

DX8200A

General View:



Figure A

- ① Laser Beam Output Windows
- ② Mounting Slots
- ③ Laser Safety Label
- ④ Mounting Reference Label

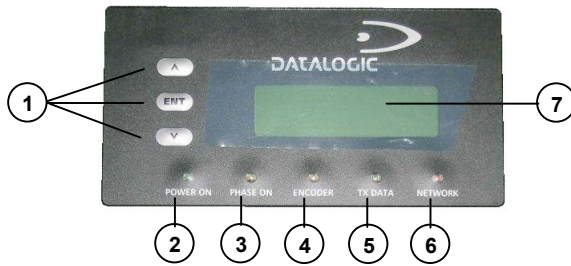


Figure B

- ① Programming Keypad
- ② Power On LED (Green)
- ③ Phase On LED (Yellow)
- ④ Encoder LED (Yellow)
- ⑤ TX Data LED (Green)
- ⑥ Network LED (Red)
- ⑦ LCD Display

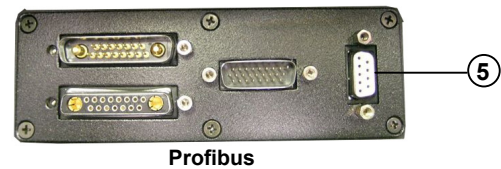
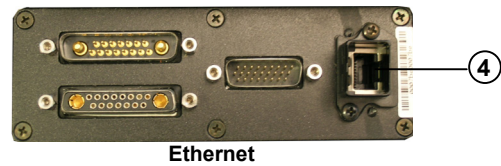
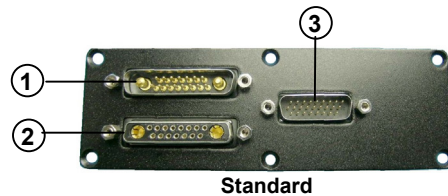


Figure C

- ① Lonworks 17-pin Male Connector
- ② Lonworks 17-pin Female Connector
- ③ Serial Interface and I/O 26-pin male Connector
- ④ Harting RJ Industrial® Modular female Connector
- ⑤ Profibus 9-pin female Connector
- ⑥ DeviceNet 5-pin male Connector

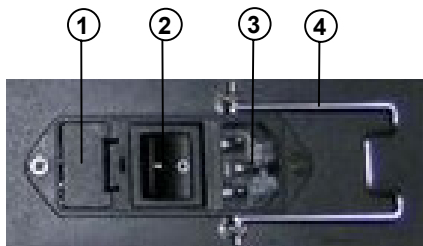


Figure D
(VAC Models Only)

- ① Line Fuses
- ② Line Switch
- ③ Power Inlet
- ④ Cord Retaining Clamp



NOTE

For further details on product installation, see the complete Reference Manual available on the configuration CD-ROM included with this product.

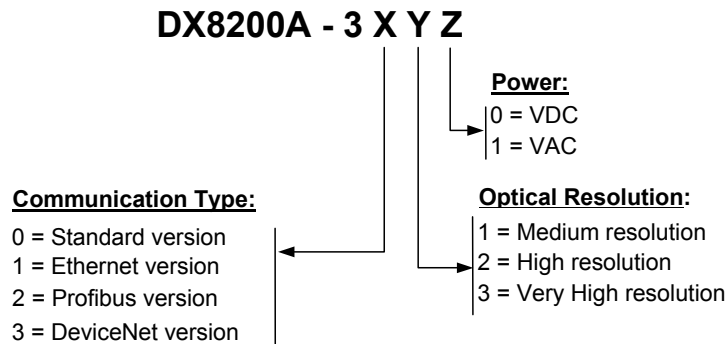
Technical Features:

ELECTRICAL FEATURES		
	VAC models	VDC models
Supply voltage	110 to 230 Vac	20 to 30 Vdc
Power consumption	30 VA typical 35 W Max. (including startup current)	
Common Communication Interfaces	Main	Baud Rate
	RS232	1200 to 115200
	RS485 full-duplex	
	RS485 half-duplex	
	20 mA C.L. (INT-30 with C-BOX 100 only)	19200
	Auxiliary	
	RS232	1200 to 115200
	Other	
Lonworks	1.25 Mb/s	
Model-Dependent Communication Interfaces	Ethernet Profibus DeviceNet	100Mb/s up to 12 M/b/s up to 500 K/b/s
Inputs Ext. Trigger 1, 3 aux. digital inputs	(optocoupled NPN or PNP)	
Outputs 3 software programmable digital outputs	(optocoupled)	
OPTICAL FEATURES		
Light receiver	Avalanche photodiode	
Wavelength	630 to 680 nm	
Safety class	Class 2 - EN60825-1; Class II - CDRH	
Light source	Up to 4 semiconductor laser diodes	
Laser control	Security system to turn laser off in case of motor slow down	
READING FEATURES		
Scan rate	≤ 1000 scans/s (500 per leg)	
Maximum resolution Max. reading distance Max. reading width Max. depth of field	(see reading diagrams on page 14)	
USER INTERFACE		
LCD Display	2 lines by 20 characters LCD	
Keypad	3 keys	
LED indicators	Power On (green) Phase On (yellow) Encoder (yellow) TX Data (green) Network (red)	

SOFTWARE FEATURES	
Readable Codes	Interleaved 2/5 Code 39 Standard Codabar Code 128 EAN 128 Code 93 (standard and full ASCII) EAN/UPC (including Add-on 2 and Add-on 5)
Code selection	Up to 10 codes during one reading phase
Headers and Terminators	Up to 128-bytes headers and 128-bytes terminators
Operating modes	On Line, Serial On Line, Automatic, Test, PackTrack™, Continuous
Configuration modes	Genius™ utility program
Parameter storage	Non-volatile internal FLASH
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
Ambient light immunity	20000 lux
Vibration resistance: EN 60068-2-6 2 hours on each axis	Frequency range from 5 to 150 Hz; Constant displacement 3 mm pk-pk from 5 to 9 Hz; Constant acceleration 0.5 g from 9 to 150 Hz;
Shock resistance: IEC 68-2-27 test EA 3 shocks on each axis	30 g; 11 ms
Protection class	IP64*
PHYSICAL FEATURES	
Mechanical dimensions	470 x 300 x 141 mm (18.50 x 11.81 x 5.55 in)
Weight	about 11 kg (24 lbs. 3 oz.)

* sealed connectors required, use Harting RJ Industrial® Push Pull Ethernet connector for Ethernet models.

