

OFFICIAL DOCUMENT PACKAGE

# Manufacturer's Manual

Amikon cover with selected official ABB technical pages

ABB AC500 / S500-eCo I/O

## DO562

TRANSISTOR DIGITAL OUTPUT MODULE

Selected official pages retain the original technical tables, ratings, notes and pagination.

OFFICIAL SOURCE

ABB 3ADR010055 revision 14, 2025-11-28, DO562 datasheet

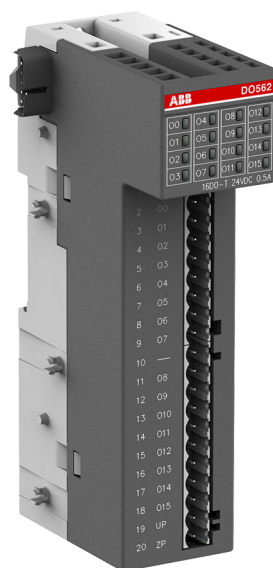
DO562 ordering, output protection and installation requirements, original pages 1-8

This technical extract does not replace the complete equipment and system manuals. Check the installed hardware and project before use.

DATA SHEET - ORIGINAL INSTRUCTIONS

# DO562

## Digital output module



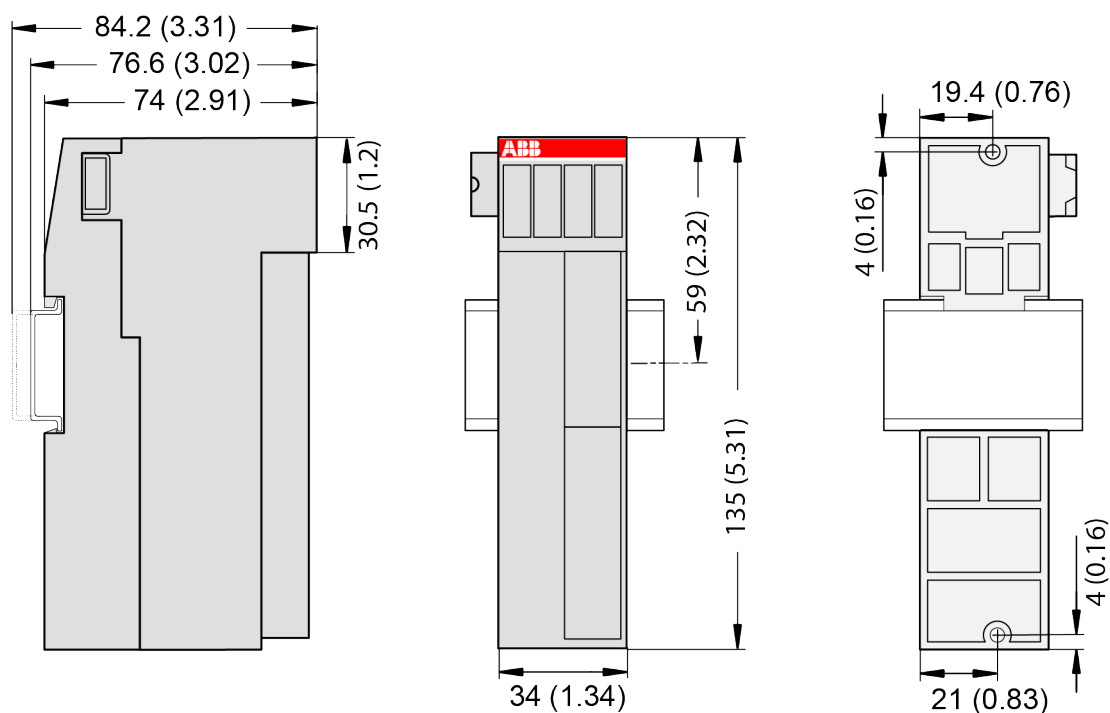
## 1 Ordering data

| 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](#).