# TOP-TSR100xx

**Remote Control Inputs and Outputs**

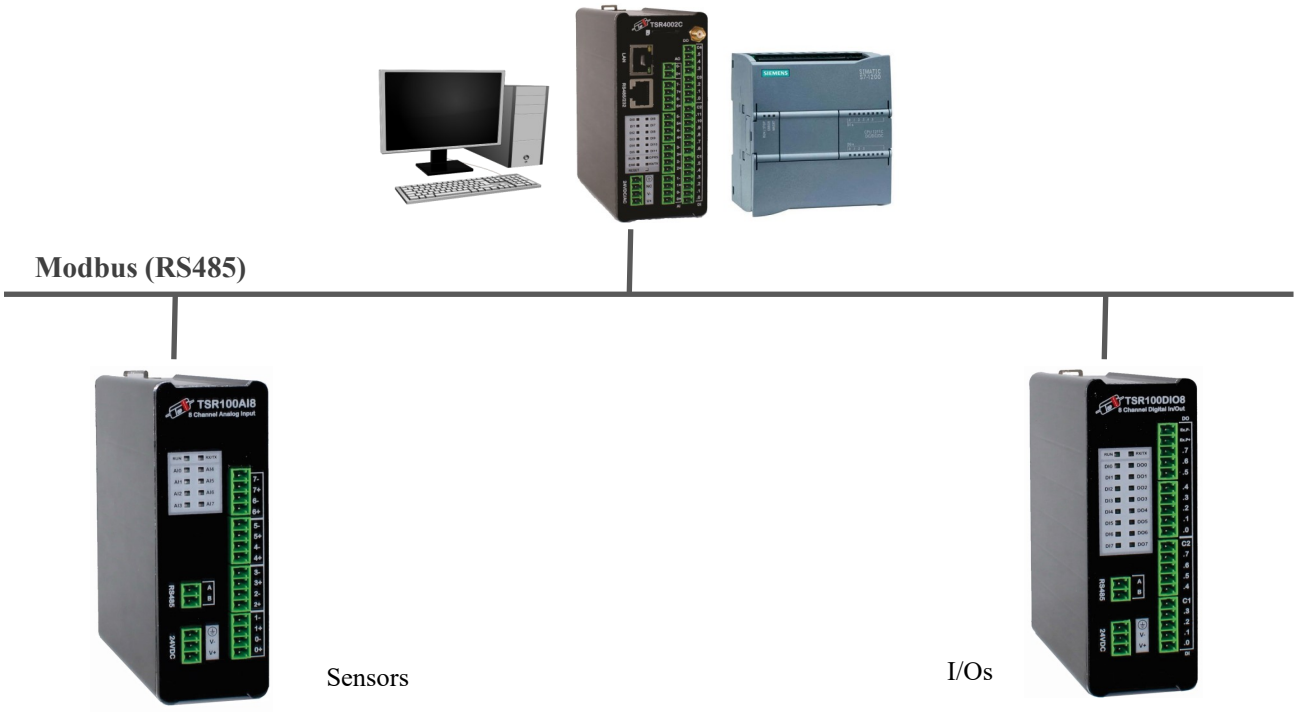
| Overview of I/O Extention Modules | |
|---|---|
| TSR100DI16 | 16 x Isolated Digital Input 24v DC |
| TSR100DO16 | 16 x Isolated Open Collector Digital Output |
| TSR100DIO8 | 8 x Isolated Digital Input & 8 x Digital Output |
| TSR100AI8 | 8 x Differential Analog Input |

## Introduction

Remote I/O enables master devices such as programmable logic controllers (PLCs) or Remote Terminal Units (RTUs) to control the input and output of data from a remote location via network. The input and output signals can be either digital or analog. Extension modules are cheaper than control systems and can, therefore, reduce costs of certain solutions.

TSR100xx series supports communication via MODBUS RTU or ASCII protocols.

