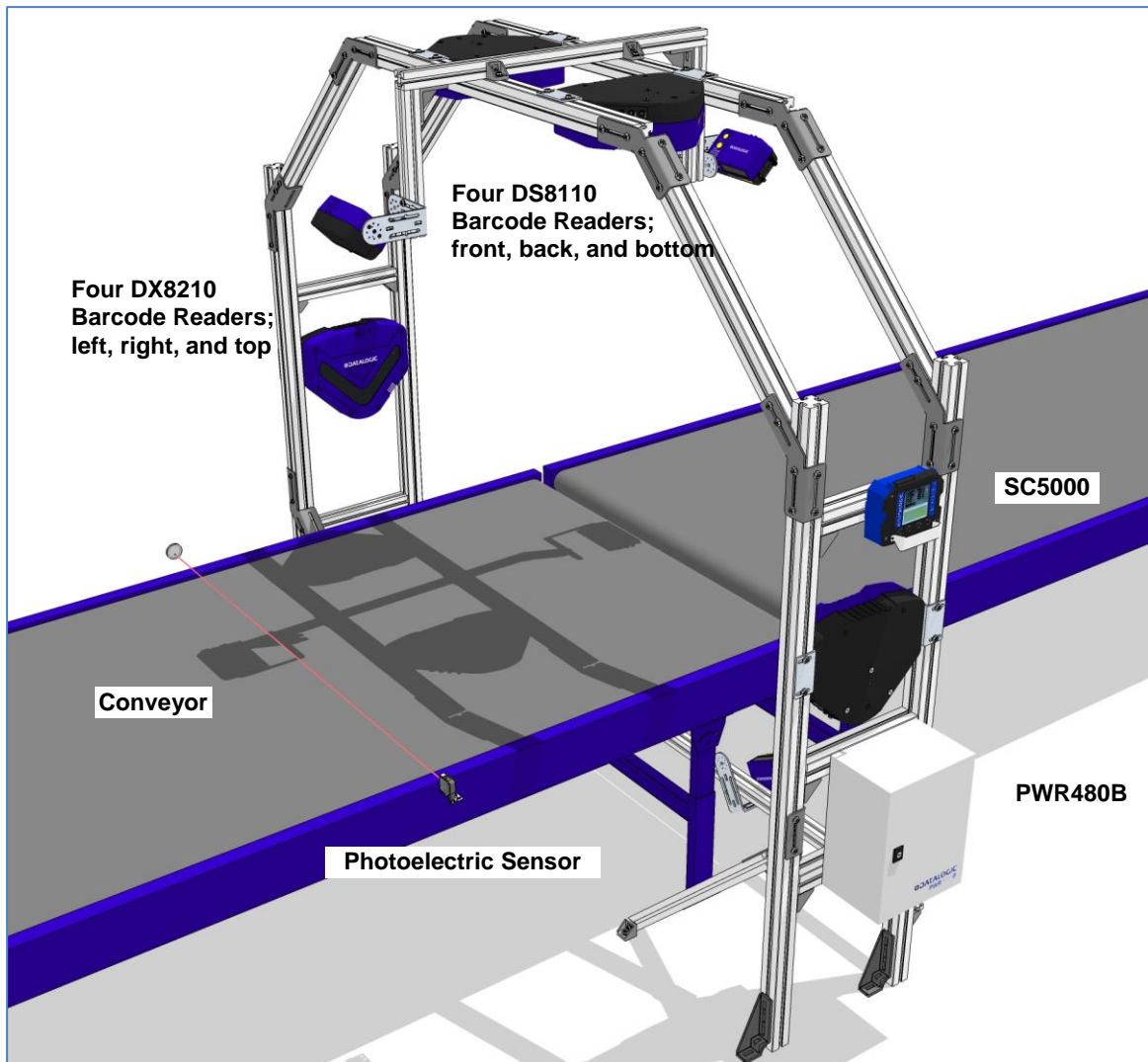
Figure 21 – Example Large Synchronized Network Reading Station

For applications having regular shaped packs, the default settings are sufficient, but for Airport applications working in PackTrack Operating Mode, irregular shaped packs can cause PS signal glitches resulting in false "packs too short" or "packs too close" errors.
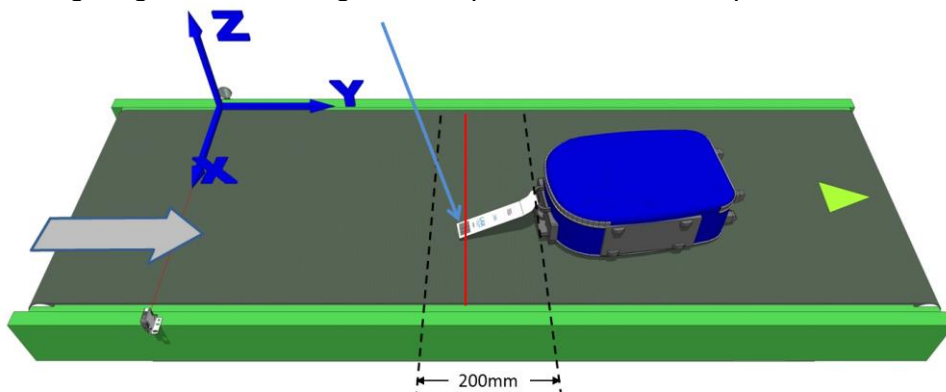
Figure 22 – Compensating for Irregular-Shaped Packs

To correct this, set the following Operating Modes parameters: Minimum Distance Between Packs = 200 mm, Minimum Pack Length = 200 mm, Window Dimension = 200 mm.

2.4.2   Redundant System Layout

For large local EBC networks, a redundant system (REDs) can be configured in which two SC5000 Controllers are used together with their respective PWR power supply units. The scanners are distributed equally between the PWR units. In this case one of the SC5000 Controllers is dedicated as the **Master Working** or active unit while the other is functions as a dedicated **Master Protecting** or backup unit.

To set up a redundant system:

1. Connect a system of two SC5000 and at least one DS8110 or DX8210 (a mix of more than one scanner is typical). The network consists of a ring closed at the two SC5000 Controllers.

2. Power up the system.

3. In **e-Genius**, set one of the SC5000 Controllers with a Role of Master Working, and the other with the Role of Master Protecting *(see section 3.5.12 **Redundant Operation**).*

4. In the **e-Genius** menu, navigate to **Modify Settings | System Info** and click **Discover Scanners**.

SC5000: Redundant System Layout with Ethernet TCP/IP to Host
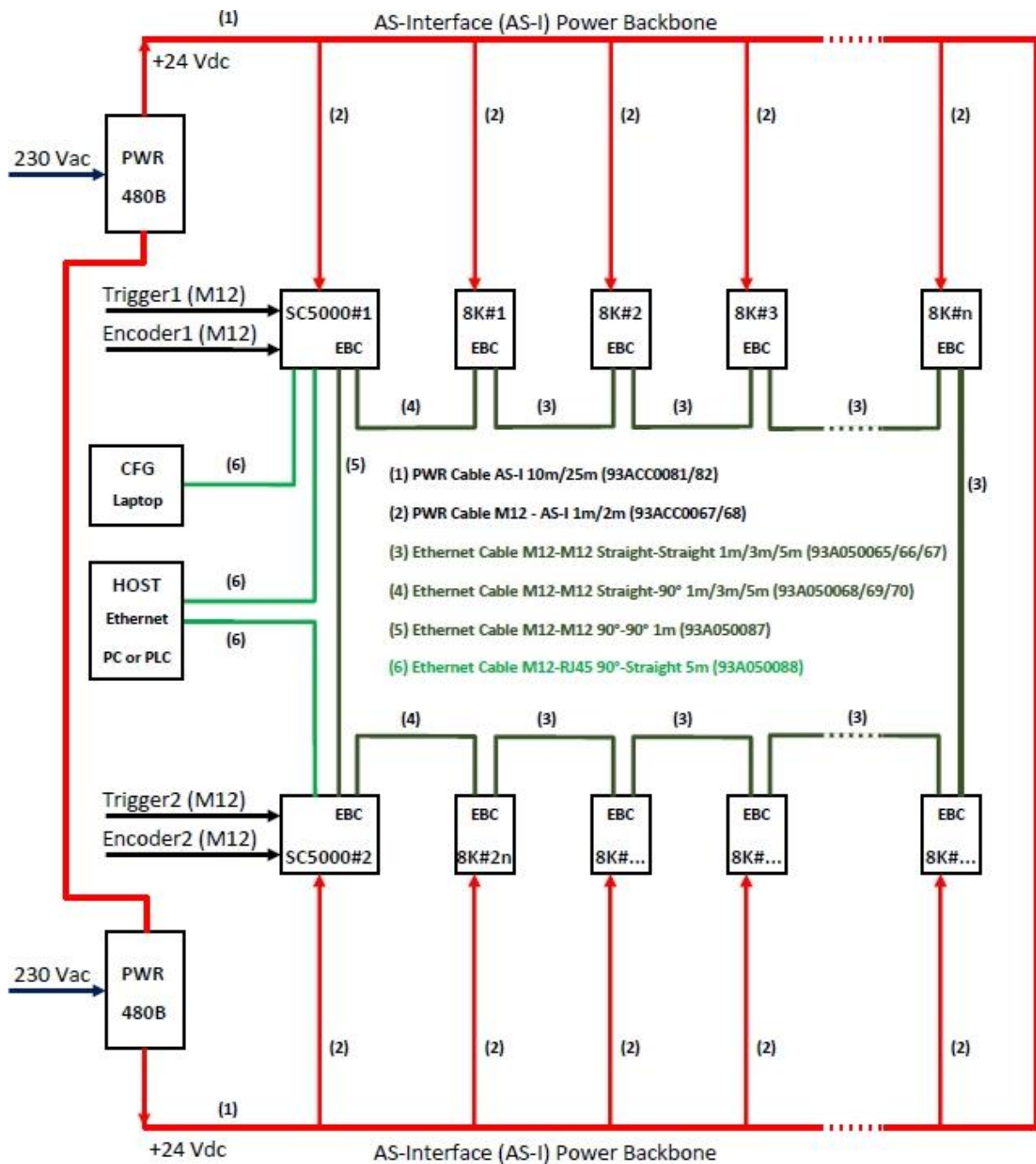
Figure 23 - Redundant Reading Station Layout with DS8110/DX8210 Scanners

SC5000: Redundancy Layout with Host Supporting Serial COM Communications

If the Host supports serial COM communications (type RS232 or RS422) rather than the Ethernet one, use one CBX510 accessory for each SC5000 controller, as shown below.

The remaining part of the layout (scanners, PWR etc.) does not change.

As already mentioned, the CBX510 can also be used to wire the Trigger and Encoder signals (and other I/O) as an alternative to the M12 connection.

Moreover, for Redundancy layouts, it is recommended to connect the PWR-480B signals 13/14 (DC OK, normally closed pair), to a free input port in the CBX510; this should be done for each set PWR480B-CBX510-SC5000. In this way each controller can monitor its Power Source cabinet, to signal an alarm in case of a PWR failure.
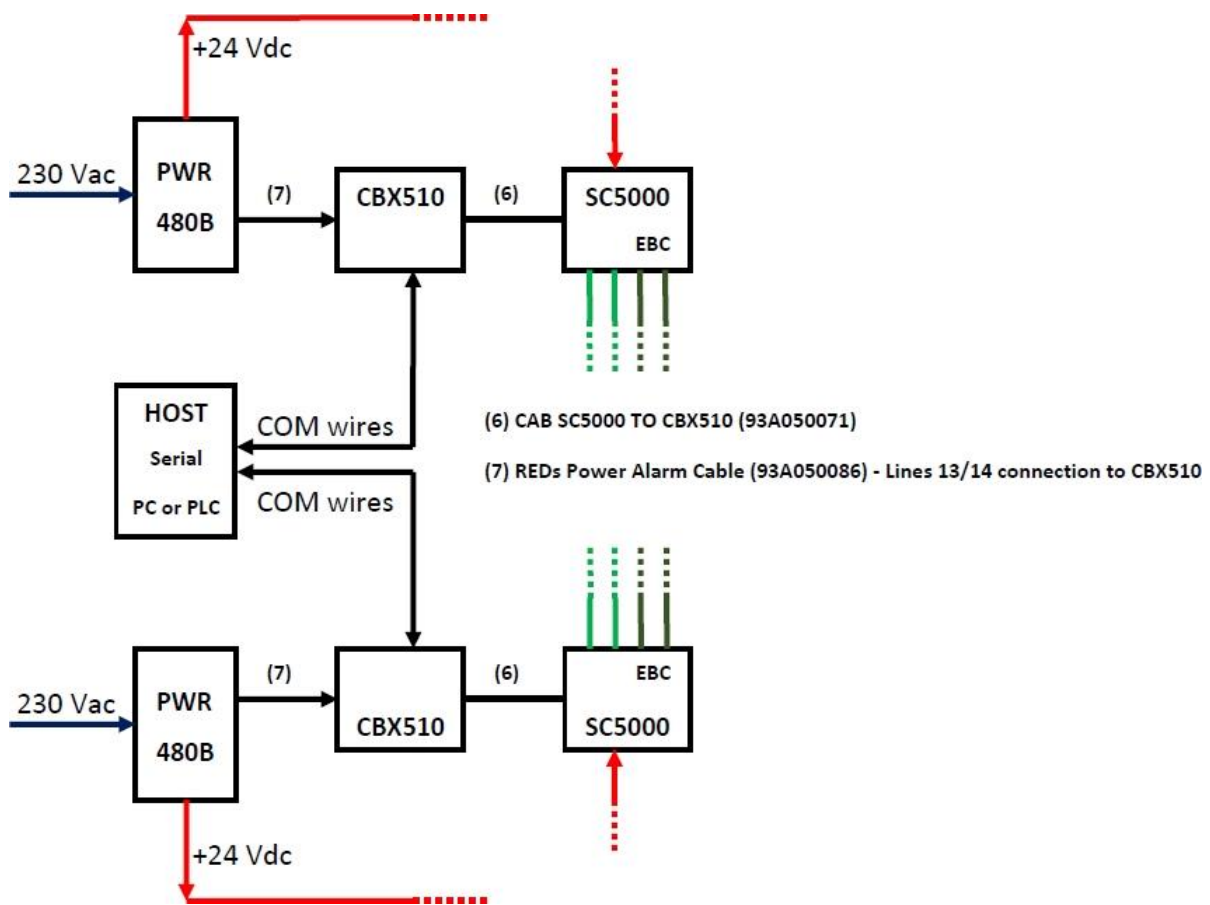

Figure 24 - Redundant Reading Station with Host Supported Serial Communications

SC5000: Redundancy Layout with Host Supporting a Single Serial Communication Port

If the Host only supports a single COM port (RS232 or RS422) rather than Ethernet, use one CBX510 accessory for each SC5000 controller, as shown below.

The remaining part of the layout (scanners, PWR etc) does not change.

As already mentioned, the CBX510 can also be used to wire the Trigger and Encoder signals (and other I/O) as an alternative to the M12 connection.

In this case, it is necessary to connect the Host (RS232 or RS422) serial interface to a user supplied relay placed inside one of the PWR-480Bs. The relay is also connected to both CBX510 RS232 or RS422 Main Interfaces; one to the Working Controller (in the normally closed state and the other to the Protecting Controller in the open state. A free output from the SC5000 controller will be configured to command the relay so that any event that causes the Redundancy switch will connect the Active Serial Interface to the Host.

(6) CAB SC5000 TO CBX510 (93A050071)

(7) REDs Power Alarm Cable (93A050086) - Lines 13/14 connection to CBX510

(8) CBX510 free Output to User supplied Relay inside PWR-480B
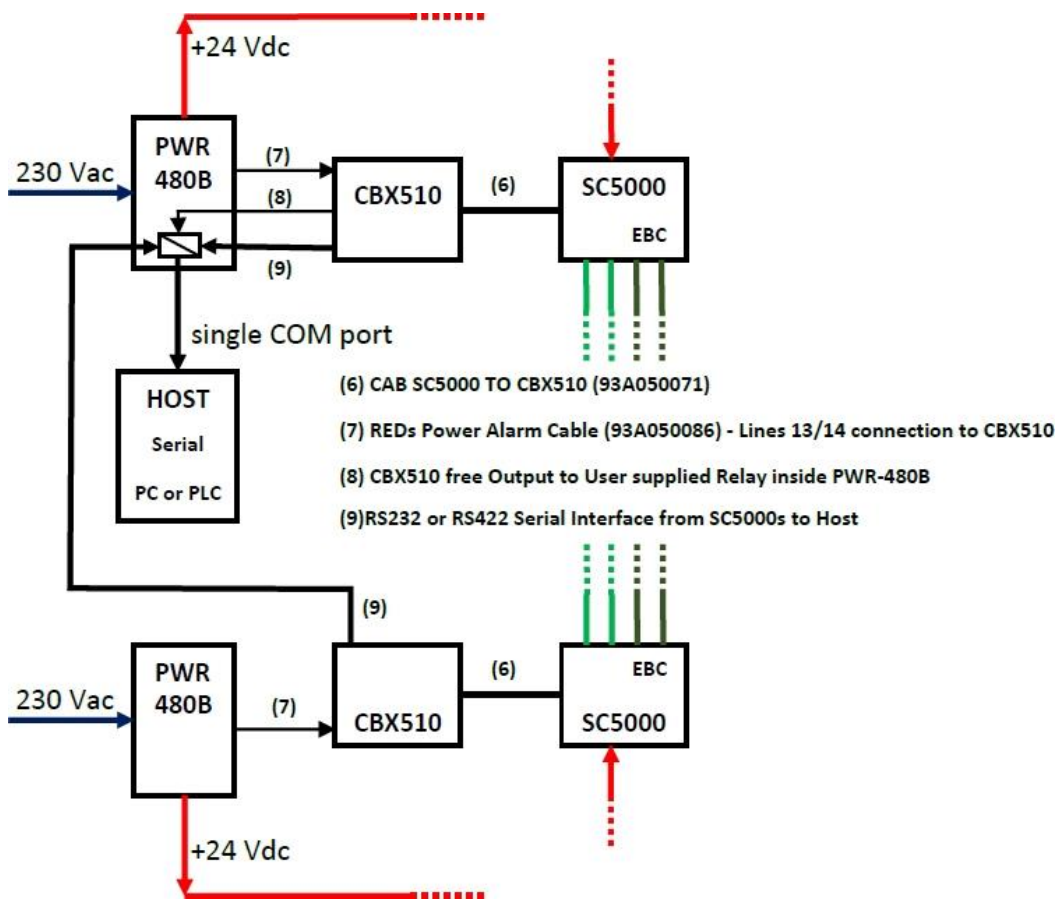
(9) RS232 or RS422 Serial Interface from SC5000s to Host

Figure 25 - Redundant Reading Station with Host Supporting a Single Serial Communication Port
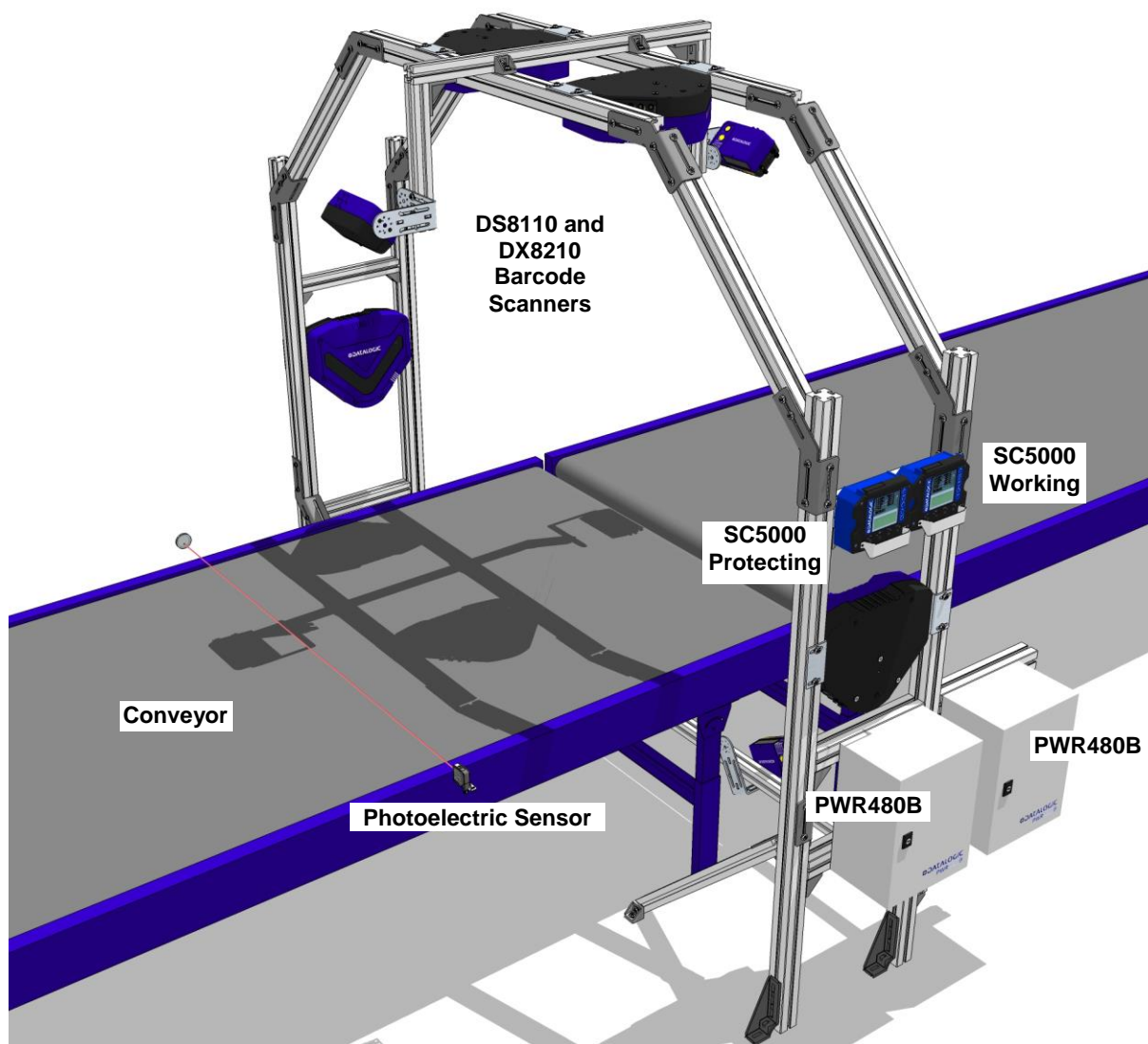
Figure 26 - Example Redundant Reading Station

2.5 KEYPAD AND DISPLAY

The SC5000 display shows different messages according to the following operating modes. Use the SC5000 keypad to scroll through the windows or navigate in the menu.

Symbols	Meaning
UP	Scroll up
DOWN	Scroll down
CLR	Clear
ENT	Enter
MENU	Menu

2.5.1 How to Get to the Boot Loader

To run the SC5000 Boot Loader:

1. Disconnect power from the SC5000.

2. Press and hold the MENU button on the SC5000, and reapply power to the unit. The Boot Loader opens.

2.5.2 How to Default the SC5000

1. Disconnect power from the SC5000.

2. Press and hold the **UP** and **CLR** buttons, and reapply power to the unit. The unit properties are defaulted.

2.5.3 How to Get to the Menu Functions

With the SC5000 powered up, press the buttons **ENTER** and **MENU** at the same time.

2.5.4 Standard Mode

Upon startup, the Diagnostic Mask window is displayed by default. Using the **UP** and **DOWN** arrow keys it is possible to scroll through the following windows:

1) Diagnostic Mask Window
2) Reading Performance Window
3) Reading Mask Window
4) I/O Status Window
5) Conveyor Speed
6) System Info Window
7) Last Code & Read Mask
8) Alarms

Diagnostic Mask Window (Default Window)

This window illustrates the status of each node (of each scanner of the cluster).

```
S   c   a   n           *   *   *   *   *   *   *   *
S   t   a   t   e       A   B   C   D   E   F   G   H
```

The slave scanners are listed as letters (**A**, **B**, **C**, etc.) [or numbers (**01**, **02**, **03**, etc.) depending on the *System.Global.ClusterInfo.UserInterfaceType* configuration].

Above each scanner position a symbol indicates the scanner status according to the following convention:

- **–** From the startup the node has not been discovered.
- **?** At the startup of the system the node has been discovered but it does not answer to the master.
- ***** The node status is OK.
- **!** The node returns an error code to the diagnostic Laser Off.
- **&** The node returns an error code to the diagnostic Motor Off.
- **%** The node returns a generic error.

Other messages can also be displayed:

Empty scan cluster	No scanner has been discovered within the cluster.
No slave expected	A scanner not expected by the system configuration has been discovered.
Energy Saving	The Energy Saving feature has been activated.

Reading Performance Window

This window displays the following data:

P	a	c	k		o	u	t		=		1	2	4	6	7
G	o	o	d		r	e	a	d		=		1	2	4	6	7
N	o		r	e	a	d		=		0					
M	u	l	t	i	p	l	e		r	e	a	d		=		0

- Number of processed parcels
- Number of Good Reads
- Number of No Reads
- Number of Multiple Reads

```
Pack out = 95784
Good read = 71509
No read = 24275
Multiple read = 0
```
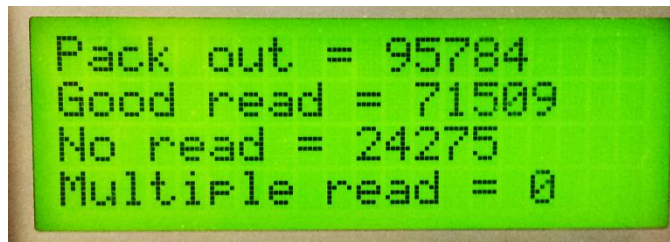
Reading Mask Window

This window indicates the node that performed a reading of the codes enabled on the master.

R	e	a	d			*		*							
m	a	s	k			A	B	C	D	E	F	G	H		

```
Read
mask   AB
```

The following indicators are used:

* The node read a barcode enabled on the master.

<space> The node read no barcode.

I/O Status Window

This window provides data concerning the digital input/output status.

E N C = 0	P S = 0	P S A U X = 0
I N 1 = 1	I N 2 = 0	I N 3 = 0
O U T 1 = 0	O U T 2 = 0	O U T 3 = 0
O U T 4 = 0	O U T 5 = 0	O U T 6 = 0

0 = Low Level Signal
1 = High Level Signal

```
ENC=1 PS=1 PSAUX=0
OUT1=1 OUT2=1 OUT3=1
```

Conveyor Speed Window

This window provides data concerning the conveyor speed.

```
Conveyor    speed
xx    (mm/sec)
xx    (ft/min)
```

```
Conveyor speed:
849 (mm/sec)
167.1 (ft/min)
```

System Info Window

This window provides information about the software release.

```
SC5000    8K    Master
DL8K    v0_8_2_1
Host    172.027.101.xxx
Cfg     192.168.003.100
```

```
SC5000 8k master
SC5K_v0_8_5_6
Host 010.027.154.124
Cfg  192.168.003.100
```

For the Profibus model the Profibus Node Address is also displayed.

Last Code & Read Mask

This window is available only when enabling the *Last Code & Reading Mask Window* parameter. It displays the following data fields

L	a	s	t	C	o	d	e		&		R	e	a	d	M	a	s	k
>		2	5	6	3	4	8	9	3	3	2	5	7	5	3	2	4	5	7
>	A	D																
G	1	0	0	%		N	0	%		M	0	%		P	0	%		

- Last read code (shown truncated if longer than 18 digits)
- List of nodes that performed the reading
- Statistics (Good Read Rate, No Read Rate, Multiple Read Rate, Partial Read Rate) calculated on the last 100 codes or in continuous mode depending on the *Last Code & Reading Mask Window* parameter selection.

Alarms

Specific diagnostic alarms are available only when they are enabled.

N	o		a	l	a	r	m	s

Up to four alarms can be displayed at a time (one per line). They are generated by the network or by the SC5000.

All alarms are ordered according to their priority (failure messages have priority over warning messages).

A failure message causes the Status LED to light up red.

If the Display Warnings as Alarms parameter is enabled, a warning message causes the Status LED to blink red.

2.5.5 Redundancy Mode

When working in a redundant system (REDs), the SC5000 displays different windows according to its redundancy role (refer to the SC5000 Help On-Line for further details).

SC5000 Active Controller Window

The SC5000 working as active controller displays the diagnostic mask window, as if it is working in a single master network.

SC5000 Standby Controller Window

This window is displayed on the SC5000 working as standby controller. It illustrates the topology redundancy role of the controller:

- "Protecting/Standby" or "Working/Standby"

2.5.6 Menu Mode

For security purposes, the menu mode is entered by pressing the **Enter** and **Menu** keys at
the same time. To navigate in the menus the keypad keys are used as follows:

- Press **Enter** to select an item or enter a branch level.
- Press **Clear** to exit an item without saving or return to the previous branch level.
- Press the **Up** or **Down** arrow keys to scroll through a branch list.

It is possible to access the **System** menu, **Setup** parameters menu:

Menu	Branch	Branch	Note
System			
	Info	Shows the System Info Window	
	Reset	Reset the system	(asks for confirmation)
	Restore	Complete Restore procedure	(asks for confirmation)
	Backup	Complete Backup system configuration	(asks for confirmation)
	Mib Dist	Distribute the MIB on the tunnel	(asks for confirmation)
	SW Dis	Distribute the SW on the tunnel	

The Backup and Restore procedures can also be performed by GUI. *See section 3.8.1.*

Menu	Branch	Branch	Note
Setup			
	Time		Set system time: Up & Down to change values, Enter to change fields, at last field Enter exits saving new values. ***Not yet supported***
	Date		Set system date: Up & Down to change values, Enter to change fields, at last field Enter exits saving new values. ***Not yet supported***
	Ethernet		Ethernet interface
		Host IP	Set IP Address of the Host Eth port
		Cfg IP	Set IP Address of the Cfg Eth port
		GW address	Set IP address of the gateway for the Host port
		Host Mask	Set the netmask of the Host Eth port.
		Cfg Mask	Set the netmask of the CfgtEth port.
		Mac address	Show the mac address.
	Profibus addr		Profibus node address (only Profibus models)
	SD Card		
		Format	Format the SD card Disk
		Info	Shows SD capacity, free and used space
	Statistics	Reset Statistics	Resets Statistical Counters
REDS			
	Working		Force SC5000 topology role to Working
	Protecting		Force SC5000 topology role to Protecting
	Active		Force SC5000 redundancy role to Active. This item is enabled only if the SC5000 has redundancy role == StandBy
	Standby		Force SC5000 redundancy role to Standby. This item is enabled only if the SC5000 has redundancy role == Active

3 E-GENIUS

The SC5000 Controller provides fully automated, industrial quality control for Datalogic omnidirectional barcode identification systems. The user interface provides an easy-to-use series of configuration and diagnostics features that enable you to set up your Scanning System.

3.1 GETTING STARTED

The **SC5000 Controller** is designed for ease-of-setup. **e-Genius** is a browser-based application you will use to define operating parameters, monitor read quality, construct output messages, and view diagnostics. **e-Genius** enables you to easily configure, fine-tune, and monitor your scanning system operation.

e-Genius provides ease-of-use for any operator level.

3.1.1 Prerequisites

Before setting up your barcode scanner you will need the following:

Computer	Laptop
Browser	Internet Explorer 11 (or later)
	Firefox 30 (or later)
	Chrome 36 (or later)

3.1.2 Starting e-Genius

To access e-Genius:

1. Connect your computer to the SC5000 CFG port using either ETH CABLE M12-RJ45 5M 90°-RJ45 or CBL-1534-0.2 ADAPT.CABLE ETH M12-TO-RJ45F. If the CFG port is taken, HOST port can be used.

2. Turn on your computer.

3. If you are connecting to a stand-alone unit (not connected to an in-house network), you must configure your PC's IP Address to be in the same network as the IP Address.

    To change your PC's IP Address:

    a. From the desktop, click the **Start** button, and then select **Control Panel**.

    b. Type **adapter** in the search box, and then from the results, under **Network and Sharing Center**, click **View network connections**.

    c. Right-click **Local Area Connection**, and then select **Properties**.

    d. Select the **Networking** tab. Under **This connection uses the following items**,

click **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.

   e.   Select **Use the following IP address**.

   f.   In the **IP address** field, type the first 3 octets of the IP address of the reader/controller unit.

   g.   For the last octet, type a number that differs from the last octet in the reader/controller's IP address. The actual number used is not important as long as it does not match that of the reader/controller.

   Example: If the barcode scanner's IP Address is 192.168.3.100, set your PC's IP Address to 192.168.3.101.

   h.   In the Subnet mask field, type 255.255.255.0

   i.   Click **Okay**.

4.   Open a web browser and enter the IP address for the SC5000 Controller. If the correct IP address is entered, the **e-Genius** Log On window will appear.