Model Description:



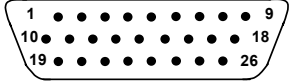
Accessories:

NAME	Description	Part Number
PWR-120	J-box power unit 110/230 VAC 24 V 120 W	93ACC1530
PWR-240	J-box power unit 110/230 VAC 24 V 240 W	93ACC1070
PWR-480	J-box power unit 110/230 VAC 24 V 480 W	93ACC1080
BTK-8100	Bus terminator kit (5 pcs)	93ACC1090
BTK-8102	Double terminator kit (2 pcs)	93A051287
PLL-8000	Optocoupled PLL device	93ACC1280
US-BOX	C-BOX mounting bracket to station frame (10 pcs)	93ACC1777
FS-1	Frame shaper (8 pcs)	93ACC1750
CAB-DX8000	DX8200A Power Cable VAC	93A051333
CAB-DX8001	DX8200A Power Cable VAC (US)	93A051334
CAB-8100	10 wire shielded cable D 9.5 mm – 50 m	93ACC1120
CAB-8101	17-pin scanner/scanner connection cable 1.2 m	93A051020
CAB-8102	17-pin scanner/scanner connection cable 2.5 m	93A051030
CAB-8105	17-pin scanner/scanner connection cable 5 m	93A051040
CAB-8305	Power and bus return cable (last Slave) 5 m	93A051268
CAB-8310	Power and bus return cable (last Slave) 10 m	93A051336
CAB-8402	No power cable 2.5 m	93ACC1758
CAB-8405	No power cable 5 m	93ACC1759
CAB-6011	26-pin scanner to C-BOX 100 1 m	93A051221
CAB-6012	26-pin scanner to C-BOX 100 2 m	93A051222
CAB-6015	26-pin scanner to C-BOX 100 5 m	93A051223
CAB-6502	Fam 6K-8K cross cable 2.5 m	93A051288
CAB-6505	Fam 6K-8K cross cable 5 m	93A051289
CAB-8605	Power and Lonworks termination cable (Master) 5 m	93A051290
CAB-DX8000	Power cable DX8200A VAC (EU)	93A051333
CAB-DX8001	Power cable DX8200A VAC (US)	93A051334
Sentinel-5	Supervisor (up to 5 arrays)	93A101004
Sentinel-10	Supervisor (up to 10 arrays)	93A101005
Sentinel-32	Supervisor (up to 32 arrays)	93A101007
C-BOX 100	Passive Connection Box	93ACC1510
MEP-542	Photocell kit – PNP	93ACC1727
MEP-543	Photocell kit – NPN	93ACC1728
OEK-2	Optical encoder kit (10 m cable + spring)	93ACC1770
OEK-1	Optical encoder kit + 10 m cable	93ACC1600
US-BOX	C-BOX Mounting Bracket to station frame (10 pcs)	93ACC1777
UPT-80	DX8200A – DX8200 Adapter	93ACC1757

Electrical Connections:

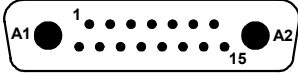
The details of the connector pins are indicated in the following tables:

The DX8200A scanner provides a 26-pin male D-sub connector for connection to power supply, Host interface (Main and Aux), and input/output signals.

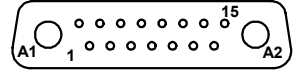
26-pin D-Sub Connector Pinout						
Pin	Name	Function				
1	CHASSIS	Chassis - internally connected to GND Cable shield connected to chassis	 <p>26-pin male D-sub Connector</p>			
20	RXAUX	Receive data of auxiliary RS232 (referred to GND)				
21	TXAUX	Transmit data of auxiliary RS232 (referred to GND)				
8	OUT 1+	Configurable digital output 1 – positive pin				
22	OUT 1-	Configurable digital output 1 – negative pin				
11	OUT 2+	Configurable digital output 2 – positive pin				
12	OUT 2-	Configurable digital output 2 – negative pin				
16	OUT 3A	Configurable digital output 3 – polarity insensitive				
17	OUT 3B	Configurable digital output 3 – polarity insensitive				
18	EXT_TRIG/PS A	External trigger (polarity insensitive) for PS				
19	EXT_TRIG/PS B	External trigger (polarity insensitive) for PS				
6	IN2/ENC A	Input signal 2 (polarity insensitive) for Encoder				
10	IN2/ENC B	Input signal 2 (polarity insensitive) for Encoder				
14	IN3A	Input signal 3 (polarity insensitive)				
15	IN4A	Input signal 4 (polarity insensitive)				
24	IN_REF	Common reference of IN3 and IN4 (polarity insensitive)				
9, 13	VS	Supply voltage – positive pin				
23, 25, 26	GND	Supply voltage – negative pin				
Main Interface Connector Pinout						
Pin	RS232	RS485 Full-Duplex			RS485 Half-Duplex	20 mA C.L. (INT-30 with C-BOX 100 only)
2	TX	TX485+			RTX485+	see INT-30 instructions
3	RX	RX485+				
4	RTS	TX485-			RTX485-	
5	CTS	RX485-				
7	GND_ISO	GND_ISO			GND_ISO	

Two 17-pin connectors provide access to the scanner's local Lonworks network used for both input and output connections to build a multi-sided or omni-station system.

17-pin Lonworks Connector Pinout		
Pin	Name	Function
A1	GND	Supply voltage (negative pin)
A2	VS	Supply voltage 20 to 30 Vdc (positive pin)
1	CHASSIS	Cable shield A - internally connected by capacitor to chassis
2	n.c.	Not connected
3	CHASSIS	Cable shield B - internally connected by capacitor to chassis
4	n.c.	Not connected
5	n.c.	Not connected
6	n.c.	Not connected
7	VS_I/O	Supply voltage of I/O circuit
8	Lon A+	Lonworks a line (positive pin)
9	Lon A-	Lonworks a line (negative pin)
10	Lon B+	Lonworks b line (positive pin)
11	Lon B-	Lonworks b line (negative pin)
12	SYS_I/O	System signal
13	SYS_ENC_I/O	System signal
14	Reserved	Internally connected
15	Ref_I/O	Reference voltage of I/O circuit



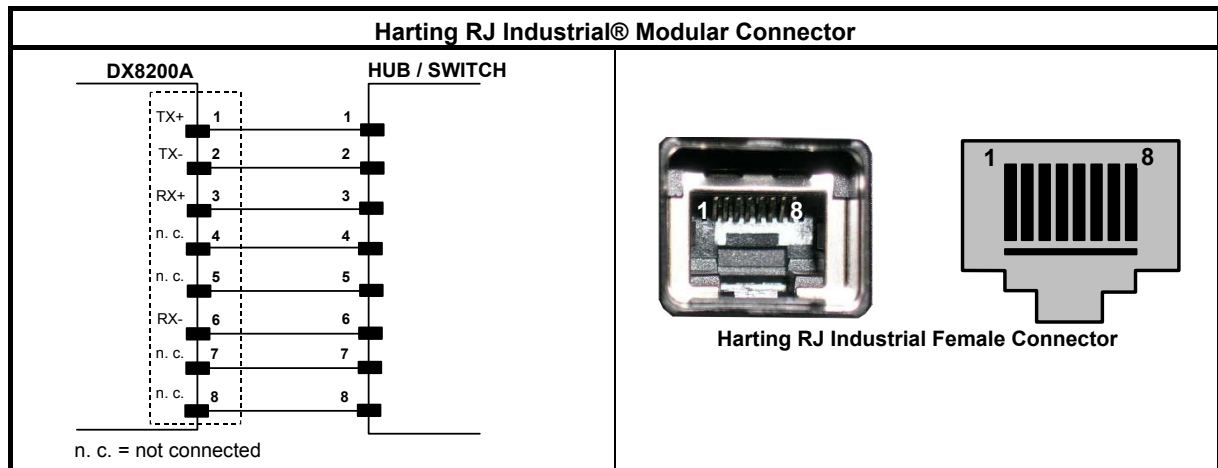
Male - Input



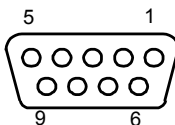
Female - Output

17-pin Local Lonworks Connectors

Ethernet Version



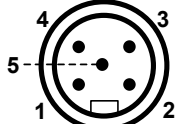
Profibus Version

Profibus Connector			
Pin	Name	Function	
1	Shield*	Shield, protective ground resp.	 <p style="text-align: center;">Profibus 9-pin D-sub Female Connector</p>
2	Free		
3	B-LINE (RxD/TxD-P)	Received/Transmitted data-P	
4	CNTR-P**	Repeater control signal	
5	DGND	Data ground (M5V)	
6	+5 V	Voltage plus (P5V)	
7	Free		
8	A-LINE (RxD/TxD-N)	Received/Transmitted data	
9	CNTR-N**	Repeater control signal	

