



# C-BOX 300/310

## Installation Manual





# **C-BOX 300/310**

## **INSTALLATION MANUAL**





DATALOGIC S.p.A.  
Via Candini 2  
40012 - Lippo di Calderara di Reno  
Bologna - Italy

C-BOX 300/310

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## GUIDE TO INSTALLATION

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The following can be used as a checklist to verify all of the steps necessary for complete installation of the C-BOX 3X0.

- 1) Read all information in the section "Safety Precautions" at the beginning of this manual.
- 2) Correctly position and mount the C-BOX 3X0 within the reach of the barcode scanner cable, according to the information in paragraph 2.3.
- 3) Provide correct system cabling according to the signals necessary for your application and PROFIBUS settings (see all sub-paragraphs under 2.4 and 2.5).

The installation is now complete.

## GENERAL VIEW

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### C-BOX 300



Figure A

- ① 25-pin scanner connector
- ② Compression connectors
- ③ Cover screws (4)
- ④ Profibus connector

## C-BOX 310

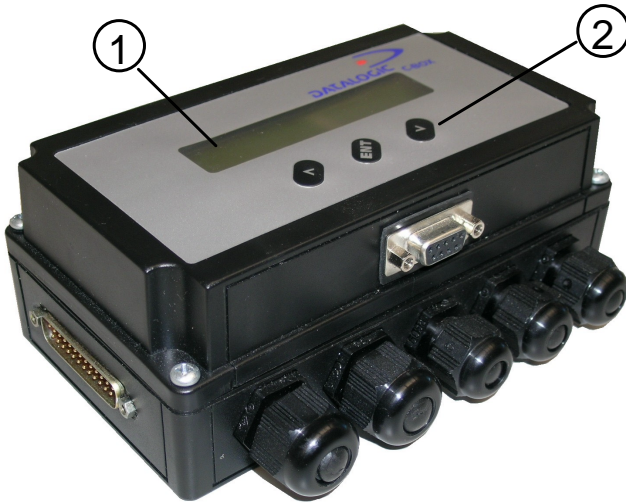


Figure B

- ① LCD display
- ② Keypad



## C-BOX 300/310

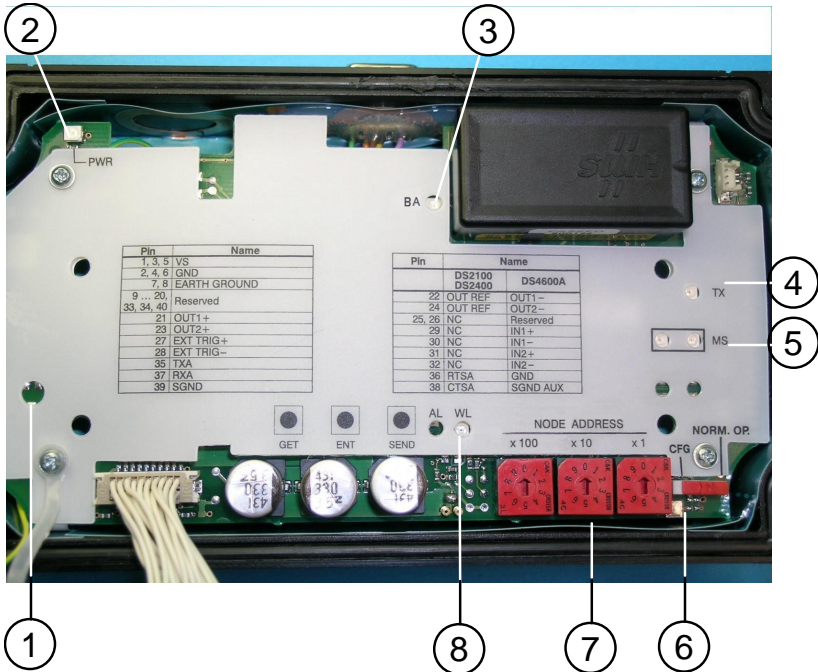
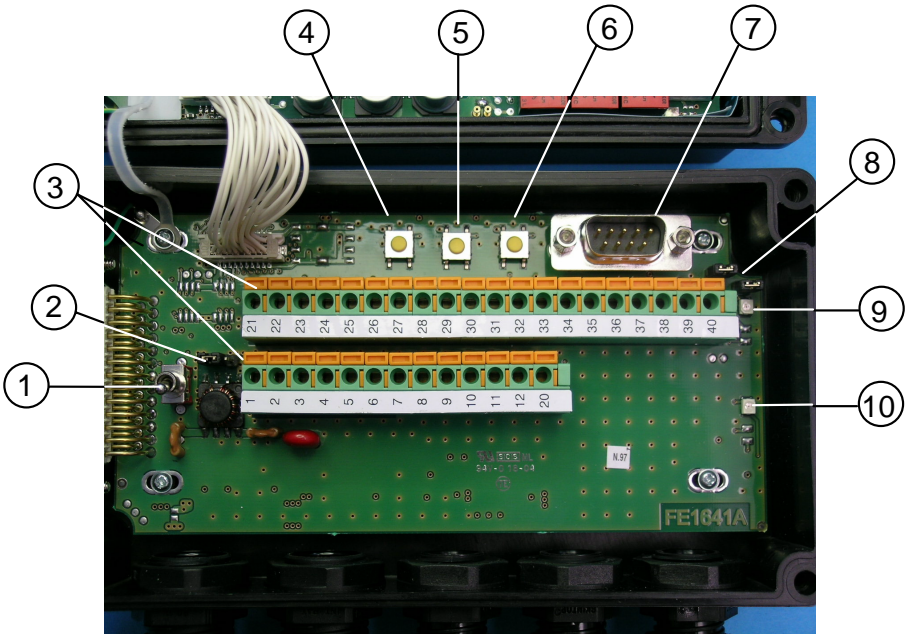