   The default setup IP address for all **SC5000 Controllers** is: 192.168.3.100 (CFG) and 172.27.101.220 (Host).
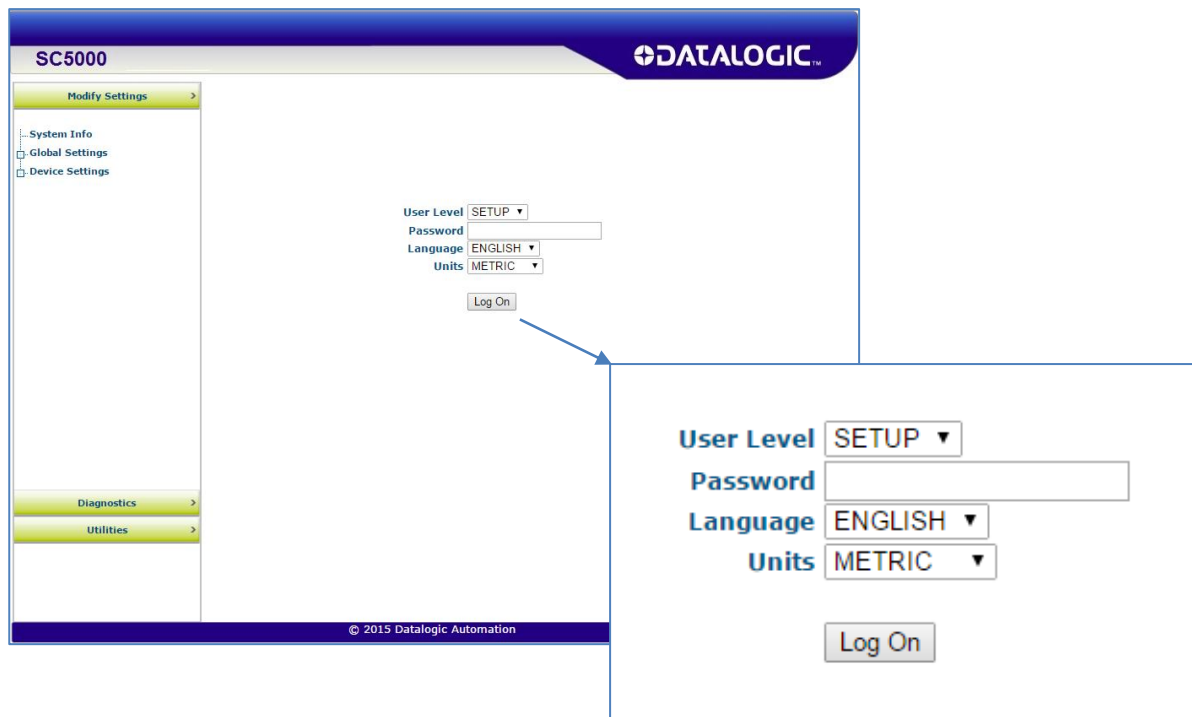
5.   Enter the **Password** (default is DLA) for your system in the fields provided.

6.   Select a language from those available in the **Language** drop-down list.

7.   Select **METRIC** or **IMPERIAL** from the **Units** drop-down list.

8.   Click **Log On**.

If the password is valid, the application enables all functions available to the user and displays the main window.

If the password is not valid, the application displays a results box with the message, **"Incorrect Password."** Click **OK** to return to the **Log On** window and enter the correct user name and password. I you don't know the password, query your system manager.
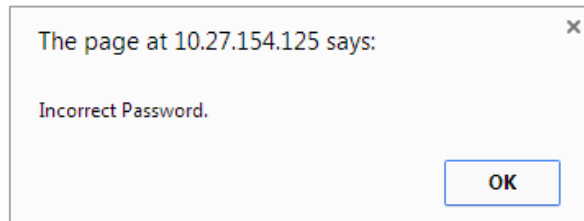
To log out of e-Genius:

Click [image] at the upper right corner of the **e-Genius** window to Log Out. When logged out, the Log On window will appear.

3.2 E-GENIUS BASICS

3.2.1   e-Genius Menu Tree

The functions that you can select are displayed in a menu tree on the left–hand side of the reader/controller **e-Genius**. The function list is organized much like the hierarchy of a file system, where you can expand items that are preceded by a box (⊡) to further sub–levels until you find a function of interest.
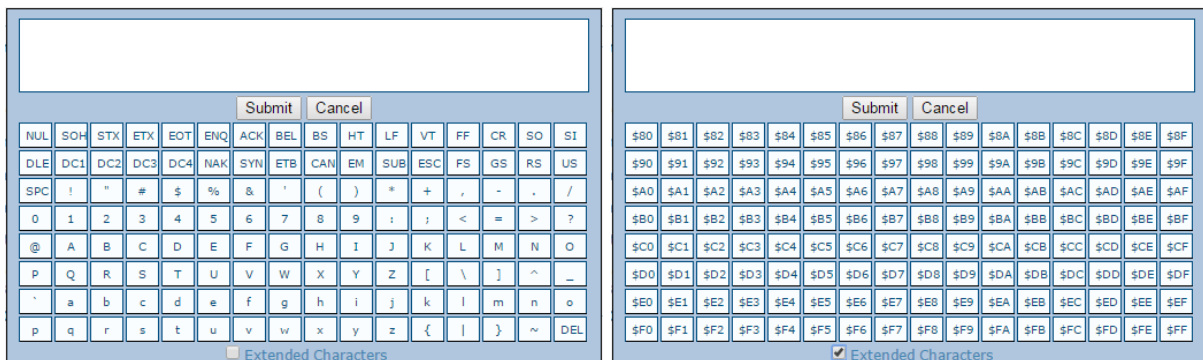
Sub–levels appear indented below the items from which they are expanded. Clicking the box again will collapse that branch of the menu. You can expand no further when an item is not preceded by a box.

The reader/controller **e-Genius** menu tree appears with no items expanded. Click the folders to display the active window for the setup function and/or expand the folders to view any additional setup features.

3.2.2   Entering Text Using the Text Entry Tool

In cases where text needs to be entered to create message headers, trailer, custom messages, or for other reasons, the **Text Entry Tool** pencil icon " ✏ " will be displayed.

Click ✏ to open the **Text Entry Tool.**

NOTE: The **Text Entry Tool** is needed to enter unprintable/untypable characters. For example, <CR> is a single character presented as a string for more easily reading.

The character must be entered with the tool, if typed normally it will be recognized as a string and not as a single character.

You can enter text in the text field by typing, or click on the character buttons to create your message. Select the **Extended Characters** check box to reveal a new set of control characters.

Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

3.2.3   Update and Reset Buttons

The **Update All**, **Reset All**, and **Reset Page** buttons provide the following functions:

- **Update All:** Click to save all pending parameter changes (across active windows)

- **Reset All:** Click to revert all pending parameter changes (across active windows) to their last saved values

- **Reset Page:** Click to revert pending parameter changes on the current page to their last saved values

3.2.4   Getting Help

**e-Genius** provides complete online help.

To access the complete help system:

Select **Utilities | Help** in the **e-Genius** menu tree. The help **Welcome** window appears. The **Welcome** page provides important product information as well as three ways to find specific help information: **Contents, Index,** and **Search.**

**To display contextual help for a current window:**

1. Click the **Help Icon** displayed at the top right of the screen. A help window appears, providing you with information for that specific page.
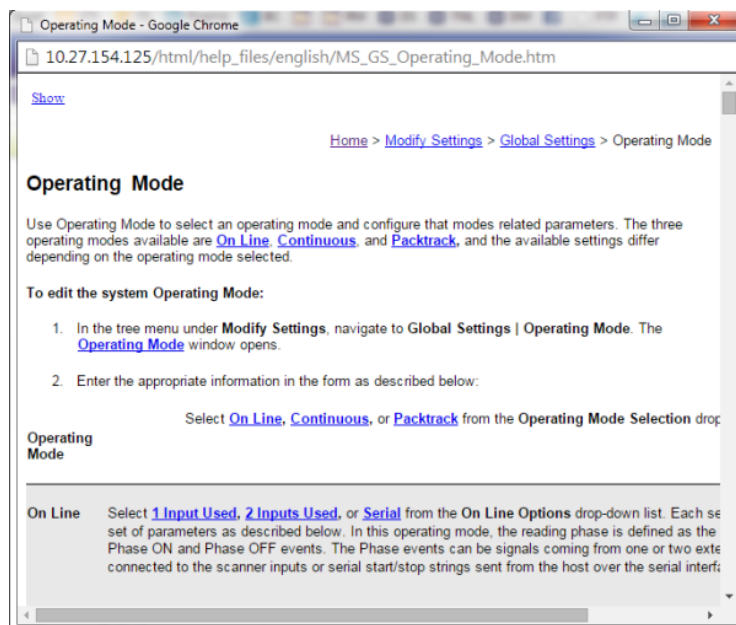
2. Click the **Show** link in the upper left corner of the help window to access Contents, Index, and Search options.

3.3 MODIFY SETTINGS

Use the Modify Settings Menu Tree selections during initial setup to configure your scanning system. If necessary, you can later make modifications to the configuration using the same menu selections.
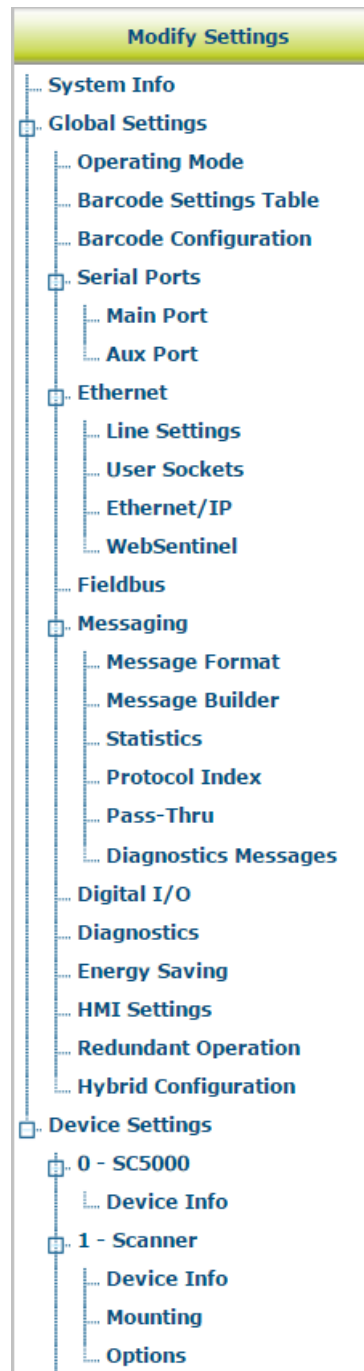
3.4 MODIFY SETTINGS | SYSTEM INFO

Use **System Info** to identify and name the scanning system (whether it includes one scanner or an array), indicate Master or Standalone systems, discover the scanners included in the system, and distribute software from the Master scanner to Slave scanners in the system.

To view and edit system information:

1. In the tree menu under **Modify Settings**, click System Info. The System Info window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
System Info	
System Description	Enter a name to identify this scanning system in the text field.
Role	Select **Standalone** or **Master** from the drop-down list. **Standalone** (not controllers) indicates a scan point with a single barcode scanner. **Master** indicates that the system is made up of more than one barcode scanner in a master and slave configuration.

> **NOTE**: The SC5000 Controller will always be shown as Master and cannot be changed.

Field Name	Action/Definition
Enable Automatic Slave Replace	There are two ways to replace a defective scanner : • If the check box **is not** selected: The replacement will be done only pressing the RESTORE *(see section 3.8.1)* key on the scanner or using the **Edit** drop-down. • If the check box **is** selected: The replacement will be completely automatic. This will work also as Hot-Automatic-Replacement without turning the system power off and on.
Master Tools	These options are shown if Master is selected and is the default option for the SC5000
Discover Scanners	Click **Discover Scanners** to automatically find all of the scanners in an array. The discovered scanners will be listed in the **Device Information** portion of the window. This step is only done during initial configuration and is not a troubleshooting option.
Distribute Software	Click **Distribute Software** to send the current software residing on the master scanner to all of the slave scanners listed in the **Device Information** section of the window.
Device Information	
Status	**Green** = No errors and ready to read **Gray** = Unit not connected (unit not seen by master) **Red** = Error. If you click on the red circle it will take you to the status viewer page for more info on the error
Model	Displays an image of the scanner/controller model
Dev	Displays the system designation for the device
MAC Address	Displays the MAC Address (Media Access Control Address) for the device
Software version	Displays the device installed software version.
Description	Enter a user-defined description of the device.
ID	Click **ID** to visually identify a scanner in an array/tunnel. When clicked, all the scanner lasers will turn off except for the selected scanner, whose laser will blink for 20 seconds.

Field Name	Action/Definition
Edit	Select to **Remove, Reassign, Add,** or **Replace** from the **Edit** drop-down list to complete the following actions:

- **Remove:** When selected, you can select the scanner to remove from the Dev/MAC Address drop-down list. Click **OK** to remove the selected scanner from the system.

- **Reassign:** When selected, the Dev column of the selected slave scanner (selected with ID) presents a drop-down list of Dev numbers. Select a different number to reassign the scanner.

- **Add:** This is an option under the **Edit** drop-down list in the **Unconfigured Devices** section of the screen. Click **OK** to add the selected device to the system.

- **Replace:** This is an option under the **Edit** drop-down list in the **Unconfigured Devices** section of the screen. When selected, you can select from a list of slave scanners *(Those with a gray indicator, meaning the unit is not connected)* in the system using **MAC Address** and **Dev** drop-down lists. Click **OK** to replace the selected scanner with the **Unconfigured Device**.

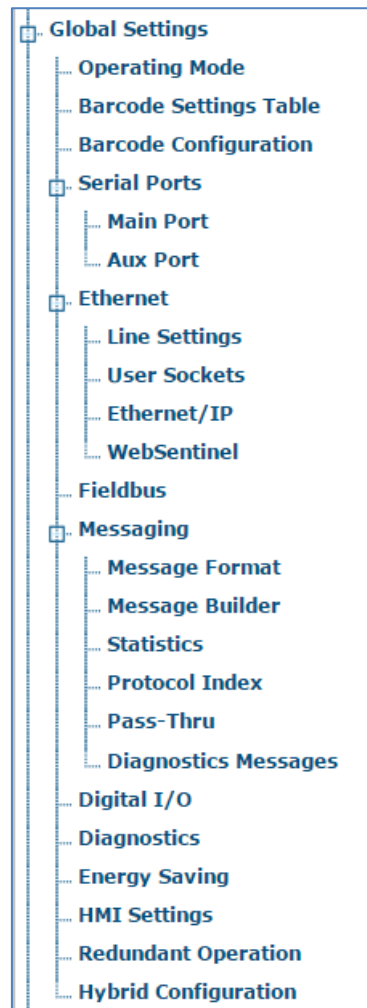| **Additional Devices**	
Send Barcodes to Non-Singulated Dimensioning System	Select the checkbox to enable **Non-Singulated Dimensioning System Info** options. (currently not available for Standalone or Multi-head DM3610 systems).
IP Address	Enter the device IP Address.
Port Number	Enter a port number for the device.
Enable Tach Sync	Select the checkbox to enable encoder/tachometer syncing between system devices.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3.5 MODIFY SETTINGS | GLOBAL SETTINGS

Use the Global Settings menu tree selections during initial setup to configure your **SC5000** and its barcode scanning system. Global settings are applied to the system Master, and then distributed by the Master Scanner to the Slave devices. If necessary, you can later make modifications to the global system settings using the same menu selections.

Global Settings
- Operating Mode
- Barcode Settings Table
- Barcode Configuration
- Serial Ports
  - Main Port
  - Aux Port
- Ethernet
  - Line Settings
  - User Sockets
  - Ethernet/IP
  - WebSentinel
- Fieldbus
- Messaging
  - Message Format
  - Message Builder
  - Statistics
  - Protocol Index
  - Pass-Thru
  - Diagnostics Messages
- Digital I/O
- Diagnostics
- Energy Saving
- HMI Settings
- Redundant Operation
- Hybrid Configuration

3.5.1   Modify Settings | Global Settings | Operating Mode

Use Operating Mode to select an operating mode and configure that modes related parameters. The three operating modes available are **On Line**, **Continuous**, and **PackTrack,** and the available settings differ depending on the operating mode selected.

To edit the system Operating Mode:

1. In the tree menu under **Modify Settings**, navigate to **Global Settings | Operating Mode**. The Operating Mode window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Operating Mode	Select **On Line, Continuous**, or **PackTrack** from the Operating Mode Selection drop-down list.
Bidirectional PackTrack Enable (SC5000 Only)	Select the check box to enable. If enabled, conveyor direction parameters are made available (forward or reverse). **Example:** • **Start Input Number**= Input 1 • **Reverse Start Input** = Input 3 • **Direction Input** = Input 4 • **Reverse Start Input Active Level** = Closed with reverse conveyor direction /Open with forward conveyor direction
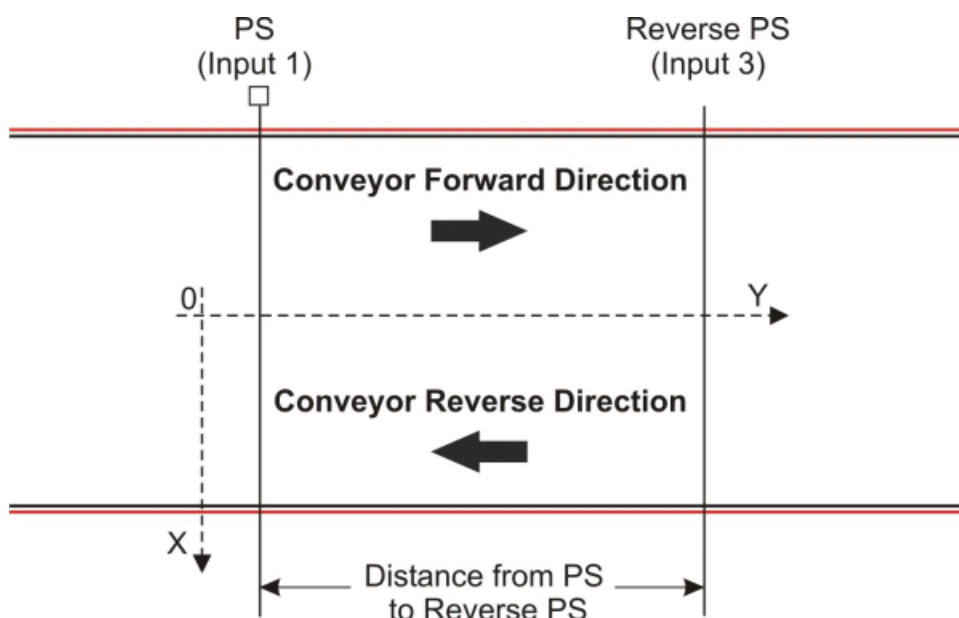
	Bidirectional PackTrack Settings
Reverse Start Input	Select **Trigger (Input 1), Aux (Input 3),** or **I/O 4 (Input 4)** from the drop-down list. This defines the number of the input to be used as presence sensor when the conveyor has a reverse direction.
Reverse Start Input Active Level	Select **Active Closed** or **Active Open** from the drop-down list. This defines the logical level of the input indicating the reverse direction of the conveyor.
Distance from PS to Reverse PS	Enter a value to define the distance (mm [in]) between the PS (conveyor with forward direction) and the Reverse PS (conveyor with reverse direction).
Direction Input	Select **Trigger (Input 1), Aux (Input 3),** or **I/O 4 (Input 4)** from the drop-down list. This defines the number of the input transmitting information about the conveyor current direction.

Field Name	Action/Definition
Direction Input Active Level	Select Active Closed or Active Open from the drop-down list. This defines the active state of the Reverse Presence Sensor Input. • **Active Closed:** The input is active when there is no current flowing through IN pins • **Active Open:** The input is active when current flows through IN pins
Online	Select **1 Input Used**, **2 Inputs Used**, or **Serial** from the **On Line Options** drop-down list. Each selection has a different set of parameters as described below. In this operating mode, the reading phase is defined as the time between the **Phase ON** and **Phase OFF** events. The Phase events can be signals coming from one or two external presence sensors connected to the scanner inputs or serial start/stop strings sent from the host over the serial interface or Ethernet input.
1 Input Used	The reading phase takes place during the active phase of the presence sensor, when the scanner tries to acquire and correctly decode the code. If the operation is successful, the barcode characters are transmitted on the serial interface or Ethernet input in the format defined by the current configuration and the right output event is raised at the end of the photoelectric sensor's active phase. If a code cannot be decoded, a no read message is sent and the no read event is raised at the end of the photoelectric sensor's active phase.

	Trigger Source
Start Input from Bus	This parameter is available only for Fieldbus Hosts and if checked, allows the Fieldbus Master to drive the Reading Phase. For Profinet or Profibus interfaces, it allows the Fieldbus Master to drive the reading phase via bit 7 in Byte 0 (LSB) of the Output Area. For EtherNet/IP, it allows the EtherNet/IP Client to drive the reading phase via bit 7 in Byte OutputBits of the DL_OutputStruct. ⚠ **IMPORTANT**: In a redundant (REDS) system with **Start Input From Bus** selected, the PLC must trigger both SC5000s. Both SC5000s need to receive the same trigger so the redundant controller is able to compare packages with the packages of the active controller. This is true for all fieldbus.

Field Name	Action/Definition		
		Start Input Number	Select the Input Number from the selections available in the drop-down list. This option defines the numbered input that will start the trigger cycle.
		Start Input Active Level	Select **Active Open** or **Active Closed** from the drop-down list. • **Active Open:** The input is active when there is no current flowing through IN pins. The input from the trigger source is normally closed. The scanner goes into trigger mode when the input source is opened. • **Active Closed:** The input is active when current flows through IN pins. The input from the trigger source is normally opened. The scanner goes into trigger mode when the input source is closed.
		Reading Phase Timeout	Select the check box to define a timeout for the **On Line Serial** mode and the **On Line 1 Input** mode.
		Timeout (ms)	Enter a timeout in milliseconds (from 40 to 15000 ms) in the field provided. The **Timeout** represents the period of time for the reading phase.
		Timeout Counting From	Select **Start** or **Stop** from the drop-down list. • When **Start** is selected, the **Timeout** used to determine the reading phase will begin from the **Start Input** or **Serial Start String** (normal operation) • When **Stop** is selected, the **Timeout** used to determine the reading phase will begin from the **Stop Input** or **Serial Stop String** (effectively extending the reading phase).
		Verifier Settings	
		Verifier Enable	Select the check box to enable the **Code Verifier** operating mode.
		Verifier Code	Click ✎ to activate the Text Entry Tool and create the string text used as the match code to the decoded codes. Use characters from **NUL** (00H) to ~ (7EH). Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

Field Name	Action/Definition		
		Store Input	Select an option from the drop-down list to define the number of the input used to automatically store the verifier code. This input must be activated before the reading phase starts, the verifier code must be read and then after the end of the reading phase the input must be deactivated.
		Active Level	Select **Active Open** or **Active Closed** from the drop-down list to choose the active state of the input.
			• **Active Open:** The input is active when there is no current flowing through IN pins. The input from the verify mode source is normally closed. The scanner goes into trigger mode when the input source is opened.
			• **Active Closed:** The input is active when current flows through IN pins. The input from the verify mode source is normally opened. The scanner goes into trigger mode when the input source is closed.
		Wrong Code Tx	Select the check box to enable the transmission of the Wrong Code (Non-Valid Code).
		Wrong String Tx	Select the check box to enable the transmission of the Wrong String (Non-Valid String) message.
		Wrong String (max. 128 chars)	Enter a text string to be sent in case of a mismatch (wrong code read/non-valid code).
		Beam Shutter Settings	
		Beam Shutter	Select **Disabled**, **Triggered**, or **Enabled** from the drop-down list. The Beam Shutter turns the laser off. The Beam Shutter option can be used to increase the overall laser diode life when used in high ambient temperature applications (over 35° C); reduce power consumption; and to turn off the laser for safety purposes.
			• **Disabled:** The laser is always on.
			• **Triggered:** The laser is turned off as soon as the code(s) are read or when the reading phase ends. The laser is turned on again when the next reading phase starts.
			• **Enabled:** The laser is always off and all operations are suspended.

Field Name	Action/Definition		
	2 Inputs Used	The reading phase is defined by 2 inputs. It starts when the **Start Input** is activated and stops when the **Stop Input** is deactivated (unless the **Extended Phase** is enabled).	
		Trigger Source	
		Extended Phase	Available only for the **On Line/2 Inputs** option. If checked, it allows the **Stop Input** to end the reading phase only if the **Start Input** is also deactivated.
		Start Input Number	Select an input from the drop-down list to define the number of the input starting the reading phase.
		Start Input Active Level	Select **Active Open** or **Active Closed** from the drop-down list. **Active Open:** The input is active when there is no current flowing through IN pins. The input from the trigger source is normally closed. The scanner goes into trigger mode when the input source is opened. **Active Closed:** The input is active when current flows through IN pins. The input from the trigger source is normally opened. The scanner goes into trigger mode when the input source is closed.
		Stop Input Number	Select an input from the drop-down list to define the input ending the reading phase.
		Stop Input Active Level	Select **Active Open** or **Active Closed** from the drop-down list to define the active state of the input. **Active Open:** The input is active when there is no current flowing through IN pins. The input from the trigger source is normally closed. The scanner goes into trigger mode when the input source is opened. **Active Closed:** The input is active when current flows through IN pins. The input from the trigger source is normally opened. The scanner goes into trigger mode when the input source is closed.
		Reading Phase Timeout	If checked, it allows defining a timeout for the **Serial On Line** mode and the **On Line 1 Input** mode.

Field Name	Action/Definition		
		Stop Phase Edge	Select Trailing or Leading from the drop-down list to define the signal edge of the stop input used by the scanner as reference for ending the reading phase: **Trailing:** The reading phase ends when the pack has completely passed by the stop input. **Leading:** The reading phase ends as soon as the stop input detects the front edge of the package.
		Beam Shutter Settings	
		Beam Shutter	Select Disabled, Enabled, or Triggered from the drop-down list. The Beam Shutter turns the laser off and can be used: - to increase the overall laser diode life when used in high ambient temperature applications (over 35° C); - to reduce power consumption; - to turn off the laser for safety purposes. **Selection definition:** **Disabled:** The laser is always on. **Enabled:** The laser is always off and all operations are suspended. **Triggered:** The laser is turned off as soon as the barcode(s) are read or when the reading phase ends. The laser is turned on again when the next reading phase starts
	Serial		In **Serial/On-Line** mode the reading phase starts when the **Serial Start String** is received on the serial interface and ends when the **Serial Stop String** is received or when a programmed **Reading Phase Timeout** expires. If decoding is correct, the data is transmitted on the serial port as defined by the configuration. The output line selected for the right output event is activated and the relative message is transmitted on the serial interface or Ethernet input. In case of a bad read, a no read message is transmitted on the serial interface. The output line selected for the no read event is activated and the relative message is transmitted on the serial interface or Ethernet input.

Field Name	Action/Definition

	Trigger Source
Serial Start String (max. 32 chars)	Click ✎ to activate the **Text Entry Tool** and create the string text used to signal the beginning of the reading phase. Use characters from NUL (00H) to ~ (7EH). Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text. The **Serial Start** string must be different from the **Serial Stop** string and **Motor ON/OFF** strings. When **ACK/NAK Protocol** or **Energy Saving** is enabled, the **Serial Start/Stop Strings** cannot contain ACK/NAK characters.
Serial Stop String (max. 32 chars)	Click ✎ to activate the **Text Entry Tool** and create the string text used to signal the end of the reading phase. Use characters from NUL (00H) to ~ (7EH). Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text. The **Serial Stop** string must be different from the **Serial Start** string and **Motor ON/OFF** strings. When **ACK/NAK Protocol** or **Energy Saving** is enabled, the **Serial Start/Stop Strings** cannot contain ACK/NAK characters.
Reading Phase Timeout	Select the check box to define a timeout for the **Serial On Line mode**.
Timeout (ms)	Enter a timeout in milliseconds (from 40 to 15000 ms) in the field provided. The **Timeout** represents the period of time for the reading phase.
Timeout Counting From	Select **Start** or **Stop** from the drop-down list. • When **Start** is selected, the **Timeout** used to determine the reading phase will begin from the **Start Input** or **Serial Start String** (normal operation) • When **Stop** is selected, the **Timeout** used to determine the reading phase will begin from the **Stop Input** or **Serial Stop String** (effectively extending the reading phase).

Field Name	Action/Definition		
		Stop Priority	This is available when **Start** is selected from the **Timeout Counting From** drop-down list.
			Select **Input/Serial Stop** or **Always Timeout** from the drop-down list.
			• **Input/Serial Stop**: The Stop Input Number or Serial Stop String defines the end of the reading phase. Timeout has a lower priority.
			• **Always Timeout:** The reading phase always stops when the selected timeout expires.
		Beam Shutter Settings	
		Beam Shutter	Select **Disabled, Enabled**, or **Triggered** from the drop-down list. The **Beam Shutter** turns the laser off and can be used to increase the overall laser diode life when used in high ambient temperature applications (over 35° C); to reduce power consumption; and to turn off the laser for safety purposes.
			Selection definition:
			• **Disabled:** The laser is always on.
			• **Enabled:** The laser is always off and all operations are suspended.
			• **Triggered:** The laser is turned off as soon as the code(s) are read or when the reading phase ends. The laser is turned on again when the next reading phase starts
Continuous	The reading phase is always active and allows reading two or more codes when placed along the same scan line. Code transmission is identical to the other operating modes except that there is no transmission on the serial port in case of a No Read condition.		
	Mode Setting		
	Code Filter	Select **Disable, Timeout, Encoder Steps,** or **Tx Line** from the **On Line Options** drop-down list. This parameter determines criteria for flushing entries from the code filtering list depending on the type of list management:	
		• The **Code Filter Depth** parameter, when not = 0, manages a FIFO (First In First Out) list of codes which are compared for filtering. The **Timeout** and **Encoder Steps** values are in addition to the cyclical flushing of entries when the FIFO list depth is exceeded.	
		• When **Code Filter** is set to **Tx Line** an internal list is managed where each entry is flushed when the **Tx Line** distance is exceeded.	

Field Name	Action/Definition
	The application program inherently compares codes based on content and code length.

Each Code Filter criteria has its own relative value parameter.

- **Disable:** No additional criteria are applied. If code filtering is enabled through the Code Filter Depth parameter, the FIFO list is only modified by new code entries (FIFO list depth exceeded).

- **Timeout:** A timeout measured in milliseconds is also applied to each code entry. The current code entry will be flushed from the list when the timeout expires.

- **Encoder Steps:** a threshold measured in encoder steps is also applied to each code entry. The current code entry will be flushed from the list when the number of encoder steps is exceeded. See Filter Number of Encoder Steps.

- **Tx Line:** The distance measured in mm to the transmit line is applied to each code entry. The current code entry will be flushed from the list when the distance in mm is exceeded. When Tx Line is selected, all the networked scanners must have been calibrated using PackTrack *(See PackTrack in the DS8110 and DX8210 Reference Manuals).*
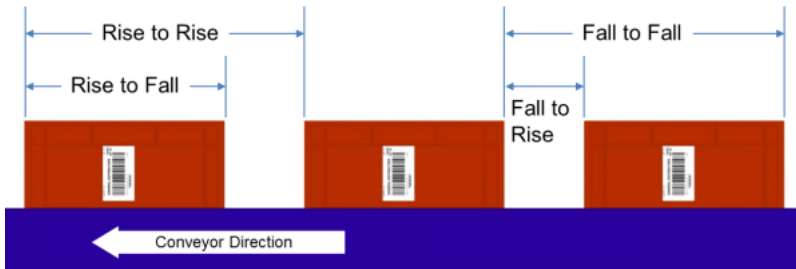
NOTE: When Code Filter = Tx Line:

The Code Filter Depth parameter is no longer available because the application program manages an internal list which depends solely on the number of codes decoded before the Tx Line is reached.

Any code which is determined to be identical to a code in the list by comparing the filter conditions will be discarded, and to increase precision the code in the list will have its x, y, z position coordinates adjusted as the average between the two readings.

$$x=x1+x2/2 \ , \ y=y1+y2/2 \ , \ z=z1+z2/2$$

Field Name	Action/Definition
Code Filter Depth	In **Continuous mode**, **Code Filter Depth** is used to avoid multiple reads of the same code. The entered value (other than zero) defines the number of codes to memorize in a FIFO (First In First Out) list.

When a code is read, it is compared to the list. The application program inherently compares codes based on content and code length. If the list contains a code identical to the current code being read, the current code is discarded. If not, the current code is accepted and added to the list in the first position; the remaining codes in the list are shifted. If the list is full the oldest code in the list will be flushed.

When = 0, there is no FIFO list and there is no filtering.

Selection: a value from 0 to 127

Example:

Code Filter Depth = 3

List	Code Read	Accepted
xxx (no codes in list)	A	Yes
Axx	B	Yes
BAx	B	No
BAx	C	Yes
CBA	D	Yes
DCB	A	Yes
ADC	A	No

Field Name	Action/Definition
Filter Number of Encoder Steps	Enter a number of encoder steps from 1 to 15000. This parameter sets the number of Encoder Steps after which the **FIFO (First In First Out)** list entry is flushed.
Replicate same code when symbologies don't match	Select the check box to enable a further code filter condition according to which a read code is added to the list or discarded. This parameter is available if the **Code Filter Depth** value is other than zero or if the Code Filter value is Tx Line. In addition to the inherent content and code length comparison, this parameter compares the code type (symbology). If the current code being read is identical to any code contained in the list by: content, length and type, the current code is discarded. If not, the current code is accepted and added to the list in the first position; the remaining codes in the list are shifted. If the list is full the oldest code in the list will be flushed.

