ABB AX522 1SAP250000R0001

Analog Input/Output Module

S500 analog signal interface. ABB AX522 1SAP250000R0001 is a standard S500 analog input/output module that combines process measurement and analog control signals in an AC500 I/O station. It provides eight inputs for individually configured voltage, current or supported resistance-temperature signals, plus eight voltage outputs; the first four output channels can alternatively provide current signals. This mixed I/O arrangement allows a single module to collect sensor values and send commands to analog field devices. Channel indications and configurable signal ranges help the module fit the measurement and output functions required by the control application.



Technical Specifications

Product Identity	
Manufacturer / ordering code	ABB / AX522 1SAP250000R0001; standard variant
Product family	S500 I/O for AC500 CPU or communication interface
Terminal unit	TU515 or TU516; terminal unit selection must match the installation
Module weight	300 g
Functional Configuration	
Analog inputs	8 channels in one group; voltage, current and resistance-temperature modes
Input signal ranges	0–10 V, ±10 V, 0–20 mA, 4–20 mA; Pt100, Pt1000 and Ni1000 temperature modes
Analog outputs	8 voltage outputs; current output available on channels 0–3 only
Output signal ranges	±10 V, 0–20 mA or 4–20 mA, according to channel capability
Electrical isolation	From I/O bus: yes. Between channels: no. From UP/ZP process supply: no.
Performance & Power	
Input resolution	12 bits for unipolar voltage/current ranges; 12 bits including sign for ±10 V. Temperature resolution depends on sensor mode.
Output load	Current mode: 0–500 Ω. Voltage mode: maximum ±10 mA.
Process supply	24 V DC, –15% / +20%; observe the applicable supply and protection requirements
Environment	
Operating temperature	Horizontal mounting: 0 to +60 °C. Vertical mounting: 0 to +40 °C with 50% load derating.
Protection	IP20 when fully assembled; installation in a closed cabinet

Selected original manufacturer material follows on pages 3–4.

Compatibility & Selection Guide

Master-controlled configuration. The I/O-bus master transfers the channel parameters at power-up; the AX522 does not store this configuration independently. ABB describes Control Builder Plus / Automation Builder parameterization for module firmware greater than V2.0.0. Check the existing controller project and firmware before replacement.

Wiring & Installation Reference

Supply and signal connections

UP / ZP · +24 V / 0 V process supply · Use the documented supply protection and SELV/PELV separation

Analog inputs · Configured voltage, current or RTD signal · Match sensor type and the exact ABB wiring arrangement

Analog outputs · Voltage on 0–7; current on 0–3 · Check channel mode and load; leave unused outputs open

AGND / ZP · Analog reference / supply reference · Keep the potential difference within 1 V

Installation and replacement

1. Confirm the station Check the AX522 order code, TU515/TU516 terminal unit, I/O-bus master project and required channel signals before replacing a module.

2. Isolate and mount Switch off supply and process voltage before wiring or replacement. Secure the terminal unit on the approved DIN rail or wall arrangement, and preserve natural ventilation and the documented cabinet clearance.

3. Wire and restore configuration Follow ABB’s signal-specific drawings, shielding and equipotential-bonding instructions. At startup the I/O-bus master transfers parameter data; verify the channel modes and module diagnostics before use.

Installation precautions

AX522 is not a safety module. Do not use it for safety functions or in a hazardous environment unless the applicable equipment and installation are expressly approved for that use.

Use SELV/PELV supplies with safe separation. Keep AGND-to-ZP potential difference within 1 V, use shielded analog cables and follow ABB’s equipotential-bonding instructions.

This reference does not establish eligibility for hot swapping. Power off before wiring or replacement; the manual’s conditional hot-swap provisions must not be treated as blanket permission.

Passive-current inputs have specific overcurrent protection behavior. Review the original precautions before connecting or restoring a loop.

View analog output wiring reference — page 4 · View safety and grounding precautions — page 3

Manufacturer reference 1

WARNING!

Removal/Insertion under power

Removal or insertion under power is permissible only if all conditions for hot swapping are fullfilled.

Conditions for hot swap

“Conditions for hot swap” on page 1152

The devices are not designed for removal or insertion under power when the conditions for hot swap do not apply. Because of unforeseeable consequences, it is not allowed to plug in or unplug devices with the power being ON.

