



C-BOX 150

Installation Manual

DATALOGIC

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C-BOX 150

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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 150 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.



CAUTION

The overall value of power consumption of the system (C-BOX 150 + scanner) is given by adding the scanner power consumption to that of the C-BOX 150. Refer to the manual of the connected scanner for details about minimum/maximum supply voltage and power consumption.

See par. 2.4.1 for correct power supply connections.

WEEE COMPLIANCE



GENERAL VIEW

C-BOX 150



Figure A

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

C-BOX 150

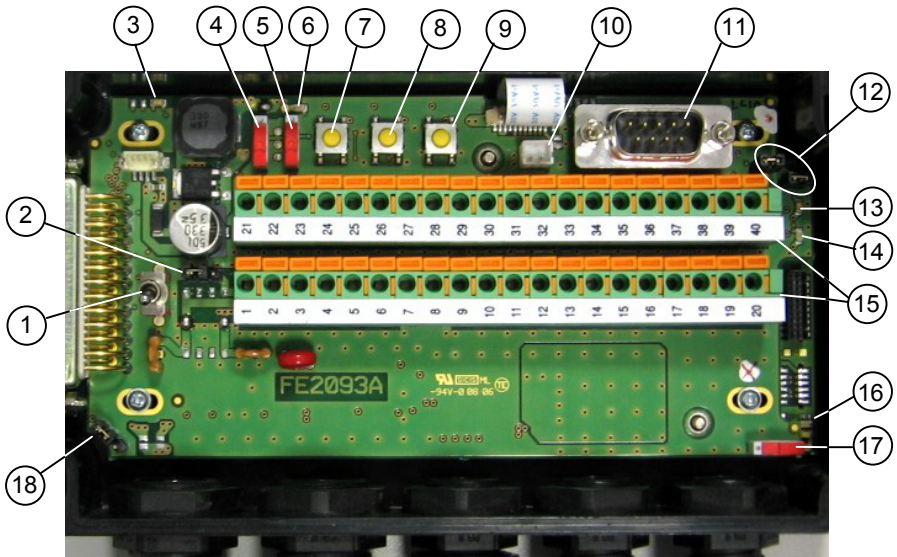


Figure B - Bottom Inside

- | | |
|----------------------------------|--------------------------------|
| ① Power on switch | ⑩ INT-30 power connector |
| ② Chassis grounding jumper | ⑪ Auxiliary port connector |
| ③ Power polarity error LED (red) | ⑫ OM4000 jumpers |
| ④ RS485 Bus termin.switch | ⑬ Warning LED (red) |
| ⑤ Scanner selection switch | ⑭ Status LED |
| ⑥ Power on LED (green) | ⑮ Spring clamp terminal blocks |
| ⑦ GET button | ⑯ Tx LED |
| ⑧ TEST button | ⑰ Configuration switch |
| ⑨ SEND button | ⑱ Power source jumper |

GUIDE TO INSTALLATION

The following can be used as a checklist to verify all of the steps necessary for complete installation of the C-BOX 150.

- 1) Read all information in the section "Safety Precautions" at the beginning of this manual.
- 2) Correctly position and mount the C-BOX 150 within the reach of the barcode scanner cable, according to the information in paragraph 2.3.
- 3) Make all electrical connections according to your application. See par. 2.4 and 2.6.
Further typical layouts are given in the Scanner Reference Manual.
- 4) Set all the proper configuration jumpers and switches according to your application.
See all sub-paragraphs under 2.4.
- 5) Connect the scanner to the C-BOX 150.
- 6) Switch-on the system.
- 7) Wait until the Warning Led (WL, red) is switched off.
- 8) Through the internal 9 pin male connector (it carries the Scanner Aux. Serial Port signals) configure the scanner according to your specific application; use WinHost for the 1000, 2000, 4000 Family, and Genius for the 6K/8K Family.
- 9) Force the 'Get Scanner Configuration' procedure using the internal keys (see paragraph 2.5.1).
- 10) Wait until the Warning Led (WL, red) is switched Off.

Now the C-BOX 150 contains the scanner configuration.
The installation is complete.

1 INTRODUCTION

1.1 PRODUCT DESCRIPTION

The C-BOX 150 is a connection box which can be used as an accessory to several Datalogic family scanners.

Its main feature is to make the substitution of a Datalogic scanner in an installation plain and easy.

To achieve this goal the C-BOX 150 provides the GET command to pass the connected scanner's configuration to the C-BOX 150 non volatile memory. The SEND command allows a previously saved configuration to be transferred from the C-BOX 150 to the scanner.

By default, at every power-on, the C-BOX 150 automatically sends the configuration stored in its memory to the connected scanner. Therefore the substituted scanner will be correctly configured.

The C-BOX 150 allows you to perform the following functions:

- Facilitate the connection of the scanner signals using a spring clamp connector.
- 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.