## Application



## Common System Specification

| System | | |
|---|---|---|
| CPU | | ARM Cortex M0 |
| SRAM | | 8 Kbyte |
| Flash Memory | Internal | 32 Kbyte |
| **Communication** | | |
| Serial Port | RS485 | Modbus slave (ASCII – RTU) |
| **Power Requirements** | | |
| Reverse Polarity Protection | | Yes |
| Frame Ground Protection | | ESD |
| Powered from Terminal Block | | Yes, +7 Vdc ~ +40 Vdc |
| **Mechanical** | | |
| Casting | | Metal |
| Dimension (W x L x H) | | 40mm x 105mm x 112mm |
| Installation | | DIN-Rail or Wall mounting |

## Individual Specification

| Digital Input | |
|---|---|
| Channels | 16 (Sink & Source) |
| Type | Isolated Contact |
| On Voltage Level | +10 VDC ~ +40 VDC |
| Off Voltage Level | +4 VDC Max. |
| Input Impedance | 10 KΩ , 0.5W |
| Overvoltage Protection | +40 VDC |

| Digital Output | |
|---|---|
| Channels | 16 |
| Type | Transistor Type |

| Analog Input | | |
|---|---|---|
| Channels | | 8 (Differential) |
| Range | | 0 ~ +5V, 0~20mA , 4~20mA (Selectable in ordering time) |
| Resolution | | 12 bit |
| Sampling Rate | | 100k Sample/Sec. (Total) |
| Accuracy | | ±2 LSB |
| Overcurrent Protection | | 25mA Max. |
| Individual Channel Configuration | | Yes |
| Input Impedance | Voltage | 2MΩ |
| | Current | 150Ω |

| Digital Input | |
|---|---|
| Channels | 8 (Sink & Source) |
| Type | Isolated Contact |
| On Voltage Level | +10 VDC ~ +40 VDC |
| Off Voltage Level | +4 VDC Max. |
| Input Impedance | 10 KΩ , 0.5W |
| Overvoltage Protection | +40 VDC |
| **Digital Output** | |
| Channels | 8 |
| Type | Transistor Type |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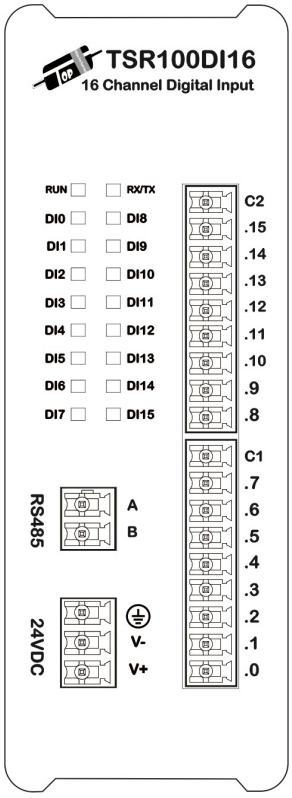
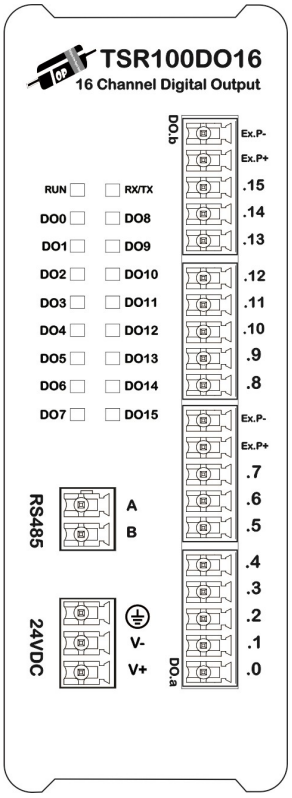
# Pin Assignment




| Power & Communication | | | |
|---|---|---|---|
| Power Supply | | V+ | DC +24v |
| | | V- | DC GND |
| | | | Earth |
| COM1 | RS485 | B | RS485+ |
| | | A | RS485- |
| **Inputs And Outputs** | | | |
| Digital Inputs | | .0 | DIN1 |
| | | .1 | DIN2 |
| | | .2 | DIN3 |
| | | .3 | DIN4 |
| | | .4 | DIN5 |
| | | .5 | DIN6 |
| | | .6 | DIN7 |
| | | .7 | DIN8 |
| | | C1 | COM1 |
| | | .8 | DIN9 |
| | | .9 | DIN10 |
| | | .10 | DIN11 |
| | | .11 | DIN12 |
| | | .12 | DIN13 |
| | | .13 | DIN14 |
| | | .14 | DIN15 |
| | | .15 | DIN16 |
| | | C2 | COM2 |

