i3N100/14004-SEHF
Remote Compact Controller

IMO

Key Features

- Built-in Ethernet, CAN, RS-232 and MicroSD
- 14 Digital Inputs
- 10 Digital Outputs
- Advanced Ladder Logic
- 2x Serial Ports

CE UL CERTIFIED

General Data

Required Power (steady state)	120mA at 24VDC
Required Power (inrush)	25A for 1ms at 24VDC switched
Primary Power Range	10-32VDC
Real Time Clock	Yes
Clock Accuracy	±8 seconds/month at 25°C
Relative Humidity	5 to 95% non-condensing
Operating Temperature	-10°C to +60°C
Storage Temperature	-10°C to +60°C
Altitude	Up to 2000m
Battery	Li-Ion polymer battery charging range 0-50°C
Weight	283.5g / 10oz
Mounting	35mm DIN Rail or Panel Surface
Housing Type	Plastic (UL 50 rated, flame retardant, UV resistant)

Control & Logic

Control Language Support	Advanced Ladder Logic Full IEC 61131-3 Langauages
Logic Size & Scan Rate	128kB, 0.013ms/kB
Online Programming Changes	Supported in Advanced Ladder
PID Support	Up to 6
Digital Inputs (%I)	2048
Digital Outputs (%Q)	2048
Analog Inputs (%AI)	512
Analog Outputs (%AQ)	512
General Purpose 16-bit Registers (%R)	4096 Retentive
General Purpose 1-bit Registers (%T)	2048 Non-Retentive
General Purpose 1-bit Registers (%M)	2048 Retentive

Connectivity

Serial	2 (1x RS-232, 1x 2-wire RS-485)
CAN	1x 125kbps - 1 Mbps
Ethernet	1x 10Mbps / 100Mbps
microSD	1x SD, SDHC, SDXC in FAT32 format
USB	No
Communication Support	WebMI
	Web Portal
	Outgoing Email with Attachments
	TCP/IP and Modbus TCP/IP
	FTP
	Data Logging

Digital DC Inputs

Inputs per Module		14
Commons per Module		1
Addressing		%I1 to %I14
Input Voltage Range		0-30VDC
Absolute Max. Voltage		35VDC Max.
Input Impedance		10kΩ
Input Current	Positive Logic	Negative Logic
Min. "On" Current	0.8mA	-1.6mA
Max. "Off" Current	0.3mA	-2.1mA
Min. "On" Input		8VDC
Max. "Off" Input		3VDC
OFF to ON Response		100μs min.*
ON to OFF Response		100μs min.*
Galvanic Isolation		None
Logic Polarity		Pos. or Neg. Based on Configuration
I/O Indication		LED
High Speed Counter (HSC)		None
Connector Type		5.08mm & 3.5mm Pluggable Cage Clamp

Digital DC Outputs

|	
Outputs per Module	10
Commons per Module	1
Addressing	%Q1 to %Q10
Output Type	Sourcing
Absolute Max. Voltage	30VDC Max.
Output Protection	Short Circuit & Overvoltage
Max. Output Current per Point	0.5A
Max. Total Current	2A Total Current
Max. Output Supply	30VDC
Min. Output Supply	10VDC
Max. Voltage Drop at Rated Current	0.25VDC
Min. Load	None
I/O Indication	LED
Galvanic Isolation	None
OFF to ON Response	500ns min.*
ON to OFF Response	500ns min.*
PWM Out	None
Output Characteristics	Current Sourcing (Pos. Logic)

* All values updated 1x per scan

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IMO
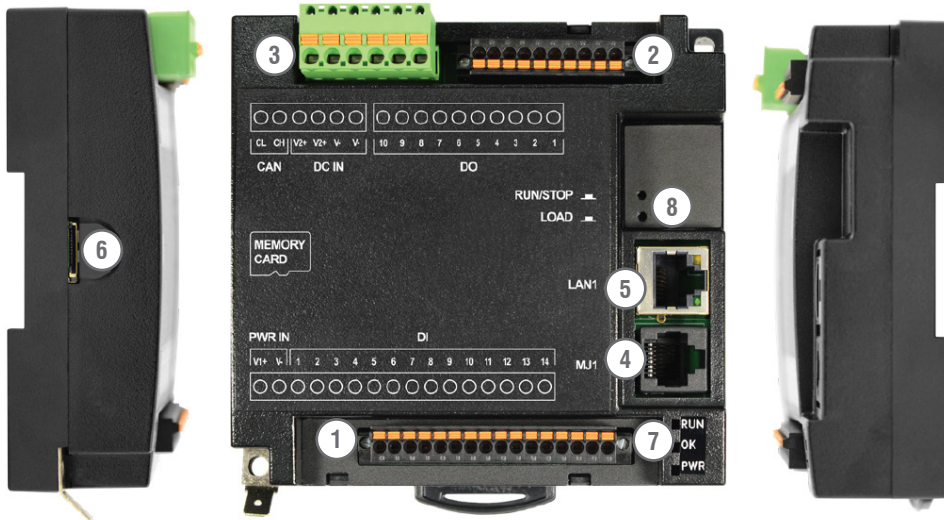
1. Power & Input Connector
2. Output Connector
3. CAN Port & External Power
4. Serial Port
5. Ethernet Port
6. microSD Slot
7. Status LEDs
8. Buttons