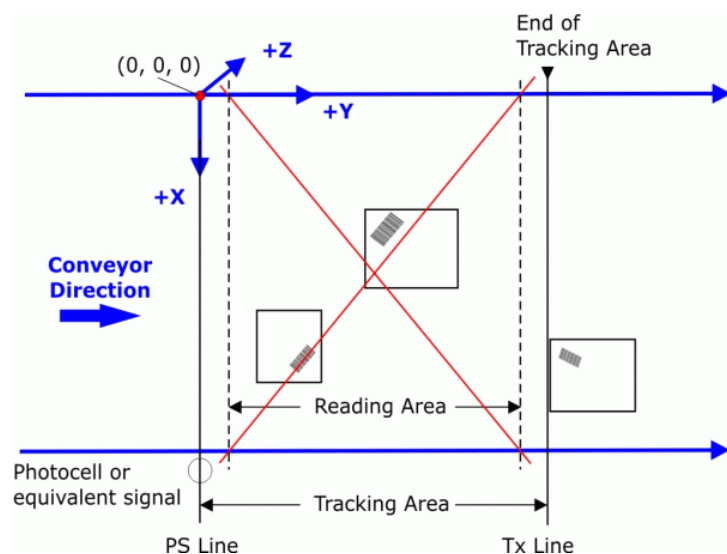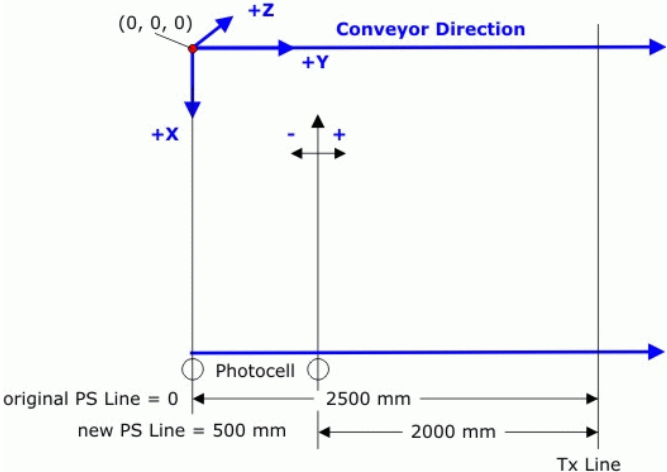| Field Name	Action/Definition
Replicate same code when X positions don't match	Select the check box to enable a further code filter condition according to which a read code is added to the list or discarded. This parameter is available if the **Code Filter Depth** value is other than zero or if the Code Filter value is Tx Line. In addition to the inherent content and code length comparison, this parameter compares the X coordinate code position. If the current code being read is identical to any code contained in the list by: content, length and X coordinate code position, the current code is discarded. If not, the current code is accepted and added to the list in the first position; the remaining codes in the list are shifted. If the list is full the oldest code in the list will be flushed.
Replicate same code when Y positions don't match	Select the check box to enable a further code filter condition according to which a read code is added to the list or discarded. This parameter is available if the Code Filter **Depth** value is other than zero or if the Code Filter value is Tx Line. In addition to the inherent content and code length comparison, this parameter compares the Y coordinate code position. If the current code being read is identical to any code contained in the list by: content, length and Y coordinate code position, the current code is discarded. If not, the current code is accepted and added to the list in the first position; the remaining codes in the list are shifted. If the list is full the oldest code in the list will be flushed.
Replicate same code when Z positions don't match	Select the check box to enable a further code filter condition according to which a read code is added to the list or discarded. This parameter is available if the **Code Filter Depth** value is other than zero or if the Code Filter value is Tx Line In addition to the inherent content and code length comparison, this parameter compares the Z coordinate code position. If the current code being read is identical to any code contained in the list by: content, length and Z coordinate code position, the current code is discarded. If not, the current code is accepted and added to the list in the first position; the remaining codes in the list are shifted. If the list is full the oldest code in the list will be flushed.
Continuous Threshold (number of scans)	Enter an *N* number of scans without a code allowed in order to assure code identification in the reading zone. Enter a value from 10 to 32665.
Encoder Settings	
Encoder Source	Select **Constant Speed (Internal), Physical Encoder (Tachometer),** or **Derived Encoder (PLL)** from the drop-down list: • **Constant Speed (Internal):** Allows the user to specify the tach rate to be used (from .05 - 3.05 m/sec [from 10 - 600 ft/min]). No external hardware is used. • **Physical Encoder (Tachometer):** A physical encoder is connected to the Encoder input and is enabled • **Derived Encoder (PLL):** determines the encoder rate from an external signal. This is used in applications where the distance between fixed-sized packages/trays is constant.

Field Name	Action/Definition
Encoder Step	Enter the step value of the encoder.

Encoder Step Settings Table:

Encoder Model	PPR (Pulses Per Revolution)	PPI (Pulses Per Inch)	Encoder Step Setting
OEK-4 (Datalogic)	250	20	63
OEK-2 (Photocraft)	24	2	635
OEK-2	48	4	317
OEK-2	192	16	79
OEK-2	240	20	63

NOTE: The maximum allowed encoder frequency is 5 kHz (equivalent to an encoder set to 20 PPI with a conveyor speed of 381 m [1250 ft.] /minute.

Field Name	Action/Definition
Conveyor Speed (mm/sec)	This parameter is available only when the Physical Encoder is disabled. It defines the constant speed of the conveyor in mm/sec.
Derived Encoder Input Source	Select the input source from the drop-down list.
Derived Encoder Input Edge	Select **Rise to Rise, Fall to Fall, Rise to Fall,** or **Fall to Rise** from the drop-down list. The selections represent the leading and trailing edges of the package, i.e.: Rise=Leading, Fall=Trailing.

Field Name	Action/Definition
Derived Encoder Input Pulse Width	Enter the width/distance (mm[in]) corresponding to the **Derived Encoder Input Edge** selected above.
PackTrack	Refer to *PackTrack in the DS8110 and DX8210 Reference Manuals* for physical PackTrack installation procedures. **Trigger Source**
Start Input from Bus	This parameter is available only for Fieldbus Hosts and if checked, allows the Fieldbus Master to drive the Reading Phase. For Profinet or Profibus interfaces, it allows the Fieldbus Master to drive the reading phase via bit 7 in Byte 0 (LSB) of the Output Area.

| Field Name	Action/Definition
	For EtherNet/IP, it allows the EtherNet/IP Client to drive the reading phase via bit 7 in Byte OutputBits of the DL_OutputStruct. ⚠️ **IMPORTANT**: If the system is Redundant (REDS) using two SC5000 Controllers (one as a backup) the PLC must be wired to trigger both SC5000s. Both SC5000s need to receive the same trigger so the redundant controller is able to compare packages with the packages of the Active controller. This is true for all fieldbus.
Start Input Number	Select an input from the drop-down list to define the number of the input starting the reading phase.
Start Input Active Level	Select **Active Open** or **Active Closed** from the drop-down list to define the active state of the input. • **Active Open:** The input is active when there is no current flowing through IN pins. • **Active Closed:** The input is active when current flows through IN pins.
Transmission Edge	Select **Trailing** or **Leading** from the drop-down list to define the signal edge of the stop input used by the scanner as reference for ending the reading phase: • **Trailing:** The reading phase ends when the pack has completely passed by the stop input. • **Leading:** The reading phase ends as soon as the stop input detects the front edge of the pack.
Mode Setting	
Distance from PS Line to Tx Line	Enter the distance along the Y axis from the PS (photoelectric sensor) to the **TX Line** (transmit).

Field Name	Action/Definition

NOTE: Tracking starts 10 cm [4 inches] before and stops 10 cm [4 inches] after the Reading Area in order to ensure the barcode is assigned to the correct package.

PS Line	This parameter defines the read signal Y coordinate (mm) referred to the origin of co-ordinates used for PackTrack™ configuration (see below).

Example:

Normally the PS Line coincides with the PackTrack reference where X, Y, Z = 0.

If the presence sensor (photocell or Host PS signal) is moved, you must set the PS Line accordingly and recalculate the Tx Line.

1. PS Line = 0; Distance from PS Line to Tx Line = 2500

2. PS Line = 500; Distance from PS Line to Tx Line = 2000

Minimum Pack Length	Enter the minimum length of a pack in the space provided (mm, in).

Minimum Distance Error Behavior	Select **Ignore Error, Compose,** or **Discard Last** from the drop-down list. • **Ignore Error:** the occurred error is ignored • **Compose:** Enter the Minimum Distance Between Packs in the field provided. • **Discard Last:** discards all received packs

Minimum Distance Between Packages	Enter the minimum distance (mm, in) between consecutive packs. This field is only available when **Compose** or **Discard Last** is selected for the **Minimum Distance Error Behavior.**

Window Dimension	Enter a **Window Dimension** in the field provided. The measurement of a barcode position in absolute coordinates performed by the scanners may be affected by an error. PackTrack™ evaluation can fail in assigning the barcode for this

Field Name	Action/Definition
	reason. With the **Window Dimension** parameter, the Y coordinates that delimit the pack can be virtually extended to improve the assigning success rate (see the following figure).

If the minimum distance between two consecutive packs is less than twice the value of the **Window Dimension**, the window is dynamically resized (dynamic window) to half the distance between the two packs. The code will be assigned within the **Window Dimension** of the closest pack.

If the minimum distance between two consecutive packs is more than twice the value of the **Window Dimension**, the code will be assigned within the **Window Dimension** itself.
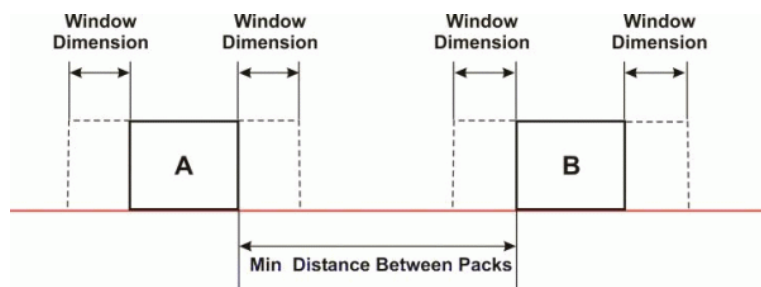
Encoder Settings

Encoder Source	Select **Constant Speed (Internal), Physical Encoder (Tachometer),** or **Derived Encoder (PLL)** from the drop-down list:

- **Constant Speed (Internal):** Allows the user to specify the tach rate to be used (from .05 - 3.05 m/sec [from 10 - 600 ft/min]). No external hardware is used.
- **Physical Encoder (Tachometer):** A physical encoder is connected to the Encoder input and is enabled
- **Derived Encoder (PLL):** determines the encoder rate from an external signal. This is used in applications where the distance between fixed-sized packages/trays is constant.

Encoder Step	Enter the step value of the encoder.

Encoder Step Settings Table:

Encoder Model	PPR (Pulses Per Revolution)	PPI (Pulses Per Inch)	Encoder Step Setting
OEK-4 (Datalogic)	250	20	63
OEK-2 (Photocraft)	24	2	635
OEK-2	48	4	317
OEK-2	192	16	79
OEK-2	240	20	63

NOTE: The maximum allowed encoder frequency is 5 kHz (equivalent to an encoder set to 20 PPI with a conveyor speed of 381 m [1250 ft.] /minute.

Field Name	Action/Definition
Conveyor Speed (mm/sec)	This parameter is available only when the Physical Encoder is disabled. It defines the constant speed of the conveyor in mm/sec.
Derived Encoder Input Source	Select the input source from the drop-down list.
Derived Encoder Input Edge	Select **Rise to Rise, Fall to Fall, Rise to Fall,** or **Fall to Rise** from the drop-down list. The selections represent the leading and trailing edges of the package, i.e.: Rise=Leading, Fall=Trailing.

Field Name	Action/Definition
Derived Encoder Input Pulse Width	Enter the width/distance (mm[in]) corresponding to the **Derived Encoder Input Edge** selected above.

Beam Shutter Settings

Field Name	Action/Definition
Beam Shutter	Select **Disabled, Enabled,** or **Triggered** from the drop-down list. The Beam Shutter turns the laser off and can be used: • to increase the overall laser diode life when used in high ambient temperature applications (over 35° C); • to reduce power consumption; • to turn off the laser for safety purposes. **Selection definition:** • **Disabled:** The laser is always on. • **Enabled:** The laser is always off and all operations are suspended. • **Triggered:** The laser is turned off as soon as the code(s) are read or when the reading phase ends. The laser is turned on again when the next reading phase starts
PackTrack Beam Shutter Timeout	Select a time value from the drop-down list. This parameter is available only when **Operating Mode = PackTrack™** and **Beam Shutter = Triggered.** By setting this parameter the laser is turned off as soon as the selected timeout expires.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3.5.2 Modify Settings | Global Settings | Barcode Settings Table

Use **Barcode Settings** to select and configure barcodes to be read in your application. Each barcode type

To edit the **Barcode Settings**:

1. In the tree menu under Modify Settings, navigate to **Global Settings | Barcode Settings. The** Barcode Settings window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Top Panel	Displays a list of barcodes that have been added to the system with the following columns:
Idx	Select an option button for the row/barcode you wish to edit. • If a barcode type is displayed in the selected row, its configuration can then be edited. • If a row displaying disabled is selected, a barcode type can be selected and configured for that row.
Symbology	Displays the name of the barcode symbology for that row. If no symbology has been added for a row, disabled is displayed.
Minimum Length	Displays the minimum barcode character length for that row's symbology.

Field Name	Action/Definition
Maximum Length	Displays the maximum barcode character length for that row's symbology.
Barcode *n*	**NOTE:** Input fields will vary depending on the selected symbology.
Enable	Select the **Enable** check box to activate the selected barcode. Deselect the **Enable** check box to disable the selected barcode. When the check box has been selected, configuration and code type options are displayed.
Code Symbology	Select a barcode symbology from those available in the **Code Symbology** drop-down list.
EAN Add On	Select **No Add On, 2 digits Add On,** or **5 digit Add On** from the **EAN Add On** drop-down list. Selecting **2 digit Add On** or **5 digit Add On** adds that many digits as a supplement to the barcode. **EAN** is the acronym for **International Article Number**, previously known as **European Article Number**.
Minimum Label Length	Enter the minimum character length for the selected barcode.
Maximum Label Length	Enter the maximum character length for the selected barcode.
Match String Rule	Select **Match** or **Do Not Match** from the drop-down list. This parameter defines the matching rule, according to which a code can be transmitted. • Match: All codes matching the Pattern Match String will be transmitted • Do Not Match: All codes not matching the Pattern Match String will be transmitted
Pattern Match String (max. 200 chars)	Click ✎ to activate the Text Entry Tool and create a pattern match string. A code can also be identified by its content. A pattern matching string is programmable for each code and if the read codes do not match the defined string, a No Read Event will be returned. It is possible to define the matching string by inserting: • all printable characters • non printable ASCII characters available in the list which appears by right-clicking on the parameter edit box • * = defining any string consisting of an undefined number of characters (it may be empty) • ? = identifying any character to be found in the position indicated within the string If your application requires inserting ?, * and NUL as characters, it is necessary to use the following syntax: • ? character = <NUL>? • * character = <NUL>* • NUL character = <NUL>00 • other extended ASCII characters = <NUL>xy, where xy identifies the character hex value

Field Name	Action/Definition

Examples:

Match a code starting with 123 string and followed by any string of characters:

- Match String = 123*
- Example Code = 123aC53

Match a code ending with 123 string preceded by any string of characters:

- Match String = *123
- Example Code = 41pO123

Match a code having 123 string in any position:

- Match String = *123*
- Example Code = 41pO123253

Match a code starting with 123 string followed by three generic characters and an undefined string of characters, in this case no character:

- Match String = 123???*
- Example Code = 123ad2

Match any code of four characters:

- Match String = ????
- Example Code = gT6k

Match a code with 6 characters in any position having 12 as central characters:

- Match String = *??12??*
- Example Code = datal12og35

The following is an example of a very complex string where ? and* are used both as commands and as characters:

- Match String = *45<NUL>??*??AC<NUL>*251?*
- Example Code = GEN45?3iusdsAC*2516300

NOTE: For **Codabar** codes the start/stop characters must considered in the match conditions.
For all codes which use check digits, if the **Check Digit** is transmitted, it must be considered in the match conditions.

Options		**NOTE:** Input fields will vary depending on the selected symbology.
Decoding Safety		Enter a number from **1** to **100** (**1** = control disabled) in the field provided. It verifies that an *N* number of decodes are performed with the same result before code reading is accepted as valid.

Field Name	Action/Definition
Check Digit	Select the check box to improve decoding safety: it is generally the last digit aligned to the right of the code and verifies the validity of the preceding digits. The calculation technique and number of check digits depend on the code selected.
	It is advised to enable the check digit whenever correct code identification is difficult. The following barcode symbologies include check digits in their definitions:
	• Code 128 • EAN/UPC • Code 93
	For these symbologies the check digit control is not allowed.
Check Digit Type	Select a customized check digit for **Standard, German, DHL, Daimler-Chrysler,** or **Bosch** from the drop-down list.
Check Digit Tx	Select the check box to include the Check Digit in the code transmitted.
Bar Count	Select **Variable** or an available value from the drop-down list. The Bar Count allows to further specify the number of elements in the read code for Code 128, GS1-128, Code 93, ISBT 128 or Code 39 Full ASCII.
	For these codes, the same number of barcode elements (bars + spaces) can be associated with a different number of characters.
	• **Variable:** to select the correct number of characters, set Label Length to the desired fixed value and Bar Count to Variable

12
Code 128
Subset A

12
Code 128
Subset C

Digit Number 2, Bar Count variable

• **Code 128 or GS1-128:** from 25 to 499 - a variable number of characters in steps of 6.
• **Code 93 or ISBT 128:** from 25 to 385 - a variable number of characters in steps of 6.
• **Code 39 Full ASCII:** from 29 to 619 - a variable number of characters in steps of 10.

To select a particular barcode length in elements, set Bar Count to the desired fixed value and Label Length to Variable.

12
Code 128
Subset A

1234
Code 128
Subset C

Digit Number variable, Bar Count 31

Field Name	Action/Definition
Match Direction Rule	Select **Disable, Forward,** or **Reverse** from the drop-down list. This parameter defines the direction, according to which a code can be transmitted. The direction refers to the code direction with respect to the scan line, in particular: **Forward** = the code start character precedes the stop character in the scan line (Start Ch + Code + Stop Ch); Reverse = the code stop character precedes the start character in the scan line (Stop Ch + Code + Start Ch) • **Disable:** All codes are transmitted no matter what the direction is • **Forward:** All codes having a forward direction are transmitted • **Reverse:** All codes having a reverse direction are transmitted
Start Char Tx	Select **Disabled, Lower Case,** or **Upper Case** from the drop-down list. This parameter is available only for **Codabar** code symbologies. It allows transmitting the code start character: • **Disabled:** The character is not selected; • **Lower Case:** The character is transmitted in lower case; • **Upper Case:** The character is transmitted in upper case.
Stop Char Tx	Select **Disabled, Lower Case,** or **Upper Case** from the drop-down list. This parameter is available only for **Codabar** code symbologies. It allows transmitting the code stop character: • **Disabled:** The character is not selected; • **Lower Case:** The character is transmitted in lower case; • **Upper Case:** The character is transmitted in upper case.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3.5.3   Modify Settings | Global Settings | Barcode Configuration

Use **Barcode Configuration** to configure how the system defines a no read barcode, and configure and filter NOREAD messages.

To edit the Barcode Configuration:

1. In the tree menu under **Modify Settings**, navigate to **Global Settings | Barcode Configuration**. The **Barcode Configuration** window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Code Combination	**Select Single Label, Standard Multi Label, Logical Combination,** or **Code Collection** from the drop-down list. The Code Combination parameter selects the decoding mode for the scanner.

- **Single Label:** In this mode only one barcode can be read in each reading phase; however it can be determined automatically from up to 10 enabled codes. The scanner stops decoding as soon as a code is read.

  If the code is not read during the reading phase, the No Read message is produced.

- **Standard Multi Label:** In Multi Label mode the barcodes selected (up to 10), will all be read in the same reading phase. If the reading phase terminates before all the codes are read, a Global No Read message will be produced, unless it is disabled, in which case a Local No Read will be produced.

  NOTE: In case of Multi Label, the codes will be distinguishe EITHER by their symbology, OR by their contents. If two (o more) codes share the same symbology and content, th scanner will perceive them as a unique code.

- **Logical Combination:** In Logical Combination mode the codes of the groups defined by the Logical Combination Rule are read in the same reading phase.

- **Code Collection:** In Code Collection mode expected codes are collected within a single reading phase in the order in which they are read. The No Read message is produced only if none of the codes are read. Up to 50 codes can be collected.

Barcode Configuration > Single Label

When **Single Label** has been selected from the **Code Combination** drop-down list, the Barcode Configuration window reveals related input fields.

Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Code Combination	**Single Label** has been selected.
No Read Message	**Select Disable No Read Message, Global No Read Message,** or **Local No Read(s) Message** from the drop-down list. The No Read condition occurs whenever a code cannot be read or decoded. • **Disable No Read Message:** The No Read Message is not transmitted. • **Global No Read Message:** The No Read String will be sent if the scanner is unable to decode one or more barcodes in the reading phase. • **Local No Read(s) Message:** Do not use this option when working in Single Label mode.
Use 'Global No Read String' when No Codes Read	Select the check box to allow the **Global No Read String** to be used if no codes at all are read. This option is **not** available when **Global No Read Message** is selected from the **No Read Message** drop-down list.
Global No Read String (max. 128 chars)	Click ✎ to activate the Text Entry Tool and create a string to be displayed when **Global No Read Message** is selected from the **No Read Message** drop-down list.
Multi Filters	Select the check box to display the **Multi-Filter Settings** options.

Field Name	Action/Definition
	Multi-Filter Settings
Contained Filter	Select the check box to reveal the **Max Number of Different Characters** field. When checked, this filter attempts to eliminate false multiple reads by determining if a short code read is "contained in" (is a sub-string of), another longer code read. This condition implicates that the short code is probably a misread of the same longer code and therefore should be ignored, (should not be considered as a multiple read of a different code). This filter is based upon the following rules: • a multiple read condition occurs • all decoded codes of the same type are compared with each other **Rule 1:** the shorter code is considered contained in the longer code if the character string is found in the same order; the longer code may have a single block of characters in any position (before, after or in between the compared strings) **Example:** The code **123456** is considered contained in the following codes: 00**123456**, **123456**00, **123**78**456**. The code **123456** is not considered contained in the following codes: 1234**65**07 (string out of order), 12345**700** (string not complete), 12**0378**456 or **00**123456**00** (multiple blocks in the string). **Rule 2:** the shorter code is not filtered by rule 1. In the longer code, all possible sub-strings of the same length as the shorter code string are compared with the shorter code string. The shorter code is considered contained in the longer code if the number of different characters between the compared codes is less than or equal to the Max Number of Different Characters. The shorter code will be filtered by rule 2. **Example:** If Max Number of Different Characters = 1: The code 123456 is considered contained in the following codes: 123**0**5600, 00123**0**56, 8812**3**05**6**88 because there is only one different character in the compared string. The code 123**4**56 is not considered contained in 123**066**789 because there are two different characters in the compared string. **CAUTION:** If the **Contained Filter** parameter is used when **Message Tx Selection** *(see section 3.5.6)* is set to **On Decoding**, the filter conditions may be satisfied before the reading phase ends resulting in possible successive multiple read errors.

Field Name	Action/Definition
Max Number of Different Characters	Enter a value from 0 to 5 in the field provided to define the maximum number of different characters allowed to still consider a code as being included in another one and therefore to be filtered. If the number of different characters between the compared codes exceeds the value of this parameter, the codes are considered as different and will not be filtered (a multiple read of a different code occurs). If the number of different characters between the compared codes is less than or equal to the value of this parameter, the short code is considered as a sub-string of the longer code and will be filtered (no multiple read occurs). **Examples:** If Max Number of Different Characters = 2: The code **123456** read once, is considered the same as the following codes read multiple times: 1**33**056, 12345**4**6, 123457 because there are two or less different characters by position in the compared codes. The code **123456** read once, is not considered the same as the following codes read multiple times: 1**53**24**6**, 1**03**05**7**, **654321** because there are at least three different characters by position in the compared codes.
Voting Filter	Select the check box to reveal the **Max Number of Different Characters** field. When checked, this filter attempts to eliminate false multiple reads by comparing the number of different characters by position between two codes of the same type and length. This condition implicates that reading a code of the same type and length having very few different characters is probably a misread of the code itself and therefore the code read the least number of times should be ignored, (should not be considered as a multiple read of a different code). This filter is based upon the following rules: • a multiple read condition occurs; • the two codes are of the same type; • the two codes have the same length; • the number of different characters by position is equal to or less than the number defined by the Max Number of Different Characters parameter; • **Message Tx Selection** *(see section 3.5.6)* must be set to **After Reading Phase Off.**
Filter Out Low Height Codes	Select the check box to reveal the **Minimum Readings Difference Between Scanners** field**.** **Background:** This option was developed for the airports systems where there are often tall bar height codes and low bar height codes with the same content attached to baggage. Travelers will often remove the large, tall bar height code, while leaving the smaller, low bar height codes attached to the bag. The next time they travel they may have multiple low bar height codes on their baggage plus the new tall bar height and low bar height codes for the new trip. This option instructs the system to ignore low bar height codes, which are likely read only once or twice, in favor of tall bar height codes, which will likely be read multiple times. This is used in tunnel applications where multiple barcodes are read and there is a need to filter out one of the barcodes. If less than *x* number of scanners read the barcode, then it will be considered a NOREAD for that code.

Field Name	Action/Definition
Minimum Readings Difference Between Scanners	Enter the minimum number of scanners that must read a barcode for it to be considered a valid read.
Filter Out Single Readings	If only 1 scanner reads a code it will be considered a NOREAD.
Strip Filter	Select the check box to display the **Strip Filter Settings** options. This is a second level filter that when enabled allows eliminating characters not managed by the host.

Strip Filter Settings	
Strip All Non Printable Chars	Select the check box to remove all non- printable ASCII characters from the code (000-020 and 127).
Char(s) to be Stripped	Click ✎ to activate the Text Entry Tool and enter specific characters to be stripped from the code. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Strip Filter Collapse	Select the check box to remove the stripped characters from the code and, therefore, reduce the code length (collapsed). It can even be null.
Replacement Char	Click ✎ to activate the Text Entry Tool and enter the substitution character to replace all the stripped ones. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

Barcode Configuration > Standard Multi Label

When **Standard Multi Label** has been selected from the **Code Combination** drop-down list, the Barcode Configuration window reveals related input fields.

> **NOTE:** In case of Multi Label, the codes will be distinguished EITHER by their symbology, OR by their contents. If two (or more) codes share the same symbology and content, the scanner will perceive them as a unique code.

1.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Code Combination	Standard Multi Label has been selected.
No Read Message	Select **Disable No Read Message, Global No Read Message,** or **Local No Read(s) Message** from the drop-down list. The No Read condition occurs whenever a code cannot be read or decoded. • **Disable No Read Message:** The No Read Message is not transmitted. • **Global No Read Message:** The No Read String will be sent if the scanner is unable to decode one or more barcodes in the reading phase. • **Local No Read(s) Message:** This option is useful when one or more codes are not read in the reading phase or when more codes than the expected number set by the configuration parameters are read. If working in **Standard Multi Label** mode, this option activates the **Code Label Local No Read String** and the **Code Label Local Multiple Read String** parameters which allow setting a **Local No Read String** and a Local Multiple string for each defined code symbology.
Use 'Global No Read String' when No Codes Read	Select the check box to allow the **Global No Read String** to be used if no codes at all are read. This option is **not** available when **Global No Read Message** is selected from the **No Read Message** drop-down list.
Global No Read String (max. 128 chars)	Click ✎ to activate the **Text Entry Tool** and create a string to be displayed when **Global No Read Message** is selected from the **No Read Message** drop-down list. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Multiple Read Message	Select **Disable** or **Enable** from the drop-down list. This string will be sent if, during the reading phase, the scanner reads more than the number of the expected barcodes set by the configuration parameters.
Multiple Read String (max. 128 chars)	Click ✎ to activate the **Text Entry Tool** and create a string to be displayed in case of **Multiple Read Message**. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text. This parameter is only available when **Multiple Read Message** is enabled and the **No Read Message** selection is different from Local No Read(s) String. It is possible to select either the ASCII or HEX value. If disabled, the scanner transmits the first code read.
Send All Multiple Read Labels	For Advanced Data Format only, by enabling this parameter all multiple read labels will be included in the output message. They can be separated by the **Multiple Read Separator**. **Multiple Read Label Separator String (max. 128 chars):** The Multiple Read Label Separators (up to 128 bytes) are used to separate multiple read barcodes in the reading phase. This is meaningful when the Code Combination parameter is set to Multi

Field Name	Action/Definition
	Label or Logical Combination and the Send All Multiple Read Labels parameter has been enabled. If selected, they occur within the Code Field and are transmitted after each decoded multiple read barcode.
Multi Filters	Select the check box to display the **Multi-Filter Settings** options.

Multi-Filter Settings	

Contained Filter	Select the check box to reveal the **Max Number of Different Characters** field.
	
	When checked, this filter attempts to eliminate false multiple reads by determining if a short code read is "contained in" (is a sub-string of), another longer code read. This condition implicates that the short code is probably a misread of the same longer code and therefore should be ignored, (should not be considered as a multiple read of a different code).
	
	This filter is based upon the following rules:
	
	• a multiple read condition occurs
	• all decoded codes of the same type are compared with each other
	
	Rule 1: the shorter code is considered contained in the longer code if the character string is found in the same order; the longer code may have a single block of characters in any position (before, after or in between the compared strings)
	
	    Example: The code **123456** is considered contained in the following codes: 00**123456**, **123456**00, **123**78**456**.
	
	    The code **123456** is not considered contained in the following codes: 1234**65**07 (string out of order), 12345**700** (string not complete), 12**0**378456 or **00**123456**00** (multiple blocks in the string).
	
	Rule 2: the shorter code is not filtered by rule 1. In the longer code, all possible sub-strings of the same length as the shorter code string are compared with the shorter code string. The shorter code is considered contained in the longer code if the number of different characters between the compared codes is less than or equal to the Max Number of Different Characters. The shorter code will be filtered by rule 2.
	
	    Example:
	
	    If Max Number of Different Characters = 1:
	
	    The code 123456 is considered contained in the following codes: 1230560, 00123056, 8812305688 because there is only one different character in the compared string.
	
	    The code 123456 is not considered contained in 123066789 because there are two different characters in the compared string.
	
	    CAUTION: If the Contained Filter parameter is used when **Message Tx Selection** *(see section 3.5.6)* is set to **On Decoding**, the filter conditions may be satisfied before the reading phase ends resulting in possible successive multiple read errors.

Field Name	Action/Definition
Max Number of Different Characters	Enter a value from 0 to 5 in the field provided to define the maximum number of different characters allowed to still consider a code as being included in another one and therefore to be filtered. If the number of different characters between the compared codes exceeds the value of this parameter, the codes are considered as different and will not be filtered (a multiple read of a different code occurs). If the number of different characters between the compared codes is less than or equal to the value of this parameter, the short code is considered as a sub-string of the longer code and will be filtered (no multiple read occurs). **Examples:** If **Max Number of Different Characters** = 2: The code **123456** read once, is considered the same as the following codes read multiple times: 1**33**0**56, 123**54**6, 12345**7** because there are two or less different characters by position in the compared codes. The code **123456** read once, is not considered the same as the following codes read multiple times: 1**53**2**46, 1**03**05**7, **654321** because there are at least three different characters by position in the compared codes.
Voting Filter	Select the check box to reveal the **Max Number of Different Characters** field. When selected, this filter attempts to eliminate false multiple reads by comparing the number of different characters by position between two codes of the same type and length. This condition implicates that reading a code of the same type and length having very few different characters is probably a misread of the code itself and therefore the code read the least number of times should be ignored, (should not be considered as a multiple read of a different code). This filter is based upon the following rules: • a multiple read condition occurs; • the two codes are of the same type; • the two codes have the same length; • the number of different characters by position is equal to or less than the number defined by the **Max Number of Different Characters** parameter; • **Message Tx Selectio**n *(see section 3.5.6)* must be set to **After Reading Phase Off**.

Field Name	Action/Definition
Filter Out Low Height Codes	Select the check box to reveal the **Minimum Readings Difference Between Scanners** field**.** **Background:** This option was developed for the airports systems where there are often tall bar height codes and low bar height codes with the same content attached to baggage. Travelers will often remove the large, tall bar height code, while leaving the smaller, low bar height codes attached to the bag. The next time they travel they may have multiple low bar height codes on their baggage plus the new tall bar height and low bar height codes for the new trip. This option instructs the system to ignore low bar height codes, which are likely read only once or twice, in favor of tall bar height codes, which will likely be read multiple times. This is used in tunnel applications where multiple barcodes are read and there is a need to filter out one of the barcodes. If less than x number of scanners read the barcode, then it will be considered a NOREAD for that code.
Minimum Readings Difference Between Scanners	Enter the minimum number of scanners that must read a barcode for it to be considered a valid read.
Filter Out Single Readings	With the check box selected, if only 1 scanner reads a code it will be considered a NOREAD.
Strip Filter	Select the check box to display the **Strip Filter Settings** options. This is a second level filter that when enabled allows eliminating characters not managed by the host.

Strip Filter Settings	
Strip All Non Printable Chars	Select the check box to remove all non- printable ASCII characters from the code (000-020 and 127).
Char(s) to be Stripped	Click ✎ to activate the Text Entry Tool and enter specific characters to be stripped from the code. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Strip Filter Collapse	Select the check box to remove the stripped characters from the code and, therefore, reduce the code length (collapsed). It can even be null.
Replacement Char	Click ✎ to activate the Text Entry Tool and enter the substitution character to replace all the stripped ones. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

Barcode Configuration > Logical Combination

When **Logical Combination** has been selected from the **Code Combination** drop-down list, the Barcode Configuration window reveals related input fields.
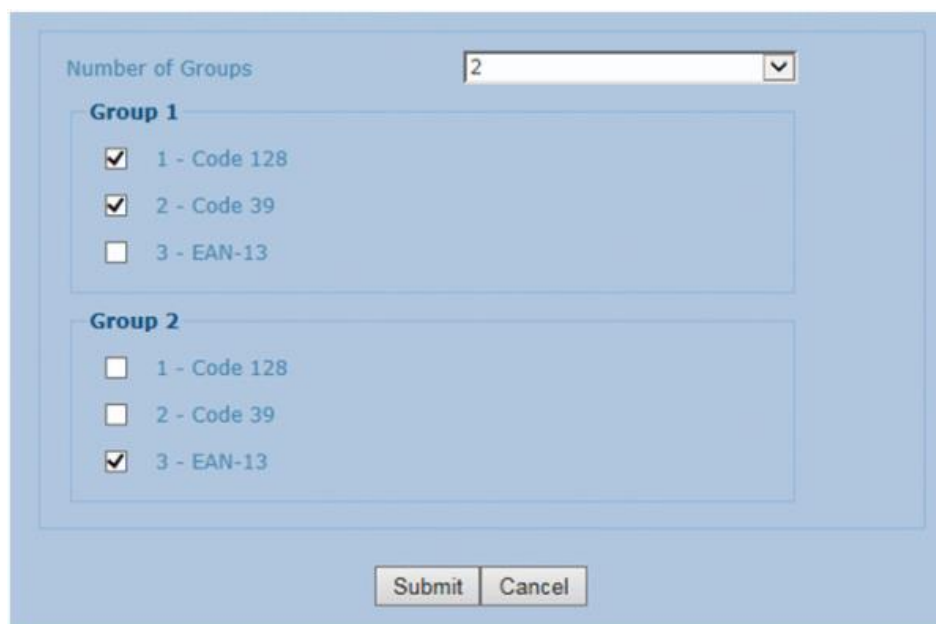
1. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Code Combination	**Standard Multi Label** has been selected.

