

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS

6ES7650-1AF51-2XX0

THERMOCOUPLE MARSHALLED TERMINATION ASSEMBLY

Used with the applicable SIMATIC PCS7 TC MTA configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Siemens Marshalled Termination Assemblies for ET200M Remote I/O, A5E00482820-09, TC MTA chapter8; naked drawingp.21 and Mall net weight0.365kg



ET 200M Marshaled Termination Assemblies Remote I/O Modules

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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
with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.
CAUTION
without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.
NOTICE
indicates that an unintended result or situation can occur if the corresponding information is not taken into account.

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 for the specific task, 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 adhered to. The information in the relevant documentation must be observed.

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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.

1.3 General Construction and Dimensions

Figure 1–2 shows the general construction of a Marshalled Termination Assembly (MTA). There are two basic sizes for MTAs a long version and a short version. Refer to the technical specifications for the MTAs for dimensions. Figure 1–3 shows a typical long version. Only the high voltage versions have covers.

Figure 1–2 General Construction

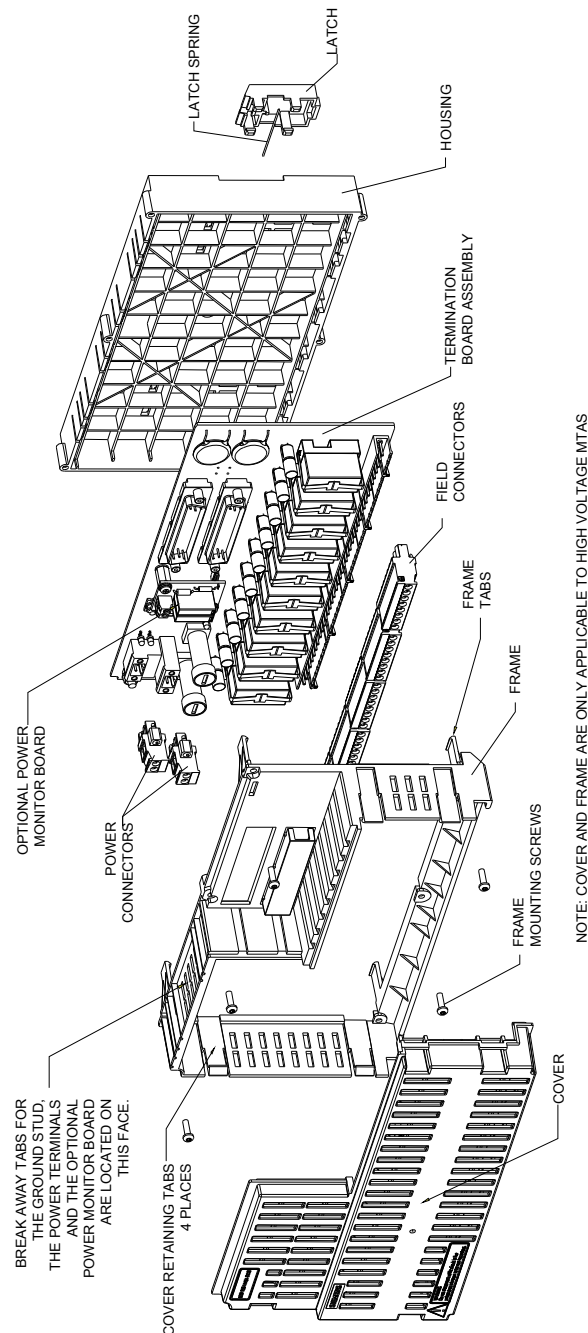
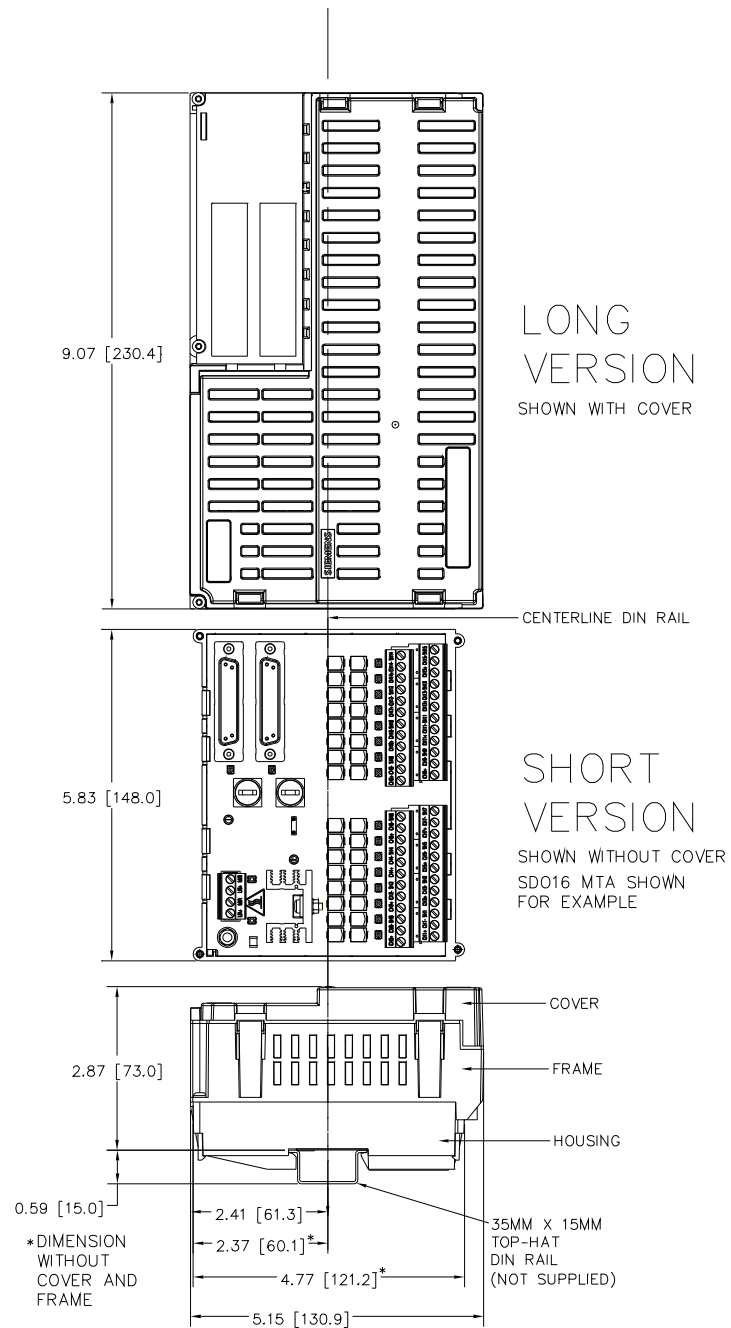


Figure 1–3 Dimensions in inches [mm]



8 8-Channel TC Input MTA

Part No. 6ES7650-1AF51-2XX0 or 6ES7650-1AF50-2XX0

8.1 Description

This section contains information and requirements to facilitate installation of Siemens Marshalled Termination Assembly (MTA) (6ES7650-1AF51-2XX0 or 6ES7650-1AF50-2XX0), designed to interface with the Siemens ET 200M 8-Channel TC Input Module (6ES7 331-7PF10-0AB0, E-Stand 4 or higher, & 6ES7 331-7PF11-0AB0).

Note: The only major difference between the two part numbers is the housing. The Anthracite Gray housing is the latest design. Functionality of both part numbers is the same.