Figure C - Cover inside

- ① LCD contrast trimmer\*
- ⑤ Module status LEDs
- ② Power on LED
- ⑥ Configuration switch
- ③ BUS activity LED
- ⑦ Node address selectors
- ④ Tx LED
- ⑧ Warning LED

\* For 310 models only

## C-BOX 300/310



**Figure E - Bottom inside**

- |                                |                            |
|--------------------------------|----------------------------|
| ① Power on switch              | ⑥ SEND button              |
| ② Scanner grounding selector   | ⑦ Auxiliary port connector |
| ③ Spring clamp terminal blocks | ⑧ OM4000 jumpers           |
| ④ GET button                   | ⑨ Warning LED              |
| ⑤ TEST button                  | ⑩ Power polarity error LED |

# SAFETY PRECAUTIONS

---

## POWER SUPPLY

ATTENTION: READ THIS INFORMATION BEFORE INSTALLING THE PRODUCT

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

The C-BOX 3X0 is intended to be supplied either by a UL Listed NEC Class 2 power source, or a UL Listed ITE Limited Power Source (LPS), rated 10-30 V dc, minimum 0.5 A.

See par. 2.4.1 for correct power supply connections.

## SAFETY NOTES

Observe the general rules for PROFIBUS components when planning the C-BOX installation.

Please observe the following to avoid risk to personnel and damage to equipment and to ensure that the C-BOX 3X0 functions correctly:

- |                    |   |
|--------------------|---|
| Safety regulations | <ul style="list-style-type: none"><li>- Observe the guidelines in the VDE 0100 regulations for handling electrical components,</li><li>- Observe the applicable safety and accident prevention regulations.</li></ul> |
|--------------------|---|

The C-BOX must only be installed or uninstalled by qualified technical personnel with appropriate electro-technical qualifications.

- |                   |  |
|-------------------|--|
| PROFIBUS standard | Observe the guidelines in the PROFIBUS standard EN 50 170. |
|-------------------|--|

- |           |   |
|-----------|---|
| Bus cable | Bus wiring should only take place using special shielded, twisted pair PROFIBUS cable. The high data transfer rates can only be guaranteed with the correct cable type. |
|-----------|---|

- |               |  |
|---------------|--|
| Cable lengths | Refer to the manual for the DP master for information on maximum cable lengths for PROFIBUS. |
|---------------|--|

Terminating resistors	Terminating resistors must be used if the C-BOX is installed at the beginning or end of the PROFIBUS cable segment. In this case, it is recommended to use PROFIBUS connectors which contain an integrated terminating resistor. It is recommended to use connectors from ERNI and Siemens. If the bus is incorrectly terminated, this can lead to errors in data transfer or to damage to other stations on the bus.
Bus connectors	It is recommended to use only commercially available PROFIBUS connectors for connecting the bus. It is recommended to use connectors from ERNI and Siemens.
Cable shield	<p>Shielded cables are less sensitive to interference due to electromagnetic fields. With shielded cables, the interference currents are led to ground through the shielding rail, which is electrically connected to the case. To ensure that the interference currents which flow through the shielding do not themselves interfere with other devices, it is important to provide a low impedance connection to the protective ground. Observe the following rules for the shields of the PROFIBUS cable and the serial interface cable:</p> <ul style="list-style-type: none"> <li>– The braiding of the shielding should have a degree of coverage of more than 80%.</li> <li>– The shielding should include a braided shield and should not consist solely of foil shielding, since the latter can be easily damaged by cable tension and pressure.</li> <li>– To ensure good immunity to interference at high frequencies as well, the shielding of the cable should be attached to the shielding rail at both ends of the cable.</li> </ul>

When connecting up the C-BOX 3X0, it is recommended to observe the guidelines in the VDE 0100 regulations for handling electrical equipment.

# 1 GENERAL FEATURES

---

## 1.1 DESCRIPTION

The C-BOX 3X0 is a connection box available in two models: C-BOX 300, without display, and C-BOX 310, with a LCD display.

It can be used as an accessory of the Datalogic scanners to perform the following functions:

- Facilitate the connection of the scanner signals using a spring clamp connector.
- Perform a conversion from RS232 to Profibus to connect a RS232 scanner to a Profibus network.
- Get the scanner configuration and store it in memory.
- Force the scanner to the Test operating mode.
- Send the configuration stored in memory to the scanner.
- In the C-BOX 310, visualize the data packet sent by the scanner on the LCD.

The C-BOX 300 / C-BOX 310 mechanical dimensions are 167 x 115 x 61 mm (6.57 x 4.53 x 2.40 in.). The C-BOX 300 weighs about 440 g (15.50 oz); the C-BOX 310 weighs about 500 g (17.60 oz).

Electrical connection is provided through spring clamp terminal blocks inside the C-BOX 3X0.

The scanner is connected to the C-BOX 3X0 through a 25-pin connector placed on the left side of the housing.

A 9-pin connector placed inside the C-BOX 3X0 facilitates connection between an external PC and the auxiliary serial interface of the scanner.

The external 9-pin female connector is used to connect the C-BOX 3X0 to a Profibus network.