The C-BOX 150 mechanical dimensions are 161 x 114.5 x 40 mm (6.34 x 4.51 x 1.57 in.). The C-BOX 150 weighs about 410 g (14.48 oz).

Electrical connection is provided through spring clamp terminal blocks inside the C-BOX 150.

The scanner is connected to the C-BOX 150 through a 25-pin connector placed on the left side of the housing.

A 9-pin connector placed inside the C-BOX 150 facilitates connection between an external PC and the auxiliary serial interface of the scanner.

1.2 C-BOX 150 COMPATIBLE DEVICES

The C-BOX 150 can be connected to the following scanners through the 25-pin connector illustrated in Figure A.

DS1100*	DS2400A	DS8100A
DS2100A	DS4600A	DX8200A
DS2200*	DS6X00	

*10 and 30 Vdc versions only

2 INSTALLATION

2.1 PACKAGE CONTENTS

Verify that the C-BOX 150 and all the parts supplied with the equipment are present and intact when opening the packaging; the list of parts includes:

- 1) C-BOX 150
- 2) Installation manual
- 3) C-BOX 150 configuration CD-ROM
- 4) 2 mounting screws
- 5) Grounding cable

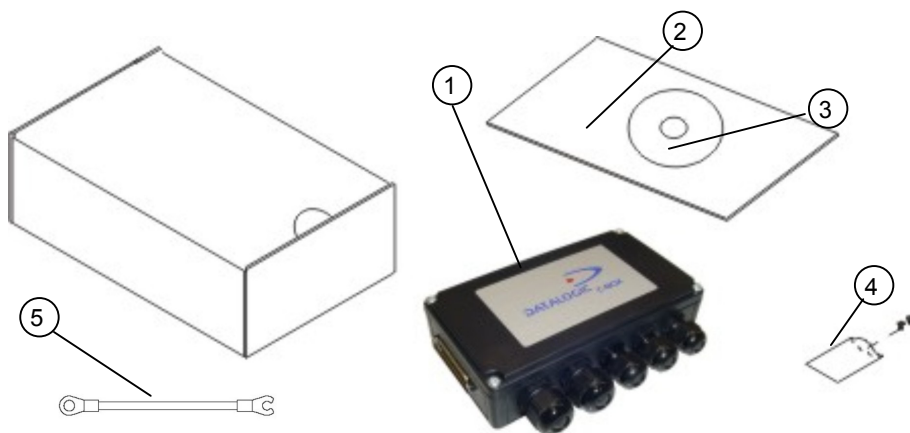


Figure 1 - C-BOX 150 Package Contents

2.2 OPENING THE DEVICE

To install the C-BOX 150 or during normal maintenance, it is necessary to open it by unscrewing the four cover screws:



CAUTION

The C-BOX 150 must be disconnected from the power supply during this operation.

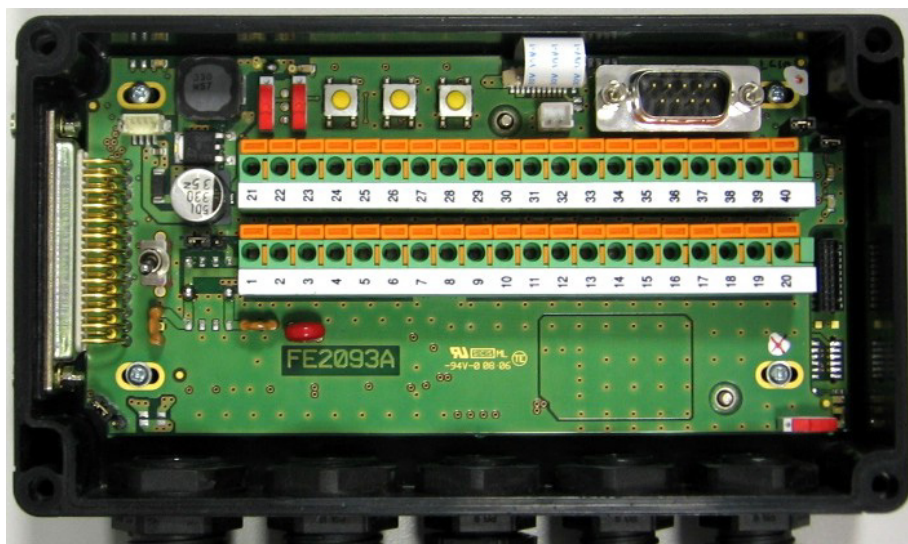


Figure 2 - Opening the C-BOX 150

It is possible to perform the following operations:

- Proceed with the cable connections (see paragraph 2.4.2).
- Mount the C-BOX 150 to a wall or panel.

2.3 MECHANICAL INSTALLATION

The diagram below gives the overall dimensions of the C-BOX 150 and may be used for its installation.

