PWR-120

INSTALLATION MANUAL

Reading Station Power Supply

DATALOGIC

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Patents

See www.patents.datalogic.com for patent list.

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PREFACE

ABOUT THIS MANUAL

This Instruction Manual is provided for users seeking advanced technical information, including installation, connections, maintenance and specifications.

Manual Conventions

The following conventions are used in this document:

The symbols listed below are used in this manual to notify the reader of key issues or procedures that must be observed when using the reading station power supply:

NOTE: Contains important information necessary for proper installation and use of the device.

The CAUTION symbol advises you of actions that could damage equipment or property.

HIGH VOLTAGE: This symbol alerts the user they are about to perform an action involving, either a dangerous level of voltage, or to warn against an action that could result in damage to devices or electrical shock. Operations having this symbol must be performed by qualified personnel only.

SAFETY REGULATIONS

Electrical Safety

This product conforms to the applicable requirements contained in the following European Standards:

- EN 61439-1
- EN 60204-1
- EN 60950-1 +A11 +A1 +A12 +A2
- EN 62368-1

Product Data Label

The Product data label is located on the outside door panel.

Figure 1 - Product Data Label

TECHNICAL SUPPORT

Support Through the Website

Datalogic provides several services as well as technical support through its website. Log on to (www.datalogic.com).

For quick access, from the home page click on the search icon 🔍, and type in the name of the product you're looking for. This allows you access to download Data Sheets, Manuals, Software & Utilities, and Drawings.

Hover over the Support & Service menu for access to Services and Technical Support.

Reseller Technical Support

An excellent source for technical assistance and information is an authorized Datalogic reseller. A reseller is acquainted with specific types of businesses, application software, and computer systems and can provide individualized assistance.

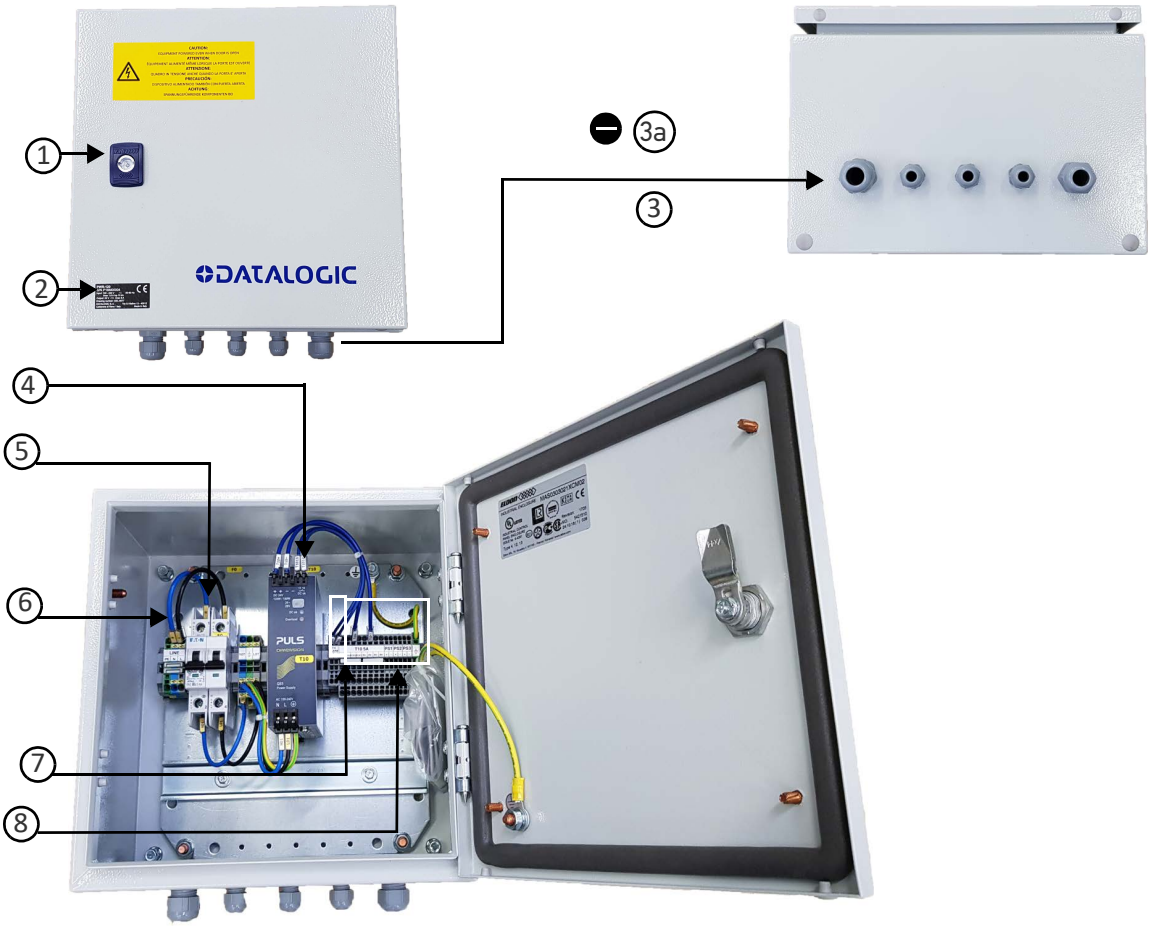
CE Compliance

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 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



1) Key Lock	5) Thermal-Magnetic Circuit Breaker
2) Product Data Label	6)AC Line Input Terminal Block
3) Compression Connectors	7) “DC OK” Terminal Block
3a) AS-I Cable Sealing Grommet	8) 24 Vdc Terminal Block
4) Monophase Switching Power Supply	

Figure 2 - PWR-120 General View

CHAPTER 1
OPERATING FEATURES

DESCRIPTION

The PWR-120 is an electrical cabinet housing a 24 Vdc power supply which is used to power up a varying number of reading devices (depending on the product), along with their relative accessory devices. See “LOW Voltage Electrical Connections” on page 6 for details.