Logical Combination Rule	Click ✎ to activate the code group selection dialog box.

Select the number of groups you wish to use from the Number of Groups drop-down list. Then select the check box next to the Group/Code you wish to define. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

Groups and their order define the output message format, while each group identifies an expected code.

When editing the logical combination rule, proceed as follows:

1. Define the Barcode Settings indicating the type of expected code labels. It is possible to define up to 10 different code types;

2. Define how many code types (groups) are expected by editing the combination rule through the following logical operators. Each group may include one or more selected code types.

   & = AND operator which separates a group from the previous/following one;

   ^ = XOR operator to be used to combine different code labels within the same group. It allows reading one of the defined code labels.
   The maximum number of groups to be defined for each rule string is 15.

If Local No Read Message is selected from the No Read Message drop-down list, the Group No Read Messages parameter group is displayed requiring the definition of a Local No Read String for each group.

Field Name	Action/Definition
	Examples: Logical Combination Rule

For all the following examples the **No Read Message** parameter is set to **Global No Read Message**.

Example 1

Code label setting#1 = Code 128
Logical Combination Rule = 1&1
Defines 2 groups, each of them expecting a Code 128 label.

Decoded Code Symbology		Output Message
First Label #1	**Second Label #1**	
---	---	<Header><Global No Read Message><Terminator>
X	---	<Header><Global No Read Message><Terminator>
---	X	<Header><Global No Read Message><Terminator>
X	X	<Header><Code 128 data><Data Packet Separator><Code 128 data><Terminator>

NOTE: If **Multiple Read Message** is enabled and a third label belonging to the Code 128 symbology is decoded, the **Multiple Read** string is transmitted instead. If the **Multiple Read Message** is disabled, the third code label is ignored and only the first two codes are transmitted.

For advanced formatting, if the **Send All Multiple Read** Labels parameter is enabled, then all three labels are sent in the output message; the multiple read label is separated by its own **Multiple Read Label Separator String** which should be different from the **Data Packet Separator** (DPS).

Example 2

Code label setting#1 = Code 39
Code label setting#2 = Code 128
Logical Combination Rule = 1^2
Defines a single group expecting a Code 128 label OR a Code 39 label.

Decoded Code Symbology		Output Message
Label #1	**Label #2**	
---	---	<Header><Global No Read Message><Terminator>
X	---	<Header><Code 39 data><Terminator>
---	X	<Header><Code 128 data><Terminator>
X	X	<Header><First decoded code/Multiple Read Message string ><Terminator>

Field Name	Action/Definition

<u>**Example 3**</u>

Code label setting#1 = EAN 8
Code label setting#2 = UPC-A
Logical Combination Rule = 1&1&1^2
Defines three different groups. The first two groups expect an EAN 8 label while the third one expects an EAN 8 label OR an UPC-A label.

Decoded Code Symbology				Output Message
First Label #1	Second Label #1	Third Label #1	Label #2	
---	---	---	---	\<Header>\<Global No Read Message>\<Terminator>
X	---	---	---	\<Header>\<Global No Read Message>\<Terminator>
---	X	---	---	\<Header>\<Global No Read Message>\<Terminator>
---	---	X	---	\<Header>\<Global No Read Message>\<Terminator>
---	---	---	X	\<Header>\<Global No Read Message>\<Terminator>
X	X	X	---	\<Header>\<EAN 8 data>\<DPS>\<EAN 8 data>\<DPS>\<EAN 8 data>\<Terminator>
X	X	---	X	\<Header>\<EAN 8 data>\<DPS>\<EAN 8 data>\<DPS>\<UPC-A data>\<Terminator>
X	X	X	X	\<Header>\<EAN 8 data>\<DPS>\<EAN 8 data>\<DPS>\<First decoded code/Multiple Read Message string>\<Terminator>

Field Name	Action/Definition

<u>**Example 4**</u>

Code label setting#1 = Code 93
Code label setting#2 = Interleaved 2/5
Code label setting#3= EAN-8
Code label setting#4= UPC-A

Logical Combination Rule = 1^2&3^4

Defines 2 groups, each of them expecting one of the defined code types. The first group may expect a Code 93 label or an Interleaved 2/5 label. The second group may expect an EAN-8 label or an UPC-A label.

Decoded Code Symbology				Output Message
Label #1	Label #2	Label #3	Label #4	
---	---	---	---	\<Header>\<Global No Read Message>\<Terminator>
X	---	---	---	\<Header>\<Global No Read Message>\<Terminator>
---	X	---	---	\<Header>\<Global No Read Message>\<Terminator>
---	---	X	---	\<Header>\<Global No Read Message>\<Terminator>
---	---	---	X	\<Header>\<Global No Read Message>\<Terminator>
X	X	---	---	\<Header>\<Global No Read Message>\<Terminator>
X	---	X	X	\<Header>\<Code93>\<DPS>\< First decoded code/Multiple Read Message string>\<Terminator>
X	X	X	---	\<Header>\<First decoded code/Multiple Read Message string>\<DPS>\<EAN 8 data>\<Terminator>
---	X	X	X	\<Header>\< Interleaved 2/5 data>\<DPS>\< First decoded code/Multiple Read Message string >\<Terminator>
X	---	X	---	\<Header>\<Code 93 data>\<DPS>\<EAN 8 data>\<Terminator>
X	---	---	X	\<Header>\<Code 93 data>\<DPS>\<UPC-A data>\<Terminator>
---	X	X	---	\<Header>\<Interleaved 2/5 data>\<DPS>\<EAN 8 data>\<Terminator>
---	X	---	X	\<Header>\<Interleaved 2/5 data>\<DPS>\<UPC-A data>\<Terminator>
X	X	X	X	\<Header>\<First decoded code/Multiple Read Message string>\<DPS>\< First decoded code/Multiple Read Message string >\<Terminator>

Field Name	Action/Definition
No Read Message	Select **Disable No Read Message, Global No Read Message,** or **Local No Read(s) Message** from the drop-down list. The **No Read** condition occurs whenever a code cannot be read or decoded. • Disable No Read Message: The No Read Message is not transmitted. • Global No Read Message: The No Read String will be sent if the scanner is unable to decode one or more barcodes in the reading phase. • Local No Read(s) Message: This option is useful when one or more codes are not read in the reading phase or when more codes than the expected number set by the configuration parameters are read. If working in **Logical Combination** mode, this option reveals Group No Read Messages fields, which allows entering group no read strings for each defined code symbology.
Use 'Global No Read String' when No Codes Read	Select the check box to allow the **Global No Read String** to be used if no codes at all are read. This option is **not** available when **Global No Read Message** is selected from the **No Read Message** drop-down list.
Global No Read String (max. 128 chars)	Click ✎ to activate the Text Entry Tool and create a string to be displayed when **Global No Read Message** is selected from the **No Read Message** drop-down list. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Multiple Read Message	Select **Disable** or **Enable** from the drop-down list. This string will be sent if, during the reading phase, the scanner reads more than the number of the expected barcodes set by the configuration parameters. If **Disable No Read Message** or **Global No Read Message** is selected from the **No Read Message** drop-down list, this string will be sent if, during the reading phase, the scanner reads more than the number of the expected barcodes set by the configuration parameters. If **Local No Read(s) Message** is selected from the **No Read Message** drop-down list, the **Group Multiple Read Messages** fields appears, allowing the user to enter strings for each Group
Multiple Read String (max. 128 chars)	Click ✎ to activate the Text Entry Tool and create a string to be displayed in case of Multiple Read Message. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text. This parameter is only available when **Multiple Read Message** is enabled and the **No Read Message** selection is different from Local No Read(s) String. It is possible to select either the ASCII or HEX value. If **disabled**, the scanner transmits the first code read.

Field Name	Action/Definition
Send All Multiple Read Labels	For **Advanced Data Format** only, by enabling this parameter all multiple read labels will be included in the output message. They can be separated by the **Multiple Read Separator**. **Multiple Read Label Separator String (max. 128 chars):** The Multiple Read Label Separators (up to 128 bytes) are used to separate multiple read barcodes in the reading phase. This is meaningful when the Code Combination parameter is set to Multi Label or Logical Combination and the Send All Multiple Read Labels parameter has been enabled. If selected, they occur within the Code Field and are transmitted after each decoded multiple read barcode.
WebSentinel - Partial Read Is Treated As	Select **No Read, Good Read,** or **Partial Read** from the drop-down list. This determines how WebSentinel will treat the partial read.
Multi Filters	Select the check box to display the **Multi-Filter Settings** options.

Multi-Filter Settings	
Contained Filter	Select the check box to reveal the **Max Number of Different Characters** field. When checked, this filter attempts to eliminate false multiple reads by determining if a short code read is "contained in" (is a sub-string of), another longer code read. This condition implicates that the short code is probably a misread of the same longer code and therefore should be ignored, (should not be considered as a multiple read of a different code). This filter is based upon the following rules: - a multiple read condition occurs - all decoded codes of the same type are compared with each other **Rule 1:** the shorter code is considered contained in the longer code if the character string is found in the same order; the longer code may have a single block of characters in any position (before, after or in between the compared strings) **Example:** The code **123456** is considered contained in the following codes: 00**123456**, **123456**00, **123**78**456**. The code **123456** is not considered contained in the following codes: 1234**6**5**07** (string out of order), 12345**700** (string not complete), 12**0378**456 or **00**123456**00** (multiple blocks in the string).

Field Name	Action/Definition
	Rule 2: the shorter code is not filtered by rule 1. In the longer code, all possible sub-strings of the same length as the shorter code string are compared with the shorter code string. The shorter code is considered contained in the longer code if the number of different characters between the compared codes is less than or equal to the **Max Number of Different Characters.** The shorter code will be filtered by rule 2. If Max Number of Different Characters = 1: The code 123456 is considered contained in the following codes: 123056600, 00123056, 88123050688 because there is only one different character in the compared string. The code 123456 is not considered contained in 123066789 because there are two different characters in the compared string. **CAUTION:** If the Contained Filter parameter is used when **Message Tx Selection** *(see section 3.5.6)* is set to **On Decoding**, the filter conditions may be satisfied before the reading phase ends resulting in possible successive multiple read errors.
Max Number of Different Characters	Enter a value from 0 to 5 in the field provided to define the maximum number of different characters allowed to still consider a code as being included in another one and therefore to be filtered. If the number of different characters between the compared codes exceeds the value of this parameter, the codes are considered as different and will not be filtered (a multiple read of a different code occurs). If the number of different characters between the compared codes is less than or equal to the value of this parameter, the short code is considered as a sub-string of the longer code and will be filtered (no multiple read occurs). **Examples:** If Max Number of Different Characters = 2: The code **123456** read once, is considered the same as the following codes read multiple times: 1**33**056, 123**54**6, 12345**7** because there are two or less different characters by position in the compared codes. The code **123456** read once, is not considered the same as the following codes read multiple times: 1**53**24**6**, 1**03**05**7**, **654321** because there are at least three different characters by position in the compared codes.
Voting Filter	Select the check box to reveal the **Max Number of Different Characters** field. When checked, this filter attempts to eliminate false multiple reads by comparing the number of different characters by position between two codes of the same type and length. This condition implies that reading a code of the same type and length having very few different characters is probably a misread of the code itself and therefore the code read the least number of times should be ignored, (should not be considered as a multiple read of a different code). This filter is based upon the following rules: • a multiple read condition occurs; • the two codes are of the same type;

Field Name	Action/Definition
	• the two codes have the same length; • the number of different characters by position is equal to or less than the number defined by the **Max Number of Different Characters** parameter; • **Message Tx Selection** *(see section 3.5.6)* must be set to **After Reading Phase Off.**
Filter Out Low Height Codes	Select the check box to reveal the **Minimum Readings Difference Between Scanners** field**.** **Background:** This option was developed for the airports systems where there are often tall bar height codes and low bar height codes with the same content attached to baggage. Travelers will often remove the large, tall bar height code, while leaving the smaller, low bar height codes attached to the bag. The next time they travel they may have multiple low bar height codes on their baggage plus the new tall bar height and low bar height codes for the new trip. This option instructs the system to ignore low bar height codes, which are likely read only once or twice, in favor of tall bar height codes, which will likely be read multiple times. This is used in tunnel applications where multiple barcodes are read and there is a need to filter out one of the barcodes. If less than *x* number of scanners read the barcode, then it will be considered a NOREAD for that code.
Minimum Readings Difference Between Scanners	Enter the minimum number of scanners that must read a barcode for it to be considered a valid read.
Filter Out Single Readings	With the check box selected, if only 1 scanner reads a code it will be considered a NOREAD.
Strip Filter	Select the check box to display the **Strip Filter Settings** options. This is a second level filter that when enabled allows eliminating characters not managed by the host.

Field Name		Action/Definition
Strip Filter Settings	**Strip All Non Printable Chars**	Select the check box to remove all non- printable ASCII characters from the code (000-020 and 127).
	Char(s) to be Stripped	Click ✎ to activate the **Text Entry Tool** and enter specific characters to be stripped from the code. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
	Strip Filter Collapse	Select the check box to remove the stripped characters from the code and, therefore, reduce the code length (collapsed). It can even be null.
	Replacement Char	Click ✎ to activate the **Text Entry Tool** and enter the substitution character to replace all the stripped ones. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text

Field Name	Action/Definition
Priority Filter Enable	Select the check box to display the Priority Filter options. This function allows the user to prioritize barcodes. **Example:** If there is a message with a field that should contain one of multiple code types (for example, Code128, Code39 and I2of5). In this field, the user wants: • If Code 128 is read, it goes in the field (any code39 and I2of5 are ignored) • If Code 128 is not read – if Code39 is read, it goes in the field (and I2of5 is ignored) • If Code 128 and Code30 are not read – if i2of5 is read, it goes in the field.

Priority Filter Group List	Enter the Group List in the field provided. This field defines the specific Logical Combination groups to which the Priority Filter will apply. The groups are numbered according to the order in which they are listed (from left to right) in the Logical Combination Rule parameter.
	
	Format: Group Number(s) separated by the comma character
	
	    Example:
	
	    1,3 means the Priority Filter is applied to Logical Groups 1 and 3. Logical Group 2 will not have the Priority Filter applied, however it will follow the normal rules of code analysis, and if selected, the Strip Filter parameters will apply.

Priority Filter Type	Select Normal or Advanced from the drop-down list.
	
	Description:
	
	• Normal: Uses the Logical Combination Rule string to define the priority
	
	• Advanced: Uses the Priority Filter Advanced String to define the priority. Advanced type allows the priority filter to essentially take "priority" over the Logical Combination Rule string.
	
	<u>NORMAL</u>
	
	When the **Priority Filter Type** is set to **Normal**, the operators used in the **Logical Combination Rule** string have the following meaning:
	
	    & = AND operator which separates a group from the previous/following one;
	
	    ^ = The priority is given to the code label indicated to the left of the operator. If this code is read, the

Field Name	Action/Definition
	group is in Good Read independent from any other code in the same group.

Example:

Logical Combination Rule = 1^2&5^3^4&6^7 (3 groups)

Results Without Priority Filter:

Group 1 - read either code 1 or 2 = Good Read; read both code 1 and 2 = Multiple Read

Group 2 - read either code 5 or 3 or 4 = Good Read; read any combination = Multiple Read

Group 3 - read either code 6 or 7 = Good Read; read both code 6 and 7 = Multiple Read

Results With Priority Filter:

Filter Enabled on Groups = 1,2

Group 1 - read code 1 = Good Read independent from reading code 2

Group 2 - read code 5 = Good Read independent from reading code 3 or 4; read code 3 = Good Read independent from reading code 4

Group 3 - read either code 6 or 7 = Good Read; read both code 6 and 7 = Multiple Read

ADVANCED

When the **Priority Filter Type** is set to **Advanced**, the **Priority Filter Advanced String** applies to the Logical Combination Groups. This string must correspond to the order of the groups defined in the Logical Combination Rule string.

The following operators can be used:

& = Code group separator. This operator separates a group from the previous/following one;

^ = The priority is given to the code label indicated to the left of this operator. If this code is read, the group is in Good Read independent from any other code in the same group.

| = Equal priority operator (vertical line). Codes separated by this operator have the same priority and if both codes are read a Multiple Read will result.

The only difference from the implicit pattern string of the Normal (default) case when the Logical Combination Rule string is used, is the Equal Priority operator.

Field Name	Action/Definition
	Example: Logical Combination Rule = 1^2&5^3^4&8^6^7 (3 groups) **Results Without Priority Filter:** **Group 1** - read either code 1 or 2 = Good Read; read both code 1 and 2 = Multiple Read **Group 2** - read either code 5 or 3 or 4 = Good Read; read any combination = Multiple Read **Group 3** - read either code 8 or 6 or 7 = Good Read; read any combination = Multiple Read **Results With Priority Filter:** Filter Enabled on Groups = 1,3 Filter Type =Custom Custom Filter Pattern String = 1^2&8^6|7 (2 groups) **Group 1** - read code 1 = Good Read independent from reading code 2 **Group 2** - read either code 5 or 3 or 4 = Good Read; read any combination = Multiple Read **Group 3** - read code 8 = Good Read independent from reading code 6 or 7; no read on code 8 and read either code 6 or 7 = Good Read; no read on code 8 and read both code 6 and 7 = Multiple Read
Priority Filter Advanced String	Enter the character string (see above).

2. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

Barcode Configuration > Code Collection

When **Code Collection** has been selected from the **Code Combination** drop-down list, the Barcode Configuration window reveals related input fields.

1. Enter the appropriate information in the form as described below:

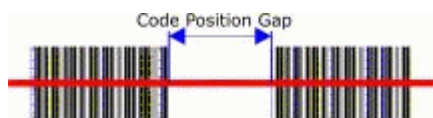| Field Name	Action/Definition
Code Combination	**Code Collection** has been selected.
No Read Message	Select **Disable No Read Message, Global No Read Message,** or **Local No Read(s) Message** from the drop-down list. The No Read condition occurs whenever a code cannot be read or decoded. • **Disable No Read Message:** The No Read Message is not transmitted. • **Global No Read Message:** The No Read String will be sent if the scanner is unable to decode one or more barcodes in the reading phase. • **Local No Read(s) Message:** This option is useful when one or more codes are not read in the reading phase or when more codes than the expected number set by the configuration parameters are read. If working in Standard Multi Label mode, this option activates the Code Label Local No Read String and the Code Label Local Multiple Read String parameters which allow setting a Local No Read String and a Local Multiple string for each defined code symbology.

Field Name	Action/Definition
Use 'Global No Read String' when No Codes Read	Select the check box to allow the **Global No Read String** to be used if no codes at all are read. This option is **not** available when **Global No Read Message** is selected from the **No Read Message** drop-down list.
Global No Read String (max. 128 chars)	Click ✎ to activate the **Text Entry Tool** and create a string to be displayed when **Global No Read Message** is selected from the **No Read Message** drop-down list. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Multi Filters	Select the check box to display the **Multi-Filter Settings** options.

Code Collection Settings	
Associate Same Codes When Read By Different Scanners	Select the check box to enable this function. This parameter is available only when the **Code Combination** parameter is set to *Code Collection* and the scanner role is *Master*. If enabled, it allows transmitting all codes belonging to the same programmed Slot (same symbology and content) but read by different scanners (including the Master) in a single instance. **Scanner Role:** • **Master SYNCHRONIZED:** The scanner is connected as a Master in a master/slave synchronized configuration. • **Slave SYNCHRONIZED:** The scanner is connected as a Salve in a master/slave synchronized configuration. (See note below.) • **Other:** This selection is for a stand-alone scanner.
Code Different When Scan Gap Is Greater Than	This parameter is available only when the **Code Combination** parameter is set to **Code Collection**. If the number of scans performed between two consecutive codes read (by the Master or Stand Alone scanner) is greater than the defined number, the codes will be considered as different. The parameter set to 0 means the filter is disabled: when there is no scan gap all the consecutive codes read will be considered as only one code.
Code Different When Code Position Gap Is Greater Than	This parameter is available only when the **Code Combination** parameter is set to Code Collection. If the position gap between two consecutive codes read (by the Master or Stand Alone scanner) on the same scan line is greater than the defined gap number, the codes will be considered as different. The parameter set to 0 means the filter is disabled: when there is no code position gap all the consecutive codes read will be considered as only one code.

Field Name	Action/Definition
	Multi-Filter Settings

Contained Filter	Select the check box to reveal the **Max Number of Different Characters** field.
	
	When checked, this filter attempts to eliminate false multiple reads by determining if a short code read is "contained in" (is a sub-string of), another longer code read. This condition implicates that the short code is probably a misread of the same longer code and therefore should be ignored, (should not be considered as a multiple read of a different code).
	
	This filter is based upon the following rules:
	
	   - a multiple read condition occurs - all decoded codes of the same type are compared with each other
	Rule 1: the shorter code is considered contained in the longer code if the character string is found in the same order; the longer code may have a single block of characters in any position (before, after or in between the compared strings)
	
	    Example: The code **123456** is considered contained in the following codes: 00**123456**, **123456**00, **123**78**456**.
	
	    The code **123456** is not considered contained in the following codes: 1234**65**07 (string out of order), 12345**700** (string not complete), 12**0**378456 or **00**1234560**0** (multiple blocks in the string).
	
	Rule 2: the shorter code is not filtered by rule 1. In the longer code, all possible sub-strings of the same length as the shorter code string are compared with the shorter code string. The shorter code is considered contained in the longer code if the number of different characters between the compared codes is less than or equal to the **Max Number of Different Characters**. The shorter code will be filtered by rule 2.
	
	    Example:
	
	    If Max Number of Different Characters = 1:
	
	    The code 123456 is considered contained in the following codes: 123**0**5600, 00123**0**56, 88123**0**5688 because there is only one different character in the compared string.
	
	    The code 123456 is not considered contained in 123**066**789 because there are two different characters in the compared string.
	
	    ⚠️ **CAUTION**: If the **Contained Filter** parameter is used when **Message Tx Selection** *(see section 3.5.6)* is set to **On Decoding**, the filter conditions may be satisfied before the reading phase ends resulting in possible successive multiple read errors.

Field Name	Action/Definition
Max Number of Different Characters	Enter a value from 0 to 5 in the field provided to define the maximum number of different characters allowed to still consider a code as being included in another one and therefore to be filtered. If the number of different characters between the compared codes exceeds the value of this parameter, the codes are considered as different and will not be filtered (a multiple read of a different code occurs). If the number of different characters between the compared codes is less than or equal to the value of this parameter, the short code is considered as a substring of the longer code and will be filtered (no multiple read occurs). **Examples:** If Max Number of Different Characters = 2: The code **123456** read once, is considered the same as the following codes read multiple times: 1**33**0**56**, 123**54**6, 12345**7** because there are two or less different characters by position in the compared codes. The code **123456** read once, is not considered the same as the following codes read multiple times: 1**53**2**4**6, 1**03**0**57**, **654321** because there are at least three different characters by position in the compared codes.
Voting Filter	Select the check box to reveal the Max Number of Different Characters field. When checked, this filter attempts to eliminate false multiple reads by comparing the number of different characters by position between two codes of the same type and length. This condition implicates that reading a code of the same type and length having very few different characters is probably a misread of the code itself and therefore the code read the least number of times should be ignored, (should not be considered as a multiple read of a different code). This filter is based upon the following rules: • a multiple read condition occurs; • the two codes are of the same type; • the two codes have the same length; • the number of different characters by position is equal to or less than the number defined by the **Max Number of Different Characters** parameter; • **Message Tx Selection** *(see section 3.5.6)* must be set to **After Reading Phase Off**.

Field Name	Action/Definition
Filter Out Low Height Codes	Select the check box to reveal the **Minimum Readings Difference Between Scanners** field**.** **Background:** This option was developed for the airports systems where there are often tall bar height codes and low bar height codes with the same content attached to baggage. Travelers will often remove the large, tall bar height code, while leaving the smaller, low bar height codes attached to the bag. The next time they travel they may have multiple low bar height codes on their baggage plus the new tall bar height and low bar height codes for the new trip. This option instructs the system to ignore low bar height codes, which are likely read only once or twice, in favor of tall bar height codes, which will likely be read multiple times. This is used in tunnel applications where multiple barcodes are read and there is a need to filter out one of the barcodes. If less than *x* number of scanners read the barcode, then it will be considered a NOREAD for that code.
Minimum Readings Difference Between Scanners	Enter the minimum number of scanners that must read a barcode for it to be considered a valid read.
Filter Out Single Readings	With the check box selected, if only 1 scanner reads a code it will be considered a NOREAD.
Strip Filter	Select the check box to display the **Strip Filter Settings** options. This is a second level filter that when enabled allows eliminating characters not managed by the host.
Strip Filter Settings	
Strip All Non Printable Chars	Select the check box to remove all non- printable ASCII characters from the code (000-020 and 127).
Char(s) to be Stripped	Click 🖉 to activate the **Text Entry Tool** and enter specific characters to be stripped from the code. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Strip Filter Collapse	Select the check box to remove the stripped characters from the code and, therefore, reduce the code length (collapsed). It can even be null.
Replacement Char	Click 🖉 to activate the **Text Entry Tool** and enter the substitution character to replace all the stripped ones. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

2. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3.5.4   Modify Settings | Global Settings | Serial Ports

Use the Serial Ports menu tree selections during initial setup to configure any serial ports used by your barcode scanning system. If necessary, you can later make modifications to the global system settings using the same menu selections, including:

```
⊟··Serial Ports
   ⊢··Main Port
   ⊢··Aux Port
```

Modify Settings | Global Settings | Serial Ports | Main Port

Use **Main Port** window to configure communication between the scanner and the Host, or in a multi-sided layout, between the Master (scanner/controller) and a Host.

To edit the Main Port settings:

1. In the tree menu under **Modify Settings**, navigate to **Global Settings | Serial Ports | Main Port**. The Main Port window opens.

```
┌─Main Serial Port────────────────────────────────────────────┐
│ Data Tx                                          ☑            │
│ Heartbeat                      Enable Unconditioned ▼         │
│ ┌─Heartbeat Settings────────────────────────────────────┐    │
│ │ Heartbeat Timeout                    60        sec     │    │
│ │ Heartbeat Message       HB                      ✎      │    │
│ │ Heartbeat Terminator    <CR><LF>                ✎      │    │
│ └───────────────────────────────────────────────────────┘    │
│ ┌─Line Settings─────────────────────────────────────────┐    │
│ │ Main Port Communication Mode    Standard    ▼         │    │
│ │ Main Port Electrical Interface  RS232       ▼         │    │
│ │ Handshake                       None        ▼         │    │
│ │ Baud Rate                       115200      ▼         │    │
│ │ Parity                          None        ▼         │    │
│ │ Data Bits                       8           ▼         │    │
│ │ Stop Bits                       1           ▼         │    │
│ └───────────────────────────────────────────────────────┘    │
│           Update All | Reset All | Reset Page                │
└─────────────────────────────────────────────────────────────┘
```

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Data Tx	Select the check box to enabled **Data Tx**. If selected, the **Main Serial Port** channel is used by the scanner to transmit data and/or messages.

Field Name	Action/Definition
Heartbeat	Select **Disable, Enable Unconditioned,** or **Enable Conditioned** from the drop-down list. This parameter is available when the **Data TX** parameter is checked. It enables/disables the transmission of the Heartbeat message signaling that the device is still active. • **Disable:** The Heartbeat message is not transmitted • **Enable Unconditioned**: The Heartbeat message is always transmitted, even if communication is still active • **Enable Conditioned:** The Heartbeat message is transmitted only when there is no communication
Heartbeat Settings	
Heartbeat Timeout	Enter a time value in seconds to define the amount of time between two message transmissions. If the input timeout expires and no transmission has occurred, the Heartbeat message will be transmitted.
Heartbeat Message (max. 32 chars)	Click ✎ to activate the Text Entry Tool and create heartbeat header text to signal the beginning of the heartbeat message. Characters from NUL (00H) to ~ (7EH) can be used. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text. The **Heartbeat Message** (header) string must be different from the **Heartbeat Terminator** string.
Heartbeat Terminator (max. 32 chars)	Click ✎ to activate the Text Entry Tool and create **Heartbeat Terminator** text to signal the end of the heartbeat message. Characters from NUL (00H) to ~ (7EH) can be used. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text. The **Heartbeat Terminator** string must be different from the **Heartbeat Message** (header) string.
Line Settings	
Main Port Communication Mode	Select **Standard** or **Siemens 3964** from the drop-down list.
Main Port Electrical Interface	Select **RS232** or **RS422 full duplex** from the drop-down list. The Main serial interface is compatible with these available electrical standards.
Handshake	Select **None, Hardware (RTS/CTS),** or **Software (Xon/Xoff)** from the drop-down list. Handshake is a communication control used to protect against data loss, it can be achieved via hardware (RTS\CTS protocol) or software (Xon\Xoff protocol).
Baud Rate	Select a value from **1200** to **115200** from the drop-down list. **Baud Rate** is the transmission speed in a communication line.
Parity	Select **None, Odd,** or **Even** from the drop-down list. **Parity** is a parameter indicating the presence of a control bit in the communication protocol frame.
Data Bits	Select **7** or **8** from the drop-down list. **Data Bits** is a parameter indicating the number of bits composing the data packet of the communication protocol frame.

Field Name	Action/Definition
Stop Bits	Select **1** or **2** from the drop-down list. **Stop Bits** is a parameter indicating the number of stop bits in the data packet of the communication protocol frame.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

Modify Settings | Global Settings | Serial Ports | Aux Port

Use the **Aux Port** window to configure communication through the Auxiliary Serial Port. For this communication mode, RS232 interface is automatically selected.

To edit the Aux Port settings:

1. In the tree menu under **Modify Settings**, navigate to **Global Settings | Serial Ports | Aux Port**. The Aux Port window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Search for CBX BM100 at Device Startup	Select the check box to automatically search for a BM100 storage module when the scanner is powered on.
Data Tx	Select the check box to enabled **Data Tx**. If selected, the **Aux Serial Port** channel is used by the scanner to transmit data and/or messages.
Heartbeat	Select **Disable, Enable Unconditioned,** or **Enable Conditioned** from the drop-down list. This parameter is available when the **Data TX** parameter is checked. It enables/disables the transmission of the Heartbeat message signaling that the device is still active. • **Disable:** The Heartbeat message is not transmitted • **Enable Unconditioned:** The Heartbeat message is always transmitted, even if communication is still active • **Enable Conditioned:** The Heartbeat message is transmitted only when there is no communication
Heartbeat Settings	
Heartbeat Timeout	Enter a time value in seconds to define the amount of time between two message transmissions. If the input timeout expires and no transmission has occurred, the Heartbeat message will be transmitted.
Heartbeat Message (max. 32 chars)	Click ✎ to activate the **Text Entry Tool** and create heartbeat header text to signal the beginning of the heartbeat message. Characters from NUL (00H) to ~ (7EH) can be used. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text. The Heartbeat Message (header) string must be different from the Heartbeat Terminator string.
Heartbeat Terminator (max. 32 chars)	Click ✎ to activate the **Text Entry Tool** and create **Heartbeat Terminator** text to signal the end of the heartbeat message. Characters from NUL (00H) to ~ (7EH) can be used. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text. The **Heartbeat Terminator** string must be different from the Heartbeat Message (header) string.
Line Settings	
Baud Rate	Select a value from 1200 to 115200 from the drop-down list. **Baud Rate** is the transmission speed in a communication line.
Parity	Select **None, Odd,** or **Even** from the drop-down list. **Parity** is a parameter indicating the presence of a control bit in the communication protocol frame.
Data Bits	Select 7 or 8 from the drop-down list. **Data Bits** is a parameter indicating the number of bits composing the data packet of the communication protocol frame.

Field Name	Action/Definition
Stop Bits	Select 1 or 2 from the drop-down list. **Stop Bits** is a parameter indicating the number of stop bits in the data packet of the communication protocol frame.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3.5.5   Modify Settings | Global Settings | Ethernet

Use the **Ethernet** menu tree selections during initial setup to configure the Ethernet settings for your barcode scanning system.

Ethernet is the most popular physical layer LAN technology in use today. It is the IEEE 802.3 series standard, based on the CSMA/CD access method that provides two or more stations to share a common cabling system. This access method, Carrier Sense Multiple Access with Collision Detection, is the basis for Ethernet systems providing a wide range of speed.

The design goals for Ethernet are to create a simply defined topology that makes efficient use of shared resources that are easy to reconfigure and maintain and provides compatibility across many manufacturer and systems.

Ethernet supports many different network protocols; Datalogic scanners support IP plus TCP or UDP over Ethernet and 802.3 frame format as Ethernet protocol low level.

If necessary, you can later make modifications to the global system settings using the same menu selections, including:
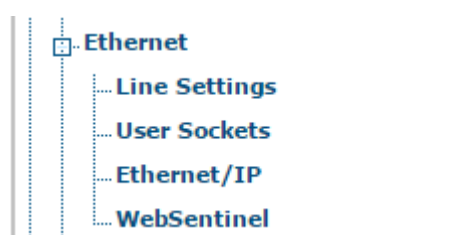
Modify Settings | Global Settings | Ethernet | Line Settings

Use the **Line Settings** window to define and report the fundamental information about the system.

