DATACOM

DM4170

CARRIER ETHERNET SWITCH

INSTALLATION GUIDE

LEGAL NOTE

In spite the fact that all the precautions were taken in development of the present document, DATACOM shall not be held responsible for eventual errors or omissions as well as no obligation is assumed due to damages resulting from the use of the information included in this guide. The specifications provided in this guide shall be subject to changes with no prior notification and are not acknowledged as any type of contract.

WARRANTY

DATACOM's products are covered by a warranty against manufacturing defects during a minimum period of 12 (twelve) months including the legal term of 90 days, as from the date of issue of the supply Nota Fiscal (Invoice).

Our warranty is standard counter warranty, this means, for exercise of the warranty, the customer should send the product to DATACOM Authorized Technical Assistance with paid freight. The return freight of the equipment will be DATACOM responsibility.

To obtain additional information, see our warranty policy in **www.datacom.com.br/en/home**

Telephone Number: **+55 51 3933-3094**

CONTACTS

TECHNICAL SUPPORT

Datacom has available a support portal - DmSupport, to help the customers in use and config of our equipment.

Access to the DmSupport can be made through link: **https://supportcenter.datacom.com.br**

In this site the following are available: firmwares, technical datasheets, config guide, MIBs and manuals for download. In addition, it allows opening of calls for assistance with our technical team.

Telephone Number: **+55 51 3933-3122**

We would like to highlight that our assistance through telephone support is available from Monday through Friday from 08:00 AM through 05:30 PM.

Important: For support assistance 24x7, please request a quotation to our sales department.

GENERAL INFORMATION

For any other additional information, please visit the **www.datacom.com.br/en/home** or call:

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PRODUCT DOCUMENTATION

About this Document

This document is part of a set of documents prepared to provide all necessary information about DATACOM products.

Software Platform

- **Quick Configuration Guide –** Provides instructions on how to set the functionalities in a quick manner in the equipment
- **Troubleshooting Guide –** Provides instructions on how to analyze, identify and solve problems with the product
- **Command Reference –** Provides all the commands related to the product
- **Release Notes –** Provides instructions on the new functionalities, identified defects and compatibilities between Software and Hardware

Hardware Platform

- **Datasheet –** Provides the product technical characteristics
- **Installation Guide –** Provides instructions on the procedures covering product installation

The availability of some documents can vary depending on the type of product.

Access **https://supportcenter.datacom.com.br/** to locate the related documents or contact the **Technical Support** for additional information.

TABLE OF CONTENTS

1 INTRODUCING THE PRODUCT'S INSTALLATION MANUAL

1.1 ABOUT THIS MANUAL

This manual can be used for the DM4170 switches, providing information about the installation of this product line.

The document focuses on the electrical and physical part, indicating the states of the equipment as well as the installation of its hardware. It is assumed that the individual or individuals who will manage any aspect of the product have basic knowledge of electrical installations, Ethernet interfaces and general telecommunications knowledge.

1.2 TARGET AUDIENCE

This manual is intended for network administrators, technicians or qualified personnel responsible to install, configure, plan and maintain this product.

1.3 CONVENTIONS

To facilitate understanding throughout this manual the following conventions have been adopted:

1.3.1 Icons

Icon	Category	Description
	Note	Notes better explain certain details presented in the text.
	Caution	This formatting indicates that the text contained herein is of great importance and there is a risk of damage.
	Warning	Indicates that if the procedures are not followed correctly, there is a risk of electric shock.
	Warning	Indicates the presence of laser radiation. If the instructions are not followed and direct exposure to the skin and eyes is not avoided, it may cause damage to the skin or impair vision.
	Caution	Indicates equipment or part that is sensitive to static electricity. It should not be handled without grounding antistatic wrist strap or equivalent.
	Warning	Indicates the emission of non-ionizing radiation.
	Note	Symbol of the WEEE directive (Applicable for European Union and other countries with selective collection system). This symbol on the product or on packaging indicates that the product cannot be disposed of with household waste. However, it is your responsibility to take the equipment to be disposed of at a collection

Icon	Category	Description
		point designated for the recycling of electrical and electronic equipment. Separate collection and recycling of equipment at the time of disposal help preserve natural resources and ensure that equipment is recycled so as to protect people's health and the environment. For more information on where to discard equipment for recycling, contact your local dealer where the product was purchased.

Table 1 – Icon Conventions

A caution type notice calls attention to conditions that, if not avoided, may damage or destroy hardware.

A warning type notice calls attention to conditions that, if not avoided, can result in death or serious injury.

2 GETTING STARTED

2.1 SAFETY WARNINGS

Before proceeding, carefully observe the following safety warnings:

Before installation, the entire manual must be read carefully. If you have any questions, you should contact the authorized technical support.

Pay attention to the safety instructions during the installation, operation and maintenance of this product. The installation, operation and maintenance procedures should preferably be performed by qualified and trained personnel authorized to carry out such tasks.

To prevent the risk of electric shocks, before connecting the equipment or connecting cables, ensure the installation and operation of a grounding system.

Some parts of the equipment may emit laser radiation. Avoit direct exposure of the skin and eyes.

Optical modules use invisible radiation laser transmitters. Although most SFP/SFP+/QSFP+ on the market meet LASER safety specifications, never look directly at the terminals of a module or an optical cord. Exposure to laser emission may cause partial or total loss of vision.

Make sure the rack or table power supply is not overloaded.

3 HARDWARE DESCRIPTION

This chapter describes the DM4170 line's hardware features.

3.1 Product Overview

The DM4170 product line has two product versions as shown below:

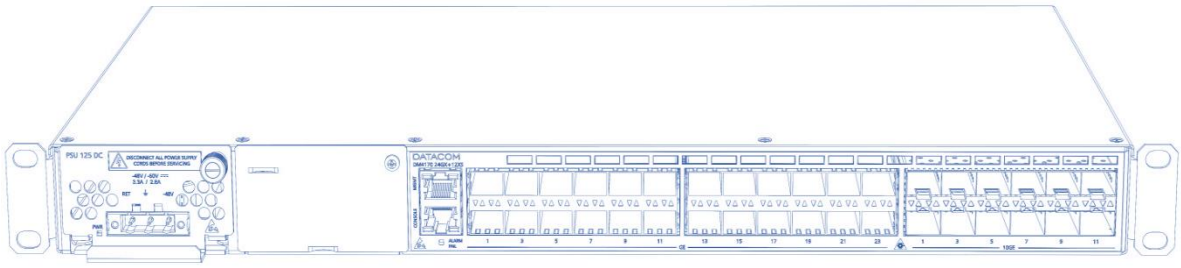


Figure 1 - DM4170 24GX+12XS

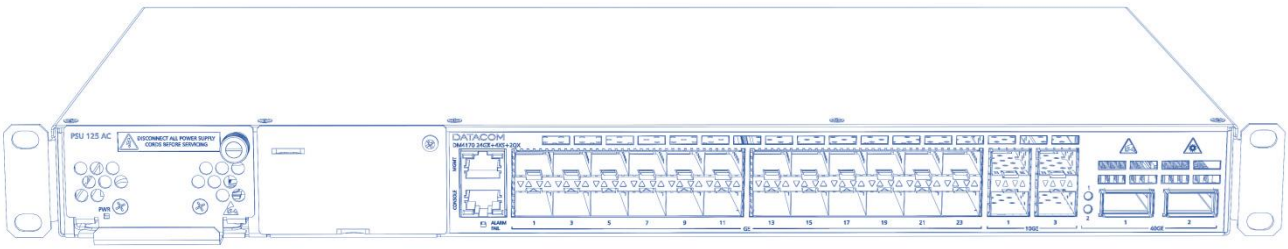


Figure 2 - DM4170 24GX+4XS+2QX

3.2 Model DM4170 24GX+12XS

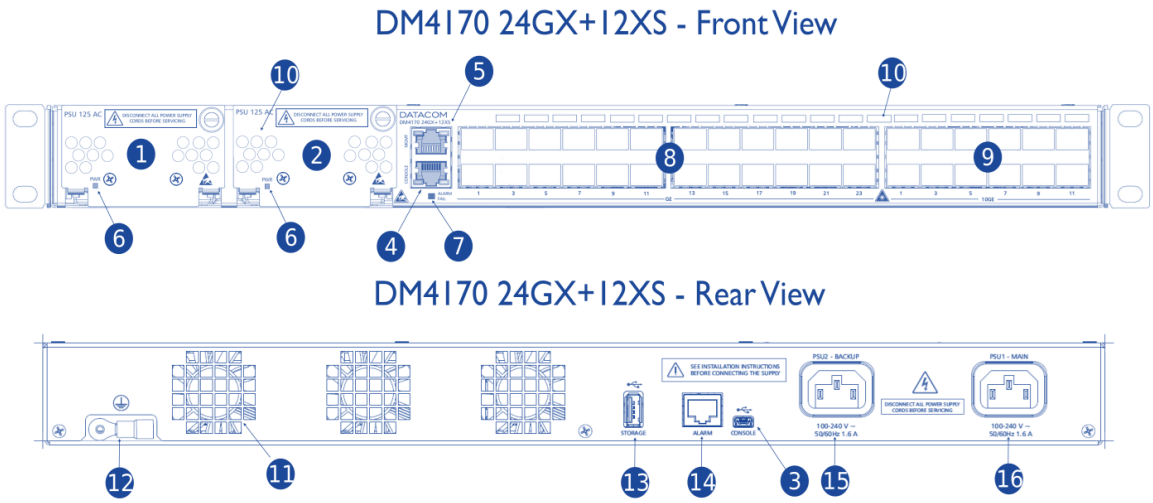


Figure 3 - DM4170 24GX+12XS Views

	Descrição
1	SLOT PSU1 (MAIN)
2	SLOT PSU2 (BACKUP)
3	USB Host Interface
4	Serial Console Interface (RS-232)
5	Gigabit Ethernet Management Interface (MGMT)
6	LED Power (PWR)
7	LED ALARM/FAIL
8	24 Gigabit Ethernet Ports (SFP)
9	12 10Gigabit Ethernet Ports (SFP+)
10	Front Panel Air Entry
11	Rear Panel Air Exit
12	Auxiliary Safety Ground
13	USB Storage Interface
14	Alarm Interface (2 inputs and 1 output)
15	PSU2 Power Input (Backup)
16	PSU1 Power Input (Main)

Table 2 – DM4170 24GX+12XS Interface Description

3.3 Model DM4170 24GX+4XS+2QX

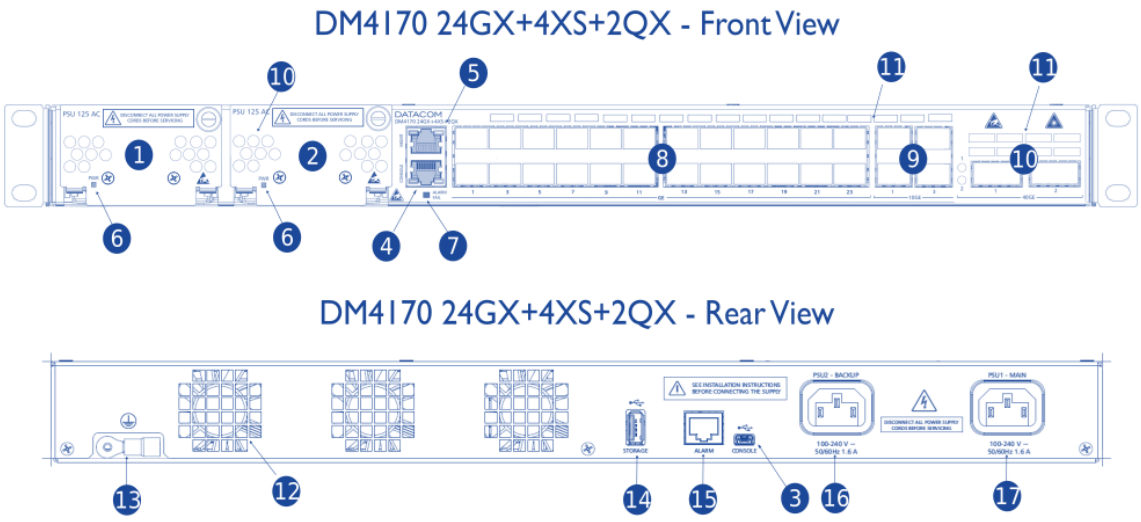


Figure 4 - DM4170 24GX+4XS+2QX Views

	Description
1	SLOT PSU1 (MAIN)
2	SLOT PSU2 (BACKUP)
3	USB Host Interface
4	Serial Console Interface (RS-232)
5	Gigabit Ethernet Management Interface (MGMT)
6	LED Power (PWR)
7	LED ALARM/FAIL
8	24 Gigabit Ethernet Ports (SFP)
9	4 10Gigabit Ethernet Ports (SFP+)
10	2 40Gigabit Ethernet Ports (QSFP+)
11	Front Panel Air Entry
12	Rear Panel Air Exit
13	Auxiliary Safety Ground
14	USB Storage Interface
15	Alarm Interface (2 inputs and 1 output)
16	PSU2 Power Input (Backup)
17	PSU1 Power Input (Main)

Table 3 – DM4170 24GX+4XS+2QX Interface Description

3.4 EQUIPMENT STATUS LEDS

The DM4170 switches have two status LEDs on the front panel, the ALARM/FAIL LED on the Mainboard, and the PWR LED on each PSU. The table below describes the LED status behavior of the equipment.

LED PWR	▪ GREEN ON: Indicates that the source is powering the switch. ▪ OFF: Power source failure or not powering.
LED ALARM/FAIL	▪ OFF: Equipment operating normally, no failures or alarms detected. ▪ YELLOW/AMBER ON: Indicates that alarms were detected by the equipment. ▪ RED ON: Indicates that the equipment is in internal failure state. When the power is connected to the equipment, this LED will turn red for a short time, and then will turn off.

Table 3 - Status LED Behavior

3.5 Serial console interface (RS-232)

The DM4170 switch has a console port for local management. The console port uses an RJ45 connector. A cable with a male RJ45 connector and a female DB9 connector must be used for the connection to a computer or laptop.

The serial console cable is an accessory included in the DM4170. Additional cables can be purchased separately via code 710.0137.xx or assembled as described in the following images. The pin assignment of the RJ45 connector and its match with the DB9 connector is described in table 4.