As shown in Appendix Electrical diagrams the AC Input Line passes through a protective thermo-magnetic circuit breaker and connects to the monophase switching power supply.

The 24 Vdc output power is connected to the output terminal blocks which are protected by the internal power supply features.

Two output power supply status monitoring signals (DC-OK) are provided to connect to an optional digital alarm. If for some reason the output voltage is reduced by less than 90% of nominal, these lines open.

OUTPUT PROTECTION

This power supply is specifically designed to power Datalogic devices and implements output protection according to the type of overload behavior.

Light Overload

Light Overload is defined as application of a load that results in a reduction of the output voltage that remains above 13V. In this case the power supply can deliver up to 7.2 amperes continuously. See Figure 1 on page 2 (A: continuous current)

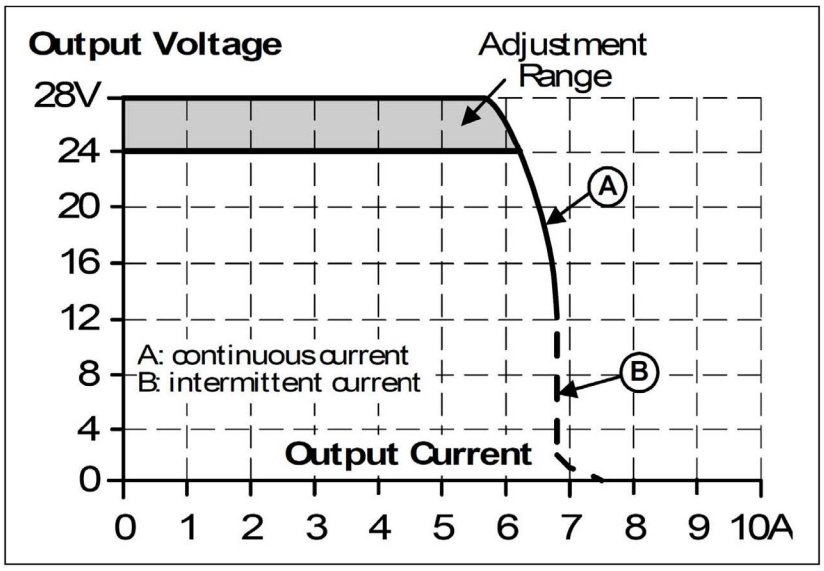


Figure 1 - Overload Behavior

Heavy Overload (including short-circuit)

Heavy Overload is defined as application of a load which causes a reduction in voltage below 13V. This causes the power supply to enter HICCUP operation where power is supplied for 1 second and then shuts off for 9 seconds. This procedure is repeated until the short-circuit or overload is resolved, see Figure 4 Short-Circuit Protection HICCUP Mode. For this condition, the maximum length of the power cables between the power supply and the powered devices guarantees the behavior of a short-circuit downstream of this cable.

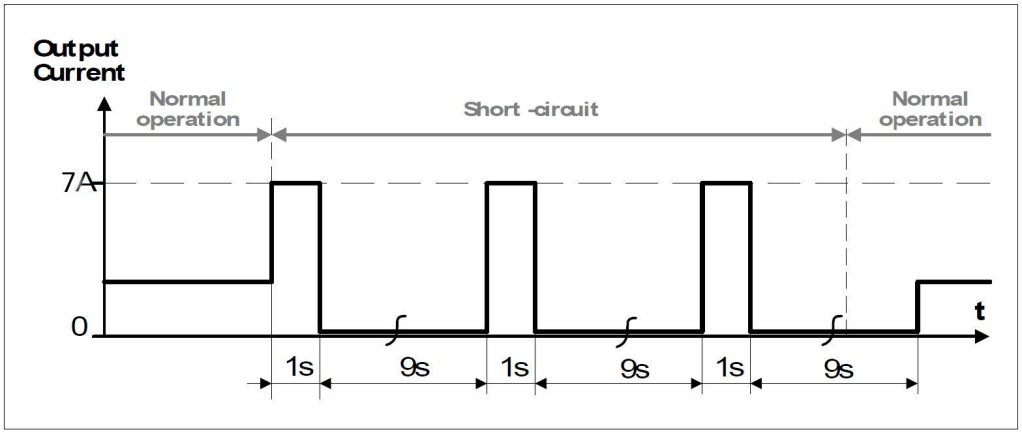


Figure 2 - Short Circuit Protection HICCUP Mode

CHAPTER 2
PRE-INSTALLATION CHECKLIST

This chapter can be used as a checklist to verify all the steps necessary to complete installation of the PWR power Supply.

