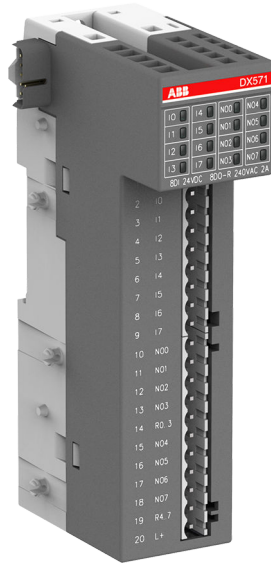


DATA SHEET

DX571

Digital input/output module



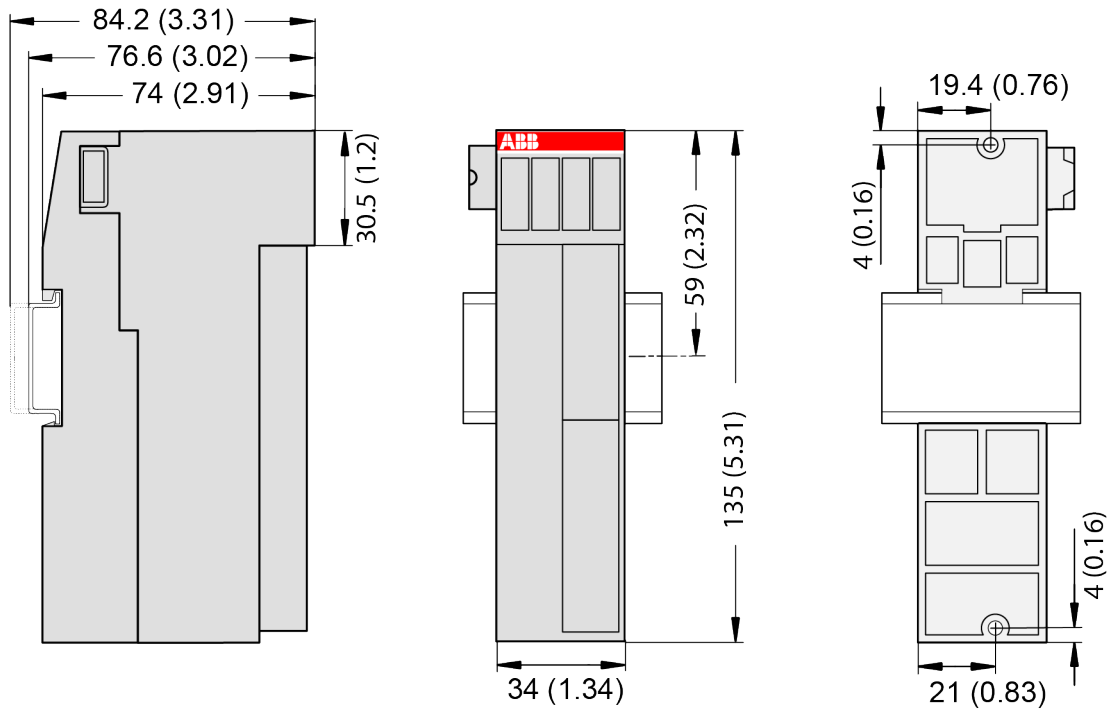
1 Ordering data

| Part no. | Description | Product life cycle phase *) |
|--------------------|--|-----------------------------|
| 1TNE 968 902 R2302 | DX571, digital input/output module, 8 DI 24 V DC / 24 V AC, 8 DO, relay output | Active |
| 1TNE 968 901 R3101 | Terminal block TA563-9, 9 pins, screw front, cable side, 6 pieces per unit | Active |
| 1TNE 968 901 R3102 | Terminal block TA563-11, 11 pins, screw front, cable side, 6 pieces per unit | Active |
| 1TNE 968 901 R3103 | Terminal block TA564-9, 9 pins, screw front, cable front, 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 R3105 | Terminal block TA565-9, 9 pins, spring 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 L+ | |
| Connections | Terminal 20 for L+ (+24 V DC). The negative pole is provided by the I/O bus. |
| Rated value | 24 V DC |
| Current consumption via L+ | 50 mA |
| Inrush current (at power-up) | 0.0035 A ² s |
| Max. ripple | 5 % |
| Protection against reversed voltage | Yes |
| Rated protection fuse for L+ | Recommended; the outputs must be protected by a 3 A fast-acting fuse |
| Current consumption from 24 V DC power supply at the L+/UP and M/ZP terminals of the CPU/communication interface module | Ca. 5 mA |

| Parameter | Value |
|--|---|
| Galvanic isolation | Yes, between the input group and the output group and the rest of the module |
| Isolated groups | 3 groups (1 group for 8 input channels, 2 groups for 8 output channels) |
| Surge-voltage (max.) | 35 V DC for 0.5 s |
| Max. power dissipation within the module | 2.3 W |
| Weight | Ca. 150 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. |

No effects of multiple overloads

No effects of multiple overloads on isolated multi-channel modules occur, as every channel is protected individually by an external fuse.