## 2 INSTALLATION

---

### 2.1 PACKAGE CONTENTS

Verify that the C-BOX 3X0 and all the parts supplied with the equipment are present and intact when opening the packaging; the list of parts includes:

- 1) C-BOX 3X0
- 2) Installation manual
- 3) C-BOX 3X0 configuration CD-ROM
- 4) 2 mounting screws

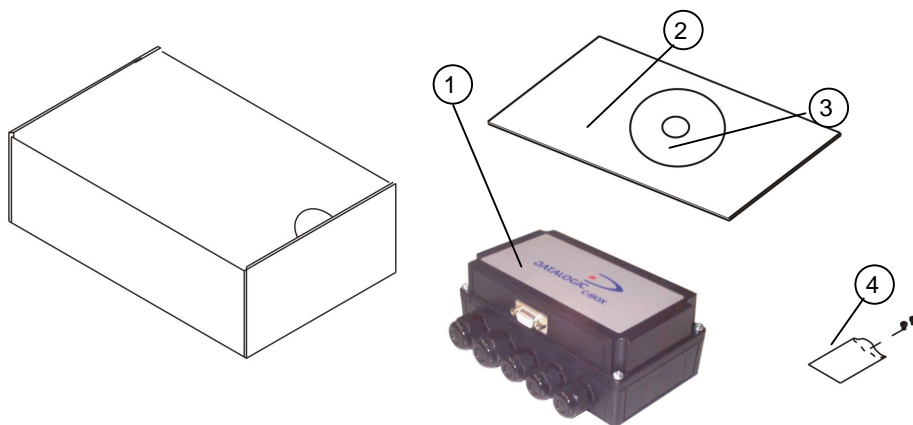


Figure 1 - C-BOX 3X0 package contents

## 2.2 OPENING THE DEVICE

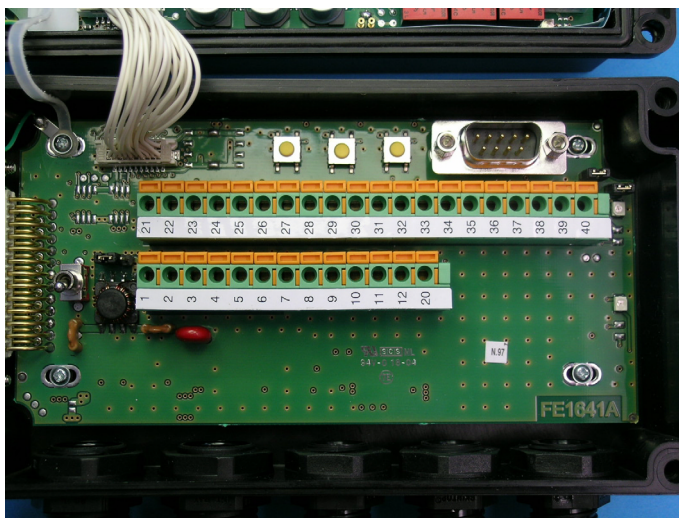
To install the C-BOX 3X0 or during normal maintenance, it is necessary to open it by unscrewing the four cover screws:



**CAUTION**

*The C-BOX 3X0 must be disconnected from the power supply during this operation.*

**C-BOX 3X0**



**Figure 2 - Opening the C-BOX 3X0**

It is possible to perform the following operations:

- Proceed with the cable connections (see paragraph 2.4.2).
- Set the Profibus node address selection on the rotary switches.
- Mount the C-BOX 3X0 to a wall or panel.

## 2.3 MECHANICAL INSTALLATION

The diagram below gives the overall dimensions of the C-BOX 3X0 and may be used for its installation.