Digital Input Wiring

Positive Logic In   **Negative Logic In**

Power & Input Connector
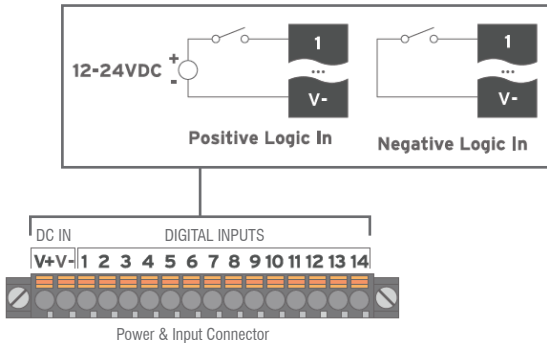
**POSITIVE LOGIC vs. NEGATIVE LOGIC WIRING:**

The i3N1410 can be wired for Positive Logic inputs or Negative Logic inputs. Settings for the Digital Inputs must match the wiring used in order for the correct input states to be registered. The state of the input is reflected in registers %I1 - %I8.

Digital Output Wiring
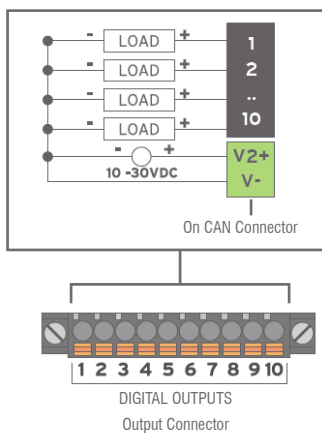
Digital outputs are Positive Logic. If an output is turned on, the voltage supplied at the Vext terminal is applied to that output. When used as normal inputs, the state of the output may be controlled using the registers %Q1, %Q2, %Q3 and %Q4.

DIGITAL OUTPUTS

Output Connector

CAN Communications
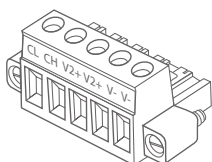
The CAN port is provided via three connections on the CAN & Ethernet Power connector: CAN_LOW (CL), CAN_HIGH (CH), and V- (C). Additionally, remote expansion I/O, such as SmartRail, SmartBlock, and SmartStix may be implemented using the CsCAN protocol. If CsCAN expansion I/O is to be used, a 24VDC power source will be required on the CsCAN bus in order to power the expansion I/O modules. This connector also houses the connections for Digital Output source power.

Serial Communications
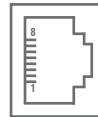
MJ1/2 Serial Ports

MJ1: RS-232 with Full Handshaking
MJ2: RS-485 Half-Duplex

Pin	MJ1 Pins Signal	Direction	MJ2 Pins Signal	Direction
8	TXD	OUT	-	-
7	RXD	IN	-	-
6	0 V	Ground	0 V	Ground
5	+5V@60mA	OUT	+5V@60mA	OUT
4	RTS	OUT	-	-
3	CTS	IN	-	-
2	-	-	RX- / TX-	IN / OUT
1	-	-	RX+ / TX+	IN / OUT

Ethernet Communications

Link Indicator

Activity Indicator

Modular jack (8 posn RJ45)

10/100 Ethernet port with automatic MDI-X (crossover detection) is provided via the single 8-position modular jack labelled "LAN". Several features are available for use over Ethernet, such as WebMI, Modbus TCP/IP, Ethernet/IP, SMTP (E-mail), expansion I/O to SmartRail and more.

Ethernet configuration is done via the i3 Configurator Hardware Configuration.

For more information on Ethernet, available features and protocols, refer to the i3Ni User Manual.

Status LEDs

Three LEDs provide general status of the i3N:

LED Type	When OFF	When ON	When FLASHING (1Hz)
PWR	No power applied	10-30VDC applied	N/A
OK	Self-test fail	Self-test pass	I/O forcing enabled
RUN	Stop mode	Run mode	Do I/O mode

LED DIAGNOSTIC FUNCTIONALITY
When the OK and RUN are flashing alternately, a download is in progress. When the flashing stops, the download is complete and the unit will reboot (allow 30 seconds). When flashing together, the download has failed, and the number of flashes indicates the error. There will be a 2 second gap and the pattern will be repeated. The number of flashes and the associated error are as follows:

2 Flashes - The MAC ID is empty
3 Flashes - The internal MAC file is corrupt
4 Flashes - The MAC ID TXT file is invalid
5 Flashes - The MAC ID file is not found or the microSD card is empty or missing system files

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Built-In I/O

Registers	Description
%I1 to %I8	Digital Inputs
%I9 to %I15	Reserved
%I16	%Q Fault Status
%Q1 to %Q4	Digital Outputs

Dimensions

113.7mm (4.48")
111.0mm (4.37")
118.6mm (4.67")
116.0mm (4.57")

Connector

72.0mm (2.81")
54.0mm (2.13")
59.25mm (2.33")