

VLT® PROFINET MCA 120

VLT® AutomationDrive FC 361

1 Introduction

1.1 Purpose of this Installation Guide

This installation guide provides information for quick replacement of a VLT® PROFINET MCA 120 interface in the VLT® AutomationDrive FC 361.

The installation guide is intended for use by qualified personnel. Users are assumed to be familiar with the VLT® drive, with PROFINET technology, and with the PC or PLC used as a master in the system.

Read the instructions before installation and ensure that instructions for safe installation are observed.

1.2 Trademarks

VLT® is a registered trademark for Danfoss A/S.

2 Safety

2.1 Safety Precautions

⚠ WARNING ⚠

DISCHARGE TIME

The drive contains DC-link capacitors, which can remain charged even when the drive is not powered. High voltage can be present even when the warning indicator lights are off.

Failure to wait the specified time after power has been removed before performing service or repair work could result in death or serious injury.

- Stop the motor.
- Disconnect AC mains, permanent magnet type motors, and remote DC-link supplies, including battery back-ups, UPS, and DC-link connections to other drives.
- Wait for the capacitors to discharge fully. The minimum waiting time is specified in table *Discharge time* and is also visible on the nameplate on top of the drive.
- Before performing any service or repair work, use an appropriate voltage measuring device to make sure that the capacitors are fully discharged.

Table 1: Discharge Time

Voltage [V]	Power range [kW (hp)]	Minimum waiting time (minutes)
380–480	90–315 kW (125–450 hp)	20

3 Technical Data

3.1 Cabling Requirements

- Choose suitable media for Ethernet data transmission. CAT5e and CAT6 cables are recommended for industrial applications. Both types are available as unshielded twisted pair and shielded twisted pair.
- Shielded cables are recommended for use in industrial environments and with drives.
- A maximum cable length of 100 m (328 ft) is allowed between the switches.

3.2 Cable Specifications

PROFINET cables used are based electrically on category 5 balanced LAN cables according to ISO/IEC 11801 Edition 2.0, Class D.

Type C cables can be used in special applications (for example, the use of trailing cables and frequently moved machine parts), even though their design and mechanical parameters can deviate from the specifications of type A and type B cables. Still, most of the electrical parameters (for example, impedance levels) are retained.

Highly flexible copper cables generally have the finest stranded conductors and a highly resistant polyurethane outer sheath. Various outer sheath materials are permitted to meet the various demands regarding resistance of industrial environments and exterior/underground laying (natural and synthetic oil, grease, coolants/lubricants, chemicals, high and low temperatures, UV radiation, and so on).

Table 2: Cable Specifications for Application Types A, B and C

Cable type	Application type A	Application type B	Application type C
Design	Data cable	Data cable	Data cable
Cable installation type	Stationary, no movement after installation.	Flexible, occasional movement or vibration.	Special applications (for example, highly flexible, permanent movement, vibration, or torsion).
Cable marking	PROFINET type A	PROFINET type B	PROFINET type C
Core cross-section	AWG 22/1	AWG 22/7	AWG 22/..
Outer diameter	5.5–8.0 mm (0.22–0.31 in)		Application dependent
Core diameter	1.5 ± 0.1 mm (0.06 ± 0.004 in)		Application dependent
Color (outer sheath)	Green RAL6018		Application dependent
Core identification (colors)	White, yellow, blue, orange		
star quad 2 pair	Pair 1: white (RXD+), blue (RXD-) Pair 2: yellow (TXD+), orange (TXT-)		
Number of cores	4		
Cable design	2 pairs or 1 star quad		
Shielding design type	Aluminum foil + Cu braiding		Application
Plug type	RJ 45 (IP20 or IP65/67)/M12		

Table 3: Transmission Performance Requirements

Relevant standard	ISO/IEC 11801 Edition 2.0, IEC 61156 (minimum Category 5)
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Delay skew	≤ 20 ns/100 m
Transfer impedance	≤ 50 m Ω /m at 10 MHz

4 Installation

4.1 Mounting

Procedure

1. Make sure that the power to the drive is disconnected.
2. Remove the front cover from the drive.
3. Remove the LCP (Local Control Panel) or blind cover, and then remove the LCP cradle from the drive.
4. Disconnect the communication cables from the existing MCA option card.
5. Remove the existing MCA option card from the drive.
6. Fit the new VLT® PROFINET MCA 120 option card into slot A. Mount the option with the Ethernet port facing up for top cable entry.
7. Connect the Ethernet cables. See [illustration 1](#) and [table 4](#) for the definition of PROFINET connectors.

