

SD750

ACCESSORIES MANUAL

DIGITAL I/O EXPANSION BOARD



LOW VOLTAGE VARIABLE SPEED DRIVE

SD750

— *LOW VOLTAGE VARIABLE SPEED DRIVE* —

Accessories Manual

Digital I/O expansion board

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ABOUT THIS MANUAL

PURPOSE

This manual contains important instructions for the installation, configuration and use of **the optional digital input/output (I/O) expansion board** for Power Electronics' SD750 variable speed drives.

TARGET AUDIENCE

This manual is intended for qualified customers who will install, operate and maintain Power Electronics SD750 variable speed drives.

Only trained electricians may install and commission the drives.

REFERENCE MANUALS

The following reference documents are available for SD750 variable speed drives:

- Hardware and Installation Manual.
- Programming and Software Manual.
- Maintenance Manual.
- Pumps Application Manual.

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SAFETY SYMBOLS

Always follow safety instructions to prevent accidents and potential hazards from occurring.

In this manual, safety messages are classified as follows:

	WARNING	<p>Identifies potentially hazardous situations where dangerous voltage may be present, which if not avoided, could result in minor personal injury, serious injury or death.</p> <p>Be extremely careful and follow the instructions to avoid the risk of electrical shocks.</p>
	CAUTION	<p>Identifies potentially hazardous situations, which if not avoided, could result in product damage, or minor or moderate personal injury.</p> <p>Read the message and follow the instructions carefully.</p>
	NOTICE	<p>Identifies important measures to take in order to prevent damage equipment and warranty lost, as well as encouraging good use and environmental practices.</p>

Other symbols used in this manual for safety messages are the following:

	Hot surface. Be careful and follow the instructions to avoid burns and personal injuries.
	Risk of fire. Be careful and follow the instructions to prevent causing an unintentional fire.
	Caution, risk of electric shock. Energy storage timed discharge. Wait for the indicated time to avoid electrical hazards.
	Caution, risk of hearing damage. Wear hearing protection.

SAFETY INSTRUCTIONS

IMPORTANT!

Read carefully this manual to maximize the performance of the product and to ensure its safe installation and use.

In order to appropriately use the drive, please, follow all instructions described in the *Hardware and Installation Manual* which refer to transportation, installation, electrical connection and commissioning of the equipment.

For maintenance operations, follow the instructions from the *Maintenance Manual*.

Power Electronics accepts no responsibility for any damages resulting from incorrect use of equipment.



CAUTION

Read carefully the *Hardware and Installation Manual*, the *Maintenance Manual* and all documentation related to the drive to guarantee its safe use and avoid the risk of personal injuries and damages to the equipment.

Ensure compliance with local and national regulations of the installation site.

INTRODUCTION

1

SD750 drives are compatible with several optional boards:

- Communication boards (Ethernet/IP, Profinet, CANopen, Profibus...).
- Encoder board.
- Digital and analog I/O expansion boards.
- Optical fiber board

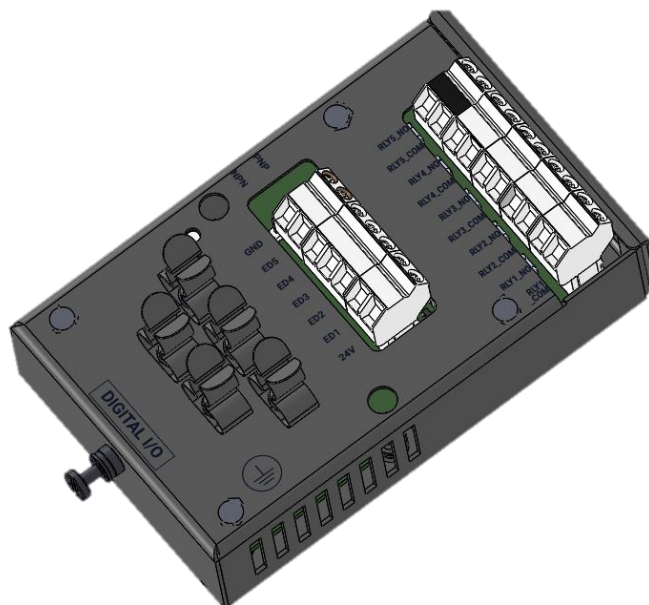
...among others. Up to three optional boards can be connected, maximum two of the same type.