* signal is optional

** signal is optional; RS485 level

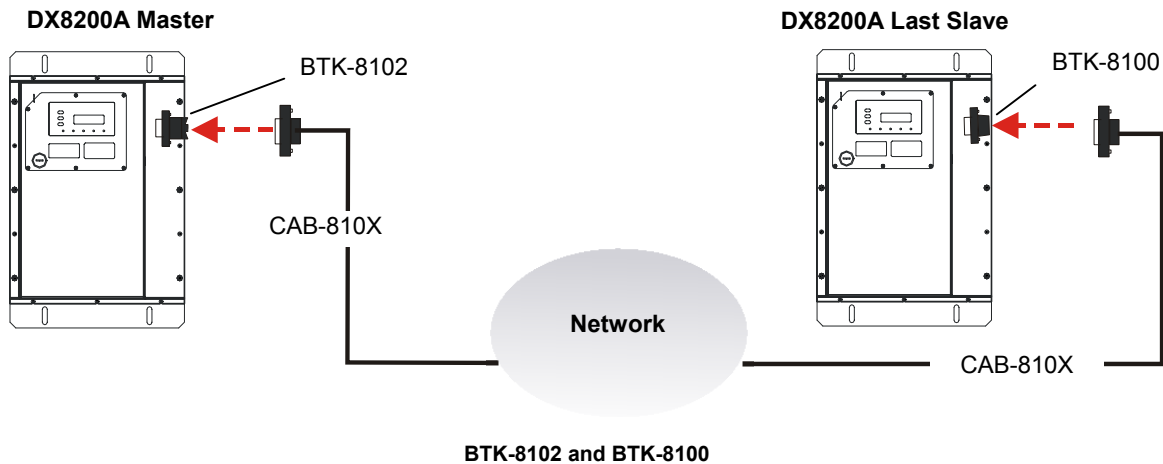
DeviceNet Version

DEVICENET CONNECTOR			
Pin	Name	Function	
2	V+	Supply voltage – positive pin	 <p style="text-align: center;">5-pin male DeviceNet Connector</p>
5	CAN_L	CAN bus data line – L	
1	SHIELD	Shield	
4	CAN_H	CAN bus data line – H	
3	V-	Supply voltage – negative pin	

Network Termination:

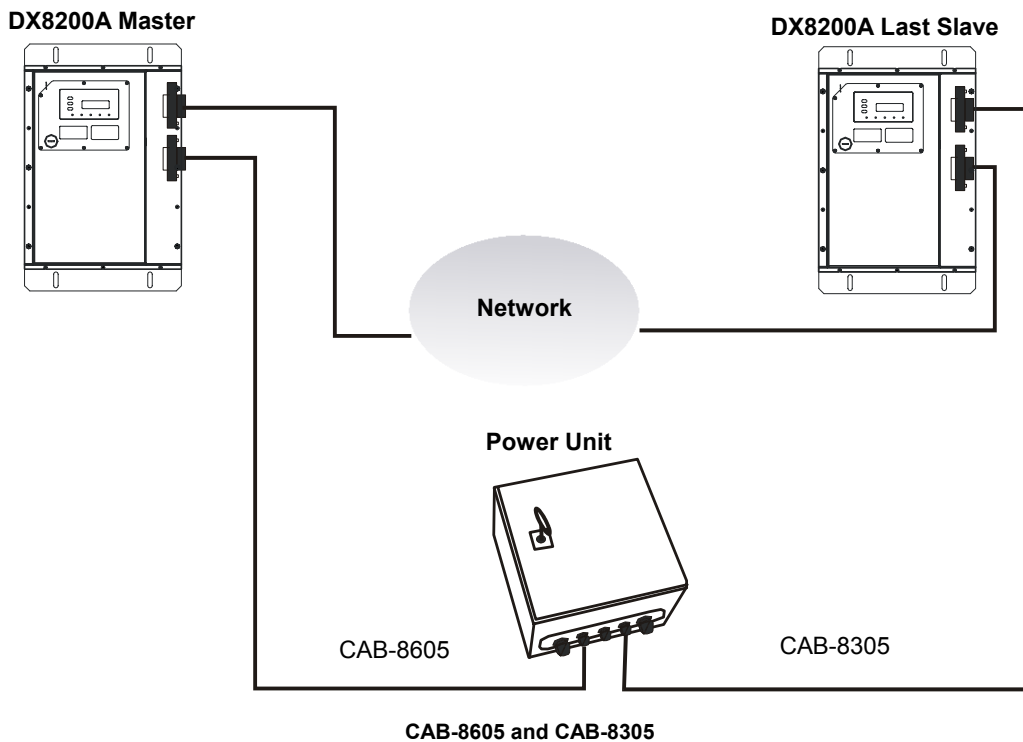
When building a Lonworks system the network must be properly terminated by positioning the BTK-8102 Lonworks terminator in the DX8200A master reader and the BTK-8100 Lonworks bus return in the last DX8200A slave reader.

The BTK-8100 bus return provides a connector to be inserted in the Lonworks 17-pin female connector of the last slave reader in the network; while the BTK-8102 Lonworks terminator provides a different connector to be inserted in the Lonworks 17-pin male connector of the master reader:



Two cables are also provided as accessories to terminate and power the network: CAB-8605 and CAB-8305.

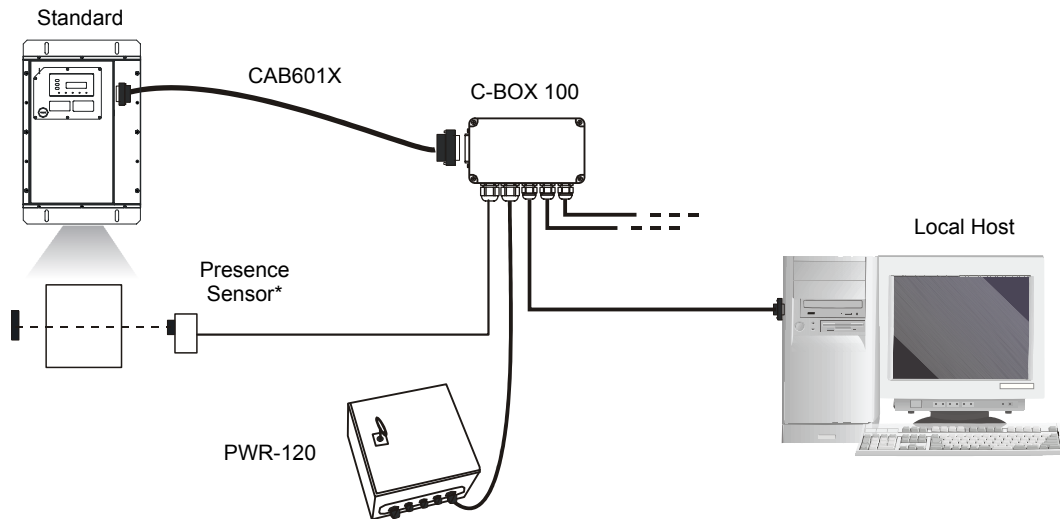
CAB-8605 is a power and Lonworks termination cable to be used for connecting the DX8200A master to an external power unit within the network; while CAB-8305 is a power and bus return cable to be used for connecting the last DX8200A slave to an external power unit. **This two cables must be used only for VDC models.**



