

MODULUS

DI-24 Discrete Input Modules

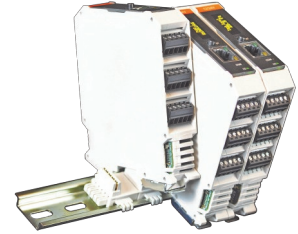
Modulus DI-24 Discrete Input modules extend the I/O capacity of Modulus SCADA controllers, as well as the many 3rd party devices that support industry standard communications protocols such as Modbus, DF1, and Ethernet IP.

DI-24 modules are available as 12/24V or 120/240V Discrete Input models. Both AC and DC signals are supported.

Modulus DI-24 Discrete Input modules have built-in web pages for configuration, programming, monitoring and manuals. No application software is needed; just a web browser. Custom user documentation can also be loaded into the module, so that drawings, datasheets, etc. are always available for site support and maintenance.



8x-1002 (12/24V)
8x-1102 (120/240V)



Modulus DI-24 Discrete Input Module

- 24 DISCRETE INPUTS (OPTICALLY ISOLATED)
- 1 ETHERNET PORT
- 1 SERIAL PORT

STANDALONE OPERATION

Modulus DI-24 Discrete Input modules can serve as standalone devices with SCADA communications, local and web human machine interfaces (HMIs), trending and data logging, alarming, reporting, and programmable logic control.

COMMUNICATIONS

DI-24 modules have an Ethernet port and a serial port to communicate directly with Modbus devices, as well as Allen Bradley PLCs. Ethernet to Serial bridging is also supported. The module can also serve as a communications concentrator or master controller.

GRAPHICAL, MOBILE, AND LOCAL HMIs

Configurable graphical web and mobile device interfaces are built into DI-24 modules. The front panel display can also be customized to show live process values and states, and make setting changes.

HISTORICAL TRENDING AND EVENT LOGGING

DI-24 modules have an internal solid state flash disk, as well as a micro SD memory card slot to record over 100 years of data! You can retrieve and display historical data with built-in web tools and extract trend and event data as spreadsheet files.

REPORTING

Reports can be created in minutes showing live values, production totals, trend and event data, alarm summaries, etc. Customize reports with your own logos and graphics. Call up reports on demand, or have them automatically transferred to your computer.

ALARMING

A DI-24 module can manage alarm conditions on any of its local inputs, as well as over 500 conditions monitored by communications with other devices. Alarms conditions can be displayed locally and annunciated in tandem with other devices such as a Modulus Cellular Communications module (for text message and e-mail alerts). The module maintains a journal spreadsheet file of when alarms occurred, when they were acknowledged, by whom, and when the alarm conditions cleared.

PROGRAMMABLE LOGIC

Each DI-24 module supports programmable logic written in any mix of ladder logic, function block and text languages. Programmable logic can be used for anything that can't be done with the built-in functions of the module.

PID AND PUMP CONTROL

DI-24 modules support four Proportional, Integral and Derivative (PID) loops and have a built-in triplex Pump Controller (float or level control with alternation). Although the DI-24 module has no outputs of its own, it can perform control operations via communications with other Modulus modules or external output devices.

REDUNDANCY

DI-24 modules support redundancy for enhanced reliability. If a module goes off-line, a designated backup can take over automatically.

Modulus DI-24 Discrete Input Module Specifications

FIELD I/O

Digital Inputs:	24	Optically Isolated, bipolar (AC/DC, not polarity sensitive)
Input Range:	[8x-1002]	0 to 30V (OFF < 6V, ON>9V), 60V absolute maximum
	[81-1102]	0 to 240V (OFF < 60V, ON>90V), 300V absolute maximum
	[82-1102]	0 to 120V (OFF < 60V, ON>90V), 160V absolute maximum
Input Current:	[8x-1002]	1.2mA @ 12V, 3mA @ 24V
	[8x-1102]	1.2mA @ 120V, 3mA @ 240V
Filtering		Inputs 1 through 8: individually selectable—5Hz, 10Hz, 20Hz, 50Hz, 100Hz, 500Hz, 1KHz, 2KHz+
		Inputs 9 through 24: individually selectable—20Hz, 100Hz