HIGH VOLTAGE: Opening the cabinet requires a key that should be used by a person adequately advised or supervised by an electrically skilled person to enable him or her to perceive risks and avoid hazards which electricity can create. Internal components guarantee an IP20 degree of protection against direct contact.

1. Read all information in this manual before installation, paying particular attention to all Caution and Warning notes.

2. Mount the PWR to the Station frame using the brackets and bolts provided in the package. See “Cabinet Mounting” on page 5.

SYSTEM WIRING: DC OUTPUT

3. Connect your devices in the PWR according to your application.
   Barcode Scanners
   Correctly connect the AS-I cabling to the PWR using the AS-I cable wiring instructions for backbone and branch wiring. See “Laser Barcode Scanners” on page 9. and your scanner manual for details. All cables must pass through the compression connector as described in See “DC Low Voltage Cable insertion” on page 6.
   Image Based ID Readers
   Connect your specific product as described in the sub-paragraph under Chapter 4, Image-Based id Readers and the reader manual. All cables must pass through the compression connector as described. See “DC Low Voltage Cable insertion” on page 6.

SYSTEM WIRING: AC INPUT

4. To comply with EN60950-1:2007 par.1.7.2.2, par. 2.7.1, par 2.7.4, par. 3.4.6, and to protect the AC input connection to the device; a disconnecting device with built in overcurrent and earth protection shall be installed external to the equipment according to local regulations.
   According to EN60950-1:2007 par. 3.2.3; the AC input cable must have a maximum diameter of 14mm and the conduit a max diameter of 16mm.

5. With AC line voltage OFF, wire the AC Line to the AC Line Input Terminal Block. See “AC Line Input Voltage” on page 13.

SYSTEM WIRING: TEST

6. Apply the AC line voltage from the building installation or the DWS-SWITCH and check that the PWR powers up correctly. The green DC-OK light should be on steady and the overload light (red) should off.

7. Close and lock the PWR enclosure and check that it does not open (lock functions correctly).

The PWR-120 installation is now complete.

CHAPTER 3
MECHANICAL INSTALLATION

CABINET MOUNTING

The cabinet must be mounted to the reading station frame using the brackets and bolts provided in the package.

1. Mount the bracket to the cabinet.
2. Mount the cabinet to the frame.

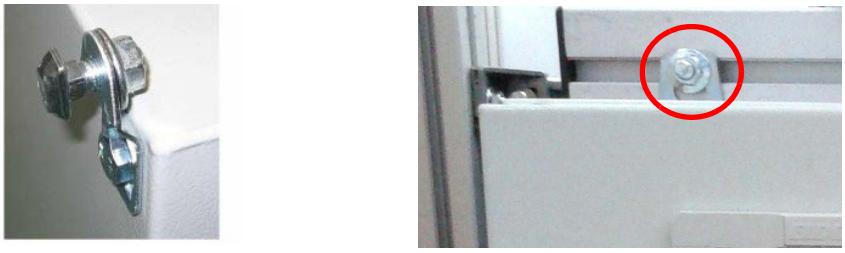
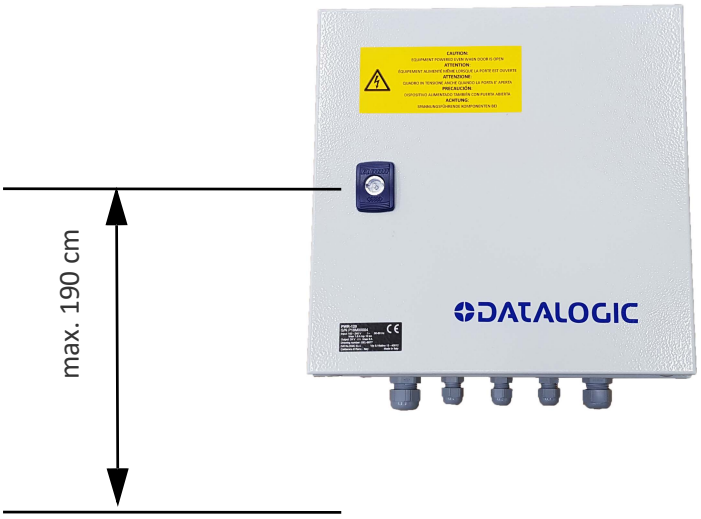


Figure 1 - Mounting Brackets



NOTE

The cabinet must be installed vertically in such a way that the key lock is not higher than 1.90 m from the ground.

Figure 2 - PWR-120 cabinet max. height

Please note that the cabinet door can be unlocked and opened by using the key provided along with the product.

CHAPTER 4
LOW VOLTAGE ELECTRICAL CONNECTIONS

DC LOW VOLTAGE CABLE INSERTION

The compression connectors have IP65 protection capability. All cables must pass through the compression connectors.

Compression Connectors

Follow these instructions to correctly insert the cables:

1. Determine the number and size of the cables coming into and leaving the PWR-120.
2. Locate the correct compression connector sizes and positions relative to these cables.
3. Pass the cable end through the proper compression connector so that the gland material seals around it when tightened.