Figure 5 - Console cable

Figure 6 - RJ45 console cable connector pins

RJ45 Male	DB9 Female	Function	DM4170 Input/output
1	-	Reserved	-
2	-	Reserved	-
3	2	RS232_TX	Output
4	5	DGND	Ground
5	5	DGND	Ground
6	3	RS232_RX	Input
7	-	Reserved	-
8	-	Reserved	-

Table 4 - Console interface connector pin assignment

3.6 USB Interface Console

The rear panels of the equipment for local management. The USB console port is accessible via a Micro-USB cable (not included). The driver for using this interface in Windows can be found at **http://www.datacom.com.br/support**.

3.7 USB Host Interface

The product provides a type A USB host interface on the rear panel that can operate according to specification 2.0. There is no need to use this interface during the switch's

installation process. Contact **TECHNICAL SUPPORT** for more information on using this interface.

3.8 ETHERNET MANAGEMENT INTERFACE (MGMT)

The DM4170 has a Gigabit Ethernet interface used for local or remote management of the switch. For details on how to use it, see the chapter, **ACCESSING THE PRODUCT**. This interface has two status LEDs whose behavior is described in **TABLE 5 - MGMT INTERFACE LEDS**.

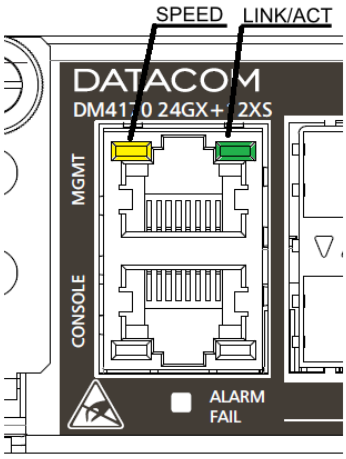


Figure 7 - LEDS MGMT

Indicator	Color	Status	Description
LINK/ACT	GREEN	Off	*Link Down* (inactive port)
		On	*Link Up* (active port)
		Blinking	Data sending and/or receiving activity
SPEED	YELLOW	Off	Port operating in 1000Base-T mode
		ON	Port operating in 10Base-T or 100Base-TX

Table 5 - MGMT Interface LEDs

3.9 DATA INTERFACES

3.9.1 SFP Optical Ethernet Gigabit Interfaces (1000Base-X)

The DM4170 24GX has 24 Gigabit Ethernet optical interfaces using an SFP connector. There are LINK/ACT and SPEED indicator LEDs that are built into the connectors corresponding to each interface. The ports are identified in the front panel's printing but only odd ports (bottom ports) are numbered. The numbering of the other ports follows the order according to the figure below:

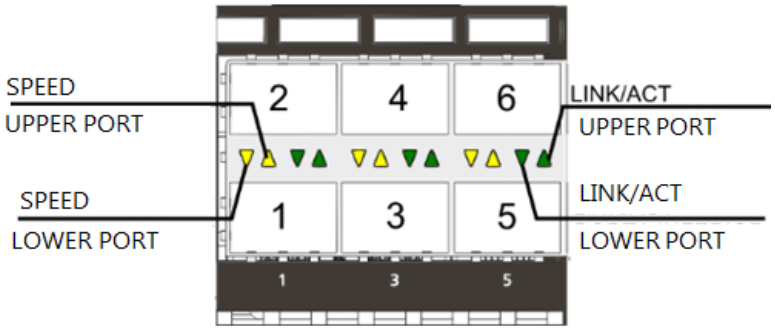


Figure 8 - 1GbE SFP LED ports

3.9.2 Indicator LEDs of the Gigabit Ethernet Optical Interfaces

The convention to indicate the operation and mode of operation of the 1GbE SFP interfaces is described below:

Indicator	Color	Status	Description
LINK/ACT	GREEN	Off	*Link Down* (inactive port)
		On	*Link Up* (active port)
		Blinking	Data sending and/or receiving activity
SPEED	YELLOW	Off	Port operating in 1000Base-X or 1000Base-T mode
		On	Port operating at a rate lower than 1Gbps.

Table 6 – Indicator LEDs for 1GbE SFP interfaces

3.9.3 SFP+ Ethernet 10 Gigabit Optical Interfaces (10GBase-X)

The DM4170 versions have 4 or 12 10 Gigabit Ethernet optical interfaces depending on the model, all using an SFP+ connector. There are LINK/ACT and SPEED indicator LEDs that are built into the connectors corresponding to each interface. The ports are identified in the front panel printing, but only odd ports (bottom ports) are numbered. The numbering of the other ports follows the order according to the Figure below:

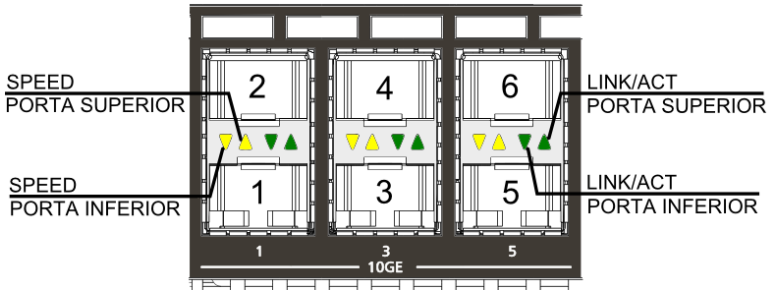


Figure 9 - 10GbE SFP+ LED ports

The convention to indicate the operation and mode of operation of the 10GbE SFP+ interfaces is described below:

Indicator	Color	Status	Description
LINK/ACT	GREEN	Off	*Link Down* (inactive port)
		On	*Link Up* (active port)
		Blinking	Data sending and/or receiving activity
SPEED	YELLOW	Off	Port operating in 10GBase-X or 10GBase-T mode
		On	Port operating at a rate lower than 10Gbps

Table 7 – Indicator LEDs of 10GbE SFP+ interfaces

3.9.4 QSFP+ Ethernet 40 Gigabit Optical Interfaces (40GBase-X)

The DM4170 QX versions have 2 optical 40 Gigabit Ethernet interfaces, all using QSFP+ connectors. There are bicolor LEDs indicating the status of each interface.

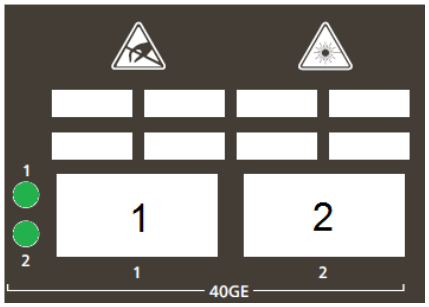


Figure 10 - 40GbE QSFP+ LED ports

The convention to indicate the operation and mode of operation of the 40GbE QSFP+ interfaces are described in table below.

Indicator	Color	Status	Description
LINK/ACT /SPEED	VERDE AMARELO	Off	*Link Down* (inactive port)
		On VERDE	*Link Up* at 40Gbps (active port)

		Off AMARELO	*Link Up* operating at a rate lower than 40Gbps
		Blinking	Data sending and/or receiving activity

Table 8 – Indicator LEDs of 40GbE QSFP+ interfaces

3.10 Alarm Input and Output

The DM4170 has two alarm inputs and one alarm output in an RJ45 connector. Alarm 1 and 2 inputs are isolated via optocoupler. External alarm detection occurs when the voltage difference between IN+ and IN- reaches 12V. Table 10 presents the voltages and status for alarm 1 and 2 inputs.

