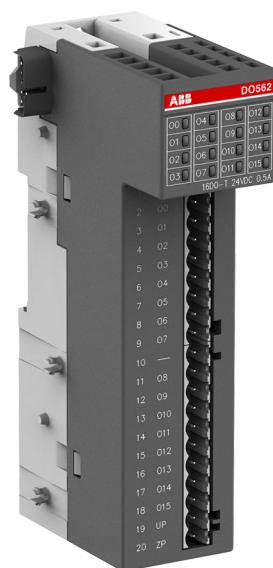


# DO562

## Digital output module



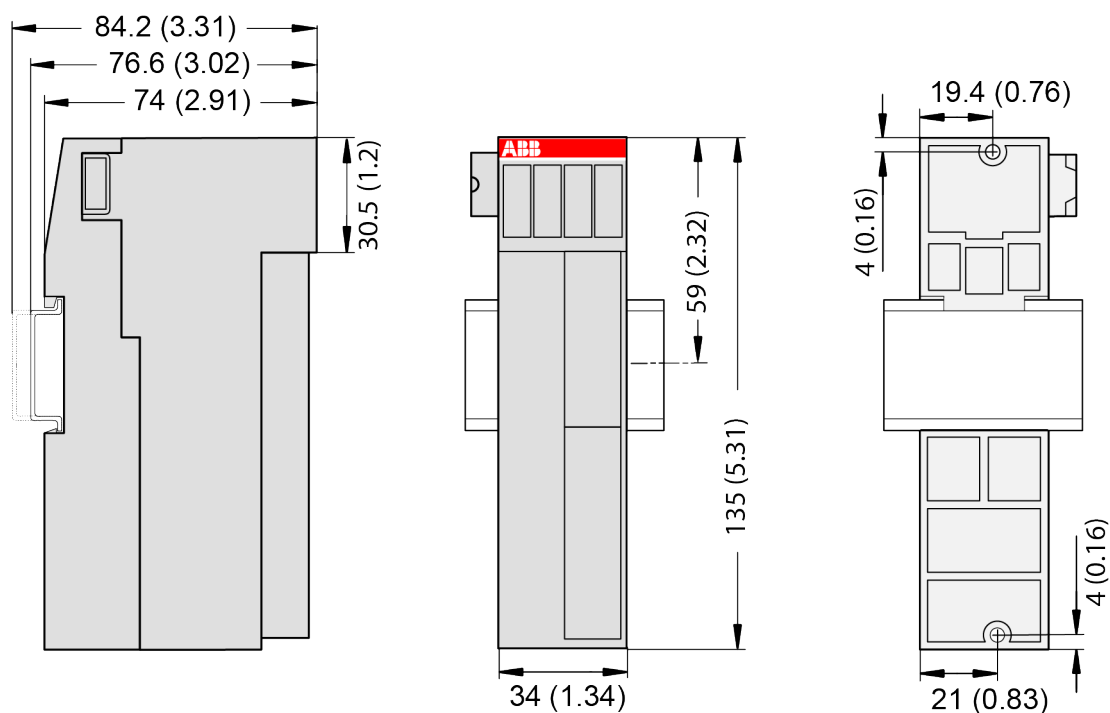
## 1 Ordering data

| Part no.           | Description                                                                    | Product life cycle phase *) |
|--------------------|--------------------------------------------------------------------------------|-----------------------------|
| 1SAP 230 900 R0000 | DO562, digital output module, 16 DO, transistor 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.

🔗 Chapter 4 “System data AC500-eCo” on page 4

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 DC)         |
|                           | Rated value                         | 24 V DC                                                               |
|                           | Current consumption via UP terminal | 20 mA + max. 0.5 A per output                                         |
|                           | Max. ripple                         | 5 %                                                                   |
|                           | Inrush current                      | 0.000002 A <sup>2</sup> s                                             |
|                           | Protection against reversed voltage | Yes                                                                   |
|                           | Rated protection fuse for UP        | Recommended; the outputs must be protected by an 3 A fast-acting fuse |

| Parameter                                                                                                               | Value                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Current consumption from 24 V DC power supply at the L+/UP and M/ZP terminals of the CPU/communication interface module | Ca. 10 mA                                                                                                 |
| Galvanic isolation                                                                                                      | Yes, between the output group and the rest of the module                                                  |
| Isolated groups                                                                                                         | 1 (16 channels per group)                                                                                 |
| Surge-voltage (max.)                                                                                                    | 35 V DC for 0.5 s                                                                                         |
| Max. power dissipation within the module                                                                                | 1.4 W                                                                                                     |
| Weight                                                                                                                  | Ca. 125 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 outputs