8.2 Features

The following features have been incorporated into this MTA:

- Built in Reference Junction Sensor
- LED indication of power supply condition
- Module power fusing
- Shield connections available for channel cabling
- Ground stud for connecting shield to earth ground
- Power input terminations are pluggable for easy maintenance

8.3 Operation

Power is supplied via the removable power connector that is retained by screws and marked **L+**, **M**. The **Module 1** LED indicates the presence of voltage and **F100** supplies power to the module connected to **J1**. The Power Monitor board option is not available on this MTA.

Incoming power is sent to the module via the power fuse.

Field Terminals, **TCx+**, **TCx-**, and **SHx** connect to the field devices. The **TCx+** and **TCx-** field connections allow many types of thermocouples to be used with this MTA. The **SHx** is the field cable shield connection. The field termination connections are not removable so that measurement errors can be reduced.

The channel connections connect to the I/O module input via **J1**.

The MTA also contains an RTD for use as a reference junction sensor. It is thermally coupled to the field terminals and is used by the Module for reference.

8.4 Installation Requirements

See Section 2, *Installation*, before performing any installation and observe all warnings

A common interconnecting cable (6ES7922-3BD00-0AS0 or 6ES7922-3BJ00-0AS0), supporting eight Thermocouple input channels, interconnects the Thermocouple input termination assembly to the 8-channel Thermocouple input module (6ES7 331-7PF10-0AB0, E-Stand 4 or higher & 6ES7 331-7PF11-0AB0). See Figure 8–1.

Note

To disconnect the interconnecting cable shield from ground at the MTA only, cut and remove the shield disconnect jumper, **W100**.

8.5 Maintenance

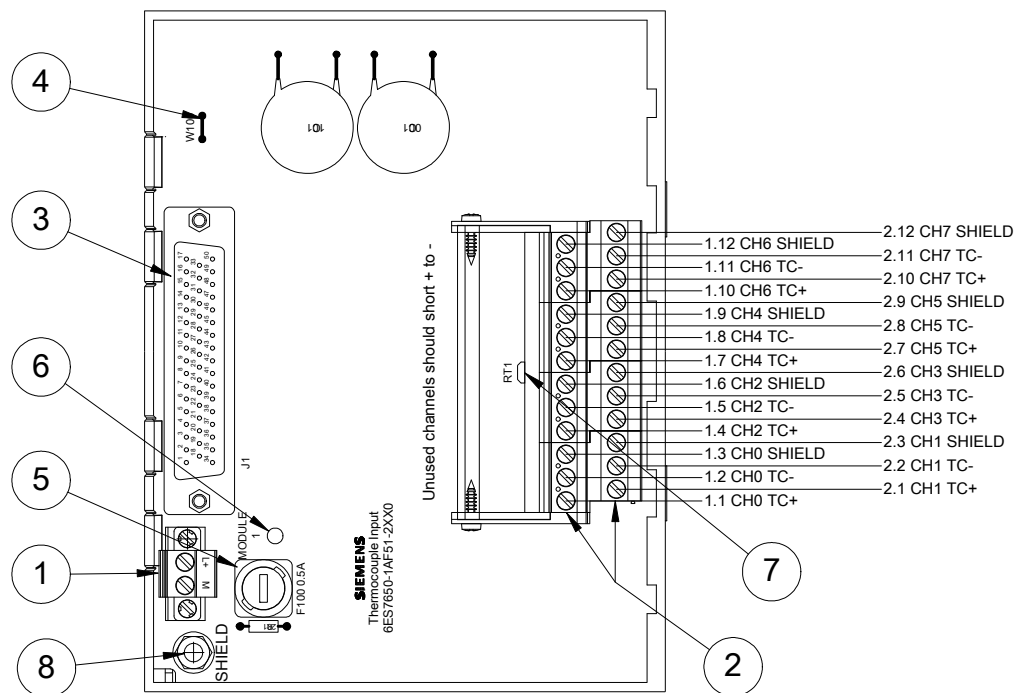
See Section 3, *Maintenance*, before performing any maintenance and observe all warnings

Under normal operation, the I/O Power LED is on. If it is off, check the I/O Module Fuse and the power supply to the MTA.