There are three compression connector sizes with the following specifications:

NUMBER OF COMPRESSION CONNECTORS	CABLE DIAMETER	
	Millimeters	Inches
1	9-14	0.354-0.551
3	3.5-8	0.138-0.315
1	7-13	0.256-0.512

Installing the AS-I Cable

Prepare the AS-I cable by first inserting the compression connector nut, then the AS-I cable sealing grommet onto the AS-I cable. Then strip the outer protection sheath leaving about 5 cm of blue and brown wires free for positioning. Strip the individual wires for insertion into the Terminal Block.

Pass the AS-I cable through the compression connector and make sure there is enough length to easily reach the 24 Vdc Terminal Block.

Seat the AS-I cable sealing grommet into the compression connector and tighten the compression connector nut.

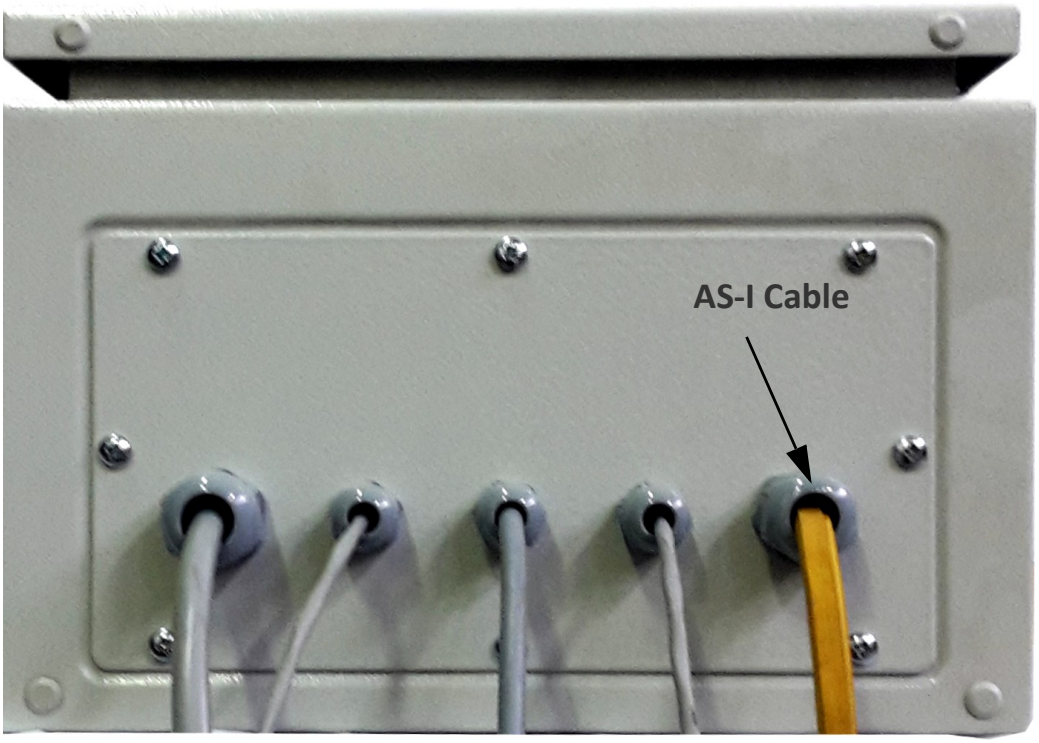


Figure 1 - Cable insertion

DC VOLTAGE TERMINAL BLOCK

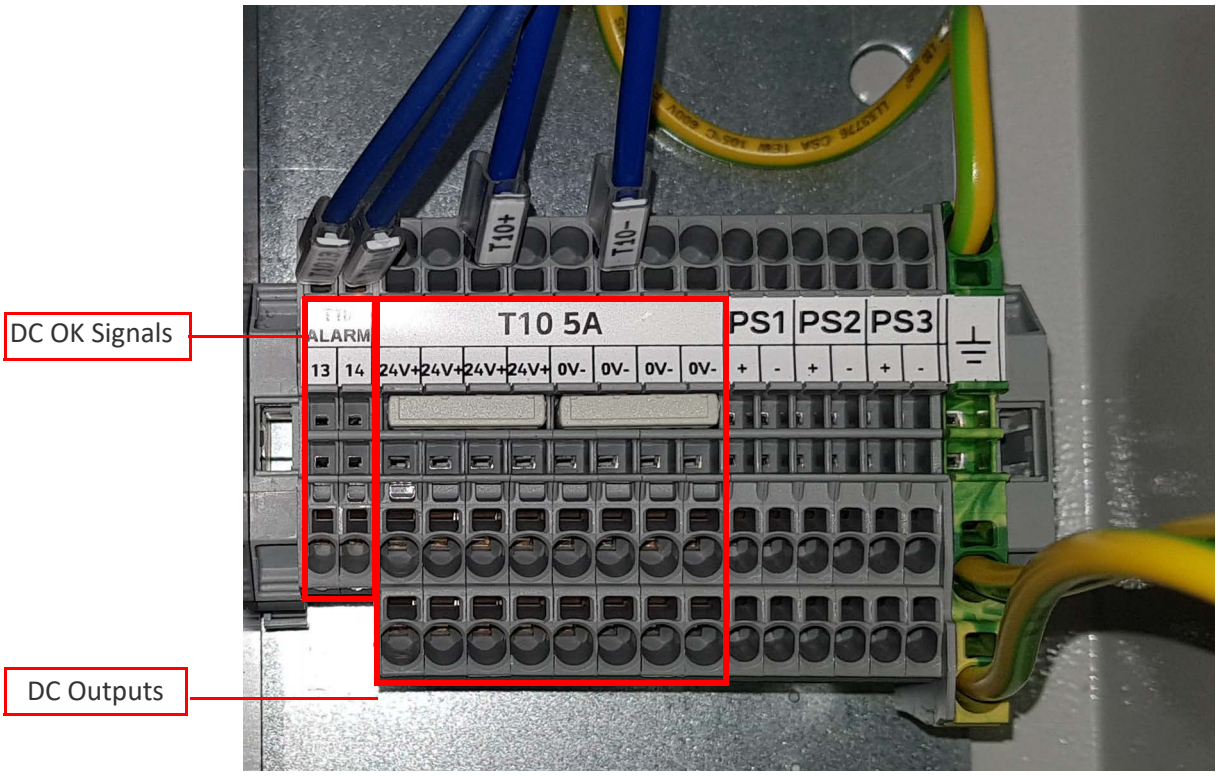


Figure 2 - PWR-120 DC Output Power Connections

DC OK Monitoring

The DC voltage terminal block provides two wiring terminals (13-14), which monitor the status of the switching power supply (DC OK feature). When the power supply module runs correctly, lines 13 and 14 form a normally closed contact. If the power module experiences problems (i.e. output overload causing output voltage to be reduced by less than 90% of nominal) these lines open. Lines 13 and 14 are decoupled from the power output lines and can be connected to a free digital input to signal this alarm condition.

