

VirtualSCADA® VS-FIOA-0800-RP-B / VS-FIOA-0800-R-B RTD Input Module User Manual



Revision 1.00.00

Table of contents

Warranty and support	3
Product return	3
1 About the VirtualSCADA VS-FIOA-800-RP-B / R-B : RTD Input Device	4
1.1 General	4
1.2 Mounting	5
1.3 Connectors / Indicators	6
1.3.1 Power Supply	6
1.3.2 RTD Input Connections	7
1.3.3 RS485 Port Connections	8
1.3.4 LED Indicators	8
2 FIOA Device Configuration	9
2.1 Communication Setup	9
2.2 MODBUS Tags / Registers for RTD inputs	11
APPENDIX A: TECHNICAL SPECIFICATIONS	12
APPENDIX B: APPLICATIONS	13

Warranty and support

To obtain fast and simple support for your **VS-FIOA-0800-RP-B** or **VS-FIOA-0800-R-B** products visit our website at www.VirtualSCADA.com

Product return

If you experience any problems with a **VS-FIOA-0800-RP-B** or **VS-FIOA-0800-R-B** device and wish to have it repaired or exchanged, please follow these steps:

- Obtain a RMA Return Number, RMA, www.VirtualSCADA.com
- To get this number you'll need to provide some information about the problem you have, contact information etc.
- Print the "RMA Number" and send it to us together with the product. Make sure the RMA is visible on the outside of the package, and that the delivery is pre-paid, otherwise the delivery won't be accepted by us. Also provide evidence of original purchase.
- If the faulty product is covered by the 12-month warranty, we will repair or exchange the device and return it within 30 days. If the product is not covered by Warranty we will advise an estimated repair cost.

1 About the VirtualSCADA VS-FIOA-800-RP-B/R-B

1.1 General

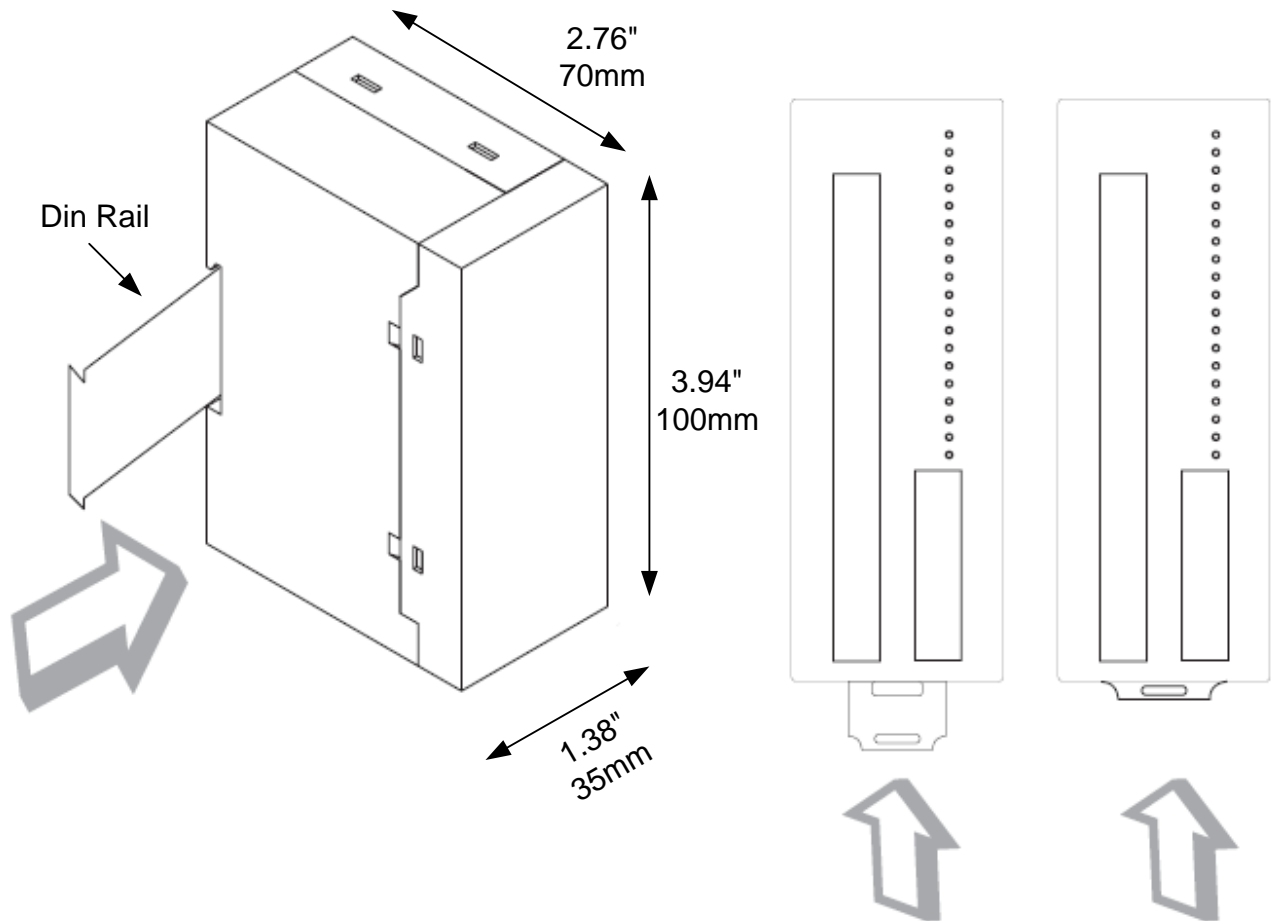
The **VS-FIOA-0800-RP-B** and **VS-FIOA-0800-R-B** series products add RTD input capability to your PLC or SCADA System. The FIOA 0800-R-B model has 8 PT1000 inputs and the FIOA 0800-RP-B has 8 PT100 inputs. Both modules have a RS485 (2 wire) communication port. The RS485 communication port is used to connect to any MODBUS RTU master device (PLC / SCADA / Operator Interface).

