

Machinery Health™ System

A6500-TP Temperature Process Card



1 General

1.1 Using this manual

This manual contains information concerning the use of the device.

Read the operating manual completely prior to starting installation and operating the device. Comply with all safety instructions.

This operating manual applies for A6500-TP Temperature Process Cards with hardware revisions and software versions listed in [Table 1-1](#).

Table 1-1: Hardware and software revisions

Hardware revision ¹	Firmware version	AMS Machine Studio version
03, 04, 05, 06, 07, 08, and 12 ²	3.2.0.119 or later ³	3.8

¹ See type plate for revision level.

² Requires AMS Machine Studio version 3.7 or later and firmware version 3.2.0.119 or later.

³ Requires an A6500-CC with firmware version 3.x.

Include the operating manual when transferring the device to third parties.

Note

When requesting technical support, please indicate type and serial number from the type plate.

[Table 1](#) shows a list of documents that are referred to in this operating manual.

Table 1-2: Referenced documents

MHM-97875	Operating Manual A6500-CC Com Card
MHM-97877	Operating Manual A6500-xR System Racks
MHM-97879	Operating Manual AMS Machine Studio - General Functions

1.2 Symbols

Note

This symbol marks passages that contain important information.

⚠ CAUTION

This symbol marks operations that can lead to malfunctions or faulty measurements, but will not damage the device.

⚠ DANGER

A danger indicates actions that can lead to property damage or personal injury.

	According to IEC 61010, this symbol means that this device must be operated with DC voltage.
	According to IEC 61010, this symbol means that the documentation of the device must completely be read and understood before installing and commissioning of the device. Observe all safety related instructions in this document.

1.3 Liability and guarantee

Emerson is not liable for damages that occur due to improper use. Proper use also includes the knowledge of, and compliance with, this document.

Customer changes to the device that have not been expressly approved by Emerson will result in the loss of guarantee.

Due to continuous research and further development, Emerson reserves the right to change technical specifications without notice.

1.4 Incoming goods inspection

Check the content of the shipment to ensure that it is complete; visibly inspect the goods to determine if the device has been damaged during transport. The following parts are included in the scope of delivery and must be contained in the shipment.

- A6500-TP Temperature Process Card
- Operating manual

If the contents are incomplete, or if you observe any defects, file a complaint with the carrier immediately. Inform the responsible Emerson sales organization so your device can be replaced. In this case, attach a tag with customer name and the observed defect.

1.5 Technical support

You may need to ship this product for return, replacement, or repair to an Emerson Product Service Center. Before shipping this product, contact Emerson Product Support to obtain a Return Materials Authorization (RMA) number and receive additional instructions.

Product Support

Emerson provides a variety of ways to reach your Product Support team to get the answers you need when you need them:

Phone	Toll free 1 800 833 8314 (U.S. and Canada) +1 512 832 3774 (Latin America) +63 2 8702 1111 (Asia Pacific, Europe, and Middle East)
Email	Guardian.GSC@Emerson.com
Web	http://www.emerson.com/en-us/contact-us

To search for documentation, visit <http://www.emerson.com>.

To view toll free numbers for specific countries, visit <http://www.emerson.com/technicalsupport>.

Note

If the equipment has been exposed to a hazardous substance, a Material Safety Data Sheet (MSDS) must be included with the returned materials. An MSDS is required by law to be available to people exposed to specific hazardous substances.

1.6 Storage and transport

Store and transport the device only in its original packaging. Technical data specifies the environmental conditions for storage and transport.

Related information

[Technical data](#)

[Power supply](#)

[Signal input](#)

[Digital input](#)

[Outputs](#)

[Data interface](#)

[Mechanical design and environmental conditions](#)

1.7 Disposal of the device

Provided that no repurchase or disposal agreement exists, recycle the following components at appropriate facilities:

- Recyclable metal
- Plastic elements

Sort the remaining components for disposal, based on their condition. National laws or provisions on waste disposal and protection of the environment apply.

Note

Environmental hazards! Electrical waste and electronic components are subject to treatment as special waste and may only be disposed by approved specialized companies.