Signal IN-	Signal IN+	Description
0V (Reference)	0V to 3V	No alarm
0V (Reference)	12V to 60V	Alarm

Table 9 – Conditions for alarm detection

For alarm output, the equipment uses a relay. In an alarm situation1 or when the switch is off, pin 7 (common) is short circuited with pin 8 (NC). When operating without alarms, pin 7 (common) will be short circuited with pin 6 (NO), while pin 8 (NC) will be isolated.

Table 12 describes the pin settings used in connector RJ45 of the alarm interface.

RJ45 Male	Signal
1	Input 1 – IN+
2	Input 1 – IN-
3	Input 2 – IN+
4	Input 2 – IN-
5	Not connected
6	Output – NO (Alarm Off)
7	Output – Common
8	Output – NC (Alarm On)

Table 10 – Alarm pin connector

3.11 PSUs and Power Inputs

DM4170 switches have two PSU 125 power supply slots (supplied separately) on the front of the **switch.**

[1] Roadmap feature, contact Technical Support if you have any questions.

The DM4170 switches have two PSU models: the PSU 125 DC that operates with DC -48/60 Vdc power supply and the PSU 125 AC that operates with 100/240Vac (50/60Hz) AC power supply. For further details read the **TECHNICAL SPECIFICATIONS** chapter.

The PSU 125 DC has TERMINAL BLOCK power terminals; the terminals are located on the front of the PSU.

The PSU 125 AC has three-pin IEC 320/C14 plugin power terminals; each terminal being responsible for supplying power to each of the power sources.

The PSU 125 power sources operate in 1:1 redundancy, with only one of them being sufficient to maintain the switch's full operation. The combination of AC and DC power sources on the same switch is permitted. The insertion/removal of the power cables and the PSU 125 can be hot-swapped allowing the uninterrupted operation of the switch if one of the two power sources is turned off or fails. The PSU 125 has a PWR LED on its front panel which, when lit, indicates that it is properly powered and operational.

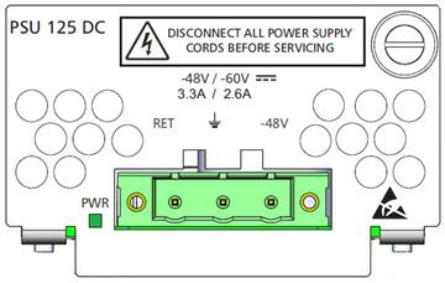


Figure 11 - PSU Panel 125 DC

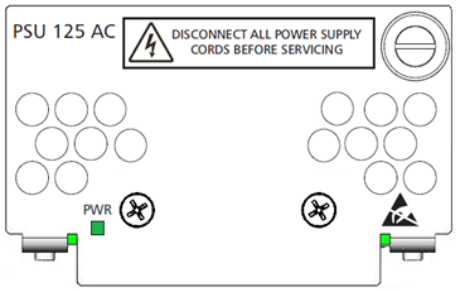


Figure 12 - PSU Panel 125 AC

The equipment is de-energized through its power cable (s). The power outlet must be nearby and easily accessible.

The electrical installation of the site should be protected by devices against short circuits.

On the PSU 125 DC, fuses F1 and F2 support currents up to 15A. They are 86V Fast Acting. If necessary, only replace it with one of the same specifications. The F3 output fuse supports currents up to 15A. It is also 86V Fast Acting. If necessary, also replace it with another one with the same specifications.

In the PSU 125 AC, fuse F1 supports currents of up to 5A. They are of Fast Acting type, 250V. If necessary, only replace it with one of the same specifications. The F1000 output fuse supports up to 15A. It is a Fast Acting type, 86V. If necessary, also replace it with another one with the same specifications.

In the situation where both PSUs are present and the power inputs are energized and operating with voltages within the specified range, the main power input (MAIN) will take precedence over the BACKUP power supply.

3.11.1 Pin Settings and Polarity

3.11.1.1 PSU 125 AC

The figure below presents the pin assignment of the IEC 320/C14 connector for the power supply of the equipment.

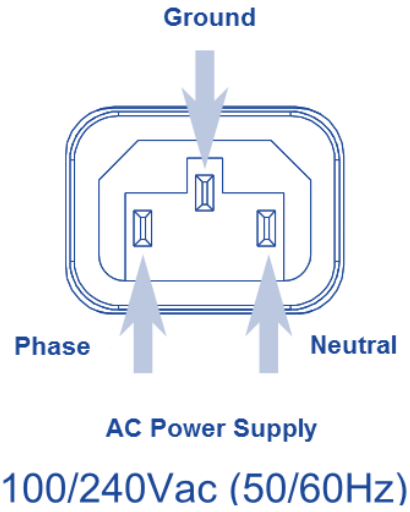


Figure 13 – AC Power Connector Pin Assignment

According to the NBR 14136 standard, the grounding pin of the product must be connected to the grounding installations of the installation site, since the power pins have no polarity indication.

3.11.1.2 PSU 125 DC

The figure below shows the pinout of the TERMINAL BLOCK connector for powering the equipment.

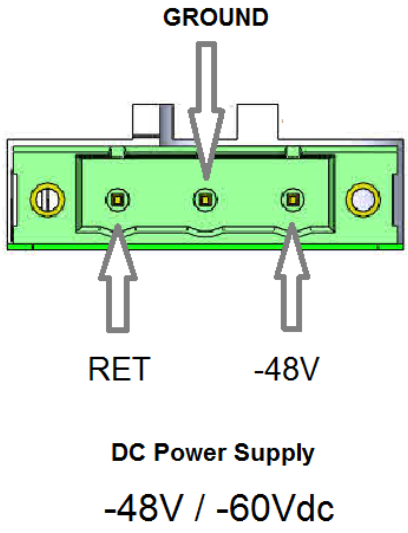


Figure 14 – DC Power Connector Pin Settings

3.11.2 Power Cables

3.11.2.1 PSU 125 AC

The PSU 125 AC includes a 3-meter power cord in the standard female IEC 320/C14 for the NBR 14136 plug.

3.11.2.2 PSU 125 DC

The PSU 125 includes a 3.5 meter DC power cable in the PP 1 mm2 gauge standard with both ends open and the TERMINAL BLOCK standard male connector (normally shipped screwed to the PSU 125 DC) for the installation of the cable.