This manual focuses on the optional digital input/output (I/O) expansion board. This board allows to increase the number of digital inputs and outputs compared to those of the SD750 series (six inputs and three outputs).

This board allows **the drive to increase its inputs and outputs as follows:**

- Increases five configurable, optically isolated, digital inputs - allowing a total of eleven or sixteen inputs, depending on whether an expansion board or two have been added.
- Increases five digital outputs, via relays, with option to connect and disconnect delay, signal inversion and the source / cause that activates it - allowing a total of eight or thirteen outputs, depending on whether an expansion board has been added or two.

Below is the front of the digital input/output (I/O) expansion board:



Digital I/O board specifications

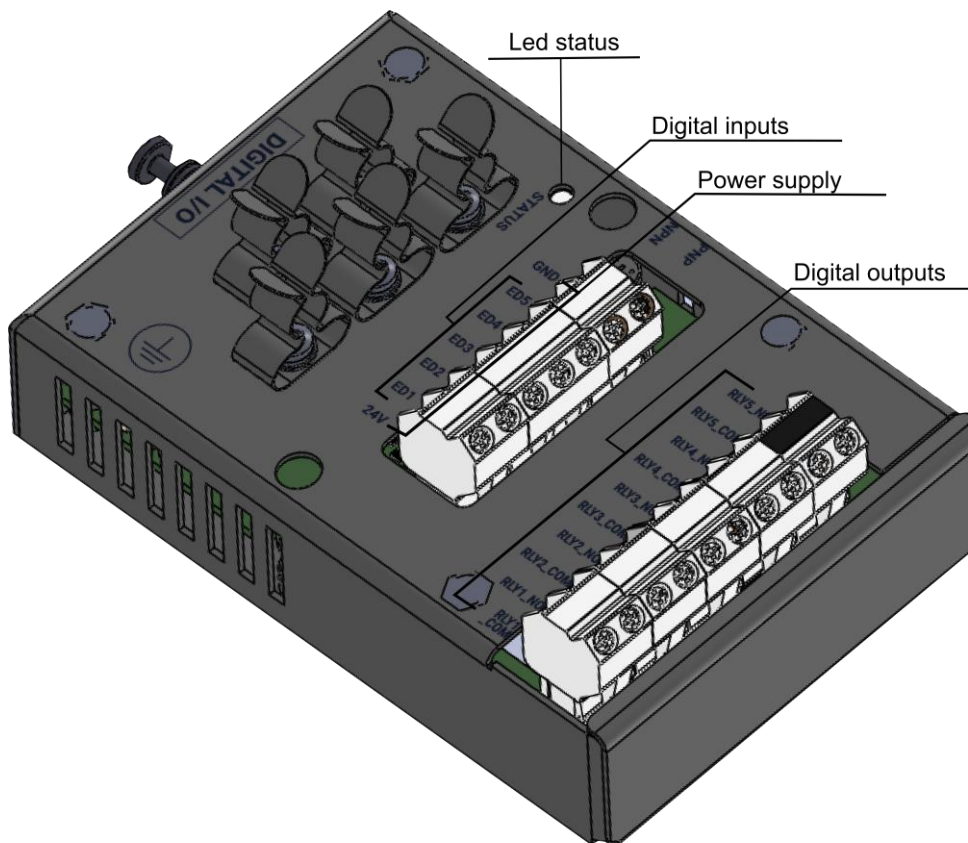
- Device type: I/O expansion
- Form factor: Insertion board.
- Type of wiring: Preferably shielded hose

LED indicators

The digital I/O expansion board includes 1 led indicator (status) that provides information about the operation of the board. It is green and its frequency changes according to the operating state of the system.

Its operation is explained in the following table:

LED	COLOR / FREQUENCY	DESCRIPTION
STATUS	Green / slow blinking	The system is operating correctly ¹ .
	Green / fast blinking	Test mode. The user has put the board in test mode, it is useful to locate the board when there are several identical boards.