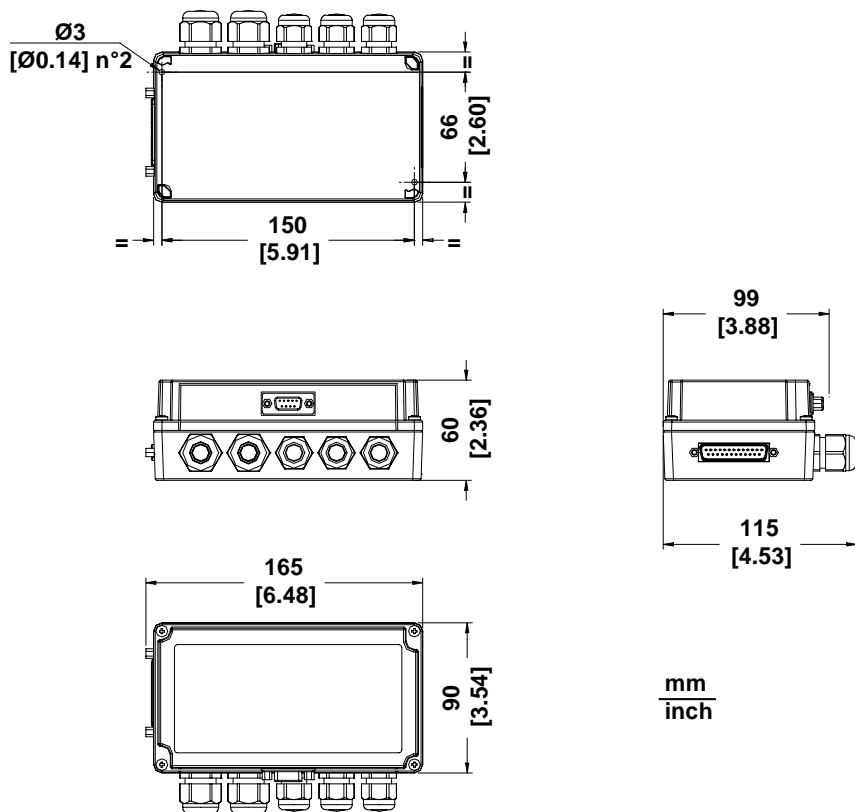


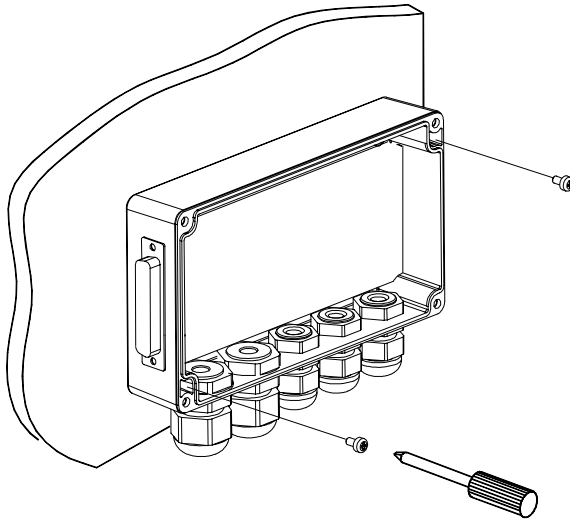
Figure 3 - Overall dimensions



C-BOX 3X0 can be installed to operate in different positions. The two screw holes inside the housing of the C-BOX 3X0 are for mechanical fixture (Figure 4).

To mount the C-BOX 3X0:

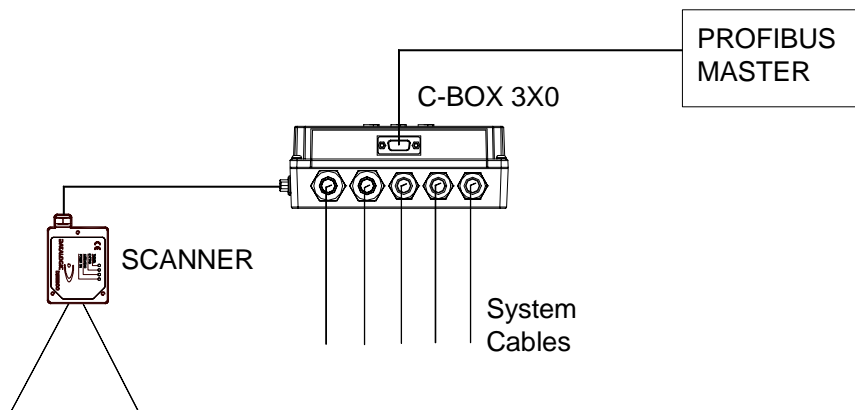
- 1) Open the C-BOX 3X0 by unscrewing the 4 cover screws. If necessary, using the two mounting holes inside the device as a pattern, mark the panel with an appropriate object and then drill two holes in the panel.
- 2) Align the C-BOX 3X0 and insert two screws and screw them into the panel until tight (see Figure 4).



**Figure 4 - Mounting C-BOX 3X0**

## 2.4 ELECTRICAL CONNECTIONS AND SETUP

The following figure shows the typical layout.



**Figure 5 – System layout**

A PC can be connected to the C-BOX 3X0 (and consequently to the scanner auxiliary interface) through the internal 9-pin connector. This allows monitoring of the data transmitted by the scanner or configuration through the WinHost utility (see the scanner Installation Manual for more details). The scanner auxiliary interface signals are also available on the internal spring clamp connectors.

After making system cabling and switch settings (see sub-paragraphs under 2.4 and 2.5), connect the scanner to the 25-pin connector on the left side of the C-BOX 3X0 housing.

Switch ON the C-BOX 3X0 power switch (see Figure 6).

By default, after power on, an automatic connection procedure takes place between the C-BOX 3X0 and the scanner. During this phase, requiring a few seconds, the warning LED is turned ON. Once the procedure had been completed successfully, the warning LED is turned OFF.

To disable this automatic connection procedure, refer to WinHost Help Online.

After system functioning has been verified, close the C-BOX 3X0 using the 4 cover screws making sure the rubber seal is fitted correctly between the parts of the housing.

### 2.4.1 Power Supply

Power is supplied to the C-BOX 3X0 through the pins provided on the spring clamp connector.

The power switch (see Figure 6) switches the power supply ON or OFF for both the C-BOX 3X0 and the connected scanner.

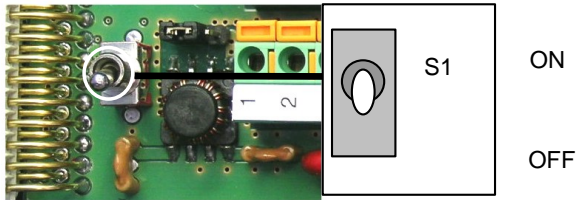


Figure 6 - Power switch ON/OFF positions

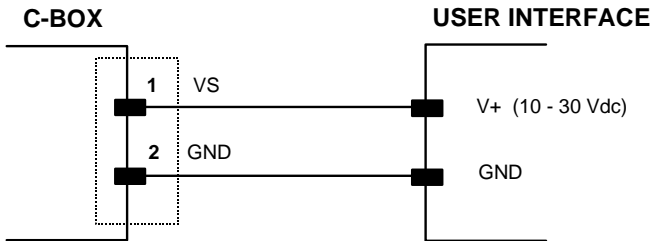


Figure 7 - Power supply connections

The power supply must be between 10 and 30 Vdc only.



