



# UR20 Digital I/O Modules

## UR20-8DIO-P-3W-DIAG

Each of the eight channels of the digital I/O module UR20-8DIO-P-3W-DIAG can be configured to be an input or an output. A status LED is assigned to each channel. Up to two sensors or actuators can be connected to each connector using a 2-wire or 3-wire connection.

- The digital inputs are specified 24 VDC Type 1 and 3 as per IEC 61131-2. The sensor supply is limited to 0.3A per connector and fused by a self-resetting fuse. The individual channel diagnosis monitors the sensor supply for overcurrent >0.3A.
- The individual channel diagnosis monitors switched outputs for overload and unswitched outputs for load (line break detection). The outputs have a maximum output current of 0.5A at 24 VDC and are short-circuit-proof. An output will only be switched if the output voltage is below the line break detection threshold (see technical data).
- The module electronics supply the connected sensors and actuators with power from the output current path ( $I_{OUT}$ ).



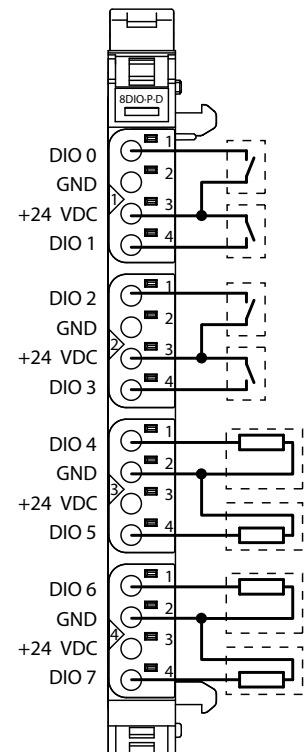
### Technical Specifications - UR20-8DIO-P-3W-DIAG

|                                                        |                                                                                                                                                           |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Price                                                  | \$137.00                                                                                                                                                  |
| Drawing                                                | <a href="#">PDF</a>                                                                                                                                       |
| <b>Inputs</b>                                          |                                                                                                                                                           |
| Number                                                 | 8                                                                                                                                                         |
| Input type                                             | P-switching, for Type 1 and Type 3 sensors as per IEC 61131-2                                                                                             |
| Input filter                                           | Input delay adjustable from 0 to 40 ms                                                                                                                    |
| Low input voltage                                      | < +5V referred to 0V of the output power supply $U_{OUT}$                                                                                                 |
| High input voltage                                     | > +11V referred to 0V of the output power supply $U_{OUT}$                                                                                                |
| Sensor supply                                          | ≤ 0.3A per connector; limited electronically                                                                                                              |
| Protective circuit                                     | Constant current with thermal switch-off and automatic restart                                                                                            |
| Sensor connection                                      | 2-wire, 3-wire                                                                                                                                            |
| Reverse polarity protection                            | No, input voltage below -10V can destroy the module                                                                                                       |
| Module diagnosis                                       | Yes                                                                                                                                                       |
| Individual channel diagnosis                           | Only auxiliary voltage output                                                                                                                             |
| <b>Outputs</b>                                         |                                                                                                                                                           |
| Number                                                 | 8                                                                                                                                                         |
| Type                                                   | P-switching                                                                                                                                               |
| Type of load                                           | Ohmic, inductive, lamp load                                                                                                                               |
| Response time                                          | Typ. 120 μs                                                                                                                                               |
| Max. output current                                    | Per channel / per module: 0.5A / 4A                                                                                                                       |
| Breaking energy (inductive)                            | 150 mJ per channel                                                                                                                                        |
| Switching frequency                                    | Ohmic load (min. 47Ω): 1 kHz; Inductive load (DC 13): 0.2 Hz without free-wheeling diode, 1 kHz with suitable free-wheeling diode; Lamp load (12W): 10 Hz |
| Actuator connection                                    | 2-wire, 3-wire                                                                                                                                            |
| Actuator supply                                        | See sensor supply                                                                                                                                         |
| Short-circuit-proof                                    | Yes                                                                                                                                                       |
| Protective circuit                                     | Constant current with thermal switch-off and automatic restart                                                                                            |
| Response time of the current limiting circuit          | <100 μs                                                                                                                                                   |
| Module diagnosis                                       | Yes                                                                                                                                                       |
| Individual channel diagnosis                           | Yes, overcurrent monitoring > 0.5A, line break detection                                                                                                  |
| Line break detection                                   | Threshold typ. 3.3V (load resistance > 6 kΩ)                                                                                                              |
| <b>Supply</b>                                          |                                                                                                                                                           |
| Supply voltage for system, inputs and outputs          | 24 VDC +20% / -15%                                                                                                                                        |
| Current consumption from system current path $I_{SYS}$ | 8 mA                                                                                                                                                      |
| Current consumption from output current path $I_{OUT}$ | 34 mA + sensor supply + load                                                                                                                              |
| Weight                                                 |                                                                                                                                                           |
| Weight (operational status)                            | 90g                                                                                                                                                       |



**CAUTION: THE INPUT VOLTAGE MUST BE ABOVE -10V OR THE MODULE CAN BE DESTROYED.**

### Terminal Connections





# UR20 Module Specifications

| Environmental Specifications - UR20 I/O Modules     |                                 |                                                                                                                      |
|-----------------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>Degree of protection (IEC 60529)</b>             |                                 | IP20                                                                                                                 |
| <b>Flammability rating UL 94</b>                    |                                 | V-0                                                                                                                  |
| <b>Material of power contacts and data contacts</b> |                                 | Ni-Au, 3µm                                                                                                           |
| <b>Temperature</b>                                  | <b>Operation</b>                | -20 + 60 °C [-4 to +140 °F]                                                                                          |
|                                                     | <b>Storage, transport</b>       | -40 to +85 °C [-40 to +185 °F]                                                                                       |
| <b>Humidity</b>                                     | <b>Operation</b>                | 95%, non-condensing as per IEC 61131-2                                                                               |
|                                                     | <b>Storage, transport</b>       | 95%, non-condensing as per IEC 61131-2                                                                               |
| <b>Air pressure</b>                                 | <b>Operation</b>                | ≥ 795 hPa [11.5 psi] (altitude ≤ 2000 m) as per IEC 61131-2                                                          |
|                                                     | <b>Storage, transport</b>       | ≥ 700 hPa [10.2 psi] (altitude ≤ 3000 m) as per IEC 61131-2                                                          |
| <b>Vibration resistance</b>                         |                                 | 5 Hz ≤ f ≤ 8.4 Hz: 3.5mm amplitude as per IEC 60068-2-6<br>8.4 Hz ≤ f ≤ 150 Hz: 1g acceleration as per IEC 60068-2-6 |
| <b>Shock resistance</b>                             |                                 | 15g over 11 ms, half sinewave, as per IEC 60068-2-27                                                                 |
| <b>Potential isolation</b>                          | <b>Test voltage</b>             | Max. 28.8V within one channel<br>500 VDC field/system (as per EN 60079-15:2017)                                      |
|                                                     | <b>Pollution severity level</b> | 2 (as per DIN EN 60664-1:2008)                                                                                       |
|                                                     | <b>Overvoltage category</b>     | II (as per DIN EN 50178)                                                                                             |
| <b>Approvals</b>                                    |                                 | CE, RoHS, UKCA, cULus E141197                                                                                        |