Features

- No setup required for analog inputs
- Pre-defined MODBUS RTU registers
- Baud-rate, parity, device address can be set with DIP-switches
- Din-rail mount
- Support for other VirtualSCADA products

The **VS-FIOA-0800-RP-B** and **VS-FIOA-0800-R-B** device can be clicked onto a DIN rail. The drawing in section 1.2 shows dimensional details of FIOA device and DIN rail plate.

Mounting

**Dimensions:**

3.94" x 1.38" x 2.76" (H x W x D)

100mm x 35mm x 70mm (H x W x D)

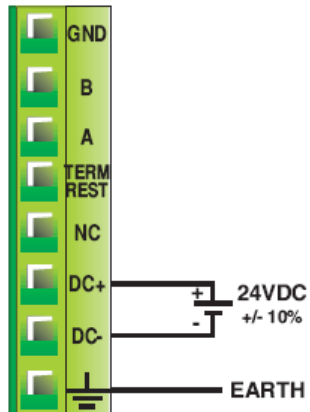
Snap the **VirtualSCADA VS-FIOA-800-R / VS-FIOA-800-R P** device onto the DIN-rail (as shown on the picture above).

1.2 Connectors / Indicators

1.2.1 Power Supply

The VS-FIOA-0800-RP-B / VS-FIOA-0800-R-B device is powered by a 24VDC supply (not included)

Power Supply: 24VDC / min. 90mA / 2W.