Follow the information below to install the cable to the Terminal Block connector:

Step 1	▪ Remove the TERMINAL BLOCK connector from the PSU 125 DC by unscrewing the two side screws of the connector using a 1/8" screwdriver (number 0) as shown below:

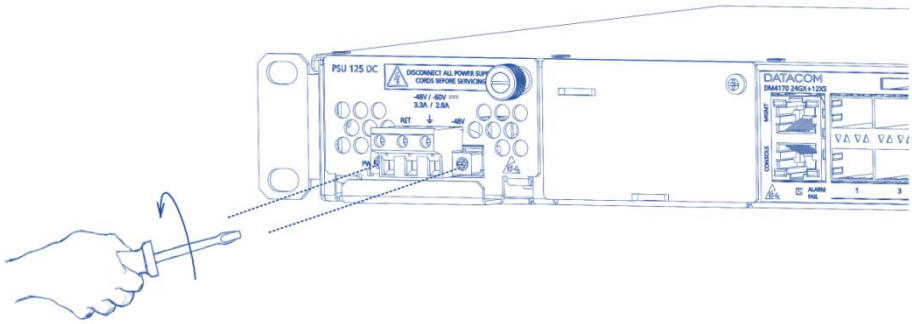


Figure 15 – Removing the TERMINAL BLOCK from the PSU 125 DC

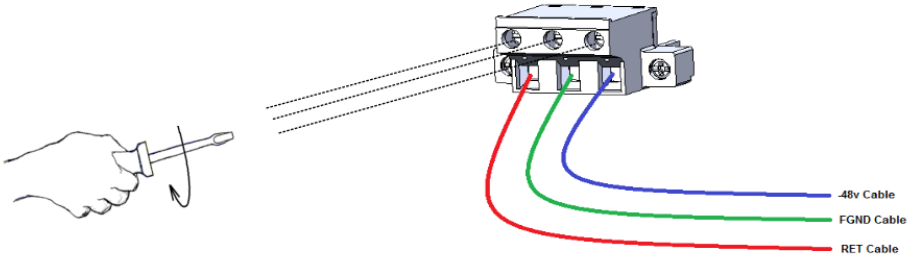
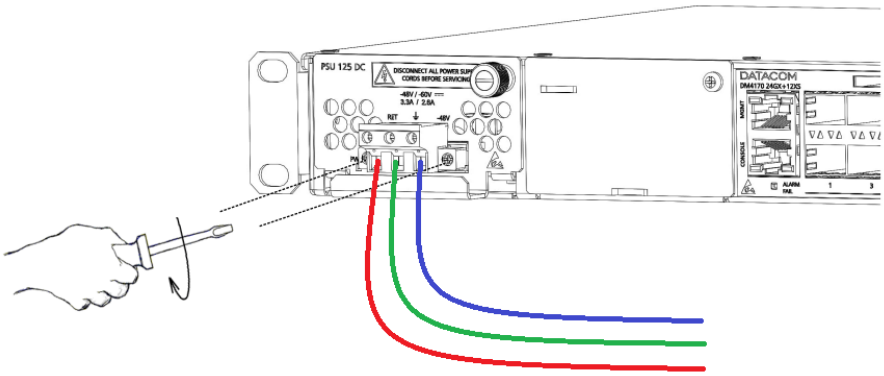
Step 2	▪ Locate the power cord shipped with the PSU 125 DC and cut it to the desired preferred length. If the cable needs to be replaced, it is important that it have a gauge of 1mm^2 or higher, and that the conductor colors follow the specifications of the country where it is installed.
Step 3	▪ Using a 1/8" screwdriver (number 0), screw the cable as shown below:  **Figure 16 – Installing the cable to the TERMINAL BLOCK**
Step 4	▪ Before the cable is powered, screw the connector with the cable installed on the PSU 125 DC, using the same 1/8" screwdriver (number 0) used above, as shown below:  **Figure 17 – Installing the cable mounted to the TERMINAL BLOCK on the PSU 125 DC**

Table 11 – Installing the PSU 125 DC power supply

3.12 PROTECTIVE GROUNDING

The DM4170 switches have a Protective Ground point on the rear panel. This connector must be connected to the installation ground (FGND) as instructed in the **DM4170 INSTALLATION** chapter.

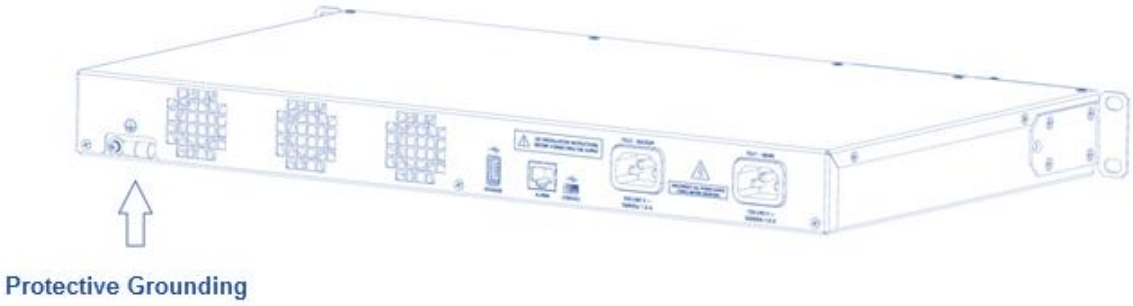


Figure 18 – Protective Grounding in DM4170

4 DM4170 INSTALLATION

This chapter explains the procedures, recommendations, and attention related to installing the DM4170.

4.1 DM4170 PACKAGE CONTENTS

The package contains a DM4170 device, the RS-232 console cable and a Quick Reference Guide. Check that the equipment is not damaged. If there is any irregularity, contact the TECHNICAL SUPPORT.

PSU 125 sources can be shipped already connected to the equipment or in separate boxes depending on the order.

4.2 IDENTIFYING THE PRODUCT

Make sure that the product received matches the figures in this guide. The DM4170 has a label on the rear side of the mechanics. It contains model information, product code and serial number. Check if there is any divergent information on the label regarding the information on the packaging.

4.3 PREPARING THE INSTALLATION SITE

Before installing the product, some care must be taken to guarantee that all steps can be followed correctly, thus ensuring proper installation.

4.4 INSTALLATION SITE REQUIREMENTS

Verify that the electrical and physical installations of the site where the product will be installed are in accordance with all specifications and technical standards applicable by the local governmental authority.

The site building needs to be prepared to withstand the mechanical and electrical loads of the new equipment to be installed. Read the **Erro! Fonte de referência não encontrada.** to check the relevant product weight and consumption information.

Make sure the rack’s power supply isn’t overloaded.

4.4.1 Environment requirements

Electrical equipment can generate significant heat. Thus, it is essential to provide a temperature-controlled environment to ensure proper and safe operation.

In addition to temperature control, it is necessary to observe that the product operates only in places with controlled humidity. In addition, the environment must be free of materials or gases capable of conducting electricity.

4.4.2 Environment requirements

To ensure correct operation, when installing the DM4170, observe the information available in the ERRO! FONTE DE REFERÊNCIA NÃO ENCONTRADA. and **ENVIRONMENTAL INFORMATION** sections.

4.5 19-INCH RACK INSTALLATION

The DM4170 was designed to be installed to 19-inch racks, occupying only 1U in height. To choose the suitable installation site, pay attention to the following items:

Choose an easily accessible location where your LEDs can be viewed;

The temperature should be between 0°C and 55°C and the relative air humidity should be between 10% and 90% non-condensed;

Install the equipment near a power source.

After choosing the appropriate location, bring the equipment to the rack and insert two standard M5 screws (not shipped with the product) into each side of the adapter to secure the assembly to the cage nuts on the rack (not shipped with the product). Finally, tighten the screws so as to guarantee that the equipment is securely attached to the rack.