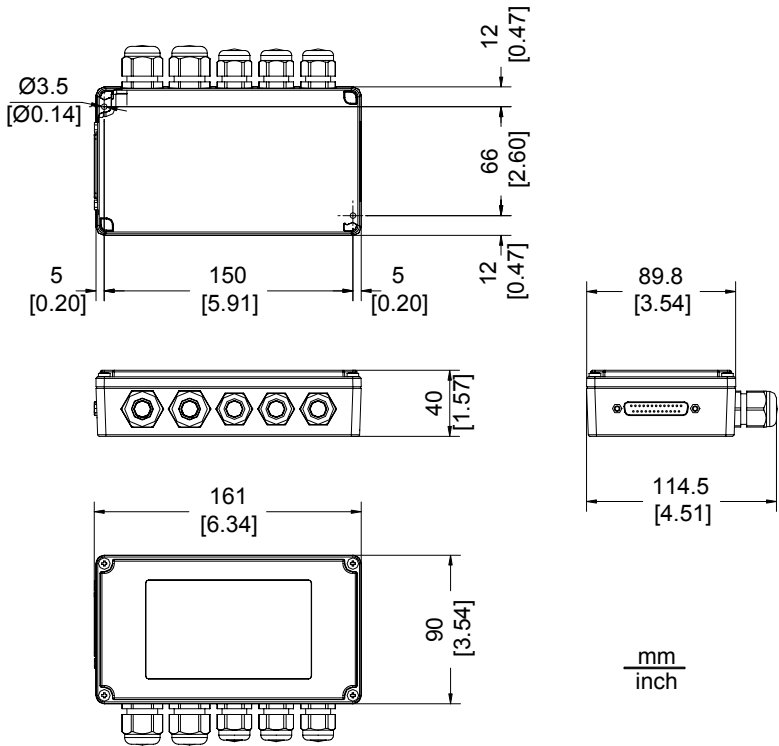


Figure 3 - Overall Dimensions

C-BOX 150 can be installed to operate in different positions. The two screw holes inside the housing of the C-BOX 150 are for mechanical fixture (Figure 4).

To mount the C-BOX 150:

- 1) Open the C-BOX 150 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 150 and insert two screws and screw them into the panel until tight (see Figure 4).

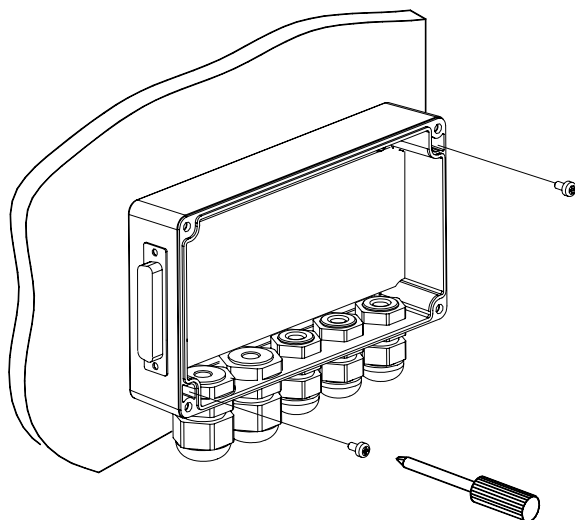


Figure 4 - Mounting C-BOX 150

2.4 ELECTRICAL CONNECTIONS AND HARDWARE SETUP

The following figure shows the typical layout.

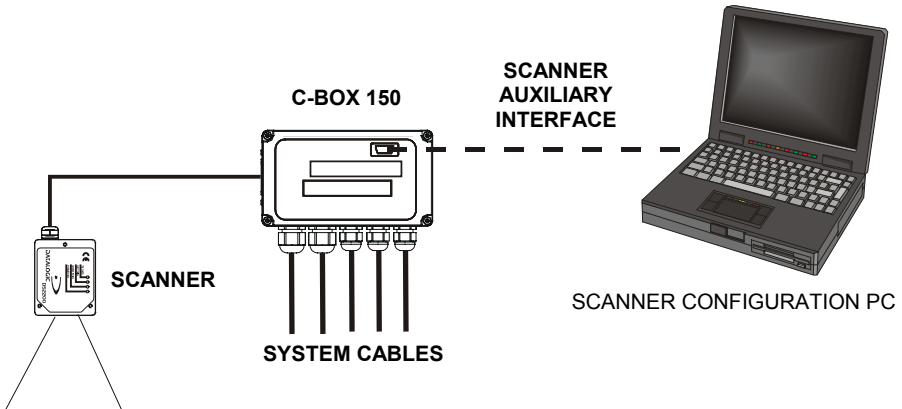


Figure 5 – System Layout

A PC can be connected to the C-BOX 150 (and consequently to the scanner auxiliary interface) through the internal 9-pin connector. This allows both scanner configuration and monitoring of the data transmitted by the scanner (see the scanner Reference Manual for more details).

