

# Digital input/output module CPX-AP-A-12DI4DO-M12-5P

Part number: 8129111

FESTO



 General operating condition

## Data sheet

| Feature                          | Value                                                                                                                                       |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Dimensions (W x L x H)           | 50.1 mm x 107.3 mm x 57.5 mm                                                                                                                |
| Grid dimension                   | 50.1 mm                                                                                                                                     |
| Type of mounting                 | Screw-clamped                                                                                                                               |
| Product weight                   | 98 g                                                                                                                                        |
| Mounting position                | optional                                                                                                                                    |
| Ambient temperature              | -20 °C ... 50 °C                                                                                                                            |
| Note on ambient temperature      | Observe ambient temperature derating according to IEC 61131-2:2017                                                                          |
| Storage temperature              | -20 °C ... 70 °C                                                                                                                            |
| Relative air humidity            | 5 - 95%<br>Non-condensing                                                                                                                   |
| Nominal altitude of use          | ≤ 2000 m ASL (> 79.5 kPa)                                                                                                                   |
| Max. installation height         | 3500 m                                                                                                                                      |
| Note on max. installation height | > 2000 m ASL (< 79.5 kPa)<br>Observe ambient temperature derating according to IEC 61131-2:2017                                             |
| Corrosion resistance class CRC   | 1 - Low corrosion stress                                                                                                                    |
| Vibration resistance             | Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6                                                            |
| Note on vibration resistance     | SG1 on H-rail<br>SG2 on direct mounting<br>Transport application test with severity class 1 to FN 942017-4 and EN 60068-2-6                 |
| Shock resistance                 | Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27                                                                           |
| Note on shock resistance         | 30 g/11 ms to EN 60068-2-27<br>SG1 on H-rail<br>SG2 on direct mounting<br>Shock test with severity level 1 to FN 942017-5 and EN 60068-2-27 |
| Protection class                 | III                                                                                                                                         |
| Pollution degree                 | 2                                                                                                                                           |
| Overvoltage category             | II                                                                                                                                          |
| Max. cable length                | 30 m outputs<br>30 m inputs                                                                                                                 |
| LABS (PWIS) conformity           | VDMA24364-B2-L                                                                                                                              |
| Fire test material               | UL94 V-0 (housing)                                                                                                                          |
| Note on materials                | RoHS-compliant<br>Free of halogen<br>Free of phosphoric acid ester                                                                          |
| Material cover                   | PBT-reinforced                                                                                                                              |
| Material screws                  | Nickel-plated steel                                                                                                                         |
| Material o-ring                  | FPM                                                                                                                                         |

