MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Selected official pages for procurement and maintenance review

PRODUCT BRAND

Siemens

PRODUCT MODEL

6ES7460-0AA01-0AB0

Siemens 6ES7460-0AA01-0AB0 is the S7-400 IM 460-0 send interface for local expansion-rack links up to 5 m, with communication-bus transfer and without 5 V power transfer. Source PDF pages: M16 pp. 2,325,327,329-332. Adjacent model text on shared pages is outside this product reference.

OFFICIAL SOURCE

S7-400 Automation System Module Data; 11/2016

Siemens original documentation and product reference

November 2016 manufacturer reference for the exact send/receive pair. Send-module and receive-module limits are distinct. Whole original pages retain topology and power-transfer restrictions.

AMIKON PRODUCT SUPPORT

+86-18020776786 INFO@AMIKON.CN

AMIKONG.COM

Amikon Limited prepared this independent reference package. Selected manufacturer pages follow with their original content and pagination visible.

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Siemens AG
Division Process Industries and Drives
Postfach 48 48
90026 NÜRNBERG
GERMANY

A5E00850736-08
℗ 11/2016 Subject to change

Copyright © Siemens AG 2016.
All rights reserved

Interface modules

6

6.1 Common features of the interface modules

Function

Interface modules (a send IM and a receive IM) are required if one or more expansion racks (ER) are to be connected to a central rack (CR). This configuration is described in the *Installation manual*.

Configuration

Interface modules must always be used together. The send modules (send IMs) are inserted in the CR, whilst the corresponding receive modules (receive IMs) are plugged into the series-connected ER.

Table 6-1 Interface modules of the S7-400

Partner	Areas of application
IM 460-0	Send IM for local link without PS transfer; with communication bus
IM 461-0	Receive IM for local link without PS transfer; with communication bus
IM 460-1	Send IM for local link with PS transfer; without communication bus
IM 461-1	Receive IM for local link with PS transfer; without communication bus
IM 460-3	Send IM for remote link up to 102.25 m; with communication bus
IM 461-3	Receive IM for remote link up to 102.25 m; with communication bus
IM 460-4	Send IM for remote link up to 605 m; without communication bus
IM 461-4	Receive IM for remote link up to 605 m; without communication bus

Overview of the connections

Note the rules for connections in the section after next.

Table 6-2 Overview of the connections

	Local connection		Remote connection	
Send IM	460-0	460-1	460-3	460-4
Receive IM	461-0	461-1	461-3	461-4
Max. number of connectable EMs per line	4	1	4	4
Max. distance	5 m	1.5 m	102.25 m	605 m
V transfer	No	Yes	No	No
Max. current transfer per interface	-	5 A	-	-
Communication bus transmission	Yes	No	Yes	No

Rules for connection

When you connect a central rack to expansion racks, you must observe the following rules:

- You can connect up to 21 ERs of the S7-400 to one CR.
- The ERs are assigned numbers to identify them. The rack number must be set on the coding switch of the receive IM. Any rack number between 1 and 21 may be assigned. Numbers must not be duplicated.
- You may insert up to six send IMs in one CR. However, only two send IMs with 5 V transfer are allowed in one CR.
- Each line connected to the interface of a send IM can comprise up to four ERs (without 5 V transfer) or one ER (with 5 V transfer).
- The exchange of data via the communication bus is limited to 7 racks, meaning the CR and ER numbers 1 to 6.
- The maximum (total) cable lengths specified for the type of connection must not be exceeded.

Table 6-3 Cable for different connections

Connection type	Maximum (total) line length
Local connection with 5 V transfer via IM 460-1 and IM 461-1	1.5 m
Local connection without 5 V transfer via IM 460-0 and IM 461-0	5 m
Remote connection via IM 460-3 and IM 461-3	102.25 m
Remote connection via IM 460-4 and IM 461-4	605 m

Terminator

The bus must be terminated in the last EU of a line. To do this, plug in the appropriate terminator in the lower front connector of the receive IM in the last EU of the line. Unused front connectors in a send IM do not have to be terminated. The IM 461-1 does not require a terminator.

