Grid Solutions

MDS I/O SOLUTIONS - NETio MIGRATION

Expanding the Possibilities for Data Acquisition

MDS I/O Solutions offers field configurable I/O options with seamless interfacing to instrumentation, sensors, and I/O signals at any remote location. Simplicity and flexibility were at the forefront of this solution. Designed to integrate with the MDS Orbit platform's secure, reliable wireless communications across LTE, Licensed, Unlicensed, or Wi-Fi.

MDS I/O Solutions presents a clear migration for legacy MDS NETio installations. MDS I/O Solutions takes NETio Expansion Modules Types 1-7 and converges them into one solution. These signals can be sent over wireless or fiber communications to the IOX-N module at a local host, PLC or DCS controller. On the edge, the I/O module (IOX-R) offers Modbus TCP to be used for your digital and analog I/O connections.

The MDS I/O Solutions portfolio includes ready to install options to meet a wide variety of I/O requirements. Easily install the solution into an existing rack, enclosure or indoor location. In the case of hard to reach places, an enclosure mounted solution may be installed into an existing enclosure or into a new customized MDS-designed enclosure.

NETio Migration 1:1 Mapping

NETio REMOTE	NETio TYPE 1	NETio TYPE 2	NETio TYPE 3	NETio TYPE 4	NETio TYPE 6	NETio TYPE 7
Analog Inputs	1	N/A	N/A	2	2	2
Analog Ouputs	1	N/A	N/A	N/A	2	N/A
Digital Inputs	2	6	N/A	4	2	1
Digital Outputs	2	N/A	6	N/A	2	3
MDS IOX Remote	IOX-R					
MDS IOX Head End*	IOX-N / IOX-N-S					

Available as a single device (IOX-N-S) or in preconfigured, ready to install solution (IOX-N).

MIGRATE

Upgrade your aging NETio systems with MDS IOX Family of Products.

GE VERNOVA

Upgradable Simplicity

- Solutions created for 1:1 replacement of NETio products.
- IOX Module programmed for needs
- Web interface for easy I/O configuration
- Push-In Technology for quick assembly
- Force I/O for digital testing
- Force analog inputs / outputs testing
- Communication Status Screen
- Point-to-point I/O Mirroring

Flexible Mounting

- DIN rail
- Rack mount
- Enclosure mountable (sold separately)
  - Fiberglass Enclosure either 20×16 or 24×20
  - 12, 24, 48, 125 VDC and AC with and without battery backup available

Diverse Radio Configurations

- 4G LTE and private cellular options for global coverage with GPS and Dual SIM
- Licensed technology with QAM, bi-directional adaptive modulation, FEC, and advanced compression maximizes efficiency on narrowband spectrum
- High-performance Wi-Fi (MIMO a/b/g/n)
- 900 MHz FHSS enables low latency and high-throughput unlicensed networks with multipoint and store-and-forward
- FirstNet Ready™ on select Cellular Modems

Technical Specifications

IOX-N AND IOX-R GENERAL MODULE SPECIFICATIONS

Dimensions*	152mm (H) x 133mm (D) x 40mm (W) 5.98" x 5.25" x 1.575"
Temperature	Storage: -40°C to +85°C / -40°F to 176°F Operation: -40°C to +70°C / -40°F to +158°F
Humidity	0-95%, non-condensing
Input Voltage	8-30 VDC (Using Analog Outputs: 9-30VDC)
Ethernet	Connector: RJ-45 Connector Speed: 10/100 MBits, Full Duplex with Auto-Negotiation (4 wires)
USB	Model: USB 2.0 Connector: USB type A female (socket) Speed: 480 MBits/sec
RS-232	2 Wire – TxD, RxD
RS-485	2 Wires – A+, B- 120Ω termination between A-B at both ends
Approvals/ Standards	CE, FCC, CSA for USA + Canada, C-Tick, A-Tick, RoHS, Hazardous Area Class 1, Division 2, optional UL508
Warranty	5 years
MicroSD	Up to 32 GB (IOX-N only)

IOX-N AND IOX-R – DIGITAL INPUTS

Quantity IOX-R	Up to 16 (Shares with Digital Outputs)
Quantity IOX-N	Up to 6
External Voltage to V+	DI only: 8 – 30 VDC DI and DO: 11 – 30 VDC
Voltage at Input	Typical: 12 VDC Max for a LOW Level: 2.0 VDC Min for a HIGH Level: 7.4 VDC Maximum: 30 VDC
Resistance at Input	>39kΩ
Fasr DI	Up to 3 Fast Digital Inputs
Counters	Up to 3 Counter Inputs (DI0, DI1, DI2) Maximum Frequency - 10 kHz with duty cycle 45-55%
Isolation	None