| Feature                                                                                        | Value                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Diagnostics via LED                                                                            | (Outputs) Diagnostics per channel<br>Power supply load (outputs)<br>(Inputs-Outputs) Diagnostics per module<br>(Inputs-Outputs) Status per channel                                                                                           |
| Diagnostics per internal communication                                                         | Load switch-off<br>Communication fault<br>Short-circuit/overload in output signal<br>Short circuit/overload in sensor supply<br>Electronics/sensors overvoltage<br>Load overvoltage<br>Electronics/sensors undervoltage<br>Load undervoltage |
| Max. address volume, inputs                                                                    | 2 Byte                                                                                                                                                                                                                                       |
| Max. address volume, outputs                                                                   | 1 Byte                                                                                                                                                                                                                                       |
| Number of outputs                                                                              | 4                                                                                                                                                                                                                                            |
| Module parameters                                                                              | Configuration of voltage monitoring load supply PL<br>Behaviour after short circuit/overload at the output                                                                                                                                   |
| Channel parameters                                                                             | Input debounce time                                                                                                                                                                                                                          |
| Communication interface, protocol                                                              | AP                                                                                                                                                                                                                                           |
| Note regarding operating voltage                                                               | SELV/PELV fixed power supplies required<br>Note voltage drop                                                                                                                                                                                 |
| Note on nominal operating voltage DC                                                           | Protected Extra-Low-Voltage to IEC 60204-1                                                                                                                                                                                                   |
| Nominal operating voltage DC of load                                                           | 24 V                                                                                                                                                                                                                                         |
| Permissible voltage fluctuation of load                                                        | ± 25 %                                                                                                                                                                                                                                       |
| Nominal DC operating voltage, electronics/sensors                                              | 24 V                                                                                                                                                                                                                                         |
| Permissible voltage fluctuations for electronics/sensors                                       | ± 25%                                                                                                                                                                                                                                        |
| Intrinsic current consumption at nominal operating voltage for electronics/sensors             | Typically 40 mA                                                                                                                                                                                                                              |
| Intrinsic current consumption at nominal operating voltage load                                | Typically 5 mA                                                                                                                                                                                                                               |
| Power failure bridging                                                                         | 10 ms                                                                                                                                                                                                                                        |
| Potential separation between the supply voltages electronics/sensor technology and load/valves | Yes                                                                                                                                                                                                                                          |
| Reverse polarity protection                                                                    | yes                                                                                                                                                                                                                                          |
| Electrical connection input, function                                                          | Digital input                                                                                                                                                                                                                                |
| Electrical connection input, connection type                                                   | 6 x socket                                                                                                                                                                                                                                   |
| Electrical connection input, connector system                                                  | M12x1, A-coded to EN 61076-2-101                                                                                                                                                                                                             |
| Electrical connection input, number of connections/cores                                       | 5                                                                                                                                                                                                                                            |
| Electrical connection input, connection pattern                                                | 00995384                                                                                                                                                                                                                                     |
| Number of inputs                                                                               | 12                                                                                                                                                                                                                                           |
| Characteristic for inputs                                                                      | To IEC 61131-2, type 3                                                                                                                                                                                                                       |
| Switching level                                                                                | Signal 0: ≤ 5 V<br>Signal 1: ≥ 11 V                                                                                                                                                                                                          |
| Switching logic for inputs                                                                     | PNP (positive switching)<br>2-wire sensors to IEC 61131-2<br>3-wire sensors to IEC 61131-2                                                                                                                                                   |
| Input debounce time                                                                            | 0.1 ms<br>3 ms (standard)<br>10 ms<br>20 ms                                                                                                                                                                                                  |
| Behaviour after end of overload of the sensor supply                                           | Automatic return                                                                                                                                                                                                                             |
| Fuse protection of inputs (short circuit)                                                      | Internal electronic fuse per module                                                                                                                                                                                                          |
| Max. residual current of inputs per module                                                     | 1.8 A                                                                                                                                                                                                                                        |
| Electrical isolation of inputs between channels                                                | no                                                                                                                                                                                                                                           |
| Electrical isolation of inputs between channel - internal communication                        | yes                                                                                                                                                                                                                                          |
| Electrical connection output, function                                                         | Digital output                                                                                                                                                                                                                               |
| Electrical connection output, connection type                                                  | 2x socket                                                                                                                                                                                                                                    |
| Electrical connection output, connector system                                                 | M12x1, A-coded to EN 61076-2-101                                                                                                                                                                                                             |
| Electrical connection output, number of connections/cores                                      | 5                                                                                                                                                                                                                                            |

| Feature                                                                  | Value                                                        |
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| Electrical connection output, connection pattern                         | 00995384                                                     |
| Characteristic for outputs                                               | According to IEC 61131-2, type 0.5                           |
| Switching logic for outputs                                              | PNP (positive switching)                                     |
| Fuse protection of outputs (short circuit)                               | Internal electronic fuse per channel                         |
| Behaviour after end of overload of the outputs                           | No automatic return                                          |
| Output delay with ohmic load                                             | Signal change 0->1: < 200 µs<br>Signal change 1->0: < 200 µs |
| Max. residual current outputs per module                                 | 2 A                                                          |
| Electrical isolation of outputs between channels                         | no                                                           |
| Electrical isolation of outputs between channel - internal communication | yes                                                          |
| Max. power supply per channel                                            | 0.5 A                                                        |