The scanner auxiliary interface signals are also available on the internal spring clamp connectors.

The scanner configuration and data monitoring are possible once the warning LED is turned OFF.

The internal 9-pin connector can also be used to configure the C-BOX 150 with a PC, through the WinHost utility.

After making system cabling and switch settings, connect the scanner to the 25-pin connector on the left side of the C-BOX 150 housing.

Switch ON the C-BOX 150 power switch (see Figure 6).

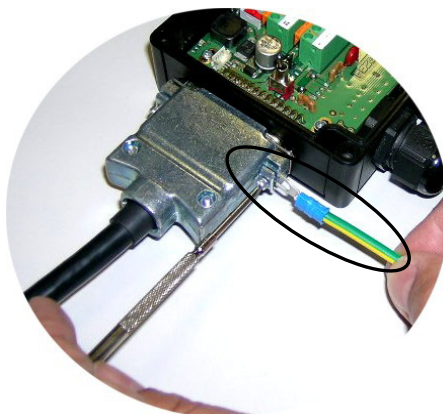
By default, after power on, an automatic connection procedure takes place between the C-BOX 150 and the scanner. During this phase, requiring a few seconds, the warning LED is turned ON. Once the procedure had been completed successfully, the warning LED is turned OFF.

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

After system functioning has been verified, close the C-BOX 150 using the 4 cover screws making sure the rubber seal is fitted correctly between the parts of the housing.

**NOTE**

It is recommended to use the dedicated grounding cable (included in the package) to improve the C-BOX 150 noise immunity. Simply connect its open end to the scanner cable's fixing screw and the other end to the ground, as shown in the figure below.



2.4.1 Power Supply

Power is supplied to the C-BOX 150 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 150 and the connected scanner.

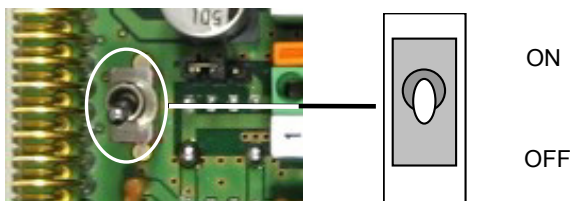


Figure 6 - Power Switch ON/OFF Positions

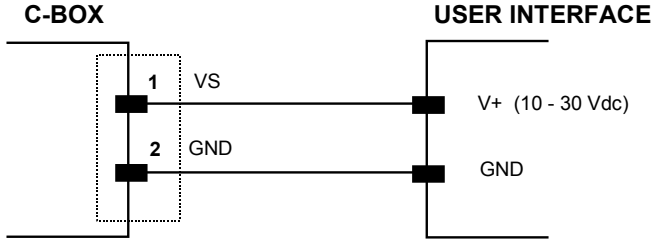


Figure 7 - Power Supply Connections

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.



NOTE

The C-BOX 150 is protected against polarity reversal. A dedicated red LED signals this condition until correct polarity is restored.

2.4.2 System Wiring

The connection and wiring procedure for C-BOX 150 is described as follows:

- 1) Open the C-BOX 150 as described in paragraph 2.2.
- 2) Verify that the C-BOX 150 power switch is off (see Figure 6).
- 3) Unscrew the compression connectors and pass all the system cables through them into the C-BOX 150 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.

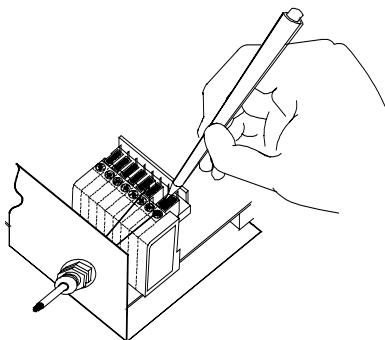


Figure 8 - System Cable Connections

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

All positions:	24 - 16 AWG	0.2 - 1.5 mm ²
----------------	-------------	---------------------------

The C-BOX 150 spring clamp connector pinouts are indicated in the following table. Refer to the scanner Reference Manual for details.