IOX-N AND IOX-R – DIGITAL OUTPUTS

Quantity IOX-R	Up to 16 (Shares with Digital Inputs)
Quantity IOX-N	Up to 6
External Voltage to V+	11 – 30 VDC
Output Type	Current Sourcing
Voltage Per Output	Maximum: 30 VDC
Current Per Output	Maximum: 625 mA up to 60°C (200 mA between 60°C-70°C)
Short Circuit Current	Typical 1.4 A, Maximum 1.9 A
Protection	Overload – Max: 35 VDC
Isolation	None

IOX-N AND IOX-R – ANALOG INPUTS

Quantity IOX-R	Up to 8
Quantity IOX-N	Up to 2
Options	Software configurable 4-20 mA, 1-5 VDC or 0-10 VDC
4-20 mA	Resolution: 16 bits Mode: Unipolar Model: Passive Input Precision: 0.1% @ 25°C, 0.2% over temperature range Input Impedance: 249 Ω (typical)
1-5 VDC IOX-R ONLY	Resolution: 16 bits Mode: Unipolar Model: Passive Input Precision: 0.1% @ 25°C, 0.2% over temperature range Input Impedance: 60 kΩ (typical)
0-10 VDC	Resolution: 16 bits Mode: Unipolar Model: Passive Input Precision: 0.1% @ 25°C, 0.2% over temperature range Input Impedance: 60 kΩ (typical)
Isolation	None

IOX-N AND IOX-R – ANALOG OUTPUTS

Quantity (both)	Up to 2
Option	4 – 20 mA
Resolution	16 bits
Mode	Unipolar
Model	Active output
Precision	0.1% @ 25°C, 0.2% over temperature range
Voltage at Output	Vin (or Vbat) – 5 V
Current at Output	22 mA
Output Impedance Limit	$\leq \dfrac{V_{in} - 5V}{22mA}$
Isolation	No Isolation

IOX-R ENCLOSURE OPTIONS

BOX-RIT-V01	IO Solutions Enclosure, 12 VDC
BOX-RIT-V02	IO Solutions Enclosure, 24 VDC
BOX-RIT-V03	IO Solutions Enclosure, 48 VDC
BOX-RIT-V04	IO Solutions Enclosure, 125 VDC
BOX-RIT-V05	IO Solutions Enclosure, 115VAC
BOX-RIT-V06	IO Solutions Enclosure, 115VAC, 5 AH BATT
BOX-RIT-V07	IO Solutions Enclosure, 115VAC, 12 AH BATT
BOX-RIT-V08	IO Solutions Enclosure, 115VAC, 26 AH BATT, 24×20 ENC

IOX-R QUICK SHIP ENCLOSURE ASSEMBLIES	
IOX-QS-V01	IOx Enclosure Assy, 12 VDC, 26 IO, Modbus
IOX-QS-V02	IOx Enclosure Assy, 24 VDC, 26 IO, Modbus
IOX-QS-V03	IOx Enclosure Assy, 48 VDC, 26 IO, Modbus
IOX-QS-V04	IOx Enclosure Assy, 125 VDC, 26 IO, Modbus
IOX-QS-V05	IOx Enclosure Assy, 115 VAC, 26 IO, Modbus
IOX-QS-V06	IOx Enclosure Assy, 115 VAC, 5 AH BATT, 26 IO, Modbus
IOX-QS-V07	IOx Enclosure Assy, 115 VAC, 12 AH BATT, 26 IO, Modbus

Quick Ship Enclosures are standardized assemblies of an IOX-R, 26 IO (16 DI/DO, 8 AI, 2 AO) configuration, mounted inside of a Fiberglass 20 × 16 × 8 in enclosure, ready to ship off the shelf in a short lead time.

For more details regarding I/O Mirroring, please see MDS I/O Solutions – I/O Mirroring Brochure.

* IOX-N is an IOX-N-S device mounted on a small DIN rail plate, populated with terminal blocks for easy installation. The dimensions of this plate assembly would be 178 mm (H) x 17 8mm (D) x 368 mm (W), 7.0" x 7.0" x 14.5"

UL508 Certification available upon request.

For more information, visit
gevernova.com/grid-solutions

GE VERNOVA