Connectivity:

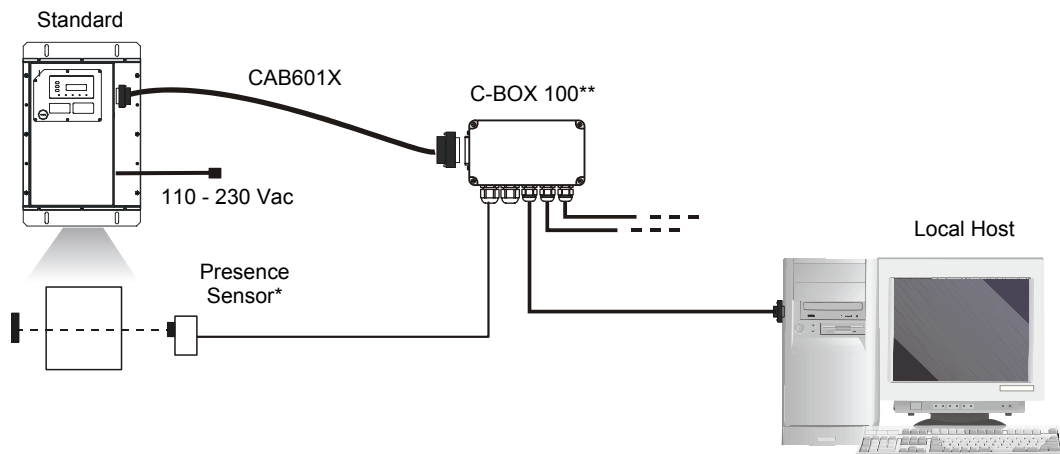
Examples of the most common system layouts are shown in this section, for additional layouts refer to the Reference Manual.

Point-to-Point Layout



* P.S. (Presence Sensor) connected to External Trigger/PS input.

Point-to-Point for Standard DC Models

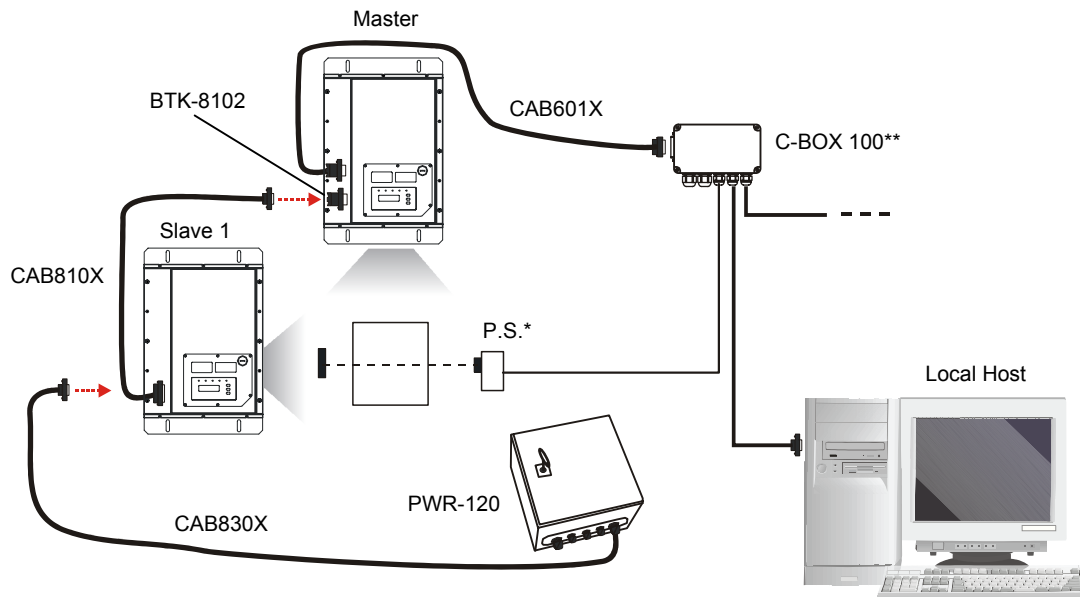


* P.S. (Presence Sensor) connected to External Trigger/PS input.

** C-BOX 100 modified to accept scanner power

Point-to-Point for Standard AC Models

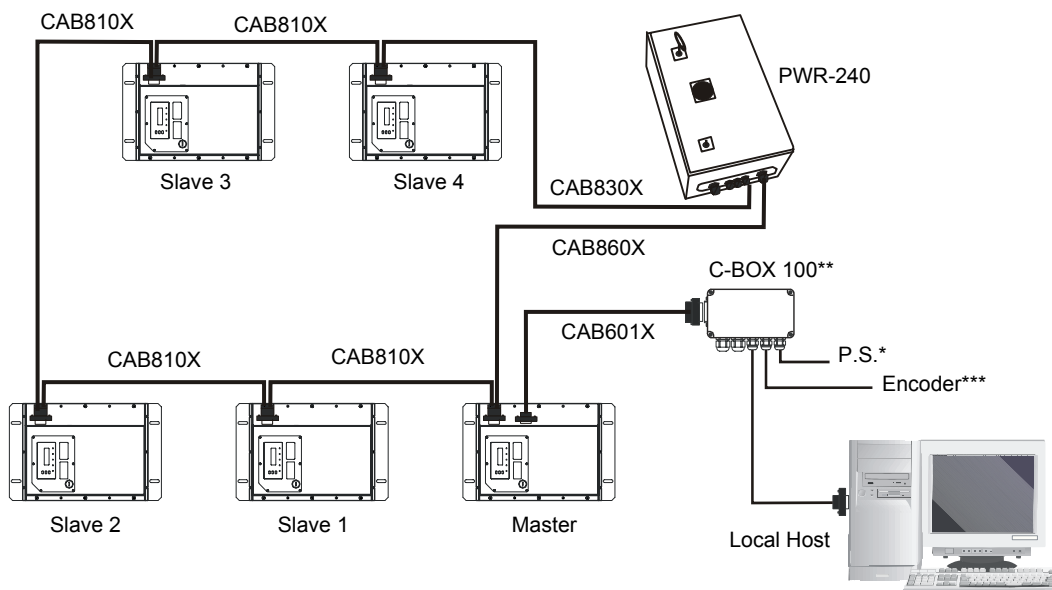
Local Lonworks Networks



* P.S. (Presence Sensor) connected to External Trigger/PS input.