DC Direct Output

The 24 volt DC Output terminals allow direct connection to your devices according to your application requirements.

LASER BARCODE SCANNERS

Supply Capacity When Wiring Directly to AS-I Compatible Scanners

For direct wiring, power distribution is performed simultaneously for all the scanners. However all the scanner motors start up slowly so that there is no significant peak current draw. See the specific scanner manual for consumption data.

The maximum number of same type scanners to be supplied for direct wiring by a single PWR-120 is shown in the table below:

SCANNER TYPE	MAXIMUM NUMBER OF SCANNERS
	Single Branch
DS8110	6
DX8210	6

The following products are also AS-I compatible: **DS5100, DM3610, SC5000**. In case of networks using a mix of products, you must calculate the total power consumption so as not to exceed the power limits. See the specific product reference manual in the Technical Features chapter for consumption data.

The power supply unit is connected directly to the scanners via AS-I cabling.

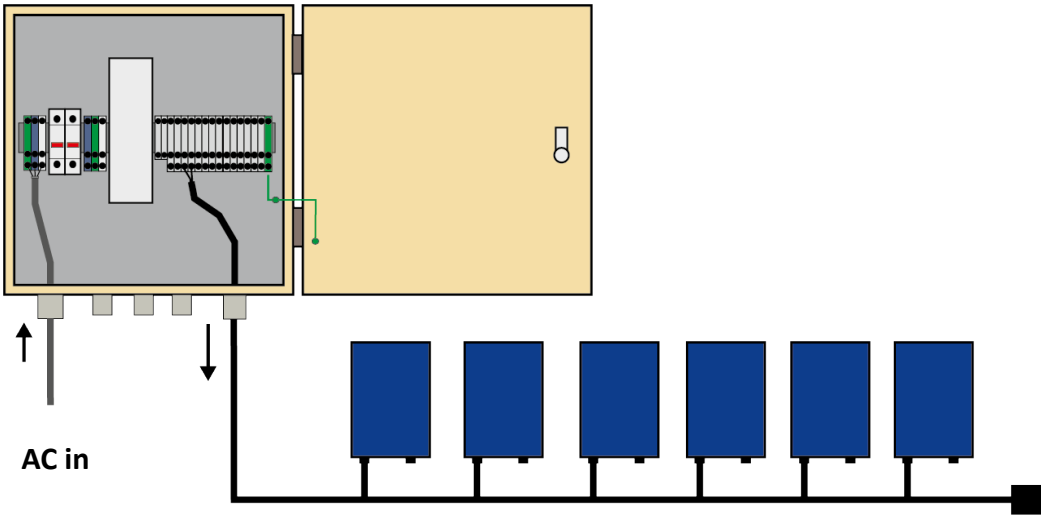


Figure 3 - Connecting PWR-120 to AS-I Compatible Scanners

Refer to the specific scanner manual for I/O interface wiring connections.

IMAGE-BASED ID READERS

Supply Capacity When Wiring to XRF410N Readers

The maximum number of XRF410N modules to be supplied by a single PWR-120 is shown in the following table.