Make sure that all voltage sources (supply and process voltage) are switched off before doing any of the following actions:

– Connect or disconnect any signal or terminal block.
– Remove, mount or replace a module.

Disconnecting any powered devices while they are energized in a hazardous location could result in an electric arc, which could create an ignition source resulting in fire or explosion.

Prior to proceeding, make sure that power is disconnected and that the area has been thoroughly checked to ensure that flammable materials or ignitable concentrations are not present.

The devices must not be opened when in operation. The same applies to the network interfaces.

CAUTION!

By installing equipotential bonding conductors between the different parts of the system, it must be ensured that the potential difference between ZP and AGND never can exceed 1 V.

CAUTION!

The process supply voltage must be included in the grounding concept (e. g. grounding of the negative terminal).

CAUTION!

The potential difference between AGND and ZP at the module must not be greater than 1 V, not even in case of long lines.

NOTICE!

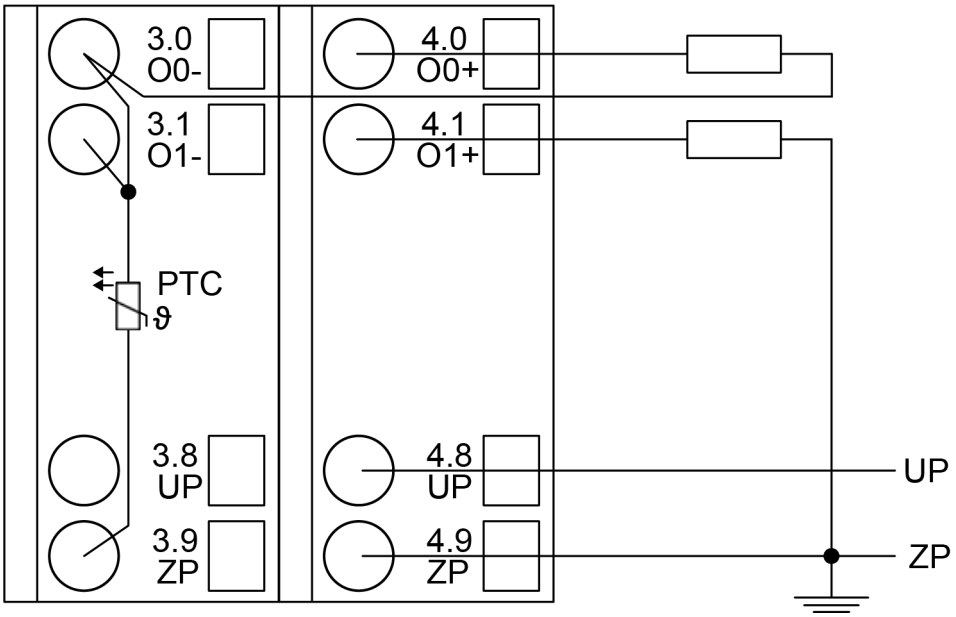
Risk of damaging the PLC modules!

Overvoltages and short circuits might damage the PLC modules.

– Make sure that all voltage sources (supply voltage and process supply voltage) are switched off before you begin with operations on the system.
– Never connect any voltages or signals to reserved terminals (marked with ---). Reserved terminals may carry internal voltages.

Generally, analog signals must be laid in shielded cables. The cable shields must be grounded at both sides of the cables. In order to avoid unacceptable potential differences between different parts of the installation, low resistance equipotential bonding conductors must be laid.

Connection of analog output loads (Voltage, current)



Only the channels 0 ... 3 can be configured as current output (0 mA ... 20 mA or 4 mA ... 20 mA).

Unused analog outputs can be left open-circuited.

Internal data exchange

Digital inputs (bytes)	0
Digital outputs (bytes)	0
Counter input data (words)	8
Counter output data (words)	8

I/O configuration

The module does not store configuration data itself. It gets its parameterization data from the master device of the I/O bus (CPU or communication interface module) during power-up of the system.

Hence, replacing I/O modules is possible without any re-parameterization via software.

Parameterization

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Hence, replacing I/O modules is possible without any re-parameterization via software.



If the external power supply voltage via UP/ZP terminals fails, the I/O module loses its configuration data. The whole station has to be switched off and on again to re-configure the module.