To edit the Line Settings:

1. In the tree menu under Modify Settings, navigate to Global Settings | Ethernet | Line Settings. The Line Settings window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
	Host Network (ETH1)
Enable DHCP	Select the check box to cause the IP address parameters to become inactive. They are then used to display the addresses assigned by a DHCP server when getting the scanner configuration.
IP Address	Enter the device Internet Protocol (IP) network address in the field provide. Consult your network administrator to obtain a new address.
IP Netmask	Enter the device subnet mask address in the field provided. Consult your network administrator to obtain a new address.
IP Gateway	Enter the device gateway address in the field provided. Consult your network administrator to obtain a new address.
IP DNS1	Enter the address of the Primary Domain Name System (DNS) in the field provided.
IP DNS2	Enter the address of the Secondary Domain Name System (DNS) in the field provided.

Field Name	Action/Definition
Setup Network (ETH2)	
Setup IP Address	Enter the Internet Protocol (IP) network address for ETH2 (Setup) in the field provided. Consult your network administrator to obtain a new address.
Setup Netmask	Enter the subnet mask address for ETH2 (Setup) in the field provided. Consult your network administrator to obtain a new address.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3

Modify Settings | Global Settings | Ethernet | User Sockets

Use the **User Sockets** (User Socket Settings) window to setup, edit, and configure numbered user sockets for your barcode scanning system. User sockets are another interface available for the Ethernet communication.

To edit the User Socket settings:

1. In the tree menu under **Modify Settings**, navigate to **Global Settings | Ethernet | User Sockets**. The User Sockets window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
User Socket List	Select an option button in the list at the top of this window to create a new user socket, or to edit an existing one.
User Socket *n*	
Enable User Socket	Select the check box to enable **User Sockets** and reveal the related configuration options.
Enable Data Transmission	Select the check box to enable **User Sockets** and reveal the related configuration options. When enabled, **Ethernet User Socket** is selected as the channel to be used by the scanner for transmitting data and/or messages.

Field Name	Action/Definition
Heartbeat	Select **Disable, Enable Unconditioned,** or **Enable Conditioned** from the drop-down list. This parameter is available when the **Data TX** parameter is checked. It enables/disables the transmission of the Heartbeat message signaling that the device is still active. • **Disable:** The Heartbeat message is not transmitted • **Enable Unconditioned:** The Heartbeat message is always transmitted, even if communication is still active • **Enable Conditioned:** The Heartbeat message is transmitted only when there is no communication
Heartbeat Settings	
Heartbeat Timeout	Enter a time value in seconds to define the amount of time between two message transmissions. If the input timeout expires and no transmission has occurred, the Heartbeat message will be transmitted.
Heartbeat Message (max. 32 chars)	Click ✎ to activate the **Text Entry Tool** and create heartbeat header text to signal the beginning of the heartbeat message. Characters from NUL (00H) to ~ (7EH) can be used. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text. The **Heartbeat Message** (header) string must be different from the **Heartbeat Terminator** string.
Heartbeat Terminator (max. 32 chars)	Click ✎ to activate the **Text Entry Tool** and create **Heartbeat Terminator** text to signal the end of the heartbeat message. Characters from NUL (00H) to ~ (7EH) can be used. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text. The **Heartbeat Terminator** string must be different from the **Heartbeat Message** (header) string
Send Diagnostic Info	Select the check box to include diagnostic information in the heartbeat message.

Field Name	Action/Definition
	Socket Configuration
Type	Select **Server** or **Client** from the drop-down list to define the type of the socket:

When the Protocol selected is TCP (see below):

- **Server:** The station waits for connections and can communicate with a maximum of 3 clients simultaneously.

- **Client:** The station tries a connection towards the server.

When the Protocol selected is UDP (see below):

- **Server:** Special Datalogic mode in which the station waits to receive a message (content of message does not matter), then responds with UDP host messages to that client. You must enter a port number, and if using a fixed UDP destination port, you must enter the number for that port as well.

- **Client:** Choose this option for standard UDP protocol. You must define the Server Address that will be receiving the UDP messages and port. If using a fixed UDP source port, you must enter the UDP source port number.

Field Name	Action/Definition
Server Address	Enter the IP address of the server to which the client tries to connect. This parameter is available only when the socket is configured as a **Client**.
Protocol	Select **TCP** (Transmission Control Protocol) or **UDP** (User Datagram Protocol) from the drop-down list to define the protocol to be used for the Ethernet communication. **NOTE:** When using the **UDP** protocol: • The User Socket Client Port is bound to the Server Port. • The maximum size for maintaining a whole datagram is 1436 bytes, messages exceeding this value will be fragmented.
Port	Enter the port number of the socket.
Fixed UDP Destination Port	When using UDP Server, select the check box to enable a fixed UDP destination port.
UDP Destination Port	When using UDP Server with a fixed UDP destination port, enter the port number.
Fixed UDP Source Port	When using UDP Client, select the check box to enable a fixed UDP source port.
UDP Source Port	When using UDP Client with a fixed UDP source port, enter the port number.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

Modify Settings | Global Settings | Ethernet | Ethernet/IP

Use the **Ethernet I/P** window to set up digital inputs and outputs for the barcode scanner.

To enable or disable Ethernet/IP:

1. In the tree menu under **Modify Settings**, navigate to **Global Settings | Ethernet | Ethernet/IP**. The Ethernet/IP window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Enable Ethernet/IP	Select the check box to enable **Ethernet/IP** and reveal the related configuration options.
Ethernet/IP Object Selection	Select DLA Object or ASI Object from the drop-down list. **Selection:** • **DLA Object** - Refers to Datalogic Devices • **ASI Object** - Refers to legacy Accu-Sort Devices
Enable ControlLogix On-Demand Messaging	Select the check box to enable **On-Demand Messaging** when **ASI Object** is selected. **On-Demand Messaging** is a special option for communicating with ControlLogix/CompactLogix Controllers. When enabled, you must provide the Controller IP Address, the Slot number of the processor in the Controller and a Tag Name. To use On-Demand messaging, a tag of the same name is then defined on the ControlLogix/CompactLogix Controller and every time a bar code is read, the Bar Code object is transferred to the ControlLogix/CompactLogix Tag.

Field Name	Action/Definition
DLA Object: Digital Input Lines	
Trigger (Input 1) Echo	Select **Disable** or **Enable** from the drop-down list. If enabled, the Scanner Master or SC5000 Controller **Trigger (Input 1)** status is echoed to the Ethernet Client via bit 0 in Byte InputBits of the DL_InputStruct.
Aux (Input 3) Echo	Select **Disable** or **Enable** from the drop-down list. If enabled, the Scanner Master or SC5000 Controller **Input 3** status is echoed to the Ethernet Client via bit 2 in Byte InputBits of the DL_InputStruct.
I/O 4 (Input 4) Echo	Select **Disable** or **Enable** from the drop-down list. If enabled, the Scanner Master or SC5000 Controller **Input 4** status is echoed to the Ethernet Client via bit 3 in Byte InputBits of the DL_InputStruct.
Phase Echo	This parameter is configurable only if **Start Input from Bus** is enabled. Select **Disable** or **Enable** from the drop-down list. If enabled, the **Reading Phase** status is echoed to the Ethernet Client via bit 7 in Byte InputBits of the DL_InputStruct.

ASI Object: On-Demand Options

Ethernet/IP

Enable Ethernet/IP	☑
Ethernet/IP Object Selection	ASI Object ▾
Enable ControlLogix On-Demand Messaging	☑

On-Demand Options

PLC IP Address	0.0.0.0
Tag Name	ScannerTag
PLC Slot Number	0

Message Options

Message Format	ASCII ▾
ASCII Message Byte Swap	☐

Digital Output Lines

Control Output 1	Disable ▾
Control Output 2	Disable ▾

Update All   Reset All   Reset Page

NOTE: Contact Datalogic Support for information on setting up ASI Objects (legacy Accu-Sort Devices). See Support Through the Website.

PLC IP Address	Enter the IP Address for the PLC Controller (Rockwell Automation: Allen-Bradley Controllogix or CompactLogix).
Tag Name	Enter a tag name (up to 40 characters) in the field provided.
PLC Slot Number	Enter the PLC Slot number in the field provided. This corresponds to the physical slot used on the PLC.

Field Name	Action/Definition
ASI Object: Message Options	
Message Format	Select ASCII or Binary from the drop-down list. **Selections:** • **ASCII -** Select to transmit an ASCII barcode message (as defined by the Message Type). The only difference is that the Header and Trailer are omitted from the barcode messages transmitted using EtherNet/IP. When ASCII messages are in use, the Byte Swap ASCII Data selection will swap the high and low byte of data within each 16 bit word. This is useful for processing data on some Programmable Controllers. • **Binary -** Select to convert barcode data to a "numeric value" and transferred as a 32 bit word. The user can specify the byte ordering of this word. If any non-numeric (not ASCII '0' to '9' or leading or trailing space) characters are contained in the barcode, the numeric value is zero.
ASCII Message Byte Swap	Select the check box to enable the function. Available when Binary is selected from the Message Format drop-down list. When ASCII messages are in use, the ASCII Message Byte Swap selection will swap the high and low byte of data within each 16 bit word. This is useful for processing data on some Programmable Controllers.
Binary Message Byte Order	Select **Little Endian** or **Big Endian** from the drop-down list. Available when Binary is selected from the Message Format drop-down list. **Selection:** • **Little Endian:** The least significant byte (little end) of the data is positioned at the byte with the lowest address. • **Big Endian:** The most significant byte (big end) of the data is positioned at the byte with the lowest address.
Digital Output Lines	
Control Output 1	This parameter is configurable only if **Digital Output 1 Use** is set to EthernetIP. Select **Disable** or **Enable** from the drop-down list. If enabled, it allows the Ethernet Client to drive the Scanner Master or SC5000 Controller **Output 1** via bit 0 in Byte OutputBits of the DL_OutputStruct.
Control Output 2	This parameter is configurable only if **Digital Output 2 Use** is set to EthernetIP. Select **Disable** or **Enable** from the drop-down list. If enabled, it allows the Ethernet Client to drive the Scanner Master or SC5000 Controller **Output 2** via bit 1 in Byte OutputBits of the DL_OutputStruct.
Control Output 3	This parameter is configurable only if **Digital Output 3 Use** is set to EthernetIP. Select **Disable** or **Enable** from the drop-down list. If enabled, it allows the Ethernet Client to drive the Scanner Master or SC5000 Controller **Output 3** via bit 2 in Byte OutputBits of the DL_OutputStruct.
Control Output 4	This parameter is configurable only if **Digital Output 4 Use** is set to EthernetIP. Select **Disable** or **Enable** from the drop-down list. If enabled, it allows the Ethernet Client to drive the Scanner Master or SC5000 Controller **Output 4** via bit 3 in Byte OutputBits of the DL_OutputStruct.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

Modify Settings | Global Settings | Ethernet | WebSentinel

Use the **WebSentinel** window to enable and configure the barcode scanner for use with Datalogic WebSentinel™.

To enable or disable WebSentinel:

1. In the tree menu under **Modify Settings**, navigate to **Global Settings | Ethernet | WebSentinel**. The WebSentinel window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Enable	Select the check box to enable **WebSentinel** and reveal the related configuration options.
WebSentinel Socket	Select a socket number for WebSentinel from those available in the drop-down list.
Monitor Settings	
Conveyor Speed Check Type	Select **Percentage** or **Absolute** from the drop-down list to determine how the conveyor speed is evaluated.
Max Conveyor Speed Percent Error (%)	In the text field provided, enter the percentage of discrepancy allowed in the conveyor speed before an error is sent. This option is available when **Percentage is** selected from the **Conveyor Speed Check Type drop-down list.**
Max Conveyor Speed Absolute Error (mm/s)	In the text field provided, enter the milliseconds of discrepancy allowed in the conveyor speed before an error is sent. This option is available when **Absolute** is selected from the **Conveyor Speed Check Type drop-down list.**
Input Timeout (secs)	Enter a time interval in seconds, after which the input will be checked for errors. If an error is found, it will be sent to WebSentinel.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3.5.6 Modify Settings | Global Settings | Fieldbus

Use the **Fieldbus** window to configure Fieldbus type communication between the scanner and Host, or, in a multi-sided layout, between several scanners and a Host.

To edit the Fieldbus settings:

1. In the tree menu under Modify Settings, navigate to **Global Settings | Fieldbus**.
   The Fieldbus window opens.

2. Enter the appropriate information in the form as described below:
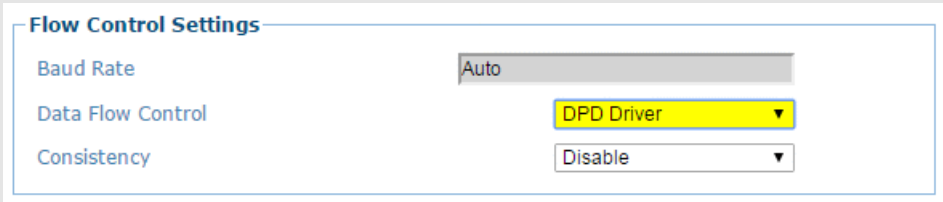
Field Name	Action/Definition
Type	Fieldbus type is displayed. When using the CBX510 with Fieldbus modules, select the correct Fieldbus Type. For SC5000, this option is preset and read-only based on the controller model used.
Data Tx	Select **Enable** or **Disable** from the drop-down list. If enabled, the fieldbus port is used by the scanner to transmit data and/or messages.
Heartbeat	Select **Disable**, **Enable Unconditioned**, or **Enable Conditioned** from the drop-down list.

This parameter is available when the Data TX parameter is checked. It enables/disables the transmission of the Heartbeat message signaling that the device is still active.

- **Disable:** The Heartbeat message is not transmitted

- **Enable Unconditioned:** The Heartbeat message is always transmitted, even if communication is still active

- **Enable Conditioned:** The Heartbeat message is transmitted only when there is no communication |

Heartbeat Settings

Heartbeat Timeout	Enter a time value in seconds to define the amount of time between two message transmissions. If the input timeout expires and no transmission has occurred, the Heartbeat message will be transmitted.

Field Name	Action/Definition
Heartbeat Message (max. 32 chars)	Click ✎ to activate the Text Entry Tool and create heartbeat header text to signal the beginning of the heartbeat message. Characters from NUL (00H) to ~ (7EH) can be used. The Heartbeat Message (header) string must be different from the Heartbeat Terminator string.
Heartbeat Terminator (max. 32 chars)	Click ✎ to activate the Text Entry Tool and create Heartbeat Terminator text to signal the end of the heartbeat message. Characters from NUL (00H) to ~ (7EH) can be used. The Heartbeat Terminator string must be different from the Heartbeat Message (header) string.

Flow Control Settings

Baud Rate	This is a read-only parameter. The default value **Auto** allows the Host to control the data transmission speed of the Profibus network.
Data Flow Control	Select **Disable, DAD Driver,** or **DPD Driver** from the drop-down list. This implements a reliable transmission protocol between Fieldbus Master (PLC) and Fieldbus Slave (SC5000 or Scanner Master) allowing specific functions such as Synchronization, Fragmentation/Reassembling and Data Consistency.
Consistency	Select **Disable** or **Enable** from the drop-down list. This parameter is available only when the Data Flow Control parameter is set to DAD or DPD Driver. If enabled, it allows improving the overall communication robustness of the Fieldbus network.

Profibus Settings

Node Address (Working)/ (Protecting)	Enter a node value in the fields provided, to define the value that distinguishes these nodes from all other nodes on the same link. Each node identifies a device within the network. The behavior is controlled by the **IP Selector** parameter in **Modify Settings | Global Settings | Redundant Operation** *(see 3.5.12).* Valid values are in the range 0 - 126. Node Address 126 forces the SSA (Set Station Address) service which allows the Fieldbus Master to assign the slave node address.

Field Name	Action/Definition
Master Input Area Size	Enter a value from 8 - 144 bytes to define the size of the message command sent from the Fieldbus module to the Fieldbus Master (Host). The default value is 8 bytes. The maximum Input + Output Area Size for the Profibus interface is 152 bytes.
Master Output Area Size	Enter a value from 8 – 144 bytes to define the size of the message command sent to the Fieldbus module from the Fieldbus Master (Host). The default value is 8 bytes. The maximum Input + Output Area Size for the Profibus interface is 152 bytes.

Profinet Settings

Field Name	Action/Definition
Master Input Area Size	Enter a value from 8 - 56 bytes to define the size of the message command sent from the Fieldbus module to the Fieldbus Master (Host). The default value is 8 bytes. The maximum Input + Output Area Size for the Profinet interface is 64 bytes.
Master Output Area Size	Enter a value from 8 – 56 bytes to define the size of the message command sent to the Fieldbus module from the Fieldbus Master (Host). The default value is 8 bytes. The maximum Input + Output Area Size for the Profinet interface is 64 bytes.
Station Name (Working)/ (Protecting)	This identifies the node on the network as an alternative to the IP address. If this value is changed by the host application during runtime, a reset is required in order for changes to have effect. The behavior is controlled by the **IP Selector** parameter in **Modify Settings | Global Settings | Redundant Operation** *(see 3.5.12).* The name can be made up only of letters or numbers. The **.** (dot) and **-** (dash) characters can be used but not as the first or last character in the name. The default names are **Working** and **Protecting**.
MAC Address	This is a read-only parameter. It displays the address of the Profinet channel reserved for internal communication.

Field Name	Action/Definition
MAC Address 1	This is a read-only parameter. It displays the address of one of the Profinet channels to be used for Host communication.
MAC Address 2	This is a read-only parameter. It displays the address of one of the Profinet channels to be used for Host communication.
IP Addressing	**Static:** the IP Address can be set manually through the IP Address, IP Net Mask and IP Gateway parameters. **DHCP:** the IP address is assigned by a DHCP server. In this case the IP Address parameters are read-only and display the DHCP assigned address. **Remote:** the IP Address is assigned by a remote network device (PC) using an IPConfig address configuration application. In this case the IP address parameters are read-only and display the remotely assigned address.
IP Address	Enter the device Internet Protocol (IP) network address in the field provided. Consult your network administrator to obtain a new address.
IP Net Mask	Enter the device subnet mask address in the field provided. Consult your network administrator to obtain a new address.
IP Gateway	Enter the device gateway address in the field provided. Consult your network administrator to obtain a new address.

<table>
<tr><td colspan="2" align="center">Digital Input Lines</td></tr>
<tr><td colspan="2">

Digital Input Lines

Trigger (Input 1) Echo — Disable ▾

Aux (Input 3) Echo — Disable ▾

Phase Echo — Disable ▾

</td></tr>
<tr><td colspan="2">

NOTE: If any of the following parameters are enabled, the **Data Flow Control** DAD/DPD Driver starts at Byte 1 (second byte) of the Fieldbus Master Input Area, and Byte 0 (first byte) is reserved for these Digital Input Line Echo parameters.

If none of the following parameters are enabled, the **Data Flow Control** DAD/DPD Driver starts at Byte 0 (first byte) of the Fieldbus Master Input Area.
- For more details, refer to the DAD/DPD Driver Reference Manual.

</td></tr>
</table>

Field Name	Action/Definition
Trigger (Input 1) Echo	Select **Disable** or **Enable** from the drop-down list. If enabled, the Scanner Master or SC5000 Controller **Trigger (Input 1)** status is echoed to the Fieldbus Master via bit 0 in Byte 0 (first byte) of the Input Area.
Aux (Input 3) Echo	Select **Disable** or **Enable** from the drop-down list. If enabled, the Scanner Master or SC5000 Controller **Input 3** status is echoed to the Fieldbus Master via bit 2 in Byte 0 (first byte) of the Input Area.
I/O 4 (Input 4) Echo	Select **Disable** or **Enable** from the drop-down list. If enabled, the Scanner Master or SC5000 Controller **Input 4** status is echoed to the Fieldbus Master via bit 3 in Byte 0 (first byte) of the Input Area.
Phase Echo	This parameter is configurable only if **Start Input from Bus** is enabled. Select **Disable** or **Enable** from the drop-down list. If enabled, the Reading Phase status is echoed to the Fieldbus Master via bit 7 in Byte 0 (first byte) of the Input Area.

Field Name	Action/Definition
	Digital Output Lines

	NOTE: If any of the following parameters are enabled, the **Data Flow Control** DAD/DPD Driver starts at Byte 1 (second byte) of the Fieldbus Master Output Area, and Byte 0 (first byte) is reserved for these Digital Output Line parameters. If none of the following parameters are enabled, the **Data Flow Control** DAD/DPD Driver starts at Byte 0 (first byte) of the Fieldbus Master Output Area. For more details, refer to the DAD/DPD Driver Reference Manual.
Control Output 1	This parameter is configurable only if **Digital Output 1 Use** is set to Profibus/Profinet. Select **Disable** or **Enable** from the drop-down list. If enabled, it allows the Fieldbus Master to drive the Scanner Master or SC5000 Controller **Output 1** via bit 0 in Byte 0 (first byte) of the Output Area.
Control Output 2	This parameter is configurable only if **Digital Output 2 Use** is set to Profibus/Profinet. Select **Disable** or **Enable** from the drop-down list. If enabled, it allows the Fieldbus Master to drive the Scanner Master or SC5000 Controller **Output 2** via bit 1 in Byte 0 (first byte) of the Output Area.
Control Output 3	This parameter is configurable only if **Digital Output 3** Use is set to Profibus/Profinet. Select **Disable** or **Enable** from the drop-down list. If enabled, it allows the Fieldbus Master to drive the Scanner Master or SC5000 Controller **Output 3** via bit 2 in Byte 0 (first byte) of the Output Area.
Control Output 4	This parameter is configurable only if **Digital Output 4** Use is set to Profibus/Profinet. Select **Disable** or **Enable** from the drop-down list. If enabled, it allows the Fieldbus Master to drive the Scanner Master or SC5000 Controller **Output 4** via bit 3 in Byte 0 (first byte) of the Output Area.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3.5.7   Modify Settings | Global Settings | Messaging

Use the Messaging selections during initial setup to configure system messaging for your system. If necessary, you can later make modifications to the configuration using the same menu selections, including:
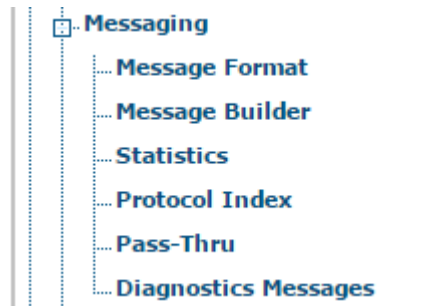
Modify Settings | Global Settings | Messaging | Message Format

Use the **Message Format** window to configure Standard or Advanced system messages.

To edit the Message Format settings:

1. In the tree menu under **Modify Settings**, navigate to **Global Settings | Messaging | Message Format**. The Message Format window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
	Messaging Formatting
Special Host Protocol	Select **None** or a specific custom protocol from the drop-down list. In some cases, a customer specific protocol may have been created. When selected, a group of options specific to that protocol are made available.

	Crisplant Protocol	
	Port to Use	Select **Aux Serial Port, Main Serial Port,** or a **User Socket** from the drop-down list.
	Crisplant Device Type/Error Definition	Select **DLA Device/Errors** or a **ASI-Axiom/Errors** from the drop-down list. This allows selection of different device types, as the error codes required by Crisplant vary from device to device. **DLA Device/Errors:** select when using current Datalogic devices **ASI-Axiom/Errors:** Select when using legacy Accu-Sort devices
	Crisplant Manufactur er ID	This field is determined by the **Crisplant Device Type/Error Definition** selected above and cannot be edited. This defines the "Scanner Identity" byte of the Error and Heartbeat messages of the Crisplant Protocol.
	Heartbeat Message Enable	Select the check box to enable the transmission of the Heartbeat message.
	Heartbeat Message Timing	Enter a value in milliseconds to define the amount of time between two code transmissions. If the selected timeout expires and no transmission has occurred, the Heartbeat message will be transmitted.
	Crisplant Protocol Type	Select **CSC, CMC,** or **P10** from the drop-down list. This defines the type of Crisplant protocol to be used: **CSC:** the <CR><LF> characters do not appear at the end of transmitted/received telegrams **CMC:** the <CR><LF> characters appear at the end of transmitted/received telegrams **P10:** the <CR><LF> characters appear at the end of transmitted/received telegrams • the Parameter Crisplant Manufacturer ID is forced to the Value 'a' (61H) and cannot be modified for this selection • the error messages are modified with respect to CSC and CMC protocols
	Discard Read on Missing Index	Select the check box to enable. When selected, if a Missed Index error occurs, an empty telegram is sent to the Crisplant Host. If not selected, and a Missed Index error occurs, the telegram contains the codes that were read relative to the pack.

Field Name	Action/Definition

	Mettler Toledo Protocol
Conveyer Direction Input	Select **Trigger (Input 1)** or **Aux (Input 3)** from the drop-down list. The selection defines which digital input transmits information about the conveyor direction. The conveyor direction is Forward when the selected input is active (default active closed). If Input 1 is used the scanner Phase On LED also signals the direction state.
SW Divide Encoder Frequency	Select the check box to enable. If selected, the encoder frequency value is divided by two before it is transmitted to the Host. This parameter only effects the value contained in the <Encoder> field of the messages sent from the scanner to the Host.

	Message Definition	
	Header	Enter a message header in the field provided. A Header (up to 128 bytes) can be defined and transmitted as a block preceding all messages sent from the scanner. Character from NUL (00H) to ~ (7EH) can be used.
	Trailer	Enter a message trailer in the field provided. A Trailer (up to 128 bytes) can be defined and transmitted as a block following all messages sent from the scanner. Character from NUL (00H) to ~ (7EH) can be used.
	Heartbeat Enable	Select the check box to enable heartbeat.
	Heartbeat Timeout	Enter a value in milliseconds. This parameter is available when the Heartbeat parameter is enabled. It defines the amount of time between two message transmissions. If the selected timeout expires and no transmission has occurred, the Heartbeat message will be transmitted.
	Heartbeat Message	Click ✎ to activate the **Text Entry Tool** and create a heartbeat message in the field provided. This parameter is available only when the Heartbeat parameter is enabled. This defines the Heartbeat message. Click **Submit** to save your changes, or click **Cancel** to return to previous.

Field Name	Action/Definition
Code Field Length Setting	Select **Fixed Length** or **Variable Length** from the drop-down list. This parameter is applied only to the <Barcode> field contained in two specific messages (Barcode information and Diagnostics) of the protocol. The code field length (in number of characters/digits) can be specified in order to be transmitted: **Selections:** • **Variable:** All possible code field lengths (in number of characters/digits) allowed for the code selected are accepted • **Fixed:** The code is entirely transmitted even if it is longer than the defined length. If shorter, it will be transmitted with the addition of the Fill Character.
Data Justification	Select **Left** or **Right** from the drop-down list. This parameter is applied only to the <Barcode> field contained in two specific messages (Barcode information and Diagnostics) of the protocol. It is available when the **Code Field Length** Setting is set to **Fixed**. This defines the position of the Fill Character within the code: **Selections:** • **Left:** Fill Character is left aligned and precedes the <Barcode> field • **Right:** Fill Character is right aligned and follows the <Barcode> field
Code Field Length	Enter a length in the field provided. This parameter is applied only to the <Barcode> field contained in two specific messages (Barcode information and Diagnostics) of the protocol. It is available when the **Code Field Length** Setting is set to **Fixed**. This defines (in number of characters/digits) the length of the <Barcode> field to be transmitted in a value range from 0 to 48.
Fill Character	Click ✏ to activate the **Text Entry Tool** and create a fill character in the field provided. This parameter is applied only to the <Barcode> field contained in two specific messages (Barcode information and Diagnostics) of the protocol. It is available when the **Code Field Length** Setting is set to **Fixed**. The **Fill Character** is inserted into each character position of a code field that has more characters (as defined in the **Code Field Length**) than exist in the barcode read. A character from NUL (00H) to ~ (7EH) can be used. Click **Submit** to save your changes, or click **Cancel** to return to previous.

Field Name	Action/Definition	
	Add AIM Prefix	Select check box to enable. If enabled, it adds the AIM standard prefix to the barcode to be sent to the host. No separator character will be added between the AIM prefix and the barcode.
	AM/PM Behavior	Select the check box to enable. If enabled, the Host is ready to receive the following message: **<STX><COMMAND><ETX>** where: **<COMMAND>** = 'A' indicates that the Host starts working in AM mode / 'P' indicates that the Host starts working in PM (default) mode **When working in AM mode:** • each code is only filtered by the Encoder Timeout parameter; • the Purolator Custom Check parameter is not effective; • the Heartbeat message will never be transmitted; • the transmitted message is not subject to padding with the Fill Character. and the output message format is the following: **<STX><scanner_nr><space><barcode><ETX><CR><LF>** where: **<scanner_nr>** = 2-digit number in the range 00-31
	AM Message Target	Select **Main Serial Port, Aux Serial Port,** or a **User Socket** from the drop-down list.

Field Name	Action/Definition	
	Multi-Tx Transport Disable	This parameter manages the message transmission through the different communication channels. **If unchecked** (check box not selected), messages are transmitted through all the communication channels having the Data Tx parameter enabled. **If checked** (check box selected), messages are sent through all the communication channels having the Data Tx parameter enabled until the scanner receives one of the three possible communication messages (Status Request, Encoder Counter Request, Initialization Command). As soon as this condition occurs, all messages will be transmitted only through the specific channel sending one of the three possible communication messages while other channels are ignored. In this way, the last channel sending one of the possible communication messages will become the one used for transmission.
	Spontaneous Status Message	Select check box to enable. In case of diagnostic errors, this message is sent every 40 seconds.
	Purolator Custom Check	Select the check box to enable. If enabled, all service labels sharing the following characteristics will not be filtered by the Code Filter Depth and Encoder Timeout parameters: • all service labels containing 2 characters only (e.g. "F1", "F2", ecc); • all service labels of 8 characters starting with "ENP"; • all service labels of 9 characters starting with "OSNR".
	Code Filter	
	Enable UPS Code Filter	Select the check box to enable. If selected, the UPS Code Filters, PTN Code Filters, and Postal Code Filters panels open.
		UPS Code Filters
		Tracking Label - Starts with '1Z' Select check box to enable. If selected, function allows the transmission of codes belonging to the Code 128 and Code 39 families starting with '1Z', '3Z', '1B' or '3B'. The length of these codes is 18 digits.
		Service Upgrade Label - Starts with'403', Length is 8 Select check box to enable. If selected, function allows the transmission of codes belonging to the Code 128 and Code 39 families starting with '403'. The length of these codes is 8 digits.

Field Name Action/Definition

	PTN Code Filters	
	Select all codes of PTN type, except codes below (that must be selected)	Select check box to enable. If selected, it is possible to transmit all Code 128 and Code 39 codes belonging to this type having a length of 11 digits with the exception of those starting with: - '400', '420', '421', '51L', '52L', '54L', '55L'
	Starts with...	Select each check box to enable/include that prefix.
	Postal Code Filters	
	Starts with...	Select each check box to enable/include that prefix. This allows the transmission of codes belonging to the Code 128 and Code 39 families having any of the following selected characteristics: • **starting with '420' and with length 8 or 12 digits** • starting with '421' and with length from 6 to 15 digits • starting with '51L' and with length 8, 9 or 12 digits • **starting with '52L' and with length 8, 9 or 12 digits** • starting with '54L' and with length from 6 to 19 digits • starting with '55L' and with length from 6 to 19 digits
Enable DPD Code Filter	Select the check box to enable the **DPD Code Filters** panel. The **DPD Code Filters** panel allows selection of the DPD code to be transmitted. All codes different from the selected DPD will also be transmitted.	
Enable SSCC-18 Code Filter	Select the check box to enable. If selected, only the GS1-128 code, type SSCC-18, of the Code 128 family is transmitted. All codes different from the GS1-128, type SSCC-18, will also be transmitted.	
Enable German Post 2/5 IL Code Filter	Select the check box to enable. If selected, only the German Post codes of the 2/5 Interleaved code family are transmitted. All code families different from the 2/5 Interleaved will also be transmitted.	

Field Name	Action/Definition	
	Diagnostic Messages	Select the check boxes as needed to enable. If selected, these parameters allow selecting the desired communication channel (Main, Aux, User Socket#n) to be used for transmitting barcode messages coming from slaves. The selection is available only if the desired communication channel is free (Data TX parameter disabled). The diagnostic data format can be defined through the commands provided by a terminal interface.
	Debug Messages	Select the check boxes as needed to enable. If selected, these parameters allow selecting the desired communication channel (Main, Aux, User Socket#n) to be used for transmitting debug messages coming from slaves. The selection is available only if the desired communication channel is free (Data TX parameter disabled).
	DPD Code Filters	If **DPD Code Filter** is enabled, the user can select the DPD code to be transmitted by selecting its check box. All codes different from the selected DPD will also be transmitted. This group allows selecting the DPD code type(s) to be transmitted. These codes belong to the Interleaved 2/5 or Code 128 family and have one of the following characteristics: • I2of5 Code, Length is 10 • **I2of5 Code, Length is 12** • I2of5 Code, Starts with '0', Length is 4 • **I2of5 Code, starts with '90',Length is 4** • **Code 128, Length is 28** All codes belonging to code families other than Interleaved 2/5 and Code 128 will be also transmitted.
Message Format	Select <u>Standard</u> or <u>Advanced</u> from the Format Type drop-down list.	
Message Tx Selection	Select **On Decoding** or **After Reading Phase Off** from the drop-down list. **Message Tx** selects the transmission of the output message on decoding or after the reading phase as illustrated below.	

