

1275 Danner Dr Aurora, OH 44202 Fax:330-562-1999 www.networktechinc.com

Tel:330-562-7070

ENVIROMUX® Series

ENVIROMUX-DI16DO(R)16

Digital Input/Output Expander Installation Manual



ENVIROMUX-DI16DO16 (Front and Rear View)



ENVIROMUX-DI16DOR16 (Rear View)

The ENVIROMUX-DI16DO(R)16 Digital Input/Output Expander enables the connection of up to 16 additional digital sensors and output devices using just one RJ45 Sensor port on an ENVIROMUX-2D, ENVIROMUX-5D, or ENVIROMUX-16D Server Environment Monitoring System (SYSTEM).

The ENVIROMUX-DI16DO16 includes digital outputs with an open-collector design for the control of up to 16 relays, solenoids, LEDs, and other devices that operate at voltages between 0-24VDC (maximum 500mA).

The ENVIROMUX-DI16DOR16 includes digital outputs with a normally-open SPST relay design for the control of up to 16 different devices that operate at a maximum125VAC (0.5A maximum) or maximum 30VDC (1.0A maximum).

Features

The ENVIROMUX-DI16DO16 and ENVIROMUX-DI16DOR16 have many features in common, and several differences, detailed

Features in common:

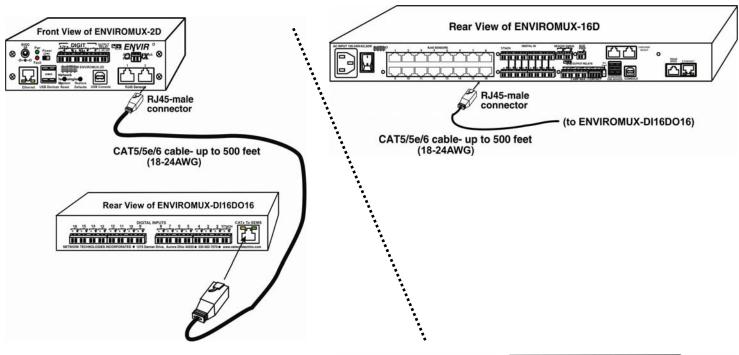
- Interfaces with the SYSTEM via the RJ45 Sensor Port
- Digital inputs:
 - 16 screw terminal pairs for connecting dry contact devices
 - One screw terminal pair for tachometer; 0 to 255 Hz
 - Accepts 26 to 16AWG wire
 - Potential free
 - Voltage range: 0 to +36VDC
 - Over-voltage surge protected
- Supports 18-24AWG CAT5/5e/6 cable up to 500 ft. (152.4 m)

Feature differences:

Feature	ENVIROMUX-DI16DO16	ENVIROMUX-DI16DOR16
Digital outputs	 16 screw terminal pairs for open-collector outputs Accepts 26 to 16AWG wire Rated sink current: 500mA per output +5VDC, 22kΩ pull-ups Voltage range: 0 to +24VDC Over-voltage surge protected 	 16 screw terminal pairs for normally-open relay contact outputs Accepts 26 to 16AWG wire Potential free Rated switching load: 0.5A @ 125 VAC, 1.0A @ ±30VDC Fused
Power supply	Requires 75mA at 5VDC (Powered by SYSTEM)	Includes 120VAC or 240VAC at 50 or 60Hz-5VDC/3.0A AC Adapter
Dimensions (WxDxH)	6.49x3.10x1.08 in (165x79x27 mm)	6.49x3.10x1.78 in (165x79x45 mm)

Installation

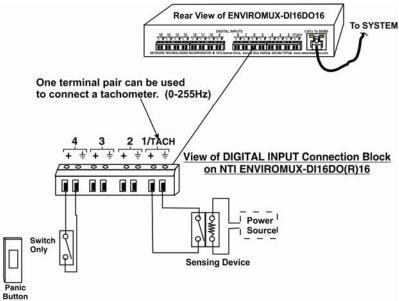
1. Connect the Expander to the SYSTEM using up to 500 feet (152.4 m) of 18-24AWG CAT5, 5e, or 6 cable.



