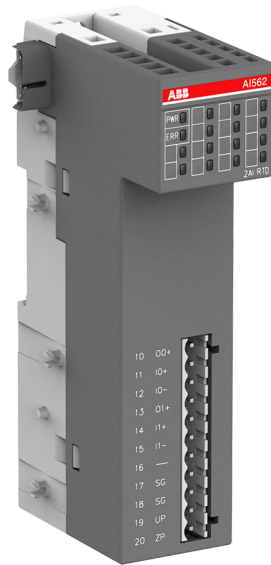


DATA SHEET

AI562

Analog Input Module



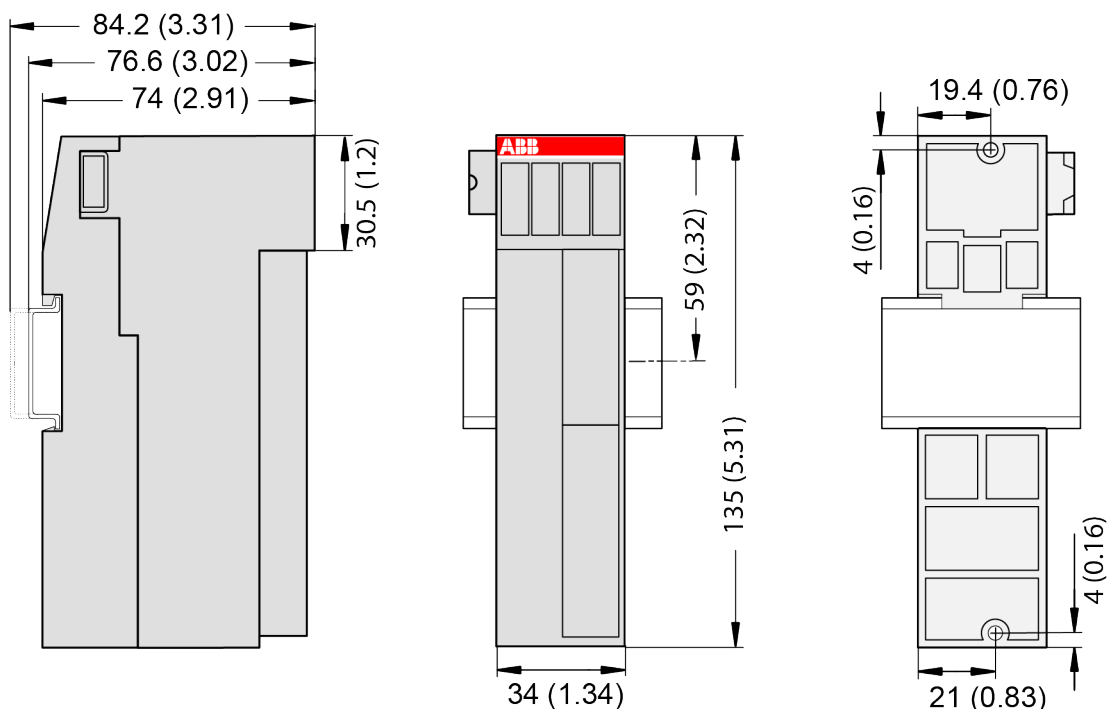
1 Ordering data

| Part no. | Description | Product life cycle phase *) |
|--------------------|--|-----------------------------|
| 1TNE 968 902 R1102 | AI562, analog input module, 2 AI, RTD | Active |
| 1TNE 968 901 R3102 | Terminal block TA563-11, 11 pins, screw front, cable side, 6 pieces per unit | Active |
| 1TNE 968 901 R3104 | Terminal block TA564-11, 11 pins, screw front, cable front, 6 pieces per unit | Active |
| 1TNE 968 901 R3106 | Terminal block TA565-11, 11 pins, spring front, cable front, 6 pieces per unit | Active |



*) Modules in lifecycle Classic are available from stock but not recommended for planning and commissioning of new installations.

2 Dimensions



The dimensions are in mm and in brackets in inch.

3 Technical data

3.1 Technical data of the module

The system data of AC500-eCo apply.

Only additional details are therefore documented below.

| Parameter | Value |
|---|--|
| Process supply voltage UP | |
| Connections | Terminal 19 for UP (+24 V DC) and terminal 20 for ZP (0 V) |
| Rated value | 24 V DC |
| Current consumption | 0.04 A |
| Inrush current (at power-up) | 0.05 A ² s |
| Max. ripple | 5 % |
| Protection against reversed voltage | Yes |
| Protection fuse for UP | Recommended |
| Current consumption from 24 V DC power supply at the terminals UP/L+ and ZP/M of the CPU/communication interface module | Ca. 5 mA |

| Parameter | Value |
|--|---|
| Galvanic isolation | Yes, between the input group and the rest of the module |
| Isolated groups | 1 (2 channels per group) |
| Surge-voltage (max.) | 35 V DC for 0.5 s |
| Max. power dissipation within the module | 1.1 W |
| Weight | Ca. 120 g |
| Mounting position | Horizontal or vertical |
| Cooling | The natural convection cooling must not be hindered by cable ducts or other parts in the control cabinet. |


NOTICE!