Scanner Pinouts				
Pin	Name			
1, 3, 5	VS			
2, 4, 6	GND			
7, 8	EARTH GROUND			
*9, 13	RS485 CABLE SHIELD			
20, 40	RESERVED			
35	TX AUX			
37	RX AUX			
	DS2100A DS2400A	DS4600A	DS1100 DS2200	DS6X00 DX6X00 DS8100A DX8200A
21	OUT1+	OUT1+	OUT1+	OUT1+
22	OUT REF	OUT1-	IO REF	OUT1-
23	OUT2+	OUT2+	OUT2+	OUT2+
24	OUT REF	OUT2-	IO REF	OUT2-
25	NC	RESERVED	NC	OUT 3A
26	NC	RESERVED	IN1-	OUT 3B
27	EXT TRIG+	EXT TRIG+	EXT TRIG+	EXT TRIG/PS A
28	EXT TRIG-	EXT TRIG-	EXT TRIG-	EXT TRIG/PS B
29	NC	IN1+	NC	IN 2/ENC A
30	NC	IN1-	IO REF	IN 2/ENC B
31	NC	IN2+	NC	IN 3A
32	NC	IN2-	NC	IN 4A
33	RESERVED	RESERVED	RESERVED	IN 3A
34	RESERVED	RESERVED	RESERVED	IN 4A
36	RTSA	GND	NC	IN 3B/IN 4B
38	CTSA	SGND AUX	NC	GND
39	SGND	SGND	SGND	GND
DS2100A DS2400A DS4600A DS6X00 DX6X00 DS8100A DX8200A				
	RS232	RS485FD	RS485HD	20mA CL (with INT-30 only)
*11, 15	TX232	TX485+	RTX485+	See INT-30 instructions
*12, 16	RTS232	TX485-	RTX485-	
17	RX232	RX485+		
18	CTS232	RX485-		
*10, 14, 19	SGND MAIN	SGND MAIN	SGND MAIN	
DS1100 DS2200				
			RS485HD	
*11, 15			RTX485+	
*12, 16			RTX485-	
17			RESERVED	
18			RESERVED	
*10, 14, 19			SGND MAIN	

* The signals on pins 9, 10, 11 and 12 are repeated on pins 13, 14, 15 and 16 to facilitate network connections (i.e. Multiplexer connections using the RS485 half-duplex Interface). In this way the network bus can enter and exit the C-Box 150 from different spring clamps but be physically connected together.

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.

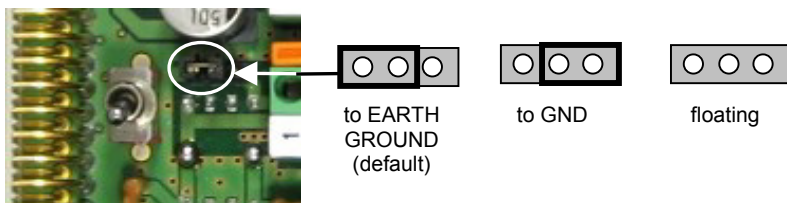


Figure 9 – Chassis Grounding

2.4.4 Scanner Selection

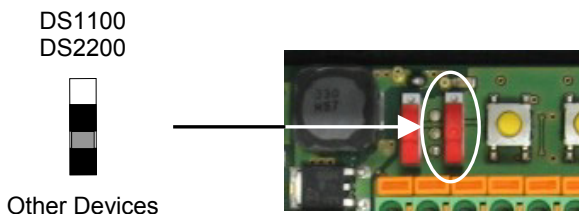


Figure 10 - Scanner Selection Switch

This switch must be set upward only when a DS1100 or a DS2200 scanner (10-30 V version) is connected. For all the other devices the switch must be set downward.

2.4.5 RS485 Bus Termination

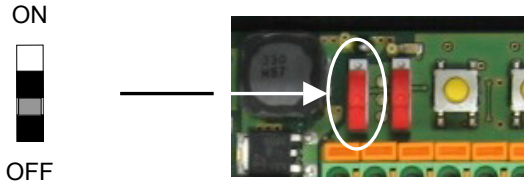


Figure 11 - Termination Resistance Switch

This switch enables or disables the insertion of the bus termination resistor for RS485 Half Duplex Multidrop applications.



CAUTION

*In Multiplexer applications the termination resistor must be enabled **ONLY** on the last device of the chain, the farthest away from the Multiplexer (assuming the Multiplexer is the first device of the chain). On all the other devices this resistor **MUST NOT** be enabled (OFF position).*

2.4.6 Powering C-BOX 150 From A Scanner

In order for C-BOX 150 to accept power from the scanner through the 25-pin connector instead of the external power supply, a jumper can be positioned as indicated in Figure 12.

This is useful, for example, in a typical Master Slaves layout with a Power Supply Unit connected to the scanners (see paragraph 2.6) or to pass power to connected accessories such as Encoder and Presence Sensor from DX8200A VAC models or other scanner layouts. See the relative scanner Reference Manual for details.

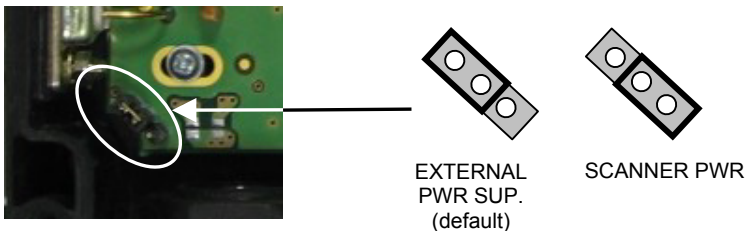


Figure 12 – C-BOX 150 Power Source Jumper

2.4.7 OM4000 Jumper Settings

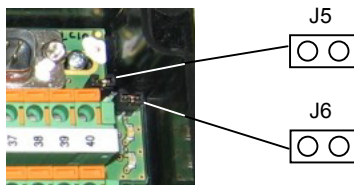


Figure 13 - OM4000 Jumpers

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 J5 position (see Figure above) pin 40 is connected to pin 27 (EXT TRIG+); a jumper in J6 position connects pin 20 to pin 28 (EXT TRIG-).