1.8 China RoHS Compliance

Our products manufactured later than June 30, 2016, and those which are sold in the People's Republic of China are marked with one of the following two logos to indicate the Environmental Friendly Use Period in which it can be used safely under normal operating conditions.

Products that do not have the following marking were either manufactured before June 30, 2026, or are not electrical equipment products (EEP).



Circling arrow symbol with "e": The product contains no hazardous substances over the Maximum Concentration Value and it has an indefinite Environmental Friendly Use Period.



Circling arrow symbol with a number: This product contains certain hazardous substances over the Maximum Concentration Value and it can be used safely under normal operating conditions for the number of years indicated in the symbol. The names and contents of hazardous substances can be found in chapter "Certificates".

1.9 CCC Certification – AMS 6500 ATG

With the announcement of the Chinese market regulation authority SAMR (State Administration for Market Regulation), a Compulsory Product Certification (CCC certification) is mandatory for many explosion protection products. This explosion proof ("Ex") product complies to the CCC obligation and is certified (certification number: 2020322304002386).



This China Compulsory Certificate mark (CCC), is a compulsory safety mark for many products imported, sold, or used in the Chinese market and indicates that the product is certified in accordance to GB/T 3836.1-2021, GB/T 3836.3-2021, and GB/T 3836.8-2021. If the product label is too small to contain the CCC certification mark, it is sufficient to have the mark printed on the minimum package and in the attached document.

1.10 Installation awareness

Note

When planning a measurement, follow these guidelines:

- Consider environmental conditions which might have an influence on the measurement such as temperature, humidity, substances aggressive to the sensor, and pollution.
- Always use a stiff and vibration-free sensor holder.
- Define a suitable measuring range, not larger than necessary, in consultation with the operator of the plant.
- Define the trip limit in consultation with the operator of the plant.
- Take measurement deviations into account when defining trip limits.
- Use a sensor that meets the requirements of the defined measuring range.
- Ensure an EMC-compatible installation including the use of proper cables.
- Ensure proper function of the measurement before activating the measurement in the production environment.

2 Safety instructions

To ensure safe operation, carefully follow all the instructions in this manual.

The correct and safe use of this device requires that both operating and service personnel understand and comply with general safety guidelines and observe the special safety comments listed in this manual. Where necessary, safety-sensitive points on the device are marked.

DANGER

Because the device is electrical equipment, only specially trained and authorized personnel may commission, service, and maintain this equipment.

2.1 Using the device

Install and use the device as specified in this document.

If the device is used in a manner not specified by the manufacturer, the functions and protection provided by the device may be impaired.

2.2 Owner's responsibility

If there is a reason to suspect that hazard-free operation, and thus, adequate machine protection is no longer possible, take the device out of operation and safeguard it from unintentional operation. This is the case:

- if the device shows visible damage.
- if the device no longer works.
- after any kind of overload that has exceeded the permissible limits (see technical data of the device for permissible limits).

DANGER

If device tests have to be completed during operation or if the device has to be replaced or decommissioned, it will impair the machine protection and may cause the machine to shut down. Make sure to deactivate machine protection before starting such work, and reactivate it after work has been completed.

Related information

[Technical data](#)

[Power supply](#)

[Signal input](#)

[Digital input](#)

[Outputs](#)

[Data interface](#)

[Mechanical design and environmental conditions](#)

2.3 Radio interference

The device is carefully shielded and tested to be technically immune to radio interference and complies with current standards. However, if you operate this device together with other peripheral devices that are not properly shielded against radio interference, disturbances and radio interferences may occur.

2.4 ESD safety

DANGER

Internal components can be damaged or destroyed due to electrostatic discharge (ESD) during the handling of the device.

Take suitable precautions before handling the device to prevent electrostatic discharges through the electronics. Such measures might include, for example, wearing an ESD bracelet. Transport and storage of electronic components may only be made in ESD-safe packaging.

Handle the device with particular care during dry meteorological conditions with relative humidity below 30% as electrostatic discharges can occur more frequently.

