



# R-16DI-8DO

## 16-CH DIGITAL INPUTS, 8-CH DIGITAL OUTPUTS ETHERNET MODULE

### Highlights

- **Nr.16 PNP / NPN digital inputs** configurable also as counters @ 32 bit max 5 KHz
- **Nr.8 Relay digital outputs** max 30 V max 1 A
- **Nr.2 10/100 Mbps Ethernet ports**, **Nr.1 RS485 port**, **Nr.1 Micro USB port**
- **Programming via Micro USB port or Ethernet web server and Seneca Studio**
- **Multi-device connection in Ethernet daisy chain mode with Fault-bypass (active connection between the two Ethernet ports in case of power failure)**
- **Mirror I / O function (signal duplication) in Peer To Peer mode without the need for a Master**
- **ModBUS Pass Through function for Modbus Ethernet-Serial conversion**
- **Ideal for high I/O density applications with built-in Ethernet networking**

R-16DI-8DO is a mixed digital module with dual Ethernet ports 10/100 Mbps and programming Micro USB front port.

The instrument is designed for flexible wiring needs, reduced installation spaces, high density I / O applications with networking Integrated Ethernet.

R-16DI-8DO counts 16 PNP / NPN digital inputs also configurable as totalizers @ 32 bits and 8 digital relay outputs with maximum range 30 V / 1 A.

All totalizers are stored in non-volatile memory (FeRAM). The module is equipped with isolation between inputs, outputs and remaining low voltage circuits equal to 1.500 Vac. The configuration can take place via Seneca Studio software and web server with support HTML5. IP address and firmware version associated with the single module can be identified on a LAN via Seneca Studio.

R-16DI-8DO supports both ModBUS TCP-IP and serial communication RS485 with ModBUS RTU protocol.

R-16DI-8DO can be connected in daisy chain Ethernet mode with fault-by-pass to ensure Ethernet connection even in the case failure of a module in the chain. Digital signals can be duplicated on one or more modules in Peer to Peer mode (I/O functionality mirror). Another advanced feature is "ModBUS Passthrough", thanks to which the module can divert requests from RS485 from Modbus TCP-IP behaving, in fact, as a gateway.



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## 16-CH DIGITAL INPUTS, 8-CH DIGITAL OUTPUTS ETHERNET MODULE

**Modbus** **ETHERNET**

### TECHNICAL DATA

#### GENERAL DATA

|                          |                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power supply             | 10..40 Vdc; 19..28 Vac                                                                                                                                                                                                                                                                                                                                                                      |
| Auxiliary voltage output | 12 Vdc / 40 mA                                                                                                                                                                                                                                                                                                                                                                              |
| Max power consumption    | 3 W                                                                                                                                                                                                                                                                                                                                                                                         |
| Max isolation            | 1,5 kVac                                                                                                                                                                                                                                                                                                                                                                                    |
| LED status indicators    | Power supply<br>Inputs / Outputs status<br>STS (IP address / DHCP)<br>RX / TX (Data receiving / transmission on RS485)<br>Ethernet TRF / LNK (Data packet transit / Ethernet connection)                                                                                                                                                                                                    |
| Protection degree        | IP20                                                                                                                                                                                                                                                                                                                                                                                        |
| Operating temperature    | -25...+65°C                                                                                                                                                                                                                                                                                                                                                                                 |
| Dimension (wxhxd)        | 106 x 90 x 32 mm                                                                                                                                                                                                                                                                                                                                                                            |
| Weight                   | 170 g                                                                                                                                                                                                                                                                                                                                                                                       |
| Case                     | ABS autoextinguish UL94-V0, black color                                                                                                                                                                                                                                                                                                                                                     |
| Connection               | Terminal blocks 3,5 mm pitch, Micro USB connector, RJ45 dual connector                                                                                                                                                                                                                                                                                                                      |
| Installation             | On DIN EN 60715 rail, wall / panel mounting                                                                                                                                                                                                                                                                                                                                                 |
| Settings                 | SENECA Studio configurator<br>Built-in Web Server                                                                                                                                                                                                                                                                                                                                           |
| Special functions        | Ethernet Daisy Chain dual connection<br>LAN fault bypass (active connection between 2 Ethernet ports in case power failure)<br>Max 32 Peer to Peer Rules (I/O Mirror) without Master unit<br>Counters with frequency, TON, TOFF, period measurement<br>Modbus Passthrough (TCP-IP to RS485)<br>IP, MAC, firmware identification and setting by SDD tool<br>FeRAM backup memory for counters |
| Data memory              | FeRAM backup memory for counters                                                                                                                                                                                                                                                                                                                                                            |