8.6 8-Channel TC Input Marshalled Termination Assembly

Figure 8–1 8-Channel TC Input Marshalled Termination Assembly

(6ES7650-1AF51-2XX0 or 6ES7650-1AF50-2XX0)



Key to numbered items in Figure 8–1	
Item	Description
1	Input power connection
2	Field wiring connections
3	I/O Module connection
4	Shield disconnect jumper (W100)
5	I/O module power fuse
6	I/O module power indicator
7	Reference Junction Sensor (PT100)
8	Shield Ground Stud for connecting to earth ground

8.7 Technical Specifications

Technical Specifications for 8-Channel TC Input MTA (6ES7650-1AF51-2XX0 or 6ES7650-1AF50-2XX0)	
Dimensions - See Section 1, Figure 1.3, Short Version	
Mounting	
Din Rail	35mm (deep top hat style)
Power Input	
Voltage Input for Single Feed	21.6 to 28.8 VDC
Current Consumption (nominal ratings; all channels connected)	0.243 A maximum
Power Dissipation (typical)	1 W
Terminal Block Wire Sizes	TB100
Wire Size – US	24 – 14 gauge AWG
Wire Size – Metric	0,205 – 2,08 mm sq.
Power Supply Specifications	See Module Specs
Fuse Ratings	
Individual channel	NA
Module Power	0.5 A (Bussmann P/N: GMA-0.5A) (Siemens Spare P/N: A5E01568885)
Indicators	
Input Power	NA
Module Power	Green LED on when input power available
Channel Power	NA
Field Terminal Block Wire Sizes TB1 – TB2	
Wire Size – US	24 – 14 gauge AWG
Wire Size – Metric	0,205 – 2,08 mm sq.
Environmental	
Ambient Temperature	-25C to +60C
Humidity	5% to 95% Non-condensing
Approvals	
MTA Agency Approvals	See Preface section, Approvals Table

Note

Fuses are available as spare parts from Siemens.

Fuse information can be found at:

<http://www.bussmann.com>

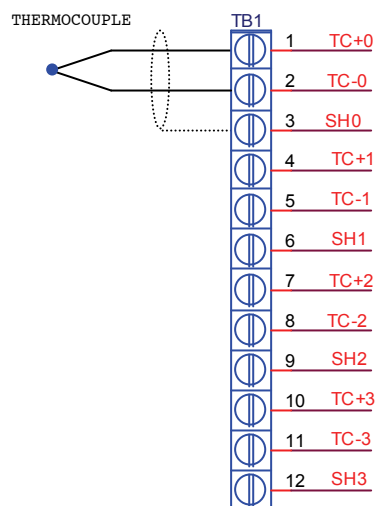
See the Section 8.10, *Hardware Configuration*, for more information.

8.8 Module Restrictions

Restrictions for 8-Channel TC Input MTA (6ES7650-1AF51-2XX0 or 6ES7650-1AF50-2XX0)	
I/O Module Restrictions	
MTA Design	External Junction Compensation only
Module Accuracy	
External Compensation Accuracy	+/-0.3C or 0.6% of terminal temperature