** C-BOX 100 modified to accept scanner power

Small Synchronized Network with 2 Readers



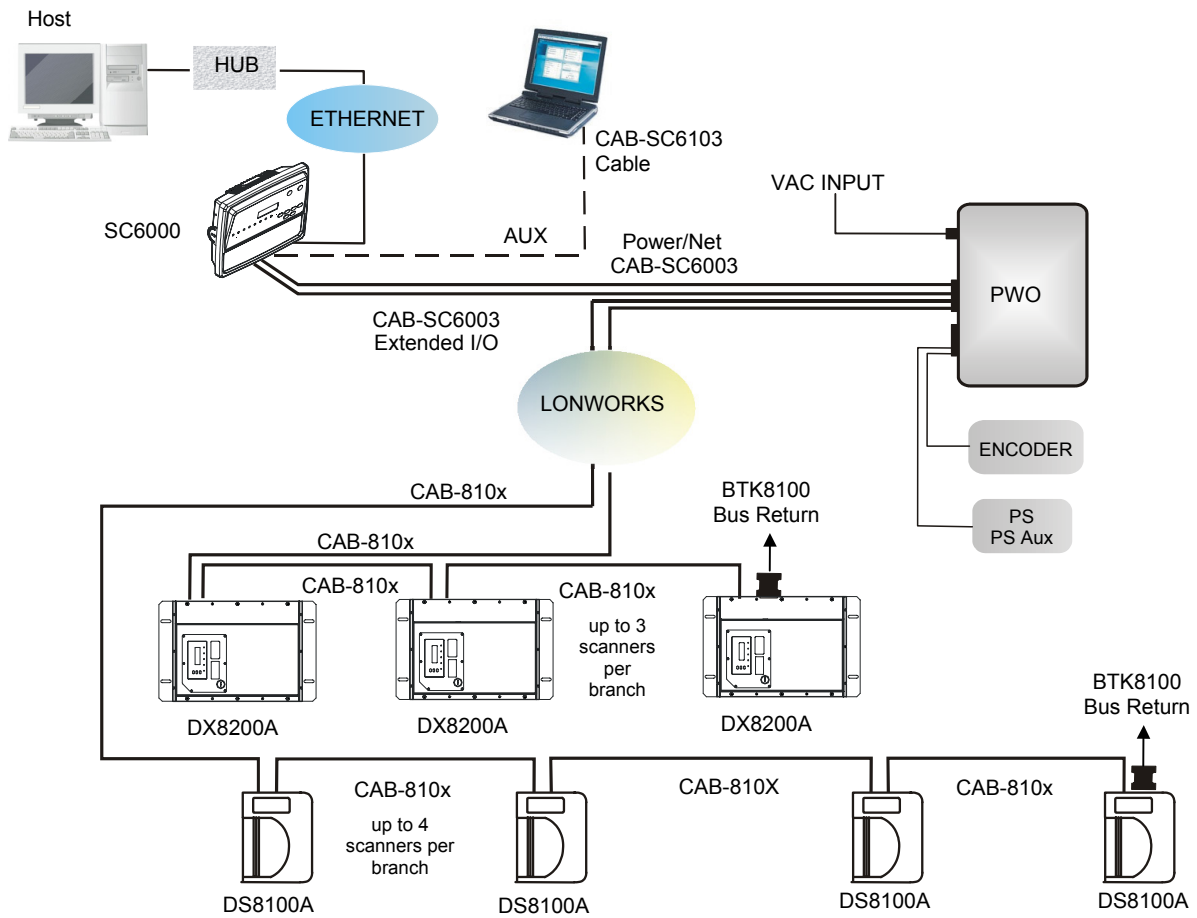
* P.S. (Presence Sensor) connected to External Trigger/PS input.

** C-BOX 100 modified to accept scanner power

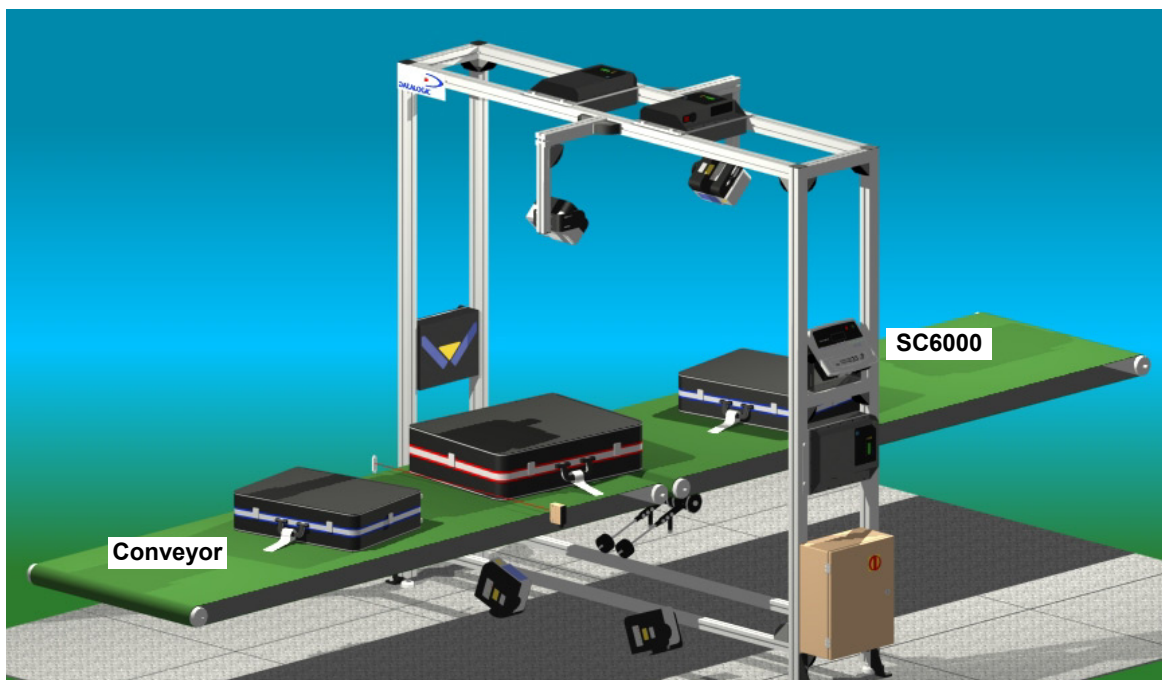
*** Encoder connected to IN2/ENC input.

Small Synchronized Network with more than 2 Readers and Single Power Unit

Local Lonworks Networks



Large Synchronized Network with DX8200A and DS8100A Scanners



Large Synchronized Network Reading Station

COMMON FEATURES

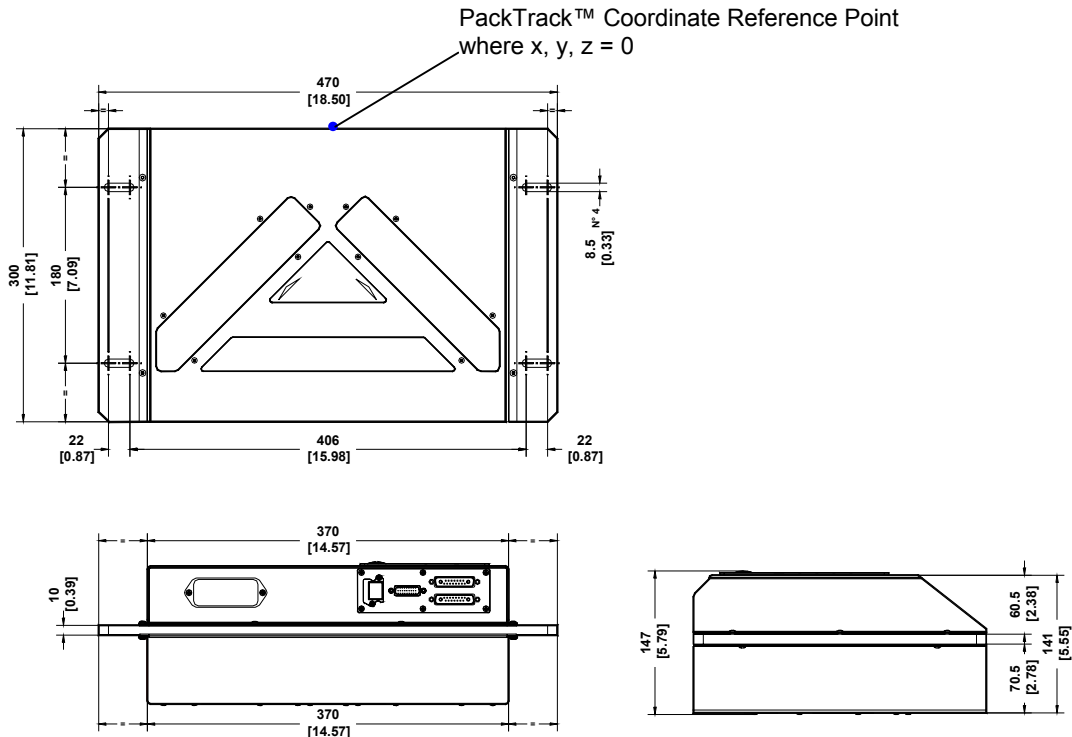
C-BOX 100 Pinout for DX8200A:

The table below gives the pinout of the C-BOX 100 terminal block connectors. Use this pinout when the DX8200A reader is connected in a network by means of the C-BOX 100:


C-BOX 100 Terminal Block Connectors				
Power				
1, 3, 5	VS			
2, 4, 6	GND			
7, 8	EARTH GROUND			
20, 40	Reserved			
Inputs				
27	EXT TRIG/PS A (polarity insensitive) for PS			
28	EXT TRIG/PS B (polarity insensitive) for PS			
29	IN 2/ENC A (polarity insensitive) for Encoder			
30	IN 2/ENC B (polarity insensitive) for Encoder			
31, 33	IN 3A (polarity insensitive)			
32, 34	IN 4A (polarity insensitive)			
36	IN 3B/IN 4B Reference (polarity insensitive)			
Outputs				
21	OUT 1+			
22	OUT 1-			
23	OUT 2+			
24	OUT 2-			
25	OUT 3A (polarity insensitive)			
26	OUT 3B (polarity insensitive)			
Auxiliary Interface				
35	TX AUX			
37	RX AUX			
38, 39	GND			
Main Interface				
	RS232	RS485 Full-Duplex	RS485 Half-Duplex	20 mA C.L. (with INT-30 only)
11, 15	TX 232	TX 485+	RTX 485+	see INT-30 instructions
12, 16	RTS 232	TX 485-	RTX 485-	
17	RX 232	RX 485+		
18	CTS 232	RX 485-		
10, 14, 19	SGND Main Isolated	SGND Main Isolated	SGND Main Isolated	
9, 13		RS485 Cable Shield	RS485 Cable Shield	

Mechanical Installation:

DX8200A can be installed to operate in any position. There are 4 slots (dia. 8.5 mm) on the sides of the scanner for mounting. The diagram below can be used for installation; refer to the Reading Diagrams for correct positioning of the scanner with respect to the reading zone and scanner orientation.



DX8200A Overall Dimensions



WARNING

When installing several scanners, take care to position them correctly so that no laser beam enters the reading window perpendicularly and at the same level of the output beam of the other scanners. This condition could occur more frequently for side mounted applications. If these precautions are not followed, it may occur that the laser of the blinded scanner starts blinking due to an internal circuit which temporarily turns the laser off when detecting a power anomaly. To resolve this problem, it is sufficient to slightly change the inclination and position of one of the two scanners involved.

Reading Conditions:

- ANSI Grade B minimum
- 500 scans/sec per leg

The following tables describe the requirements for standard applications.

		Minimum Code Height for Omnidirectional Reading (mm)					
Conveyor Speed (m/s)		0.5	1	1.5	2	2.5	3
2/5 Interleaved Code Resolution (mm)	0.25	11	13	15	17	19	21
	0.30	12	14	16	18	20	23
	0.33	13	15	17	19	21	23
	0.38	14	16	18	20	23	25
	0.50	18	19	22	24	26	28
	0.72	24	26	27	29	32	34
	1.00	33	34	35	37	39	41

Ratio 3:1

Table 1

Minimum Code Height for Omnidirectional Reading (mm)							
Conveyor Speed (m/s)		0.5	1	1.5	2	2.5	3
Code 39 Code Resolution (mm)	0.25	9	11	13	15	17	19
	0.30	10	11	14	16	18	20
	0.33	11	12	14	16	18	20
	0.38	12	13	15	17	19	21
	0.50	15	16	17	19	21	23
	0.72	20	22	23	24	25	27
	1.00	27	28	29	30	32	33

Ratio 3:1; Interdigit = Module Size

Table 2

Minimum Code Height for Omnidirectional Reading (mm)							
Conveyor Speed (m/s)		0.5	1	1.5	2	2.5	3
Code 128 – Ean 128 Code Resolution (mm)	0.25	8	10	12	14	16	18
	0.30	9	11	13	15	17	19
	0.33	9	11	13	15	18	20
	0.38	10	12	14	16	18	20
	0.50	12	14	16	18	20	22
	0.72	16	18	19	21	24	26
	1.00	22	23	24	26	28	30

Table 3

Minimum Code Height for Omnidirectional Reading (mm)							
Conveyor Speed (m/s)		0.5	1	1.5	2	2.5	3
Codabar Code Resolution (mm)	0.25	8	10	12	14	16	18
	0.30	9	11	13	15	17	19
	0.33	9	11	13	15	18	20
	0.38	10	12	14	16	18	20
	0.50	13	14	16	18	20	22
	0.72	17	18	19	21	24	26
	1.00	23	24	25	26	28	30

Ratio 3:1; Interdigit = Module Size

Table 4

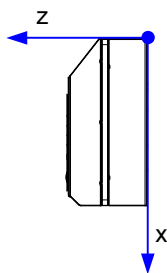
Minimum Code Height for Omnidirectional Reading (mm)							
Conveyor Speed (m/s)		0.5	1	1.5	2	2.5	3
EAN 8-13, UPC-A Code Resolution (mm)	0.25	8	9	11	13	15	18
	0.30	9	10	12	14	16	18
	0.33	9	10	12	14	16	19
	0.38	10	11	13	15	17	19
	0.50	12	13	14	16	19	21
	0.72	16	18	19	20	21	23
	1.00	22	23	24	25	26	27

Table 5

Reading Diagrams:

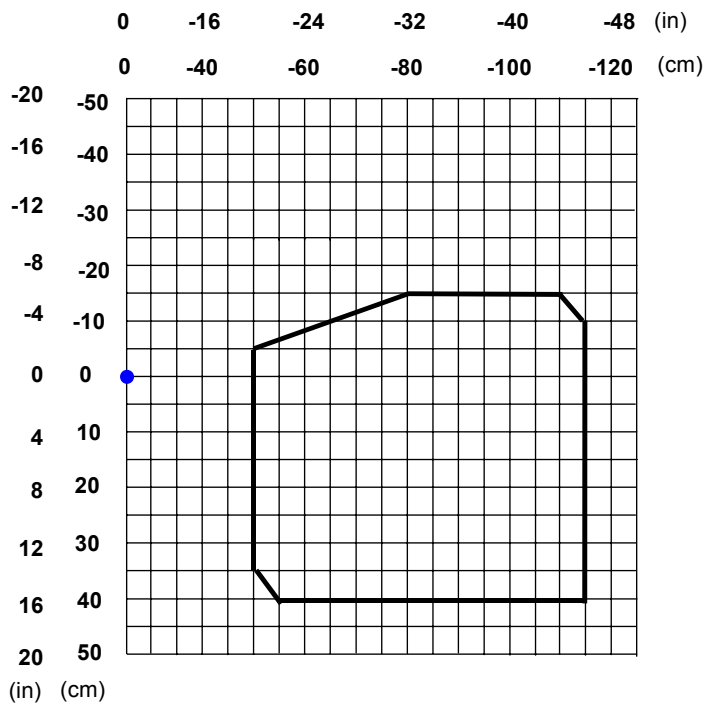
Note: $x = 0$ and $z = 0$ correspond to the edge of the DX8200A scanner as shown in the figure below.