COMMUNICATIONS

Ethernet:	1	10/100mb/s (10/100 Base-T)
SCADA Protocols		Modbus TCP & UDP (master/slave), Ethernet IP (master/slave PLC5 & SLC5/05 emulation), Ethernet to Serial bridging
Internet Protocols		HTTP (server), FTP (server & client), ICMP (ping; server and client), NTP (client), DHCP (server & client), DNS, DDNS
Serial:	1	RS-485 (115K, 38.4K, 19.2K, 9600, 4800, 2400, 1200 baud). This port is available if not used for bus communications with other modules.
Protocols		Modbus RTU (master/slave), DF1 (slave)

HMIs

Local:	128x32 graphical, wide temperature range yellow OLED and single pushbutton
Graphical:	Web based, graphic library included. Compatible with most browsers, including Internet Explorer, Firefox, Chrome, Safari, Android
Mobile:	Web based, text only, up to 50 registers. Compatible with most browsers, including Internet Explorer, Firefox, Chrome, Safari, Android

PROGRAMMING

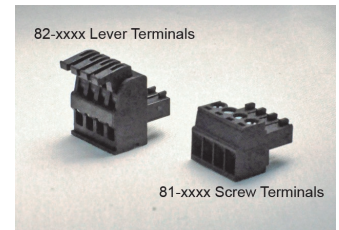
Languages:	Ladder Logic, Function Block, Text—built-in web based graphical and text editor and debugger
Capacity:	64KB logic, 2MB source code

STORAGE

Registers:	504 Numeric registers, 504 Boolean registers
Internal Flash disk:	32MB
Removable disk:	Micro SD Card (up to 256GB, supplied by customer)

GENERAL

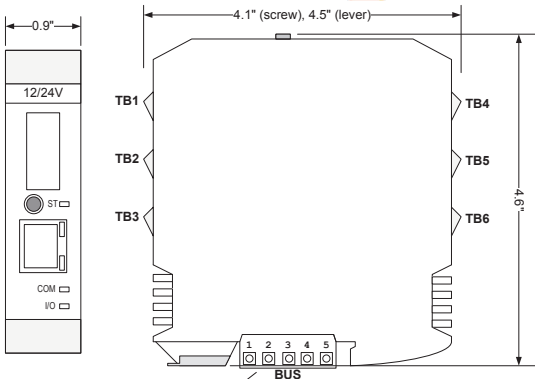
Input Power:	10Vdc to 30Vdc
Power Consumption	
Not using Ethernet	18mA @ 12Vdc / 13mA @ 24Vdc (Ethernet power saver enabled)
Using Ethernet	78mA @ 12Vdc / 43mA @ 24Vdc
Field Wiring Termination:	[81-1x02] screw terminal blocks [82-1x02] lever terminal blocks, 3.5mm, 22 to 14GA wires
Temperature:	-40°C to 70°C (operating), -40°C to 85°C (storage)
Humidity:	<95% RH (non-condensing)
Enclosure:	Polyamide, light gray (RAL 7035)
Mounting:	35mm DIN rail with bus connector block



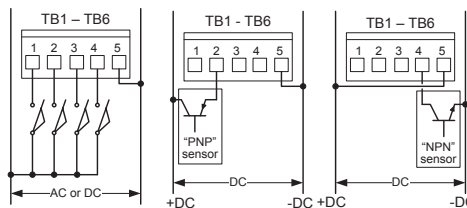
Specifications subject to change without notice. Consult factory to ensure that you are working with current information.

DIMENSIONS and WIRING

Refer to the installation manual for additional installation details and precautions.



OPTICALLY ISOLATED DISCRETE INPUTS



The discrete inputs on each terminal block share a common with only the inputs on that same block and are isolated from all other I/O points. All inputs are bipolar (not polarity sensitive).

Terminal	Function
1	-485
2	+485
3	RESET#
4	GND
5	+V

Terminal Block	Inputs
TB1	DI1 - DI4
TB2	DI5 - DI8
TB3	DI9 - DI12
TB4	DI13 - DI16
TB5	DI17 - DI20
TB6	DI21 - DI24