3 Application and design

3.1 Application

The A6500-TP Temperature Process Card is a component of the AMS 6500 ATG Machine Protection System. The card is equipped with four measuring channels for temperature measurements with thermocouples or resistance temperature detectors (RTDs) and for measurements of process signals 0 - 1 V, 0 - 10 V, or 0/4 - 20 mA standard signals. Also, the card contains 2 digital inputs and 6 digital outputs.

The measured signals are transmitted via the internal RS 485 bus to the A6500-CC Com Card and converted to Modbus RTU, Modbus TCP/IP and OPC UA protocols for further transmission to host computers or analysis systems. In addition, the Com Card provides the communication via the USB socket at the face plate for the connection to PC/laptop for the configuration of protection cards and for visualization of measuring results.

The measuring results can be output via analog outputs 0/4 - 20 mA. These outputs have a common ground and are electrically isolated from the system supply.

The operation of the A6500-TP Temperature Process Card is performed in the A6500-xR System Racks, which also provides connection of supply voltages and signals.

The A6500-TP Temperature Process Card provides the following functions:

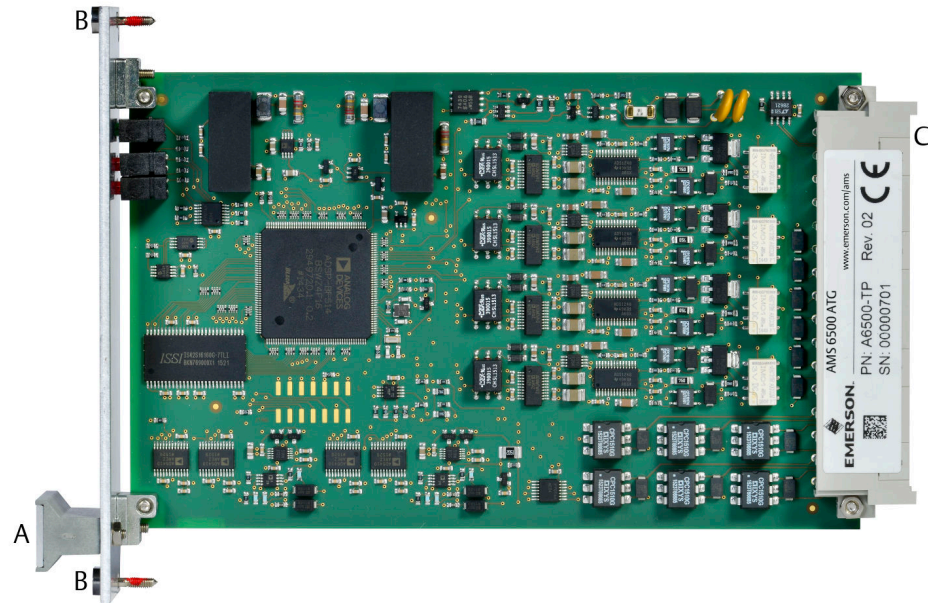
- Temperature measurement with resistance temperature detectors (RTDs)
- Temperature measurement with thermocouples with internal and external cold junction compensation
- Measurement of standard process signals 0 - 1 V, 0 - 10 V, or 0/4 - 20 mA
- Acquisition of digital signals with two digital inputs
- Output of analog values for each measuring channel via 4 current outputs 0/4 - 20 mA
- Output of alarms via 6 digital outputs; the assignment to the measuring channels can be configured in any way

3.2 Design

The A6500-TP Temperature Process Card is designed as a standard euro board (100 mm x 160 mm) and has an anodized front plate of 6 HP (approximately 30 mm) width.

Monitors of the AMS 6500 ATG system may be installed in any operating position in standard module frames 19", 3RU height, or any other Interbus compatible systems and housings. This manual describes installation and operation of the A6500-TP Temperature Process Card in the A6500-xR System Racks. [Figure 3-1](#) shows the side view of the card.

Figure 3-1: Side view



- A. Handle - for pulling the monitor from the rack; labeled with the serial number on a small sticker.
- B. Mounting screws
- C. Connector with type plate with designation (PN), serial number (SN), and hardware revision (Rev.).

Figure 3-2 shows the front plate elements.

Figure 3-2: Front view



- A. Handle
- B. Mounting screws
- C. green LED: Card status indication
- D. red LEDs: Alarm status