DX8200A-3X3X (0.25 mm/10 mils)

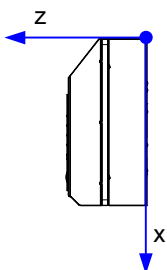


CONDITIONS

Code = Interleaved 2/5 or Code 39
 PCS = 0.90

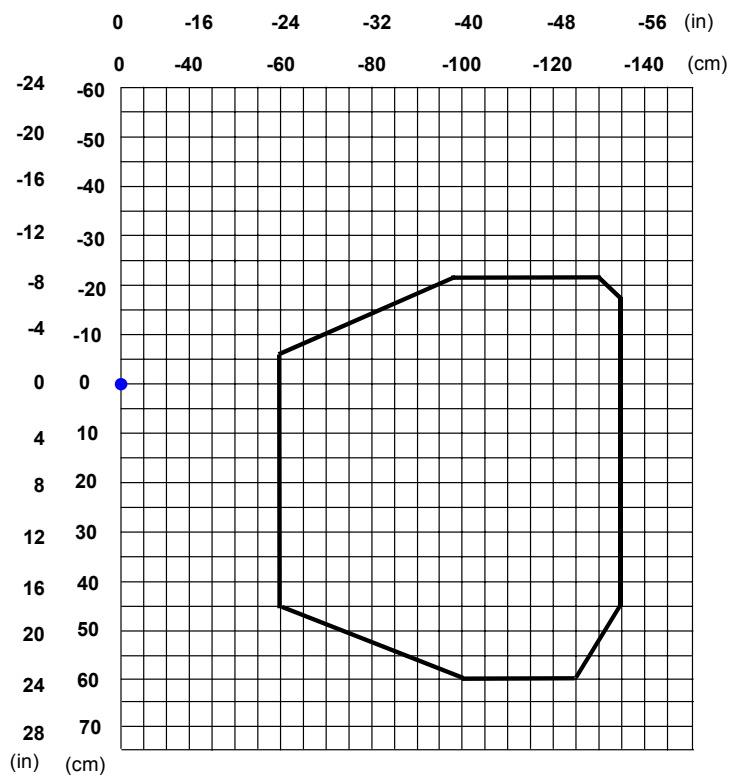


DX8200A-3X2X (0.30 mm/12 mils)



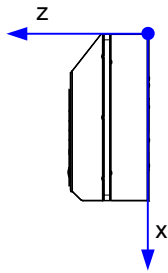
CONDITIONS

Code = Interleaved 2/5 or Code 39
 PCS = 0.90



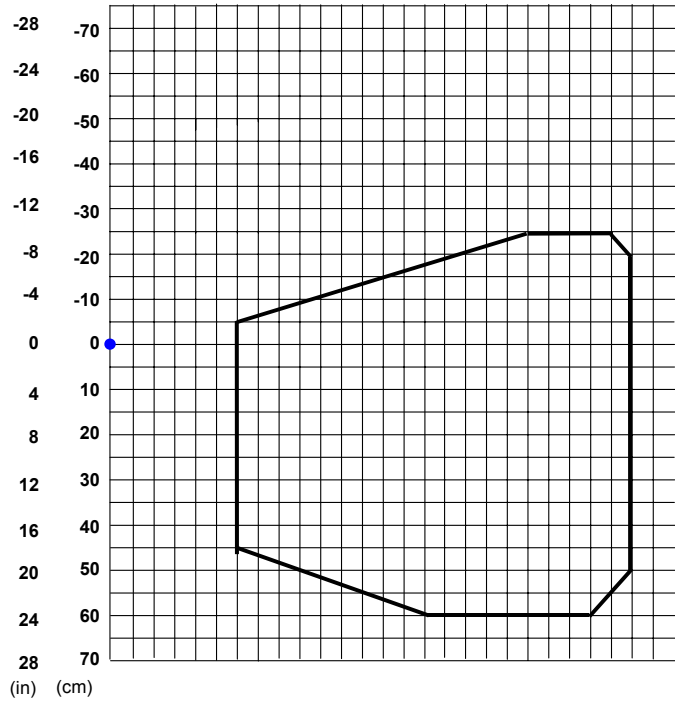
DX8200A-3X1X (0.38 mm/15 mils)

0 -16 -24 -32 -40 -48 -56 -64 (in)
 0 -40 -60 -80 -100 -120 -140 -160 (cm)



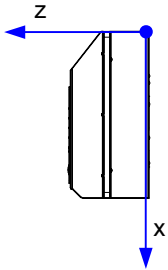
CONDITIONS

Code = Interleaved 2/5 or Code 39
 PCS = 0.90



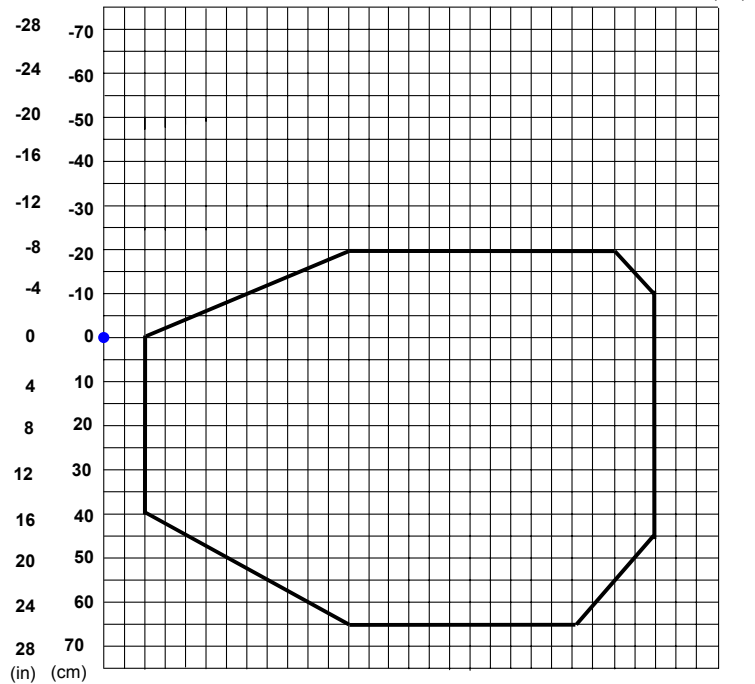
DX8200A-3X1X (0.50 mm/20 mils)

0 -20 -24 -32 -40 -48 -56 -64 -72 (in)
 0 -50 -60 -80 -100 -120 -140 -160 -180 (cm)