Field Name Action/Definition

> **NOTE:** This option is only available when an **Operating Mode** of **On Line** is selected in **Modify Settings | Global Settings | Operating Mode.**

| **Max. Tx Delay after Phase Off** | Select **Disabled** or a millisecond value (50 to 500 msec) from the drop-down list. This parameter defines a timeout, which is the maximum delay allowable for message transmission after the reading phase is closed. If this timeout expires before message transmission, the message will be discarded. |

> **NOTE:** This option is only available when an **Operating Mode** of **On Line** is selected in **Modify Settings | Global Settings | Operating Mode.**

| **Header Tx Start** | Select **With Data** or **After Reading Phase On** from the drop-down list. If **With Data** is selected, the header will be transmitted with data. If **After Reading Phase On** is selected, the header will be transmitted after the reading phase activation. See illustration below: |
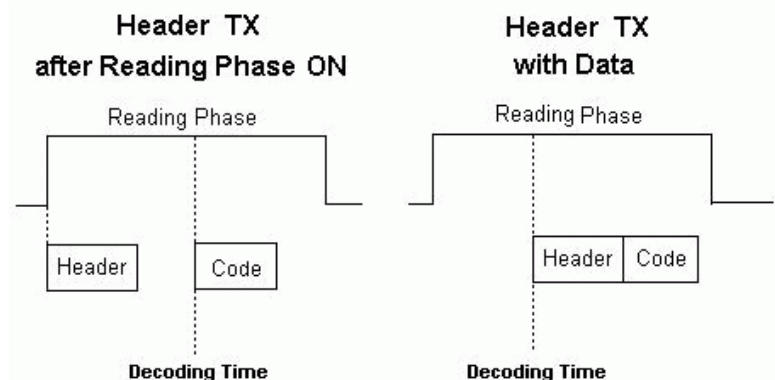
> **NOTE:** This option is only available when an **Operating Mode** of **On Line** is selected in **Modify Settings | Global Settings | Operating Mode.**

| **Termination After No Read Message** | Select **Enable** or **Disable** from the drop-down list. If **Enable** is selected, a termination string is added to the No Read message string. |

> **NOTE:** This option is only available when an **Operating Mode** of **On Line** is selected in **Modify Settings | Global Settings | Operating Mode.**

Field Name	Action/Definition
	Format Type: Standard
Header String	Click ✎ to activate the **Text Entry Tool** and create a **Header String** in the text field provided. Headers (up to 128 bytes) can be defined and transmitted as a block preceding the barcode(s). Use characters from NUL (00H) to ~ (7EH). Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Termination String	Click ✎ to activate the **Text Entry Tool** and create a **Termination String** in the text field provided. Terminators (up to 128 bytes) can be defined and transmitted as a block following the barcode(s). Use characters from NUL (00H) to ~ (7EH). Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Data Packet Separators	Click ✎ to activate the **Text Entry Tool** and create a **Data Packet Separators** in the text field provided. The **Data Packet Separators** (up to 128 bytes) are used to separate barcodes in the reading phase. Use characters from NUL (00H) to ~ (7EH). For this reason, it is very useful when the **Standard Multi Label, Code Collection or Code Combination** parameters have been selected in the **Barcode Configuration**. If selected, they occur within the **Code Field** and are transmitted after each decoded code. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Code Position Tx	Select the check box to enable. If enabled, the code position information is included in the output data format.
Code Direction Identifier Enable	Select the check box to enable. If enabled, it allows you to define the forward and reverse strings indicating the scanning direction with respect to the code direction.
Forward Direction String	Click ✎ to activate the **Text Entry Tool** and create a **Forward Direction String** in the text field provided. A **Forward Direction String** can be included in the output message to indicate that the current code has been scanned in the forward direction (scanning from left to right). This string ("+" is the default value) can be customized by the user including up to 32 characters. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

Field Name	Action/Definition
Reverse Direction String (max. 32 chars)	Click ✎ to activate the **Text Entry Tool** and create a **Reverse Direction String** in the text field provided. A **Reverse Direction String** can be included in the output message to indicate that the current code has been scanned in the reverse direction (scanning from right to left). The string ("-" is the default value) can be customized by the user including up to 32 characters. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Unknown Direction String	Click ✎ to activate the **Text Entry Tool** and create an **Unknown Direction String** in the text field. An **Unknown Direction String** can be included in the output message when it is not possible to determine the scanning direction of a code. The string ("?" is the default value) can be customized by the user including up to 32 characters. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Code Field Length Setting	Select **Variable** or **Fixed** from the drop-down list. If **Variable** is chosen, all possible code field lengths (in number of characters/digits) allowed for the code selected are accepted. If **Fixed** is chosen, only the length defined by the Code Field Length parameter is accepted.
Code Field Length	This parameter is only available when **Fixed** is selected as the **Code Field Length Setting**. Enter length of the code field to be transmitted (in number of characters/digits) in the field provided.
Data Justification	This parameter is only available when **Fixed** is selected as the **Code Field Length Setting**. Select **Left** or **Right** from the drop-down list to define the position of the Fill Character within the code.
Fill Character	This parameter is only available when **Fixed** is selected as the **Code Field Length** Setting. Click ✎ to activate the **Text Entry Tool** and create a **Fill Character(s).** The **Fill Character** is inserted into each character position of a code field that has more characters (as defined in the **Code Field Length**) than exist in the barcode read. Use characters from NUL (00H) to ~ (7EH). **Example:** For barcode "12345" with Fill Character "-" (2DH) and Code Field Length of 10 characters, the result of the different alignment will be: Left aligned = ...<Code Identifier><12345----->... Right aligned = ...<Code Identifier><-----12345>... Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

Field Name	Action/Definition
Code Identifier	Select **Disable, Standard AIM ID,** or **User Specified** from the drop-down list. A **Code Identifier** string can be included in the output message.

- If **Disable** is selected, no code identifier is included in the output message.

- If **Standard AIM ID** is selected, the AIM standard identifier is included in the output message

- If **User Specified** is selected, the **Code Identifier Strings** group is activated at the bottom of the window, allowing you to define an identifier string for each code symbology. The string will be included in the output message.

Code Identifier Strings

This section of the Message Format window is only available when **User Specified** is selected as the **Code Identifier**. Click ✎ to activate the Text Entry Tool and create a custom code identifier string for any listed code symbology. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

Field Name	Action/Definition

Format Type: Advanced

Select a Message Number to Modify	Select a numbered message you wish to modify from the drop-down list.

Advanced Format: Message Definition *n*

Message Destination	Select the check box for each port or socket that should receive the message.
Message Destination Bitmap	Indicates the destination of the message.
Message Alignment	Select **None, Left,** or **Right** from the drop-down list.
Align Length	Enter the number of characters by which to extend the message when **Left** or **Right** is selected from the **Message Alignment** drop-down box.

Field Name	Action/Definition
Align Filler Char	Click ✎ to activate the **Text Entry Tool** and create a filler character in the text field provided. This filler is used to extend the **Align Length**.
Header	Click ✎ to activate the **Text Entry Tool** and create a **Header** in the text field provided. Headers (up to 128 bytes) can be defined and transmitted as a block preceding the barcode(s). Use characters from NUL (00H) to ~ (7EH). Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Terminator	Click ✎ to activate the Text Entry Tool and create a **Terminator** in the text field provided. Terminators (up to 128 bytes) can be defined and transmitted as a block following the barcode(s). Use characters from **NUL** (00H) to **~** (7EH). Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Message Location for Global No Read	Select **Only No Read Message, Before No Read Message,** or **After No Read Message** from the drop-down list.
Global Scale Type (Units)	Select **Metric (mm)** or **Imperial (0.1 in)** from the drop-down list.
Code Identifier	Select **Disable, AIM,** or **Custom** from the drop-down list. A **Code Identifier** string can be included in the output message. • If **Disable** is selected, no code identifier is included in the output message. • If **AIM** is selected, the AIM standard identifier is included in the output message • If **Custom** is selected, the **Code Identifier Strings** group is activated at the bottom of the window, allowing you to define an identifier string for each code symbology. The string will be included in the output message.

Code Identifier Strings
This section of the Message Format window is only available when **Custom** is selected as the **Code Identifier**. Click ✎ to activate the **Text Entry Tool** and create a custom code identifier string for any listed code symbology.   Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

Modify Settings | Global Settings | Messaging | Message Builder

Use the **Message Builder** window to create Standard or Advanced system messages.

To use the Message Builder:

1. In the tree menu under Modify Settings, navigate to **Global Settings | Messaging | Message Builder**. The **Message Builder** window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Message Number to Modify	Select the number of the message you want to modify from the drop-down list.
Message *n* Item List	
Idx	Displays the index number of the messages.
Type	Displays the message type including various **Text String, Code Related Item, or Package Related** Item messages.
Qualifier	Displays relevant qualifiers for the message item if needed.
Add	Click to add a message item to the bottom of the list.
Add before	Click to add a message item above the currently selected message.
Add after	Click to add a message item below the currently selected message.

Field Name	Action/Definition
Move up	Click to move the selected message item up one level in the list.
Move down	Click to move the selected message item down one level in the list.
Remove	Click to remove the selected message item.

	Item *n* Definition
Item Type	Select **Text String, Code Related Item,** or **Package Related Item** from the drop-down list. Each selection reveals a unique set of options.
String Field	Click ✎ to activate the **Text Entry Tool** and create a text string message. This option is available when Item **Type > Text String** has been selected. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Code Related Items	Select a code related item from those available in the drop-down list. This option is available when Item **Type > Code Related Item** has been selected. The **Code Related Items** can be associated to a specific programmed code or group label depending on the Code Combination selection. **Selections Include:** • **Barcode:** Barcode data • **Barcode Length:** Number of characters in code • **Read Bitmap:** 32-bit mask indicating which scanner in the network has read the code (when character <1> is present in the related position) • **Total Read Count:** Indicates how many times the code has been read by all scanners present in the network during the same reading phase • **Read Count (by device):** Indicates the number of times the code has been read by one specific scanner present in the network during the reading phase (selectable among those present) • **X Position:** X coordinate for the code that was read • **Y Position:** Y coordinate for the code that was read • **Z Position:** Z coordinate for the code that was read • **Code Identifier:** Indicates type of code that was read • **Code Direction:** Indicates if the code has been read either from either the start character or the stop character • **Code Distance:** Indicates the distance to the code that was read • **Decode Mode:** Indicates if the code has been read using Linear or Reconstruction (ACR) reading mode

Field Name	Action/Definition
	• **Decode Scans Number:** Indicates the minimum number of decoded scans referred to the single characters in a code when the device is reading in Reconstruction mode. This Item can be used as Code Quality Index
	• **Average Code Position:** Average position of the code in the scan line (Average of Minimum and Maximum Code Position)
	• **Minimum Code Position:** Minimum position of the code in the scan line (closest to the left side/connector side of the scanner)
	• **Maximum Code Position:** Maximum position of the code in the scan line (farthest from the left side/connector side of the scanner)
	• **Ink Spread:** Indicates the calculated Ink Spread value
	• **Encoder Value:** Indicates the encoder/tachometer pulse value from trigger to the code being read
	• **Laser Number:** If more than one laser is present in the working device, this item indicates the laser used to read the code
	• **Reading Persistence:** Indicates how many times the laser beam has crossed the complete code during the reading phase
Package Related Item	Select a package related item from those available in the drop-down list. This option is available when Item Type > Package Related Item has been selected. **Selections Include:** • **Package Sequence Number:** Indicates the sequential number assigned to the package. • **Total Read Bitmap:** Indicates the complete reading mask related to all codes read during the reading phase • **Failure Bitmap:** 32-bit mask indicating which devices in the network are in fault (when character <1> is present in the related position) • **Total Read Count:** Indicates the sum of all Code-related Total Reading Counts of each code read during the reading phase • **Read Count (by device):** Indicates the number of codes read during the reading phase by the device • **Minimum Code Distance:** Indicates the distance of the code closest to the device read during the reading phase • **Maximum Code Distance:** Indicates the distance of the code most distant from the scanner that has been read during the reading phase • **Decode Mode (Master):** Indicates the programmed Reading Mode, either Linear or Reconstruction • **Number of Rejected Codes:** Indicates the number of codes rejected during the internal analysis (unexpected code, multiple read, discarded by the programmed logical rule)

Field Name	Action/Definition
	• **Package Length:** Indicates the approximate length of the package
	• **Start Trigger Encoder Value:** Indicates the encoder/tachometer pulse value when the package first hits the trigger PS
	• **End Trigger Encoder Value:** Indicates the encoder/tachometer pulse value when the package exits the trigger PS
	• **Transmit Encoder Value:** Indicates the encoder/tachometer pulse value when the data transmit occurs
	• **Current Trigger Count:** Indicates the number of trigger cycles that have occurred
	• **Working Hours (By Device):** Indicates the total number of hours the device has been active
	• **Total Good Reads:** Indicates the total number of barcodes successfully read
	• **Total No Reads:** Indicates the total number of barcodes that were not read
	• **Total Multi Reads:** Indicates the number of times packages carried more codes than the scanner is programed to read
	• **Total Partial Reads:** Indicates the total number of barcodes only partially read
	• **Protocol Index:** Indicates the programmed protocol index string data
Code/Group Selection	Select a Code/Group from those available in the drop-down list. This option is available when Item **Type > Code Related Item** has been selected.
Device Index	Select a device index number from the drop-down list. This option is available when Item **Type > Code Related Item > Read Count (By Device)** or **Type > Package Related Items > Read Count (By Device)/Working Hours (By Device)** has been selected.
Text String: Options	
Link to Code	Select Disabled, Previous Code, or Next Code from the drop-down list. • **Disabled:** A code will not be linked to this text string • **Previous Code**: The text string will be linked to the previous generated code • **Next Code:** The text string will be linked to the next generated code
Package Related Item: Options	
Item Alignment	Select **None, Left,** or **Right** from the drop-down list.
Item Alignment Length	Enter an **Item Alignment Length** in the field provided.
Item Alignment Filler	Click ✎ to activate the **Text Entry Tool** and create filler text. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Item Data Size	Select **Variable** or a number of digits to use from the drop-down list.

Field Name	Action/Definition
Item Data Format	Select **Decimal (ASCII), Hexadecimal (ASCII), Bitmap (ASCII),** or **Numeric (Binary)** from the drop-down list.

	Code Related Item: Options

Code Cutting	Select None, Simple, or Pattern from the drop-down list. **Selections:** • **Simple:** Allows cutting a programmable part of the code either at the beginning or at the end of the code. • **Pattern:** Allows cutting a part of the code according to a particular prefixed pattern.
Number of Leading Chars to Cut	Enter the number of leading characters to cut from the barcode in the field provided (available when **Simple** is selected from the **Code Cutting** drop-down list).
Number of Trailing Chars to Cut	Enter the number of trailing characters to cut from the barcode in the field provided (available when **Simple** is selected from the **Code Cutting** drop-down list).
Pattern Delimiting Chars to Cut	Enter the pattern delimiting characters in the field provided (available when **Pattern** is selected from the **Code Cutting** drop-down list).
Pattern Mode	Select Keep Before, Keep After, or Keep Middle from the drop-down list (available when Pattern is selected from the Code Cutting drop-down list). Selections: • **Keep Before:** Cuts the part of the code that starts with the pattern string (databefore the string remains). • **Keep After:** Cuts the part of the code that precedes and includes the pattern string (data after the string remains). • **Keep Middle:** Cuts the part of the code before and after (including) the two pattern strings (data between the two strings remains) **Example:**

Field Name	Action/Definition
	Referring to the window image above, if the read code is SDFR**123**5689**123**ASER the transmitted code (depending on the selected Pattern Mode) will be: • **Keep Before:** SDFR • **Keep After:** 5689123ASER • **Keep Middle:** 5689
Item Alignment Filler	Click ✎ to activate the **Text Entry Tool** and create filler text. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Item Data Size	Select **Variable** or a number of digits to use from the drop-down list.
Item Data Format	Select **Decimal (ASCII), Hexadecimal (ASCII), Bitmap (ASCII),** or **Numeric (Binary)** from the drop-down list.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

Modify Settings | Global Settings | Messaging | Statistics

Use the **Statistics** window to select the desired statistical counters, making up the statistics field, and relative statistics field separator string to be sent to the system by the Stand Alone or Master scanner.

To edit the Statistics settings:

1. In the tree menu under **Modify Settings**, navigate to **Global Settings | Messaging | Statistics**. The Statistics window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Enable	Select the check box to reveal and edit statistic message options. The selections correspond to the message as shown below:

Separator	Click ✎ to activate the **Text Entry Tool** and create a **Separator** in the text field provided. **Separator** strings (up to 32 bytes) can be created and will be inserted between the last code and the first statistical counter.
	Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

Field Name	Action/Definition
Time	Select the check box to include the time counter in the statistical message, reporting the time elapsed in hours and minutes (H MM) from the last hardware reset.
Trigger Counter	Select the check box to reports the total number of trigger sessions (reading phases) from the last hardware reset.
Good Read Counter	Select the check box to report the total number of good reads from the last hardware reset.
No Read Counter	Select the check box to report the total number of no reads from the last hardware reset.
Multiple Read Counter	Select the check box to report the total number of multiple reads from the last hardware reset.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

Modify Settings | Global Settings | Messaging | Protocol Index

Use the **Protocol Index** window to configure Protocol Index parameters. Protocol Index allows the Host to transmit a string that it has associated to a pack contained within the tracking area.

It is possible to manage several different Protocol Index messages (one per available communication interface), within the same reading phase (for the same pack). If more than one Index message is received on the <u>same</u> communication interface, only the last one will be accepted.

These strings will be received by the SC5000 and included within its output message according to the following order:

1. Built-In Ethernet User Socket 1
2. Built-In Ethernet User Socket 2
3. Built-In Ethernet User Socket 3
4. Auxiliary Serial Port
5. Main Serial Port

The general output format is: <Header>Index1<Data Packet Separator>...IndexN<Data Packet Separator>Standard Message<Terminator>

The Index field has the following format: <Index Header>Index Message<Index Terminator>

> **NOTE:** This parameter is only available for scanners configured as **Standalone** or as **Master** when working in **On Line** or **PackTrack™** operating modes.
>
> In **On Line** mode, the Protocol Index must arrive during the active reading phase otherwise it will be discarded.
>
> - If the Distance from Protocol Index to Trigger Line parameter = 0, the Protocol Index must arrive during the active reading phase otherwise it will be discarded.
>
> In PackTrack™ mode:
>
> - If the Distance from Protocol Index to Trigger Line parameter is not = 0, the Protocol Index will arrive at the specified distance.

To edit the Protocol Index settings:

1. In the tree menu under Modify Settings, navigate to **Global Settings | Messaging | Protocol** Index. The Protocol Index window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Protocol Index/ Aux Message Enable	Select the check box to reveal and edit **Protocol Index/Aux Message** options.
Receive on (com channel)	Select **Disable, Enable without Request Message,** or **Enable with Request Message** from the drop-down list. • **Disable:** The selected communication channel is not used for Protocol Index string communication. • **Enable without Request Message:** The Host sends the Protocol Index string autonomously on the selected communication channel. • **Enable with Request Message:** The Host waits for the Protocol Index Request Message sent by the scanner, when the trigger detects the presence of a pack, before transmitting the Protocol Index string associated to the pack itself on the selected communication channel.
Request Message	Click to activate the **Text Entry Tool** and create a Request Message (up to 128 bytes) to be defined and transmitted. Use characters from NUL (00H) to ~ (7EH). Click Submit to save your changes, or click Cancel to return to previous window.

Field Name	Action/Definition
Message Header	Click ✎ to activate the **Text Entry Tool** and create a **Header** (up to 128 bytes) to be defined and transmitted as a block preceding the **Protocol Index** string sent by the Host. Use characters from NUL (00H) to ~ (7EH). Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Message Terminator	Click ✎ to activate the **Text Entry Tool** and create a **Terminator** to be defined and transmitted as a block following the Protocol Index string sent by the Host. Use characters from NUL (00H) to ~ (7EH). Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Message Length	Select **Length in Message**, **Variable Length**, or a length of **3** through **12** from the drop-down list. **Length in Message:** The first byte of the scanner output message indicates the length of the Protocol Index string sent by the Host. **Variable Length:** The length of the Protocol Index string sent by the Host is variable. **3...12:** The Protocol Index string has a fixed length from 3 to 12 characters.
No Index/Message Character	Click ✎ to activate the **Text Entry Tool** and create a **No Index Char.** Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Distance from Message Receipt to Trigger	Enter the distance of travel between when a package hits the trigger (presence sensor) to when it should receive an expected message from, for example, a scale or other device. When the Receive on Main Serial Port parameter of the selected interface port is set to Enable without Request Message, this parameter specifies the distance from the Trigger Line (i.e. Presence Sensor) to the expected receiving point of the Protocol Index/Aux Message. If set to 0 the Protocol Index/Aux Message must arrive during the active reading phase otherwise it will be discarded.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

Modify Settings | Global Settings | Messaging | Pass-Thru

Use the **Pass-Thru** window to pass a message received on ANY port (serial or user socket connection) to any other port(s).

Applications can also be implemented to connect a device such as a hand-held reader to any serial or network port for additional manual code reading capability.

When using Pass-Thru mode, follow these programming notes:

* When using serial ports - Program receiving port same way regarding baud rate, data bits, stop bits and parity to the device sending the data.

* The Termination string must be configured in the same way as the message terminator on the device sending the data. The terminator will be forwarded with the message.

To edit the Pass-Thru settings:

1. In the tree menu under **Modify Settings**, navigate to **Global Settings | Messaging | Pass-Thru**. The Pass-Thru window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Source	Select the check box(es) following the **Main Serial Port, Aux Serial Port,** or numbered **User Socket** you wish to modify.
String Length	Enter the maximum length of the expected string to be received. If the string is longer than the one expected, it will be discarded.
Termination String	Click ✐ to activate the Text Entry Tool to define the characters terminating the expected string. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Destination	Select the check box next to the destination(s) to be used for the Pass-Thru.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

Modify Settings | Global Settings | Messaging | Diagnostics Messages

Use the **Diagnostic Message** window to select the parameters managing diagnostic message transmission by the **Stand Alone** or **Master** scanner.

To edit the Diagnostic Message settings:

1. In the tree menu under **Modify Settings**, navigate to **Global Settings | Messaging | Diagnostic Message**. The Diagnostic Message window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Transmit Mode	Select **On Timeout** or **With Code** from the drop-down list. The diagnostic message can be transmitted to the system by the **Stand Alone** or **Master** barcode scanner either asynchronously (at programmed intervals), or synchronously with the code.
Tx Refresh	Select a **TX Refresh** rate in seconds or minutes from the drop-down list to define the time interval in which the diagnostic messages will be transmitted if **Tx Mode** is asynchronous (On Timeout).

Field Name	Action/Definition
Message Position	Select **Append to Code** or **Replace Code** from the drop-down list. If **Transmit Mode** is synchronous (With Code), the diagnostic messages will be transmitted on the same interface used for code transmission. This selection determines if the messages will replace the code or be appended to it.

> **Error Messages**
>
> Transmit Mode   `With Code ▼`
>
> Message Position   `Append to Code ▼`

Message Format	
Header String	Click ✎ to activate the **Text Entry Tool** to define the header string (up to 128 characters) as a block preceding the diagnostic message. Use characters from NUL (00H) to ~ (7EH).
	Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Terminator String	Click ✎ to activate the **Text Entry Tool** to define the terminator string (up to 128 characters) as a block following the diagnostic message. Use characters from NUL (00H) to ~ (7EH).
	Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Error Message Type	Select **Numeric** or **Global String** from the drop-down list to define how the message will be sent.
Global String (max. 32 chars)	Click ✎ to activate the **Text Entry Tool** to define the **Global String** message (up to 32 bytes) that will be sent as a diagnostic message for any detected diagnostic error.
	Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Destination	Select the check box next to the destination(s) to be used for the diagnostic messages.
PackTrack Messages	
PackTrack Debug Message Enable	Select the checkbox to enable debug messages for PackTrack. If selected, this parameter allows transmitting messages concerning the system functioning.
PackTrack Debug Message Port	Select **Main Serial, Aux Serial,** or **Socket *n*** from the drop-down list. The debug message will be transmitted through the selected port.
PackTrack Debug Message Digital Input	Select None, Trigger (Input 1), Aux (Input 3), or I/O 4 (Input 4) from the drop-down list. This selection defines which digital input will be used to trigger debug message transmission.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3.5.8 Modify Settings | Global Settings | Digital I/O

Use the **Digital I/O** window to configure the digital inputs and outputs for your barcode scanning system.

To edit the Digital I/O settings:

1. In the tree menu under **Modify Settings**, navigate to **Global Settings | Digital I/O**. The Digital I/O window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Bidirectional Line Setup (SC5000 Controller Only)	
I/O 4 Direction	Select Input or Output from the drop-down list.

Field Name	Action/Definition
	Digital Input Lines
Trigger (Input 1) Active Level	Select **Active Closed** or **Active Open** from the drop-down list.
	• **Active Closed:** Input 1 is active when current flows through (IN1) EXT_TRIG pins.
	• **Active Open:** Input 1 is active when there is no current flowing through (IN1) EXT_TRIG pins.
	This parameter setting is not valid, if the input has already been defined in **On Line** or **PackTrack™ Operating Modes**.
Aux (Input 3) Active Level	Select **Active Closed** or **Active Open** from the drop-down list.
	• **Active Closed:** Input 3 is active when current flows through IN3 pins.
	• **Active Open:** Input 3 is active when there is no current flowing through IN3 pins.
	NOTE: This parameter setting is not valid, if the input has already been defined in **On Line** or **PackTrack™ Operating Modes**.
	Digital Output Lines
Select Digital Output Number to View/ Modify	Select the number of the output you will view or modify from the drop-down list.
	Digital Output *n*
Digital Output *n* Use	Select **Local, EthernetIP,** or **Profibus/Profinet** from the drop-down list. This parameter selects the source that drives the digital output. Local output is driven by the device application program. EithernetIP is driven by the EtherNet/IP Host and Profibus/Profinet is driven by the relative Fieldbus Host.
Digital Output *n* Line State	Select **Normally Open** or **Normally Closed** from the drop-down list.
	Each output can be represented with an **NPN** transistor; this transistor acts like a switch: so, when the transistor is **OFF**, it acts like an **OPEN** switch. On the contrary, when the transistor is **ON**, it acts like a **CLOSED** switch.
	• **Normally Open:** The idle state of the output line is open, that is, the **NPN** transistor is **OFF** (like an open switch).When the output is activated, the transistor goes **ON** (like a closed switch).
	• **Normally Closed:** The idle state of the output line is closed, that is, the **NPN** transistor is **ON** (like a closed switch).When the output is activated, the transistor goes **OFF** (like an open switch).

Field Name	Action/Definition
	Activation
Primary Activation Event	Select a **Primary Activation Event** from the drop-down list (see below). • **None:** The output is always in line state. • **Complete Read**: The event occurs, if all selected codes are read. • **Partial Read:** The event occurs, if less than the selected codes are read. • **No Read:** The event occurs, if no code is read. • **Trigger On:** The event occurs, when a start event takes place starting the reading phase. • **Trigger Off:** The event occurs, when a stop event takes place ending the reading phase. • **Multiple Read:** The event occurs, if a code is read more than once consecutively. • **Right/Match:** The event occurs, if a code is successfully decoded and matches the Match Code (Verifier Code). • **Wrong/No Match:** The event occurs, if a code is successfully decoded but does not match the Match Code (Verifier Code).
Secondary Activation Event	Select a **Secondary (Alternate) Activation Event** from the drop-down list (see below). • **None:** The output is always in line state. • **Complete Read:** The event occurs, if all selected codes are read. • **Partial Read:** The event occurs, if less than the selected codes are read. • **No Read:** The event occurs, if no code is read. • **Trigger On:** The event occurs, when a start event takes place starting the reading phase. • **Trigger Off:** The event occurs, when a stop event takes place ending the reading phase. • **Multiple Read:** The event occurs, if a code is read more than once consecutively. • **Right/Match:** The event occurs, if a code is successfully decoded and matches the Match Code (Verifier Code). • **Wrong/No Match:** The event occurs, if a code is successfully decoded but does not match the Match Code (Verifier Code).
Activate On Error	Select **Disable** or **Enable** from the drop-down list. If this parameter is enabled, the output will activate when a diagnostic error message is sent. **NOTE:** When using this parameter, all other activation events should be set to **None**.

Field Name	Action/Definition
	Deactivation
Primary Deactivation Event	Select a **Primary Deactivation Event** from the drop-down list (see below). • **None:** A deactivation event is NOT defined. • **Timeout:** Indicates the maximum duration of the output pulse. When selected, the Deactivation Timeout text field is revealed. • **Trigger On:** The event occurs, when a start event takes place starting the reading phase. • **Trigger Off:** The event occurs, when a stop event takes place terminating the reading phase.
Secondary Deactivation Event	Select a **Secondary (Alternate) Deactivation Event** from the drop-down list (see below). • **None:** A secondary deactivation event is NOT defined. • **Trigger On:** The event occurs, when a start event takes place starting the reading phase. • **Trigger Off:** The event occurs, when a stop event takes place terminating the reading phase.
Deactivate On Clear Error	Select **Disable** or **Enable** from the drop-down list. If this parameter is enabled, the output will deactivate when the error is no longer present.
Deactivation Timeout	Enter the maximum duration of the output pulse in the text field provided. Input a value from **40** to **15000 milliseconds.**

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3.5.9   Modify Settings | Global Settings | Diagnostics

Use the **Diagnostics** window to configure error reporting for your barcode scanning system.

To edit the Diagnostics settings:

1. In the tree menu under **Modify Settings**, navigate to **Global Settings | Diagnostics**. The Diagnostics window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Sampling Time	Select a **Sampling Time** in seconds or minutes from the drop-down list. This selection indicates the time lapse between system diagnostic queries.
Report Slave Scanner Diagnostics	Select the check box to report diagnostic information from the slave scanners in the system.
Errors To Report	Select the check box next to each error type the system should report.
Presence Sensor Failure	Select the check box to report presence sensor failure errors.
Presence Sensor Stuck Timeout	Select a Disable or a time interval in seconds or minutes from the drop-down list.
No Phase Timeout	Select **Disable** or a time interval in seconds or minutes from the drop-down list. If a time interval is selected, a stuck sensor will report an error after the selected interval.
Protocol Index Alarms	Select the check box to enable protocol index alarm messages.
Maximum Consecutive Lost Protocol Indexes	Enter the number of consecutive lost protocol indexes allowed before an error is reported.

Field Name	Action/Definition
Maximum % Of Lost Protocol Indexes	Enter the maximum percentage of lost protocol indexes allowed before an error is reported.
PTP Time Synchronization Failure	Select the check box to report PTP (Precision Time Protocol) Time Synchronization Errors.
Encoder Failure	Select the check box to report encoder (tachometer) errors.
Encoder Timeout	Select **Disable** or a time interval in seconds or minutes from the drop-down list. If a time interval is selected, a stuck encoder will report an error after the selected interval.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3.5.10 Modify Settings | Global Settings | Energy Saving

Use the **Energy Saving** window to activating/deactivate energy saving feature. In particular, it allows turning network scanner motors and lasers on or off according to specific conditions. It is suggested to use this parameter for example when the conveyor is stopped for a lengthy period.

To view and edit the Energy Saving settings:

1. In the tree menu under Modify Settings, navigate to Global Settings | Energy Saving. The Energy Saving window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Energy Saving Configuration	Select the check box to reveal **Energy Saving Configuration** options.
Use Encoder For	Select None, Deactivation, Activation, or Activation and Deactivation from the drop-down list. This parameter allows defining the function to be performed by an Encoder: • **None:** No function is performed by the digital input. • **Deactivation:** The digital input is used to deactivate the Energy Saving. Thus, the motor and laser of all network scanners will be turned on.

Field Name	Action/Definition
	• **Activation:** The digital input is used to activate the Energy Saving. Thus, the motor and laser of all network scanners will be turned off. • **Activation and Deactivation:** The digital input is used to both activate and deactivate the Energy Saving. Thus, the motor and laser of all network scanners will be turned on/off.
Activation Encoder Timeout	Select a minute value from the drop-down list. This parameter is available only when the encoder is used for the Energy Saving activation. If the encoder is stopped for more than the programmed timeout, the Energy Saving will be activated.
Deactivation Encoder Timeout	Select a second or minute value from the drop-down list. This parameter is available only when the encoder is used for the Energy Saving deactivation. If the encoder runs for at least the programmed timeout, the Energy Saving will be deactivated.
Use Digital Input For	Select **None, Deactivation, Activation,** or **Activation and Deactivation** from the drop-down list. This parameter allows defining the function to be performed by a digital input: • **None:** No function is performed by the digital input. • **Deactivation:** The digital input is used to deactivate the Energy Saving. Thus, the motor and laser of all network scanners will be turned on. • **Activation:** The digital input is used to activate the Energy Saving. Thus, the motor and laser of all network scanners will be turned off. • **Activation and Deactivation:** The digital input is used to both activate and deactivate the Energy Saving. Thus, the motor and laser of all network scanners will be turned on/off.
Select Digital Input	Select a digital input from the drop-down list. This parameter defines the digital input to be used for activating/deactivating the Energy Saving.
Select Input Type	Select **Edge** or **Level** from the drop-down list.
Use Main Serial Port For	Select **None, Deactivation, Activation,** or **Activation and Deactivation** from the drop-down list. This parameter allows defining the function to be performed by Main Serial Port: • **None:** No function is performed by the digital input. • **Deactivation:** The digital input is used to deactivate the Energy Saving. Thus, the motor and laser of all network scanners will be turned on. • **Activation:** The digital input is used to activate the Energy Saving. Thus, the motor and laser of all network scanners will be turned off. • **Activation and Deactivation:** The digital input is used to both activate and deactivate the Energy Saving. Thus, the motor and laser of all network scanners will be turned on/off
Header	**NOTE:** This parameter is available only when a communication channel has been selected to perform a specific function. Click to activate the **Text Entry Tool** and create a **Header** (up to 128 bytes) to define a header (1 byte) and transmit it as a block preceding the activation/deactivation string sent to a Master or Stand Alone scanner. Use characters from NUL (00H) to ~ (7EH). Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Terminator	**NOTE:** This parameter is available only when a communication channel has been selected to perform a specific function.