XRF410N MODEL	MAXIMUM NUMBER OF MODULES
Base (Bxx)	2
Hi Perf (Hxx)	1

The power supply unit is connected to the XRF410N Base module through the CBX500 AATS-001 according to the following example diagram:

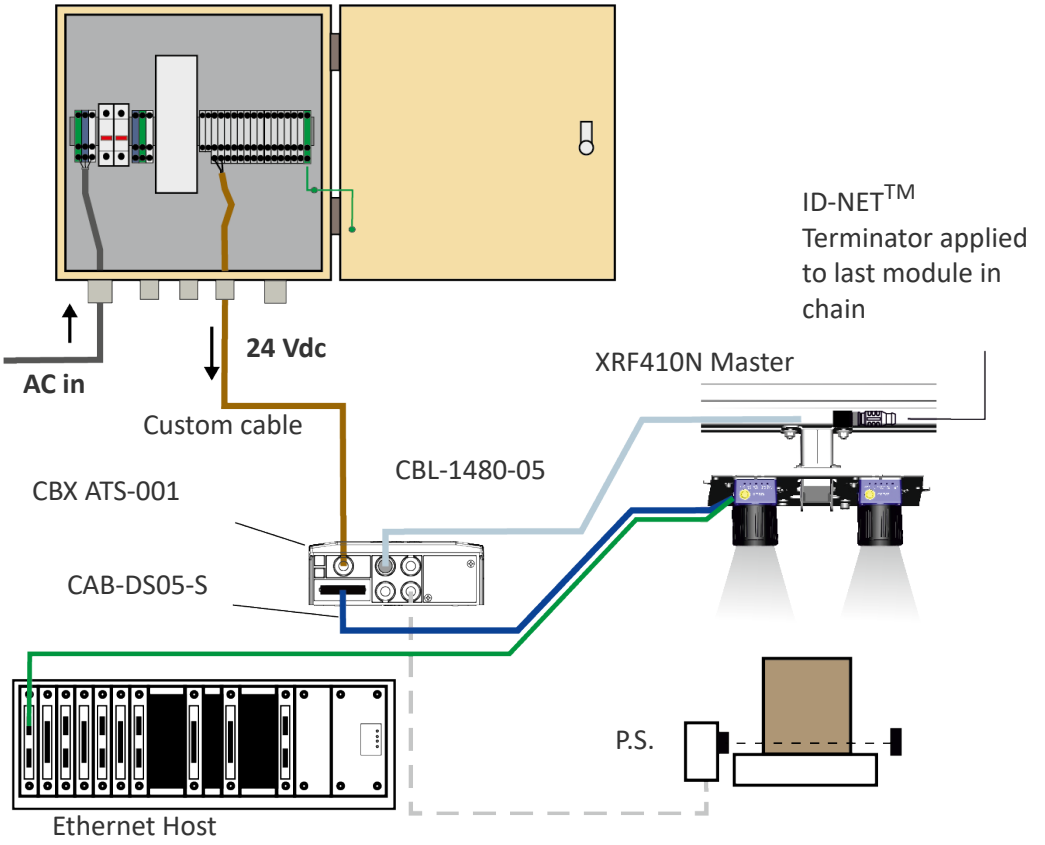


Figure 4 - Connecting PWR-120 to XRF410N Base Modules

CUSTOM POWER CABLE TO CBX	
PWR-120	CBX
24 V+	Vdc
0 V-	GND

The power supply unit is connected to the XRF410N Hi Perf module through the CBX500 ATS-001 according to the following example diagram. In this case separate power connection is also supplied to the QL connector for Illuminator power.

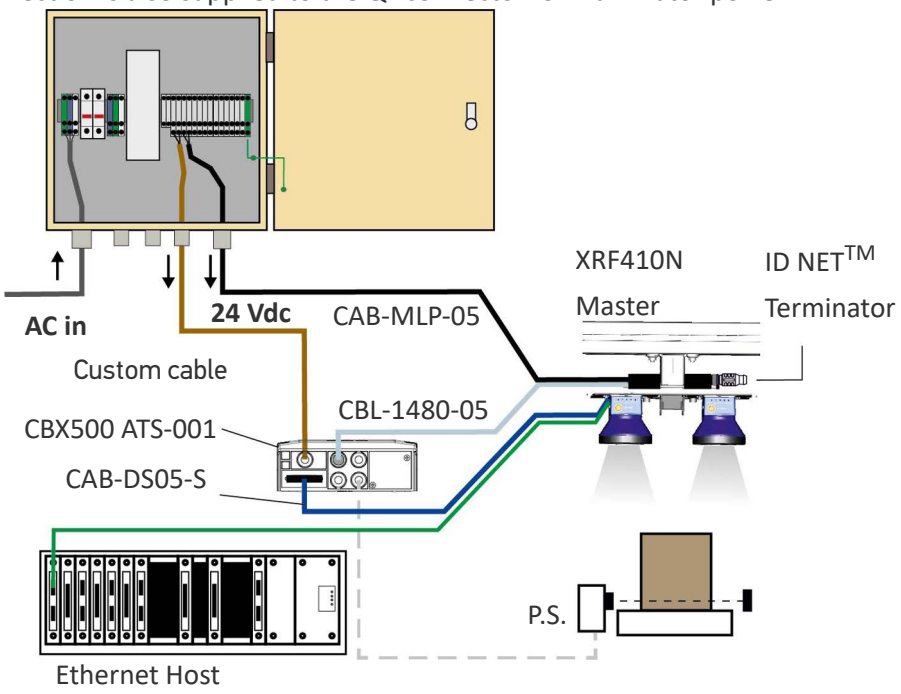


Figure 5 - Connecting PWR-120 to an XRF410N Hi Perf Module

CUSTOM POWER CABLE TO CBX		CAB-MLP-0X CABLE	
PWR-120	CBX	Wire Color	Meaning
24 V+	Vdc	White	24 V+
0 V-	GND	Blue	0 V-

Supply Capacity When Wiring to Matrix 450N Readers

One PWR-120 is able to power in parallel:

- one Matrix 450N + LT-03x illuminator
- one CBX connection box with all the standard sensors

The power supply unit can be connected to the Matrix 450N readers according to the following example diagram:

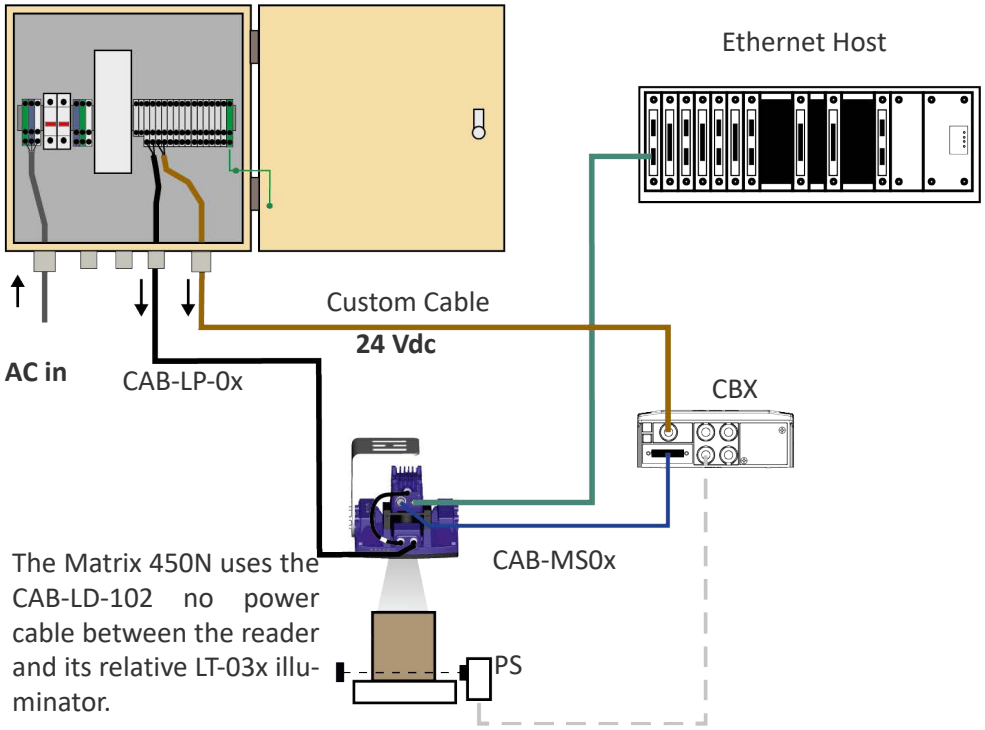


Figure 6 - Connecting PWR-120 to a Matrix 450N

CUSTOM POWER CABLE TO CBX		CAB-LP-0X CABLE TO LT-03X	
PWR-120	CBX	Wire Color	Meaning
24 V+	Vdc	Brown/White	24 V+
0 V-	GND	Black/Blue	0 V-

CHAPTER 5
AC LINE VOLTAGE ELECTRICAL CONNECTIONS

AC LINE INPUT VOLTAGE

HIGH VOLTAGE: This operation must be performed by a certified electrician.

Wire according to the following points:

Primary wiring: Overcurrent protection should be provided by a 16 A building installation circuit breaker. PWR-120 input components are rated for an Icp of 10 kA max.

Wiring methods from the branch circuit breaker to the PWR-120 power supply shall comply with the National Electric Code ANSI\NFPA. The Datalogic DWS-SWITCH is an AC Power Disconnector and Distributor cabinet which provides this protection.

For primary wiring use a 3-conductor cable (between 2.5 mm2 - 4 mm2 (13 AWG - 11 AWG), for every conductor. Choose the overall cable diameter and UL Listed conduits accordingly. The AC input cable must be inserted through the AC Input Cable Compression Connector.

The individual conductors must be inserted into the dedicated terminal blocks on the DIN rail (see figure below) which are marked Line (L) neutral (N) and Protection Earth (PE).

Replace the protection cover over the spring clamp connector after correctly installing the wires.