**NOTE**

*Pin 1 is also electrically connected to pins 3 and 5, just as pin 2 is electrically connected to pins 4 and 6. This is useful for external trigger/inputs connections.*

**WARNING**

*Incorrect grounding of the C-BOX 3X0 can injure personnel and damage equipment. Make sure that the C-BOX is correctly grounded.*

**NOTE**

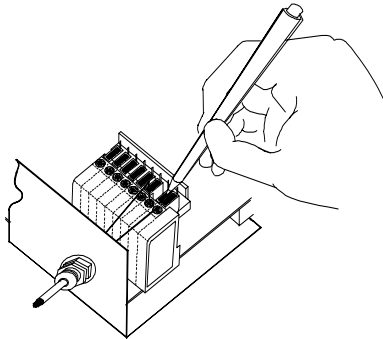
*The C-BOX 3X0 is protected against polarity reversal, a red LED signals this condition. When this condition occurs, all other C-BOX LEDs will be off until the power feed is connected with correct polarity.*

## 2.4.2 System Wiring

The connection and wiring procedure for C-BOX 3X0 is described as follows:

- 1) Open the C-BOX 3X0 as described in paragraph 2.2.
- 2) Verify that the C-BOX 3X0 power switch is off (see Figure 6).
- 3) Unscrew the compression connectors and pass all the system cables through them into the C-BOX 3X0 housing.
- 4) To connect the power and input/output signals:
  - Prepare the individual wires of the system cables by stripping the insulation back approximately 1 cm.
  - Using a device such as a screwdriver, push down on the lever directly next to the clamp (see Figure 8).
  - Insert the wire into the clamp and release the lever.

The wire will now be held in the spring clamp.



**Figure 8 - System cable connections**

The wiring used can be solid or stranded but must meet the following specifications.

All positions:	24 - 16 AWG	0.2 - 1.5 mm <sup>2</sup>
----------------	-------------	---------------------------

The C-BOX 3X0 spring clamp connector pinouts are indicated in the following table.

**Refer to the scanner Installation Manual for details.**

Pin	Name	
1, 3, 5	VS	
2, 4, 6	GND	
7, 8	EARTH GROUND	
9...12, 20, 33, 34, 40	Reserved	
21	OUT1+	
23	OUT2+	
27	EXT TRIG+	
28	EXT TRIG-	
35	TXA	
37	RXA	
39	SGND	
	DS2100A DS2400A	DS4600A
22	OUT REF	OUT1-
24	OUT REF	OUT2-
25, 26	NC	Reserved
29	NC	IN1+
30	NC	IN1-
31	NC	IN2+
32	NC	IN2-
36	RTSA	GND
38	CTSA	SGND AUX



**NOTE**

*Pin 7 or 8 should be connected to the earth ground.*

*Pins 13... 19 are not present in the C-BOX 3X0 models.*

### 2.4.3 Scanner Chassis Grounding Jumper Settings

The scanner chassis grounding method can be selected by positioning a jumper (see Figure 9). In this way the scanner chassis can be connected to earth ground (only if pins 7 or 8 are connected to a good earth ground) or to the power supply ground signal. The scanner chassis can also be left floating but, in this case, the jumper must be removed.

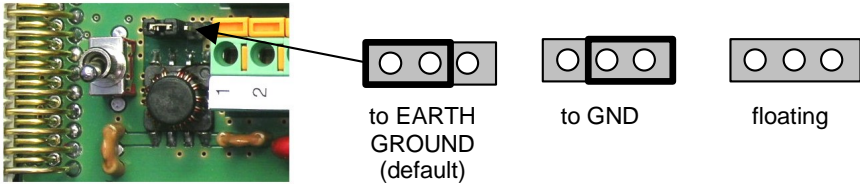


Figure 9 – Chassis grounding

The C-BOX 3X0 is now installed which completes the electrical connections for your scanning system.

### 2.4.4 OM4000 Jumper Settings

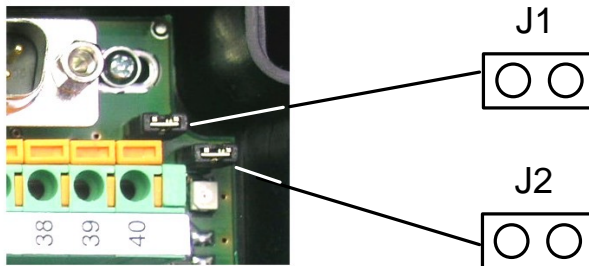


Figure 10 - OM4000 jumpers

The jumpers allow connection to the EXT TRIG signals on separate spring clamp terminals for applications which use the OM4000 Oscillating Mirror in Trigger Mode.

They are used together and they have the following significance:  
when a jumper is in the J1 position (see Figure above) pin 40 is connected to pin 27 (EXT TRIG+); a jumper in J2 position connects pin 20 to pin 28 (EXT TRIG-).

If the jumpers are removed pin 20 and pin 40 are disconnected.

## 2.5 PROFIBUS CONNECTIONS AND SETUP

### 2.5.1 Profibus Node Address Selection

To interface the C-BOX 3X0 with a Profibus network, the Node Address should be set using the rotary switches placed in the cover inside.

The valid address range is from 000 to 126.

If an invalid value is detected, the C-BOX cannot communicate with the Profibus network.

The Node Address can also be assigned through WinHost. Refer to Help on-Line.