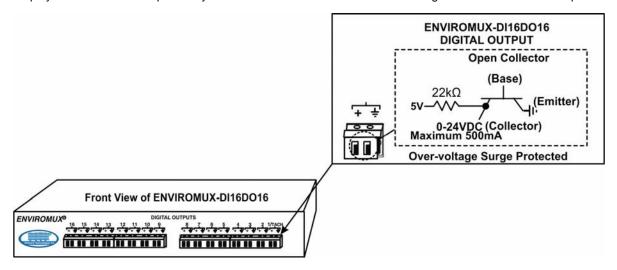
2. Dry contact sensors can then be connected to the Expander using 26-16AWG wire. Up to 16 sensors can be connected.

Two-wire switch-only type sensors can be connected to the plus (+) and ground $(\frac{1}{2})$ terminals of each of 16 sets of terminals.

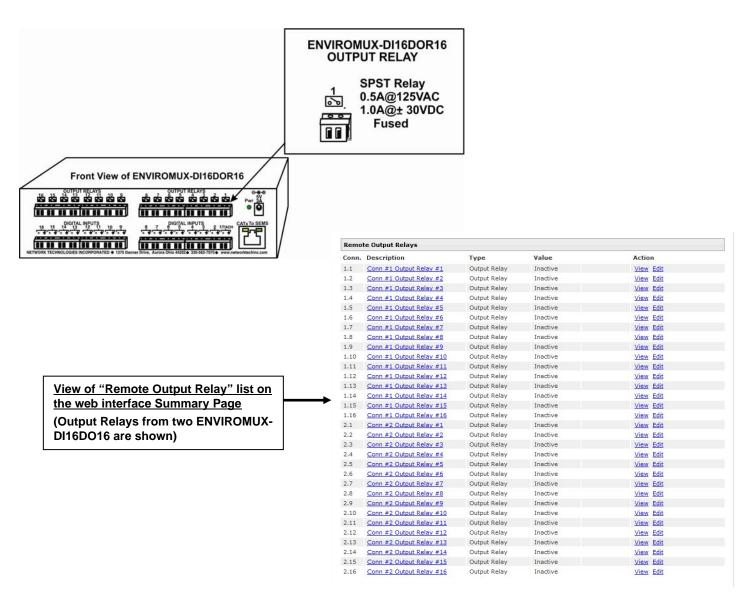
Terminal pair 1 is specially designed for connection of a tachometer/anemometer with a range of 0-255Hz (like the ENVIROMUX-WSS Wind Speed Sensor).



3a. Digital Outputs on the ENVIROMUX-DI16DO16 have an open-collector design for the control of up to 16 relays, solenoids, LEDs, and other devices that operate at voltages between 0-24VDC (maximum 500mA). Devices connected to Digital Outputs will display in the "Remote Output Relay" list in the SYSTEM web interface for assignment to sensor alert responses.