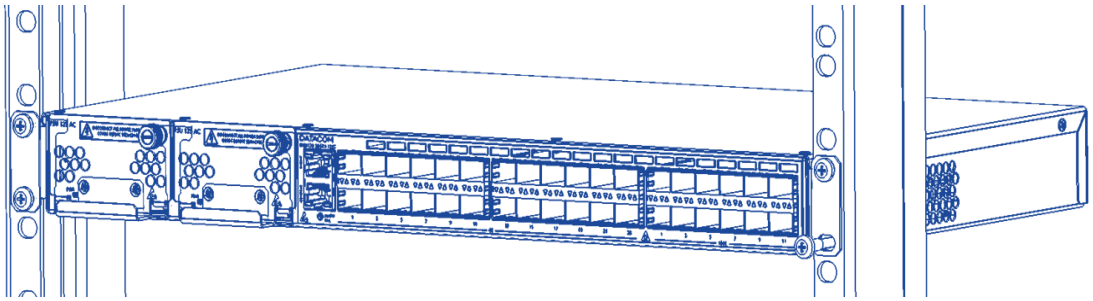


Figure 19 - 19-inch rack installation

4.6 CONNECTING THE PROTECTIVE GROUNDING

The DM4170 has a place on its rear panel to attach a cable to connect the Protective Grounding.

The grounding cable is not part of the basic accessories shipped with the switch. The cable indicated for the installation must have a thickness of 10 to 12 AWG. The color of the cable must follow the specific requirements of the country where the switch will be installed; most countries determine that the cable should be green with yellow stripes.

Step 1	▪ Locate the grounding connector located on the back of the switch as shown in **FIGURE 18 – PROTECTIVE GROUNDING IN** DM4170 Protective Grounding; remove the connector with a

	Philips screwdriver.
Step 2	▪ Secure the cable to the grounding connector.
Step 3	▪ Cut the cable to a length suitable for the connection to the installation ground.
Step 4	▪ Screw the connector to the switch using the same screw that was removed in step 1.

Table 12 – Steps for the installation of the Protective Grounding

4.7 VENTILATION

The DM4170 switch ventilation airflow is provided by the inlets on the front and left sides of the equipment and through the outlets on the rear, as in figure below. For the correct operation of the cooling system it is important that the air inlets and outlets are unobstructed and that the free areas of 5cm (2 inches) are respected on the rear panel and on the left side of the switch. These areas must have free air circulation so that the temperature of the equipment remains within the assured levels of operation, also observing the cooling of the environment.

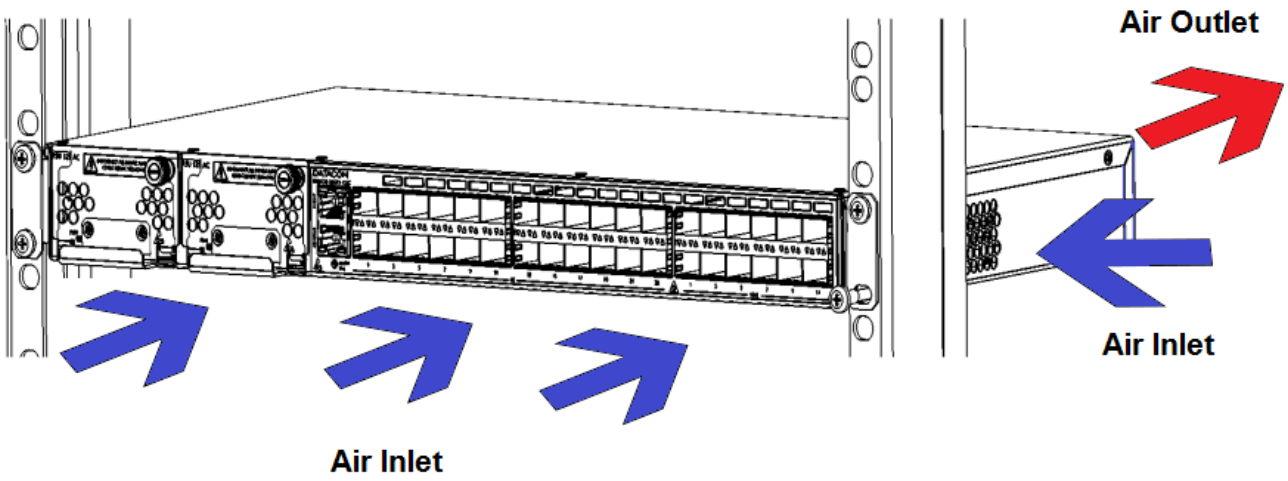


Figure 20 - DM4170 Air Flow

4.8 PRODUCT POWER SOURCE

4.8.1 Connecting the PSU 125

The PSU 125 power supplies can be hot-plugged. To connect a PSU to the equipment, align your printed circuit board with the plastic guides of the slot and insert the card until its panel touches the equipment panel. Then tighten the knurled screws to ensure correct fixation of the power supply, as in **FIGURE 21 – INSERTING THE PSU 125**. If the slot to be used is protected by a blind panel, remove it by removing the screws using a Phillips screwdriver.

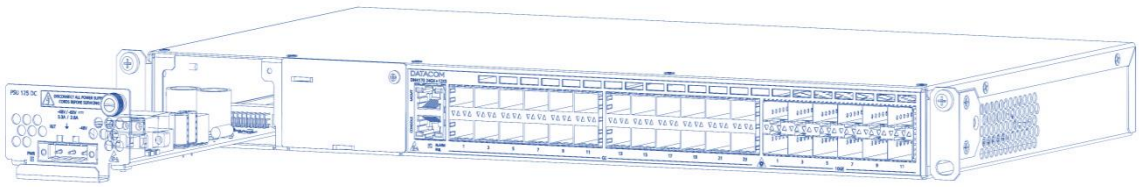


Figure 21 – Inserting the PSU 125

4.8.2 Connecting to Power Supply

After inserting the PSU 125 (s), connect the power supply according to the levels specified in the **TECHNICAL SPECIFICATIONS** chapter.

Each PSU slot has an independent power input; the DC PSUs have a front power source, while the AC PSUs have a power source at the rear panel aligned with its respective slot. The switch will only power on if there is at least one PSU that is properly powered.

4.9 CHECKING THE PRODUCT'S OPERATION

Considering that the DM4170 was installed according to the guidelines in this manual, the steps below indicate whether the equipment is operating normally.

Step 1	▪ Immediately after the unit is powered by either of the power inputs, the power-on PSU PWR indicator will light up. After approximately 3 seconds the switch's PWR LED will light up, followed by a brief blinking of the ALARM/FAIL LED (red).
Step 2	▪ After the startup has finished, observe the ALARM/FAIL indicator: ➢ OFF: indicates that the equipment has been initialized and is operating correctly. ➢ RED ON (FAIL): indicates that the machine has encountered an internal failure. TECHNICAL SUPPORT must be contacted. ➢ YELLOW/AMBER ON (ALARM): indicates that the equipment has been initialized correctly, but an alarm is enabled. If you have any questions, please contact TECHNICAL SUPPORT.

Table 13 – Checking DM4170 operation

Once the startup process has been successfully completed, the operator must configure the equipment management as indicated in the **ACCESSING THE PRODUCT** section.