8.9 Typical Thermocouple Connection to Field Terminals

Figure 8–2 Typical Thermocouple Connection to Field Terminals



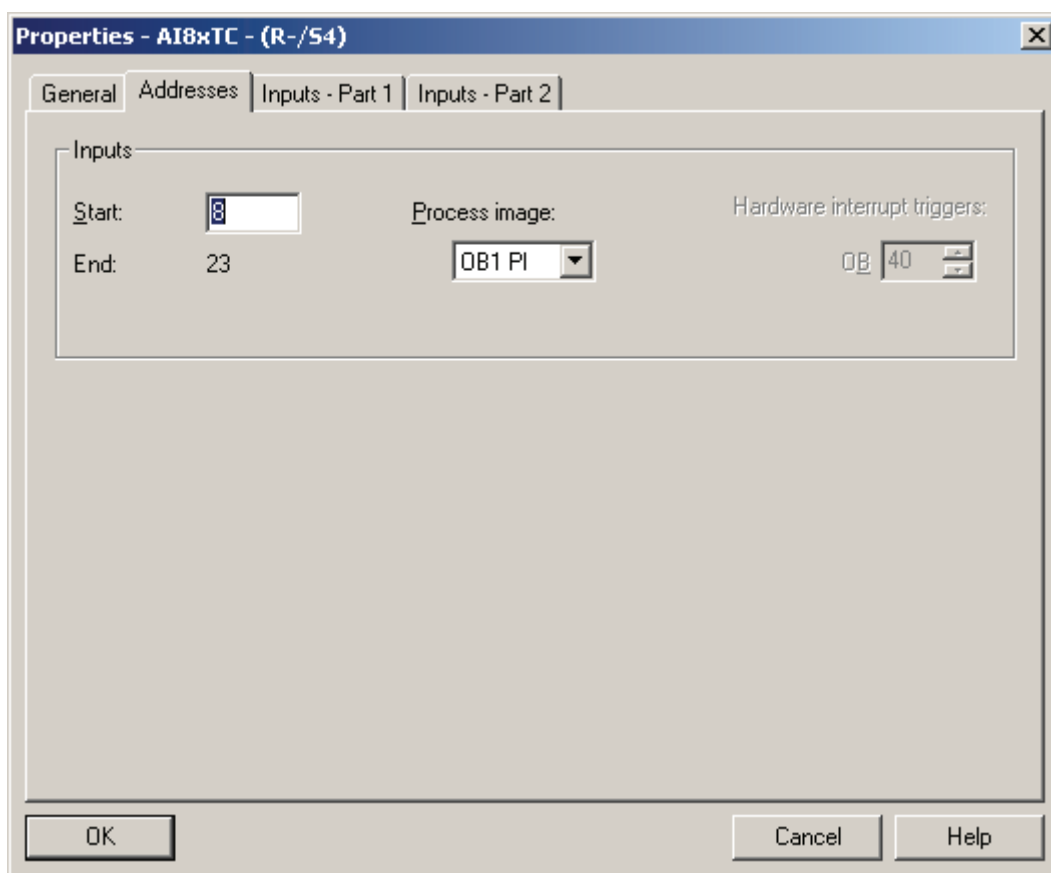
8.10 Hardware Configuration

Neither the 8-Channel Thermocouple Module nor the MTA supports redundant operation.

8.10.1 Addresses

Input address and process image should be set to the user preferences.

Figure 8–3 8-Channel TC Input Hardware Configuration: Address Setup



8.10.2 Inputs – Part 1

Under the **Inputs – Part 1** tab the **Measuring Type** field must be set to **TC-EL** (External Compensation) or deactivated. The other settings are user preferences.

Figure 8–4 shows all the TC **Measuring Ranges** as **Type J** but they can be any type or mixed as described in the TC module manual. All other settings are user preferences.

Figure 8–4 8-Channel TC Input Hardware Configuration: Inputs – Part 1 Parameters

Input Group	0 -1	2 -3	4 -5	6 -7
Enable ☐ Diagnostic Interrupt ☐ Hardware interrupt when limit exceeded ☐ Hardware interrupt at end of scan cycle				
Diagnostics				
Group Diagnostics:	☐	☐	☐	☐
with Check for Wire Break:	☐	☐	☐	☐
Measuring				
Measuring Type:	TC-EL	TC-EL	TC-EL	TC-EL
Measuring Range:	Type J	Type J	Type J	Type J
Reaction to Open Thermocouple:	Overflow	Overflow	Overflow	Overflow

Note

Under the **Inputs – Part 1** tab, the **Measuring Type** field must be set to **TC-EL** (External Compensation) or deactivated.