3.2 Technical data of the digital inputs

| Parameter | Value | | |
|---|--|-----------------|-------------------------|
| Number of channels per module | 8 | | |
| Distribution of the channels into groups | 1 group for 8 channels | | |
| Connections of the channels I0 ... I7 | Terminals 2 ... 9 | | |
| Reference potential for the channels I0 ... I7 | Terminal 1 | | |
| Indication of the input signals | 1 yellow LED per channel; the LED is ON when the input signal is high (signal 1) | | |
| Monitoring point of input indicator | LED is part of the input circuitry | | |
| Input type according to EN 61131-2 | Type 1 source | Type 1 sink | Type 1 AC ¹⁾ |
| Input signal range | -24 V DC | +24 V DC | 24 V AC 50/60 Hz |
| Signal 0 | -5 V ... +3 V | -3 V ... +5 V | 0 V AC ... 5 V AC |
| Undefined signal | -15 V ... +5 V | +5 V ... +15 V | 5 V AC ... 14 V AC |
| Signal 1 | -30 V ... -15 V | +15 V ... +30 V | 14 V AC ... 27 V AC |
| Input current per channel | | | |
| Input voltage 24 V | Typ. 5 mA | | Typ. 5 mA r.m.s. |
| Input voltage 5 V | Typ. 1 mA | | Typ. 1 mA r.m.s. |
| Input voltage 14 V | | | Typ. 2.7 mA r.m.s. |
| Input voltage 15 V | > 2.5 mA | | |
| Input voltage 27 V | | | Typ. 5.5 mA r.m.s. |
| Input voltage 30 V | < 8 mA | | |
| Max. permissible leakage current (at 2-wire proximity switches) | 1 mA | | Typ. 1 mA r.m.s. |
| Input delay (0->1 or 1->0) | Typ. 8 ms | | |
| Input data length | 1 byte | | |

| Parameter | | Value |
|-------------------|------------|-------|
| Max. cable length | | |
| | Shielded | 500 m |
| | Unshielded | 300 m |

¹⁾ When inputs are used with 24 V AC, external surge limiting filters are required.

3.3 Technical data of the digital outputs

| Parameter | | Value |
|--|----------------------------------|---|
| Number of channels per module | | 8 normally-open relay outputs |
| Distribution of the channels into groups | | 2 (4 channels per group) |
| Connection of the channels O0 ... O3 | | Terminals 10 ... 13 |
| Connection of the channels O4 ... O7 | | Terminals 15 ... 18 |
| Reference potential for the channels O0 ... O3 | | Terminal 14 (signal name R0 ... 3) |
| Reference potential for the channels O4 ... O7 | | Terminal 19 (signal name R4 ... 7) |
| Relay coil power supply | | Terminal 20 (positive pole of the process supply voltage, signal name L+). The negative pole is provided by the I/O bus. |
| Indication of the output signals | | 1 yellow LED per channel; the LED is on when the output signal is high (signal 1) and the module is powered through the I/O bus |
| Monitoring point of output indicator | | Controlled together with relay |
| Way of operation | | Non-latching type |
| Relay output voltage | | |
| | Rated value | 24 V DC / 24 V AC or 120/240 V AC |
| Output delay | | |
| | Switching 0 to 1 (max.) | Typ. 10 ms |
| | Switching 1 to 0 (max.) | Typ. 10 ms |
| Output data length | | 1 byte |
| Output current | | |
| | Rated current per channel (max.) | 2.0 A (24 V DC / 24 V AC / 48 V AC / 120 V AC / 240 V AC, only resistive loads) 2.0 A (24 V AC / 48 V AC / 120 V AC, only pilot duty) 1.5 A (240 V AC, only pilot duty) |
| | Rated current per group (max.) | 8 A |
| Lamp load (max.) | | 200 W (230 V AC), 30 W (24 V DC) |
| Spark suppression with inductive AC loads | | Must be performed externally according to driven load specification |
| Switching Frequencies | | |
| | With resistive loads | Max. 1 Hz |
| | With inductive loads | On Request |
| | With lamp loads | Max. 1 Hz |

| Parameter | Value |
|--------------------------------------|---|
| Output type | Non-protected |
| Protection type | External fuse ¹⁾ |
| Rated protection fuse | 5 A fast |
| Short-circuit-proof / Overload-proof | No, should be provided by an external fuse or circuit breaker |
| Overload message | No |
| Output current limitation | No |
| Connection of 2 outputs in parallel | Not possible |
| Lifetime of relay contacts (cycles) | 100.000 at rated load |
| Max. cable length | |
| Shielded | 500 m |
| Unshielded | 150 m |

¹⁾ Per group in case of group fuse protection. For each channel in case of channel-by-channel fuse protection. The maximum current per group must not be exceeded.

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 9 | |
| Radiated emission according to IEC 61000-6-4 CISPR11, class A | Yes |
| 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 |

| Parameter | Value |
|---|--|
| 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 |
| 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*.