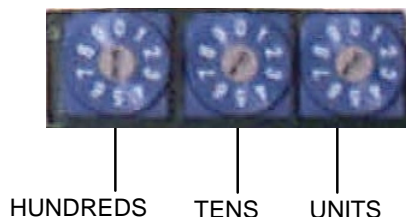
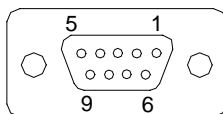


Figure 11 - Rotary switches

### 2.5.2 Profibus Connector (9-Pin Female External Connector)

To connect C-BOX 3X0 as a Profibus DP Slave, use a standard Siemens Profibus cable with a 9-pin male connector (see DIN 19245 part 1) and plug it into the 9-pin female external connector.





9-pin external female connector pinout		
Pin	Name	Function
1	N.C.	not connected
2	N.C.	not connected
3	B-LINE	(RS485+)
4	RTS	Ready To Send
5	GND	RS485 Bus Reference
6	+ 5V (galvanically isolated)	RS485 Bus Power Supply
7	N.C.	not connected
8	A-Line	(RS485-)
9	N.C.	not connected

### 2.5.3 Connection to a Profibus Network

The following figure shows a Profibus layout with C-BOX 3X0 devices connected to a Profibus Master:

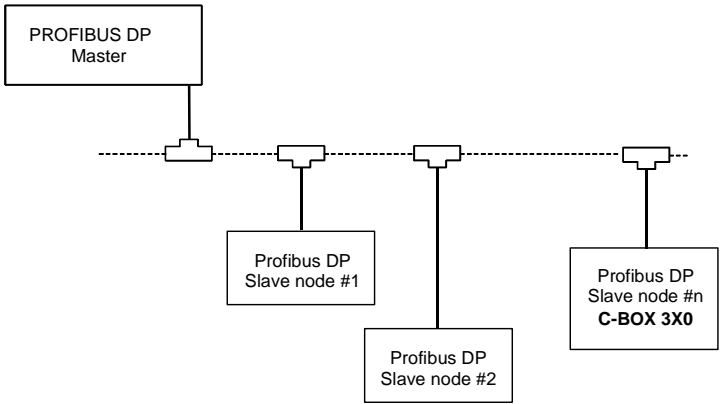


Figure 12 - Profibus connection

It is recommended to use only commercially available PROFIBUS connectors for connecting to the bus. Use connectors from ERNI and Siemens. If the C-BOX is installed at the beginning or end of the PROFIBUS cable segment, it is recommended to use PROFIBUS connectors, which contain an integrated terminating resistor.

To ensure that the C-BOX functions without errors, the shield of the PROFIBUS cable must be grounded.

- Ensure that the PROFIBUS connector uses the pin assignments shown in par 2.5.2
- Attach the PROFIBUS connector to the PROFIBUS interface socket on the C-BOX 3X0 and secure the connector with the retaining screws.
- For C-Box 310 models, it is advised to use up to two ferrites (type Stewart 28A2029-0A0) on the Profibus cable to reduce electrical noise.

## 2.5.4 C-BOX 3X0 Configuration for Profibus DP Slave Node

In order to setup the C-BOX 3X0, you need to install the function blocks in your PLC programming software and configure it.

The procedure below can be generally applied for this purpose:

1. Start the PROFIBUS configurator on the DP Master.
2. Insert the CD with the device databas files (.GSD) into the drive of the programming device (usually a PC).
3. Load the .GSD file HMS\_1810.GSD in the configurator.
4. Configure the C-BOX 3X0 (through WinHost) setting the parameters according to the PROFIBUS network application as described in the configurator's Help On-Line or User's Manual.



### NOTE

*Further information on PROFIBUS protocol and Flow control is provided in the C-BOX 300/310 PROFIBUS document and Help On-Line installed from the configuration CD provided in the C-BOX package.*

## 2.6 CONFIGURATION SWITCH AND 9-PIN INTERNAL CONNECTOR

The 9-pin internal connector may have two different functions according to the position of the configuration switch.

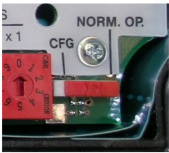


Figure 13 - Configuration switch

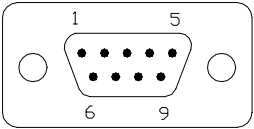


Figure 14 - 9-pin male connector

### POSITION



### MODE

**Normal Operation** (default): In this position, the C-BOX 3X0 is in the normal operating mode. It communicates with the scanner through the 9-pin internal connector and the scanner auxiliary serial interface. The internal connector pinout is illustrated in the following table:

9-pin connector pinout		
Pin	Name	Function
1		N.C.
2	RXA	Auxiliary RS232
3	TXA	Auxiliary RS232
4		N.C.
5	SGND	Signal Ground
6		N.C.
9		N.C.
DS2100A - DS2400A		
7	CTSA	Auxiliary Handshake RS232
8	RTSA	Auxiliary Handshake RS232
DS4600A		
7	SGND AUX	Auxiliary Signal Ground
8	GND	Ground

## POSITION



## MODE

**CFG:** When the switch is in this position, the C-BOX 3X0 is in configuration mode. The communication with the scanner is interrupted and pins 2 and 3 are no longer dedicated to the scanner auxiliary interface but to the C-BOX 3X0 configuration (see table below). The system enters configuration mode and waits to be configured through WinHost (see WinHost Help On Line).

The C-BOX 310 display visualizes an appropriate message.

Once the C-BOX 3X0 configuration is completed, it is necessary to replace the switch in the Normal Operation position. At the end of the reboot phase, the C-BOX 3X0 is ready to function with the new configuration.