Table 6-4 Terminators for the Receive IMs

Receive IM	Terminator
IM 461-0	6ES7461-0AA00-7AA0
IM 461-3	6ES7461-3AA00-7AA0
IM 461-4	6ES7461-4AA00-7AA0

The following figure shows you a typical configuration with send IMs, receive IMs and terminators.

Cables

Precut cables are available in different fixed lengths for connecting the individual interface modules. (See Appendix "Accessories and spare parts").

Table 6-5 Cables for interface modules

Interface modules	Cables
IM 460-0 and IM 461-0 IM 460-3 and IM 461-3	6ES7468-1... (P bus and communication bus are transferred)
IM 460-1 and IM 461-1	6ES7468-3... (P bus is transferred; mounting rack is supplied with current via the IM)
IM 460-4 and IM 461-4	6ES7468-1...

Installation and removal of the modules during operation

Please read the following warning on the insertion and removal of the interface modules and associated cables.

CAUTION

Data may be lost or corrupted.

Removing or inserting the interface modules and/or their associated cables under voltage can result in the loss or corruption of data.

Switch off the power supply modules to the CR and ERs you are working on before you carry out any changes.

6.2 Interface modules IM 460-0 (6ES7 460-0AA01-0AB0) and IM 461-0 (6ES7 461-0AA01-0AA0)

Function

The interface module pair IM 460-0 (send IM) and IM 461-0 (receive IM) are used for a local link.