5 INSTALLING SFP/SFP+/QSFP+ MODULES

This chapter describes how SFP/SFP+/QSFP+ modules must be installed and removed. It also informs about DATACOM guidelines for the cleaning and storage of modules and optical fibers.

SFP (Small Form-factor Pluggable), SFP+ and QSFP+ modules are inserted into the switch's SFP, SFP+ and QSFP+ ports, operating as transceivers between the switch and the selected optical communication path.

So as to ensure a long life and good performance of the switch, it is very important to follow the DATACOM guidelines described below.

- Care with Optical Cords
  - Always keep optical cords that are not being used with their protective cap. The core of the optical cords can become dirty and cause loss of performance just by being stored without the protective cover, even if stored in a suitable cabinet;
  - Clean the core of the optical cords before using them. To clean them it is necessary to use only specific materials. Any other material used to clean the core of the optical cords may result in loss of performance to the switch or even irreparable damage to the cords.
- Care with Optical Modules
  - When handling the optical modules, you need to always use an antistatic wrist strap;
  - In order to transport and store the optical modules it is necessary to always use their original packaging to prevent any physical or electrostatic damage to the module.
  - Modules and ports that are not being used must always have their protective cover inserted so as to avoid dust, which causes the loss of link performance.

When performing any maintenance to the switch, make sure the maintenance technician is using the appropriate protections. Grounding (use of antistatic wrist strap) can prevent damage to the operator's health and damage to the switch.

The SFP modules provided by DATACOM comply with the INF-8074i (SFP MSA), SFF-8431 (SFP+ MSA), SFF-8436 (QSFP+ MSA) and IEC/EN 60825-1 (LASER safety) specifications. Unapproved modules do not guarantee the correct operation of the switches and can damage them. Contact **TECHNICAL SUPPORT** for more information regarding the risk of using unapproved modules and the possibility of using them.

The optical modules use invisible radiation laser transmitters. Although most SFP/SFP+/QSFP+ on the market meet LASER safety specifications, never look directly at the terminals of a module or an optical cord. Exposure to laser emissions may cause partial or total loss of vision.

5.1 Installing SFP/SFP+ Modules

Follow the steps below to install SFP/SFP+ modules to the switch.

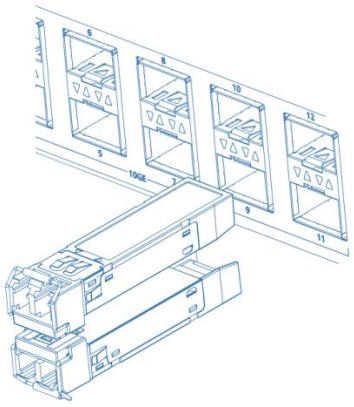
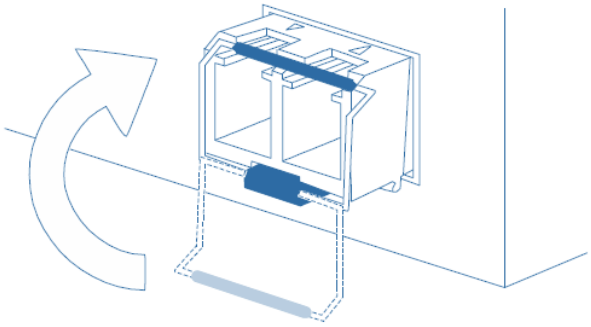
Step 1	▪ Insert the module into the SFP/SFP+ slot and press it until it is firmly inserted, as shown in the figure.  **Figure 22 – Inserting the SFP/SFP+ into the cage**
Step 2	▪ After inserting the module, it is necessary to lock it by moving the safety latch. This latch also serves to lock the optical cord after they are inserted.  **Figure 23 – Locking the SFP/SFP+**
Step 4	▪ After positioning the safety latch, the optical cords can be inserted.

Table 14 – Inserting a SFP/SFP+ Module

The DM4170 switches include dust protection plugs on all SFP/SFP+/QSFP+ ports. Before inserting the module into the slot, remove the plug. Unused ports must be kept with their plug on to ensure that the electrical contacts remain free of dust.

5.2 Removing SFP/SFP+ Modules

Before removing the optical cords, it is recommended that you check if there are labels on them that indicate to which equipment and port they should be connected, facilitating their identification later.

In order to remove the modules, simply follow the same insertion instructions in reverse order:

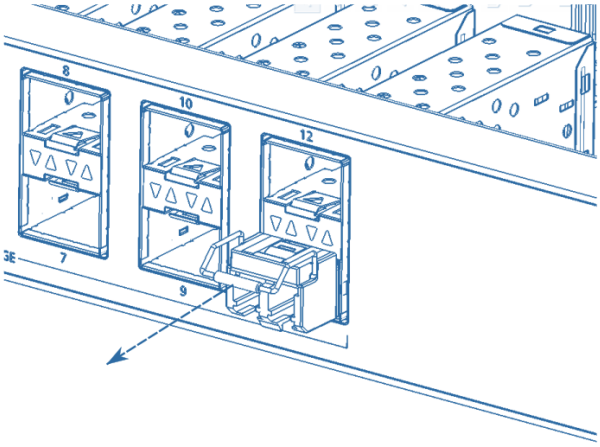
Step 1	▪ Remove the optical cords.
Step 2	▪ Lower the safety latch.
Step 3	▪ Pull the module by its safety latch, as shown in the figure below.  **Figure 24 – Removing the SFP/SFP+ from the cage**

Table 15 – Removing a SFP/SFP+ module

When operating at temperatures over 45°C, the user must monitor the operating temperature of the optical modules. Contact **Technical Support** if you have any questions.

6 ACCESSING THE PRODUCT

6.1 MANAGEMENT THROUGH THE CONSOLE INTERFACE

You can access the Command Line Interface (CLI) through the local console interface located on the left side of the product's front panel; to do so, simply connect a compatible console cable (710.0137.xx - supplied with the product) and run a terminal emulator such as Hyper Terminal or similar on a computer or laptop. The DM4170 default setting is baud rate 9600, with 1 stop bit and no parity, as in **FIGURE 25**.

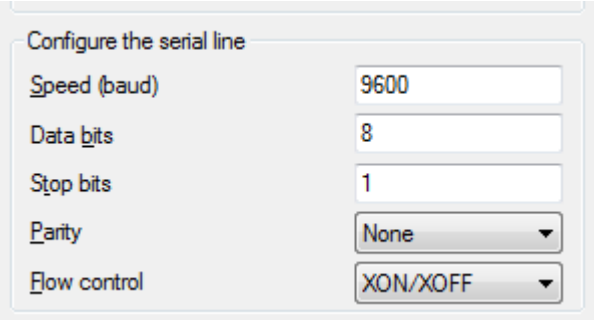


Figure 25 – Serial Port configuration

The DM4170 switch does not support hardware flow control. In the configuration of the console port, the hardware flow control should be disabled.