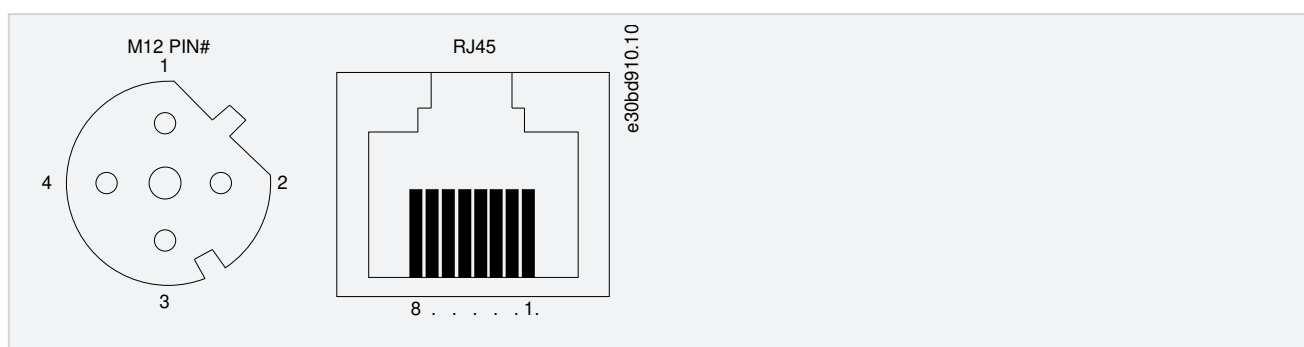


Illustration 1: PROFINET Connectors

Table 4: PROFINET Connectors

Signal	M12 PIN#	RJ 45
RX +	1	1
TX +	2	2
RX -	3	3
TX -	4	4

8. Set the address switches if needed.
9. Fit the LCP cradle.
10. Fit the LCP or blind cover in the LCP cradle.
11. Fit the front cover on the drive.
12. Connect power to the drive.

4.2 Setting Address Switches

The option has address switches that are used to set the station name (host name).

- When all switches are set to ON, or all are set to OFF, change the station name via 12-08 Host Name or via DCP command.
- In all other combinations, the address switches have priority over the parameter setting. The station name is set based on the value in 15-40 FC Type, and a 3-digit number selected from the DIP settings.

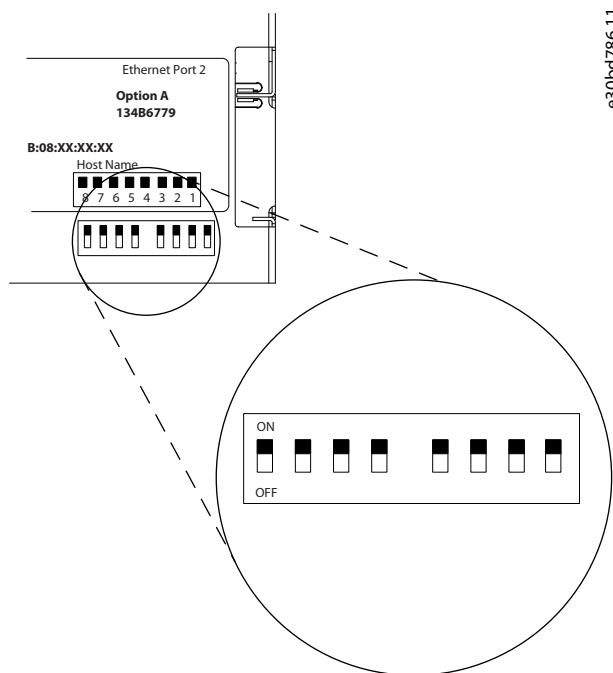


Illustration 2: Address Switches

Use the address switches to set the 253 different station names according to [table 5](#).

Table 5: Host Names Setting

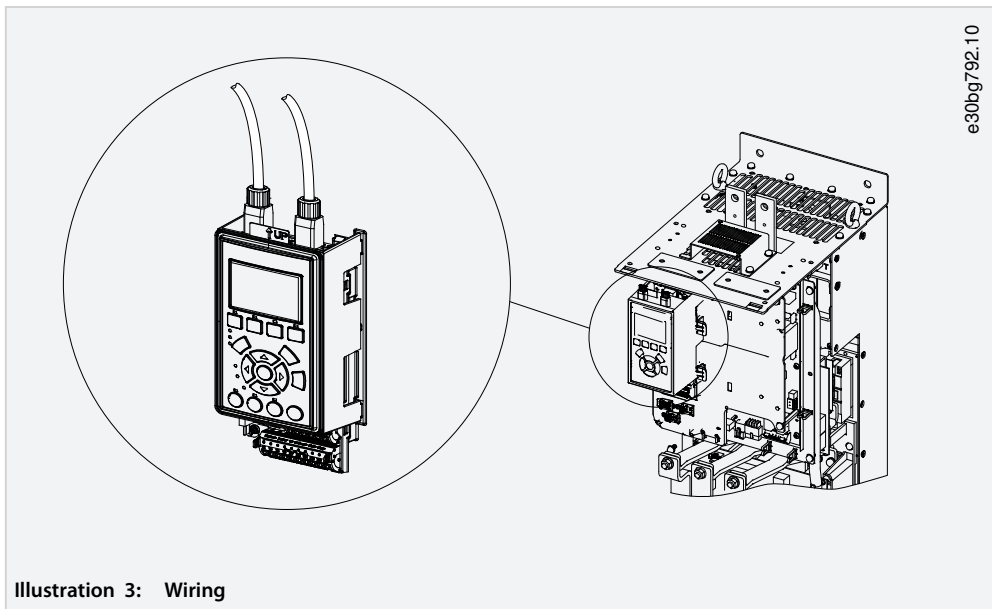
Switch	8	7	6	5	4	3	2	1
12-08 Host Name	+128	+64	+32	+16	+8	+4	+2	+1
005	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON
035	OFF	OFF	ON	OFF	OFF	OFF	ON	ON
082	OFF	ON	OFF	ON	OFF	OFF	ON	OFF
212	ON	ON	OFF	ON	OFF	ON	OFF	OFF

The station name change comes into effect at the next power-up. Read the station name in 12-08 Host Name.

4.3 Wiring Procedures

Procedure

1. Mount the pre-configured cable wires with the connectors on the fieldbus option. For cable specifications, refer to [3.2 Cable Specifications](#).



2. Fix the cable to the metal base plate using the springs.
3. Tie down the cable and route it with other control wires inside the unit.

NOTICE

Do not strip the Ethernet cable. Ground the shielded Ethernet cables through the RJ45 connector on the PROFINET interface.

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