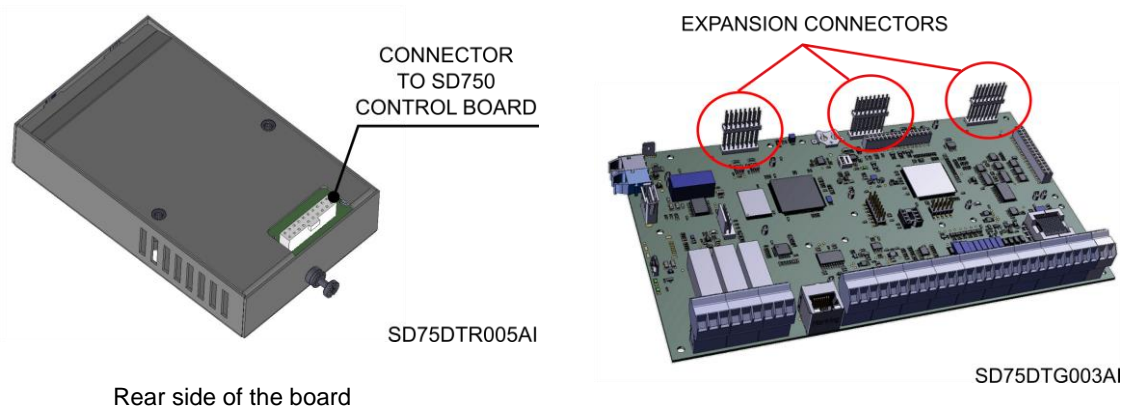
SD75DTR010CI

¹ When we state that the system operates correctly, it means that the communication between the expansion board, the network controller and the central SD750 microcontroller is correct. This does not mean, however, that the communication with the PLC is correct.

CONNECTION TO THE DRIVE

2

The digital I/O expansion board connects directly to any of the three expansion connectors on the central control board of the SD750 drive using the sixteen-pin ID connector on the back. Once connected, it allows to provide the drive with more options of digital inputs and outputs and to display new groups of parameters. Up to two boards of this type can be connected to each drive.

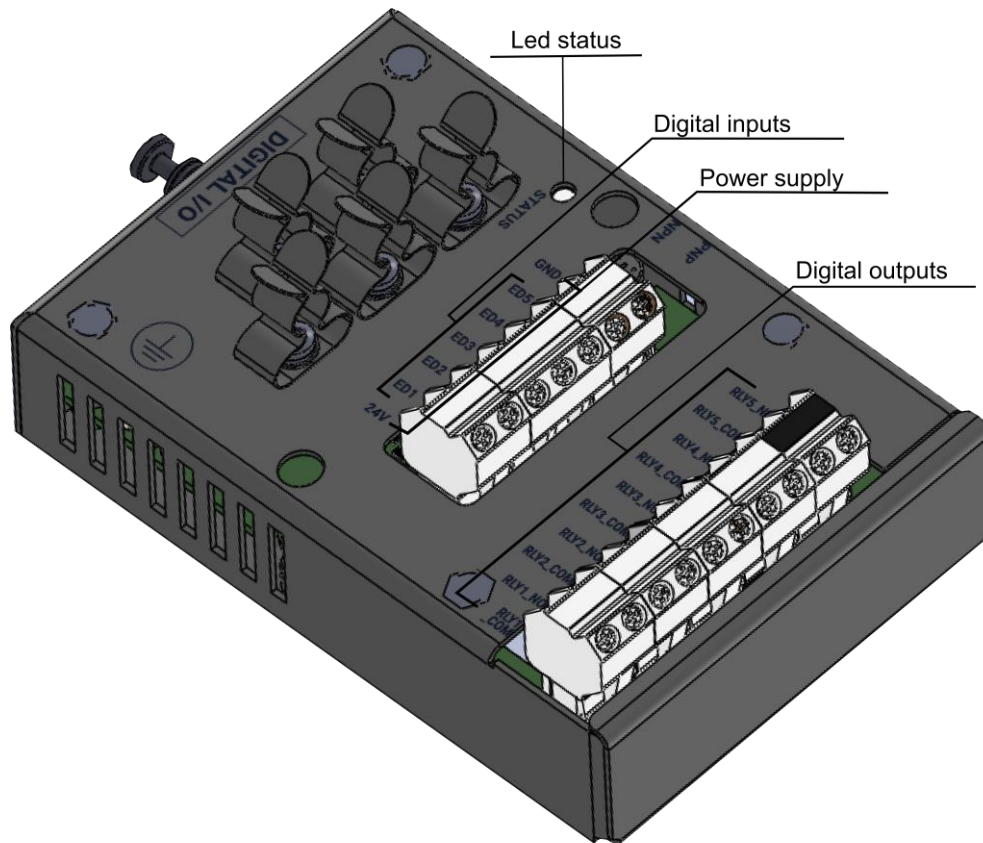


CAUTION

Power Electronics' SD750 drives operate with high electric energy.