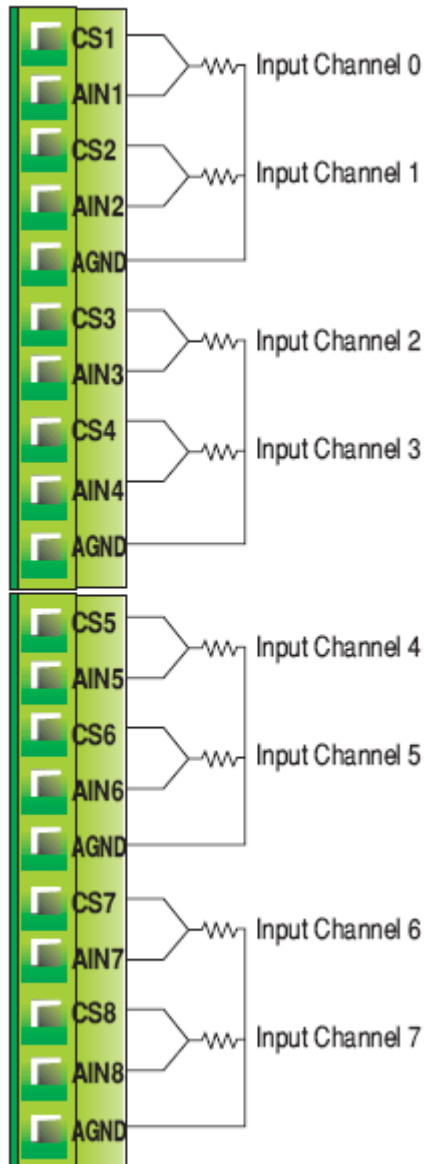
1.2.2 RTD Input Connections

CSx: Current source(x equals to 1 to 8)

AINx: Analog input(x equals to 1 to 8)

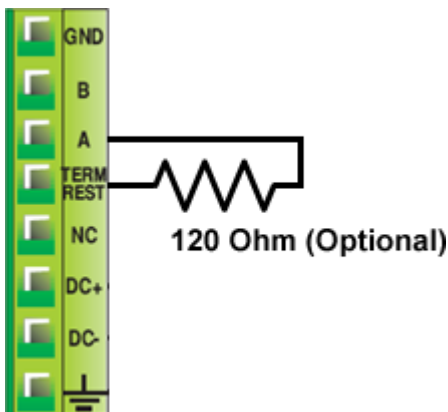
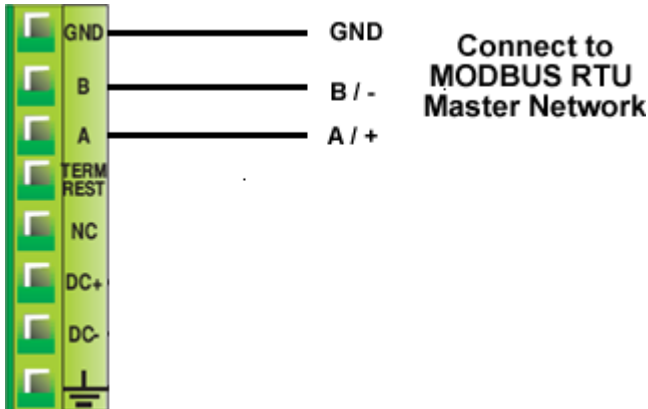
AGND: Analog ground. Analog ground for all channels is internally connected on the PCB.

Connect RTD PT100 (VS-FIOA-800-RP-B) or PT1000 (VS-FIOA-800-R-B) as shown in the wiring diagram to terminals CSx, AIN and AGND



1.2.3 RS485 Port Connection

Connect A to + of the Modbus RTU RS485 Network and B to – of the Modbus RTU RS485 Network.



Termination Resistor (Optional / when required):

Install 120 Ohm / 0.25W resistor between terminal 'A' and terminal 'TERM-REST'

1.2.4 LED Indicators

LED description

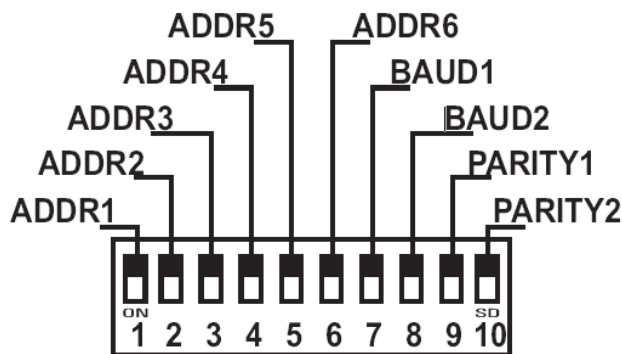
Name	Color	Function
Power	OFF	No power
	On	Power supply turned on to device
Comm	OFF	No Communication
	Flashing	Communication active with master

2 FIOA Device Configuration

2.1 VirtualSCADA VS-FIOA-800-RP-B / VS-FIOA-800-R-B communication setup

The device supports Modbus RTU driver for communication with the Master device. Dedicated Modbus registers are used for monitoring RTD inputs. The device scans all the inputs continuously and stores this information into each of the input registers. The communication parameters, device address and operation modes (Voltage / current) are set by means of a DIP switch.