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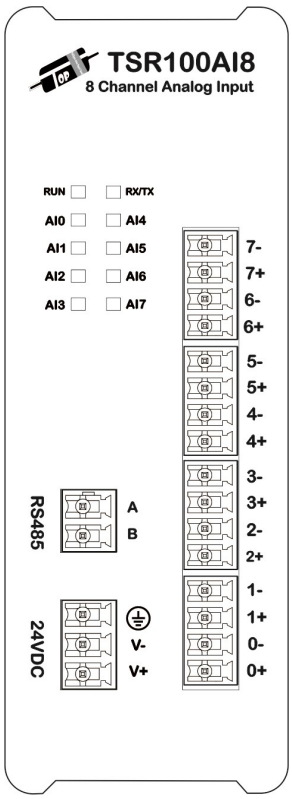
| **Inputs And Outputs** | | | |
| Digital Outputs | | .0 | DOUT1 |
| | | .1 | DOUT2 |
| | | .2 | DOUT3 |
| | | .3 | DOUT4 |
| | | .4 | DOUT5 |
| | | .5 | DOUT6 |
| | | .6 | DOUT7 |
| | | .7 | DOUT8 |
| | | Ex.P+ | +24V External power |
| | | Ex.P- | GND External power |
| | | .9 | DIN10 |
| | | .10 | DIN11 |
| | | .11 | DIN12 |
| | | .12 | DIN13 |
| | | .13 | DIN14 |
| | | .14 | DIN15 |
| | | .15 | DIN16 |
| | | Ex.P+ | +24V External power |
| | | Ex.P- | GND External power |

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|---|---|---|---|
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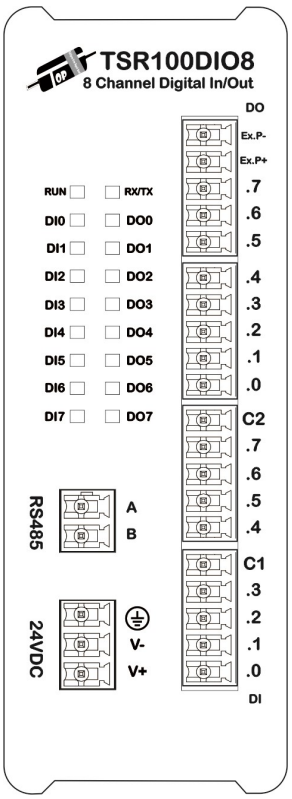
| | | V- | DC GND |
| | | | Earth |
| COM1 | RS485 | B | RS485+ |
| | | A | RS485- |
| **Inputs And Outputs** | | | |
| Analog Inputs | | 0+ | AIN0+ |
| | | 0- | AIN0- |
| | | 1+ | AIN1+ |
| | | 1- | AIN1- |
| | | 2+ | AIN2+ |
| | | 2- | AIN2- |
| | | 3+ | AIN3+ |
| | | 3- | AIN3- |
| | | 4+ | AIN4+ |
| | | 4- | AIN4- |
| | | 5+ | AIN5+ |
| | | 5- | AIN5- |
| | | 6+ | AIN6+ |
| | | 6- | AIN6- |
| | | 7+ | AIN7+ |
| | | 7- | AIN7- |

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| **Inputs And Outputs** | | | |
| Digital Inputs | | .0 | DIN1 |
| | | .1 | DIN2 |
| | | .2 | DIN3 |
| | | .3 | DIN4 |
| | | C1 | COM1 |
| | | .4 | DIN5 |
| | | .5 | DIN6 |
| | | .6 | DIN7 |
| | | .7 | DIN8 |
| | | C2 | COM2 |
| Digital Outputs | | .0 | DOUT1 |
| | | .1 | DOUT2 |
| | | .2 | DOUT3 |
| | | .3 | DOUT4 |
| | | .4 | DOUT5 |
| | | .5 | DOUT6 |
| | | .6 | DOUT7 |
| | | .7 | DOUT8 |
| | | Ex.P+ | +24V External power |
| | | Ex.P- | GND External power |


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