Make sure that the power has been disconnected and allow at least 10 minutes to ensure that the DC bus has been discharged. Make sure with a multimeter that there is no voltage at the input, output or DC bus before installing the expansion board. Otherwise, there is a risk of personal injury or accident

Connectors description



SD75DTR010CI

The I/O expansion board has two terminals on the front, one will be for the digital inputs, its activation power and common terminal and the other terminal will be for the digital outputs.

The terminal block with the least connections includes the power connector (24V) and the common terminal (GND), each at one end, as well as the five digital input connectors (ED1 - ED5), which are located between the power terminals.

There are ten output connectors, two for each digital output, one for the common connector (RLY1_COM) and one for the programmable output (RLY1_NO), located on the terminal block with the most connections.

On the back there is a the sixteen-pin ID connector to connect it to the central board of the SD750 drive.

COMMISSIONING

3

The digital I/O expansion board allows you to increase the number of inputs and outputs compared to the standard SD750.

Follow the next steps to carry out the commissioning of the digital I/O expansion board:

1. After stopping and de-energizing, the drive, connect the expansion board to the connector of the equipment prepared for the expansion boards that are free.
2. Check that the communication with the SD750 is correct (by displaying the group G23.2). See that in the group the status of digital expansion board is activated. In this case, new groups of parameters
3. Set the inputs/outputs according to the desired behavior (G4.1 or G8.1).

If you want to see if the I/O status is as expected, check the:

- SV3.34 Group Digital input status (O not active, X active)
- SV3.34 group Relay status (O not active, X active)

Parameters setting

The parameters that are activated once the board is connected are summarized below:

NOTICE

For details about the range of values and Modbus addresses, refer to the *Software and Programming Manual for SD750 drives*

Subgroup G23.2: Input/Output

The subgroup G23.2 of the SD750 inverter allows configuring and displaying the status of the input and output boards, as well as activating the test mode.

It will be necessary to verify that the corresponding board is activated during commissioning and is not in test mode. As there is the possibility of connecting up to two digital I / O expansion boards, the following parameters will be displayed:

- G23.2.1: I/O exp status dig A
- G23.2.2: Test exp I/O dig A
- G23.2.3: Status exp I/O dig B
- G23.2.4: Test exp I/O dig B

Subgroup G4.1: Digital inputs

The subgroup G4.1 of the SD750 drive allows configuring the digital inputs.

By connecting a digital I / O expansion board to the drive, five new digital input parameters are enabled in subgroup G4.1, or ten in the case of connecting two expansion boards.

Parameters from G4.1.11 to G4.1.20 will be enabled:

- G4.1.11 Digital input 7: multiple options.
- G4.1.12 Digital input 8: multiple options.
- ...
- G4.1.20 Digital input 16: multiple options.

NOTICE

Each input can be configured with multiple options, see the *SD750 Drive Software and Programming Manual* for more information on the functions of each input.

Subgroup G8.1: Digital outputs

The subgroup G8.1 of the SD750 drive allows configuring the digital outputs.

By connecting a digital I / O expansion board to the drive, twenty new digital output parameters are enabled in subgroup G8.1, or forty in the case of connecting two expansion boards.

Parameters from G8.1.13 to G8.1.52 will be enabled:

- G8.1.13 Relay 4 source selection: multiple options.
- G8.1.14 Relay connection delay 4: seconds (with one decimal place)
- G8.1.15. Relay connection delay 4: seconds (with one decimal place)
- G8.1.16 Relay 4 inversion: YES / NO
- ...
- G8.1.49 Relay 13 source selection: multiple options.
- G8.1.50 Relay 13 connection delay: seconds (with one decimal place)
- G8.1.51. Relay connection delay 13: seconds (with one decimal place)
- G4.1.52: Relay 13 inversion: YES / NO

NOTICE

Each relay source selection can be configured with multiple options, see the *SD750 Drive Software and Programming Manual* for more information.



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