A 10 position DIP Switch is used to set the Device Address, Baud Rate and Parity Setting



Device Address Setting

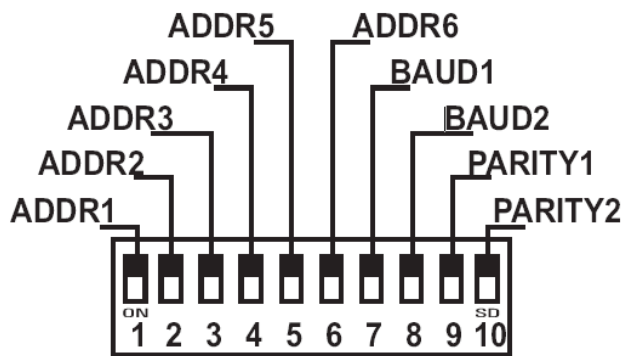
Device Address	Addr 6	Addr 5	Addr 4	Addr 3	Addr 2	Addr 1
	+32	+16	+8	+4	+2	+1
1	Off	Off	Off	Off	Off	Off
2	Off	Off	Off	Off	Off	On
3	Off	Off	Off	Off	On	Off
.						
64	On	On	On	On	Ob	On

Determine Device Address:

Each dip-switch (addr 1 to addr 6) can be set either Off (0) or On (1). To set the desired address simply set the switches so that the is '1' less than the desired address.

Example:

Device Address 27: Addr 5 is On (16), Addr 4 is On (8), Addr 2 is On (2) – 1 (offset) = 25



Baud Rate Setting

Baud Rate	Baud 2	Baud 1
9600	Off	Off
19200	Off	On
57600	On	Off
115200	On	On

Parity Setting

Baud Rate	Parity 2	Parity 1
None	Off	Off
Even	Off	On
Odd	On	Off

2.2 VirtualSCADA VS-FIOA-800-RP-B / VS-FIOA-800-R-B MODBUS RTU Registers

The following dedicated modbus registers are assigned to each of the RTD inputs:

RTD Input	MODBUS RTU Tag / Register
<i>Input 1 – channel 0</i>	40001
<i>Input 2 – channel 1</i>	40002
<i>Input 3 – channel 2</i>	40003
<i>Input 4 – channel 3</i>	40004
<i>Input 5 – channel 4</i>	40005
<i>Input 6 – channel 5</i>	40006
<i>Input 7 – channel 6</i>	40007
<i>Input 8 – channel 7</i>	40008

Data format: signed integer

The temperature value shown in the Modbus registers is in degrees Celsius multiplied by 10 in signed integer format.