9-pin connector pinout in Configuration mode		
Pin	Name	Function
2	RX	C-BOX 3X0 Configuration
3	TX	C-BOX 3X0 Configuration
5	SGND	Signal Ground

**CAUTION**

*When the C-BOX 3X0 configuration is completed, remember to replace the Configuration switch in the Normal Operation position.*

## 2.7 SCANNER REQUIREMENTS

The C-BOX 3X0 can be connected to the following scanners through the 25-pin connector illustrated in Figure A.

DS2100A	DS4600A
DS2400A	

- 1) For all scanners, it is necessary to use the RS232 interface which must be selected by the user.
- 2) At least one Terminator Character should be enabled in the connected scanner (see the Terminator parameters in the Data Format section of the Help On Line).

The device address must be pre-set using one of the methods described in par. 2.5.1.

## 2.8 OPERATING MODES

With the C-BOX 3X0, three operating modes are possible:

**Normal Operation:** Once the connection procedure is completed (the warning LED is OFF), the C-BOX 3X0 is ready to receive code strings from the scanner's RS232 main interface. Then, it converts them to the Profibus DP network.

**GET/TEST/SEND:** Through the C-BOX 300 internal buttons and the C-BOX 310 external keypad, it is possible to communicate with the scanner to perform one of the following functions:

- Get scanner configuration
- Force the scanner in TEST mode
- Send a configuration to the scanner

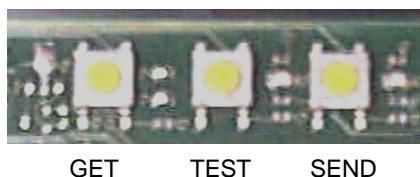
At the end of each function the scanner returns to the previous operating mode.

**Configuration (CFG):** When the CFG switch is in CFG position (left) it is possible to configure the C-BOX 3X0 parameters.

## 2.8.1 GET/TEST/SEND Functions

The C-BOX 300 has three internal function buttons. In the C-BOX 310, they are also available on the cover, and their function is indicated on the display.

**C-BOX 300**



**C-BOX 310**



**Figure 15 – Internal Function Buttons**

The procedure to enable the GET/TEST/SEND function is the following:

1. Press both the left and right buttons at the same time for at least one second; the warning LED is turned ON.
2. Release the buttons.
3. Press the left button corresponding to the GET function, the center button corresponding to the TEST function **or** the right button corresponding to the SEND function.

**GET –** (left button): the C-BOX 3X0 reads the current scanner configuration and permanently copies it in its own memory support (EEPROM). The C-BOX 3X0 preserves this configuration also when switched off.

- TEST -** (center button): the C-BOX 3X0 forces the scanner to run the Test Operating Mode (refer to the scanner Installation Manual for details). Press any button to quit the Test Operating Mode and restore the scanner normal operating mode.
- SEND -** (right button): the C-BOX 3X0 sends the configuration previously stored in its own permanent memory support to the scanner's EEPROM.

**NOTE**

*Once the buttons are released in step 1, a ten-second timeout starts. If no button is pressed within this time (no function is selected), the procedure will be cancelled.*

*The C-Box 300 warning LED (Figure 17) is turned OFF at the end of each procedure.*

*The C-BOX 310 display visualizes self-explaining messages about GET/TEST/SEND functions.*

## 2.8.2 LED Indicators

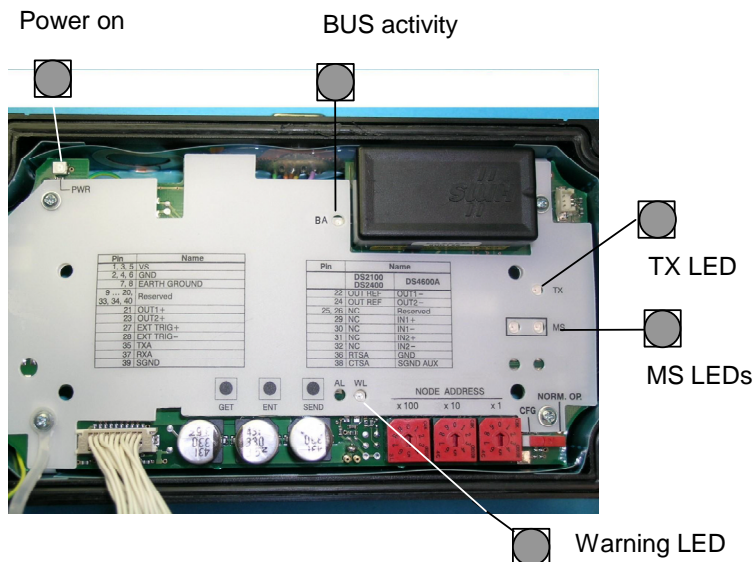


Figure 16 - LED Indicators

In the C-BOX 3X0 the Warning LED is repeated in the bottom inside.

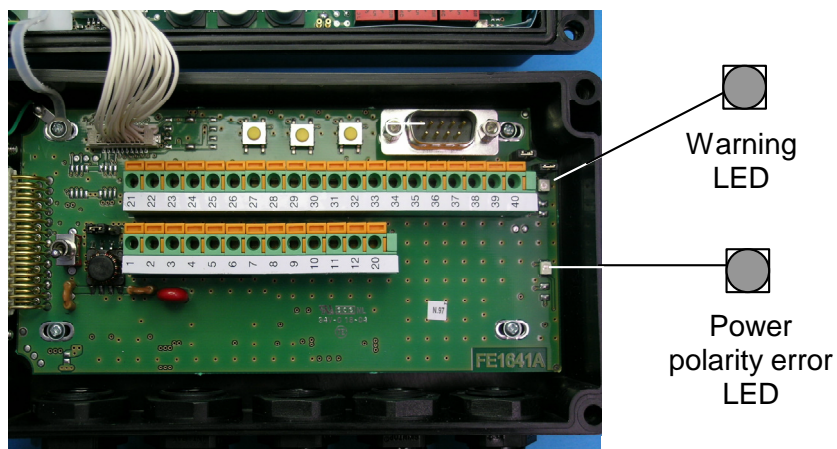


Figure 17 – Warning LED



The internal LEDs of the C-BOX 3X0 (see Figure 16) indicate the following:

<b>POWER ON (PWR)</b>	(red) indicates the C-BOX 3X0 is connected to the power supply and the power switch is ON.
<b>WARNING (WL)</b>	(red) indicates a warning or error condition. It is ON when a connection procedure is in progress (the system is busy), during a GET/TEST/SEND procedure or during the Configuration Mode. It blinks when an error condition occurs. Normally this LED should be OFF.
<b>BUS ACTIVITY (BA)</b>	(green) indicates the Profibus Network activity. When communication takes place, this LED will blink slightly.
<b>TRANSMISSION (TX)</b>	(green) indicates there is communication between the Application and the DeviceNet module. Upon communication, this LED will blink slightly.
<b>MODULE STATUS (MS)</b>	<p>(green) OFF = Bus off-line or power not supplied.  ON = Bus in Data Exchange Mode.  Flashing = Bus in Clear Mode.</p> <p>(red) OFF = No error or power not supplied.  ON = Error in initialisation of Profibus ASIC.  Flashing = Error in configuration data and / or in user parameter data.</p>
<b>POWER POLARITY ERROR</b>	(red) indicates a wrong polarity. While activated, all other LEDs will be off until the power feed is connected with correct polarity.

### 3 TECHNICAL FEATURES

ELECTRICAL FEATURES		C-BOX 300	C-BOX 310
<b>Power</b>			
Supply voltage		10 to 30 Vdc	
Power consumption max.		2.9 W + scanner	4.7 W + scanner
USER INTERFACE			
LED indicators		Power ON, Warning, Tx, Diagnostics	
PHYSICAL FEATURES			
Mechanical dimensions		167 x 115 x 61 mm (6.57 x 4.53 x 2.40 in.)	
Weight		about 440 g. (15.51 oz.)	about 500 g. (17.63 oz.)
SOFTWARE FEATURES			
Parameter storage		Non-volatile internal memory	
PROFIBUS INTERFACE			
Interface type		RS485	
Data transfer rate		bit/s 9600, 19200, 93750, 187500, 0.5M, 1.5M, 3M, 6M, 12M, automatic detection of the data transfer rate	
ENVIRONMENTAL FEATURES			
Operating temperature		-10 to 50 °C (14 to 122 °F)	
Storage temperature		-20 to 70 °C (-4 to 158 °F)	
Humidity max.		90% non condensing	
Vibration resistance		IEC 68-2-6 test FC 1.5 mm; 10 to 55 Hz; 2 hours on each axis	
Shock resistance		IEC 68-2-27 test EA 30G; 11 ms; 3 shocks on each axis	
Protection class		IP64 (when correctly connected to the scanner)	



*The features given are typical at a 25 °C ambient temperature (if not otherwise indicated).*

#### NOTE

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**C-BOX 3X0**

e tutti i suoi modelli  
and all its models  
et tous ses modèles  
und seine modelle  
y todos sus modelos

sono conformi alle Direttive del Consiglio Europeo sottoelencate:  
are in conformity with the requirements of the European Council Directives listed below:  
sont conformes aux spécifications des Directives de l'Union Européenne ci-dessous:  
der nachstehend angeführten Direktiven des Europäischen Rats:  
cumple con los requisitos de las Directivas del Consejo Europeo, según la lista siguiente:

**89/336/EEC EMC Directive**

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**92/31/EEC, 93/68/EEC**

emendamenti successivi  
further amendments  
ses successifs amendements  
späteren Abänderungen  
sucesivas enmiendas

Basate sulle legislazioni degli Stati membri in relazione alla compatibilità elettromagnetica ed alla sicurezza dei prodotti.  
On the approximation of the laws of Member States relating to electromagnetic compatibility and product safety.  
Basée sur la législation des Etats membres relative à la compatibilité électromagnétique et à la sécurité des produits.  
Über die Annäherung der Gesetze der Mitgliedsstaaten in bezug auf elektromagnetische Verträglichkeit und Produktsicherheit entsprechen.  
Basado en la aproximación de las leyes de los Países Miembros respecto a la compatibilidad electromagnética y las Medidas de seguridad relativas al producto.

Questa dichiarazione è basata sulla conformità dei prodotti alle norme seguenti:  
This declaration is based upon compliance of the products to the following standards:  
Cette déclaration repose sur la conformité des produits aux normes suivantes:  
Diese Erklärung basiert darauf, daß das Produkt den folgenden Normen entspricht:  
Esta declaración se basa en el cumplimiento de los productos con las siguientes normas:

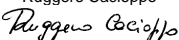
**EN 55022, August 1994:**

LIMITS AND METHODS OF MEASUREMENTS OF RADIO DISTURBANCE CHARACTERISTICS OF INFORMATION TECHNOLOGY EQUIPMENT (ITE)

**EN 61000-6-2, October 2001:**

ELECTROMAGNETIC COMPATIBILITY. GENERIC IMMUNITY STANDARD. PART 2: INDUSTRIAL ENVIRONMENT

Lippo di Calderara, 24/09/2004

Ruggero Cacioppo  
  
Quality Assurance Supervisor