Field Name	Action/Definition
	Click ✎ to activate the **Text Entry Tool** and create a **Terminator** to define a terminator (1 byte) and transmit it as a block following the activation/deactivation string sent to the Master or Stand Alone scanner. Use characters from NUL (00H) to ~ (7EH). Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Activation String	**NOTE:** This parameter is available only when a communication channel has been selected to perform the Activation or Activation & Deactivation function. Click ✎ to activate the **Text Entry Tool** and create a string that defines the characters to be transmitted within the output message to activate the **Energy Saving**. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Deactivation String	**NOTE:** This parameter is available only when a communication channel has been selected to perform the Deactivation or Activation & Deactivation function. Click ✎ to activate the **Text Entry Tool** and create a character string to be transmitted within the output message to deactivate the **Energy Saving**. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Use Aux Serial Port For	Select **None, Deactivation, Activation,** or **Activation and Deactivation** from the drop-down list. This parameter allows defining the function to be performed by the Aux Serial Port: • **None:** No function is performed by the digital input. • **Deactivation:** The digital input is used to deactivate the Energy Saving. Thus, the motor and laser of all network scanners will be turned on. • **Activation:** The digital input is used to activate the Energy Saving. Thus, the motor and laser of all network scanners will be turned off. • **Activation and Deactivation:** The digital input is used to both activate and deactivate the Energy Saving. Thus, the motor and laser of all network scanners will be turned on/off.
Header	**NOTE:** This parameter is available only when a communication channel has been selected to perform a specific function. Click ✎ to activate the **Text Entry Tool** and create a **Header** (up to 128 bytes) to define a header (1 byte) and transmit it as a block preceding the activation/deactivation string sent to a Master or Stand Alone scanner. Use characters from NUL (00H) to ~ (7EH). Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

Field Name	Action/Definition
Terminator	**NOTE:** This parameter is available only when a communication channel has been selected to perform a specific function. Click ✎ to activate the **Text Entry Tool** and create a Terminator to define a terminator (1 byte) and transmit it as a block following the activation/deactivation string sent to the Master or Stand Alone scanner. Use characters from NUL (00H) to ~ (7EH). Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Activation String	**NOTE:** This parameter is available only when a communication channel has been selected to perform the **Activation** or **Activation and Deactivation** function. Click ✎ to activate the **Text Entry Tool** and create a string that defines the characters to be transmitted within the output message to activate the Energy Saving. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Deactivation String	**NOTE:** This parameter is available only when a communication channel has been selected to perform the **Deactivation** or **Activation and Deactivation** function. Click ✎ to activate the **Text Entry Tool** and create a character string to be transmitted within the output message to deactivate the Energy Saving. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
User Socket _n_ For	Select **None, Deactivation, Activation,** or **Activation and Deactivation** from the drop-down list. This parameter allows defining the function to be performed by a numbered **Socket**: • **None:** No function is performed by the digital input. • **Deactivation**: The digital input is used to deactivate the Energy Saving. Thus, the motor and laser of all network scanners will be turned on. • **Activation:** The digital input is used to activate the Energy Saving. Thus, the motor and laser of all network scanners will be turned off. • **Activation and Deactivation:** The digital input is used to both activate and deactivate the Energy Saving. Thus, the motor and laser of all network scanners will be turned on/off.
Header	**NOTE:** This parameter is available only when a communication channel has been selected to perform a specific function. Click ✎ to activate the **Text Entry Tool** and create a **Header** (up to 128 bytes) to define a header (1 byte) and transmit it as a block preceding the activation/deactivation string sent to a Master or Stand Alone scanner. Use characters from NUL (00H) to ~ (7EH). Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Terminator	**NOTE:** This parameter is available only when a communication channel has been selected to perform a specific function. Click ✎ to activate the **Text Entry Tool** and create a **Terminator** to define a terminator (1 byte) and transmit it as a block following the activation/deactivation string sent to the Master or Stand Alone scanner. Use characters from NUL (00H) to ~ (7EH). Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

Field Name	Action/Definition
Activation String	**NOTE:** This parameter is available only when a communication channel has been selected to perform the Activation or Activation and Deactivation function. Click ✎ to activate the **Text Entry Tool** and create a string that defines the characters to be transmitted within the output message to activate the Energy Saving. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.
Deactivation String	**NOTE:** This parameter is available only when a communication channel has been selected to perform the **Deactivation** or **Activation and Deactivation** function. Click ✎ to activate the **Text Entry Tool** and create a character string to be transmitted within the output message to deactivate the Energy Saving. Click **Submit** to save your text to the origin window text field, or click **Cancel** to return to origin window without transferring text.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3.5.11 Modify Settings | Global Settings | HMI Settings (Human-Machine Interface)

Use the **HMI Settings** window to configure some aspects of the scanner LEDs and X-Press™ interface.

To view and edit the HMI Settings:

1. In the tree menu under **Modify Settings**, navigate to **Global Settings | HMI Settings**. The HMI Settings window opens.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Display Settings	
Display Warnings as Alarms	Select the check box enable function.
User Interface Type	Select **Standard** or **US Aiport** from the drop-down list.
'Last Code Read' Display	Select **Disable, Statistics (Last 100 Codes),** or **Statistics** from the drop-down list.
Enable Last 10 Codes Display	Select the check box to display the last ten barcodes read.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3.5.12 Modify Settings | Global Settings | Redundant Operation

Use **Redundant Operation** to identify the active Master in a redundant (REDs) system.

To view and edit the Redundant Operation Settings:

1. In the tree menu under Modify Settings, navigate to **Global Settings | Redundant Operation**. The **Redundant Operation** window opens.

> **IMPORTANT**: In a redundant (REDS) system with **Start Input From Bus** selected in **Operating Mode** *(see 3.5.1),* the PLC must trigger both SC5000s. Both SC5000s need to receive the same trigger so the redundant controller is able to compare packages with the packages of the active controller. This is true for all fieldbus.

> **IMPORTANT**: The EtherNet/IP addresses of the redundant SC5000s will switch, if the "Master Working" SC5000 fails and the "Master Protecting" SC5000 takes over, allowing the PLC to find a consistent IP address.
>
> For the other fieldbus, the IP Address will not switch, so the PLC has to be connected at both IP Addresses and check for data on both controllers.

2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Redundancy Enable/Disable	Select the check box to enable redundancy options.

Field Name	Action/Definition
Redundancy Topology Role	Select **Master Alone, Master Working,** or **Master Protecting** from the drop-down list. A non-redundant system show Master Alone in this field, and it is not editable. • **Master Alone:** SC5000 works as Stand Alone master (no Redundancy). • **Master Working:** SC5000 is configured as Master Working within the Redundancy system. • **Master Protecting:** SC5000 is configured as Master Protecting within the Redundancy system.
Redundancy Role Type	Select **None, Active,** or **Standby** from the drop-down list.
IP Selector	Select **Topology Role** or **Redundancy Role** from the drop-down list. **Selections:** • **Topology Role:** The IP Addresses are fixed since they are based on the Topology Redundancy Role selection; both IP Addresses must be monitored by WebSentinel or the Host. • **Redundancy Role:** The IP Addresses switch (follow) the controller Redundancy Role; only the Active IP Address needs to be monitored by WebSentinel or the Host.
WebSentinal Operating Mode	Select **Standard** or **Redundant** from the drop-down list. **Selections:** • **Standard:** When working in this mode, WebSentinel reports information about the active controller input status but not those of the stand-by controller. • **Redundant:** this mode is available only when working in a redundant system; WebSentinel reports information about the resource status of both the active controller and the stand-by controller.
Power Input Enable/Disable	Select the check box to enable power input.
Power Input Type	Select **Trigger (Input 1), Aux (Input 3),** or **I/O 4 (Input 4)** from the drop down list.
Active Output Enable/Disable	Select the check box to enable active output.
Active Output	Select **Output 1, 2, 3,** or **4** from the drop down list.

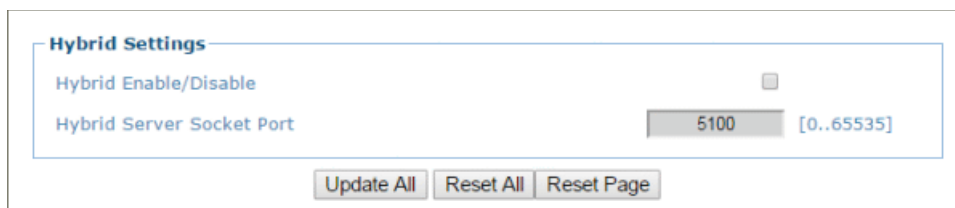| Switchover Parameters	
Consecutive Package Lost Enable	Select the check box to enable. If checked, it enables a **Consecutive Package Lost Threshold** to cause the exchange of the Redundancy Role between the Active SC5000 and the Stand-by SC5000 of the system.
Consecutive Package Lost Threshold	Enter the number of consecutive packages recognized by the Stand-by SC5000 but not by the Active SC5000, (the active controller is losing packages), after which the Redundancy Role is exchanged.

Field Name	Action/Definition
Percentage Package Lost Enable	Select the check box to enable. If checked, it enables a **Percentage Package Lost Threshold** to cause the exchange of the Redundancy Role between the Active SC5000 and the Stand-by SC5000 of the system.
Percentage Package Lost Threshold	Enter the percentage (number out of 100 packages counted) recognized by the Stand-by SC5000 but not by the Active SC5000, (the active controller is losing a percentage of packages), after which the Redundancy Role is exchanged.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3.5.13 Modify Settings | Global Settings | Hybrid Configuration

Use Hybrid Configuration to configure SC5000 as Master of an hybrid system.

To view and edit the Hybrid Configuration Settings:

1. In the tree menu under Modify Settings, navigate to Global Settings | Hybrid Configuration. The Hybrid Configuration window opens.


2. Enter the appropriate information in the form as described below:

Field Name	Action/Definition
Sampling Time	Select a **Sampling Time** in seconds or minutes from the drop-down list. This selection indicates the time lapse between system diagnostic queries.
Report Slave Scanner Diagnostics	Select the check box to report diagnostic information from the slave scanners in the system.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3.6 DEVICE SETTINGS

Use the Device Settings Menu Tree selections during initial mounting and setup to view device information and configure your system devices. If multiple scanners are used in a tunnel or array, each named scanner will be listed under Device Settings with the sub-menus **Device Info, Mounting,** and **Options**. If necessary, you can later make modifications to the configuration using the same menu selections, including:
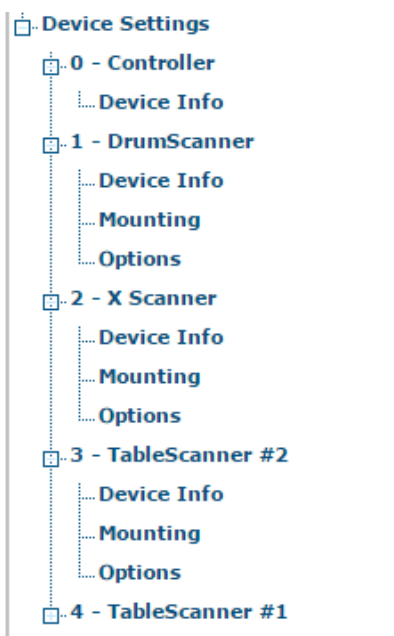
3.6.1   Device Settings | Device Name | Device Info

Use the **Device Info** window to information about each device in the system including description, serial number, and address.

To view the Device Info window:

1. In the tree menu under **Modify Settings**, navigate to **Device Settings | Device Name (if applicable) | Device Info**. The Device Info window opens.

NOTE: If more than one device is included in the scanning system, the device name will be listed in the menu tree after the Device Settings level.

2. View the following scanner information:

Field Name	Definition
Description	Displays the scanner description entered in the System Info window.
Device Address	Displays the system address.
Serial Number	Displays the serial number sent by the device.
MAC Address	Displays the MAC (media access control) address of the device.
Model Name	Displays the Model name sent by the device.

Field Name	Definition
Model Number	Displays the Model number sent by the device.
Hardware Release	Displays the hardware release number of the device.
Number Legs	Displays the number of laser legs (beams) produced by the device. Each DS8110 (Line) scanner has 1 leg, while each DX8210 (X) scanner has 2 legs.
Number Lasers	Displays the number or lasers used by the scanner.
Number Facets	Displays the number of facets in the mirror wheel.
Scan Rate (scans/sec)	Displays the scans/per second achieved by the scanner.
Software Versions	
Software Version	Displays the currently installed version of the **ARM** (anonymizing relay monitor) software.
DSP Version	Displays the currently installed version of the decoder software.
FPGA Version	Displays the currently installed version of the **field-programmable gate array** software.

3.6.2   Device Settings | Device Name | Mounting

Use the **Mounting** window to configure some aspects of the scanner LEDs and X-Press™ interface.

To view and edit the Mounting settings:

1. In the tree menu under **Modify Settings**, navigate to **Device Settings | Device Name (if applicable) | Mounting**. The Mounting window opens.

NOTE: If more than one device is included in the scanning system, the device name will be listed in the menu tree after the Device Settings level.
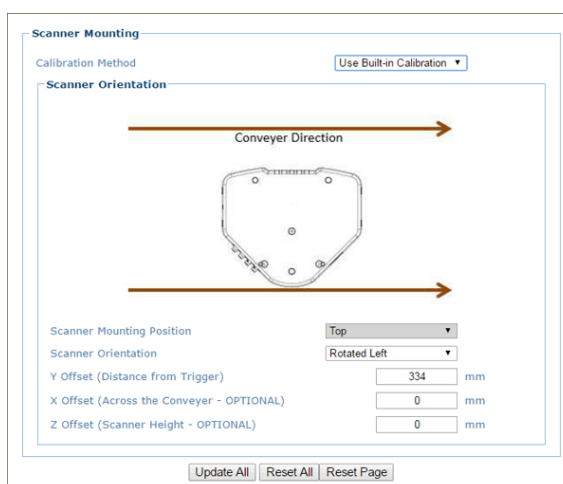

2. Enter the appropriate information in the form as described below:

Field Name	Definition
Leg *N* **(DX8210 Only)**	Select a laser leg for calibration from the drop-down list.
Calibration Method	Select **Use Built-In Calibration** or **PackTrack Calibration** from the drop-down list. **Use Built-In Calibration** only available for the DX8210, and you must manually enter the requested data. If **PackTrack Calibration** is selected, use the wizard to automatically enter most of the data.
PackTrack Calibration	
PackTrack Calibration Wizard	Click **Launch Wizard** to open the **PackTrack™ Calibration Wizard**. For complete instructions on setting up your scanners using **PackTrack**, *see the DX8210 and DS8110 Reference Manuals*, available at www.datalogic.com.

Field Name	Definition	
Calibration Adjustment	**Y Adjustment**	Enter the scanner adjustment from **Y** axis in millimeters in the field provided. This is used to make fine adjustments to the tested calibration. For complete instructions on setting up your scanners using **PackTrack**, *see the **DX8210 and DS8110 Reference Manuals***, available at www.datalogic.com.
PackTrack Calibration Coefficients	**Calibration Item 1-9**	These non-editable fields display the PackTrack calculations.
	Use Built-in Calibration	
Built-in Calibration (DX8210 only)		If **Use Built-in Calibration** is selected from the **Calibration Method** drop-down list. The **Scanner Orientation** window appears. See *the **DX8210 Reference Manual (Alternate Built-In Calibration for Top Mount)***, available at www.datalogic.com, for the complete procedure for setting up your barcode scanner with built-in calibration.

Scanner Mounting Position	Select **Top** or **Side** from the drop-down list. NOTE: **Top** is the only available option with this manual release.
Scanner Orientation	Select **Rotated Right, Forward, Rotated Left,** or **Backward** from the drop down list.
Y Offset (Distance from Trigger)	Enter the distance value in the field provided.
X Offset (Across the Conveyer - OPTIONAL)	Enter the distance value in the field provided.
Z Offset (Scanner Height - OPTIONAL)	Enter the height value in the field provided.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

PackTrack™ Calibration Wizard

PackTrack™ is a patented operating mode for **Datalogic Omni-Directional Reading Stations** used to read and correctly assign codes read on different packs when placed in the scanner Reading Area at the same time.

For complete instructions on setting up your scanners using **PackTrack**, *see the DX8210 and DS8110 Reference Manuals*, available at www.datalogic.com.

3.6.3 Device Settings | Device Name | Options

Use the **Options** window to configure some aspects of the scanner LEDs and X-Press™ interface.

To view and edit the Options settings:

1. In the tree menu under **Modify Settings**, navigate to **Device Settings | Device Name (if applicable) | Options**. The Options window opens.

NOTE: If more than one device is included in the scanning system, the device name will be listed in the menu tree after the Device Settings level.

NOTE: Options will vary depending on which device is being represented.

Scanner Options

Leg 1 - Scan Adjust Start	20	%
Leg 1 - Scan Adjust Stop	70	%
Leg 2 - Scan Adjust Start	30	%
Leg 2 - Scan Adjust Stop	80	%
Barcode Reconstruction		
Enable Stacked Codes		

Advanced Reading Settings

Overflow Start Ratio	10
Overflow Stop Ratio	10

Digitizer Settings

Number of FPGA Registers to Patch	1
FPGA Register 1 Offset	0
FPGA Register 1 Value	0
FPGA Register 1 Side to Patch	A+B Side

Update All Reset All Reset Page

2. Enter the appropriate information in the form as described below:

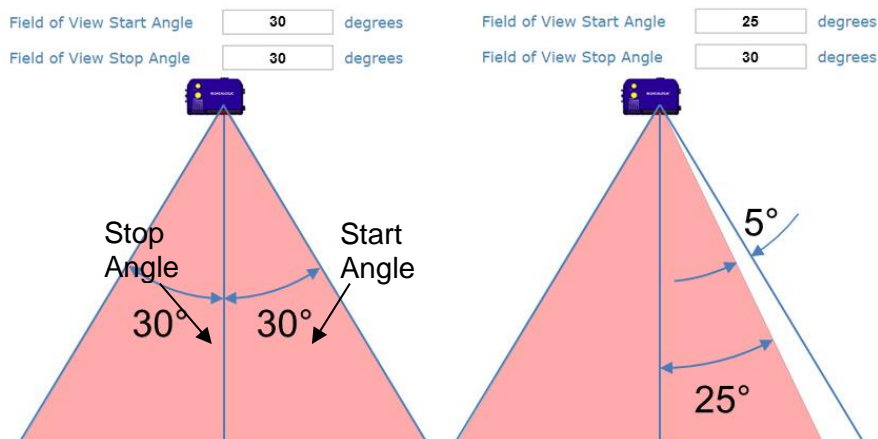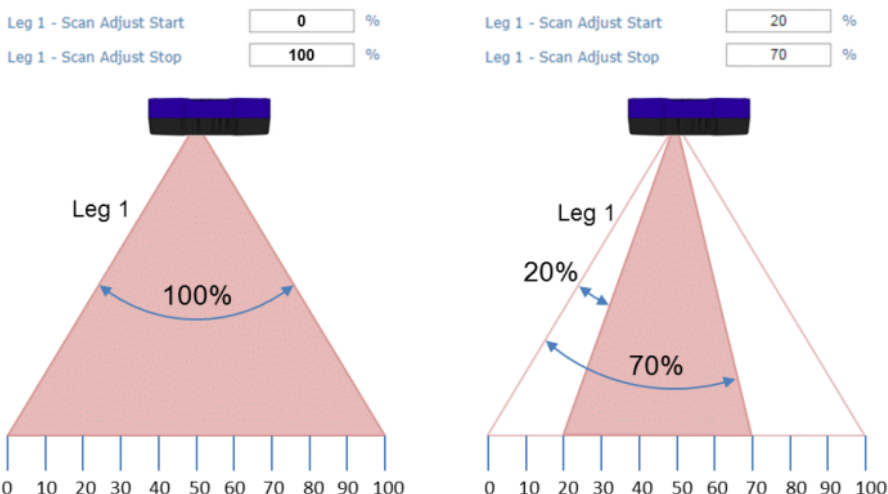| Field Name	Definition
Field of View Start Angle (DS8110)	Enter the field of view (FOV) start angle in the field provided. This will adjust the start FOV angle to that specified. In the example below, the original **Start Angle** of 30° is reduced to 25° degrees when that value is entered. **Figure 27: Start/Stop Angle** **NOTE:** This option is only available for the DS8110 scanner.
Field of View Stop Angle (DS8110)	Enter the field of view (FOV) stop angle in the field provided. This will adjust the start FOV angle to that specified. **NOTE:** This option is only available for the DS8110 scanner.
Leg 1 (or 2) - Scan Adjust Start(DX8210)	Enter percentages of the total scan area (100%) for each leg of the DX8210 as illustrated in the image below. Make adustments to narrow the reading area of each leg of the X pattern as needed for your application.
Leg 1 (or 2) - Scan Adjust Stop (DX8210)	

Field Name	Definition
Barcode Reconstruction	Select the check box to enable Advanced Code Reconstruction (ACR™ 4) when reading the code. If not checked, standard linear reading mode will be used.

Advanced Reading Settings	
Overflow Start Ratio	Enter the minimum expected width of the barcode starting quiet zone, expressed in number of modules from 1 to 50.
Overflow Stop Ratio	Enter the minimum expected width of the barcode stopping quiet zone, expressed in number of modules from 1 to 50.

Digitizer Settings

⚠️ **WARNING: Field-Programmable Gate Array (FPGA)** patches are intended for special cases only, and must only be applied with the guidance of Datalogic Support.

Number of FPGA Registers to Patch	Select a number from the drop-down list.
FPGA Register *n* Offset	Enter the register offset in the field provided.
FPGA Register *n* Value	Enter the register value in the field provided.
FPGA Register *n* Side to Patch	Select **A+B Side, A Side,** or **B Side** from the drop-down list. "Side" refers to the laser leg of the DX8210, and allow you to choose both legs or either one.

3. When you have finished making changes, click **Update All** to save all pending changes, click **Reset All** to revert to all previously saved values, and click **Reset Page** to revert to previous saved values on the current page.

3.7 DIAGNOSTICS

Use the **Diagnostics** menu tree selections to monitor your barcode scanning system performance, view system messages, and access online help. The **Diagnostic** windows include:
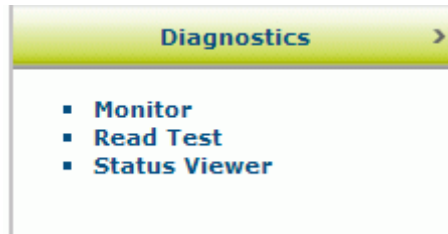
3.7.1 Diagnostics | Monitor

Use the Diagnostics > Monitor as the primary tool to monitor the reader's operation and bar code readability in real-time. Status indicators and vital statistics appear on a single screen, enabling you to effectively and efficiently detect and troubleshoot any problems that may occur

To open the Monitor window:

In the tree menu under **Diagnostics,** navigate to **Monitor**. The **Monitor** window opens.

The status indicators in **Diagnostics > Monitor** indicate the following conditions:

| Field	Definition
Status	
Phase/Trigger	GREEN indicates trigger input. The LED is activated upon trigger input regardless of trigger source (including software trigger).
Good/No Read	GREEN indicates a good (valid) bar code has been decoded.
	RED indicates a no-read (or incomplete decode).
Multiple	RED indicates more codes than desired were read.
Partial	RED indicates a partial read.
Output 1 - 4	RED indicates activity on that output.
Belt Speed	Indicates the current speed of the belt indicated by the encoder (tachometer).

Field	Definition
	Barcode Information
Code Distance (cm)	Displays the distance from the laser origin to the scanned barcode.
Scan Position	Displays the position of the code in the scan line.
Near	**GREEN** indicates the barcode has been scanned by the near-focus laser.
Far	**GREEN** indicates the barcode has been scanned by the far-focus laser.
	Messages
Message Field	Displays message data being returned by the scanner for each barcode scanned.
	Read Rate
Package Count	Displays the number of packages detected since the last reset.
Good Read (%)	Displays the number of good barcode reads since the last reset.
Multiple (%)	Displays the number of multiple barcodes detected since the last reset.
Partial (%)	Displays the number of partially read barcodes since the last reset.
No Read (%)	Displays the number of no reads (no barcode read on package) since the last reset.
Reset	Click to reset the above counters.
	Message Monitor
Message Monitor Field	Select the option button beside **Main, Aux, Socket 1, Socket 2, Socket 3, Socket 4, Socket 5,** or **Socket 6** to display messages for that host port. Select the option button beside **None** to stop displaying messages.
Connect/ Disconnect	Click **Disconnect** to stop (freeze) the **Monitor** window, or click **Connect** to start the **Monitor** window.

3.7.2   Diagnostics | Read Test

Use the Read Test window to check how well a scanner is operating.

To test a scanner's operation:

1. In the tree menu under **Diagnostics**, navigate to **Read Test**. The **Read Test** window opens.
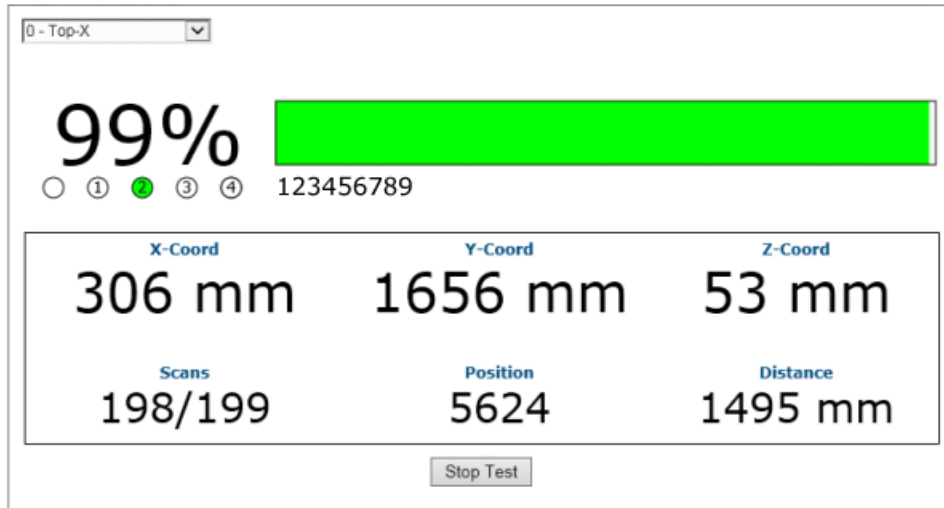
2. If there are multiple scanners in the system, select the scanner to test from the drop-down list at the top of the **Read Test** window.

3. Click the **Start/Stop Test** toggle button to run or stop the real-time performance display of the scanner.

The Read Test displays the following information:

*   **Read Rate:** This is the percentage readout and bar at the top of the window, displaying the read rate since the start of the test.

    The numbered circle indicators below the read-rate percentage indicate in **GREEN**, which of the scanner's lasers is reading the barcode.

    The alpha numeric text following the numbered circle indicators is the barcode data.

*   **Laser Identifiers:** These circles below the Read Rate percentage identify the number of lasers in the scan head as well as highlighting in GREEN the laser that is reading the barcode. In the example above, the scanner has four lasers and laser 2 is identified as reading the code. If the first circle is highlighted in RED, this indicates a NOREAD.

*   **XYZ Coord:** This displays the real-time coordinates of the barcodes being read.

*   **Scans:** Displays the number of times the scanner decoded the test barcode out of the number of opportunities it had to decode the test barcode during a test cycle.

*   **Position**: Displays the position of the barcode in the scan line.

*   **Distance:** Displays the distance from the laser origin to the last barcode read.

3.7.3   Diagnostics | Status Viewer

Use the **Status Viewer** to check up on your scanner health.

To access and use the Status Viewer:

1. In the tree menu under Diagnostics, navigate to Status Viewer. The Status Viewer window opens.

```
SYSTEM WARNING AND ERROR CODES
Warning Codes: None
Error Codes:   None

HARDWARE STATUS
Motor:       No Errors or Warnings
Lasers:      No Errors or Warnings
Acquisition: No Errors or Warnings

Powered On Time: 1-22:31:48.581

Total Power On Time:  227 years   10 days   8 hours
Total Operating Time:  2 years    10 days   5 hours
```

Status | Read Rate | H/W Info | Counters | Message Log | Clear

Command

[   ] Send Command

Use this field to enter and send commands

2. Select a device to view from the drop-down list at the top-left corner of the window.

3. Click on a button at the bottom of the display window to select the type of information you want to view:

- **Status:** displays system warnings or errors.

```
SYSTEM WARNING AND ERROR CODES
Warning Codes: None
Error Codes:   None

HARDWARE STATUS
Motor:       No Errors or Warnings
Lasers:      No Errors or Warnings
Acquisition: No Errors or Warnings

Powered On Time: 1-01:33:41.237

Total Power On Time:  0 years  294 days  20 hours
Total Operating Time: 0 years  283 days  22 hours
```

- **Read Rate**: displays read rate and package count information.

```
READ RATE
Total Packages:       34204
Good Reads:           25086      73%
No Reads:               837       2%
Partial:               8281      24%
Multiple:                 0       0%
```

- **H/W Info:** displays information about the selected hardware, including model, serial number, scans/second, laser information, and more.

```
CONFIGURATION
Model Type:  DS8110-2100
Serial Num:  C14C03507
Mac Address: 00-07-be-00-ef-8a
Num Lasers:  2
Num Legs:    1
Num Facets:  7

CURRENT STATUS
Scan Rate:        1000 scans/sec
Current APD DAC:  469

                 Temp        VCC
Laser 1:        40.59 C    3.2790
Laser 2:        40.89 C    3.2722
Logic Board:    39.00 C
APD Board:      41.50 C
```

- **Counters:** displays cumulative data about scans, triggers, errors, and much more.

```
SYSTEM INFO
Scan Rate (scans/sec):  999    Belt Speed (m/s):      1.55
Tach Rate (cnts/sec) : 2429    Belt Speed (ft/min):    306

DECODER COUNTERS
Scan Ints:             14796    DSP Codes:            59214
Triggers:              59548    DSP Triggers:           960
Process L0:            25824    Process L1:               0
Max Elements L0:         310    Max Elements L1:          0
Queue Size:                1    Queue Max:                9
Mem Alloc Err:             0    Memory Full:              0

SCAN DATA EXCEPTION COUNTERS
Missed DMA:                0    Missed QDMA:              0
Xfer Overflow:             0    Xfer Bad Length:          0
ASTRA Seg Err:             0    Invalid Leg No:           0
Low Term Count:            0    High Term Count:          0
Motor Var Cnt:             0

ARM Restarts:              0    DSP Restarts:             0
```

- **Message Log:** displays messages logged since the last clear command.

```
0-00:00:00.723: APD Read:  DAC/Temp Ref: 243/6400
0-00:00:00.723: APD Read:  Gain/Offset/Min/Max/Type: -1/-1/-1/-1/-1
0-00:00:00.725: APD DAC Initialized.
0-00:00:00.852: ADC Configuration Complete.
0-00:00:00.959: Loading FPGA file XLC_v20_0_0_0.fpga.
0-00:00:03.938: FPGA device id: 4c55.
0-00:00:03.938: FPGA version: 6.0(0).
0-00:00:06.378: Loading DSP file Decoder_release_v1_8_17_0.dsp.
0-00:00:06.678: DSP load complete.
0-00:00:06.678: Scan Engine Started.
0-00:00:06.679: FPGA Buffer Export Task Started
0-00:00:14.664: Motor Speed Threshold set to 0xFFFF.
0-00:00:14.664: FIR Filter Coefficients Loaded.
0-00:00:14.664: Scan FOV set to 88 deg (off=1562 len=21420)
0-00:00:15.263: Ethernet Initialzation Complete.
0-00:00:15.263: Web Server Initialization Complete.
0-00:00:16.665: DSP Version 1.8.17 Started.
0-00:00:16.665: Scan Engine Initialized.
0-00:00:16.686: IsAlone=0 IsMaster=0 NumDevices=3
Powered On Time: 0-00:38:22.825
```

4. Click **Clear** to clear out the **Message Log**.

You can also enter a specific system command in the field provided at the bottom of the window. Click **Send Command** to execute.

3.8 UTILITIES

Use the Utilities menu tree selections to backup, restore, and update system firmware, or to reboot the scanner. The **Utilities** windows include:
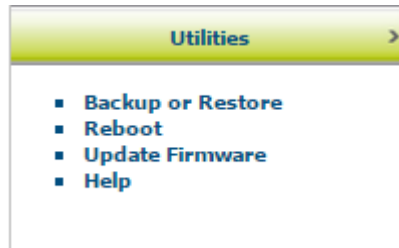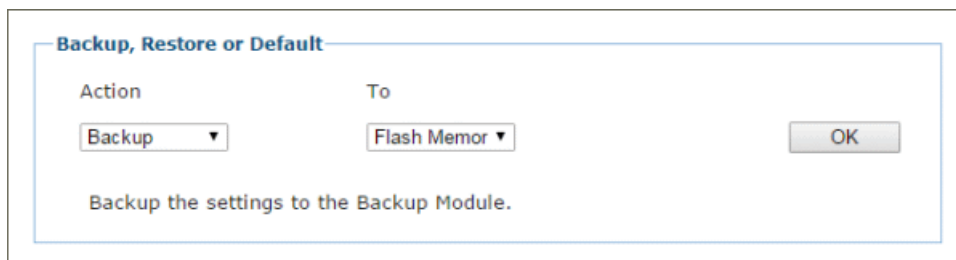

3.8.1 Utilities | Backup or Restore

Use **Backup or Restore** to save all the settings to the device and backup the settings to the backup module and/or file.