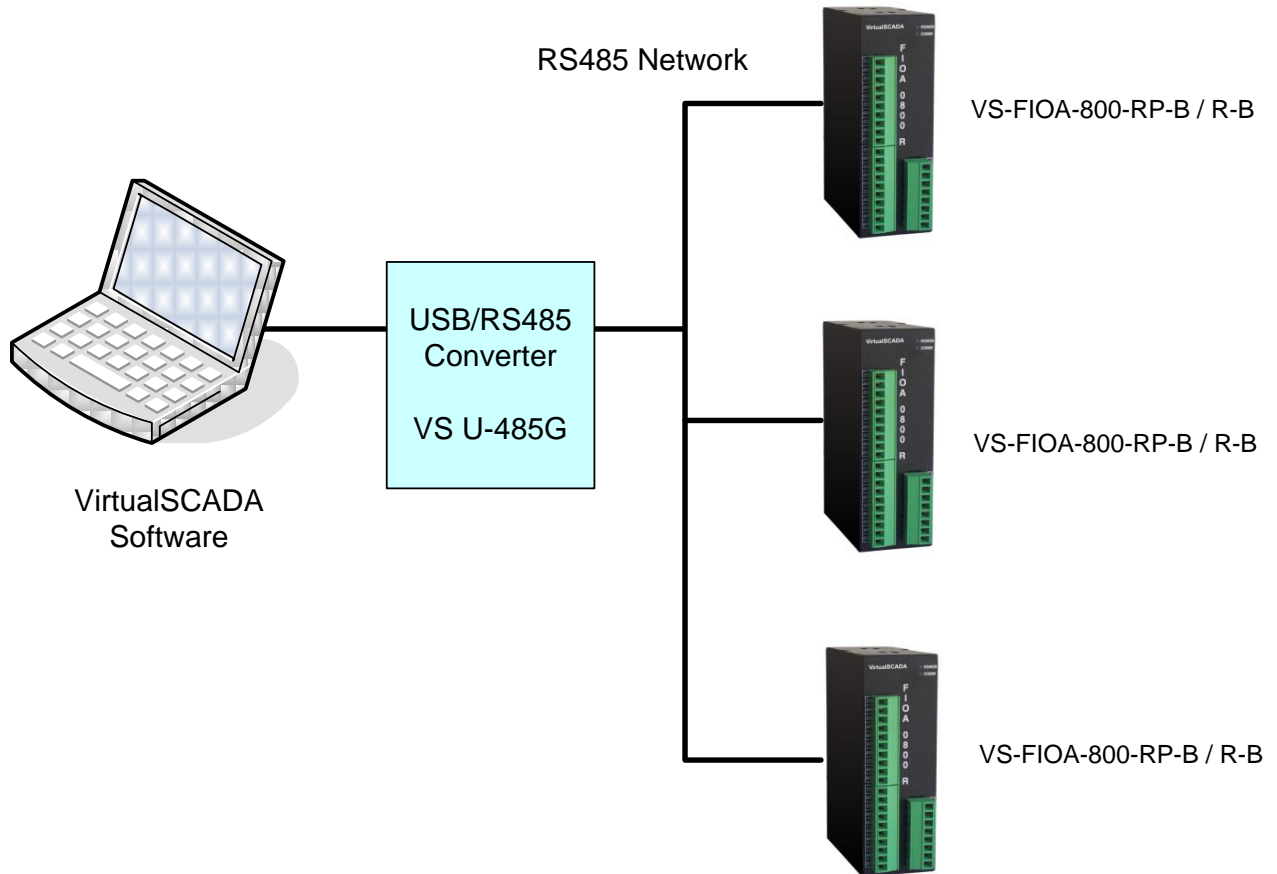
e.g. If the input value is 145.5 degree Celsius the value shown in Modbus register will be 1455

APPENDIX A: Technical Specifications for VS-FIOA-800-RP-B / VS-FIOA-800-R-B

Power Supply:	24 VDC +/- 10% (90mA / 2W)
VS-FIOA-800-RP-B	8 PT100 inputs
	PT100: Uses 3 wire compensation technique. Excitation Current is 0.5mA. Power dissipated in RTD is 0.025mW @ 100W. Range supported: -200 to 850 C
VS-FIOA-800-R-B	8 PT1000 inputs
	Uses 3 wire compensation technique. Excitation Current is 0.1mA. Power dissipated in RTD is 0.010mW @ 1000W. Range supported: -200 to 850 C
Resolution:	12 Bits +/- 0.2% of scale +/- 1 bit
Communication Port:	2 Wire RS-485
Protocol:	MODBUS RTU
I/O Terminals:	Removable terminal blocks
Operating Temperature:	32F – 122F / 0°C to 50°C
Storage Temperature:	-4F – 176F / -20°C to 80°C
Humidity:	10% to 90% (non-condensing)
Immunity to ESD:	Per IEC610000-4-2
Immunity to Fast Transients:	Per IEC610000-4-4
Immunity to Radiated Electromagnetic Field:	Per IEC610000-4-3
Immunity to Conducted Disturbances:	IEC610000-4-6
Surge:	Per IEC610000-4-5
Radiated Emission:	IEC610000-4-4