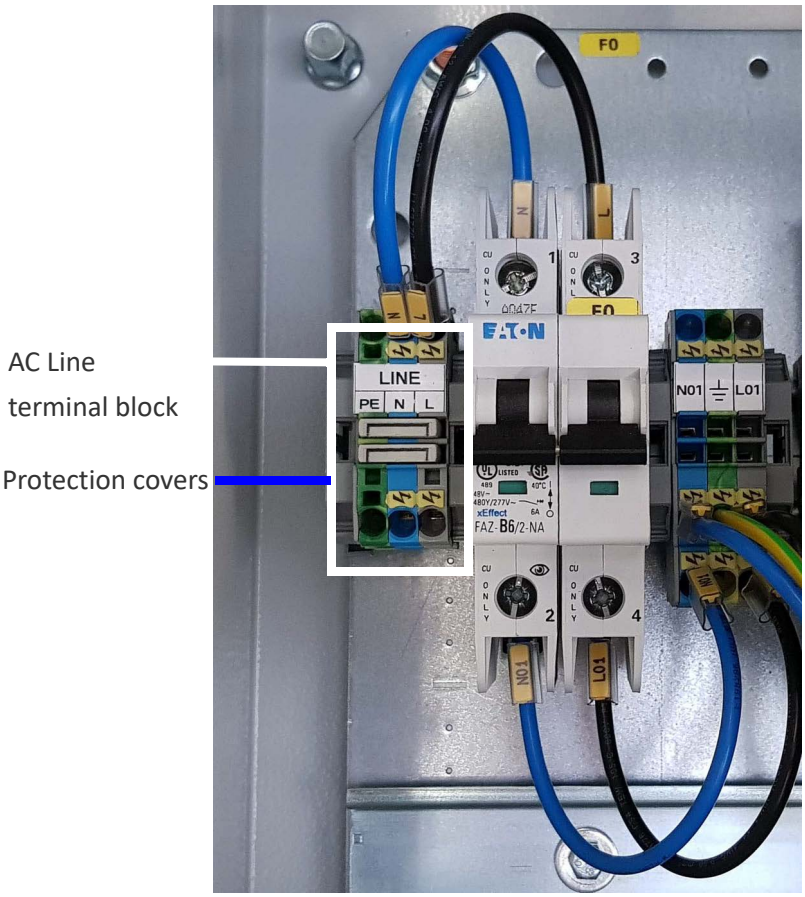


Figure 1 - PWR-120 AC Line Terminal Block with Protection Covers

CHAPTER 6
TECHNICAL FEATURES

ELECTRICAL FEATURES	
Input Voltage	AC from 100 to 240 V from 50 to 60 Hz
Input Current Consumption	Max 6 A Icp 10kA - output at full load
Output Voltage	24 Vdc
Nominal Output Current Max Continuous Overcurrent	5 A 5.5 A (up to 40° C ambient temp)

ENVIRONMENTAL FEATURES	
Operating Temperature	0° to +50°C (32° to +122°F)
Storage Temperature	-25° to + 70° C (-13° to 158°F)
Humidity	90% non condensing[a]
Protection Class	IP65*

a. when all unused compression connectors are sealed with the appropriate plugs.

PHYSICAL FEATURES	
Mechanical Dimensions HxLxD	300x300x210 mm (11.8x11.8x8.26 in)
Weight	9kg (18.84 lb)

APPENDIX A
ELECTRICAL DIAGRAMS

PWR-120 ELECTRICAL DIAGRAM

The PWR-120 components are electrically connected as displayed in the following diagram:

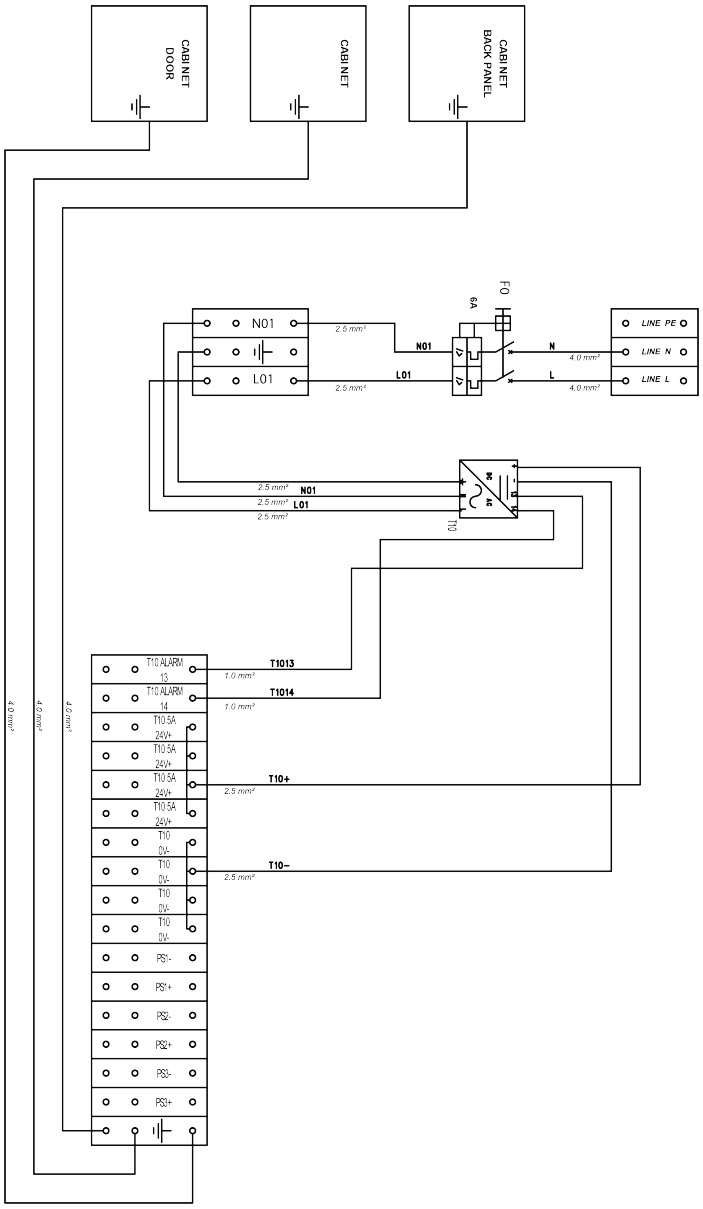


Figure 1 - PWR-120 Electrical Diagram

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