Position of the operator controls and indicators of the IM 460-0 and IM 461-0

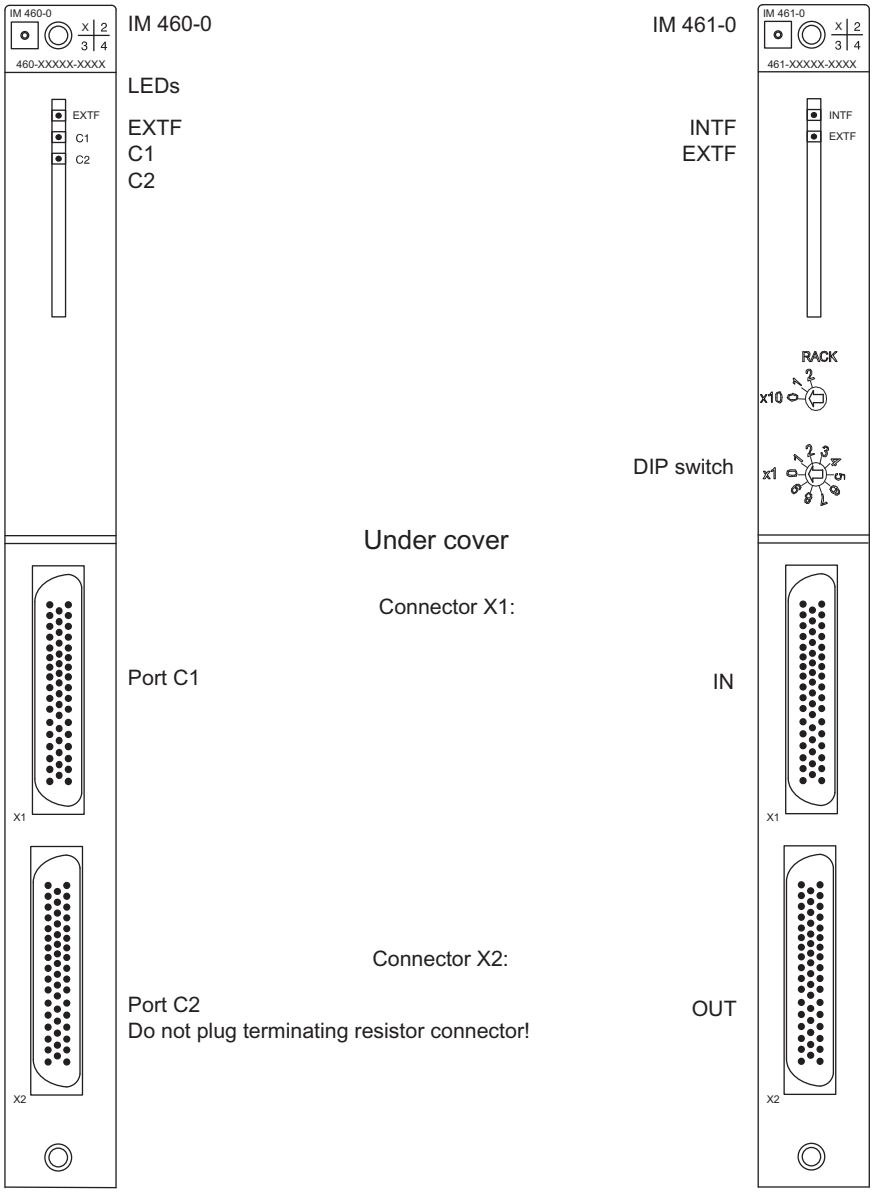


Figure 6-2 Position of the operator controls and indicators of the IM 460-0 and IM 461-0

Operator controls and indicators on the send IM

Table 6-6 Operator controls and indicators on the send IM

LEDs	Meaning
EXTF LED (red)	Lights up in the event of an external fault. Line 1 or line 2 is faulty (terminator missing or broken cable)
C1 LED (green)	Line 1 (via front connector X1, connection 1) is correct.
C1 LED (flashing green)	An EU in the line is not ready for operation because: • The power supply module is not switched on • A module has not yet completed the initialization process
C2 LED (green)	Line 2 (via front connector X2, connection 2) is correct.
C2 LED (flashing green)	An EU in the line is not ready for operation because: • The power supply module is not switched on • A module has not yet completed the initialization process
Front connectors X1 and X2	Connector (output) for line 1 and line 2 X1 = upper front connector; X2 = lower front connector

The LEDs EXTF, C1 and C2 do not light up if the terminator is not inserted or the line is interrupted when in POWER ON mode. In this case the IM 460 identifies an unoccupied interface.

Operator controls and indicators of the receive IM

Table 6-7 Operator controls and indicators of the receive IM

LEDs	Meaning
INTF LED (red)	Lights up if a rack number > 21 or = 0 was set. Lights up if you have changed the rack number under voltage.
EXTF LED (red)	Lights up in the event of an external fault (line fault, for example, if the terminator is not inserted or if a module has not yet completed the initialization process).
DIP switch	DIP switch to set the number of the mounting rack.
Front connector X1	Upper connector (input) for the cable from the previous interface module.
Front connector X2	Lower connector (output) for the cable to the next interface module or for the terminator.

Parameter assignment for the mounting rack number

Using the DIP switch on the front panel of the module, you must set the number of the mounting rack in which the receive IM is installed. The permitted range is 1 to 21.

Setting/changing the number

Proceed as follows:

1. Set the switch of the power supply module in the EU in which you want to make the change to the ⏻ position (Output voltage 0 V).
2. Enter the number using the DIP switch.
3. Switch the power supply module on again.

Specifications of the IM 460-0 and IM 461-0

Maximum line length (total)	5 m
Abmessungen B x H x T (mm)	25 x 290 x 280
Weight	
• IM 460-0 • IM 461-0	600 g 610 g
Current consumption from the S7-400 bus 5 VDC	
• IM 460-0	Typ. 130 mA Max. 140 mA
• IM 461-0	Typ. 260 mA Max. 290 mA
Power loss	
• IM 460-0	Typ. 650 mW Max. 700 mW
• IM 461-0	Typ. 1300 mW Max. 1450 mW
Terminator	6ES7461-0AA00-7AA0
Backup current	None