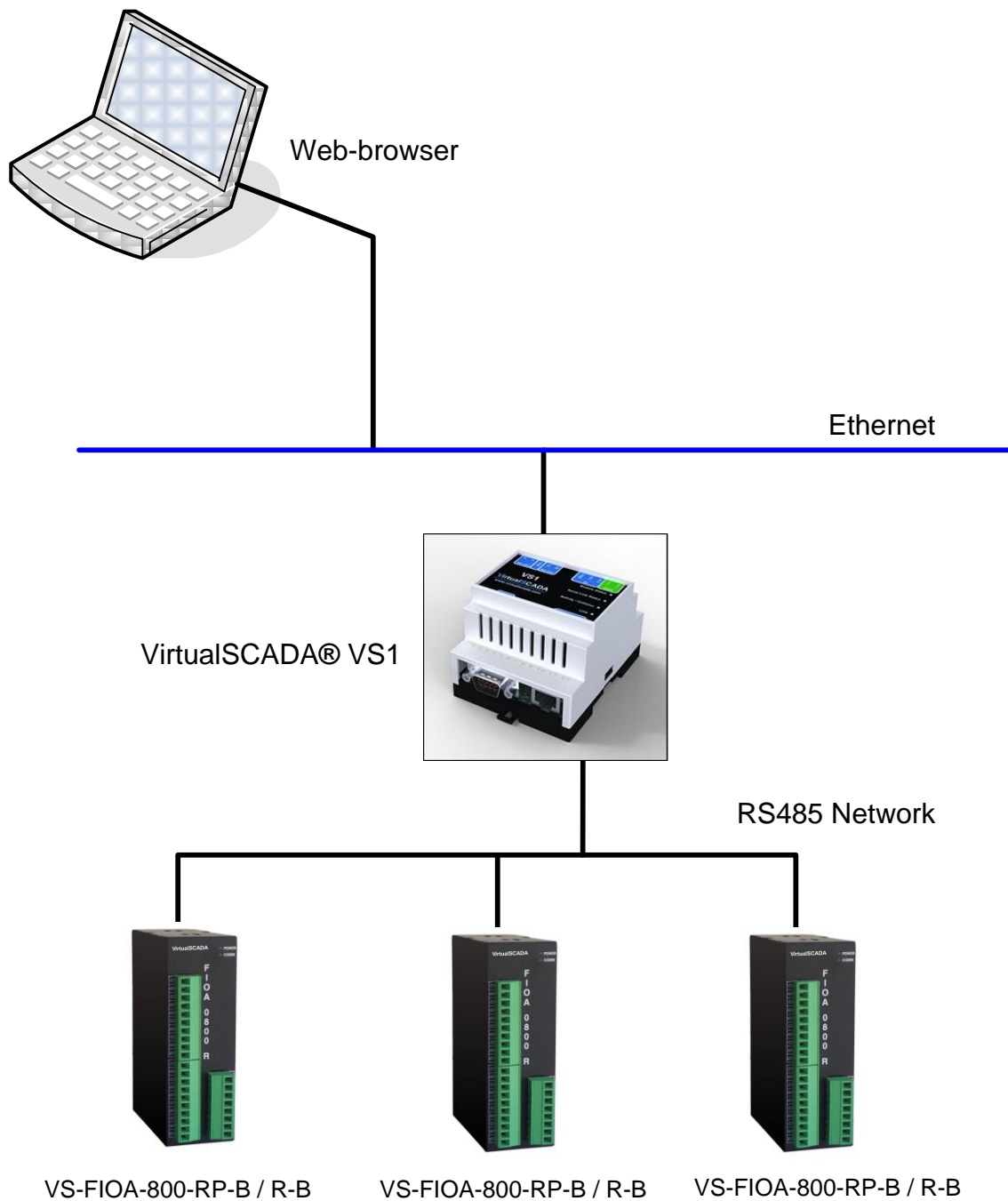
APPENDIX B: Applications

Data Acquisition System: VirtualSCADA VS-U485 + VS-FIOA-800-RP-B/R-B



Web-browser SCADA Monitoring System:

VirtualSCADA VS1 + VS-FIOA-800-RP-B/R-B



VirtualSCADA®