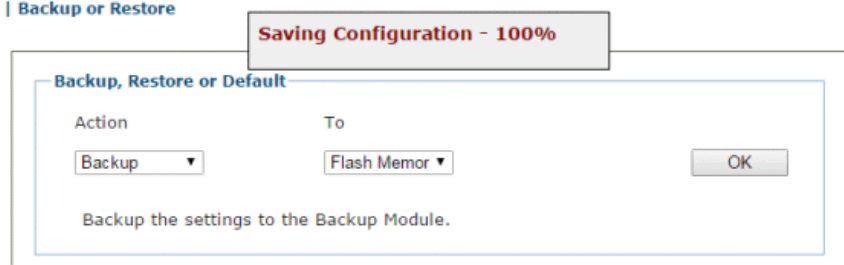**To use the Backup or Restore functions:**

1. In the tree menu under **Utilities**, click **Backup or Restore** Info. The Backup or Restore window opens.

2. From the drop-down lists shown, select an **Action** and a **To/From** option.

| Action	To/From	
Backup	**Flash Memory**	When this option is selected, click **OK** to save the settings to the Backup Module (BM100) in the CBX Connection Box. A progress box displays the percent complete of the save operation.

	File	When this option is selected, click **OK** to download the file to your computer. The file can then be saved to an appropriate backup folder.

Action	To/From	
Restore	**Flash Memory**	When this option is selected, click **OK** to retrieve the settings to the Backup Module in the CBX. A progress box displays the percent complete of the restore operation.
	File	When this option is selected, a **Choose File** button is revealed. Click **Choose File** to open a file browser and located the settings .txt file to be restored. When the file has been located and selected, click **OK** to save the file to the device.
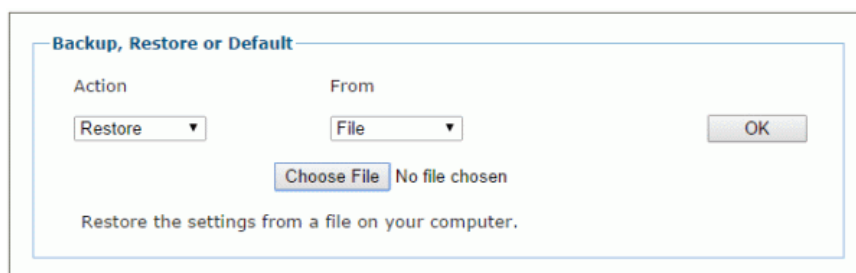
Default	**Application**	When this option is selected, click **OK** to restore application settings to Factory defaults, except for Ethernet and PackTrack.
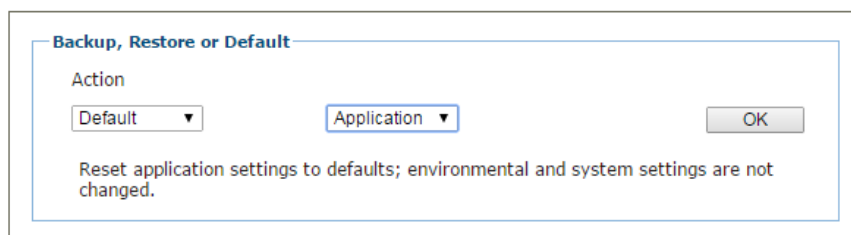
|		
	App and Env	When this option is selected, click **OK** to restore all settings including Ethernet and Packtrack.
	All	When this option is selected, click **OK** to **COMPLETELY RESET** the scanner to Factory configuration.

3

3.8.2   Utilities | Reboot

Use the **Reboot** window the restart the scanner or system.

To use the Reboot function:

1. In the tree menu under **Utilities**, click **Reboot** Info. The Reboot window opens.
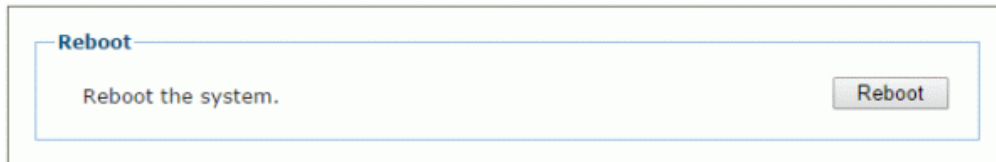
2. Click **Reboot.** A confirmation box appears.
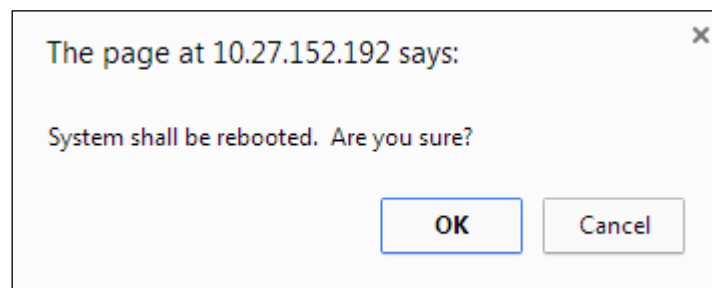
3. Click **OK** to reboot the system, or click **Cancel** to return to the reboot window without restarting the system.
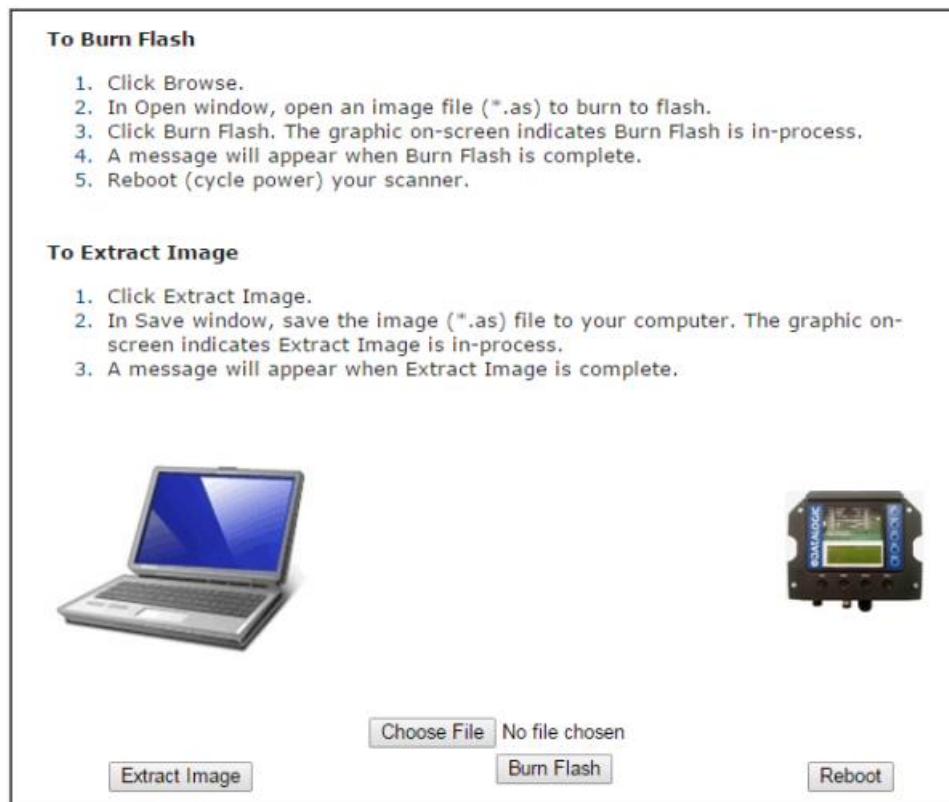
3.8.3   Utilities | Update Firmware

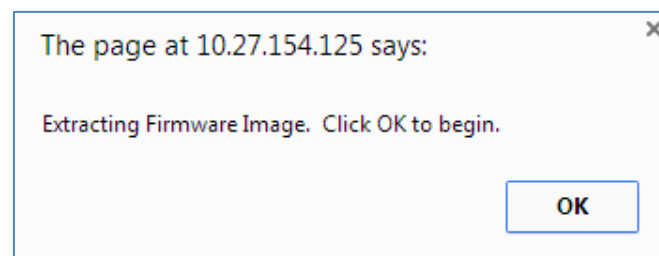Use **Update Firmware** to reload the scanner system firmware.

⚠️ **CAUTION:** This function should only be performed under the guidance of Datalogic Technical Support.

To Extract Image:

1. In the tree menu under **Utilities**, click **Update Firmware**. The Update Firmware window opens.
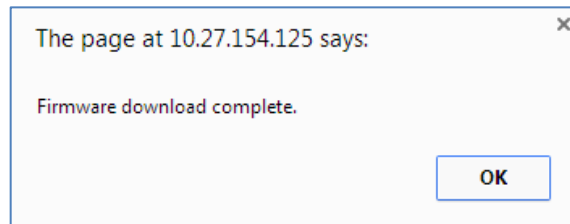
To Burn Flash

> 1. Click Browse.
> 2. In Open window, open an image file (*.as) to burn to flash.
> 3. Click Burn Flash. The graphic on-screen indicates Burn Flash is in-process.
> 4. A message will appear when Burn Flash is complete.
> 5. Reboot (cycle power) your scanner.

To Extract Image

> 1. Click Extract Image.
> 2. In Save window, save the image (*.as) file to your computer. The graphic on-screen indicates Extract Image is in-process.
> 3. A message will appear when Extract Image is complete.

Choose File   No file chosen

Extract Image   Burn Flash   Reboot

2. Click **Extract Image**. A confirmation box appears.

The page at 10.27.154.125 says: ×

Extracting Firmware Image. Click OK to begin.

OK

3. Click **OK** to continue.

4. The graphic on screen indicates **Extract Image** is in-process. A message will appear when **Extract Image** is complete.

> The page at 10.27.154.125 says: ×
>
> Firmware download complete.
>
> **OK**

To Burn Flash:

1. Click **Choose File**. In the browse window, select an image file (*.as) to burn to flash.
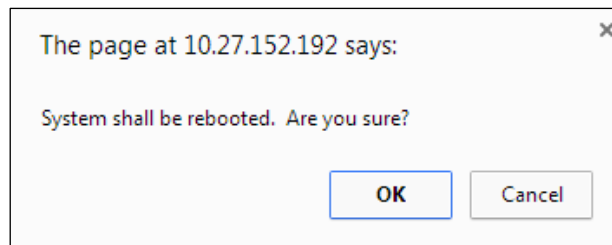
> **NOTE**: The appearance of these functions may vary from browser to browser.

2. Click **Burn Flash**. The graphic on-screen indicates **Burn Flash** is in-process.

3. A message will appear when **Burn Flash** is complete.

To Reboot the System:

1. Click **Reboot.** A confirmation box appears.

> The page at 10.27.152.192 says: ×
>
> System shall be rebooted. Are you sure?
>
> **OK**   Cancel

2. Click **OK** to reboot the system, or click **Cancel** to return to the reboot window without restarting the system.
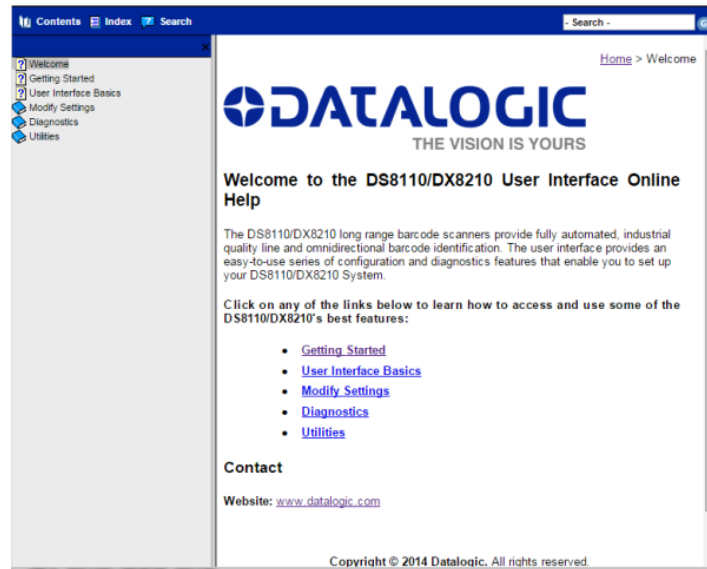
3.8.4   Utilities | Help

e-Genius provides complete online help.

To use the Help system:

In the tree menu under **Utilities**, click **Help**. The Online Help window opens.

The **Welcome** page provides important product information as well as three ways to find specific help information: **Contents, Index,** and **Search.**

To display contextual help for a current window:

Click the **Help Icon** displayed at the top right of the screen. A help window appears, providing you with information for that specific page.
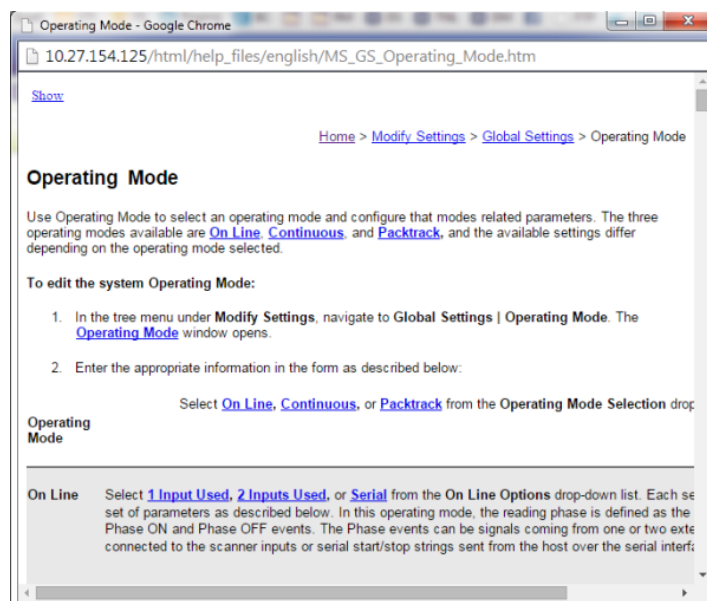
Click the **Show** link in the upper left corner of the help window to access Contents, Index, and Search options.

4   MAINTENANCE

4.1   BACKUP AND AUTOMATIC REPLACEMENT PROCEDURE

Once the system configuration has been completed using **e-Genius** as described in *section 3*, perform backup by one of the following methods:

4.1.1   Backing Up the System Using the SC5000 Keypad

1. Press the **ENT** and **MENU** keys simultaneously to enter the Menu.

2. Use the **UP** and **DOWN** keys to move within the menu items.

3. In the **<System>** menu select **<Backup>.**

4. From the **<Backup>** menu, press the **ENT** key to back up the system, or press the **CLR** key to back out of the menu.

The SC5000 Controller will store the complete system configuration on the Compact Flash card.

If a slave scanner has to be replaced, the corresponding configuration (node address, code configuration, PackTrack™ configuration, etc.) is automatically downloaded by the SC5000 into the new scanner at the next system startup.

In case of SC5000 failure, the complete system configuration can be recovered from the Compact Flash of the damaged SC5000: by simply installing the old Compact Flash in the new SC5000, the system configuration is automatically restored and the reading station is ready to start working again.

CAUTION: Before removing the Compact Flash card, disconnect power from the SC5000 Controller.

4.1.2   Backing Up the System Using e-Genius

You can also back up the system through **e-Genius**. See section *3.8.1 Backup or Restore.*

4.1.3   Replacing an SC5000

In case of SC5000 failure, proceed as follows:

Figure 28 - Removing the Compact Flash

1. Disconnect power from the device.

2. Loosen the screws in the SC5000 lid using a screwdriver.

3. Remove the Compact Flash.

4. Connect a new SC5000 to the system.

5. Insert the Compact Flash card.

6. Close and secure the lid of the replacement SC5000.

CAUTION: Make sure not to insert the Compact Flash card upside down. Carefully insert it in the guides, so that it will not fall inside the device. Gently push it into the slot.

7. Power up the system.

The system configuration is automatically restored and the reading station is ready to start working again.

5 TROUBLESHOOTING

IMPORTANT: Due to the complex and application-specific nature of these installations, operational deficiencies of the barcode scanner must be diagnosed and serviced by a trained and authorized Datalogic technician.

There are no user serviceable components or field replaceable units (FRUs) inside the barcode scanner.

For further information on training, contact us through the Datalogic website at www.datalogic.com.

NOTE: When contacting Datalogic for help with a scanner, please be ready to share the unit serial number with the Datalogic technician. The unit's serial number tag is located on the device, where shown below. Help desk contact information is available at www.datalogic.com.

Figure 29 – SC5000 Serial Number Location

5.1 ERROR CODES AND RESOLUTIONS

Error Code	Description	Severity	Explanation	Symptom	Troubleshooting	Action required
1	Node not responding	Error	In a Master/Slave configuration, the Master monitors the status of the Slaves in its network. If a slave unit fails to be identified, the Master will post this message.	- The scanning tunnel's no-read rate increases. - More than one slave unit may be shown as not responding.	- In a tunnel configuration, the cabling that connects the system into to a network must be intact or a scanner will be reported as not responding. - Make sure all the slave units are powered on.	- Make sure cables are connected. - Check scanners power source. - Replace scanner.
80	Node Reset	Error	In a Master/Slave configuration, the Master monitors the status of the Slaves in its network. If a Slave resets, it sends a reset message to the Master. The Master then posts this error condition on the diagnostic screen.	- The scanning tunnel's no-read rate may increase during the Slave scanner's reconnection.	- This condition is related to a slave scanner. Make sure the power source of the slave is not faulty.	- If condition persists, replace the scanner.
81	Motor Failure	Error	The scanner's mirror wheel motor has failed.	- The scanner will be powered up but will not emit laser light from its exit window. - The scanners motor will not be spinning.	- Hold your hand in front of the scanner to determine if the laser is on.	This is an internal failure and is not field serviceable - Replace scanner.
83	Laser Failure	Error	Scanner has a laser failure.	- There is no laser light emitted from the scanner - The mirror wheel motor may still be spinning, however, the motor speed may be out of range at which time the scanner will turn off the laser light.	- Hold your hand in front of the scanner to determine if the laser is on.	This is an internal failure and is not field serviceable. - Replace scanner.

Error Code	Description	Severity	Explanation	Symptom	Troubleshooting	Action required
130	Encoder Timeout	Warning	No encoder (tachometer) is detected in specified time. The Encoder signal provides the scanner with belt speed and other tracking information. This error will only occur when the scanner is in the PackTrack mode.	- The scanner may experience an increase in no-reads. - The scanner may start missing the transmit point.	- Confirm that the belt is running. - Make sure the encoder (tachometer) wheel is making a firm contact with the conveyor. - Check the **Global Settings | Diagnostics | Encoder Timeout** setting to confirm that it is not set too low *(See section 3.5.9).*	- Adjust the encoder (tachometer) mounting. - Adjust the **Encoder Timeout** setting *(See section 3.5.9).*
131	Input 1 Failure	Error	The Primary PS (photoelectric sensor) Input is stuck in the active state (PackTrack Mode).	- The scanner will not go into trigger. - No data will be transmitted to the Host.	- Check the alignment of the photoelectric sensor. - Check the functionality of the photoelectric sensor.	- Realign the photoelectric sensor. - Replace the photoelectric sensor.
132	No Phase Error	Error	No Phase "timeout" is exceeded (On-Line and PackTrack Mode). - Trigger must be identified within a specified time.			
133	Input 2 Failure	Error	Secondary PS (photoelectric sensor) Input Failure Stuck Active (PackTrack Mode).	- The scanner will not go into trigger. - No data will be transmitted to the Host.	- Check the alignment of the photoelectric sensor. - Check the functionality of the photoelectric sensor.	- Realign the photoelectric sensor. - Replace the photoelectric sensor.

Error Code	Description	Severity	Explanation	Symptom	Troubleshooting	Action required
135	Encoder Failure	Error	Phase input (trigger source) is activated while encoder (tachometer) is stopped (PackTrack Mode).	- No data will be transmitted to the host. - Scanner(s) will not read any barcodes. - System receives trigger cycle when no encoder signal is present.	- Check **Diagnostics | Monitor** to see if the scanner is reporting a conveyor speed *(See section 3.7.1)*. - Make sure the encoder (tachometer) wheel is making a firm contact with the conveyor.	- Adjust, realign, or replace the encoder (tachometer).
136	Redundancy Role Exchange Warning	Warning	This warning is generated on the Stand-by SC5000 to signal that the exchange of the Redundancy Role is in progress.			
138	Redundancy Warning	Error	Redundancy is not available.	- The Master Stand-by SC5000 does not work OR an encoder or presence sensor error is generated on the Master Stand-by SC5000.		
139	EBC Communication Failure	Error	Communication through the EBC interface has failed.			
141	Master Failure	Error	Communication to the Master (Active or Stand-by) is not available.			
143	Power Failure	Error	A power drop has occurred in the PWR power supply.			

Error Code	Description	Severity	Explanation	Symptom	Troubleshooting	Action required
145	Presence Sensor Failure	Error	A presence sensor warning has occurred only on the Stand-by SC5000 of the redundant system and is transmitted by the Active SC5000.			
147	Encoder Failure	Error	An encoder warning has occurred only on the Stand-by SC5000 of the redundant system and is transmitted by the Active SC5000.			
163	Max Consecutive Lost Parcels	Error	The Standby SC5000 has recognized that the Active SC5000 has exceeded the defined number of maximum consecutive lost parcels. This will cause a Redundancy Role exchange.	- Redundancy Role exchange		
165	Max % of Lost Parcels.	Error	The Standby SC5000 has recognized that the Active SC5000 has exceeded the defined maximum percentage of lost parcels (out of 100 parcels). This will cause a Redundancy Role exchange	- Redundancy Role exchange		
157	SD Card Failure	Error	SC5000 - SD card cannot be accessed. The SD card contains the backup files. It also contains a copy of the scanners application software. This failure is only in the SC5000.	- Unit will not backup or restore the parameters.	Try to save the parameters from the **SC5000** to the SD card *(see SC5000 System Controller Reference Manual).*	- Confirm that the SD card is seated properly in the SC5000. - Replace SD card *(see SC5000 System Controller Reference Manual).*

Error Code	Description	Severity	Explanation	Symptom	Troubleshooting	Action required
169	Main Serial Port Error	Error	Protocol Index message not received on Main Serial Port.			
176	Aux Serial Port Error	Error	Protocol Index message not received on Aux Serial Port.			
178	Ethernet Socket 1 Error	Error	Protocol Index message not received on User Socket 1.			
179	Ethernet Socket 2 Error	Error	Protocol Index message not received on User Socket 2.			
180	Ethernet Socket 3 Error	Error	Protocol Index message not received on User Socket 3.			
181	Ethernet Socket 4 Error	Error	Protocol Index message not received on User Socket 4.			
182	Ethernet Socket 5 Error	Error	Protocol Index message not received on User Socket 5.			
183	Ethernet Socket 6 Error	Error	Protocol Index message not received on User Socket 6.			
191	Fieldbus Mismatch	Error	Fieldbus module type does not match specified model. - Module selection incorrect compared to the actual module installed.			
193	Fieldbus Config Error	Error	Error configuring fieldbus module.	- Unable to communicate to the module.	- Confirm that the unit is not communicating to the host. - Confirm that the fieldbus parameters are configured properly *(see section 3.5.6)*.	- Replace fieldbus module.

Error Code	Description	Severity	Explanation	Symptom	Troubleshooting	Action required
195	Fieldbus DHCP Error	Error	Profinet module had a DHCP error.	- Unable to acquire an IP address.	- Confirm that the unit is not communicating to the host. - Confirm that the fieldbus parameters are configured properly *(see section 3.5.6).*	- Replace fieldbus module.
205	APD Temperature Error	Error	APD Temperature sensor is not working. A fluctuation in the scanner's temperature can have an adverse effect on several internal functions of the scanner. The scanner monitors the temperature, and if it is erratic, this error is posted.	- The scanner may experience an increase in no-reads. - The scanner may start missing the transmit point.	1. Cycle power on the scanner; 2. Wait until the unit has time to cool down. 3. Restart the scanner and monitor it to determine whether the error reoccurs.	This is an internal failure and is not field serviceable. - Replace scanner.
207	In Beam Sensor Error	Error	The scanner has an in-the-beam sensor, which provides timing for the decoding of barcodes. The scanner monitors this signal, and posts this error if the signal is sporadic or missing.	- The scanner stops reading barcodes.	- Put the scanner in the test mode to test its ability to read the barcode *(see section 3.7.2).*	This is an internal failure and is not field serviceable. - Replace scanner.
211	PTP Error	Error	Cannot synchronize the internal clock using the PTP (precision time protocol) protocol. This clock sync pulse is generated by the controller unit. It is used to sync the read data of all the scanners in the network with the master unit.	LEDs flashing.	- Confirm that all the scanners are connected in the chain. - Use the scanner test mode to confirm that the scanner can statically reading a barcode *(see section 3.7.2).* - Position a barcode on a box so it faces	- Replace faulty scanner.

Error Code	Description	Severity	Explanation	Symptom	Troubleshooting	Action required
					the questionable scanner, and dynamically test the scanner.	
219	Fieldbus Comm Error	Error	Cannot communicate with the fieldbus module.	- The host loses communication with the scanner.	- Confirm that the unit is not communicating with the Host. - Confirm that the fieldbus parameters are configured properly *(see section 3.5.6)*.	- Replace fieldbus module.
220	Network Ring Open	Error	When the SC5000 is used, the scanner internal network is connected in a chain configuration. If the SC5000 detects that network chain is not complete, it will post this error.	- The system experiences a higher no-read rate. - One or more scanners may not appear on the Diagnostic Mask Window *(see the* Diagnostic Mask Window *section).*	- Confirm that all the scanners are connected in the chain. - Use the scanner test mode to confirm that the scanner can statically reading a barcode *(see section 3.7.2).* - Position a barcode on a box so it faces the questionable scanner, and dynamically test the scanner.	- Replace faulty scanner.

5.2 TROUBLESHOOTING GUIDE

TROUBLESHOOTING GUIDE	
Problem	**Suggestion**
Power On: The **POWER** LED is not lit.	• Is power connected?
Power On: The **POWER** LED is RED.	• The power supply polarity is reversed: fix it.
On Line Mode 1: The **TRIG** LED is not lit (when external trigger activates).	• Depending on the installation: • Is the PNP sensor connected to the SC5000's TRIG M12 input connector? • Is the sensor correctly wired in the CBX510 connection box? • Is power supplied to photo sensor?
On Line Mode 1: The TRIG LED is correctly lit but nothing happens (no reading results).	• Is the software configuration consistent with the application condition (operating mode, etc.)? In **e-Genius**, select the OPERATING MODES folder and check for related parameters.
Serial On Line Mode: The reader is not triggered (no reading results).	• In **e-Genius** select the OPERATING MODE folder and check if serial on line is enabled as "On Line options" parameter value. • Are the Start-Stop strings correctly assigned? • Is the serial trigger source correctly connected and configured)?
On Line Mode and Serial On Line Mode: The reader does not respond correctly to the expected external signal end.	• In **e-Genius**, select the OPERATING MODES folder and check the "Reading Phase Timeout" parameterization.
Communication (Main / Aux): the device is not transmitting anything to the host.	• Is serial Main / Aux cable connected? • Is wiring correct? • If using the Main RS232 or RS422 interface, is the reference ground connected to SGND MAIN? Be careful that it is not completely different from GND power ground. • Are serial host settings equivalent to serial device setting?
Communication (Ethernet): the Ethernet LED is not lit.	• Verify the HUB connection. • Verify **e-Genius** settings *(see section 3.5.5).*
Communication: data do not appear on the terminal.	• In **e-Genius**, enable the DATA COMMUNICATION SETTINGS/MAIN-AUXILIARY PORT\DATA TX parameter.

TROUBLESHOOTING GUIDE	
Problem	**Suggestion**
Communication: data transferred to the host are incorrect, corrupted or incomplete.	• In **e-Genius**, select the DATA COMMUNICATION SETTINGS/DATA FORMAT folder and check for HEADER, TERMINATOR, SEPARATOR and FILL CHAR values. • Check the CODE FIELD LENGTH value. • Are the COM port parameters correctly assigned?
How do I obtain my units' serial numbers?	• The device serial number is printed on a label that is affixed on the side of SC5000 Controller. • The serial number is also displayed when connecting the device through **e-Genius**. • Serial numbers consist of 9 characters: one letter, 2 numbers, another letter followed by 5 numbers.

6 TECHNICAL FEATURES

ELECTRICAL FEATURES		
Supply Voltage	10 to 30 Vdc (typ. 24 Vdc)	
Power Consumption	0.5 A Max.	
Communication Interfaces Serial Main (isolated)		
- RS232	1200 to 115200 bits/s	
- RS422 full-duplex	1200 to 115200 bits/s	
Serial Aux		
- RS232	1200 to 115200 bits/s	
Ethernet (x2) TCP/IP	100 Mbit/s	
EBC Internal Network	100 Mbit/s	
Fieldbus - Profibus (only SC5000-1100 model) - Profinet (only SC5000-1200 model) - All models	PROFIBUS DP application protocol; up to 12 Mb/s PROFINET-IO application protocol; 100 Mb/s Embedded EtherNet/IP; 100 Mb/s	
Inputs	3 polarity insensitive optocoupled inputs (5-30 Vdc) : Trigger, Encoder/Tachometer, IN3,	
Outputs	3 optocoupled outputs	
Input/Output	1 configurable Input/Output (PNP or NPN polarity insensitive optocoupled input, or optocoupled output)	
USER INTERFACE		
LCD Display	4 lines by 20 characters LCD	
Keypad	5 keys	
LED Indicators	POWER TRIG SW-TRIG ENC IN3 IN4	STATUS EBC OUT1 OUT2 OUT3 OUT4
SOFTWARE FEATURES		
Configuration Modes	e-Genius	
Parameter Storage	Non-volatile extractable SD-card	
ENVIRONMENTAL FEATURES		
Operating Temperature	0° to +50 °C (+32° to +122 °F)	
Storage Temperature	-20° to +70 °C (-4° to +158 °F)	
Humidity	90% non condensing	
Vibration Resistance EN 60068-2-6	14 mm @ 2 to 10 Hz; 1.5 mm @ 13 to 55 Hz; 2 g @ 70-500 Hz; 2 hours on each axis	
Shock Resistance EN 60068-2-27	30 g; 11 ms; 3 shocks on each axis	
Protection Class EN 60529	IP65*	
PHYSICAL FEATURES		
Mechanical Dimensions	192 x 157 x 74 mm (7.57 x 6.18 x 2.91 in)	
Weight	1.5 kg (3.31 lb)	

*   Sealed connectors required

GLOSSARY

ACR™

Each version of the base has the powerful code reconstruction technology (ACR G5). The new fifth generation ACR considerably increases the code reconstruction reading capability in the case of damaged or very tilted barcodes.

Aperture

Term used on the required CDRH warning labels to describe the laser exit window.

Barcode

A pattern of variable-width bars and spaces which represents numeric or alphanumeric data in machine-readable form. The general format of a barcode symbol consists of a leading margin, start character, data or message character, check character (if any), stop character, and trailing margin. Within this framework, each recognizable symbology uses its own unique format.

Barcode Label

A label that carries a barcode and can be affixed to an article.

Baud Rate

A unit used to measure communications speed or data transfer rate.

CDRH (Center for Devices and Radiological Health)

This organization (a service of the Food and Drug Administration) is responsible for the safety regulations governing acceptable limitations on electronic radiation from laser devices. Datalogic devices are in compliance with the CDRH regulations.

Code Positioning

Variation in code placement that affects the ability of a scanner to read a code. The terms Pitch, Skew, and Tilt deal with the angular variations of code positioning in the X, Y and Z axes. Variations in code placement affect the pulse width and therefore the decoding of the code. Pulse width is defined as a change from the leading edge of a bar or space to the trailing edge of a bar or space over time. Pulse width is also referred to as a transition. Tilt, pitch, and skew impact the pulse width of the code.

EEPROM

Electrically Erasable Programmable Read-Only Memory. An on-board non-volatile memory chip.

Full Duplex

Simultaneous, two-way, independent transmission in both directions.

Host

A computer that serves other terminals in a network, providing services such as network control, database access, special programs, supervisory programs, or programming languages.

Interface

A shared boundary defined by common physical interconnection characteristics, signal characteristics and meanings of interchanged signals.

LED (Light Emitting Diode)
A low power electronic device that can serve as a visible or near infrared light source when voltage is applied continuously or in pulses. It is commonly used as an indicator light and uses less power than an incandescent light bulb but more than a Liquid Crystal Display (LCD). LEDs have extremely long lifetimes when properly operated.

PackTrack
PackTrack is a Datalogic patented parcel tracking system which improves the reading features in omnidirectional stations. In particular, PackTrack manages 6-sided reading systems when it is impossible to detect the real position of the code on the parcel, thus overcoming the need for external accessories essential in traditional tracking systems.

Parameter
A value that you specify to a program. Typically parameters are set to configure a device to have particular operating characteristics.

Pitch
Rotation of a code pattern about the X-axis. The normal distance between center line or adjacent characters.

Position
The position of a scanner or light source in relation to the target of a receiving element.

Protocol
A formal set of conventions governing the formatting and relative timing of message exchange between two communicating systems.

Resolution
The narrowest element dimension which can be distinguished by a particular reading device or printed with a particular device or method.

RS232
Interface between data terminal equipment and data communication equipment employing serial binary data interchange.

RS422
Interface that specifies the electrical characteristics of generators and receivers for use in serial communications over longer distances than RS232.

Scanner
A device that examines a printed pattern (barcode) and either passes the uninterpreted data to a decoder or decodes the data and passes it onto the Host system.

Serial Port
An I/O port used to connect a scanner to your computer.

Signal
An impulse or fluctuating electrical quantity (i.e.: a voltage or current) the variations of which represent changes in information.

Skew
Rotation about the Y-axis. Rotational deviation from correct horizontal and vertical orientation; may apply to single character, line or entire encoded item.

Symbol

A combination of characters including start/stop and checksum characters, as required, that forms a complete scannable barcode.

Tilt

Rotation around the Z axis. Used to describe the position of the barcode with respect to the laser scan line.

Trigger Signal

A signal, typically provided by a photoelectric sensor or proximity switch, which informs the scanner of the presence of an object within its reading zone.

UPC

Acronym for Universal Product Code. The standard barcode type for retail food packaging in the United States.

Visible Laser Diode

A light source used in scanners to illuminate the barcode symbol. Generates visible red light at wavelengths between 630 and 680 nm.

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