DATASHEET

NORVI CONTROLLERS

NORVI X-DI8 | Digital Input Expansion

The **NORVI X-DI8 is** an **8-channel digital input expansion module** for the **NORVI X Modular Controller**. It provides **protected 24 V DC digital inputs** for industrial switches, sensors, and logic-level signals.

At its core, the module integrates a **PCA9538 I²C port expander**, allowing the NORVI X CPU to read input states efficiently via the internal expansion bus. With **four selectable I²C addresses**, up to **four DI8 modules** can be connected on the same bus, providing a total of **32 digital inputs** per controller.

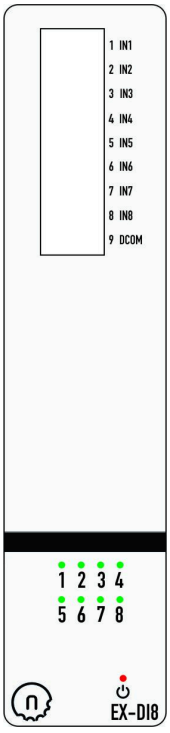
Designed for modular scalability and DIN-rail installation, the NORVI X-DI8 ensures reliable, noise-immune, and space-efficient input expansion for industrial and automation systems.

Product Features

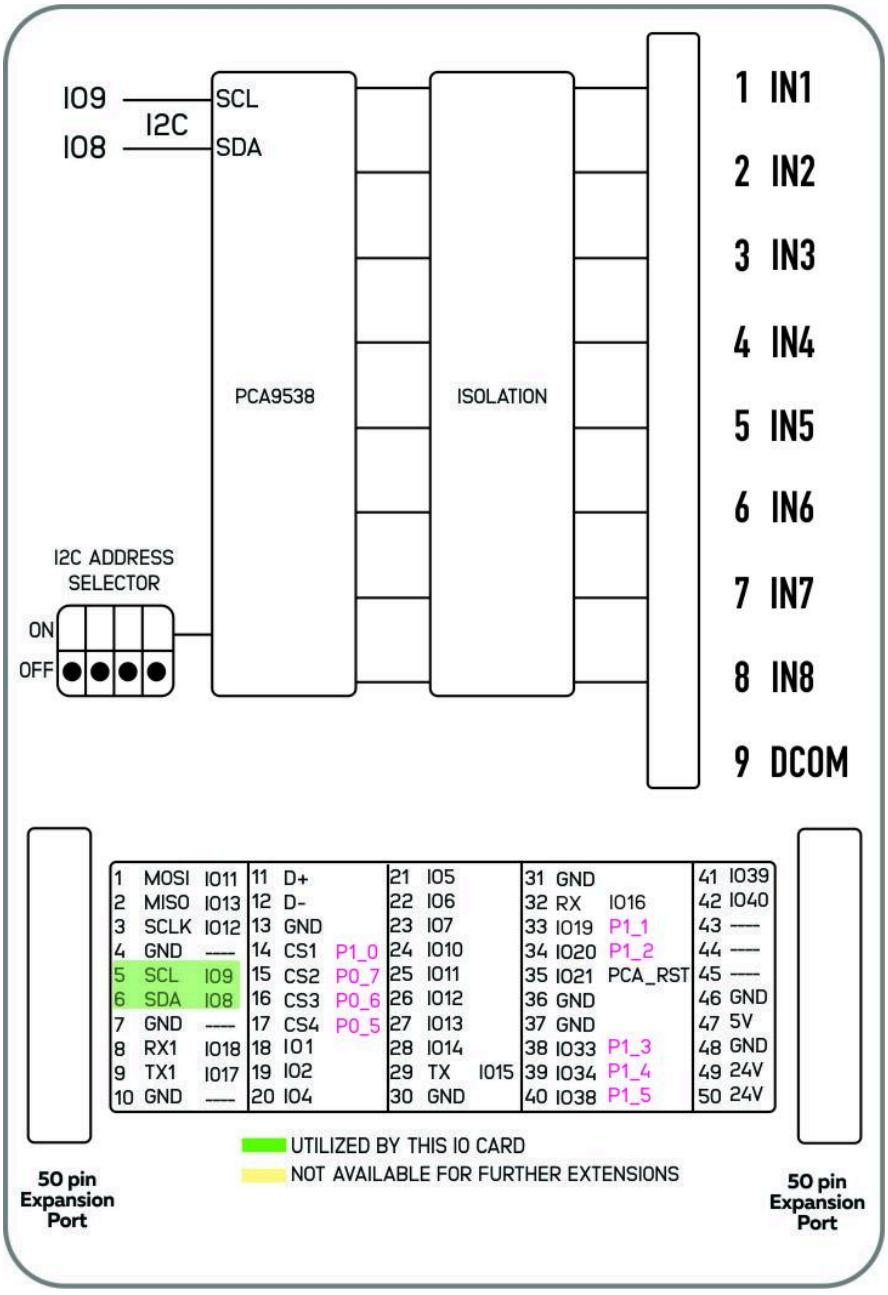
- 8 × Optically isolated 24 V DC digital inputs
- Bi-directional optocouplers — support both sourcing (PNP) and sinking (NPN) inputs
- One common terminal for all eight inputs
- PCA9538 I²C port expander with 4 selectable addresses
- Up to 4 DI8 modules per controller (32 inputs max)
- Built-in over-voltage and reverse-polarity protection
- Status LED indicators for each input channel
- Plug-and-play connection to NORVI X CPU module via expansion bus
- DIN-rail mountable industrial enclosure