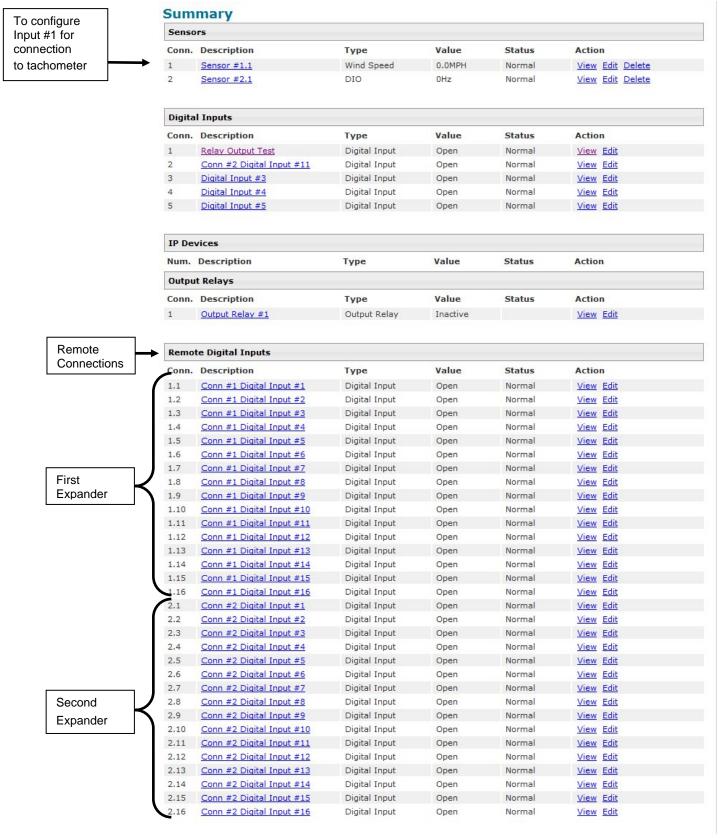
3b. Output Relays on the ENVIROMUX-DI16DOR16 have a normally-open SPST relay design for the control of up to 16 different devices that operate at maximum 125VAC (0.5A maximum) or maximum 30VDC (1.0A maximum). Devices connected to Output Relays will display in the "Remote Output Relay" list in the SYSTEM web interface for assignment to sensor alert responses.



Web Interface- Summary Page

The Summary Page of the SYSTEM will display sensors connected to the ENVIROMUX-DI16DO(R)16 in a separate list labeled "Remote Digital Inputs". (The image below demonstrates the summary page with **two** ENVIROMUX-DI16DO16 Digital Expanders connected.)

The SYSTEM will also recognize the number 1 connector set on the ENVIROMUX-DI16DO(R)16 as a possible tachometer connector, displaying its status under "Sensors". If a tachometer is being connected, configure the sensor as such. If a water sensor or dry-contact sensor is going to be connected to connection 1 (Connection "1.1" or "2.1" below), ignore the listing under "Sensors" and configure the listing under "Remote Digital Inputs". Do not configure both.



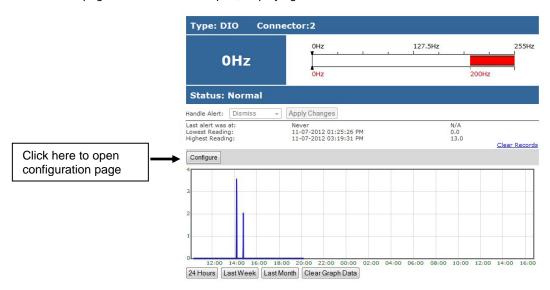
When configuring the Remote Digital Inputs for connection to a water sensors or dry-contact sensors, configure them just as you would any other Digital Input as described in the manual for the SYSTEM.

When configuring the use of Remote Output Relays, configure them also as described for Output Relays in the manual for the SYSTEM.

To view the status of a tachometer connected to Digital In #1, Click on the Sensor description or click on "View"



The status page for the sensor will open, displaying the default value of the sensor with a 0-255Hz range of sensing operation.



To configure the sensor for specific use, click on "Configure" to open a page with variable values (see image on next page).

Most of the sensor settings are the same as any other sensor configuration (detailed in the SYSTEM manual) but there are some differences:

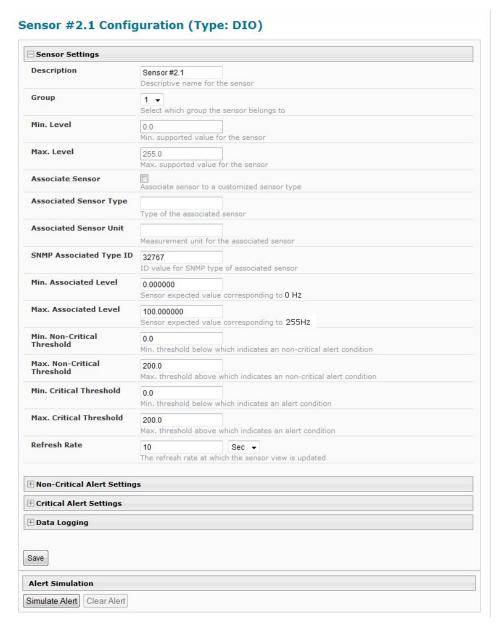
Sensor Settings	Description		
Associate Sensor	Select if the Type "DIO" should be replaced by the sensor type to be entered in the next box.		
Associated Sensor Type	Enter the "Type" of sensor that should be displayed on the summary page and in all alert communications received regarding this sensor		
Associated Sensor Unit	Enter between 1 and 3 alphabetical characters. (Ex. MPH for Miles Per Hour) These characters will be used by the ENVIROMUX to represent the unit of measure reported by the attached sensor. Leaving it empty will result in an empty string in the reported data. For example, a value will be reported on the status page, but no unit of measure will be displayed.		
SNMP Associated Type ID	Enter ID value from MIB file if SNMP traps will be used for alert notifications for this sensor (for more on this, see "SNMP Custom Type ID" on next page)		
Min. Associated Level	The minimum range of the units to be associated with the cycle count measured from the attached sensor.		
	(Ex. the ENVIROMUX-WSS associates one rotation within 1 second to be a wind speed of 2.5MPH. With an maximum operating range of 255Hz (or cycles), the maximum wind speed measurement will be 637.5MPH (255Hz X 2.5MPH).)		
Max. Associated Level	The maximum range of the units to be associated with the current reading measured from the attached sensor.		

SNMP Custom Type ID: Use this field if SNMP traps will be used for alert notifications. The Type ID corresponds with a value defined in the MIB file under "extSensorType" (default value is 32567 for type "Custom"). Place the desired number in this box that represents the type of sensor to be reported in the MIB browser or SNMP trap.

To define a new type of sensor;

- 1. open the MIB file,
- 2. locate the section titled "extSensorType",
- 3. assign a description and a number not already in use (in the "SYNTAX" field) to associate with it,
- 4. enter the number for the newly defined extSensorType in the SNMP Custom Type ID box.

If the Type ID is left blank, the value "0" will be assigned, which will be reported in the browser and SNMP trap as type "undefined".



Default configuration page for tachometer

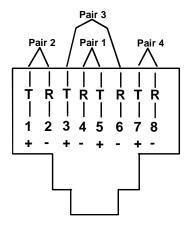
Sensor Settings				
Description	Sensor #1.1 Descriptive name	for the sensor		
Group	1 -	p the sensor belongs to		
1in. Level	0.0 Min. supported va			
1ax. Level	255.0	alue for the sensor	Г	Check this box if you enter data in the
Associate Sensor	▼ ◆	o a customized sensor typ	r	next 5 boxes
Associated Sensor Type	Wind Speed Type of the associ	ated sensor	<u></u>	
Associated Sensor Unit	MPH	for the associated sensor	,	
SNMP Associated Type ID	32767 ID value for SNMF	type of associated senso	or	
in. Associated Level	0.000000	value corresponding to 0 H		
Max. Associated Level	637.500000	value corresponding to 25		255Hz (cycles) x 2.5MPH per rotation
1in. Non-Critical Threshold	0.0	ow which indicates an non		in 1 second (cycle)
Max. Non-Critical Threshold	200.0	ove which indicates an no		
In. Critical Threshold	0.0	ow which indicates an aler		
Max. Critical Threshold	200.0	ove which indicates an ale		
Refresh Rate	10	Sec ▼ t which the sensor view is		
Non-Critical Alert Setting	s			
Critical Alert Settings				
Data Logging				
ave				

Configuration of tachometer as a wind speed sensor (ENVIROMUX-WSS)

CAT5 Cable

The CAT5 connection cable between the SYSTEM and the ENVIROMUX-DI16DO(R)16 is terminated with RJ45 connectors and must be wired according to the EIA/TIA 568 B industry standard. Wiring is as per the table and drawing below.

Pin	Wire Color	Pair
1	White/Orange	2
2	Orange	2
3	White/Green	3
4	Blue	1
5	White/Blue	1
6	Green	3
7	White/Brown	4
8	Brown	4



(View Looking into RJ45 Socket)

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