| Parameter                                       | Value                                                                                                                       |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Number of channels per module                   | 16 transistor outputs (24 V DC, 0.5 A max.)                                                                                 |
| Distribution of the channels into groups        | 1 (16 channels per group)                                                                                                   |
| Connection of the channels O0 ... O7            | Terminals 1 ... 9                                                                                                           |
| Connection of the channels O8 ... O15           | Terminals 11 ... 18                                                                                                         |
| Common power supply voltage                     | Terminal 19 (positive pole of the process voltage, signal name UP)                                                          |
| Reference potential for the channels O0 ... O15 | Terminal 20 (negative pole of the process voltage, signal name ZP)                                                          |
| 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 via the I/O bus |
| Way of operation                                | Non-latching type                                                                                                           |
| Min. output voltage at signal 1                 | UP -0.3 V at max. current consumption                                                                                       |
| Output delay (max. at rated load)               |                                                                                                                             |
| 0 to 1                                          | 50 µs                                                                                                                       |
| 1 to 0                                          | 200 µs                                                                                                                      |
| Output data length                              | 2 bytes                                                                                                                     |
| Output current                                  |                                                                                                                             |
| Rated current per channel (max.)                | 0.5 A at UP 24 V DC                                                                                                         |
| Rated current per group (max.)                  | 8 A                                                                                                                         |
| Lamp load (max.)                                | 5 W                                                                                                                         |
| Max. leakage current with signal 0              | 0.5 mA                                                                                                                      |
| Output type                                     | Non-protected                                                                                                               |

| Parameter                                             |                                        | Value                                                               |
|-------------------------------------------------------|----------------------------------------|---------------------------------------------------------------------|
| Protection type                                       |                                        | External fuse on each channel                                       |
| Rated protection fuse (for each channel)              |                                        | 3 A fast                                                            |
| Demagnetization when inductive loads are switched off |                                        | Must be performed externally according to driven load specification |
| Switching Frequencies                                 |                                        |                                                                     |
|                                                       | With inductive loads                   | Max. 0.5 Hz                                                         |
|                                                       | With lamp loads                        | Max. 11 Hz at max. 5 W                                              |
| Short-circuit-proof / Overload-proof                  |                                        | No                                                                  |
|                                                       | Overload message                       | No                                                                  |
|                                                       | Output current limitation              | No                                                                  |
|                                                       | Resistance to feedback against 24 V DC | No                                                                  |
| Connection of 2 outputs in parallel                   |                                        | Not possible                                                        |
| Max. cable length                                     |                                        |                                                                     |
|                                                       | Shielded                               | 500 m                                                               |
|                                                       | Unshielded                             | 150 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)<br>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.<br>IEC 61131-2, zone B<br>🔗 Chapter 4.6 “Approvals and certifications” on page 8 |       |
| Radiated emission according to<br>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<br>Contact discharge: 6 kV                                                                                                                                                                                                                                                                   |
| Fast transient interference voltages (burst) according to IEC 61000-4-4, criterion B        | Power supply (DC): 2 kV<br>Digital inputs/outputs (24 V DC): 1 kV<br>Digital inputs/outputs (240 V AC): 2 kV<br>Analog inputs/outputs: 1 kV<br>Communication lines shielded: 1 kV                                                                                                                                |
| High energy transient interference voltages (surge) according to IEC 61000-4-5, criterion B | Power supply (DC):<br>- Line to ground: 1 kV<br>- Line to line: 0,5 kV<br>Digital inputs/outputs/relay:<br>(24 V DC):<br>- Line to ground: 1 kV<br>(AC):<br>- Line to ground: 2 kV<br>- Line to line: 1 kV<br>Analog inputs/outputs:<br>- Line to ground: 1 kV<br>Communication lines:<br>- 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<br>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"> <li>with all modules or option boards plugged in</li> <li>with all terminals plugged in</li> <li>with all covers closed</li> </ul> |
| Housing              | Classification V-0 according to UL 94                                                                                                                                                   |

| Parameter                                               | Value                                                                     |
|---------------------------------------------------------|---------------------------------------------------------------------------|
| Vibration resistance (sinusoidal) acc. to IEC 60068-2-6 | All three axes<br>2 Hz ... 8.4 Hz, 3.5 mm peak,<br>8.4 Hz ... 150 Hz, 1 g |
| Shock test acc. to IEC 60068-2-27                       | All three axes<br>15 g, 11 ms, half-sinusoidal                            |
| <b>Mounting of the modules:</b>                         |                                                                           |
| 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](#).