Applications

- Machine and process signal monitoring
- PLC and control system I/O expansion
- Sensor interfacing in industrial automation
- Low-frequency pulse and state detection



Product Block Diagram



Main

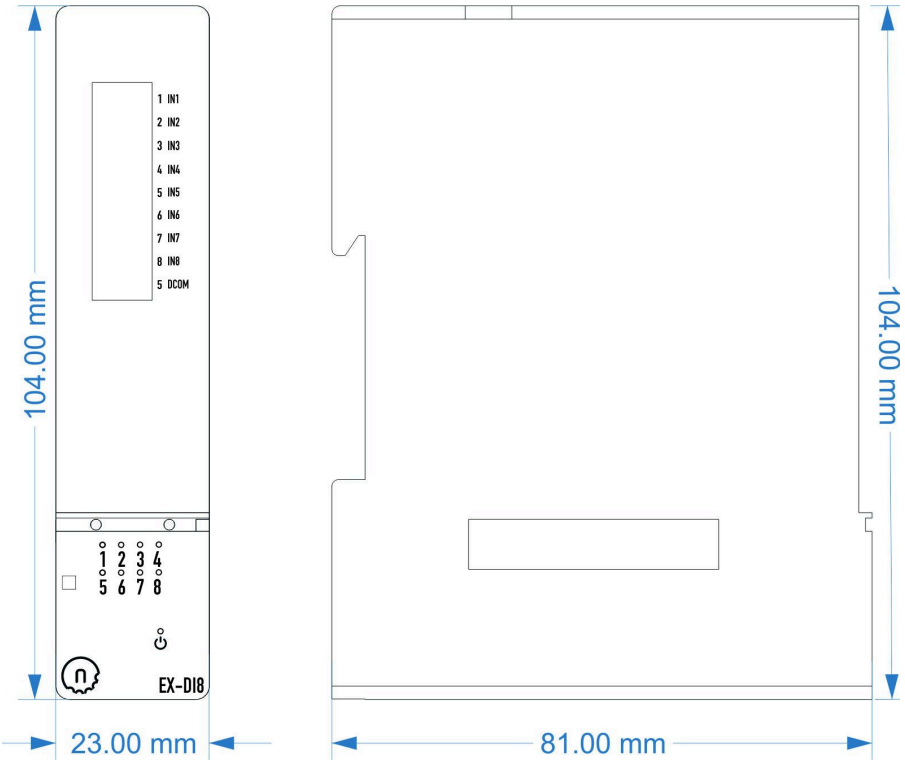
Range of Product	NORVI X
Product type	Expansion Module for NORVI X Series
Certifications	EN 61131-2:2007 EN 61010-1:2010+A1:2019 EN IEC 61010-2-201:2018 2014/30/EU- Electromagnetic Compatibility (EMC) Annex III, Part B, Module C
Rated supply voltage	24V DC

Complementary

Product Part Numbers	NORVI X-DI8

Mechanical Properties

Enclosure	NORVI X-N1
Mounting / Installation Method	DIN RAIL
Terminal Type	Push-in terminal
Terminal Arrangement	Front
Length	81.00 mm
Height	104.00 mm
Width	23.00 mm