Step 1	▪ On The PC or Laptop, start the terminal emulation program: ➢ login as:
Step 2	▪ The default username and password are **admin**. ➢ login as: **admin [Enter]** ➢ Password: admin [Enter]
Result	▪ The prompt as following will appear, indicating a successful login: ➢ Welcome to the DmOS CLI ➢ DM4170#

Table 16 – DM4170 Login

6.2 MANAGEMENT THROUGH THE ETHERNET OUTBAND INTERFACE (MGMT)

In the factory default configuration, the equipment can be accessed via SSHv2 or Telnet using the Ethernet management interface (MGMT) via IP 192.168.0.25/24. Through additional configurations, it is also possible to configure access IPs from other Ethernet interfaces, as well as disable the SSHv2 or Telnet servers, if necessary.

Step 1	▪ Entering the configuration mode: # **configure**
Step 2	▪ Entering the MGMT interface configuration: (config)# **interface mgmt 1/1/1**
Step 3	▪ Configuring the IPv4 address on MGMT interface: (config-mgmt-1/1/1)# **ipv4 address** 172.2.22.1/24
Step 4	▪ Removing the IPV4 default address: (config-mgmt-1/1/1)# **no ipv4 address** 192.168.0.25/24 (config-mgmt-1/1/1)# **top**
Step 5	▪ Configuring the equipment default gateway: (config)# **router static address-family ipv4** 0.0.0.0/0 **next-hop** 172.2.22.254
Step 6	▪ Apply and save the configuration: (config)# **commit**

Table 17 - Configuring the MGMT Interface

Before proceeding, check the preferred method for accessing the MANAGEMENT THROUGH THE CONSOLE INTERFACE or MANAGEMENT THROUGH THE ETHERNET OUTBAND INTERFACE (MGMT)

6.3 MANAGEMENT ACCESS CONFIGURATION

Considering that the equipment was correctly installed according to previous steps, the user should be able to manage it through the Command Line Interface (CLI). The CLI is accessible through the console interface or through SSH and Telnet clients.

Only one account is accessed in the factory default setting of the DM4170 product line: *admin*

User	Password	Description
admin	*admin*	*admin* is an account with administrator privileges that allows the creation of the other accounts.

Table 2 - Default account

Due the security reasons, it is strongly recommended to change the admin account password at the *first* time login.

6.4 MANAGEMENT ACCESS CONFIGURATION

For security reasons it is highly recommended to modify the default administrator account password.

Step 1	Entering the configuration mode: # **configure**
Step 2	Entering the user mode: (config)# **aaa user** admin
Step 3	Changing the password: (config-user-admin)# **password** *new-password*
Step 4	Exiting the user mode: (config-user-admin)# **exit**
Step 5	Applying and saving configuration changes: (config)# **commit**

Table 3 – DM4170 Login

Due to security issues it is strongly recommended that you change the *admin* account password immediately after the device is installed. See the *Command Reference Guide* for instructions on how to change passwords.

7 TECHNICAL SPECIFICATIONS

7.1 INTERFACES

Interfaces	DM4170 24GX+12XS	DM4170 24GX+4XS+2QX
Console (RJ45)	1	1
Management Ethernet (RJ45)	1	1
USB Host (type A)	1	1
USB Device (type B)	1	1
100Base-FX/1000Base-X(SFP)	24	24
10/100/1000Base-T (RJ45)	-	-
1000Base-X/10GBase-X (SFP+)	12	4
40GBase-X (QSFP+)	-	2

Table 204 - DM4170 Interfaces

7.2 Power Supply and Consumption

7.2.1 Power Supply AC/DC (Connector IEC 320/c14)

	PSU 125 AC	PSU 125 DC
Rated operating voltage	100 to 240Vac (± 10%) 50/60Hz	-48 to -60Vdc (± 20%)
Rated input current	1.5 A @ 100Vac 0.63 A @ 240Vac	3.3 A @ -48Vdc 2.6 A @ -60Vdc
Maximum input current	1.66A	3.90A
Output voltage	12V (± 5%)	
Output current	10A (± 5%)	
Efficiency	>80%	>80%
Rated input current	1.5 A @ 100Vac 0.63 A @ 240Vac	3.3 A @ -48Vdc 2.6 A @ -60Vdc

Table 21 – Power Inputs

7.2.2 Power Supply AND CONSUMPTION

		DM4170 24GX+12XS	DM4170 24GX+4XS+2QX
Typical consumption (Watts)	PSU 125 DC	81W	70W
	PSU 125 AC	81W	70W
Maximum consumption (Watts)	PSU 125 DC	150W	140W
	PSU 125 AC	150W	140W

Maximum current (Amperes)	PSU 125 DC	3.9A	3.6A
	PSU 125 AC	1.6A	1.5A

Table 22 – DM4170 Power Consumption

7.3 Physical Specifications

	DM4170 24GX+12XS	DM4170 24GX+4XS+2QX
Height	42.5 mm	42.5 mm
Width (with Brackets)	482 mm	482 mm
Width (without Brackets)	444 mm	444 mm
Depth	209.2 mm	209.2 mm
Weight	3.580 kg	3.400 kg

Table 23 - DM4170 Physical Specifications

7.4 Environmental Information

	DM4170 24GX+12XS	DM4170 24GX+4XS+2QX
Operating Temperature	0°C to 55°C 32ºF to 131ºF	0°C to 55°C 32ºF to 131ºF
Humidity	10% to 90%, non-condensed	10% to 90%, non-condensed
Altitude	Up to 3,000m	Up to 3,000m
Storage Temperature	-20°C to 70°C	-20°C to 70°C

Table 24 - DM4170 Operating Conditions

When DM4170 operates over 45ºC ambient temperature it is recommended to use only SFP/SFP+/QSFP+ and industrial temperature class transceivers. Contact the **Technical Support** for any doubt.

8 STANDARDS AND REGULATIONS

Class	Standard	Description
➢ **Directive 2014/30/EU Electromagnetic Compatibility**		
EMC	Ato 1120	Requisitos técnicos de compatibilidade eletromagnética para avaliação da conformidade de produtos de telecomunicações.
ECM	ETSI EN 300 386	Telecommunication network equipment; Electromagnetic Compatibility (EMC) requirements; Harmonized Standard covering the essential requirements of the Directive 2014/30/EU
EMC	EN 55032	Electromagnetic compatibility of multimedia equipment - Emission requirements
EMC	EN 50581:2012	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
EMC	EN 61000-4-6	Immunity to conducted disturbances, induced by radio-frequency fields
EMC	EN 61000-4-2	Electrostatic discharge immunity test
EMC	EN 61000-4-4	Electrical fast transient/burst immunity test
EMC	EN 61000-4-5	Surge immunity test
EMC	EN 61000-4-3	Radiated, radio-frequency, electromagnetic field immunity test
EMC	EN 61000-3-2	Limits for harmonic current emissions
EMC	EN 61000-3-3	Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems
➢ **Directive 2014/35/EU Low Voltage**		
Safety	EN 60825-1	Safety of LASER products
Safety	EN 60950-1	Information technology equipment – Safety – Part 1: General requirements
➢ **Directive 2011/65/EU Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS)**		
RoHS	EN 50581:2012	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
➢ **Directive 2012/19/EU Waste Electrical & Electronic Equipment (WEEE)**		
➢ **Environmental Conditions**		
--	EN 300 019-1-1, Class 1.2	Environmental Conditions for storage
--	EN 300 019-1-2, Class 2.3	Environmental Conditions for Transport

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