CONDITIONS

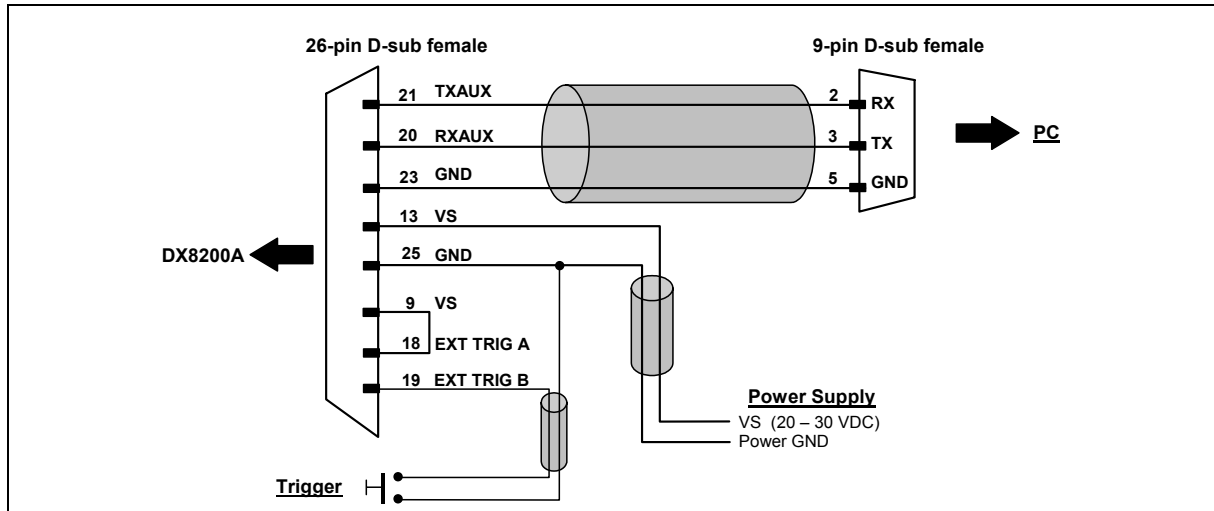
Code = Interleaved 2/5 or Code 39
 PCS = 0.90



User Interface:

How To Build A Simple Interface Test Cable:

The following wiring diagram shows a simple test cable including power, external (push-button) trigger and PC RS232 COM port connections.



Compliance:

Laser Safety



Figure A

① Warning and Device Class Label

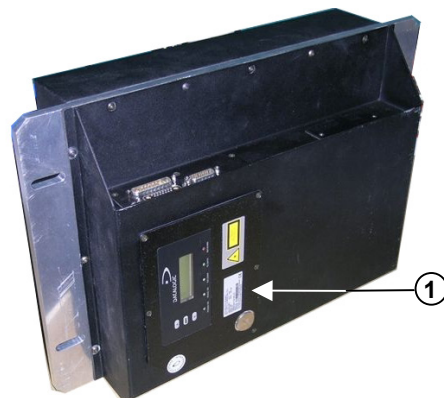


Figure B

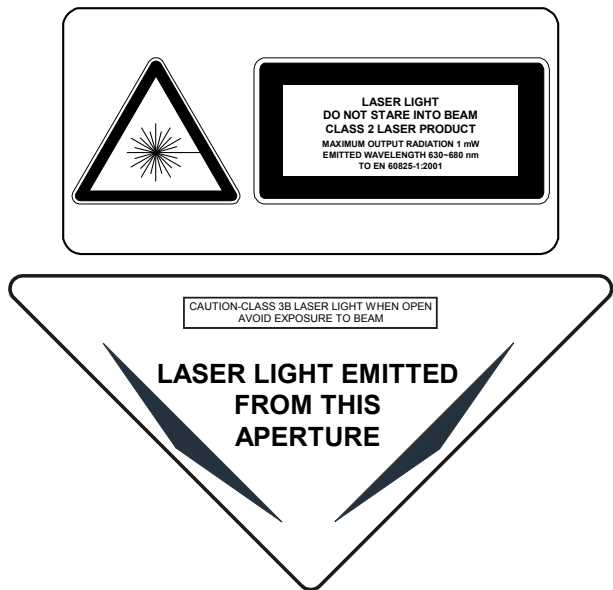
① Device Identification Label

The scanner is classified as a Class 2 laser product according to EN60825-1 regulations and as a Class II laser product according to CDRH regulations.

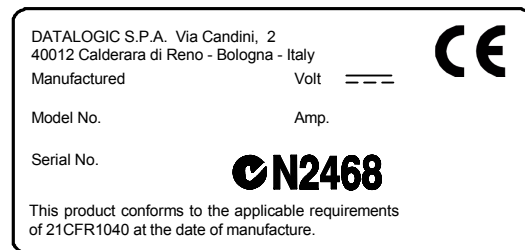
Disconnect the power supply when opening the device during maintenance or installation to avoid exposure to hazardous laser light.

There is a safety device which allows the laser to be switched on only if the motor is rotating above the threshold for its correct scanning speed.

The laser beam can be switched off through a software command (see also the Genius™ Help On-Line).



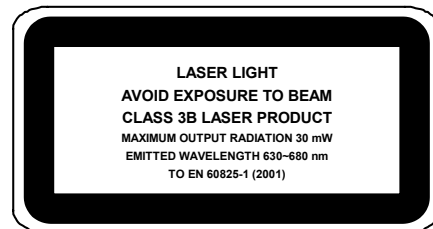
Warning and Device Class Labels



Device Identification Label

The laser diodes used in this device are classified as Class 3B laser products according to EN 60825-1 regulations and as Class IIIb laser products according to CDRH regulations. As it is not possible to apply a classification label on the laser diodes used in this device, the following label is reproduced here:

Any violation of the optic parts in particular can cause radiation up to the maximum level of the laser diode (30 mW at 630~680 nm).



Laser Diode Class Label

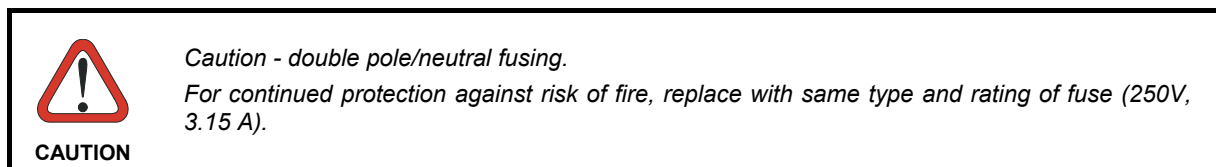
Power Supply

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

For DX8200A VDC models:

- This scanner is intended to be supplied by either a UL Listed power supply marked 'Class 2' or 'LPS', output rated 20 - 30 V dc, minimum 1.75 A or by a UL Listed computer with LPS outputs.
- This scanner must be supplied by a Class II Power Supply Unit conforming to the EN 60950 safety regulation.

Line Fuse Replacement (VAC Models only)



WEEE Compliance



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

DX8200A-XXXX, Laser Scanner

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:
den nachstehenden 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		sucesivas enmiendas

73/23/EEC Low Voltage Directive

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
EN 60950-1, December 2001:	INFORMATION TECHNOLOGY EQUIPMENT - SAFETY - PART 1: GENERAL REQUIREMENTS
EN 60825-1, June 1994: Amendments A11 (1996), A2 (2001)	SAFETY OF LASER PRODUCTS - PART 1: EQUIPMENT CLASSIFICATION, REQUIREMENTS AND USER'S GUIDE
EN 61000-3-2, December 2000:	ELECTROMAGNETIC COMPATIBILITY (EMC) PART 3-2: LIMITS - LIMITS FOR HARMONIC CURRENT EMISSIONS (EQUIPMENT INPUT CURRENT UP TO AND INCLUDING 16A PER PHASE
EN 61000-3-3, July 1995:	ELECTROMAGNETIC COMPATIBILITY (EMC) PART 3: LIMITS SECTION 3: LIMITATION OF VOLTAGE FLUCTUATIONS AND FLICKER IN LOW-VOLTAGE SUPPLY SYSTEMS FOR EQUIPMENT WITH RATED CURRENT ≤ 16A PART 1: EQUIPMENT CLASSIFICATION, REQUIREMENTS AND USER'S GUIDE

Lippo di Calderara, 08/09/2005

Ruggero Cacioppo
Ruggero Cacioppo
Quality Assurance Laboratory Manager