#### COMMUNICATION

|                                              |                                                                                                                                                |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Interfaces                                   | Nr.2 Ethernet ports (with LAN fault-bypass function) 10/100 BaseT on RJ45<br>Nr.1 RS485 port on terminals<br>Nr.1 Micro USB port (programming) |
| Data rate                                    | Up to 115.200 bps (RS485) / 100 Mbps (TCP-IP)                                                                                                  |
| Protocols                                    | ModBUS RTU, ModBUS TCP-IP, http                                                                                                                |
| Ethernet communication cable between devices | CAT5 or CAT5e unshielded                                                                                                                       |
| ModBUS communication                         | Up to 64 nodes without repeater and max speed 115 kbps                                                                                         |

#### INPUT DATA

|                     |                                                                           |
|---------------------|---------------------------------------------------------------------------|
| Channels            | Nr.16 Digital input                                                       |
| Type                | PNP with internal / external power supply, NPN with internal power supply |
| Voltage             | Threshold OFF / ON: <8 V; > 9 V                                           |
| Max frequency       | 5 kHz, 32 bit retentive counters                                          |
| Current consumption | 2,25 mA                                                                   |
| Conformity          | IEC 6113-2 Type 1 & 3                                                     |

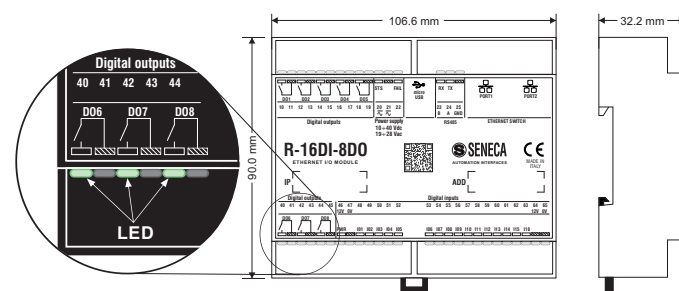
#### OUTPUT DATA

|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| Channels              | Nr. 8 digital outputs, isolated among them                                     |
| Type                  | SPST free contact relay                                                        |
| Max voltage / current | 30 Vac-dc / 1 A                                                                |
| Response time         | 20 ms (P2P)                                                                    |
| Contacts duration     | 5*10 <sup>6</sup> mechanical operations / 10 <sup>5</sup> operations with load |

#### STANDARD

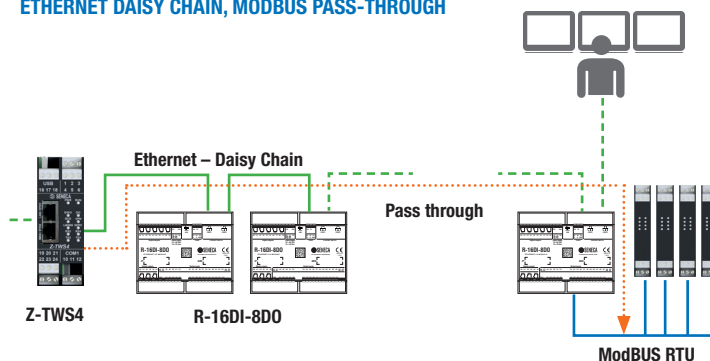
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| Approvals | CE                                  |
| Norms     | EN61000-6-4, EN61000-6-2, EN61010-1 |

### MODULE LAYOUT

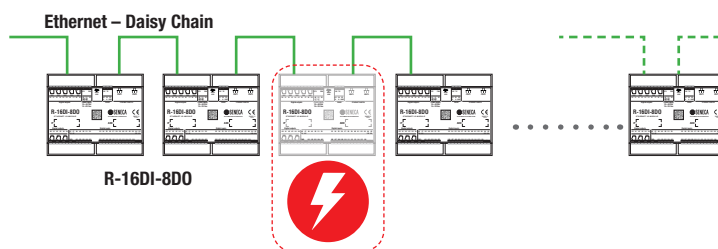


### CONNECTION EXAMPLE

#### ETHERNET DAISY CHAIN, MODBUS PASS-THROUGH



#### FAULT BY-PASS



Ethernet connection and data transmission are active even in case of failure or power failure of a module in the chain. In this way the availability and continuity of the service are guaranteed.

### ORDER CODES

| Code           | Description                                                                   |
|----------------|-------------------------------------------------------------------------------|
| R-16DI-8DO     | 16-Ch digital inputs / 8-Ch relay digital outputs, Modbus TCP-IP / Modbus RTU |
| CE-RJ45-RJ45-C | Crossover Ethernet cable (RJ45-RJ45)                                          |
| CE-RJ45-RJ45-R | Straight-thru Ethernet cable (RJ45-RJ45)                                      |
| SENECA STUDIO  | Configuration suite                                                           |
| SDD            | SENECA Discovery Device, IP scanner                                           |