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

2.4.8 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.

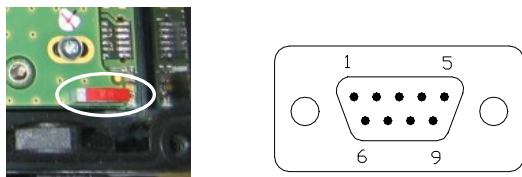


Figure 14 - Configuration Switch and 9-pin Male Connector

POSITION



MODE

Normal Operation (default): In this position, the C-BOX 150 is in the normal operating mode. The configuration PC 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 C-Box 150 connector pinout in Normal mode		
Pin	Name	Function
1		NC
2	RXA	Auxiliary RS232
3	TXA	Auxiliary RS232
4		NC
5	GND	Ground
6		NC
7	RESERVED	Device Dependent Signal
8	RESERVED	Device Dependent Signal
9		NC

POSITION



MODE

CFG: When the switch is in this position, the C-BOX 150 can be configured. 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 150 configuration (see table below). The C-BOX 150 enters configuration mode and waits to be configured through WinHost (see WinHost Help On Line).

Once the C-BOX 150 configuration is completed, it is necessary to return the switch in the Normal Operation position. At the end of the reboot phase, the C-BOX 150 is ready to function with the new configuration.

9-pin C-Box 150 connector pinout in Configuration mode		
Pin	Name	Function
2	RX	C-BOX 150 Configuration
3	TX	C-BOX 150 Configuration
5	SGND	Signal Ground



CAUTION

When the C-BOX 150 configuration is completed, remember to return the Configuration switch in the Normal Operation position.

2.5 OPERATING MODES

With the C-BOX 150, the following operating modes are possible:

Normal Operation: At power on, the C-BOX 150 tries to connect to the scanner. Once the connection procedure is completed the C-BOX 150 verifies if an Automatic SEND command must be executed. While executing the command, the serial Auxiliary interface is not available for the user. After the command completion, the warning LED will turn OFF and the Aux interface will become free for communication.

After the initialization procedure, in the Normal operating mode the scanner reads barcodes and communicates with the host.

Also in this mode, through the C-BOX 150 internal buttons it is possible to communicate with the scanner to perform one of the three GET/TEST/SEND Functions (see paragraph 2.5.1).

Configuration (CFG): When the CFG switch is in CFG position (left) it is possible to configure the C-BOX 150 parameters through WinHost.

2.5.1 GET/TEST/SEND Functions

The C-BOX 150 has three internal function buttons which are available in the Normal operating mode.

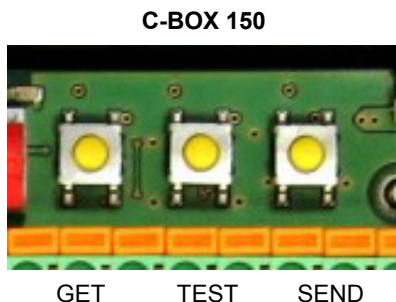


Figure 15 – Internal Function Buttons

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 will turn 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.

**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 150 warning LED will turn OFF at the end of each procedure.

Function	Description
GET (left button)	The C-BOX 150 reads the current scanner configuration and permanently copies it in its own memory support. The C-BOX 150 preserves this configuration also when switched off. The GET option can be disabled through WinHost.
TEST (center button)	The C-BOX 150 forces the scanner (DS1100, DS2XXX families and DS4600A) to run the Test Operating Mode (refer to the scanner Reference Manual for details). Press any button to quit the Test Operating Mode and restore the scanner normal operating mode. For DS6XXX, DX6XXX, DS8100A and DX8200A scanners you should use scanner keypad.
SEND (right button)	The C-BOX 150 sends the configuration previously stored in its own permanent memory support to the scanner's memory. The SEND option can be disabled through WinHost; by default it is Automatic.

**NOTE**

To override the eventual default Automatic SEND service, it is possible to preset a GET service by executing the enabling procedure immediately at power-on.