Environment

IP degree of protection	IP20
Operating altitude	0 - 2000 meters
Operating Temperature	- –10 … +85° C (14...185 °F)
Storage altitude	0 - 3000 meters
Shock resistance	15 gn for 11ms
Resistance to electrostatic discharge	4kV on contact 8kV on air
Resistance to electromagnetic fields	10 V/m (80 MHz ..... 1GHz) 3 V/m (1.4 MHz ..... 2 GHz) 1 V/m (2 MHz ..... 3 GHz)

Electrical Characteristics

Grid Powered Devices

Rated Supply Voltage (V)	24V DC
Current Consumption (mA)	80mA @ 24VDC

I/O Specifications

Parameter	Specification
Number of Inputs	8 Digital Inputs
Input Type	Isolated 24 V DC
Isolation Voltage	> 1500 Vrms (optical isolation from CPU)
Input Voltage Range	0 – 30 V DC
Logic Low (OFF)	< 5 V DC
Logic High (ON)	> 15 V DC
Input Impedance	Approx. 3.3 kΩ
Input Current	~ 7 mA @ 24 V DC
Switching Frequency	Up to 1 kHz
Protection	Over-voltage, Reverse Polarity, ESD Protected
Isolation Type	Opto-coupler isolation per channel
Interface to CPU	NORVI X Expansion Port (Direct GPIO)
Status Indicators	8 × LED Input Indicators
Power Supply	24 V DC (shared with CPU via expansion port)
Communication Bus	Internal Expansion Bus
Connector Type	Push-in Terminal Block

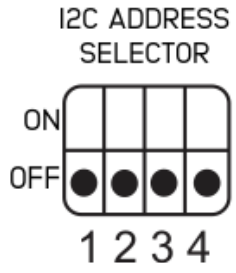
Terminal Configuration

Terminal	Description
IN1	Digital Input 1
IN2	Digital Input 2
IN3	Digital Input 3
IN4	Digital Input 4
IN5	Digital Input 5
IN6	Digital Input 6
IN7	Digital Input 7
IN8	Digital Input 8
DCOM	Isolated Digital Ground

GPIO Utilization

Utilization	Connection to CPU
SCL	IO9
SDA	IO8

I2C Address Selection



Address Selection				
DIP 1	DIP 2	DIP 3	DIP 4	Address
OFF	OFF	×	×	0x73
ON	OFF	×	×	0x72
OFF	ON	×	×	0x71
ON	ON	×	×	0x70

Expansion Port

Utilized GPIO Connections are highlighted in Green. They cannot be used for any other purpose with this module connected.

PIN INDEX	Purpose	GPIO	SOURCE
1	MOSI	IO11	ESP32-S3
2	MISO	IO13	
3	SCLK	IO12	
4	GND	----	
5	SCL	IO9	
6	SDA	IO8	
7	GND	----	
8	RX1	IO18	
9	TX1	IO17	
10	GND	----	
11	D+	----	
12	D-	----	
13	GND	----	
14	CS1	P1_0	PCA9539 I2C Address 0x75
15	CS2	P0_7	
16	CS3	P0_6	
17	CS4	P0_5	
18	IO1	IO1	ESP32-S3
19	IO2	IO2	
20	IO4	IO4	
21	IO5	IO5	
22	IO6	IO6	
23	IO7	IO7	
24	IO10	IO10	
25	IO11	IO35	
26	IO12	IO36	
27	IO13	IO37	
28	IO14	IO14	
29	RS485_TX	IO15	
30	GND	----	
31	GND	----	

32	RS485_RX	IO16	
33	P1_1	P1_1	PCA9539 I2C Address 0x75
34	P1_2	P1_2	
35	IO21	IO21	PCA9538 Reset
36	GND	----	
37	GND	----	
38	P1_3	P1_3	PCA9539 I2C Address 0x75
39	P1_4	P1_4	
40	P1_5	P1_5	
41	IO39	IO39	ESP32-S3
42	IO40	IO40	
43	NC	----	
44	NC	----	
45	NC	----	
46	GND	----	
47	5V	5V	
48	GND	GND	
49	24V	24V	
50	24V	24V	

REACH US

Technical Support
E-mail : support@norvi.io

Sales Inquiries
E-mail support@norvi.io
Web www.norvi.lk/support

Order Online www.norvi.io