All I/O channels (digital and analog) are protected against reverse polarity, reverse supply, short circuit and temporary overvoltage up to 30 V DC.

3.2 Technical data of the analog inputs

| Parameter | Value | |
|---|---|---|
| Number of channels per module | 2 configurable RTD (resistance temperature detector) inputs | |
| Distribution of channels into groups | 1 (2 channels per group) | |
| Resolution | | |
| RTD | +0.1 °C / 0.1 °F | |
| Resistance | 16 bits including sign | |
| Connection of the signals O0+ and O1+ | Terminals 10 and 13 | |
| Connection of the signals I0- and I1- | Terminals 11 and 14 | |
| Connection of the signals I0+ and I1+ | Terminals 12 and 15 | |
| Input type | Module ground referenced RTD for 2-wire and 3-wire resistance temperature detectors | |
| Galvanic isolation | Against internal power supply and other modules | |
| Input ranges | Pt100, Pt1000, Ni100, Ni1000 150 Ω, 300 Ω | |
| Indication of the input signals | No | |
| Module update time | All channels: < 1 s | |
| Channel input resistance | > 100 kΩ | |
| Input filter attenuation | -3 dB at 3.6 kHz | |
| Conversion error of the analog values caused by non-linearity, adjustment error at factory and resolution within the normal range | Typ. | Depending on RTD max. ±0.6 % of full scale (guaranteed for 3-wires connection only) at +25 °C |
| | Max. | ± 2 % of full scale (guaranteed for 3-wires connection only) at 0 °C ... +60 °C or EMC disturbances |

| Parameter | Value |
|---|---|
| Measuring range | |
| Analog to digital conversion time | Typ. 140 ms per channel |
| Unused inputs | Can be left open and should be configured as "unused" |
| Input data length | 4 bytes |
| Power dissipation inside the sensor (max.) | 1 mW |
| Suppression of interference | On request |
| Maximum input voltage | 30 V DC (sense), 5 V DC (source) |
| Basic error (resistance) | 0.1 % of full-scale |
| Repeatability | 0.05 % of full-scale |
| Overvoltage protection | Yes, up to 30 V DC |
| Wire loop resistance | < 20 Ω |
| Max. cable length (conductor cross section > 0.14 mm ²) | |
| Unshielded wire | 10 m |
| Shielded wire | 100 m |

4 System data AC500-eCo

4.1 Environmental conditions

Table 1: Process and supply voltages

| Parameter | Value |
|--|--|
| 24 V DC | |
| Voltage | 24 V (-15 %, +20 %) |
| Protection against reverse polarity | Yes |
| 24 V AC | |
| Voltage | 24 V (-15 %, +10 %) |
| Frequency | 50/60 Hz (-6 %, +4 %) |
| 100 V AC ... 240 V AC wide-range supply | |
| Voltage | 100 V ... 240 V (-15 %, +10 %) |
| Frequency | 50/60 Hz (-6 %, +4 %) |
| Allowed interruptions of power supply, according to EN 61131-2 | |
| DC supply | Interruption < 10 ms, time between 2 interruptions > 1 s, PS2 |
| AC supply | Interruption < 0.5 periods, time between 2 interruptions > 1 s |

**NOTICE!****Risk of damaging the PLC due to improper voltage levels!**

- Never exceed the maximum tolerance values for process and supply voltages.
- Never fall below the minimum tolerance values for process and supply voltages. Observe the **system data** and the **technical data** of the used module.

**NOTICE!**

Improper voltage level or frequency range which cause damage of AC inputs:

- AC voltage above 264 V
- Frequency below 47 Hz or above 62.4 Hz

**NOTICE!**

Improper connection leads cause overtemperature on terminals.


PLC modules may be destroyed by using wrong cable type, wire size and cable temperature classification.

| Parameter | | Value |
|--------------|-----------|--|
| Temperature | | |
| | Operating | 0 °C ... +60 °C (horizontal mounting of modules) 0 °C ... +40 °C (vertical mounting of modules and output load reduced to 50 % per group) |
| | Storage | -40 °C ... +70 °C |
| | Transport | -40 °C ... +70 °C |
| Humidity | | Max. 95 %, without condensation |
| Air pressure | | |
| | Operating | > 800 hPa / < 2000 m |
| | Storage | > 660 hPa / < 3500 m |

4.2 Creepage distances and clearances

The creepage distances and clearances meet the requirements of the overvoltage category II, pollution degree 2.