2.5.2 LED Indicators

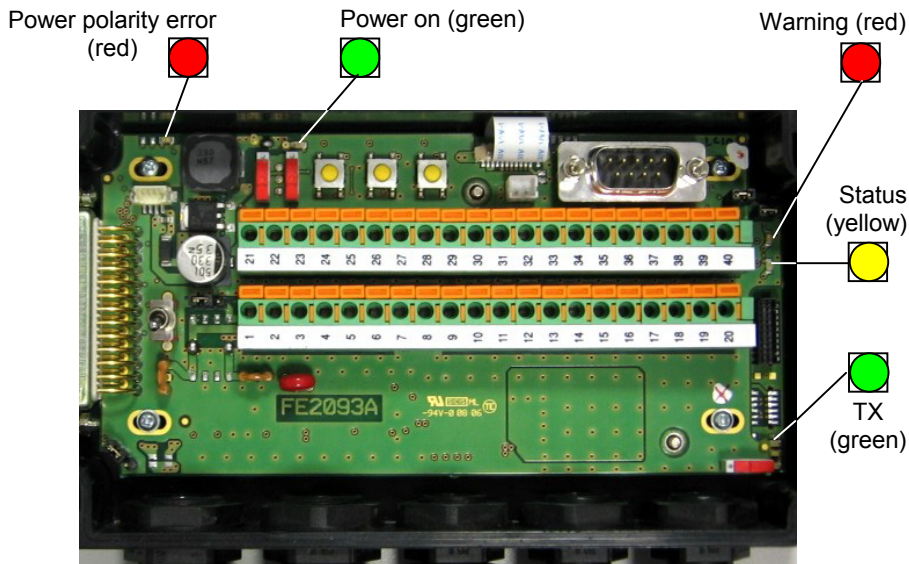


Figure 16 - LED Indicators

The internal LEDs of the C-BOX 150 (see Figure above) indicate the following:

- | | |
|-----------------------------|---|
| POWER ON (PWR) | (green) indicates the C-BOX 150 is connected to the power supply and the power switch is ON. |
| POWER POLARITY ERROR | (red) indicates a wrong polarity. While activated, all other LEDs will be off until the power feed is connected with correct polarity. |
| WARNING (WL) | <p>(red) indicates a warning or error condition.</p> <p>Off: the C-BOX 150 has terminated the Connection and/or the Update phase; all the operations have been executed successfully.</p> <p>ON: during a connection procedure and/or the Update phase (the system is busy) or during the C-BOX 150 Configuration Mode.</p> <p>It flashes quickly when a GET command has been preset at power on.</p> |

1 blinking/sec: a requested operation has been terminated abnormally.

2 blinking/sec: a wrong operation has been requested (for example the configuration in memory is not compatible with the connected scanner).

STATUS (SL)

(yellow) indicates the status of the non-volatile memory support.

Off: the memory is empty (no configuration on board).

1 blinking/sec: the memory is not empty (a Get scanner configuration service has been executed)*.

2 blinking/sec: the memory is not empty (a Get Scanner Configuration service has been executed); however the saved configuration is not compatible with the current scanner one.

TRANSMISSION (TX)

(green) indicates there is communication between the C-BOX 150 and the scanner. This LED blinks during the connection procedure.

* This is the typical state after correct system installation.

2.6 TYPICAL LAYOUTS

2.6.1 1000, 2000, 4000 Scanners

For 1000, 2000, 4000 Scanner Families, the C-BOX 150 can operate in point-to-point single scanner configuration layouts.

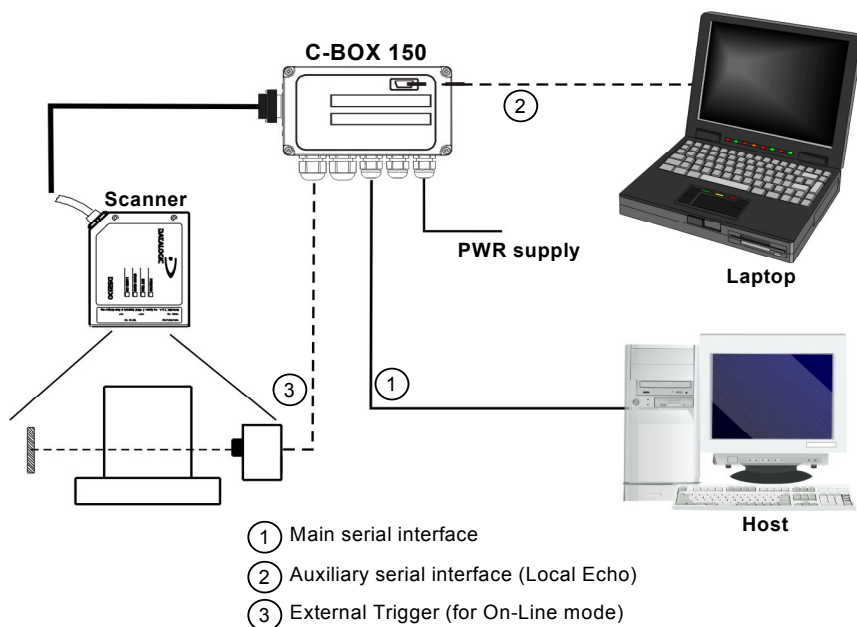
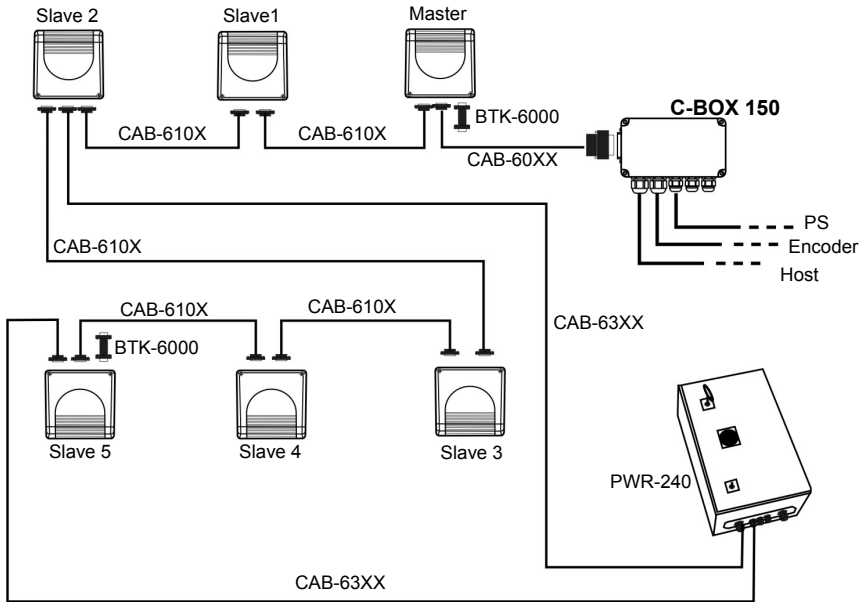


Figure 17 – Typical one scanner Layout

2.6.2 6000, 8000 Scanners

For the 6k/8k scanner Families, the C-BOX 150 can operate in both point-to-point single scanner configuration layouts and in a whole cluster of scanners in Master/Slave layouts.



NOTE

In a Master/Slave layout with a great number of Slaves, a Power Supply Unit can be connected to the scanners and the C-BOX 150 can accept the scanner power by setting the Power Source Jumper in the right position. See paragraph 2.4.6

By default, C-BOX 150 is able to perform Backup/Restore of the whole cluster (Master and Slaves). The following conditions must be met:

1. The Master/Slave network must be either Synchronized or Multidata.
2. The A.S.R. mode must be disabled.

In order to perform Backup/Restore of Master only, the C-BOX 150 Cluster GET/SEND parameter must be configured to "Master only".

See also *WinHost Help* online.

2.7 SCANNER REPLACEMENT

If you have to replace the scanner with another one:

1. Switch-off the system.
2. Connect the new scanner.
3. Switch-on the system.
4. Wait until the Warning Led (WL, red) is switched Off.

Now the new scanner has been automatically (default) updated with the correct configuration!

3 TECHNICAL FEATURES

ELECTRICAL FEATURES	
Power	
Supply voltage	10 to 30 Vdc
Power consumption max.	2.5 W + scanner
USER INTERFACE	
LED indicators	Power ON, Warning, Status Tx, Polarity inversion
PHYSICAL FEATURES	
Mechanical dimensions	161 x 114.5 x 40 mm (6.34 x 4.51 x 1.57 in)
Weight	about 410 g. (14.48 oz.)
SOFTWARE FEATURES	
Parameter storage	Non-volatile internal memory
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	14 mm @ 2 to 10 Hz;
IEC 68-2-6 test FC	1.5 mm @ 13 to 55 Hz;
	2g @ 70-200 Hz
	2 hours on each axis
Shock resistance	30g; 11 ms;
IEC 68-2-27 test EA	3 shocks on each axis
Protection class	IP64
	(when correctly connected to the scanner)


NOTE

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

dichiara che
declares that the
déclare que le
bescheinigt, daß das Gerät
declare que el

C-BOX-XXX

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	e	92/31/EEC, 93/68/EEC	emendamenti successivi
	and		further amendments
	et		ses successifs amendements
	und		späteren Abänderungen
	y		successivas 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 (CLASS A ITE), August 1994:
AMENDMENT A1 (CLASS A ITE), October 2000

LIMITS AND METHODS OF MEASUREMENTS OF RADIO DISTURBANCE
CHARACTERISTICS OF INFORMATION TECHNOLOGY EQUIPMENT

EN 61000-6-2, October 2001:

ELECTROMAGNETIC COMPATIBILITY (EMC).
PART 6-2: GENERIC STANDARDS – IMMUNITY FOR INDUSTRIAL ENVIRONMENTS

Lippo di Calderara, 05/05/2006

Ruggiero Cacioppo
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