4.3 Power supply units

 *AC500 and AC500-eCo PLC devices are Class II/Class III devices and do not require a Protective Earth (PE) connection.*


For proper EMC performance, all metal parts, DIN rails, mounting screws, and cable shield connection terminals are connected to a common ground and provide Functional Earth (FE). This is typically connected to a common reference potential, such as equipotential bonding rails.

Signal Grounds (SGND or GND) are used for signal reference and must not be connected to cable shields, FE or other signals unless otherwise specified in the specific device description.

For the supply of the modules, power supply units according to SELV or PELV specifications must be used.

 **Safety Extra Low Voltage (SELV) and Protective Extra Low Voltage (PELV)**

To ensure electrical safety of AC500/AC500-eCo extra low voltage circuits, 24 V DC supply, communication interfaces, I/O circuits, and all connected devices must be powered from sources meeting requirements of SELV, PELV, class 2, limited voltage or limited power according to applicable standards.

 **WARNING!**

Improper installation can lead to death by touching hazardous voltages!

To avoid personal injury, safe separation, double or reinforced insulation and separation of the primary and secondary circuit must be observed and implemented during installation.


- Only use power converters for safety extra-low voltages (SELV) with safe galvanic separation of the primary and secondary circuit.
- Safe separation means that the primary circuit of mains transformers must be separated from the secondary circuit by double or reinforced insulation. The protective extra-low voltage (PELV) offers protection against electric shock.

4.4 Electromagnetic compatibility

Table 2: Range of use

| |
|--|
| Application |
| Device suitable only as <i>Control Equipment for Industrial Applications</i> . |

Table 3: Electromagnetic compatibility

| Parameter | Value |
|--|-------|
| Device suitable only as <i>Control Equipment for Industrial Applications</i> , including marine applications. IEC 61131-2, zone B  Chapter 4.6 “Approvals and certifications” on page 8 | |
| Radiated emission according to IEC 61000-6-4 CISPR11, class A | Yes |

| Parameter | Value |
|---|--|
| Conducted emission according to IEC 61000-6-4 CISPR11, class A | Yes |
| Electrostatic discharge (ESD) according to IEC 61000-4-2, criterion B | Air discharge: 8 kV Contact discharge: 6 kV |
| Fast transient interference voltages (burst) according to IEC 61000-4-4, criterion B | Power supply (DC): 2 kV Digital inputs/outputs (24 V DC): 1 kV Digital inputs/outputs (240 V AC): 2 kV Analog inputs/outputs: 1 kV Communication lines shielded: 1 kV |
| High energy transient interference voltages (surge) according to IEC 61000-4-5, criterion B | Power supply (DC): - Line to ground: 1 kV - Line to line: 0,5 kV Digital inputs/outputs/relay: (24 V DC): - Line to ground: 1 kV (AC): - Line to ground: 2 kV - Line to line: 1 kV Analog inputs/outputs: - Line to ground: 1 kV Communication lines: - Line to ground: 1 kV |
| Influence of radiated disturbances IEC 61000-4-3, criterion A | Test field strength: 10 V/m |
| Influence of line-conducted interferences IEC 61000-4-6, criterion A | Test voltage: 10 V |
| Power frequency magnetic fields IEC 61000-4-8, criterion A | 30 A/m 50 Hz 30 A/m 60 Hz |

4.5 Mechanical data

| Parameter | Value |
|----------------------|---|
| Mounting | Horizontal/Vertical |
| Wiring method | Spring/screw terminals |
| Degree of protection | PLC system: IP 20 <ul style="list-style-type: none"> ● with all modules or option boards plugged in ● with all terminals plugged in ● with all covers closed |
| Housing | Classification V-0 according to UL 94 |

| Parameter | Value |
|---|---|
| Vibration resistance (sinusoidal) acc. to IEC 60068-2-6 | All three axes 2 Hz ... 8.4 Hz, 3.5 mm peak, 8.4 Hz ... 150 Hz, 1 g |
| Shock test acc. to IEC 60068-2-27 | All three axes 15 g, 11 ms, half-sinusoidal |
| Mounting of the modules: | |
| Mounting Rail Top Hat according to IEC 60715 | 35 mm, depth 7.5 mm or 15 mm |
| Mounting with screws | M4 |
| Fastening torque | 1.2 Nm |

4.6 Approvals and certifications

The PLC Automation catalog contains an [overview of the available approvals and certifications](#).