

DATASHEET

NORVI CONTROLLERS

NORVI X-Q16 | 16 x Transistor Outputs

The **NORVI X-Q16** is an 16 x Transistor Outputs Expansion module designed for the NORVI X modular controller platform.

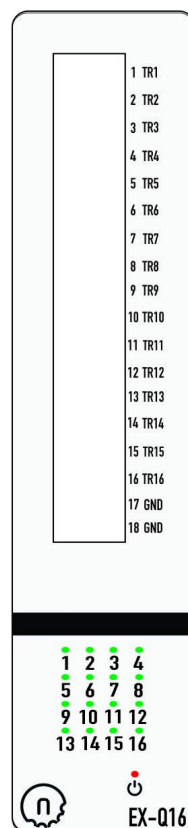
It provides **sixteen high-side switching channels** suitable for driving industrial actuators, relays, and solenoids. The outputs are optically isolated for circuit protection and utilize high-side MOSFET switches, enabling reliable control of DC loads with integrated fuse protection for industrial safety.

Product Features

- 16 × Transistor Output channels
- High-side switching (up to 24V DC)
- Full optical isolation for circuit protection
- Enhanced Circuit Protection
- Dual Opto-Isolation
- Integrated fuse and surge protection per channel
- Individual LED status indicators
- Designed for NORVI X modular architecture

Applications

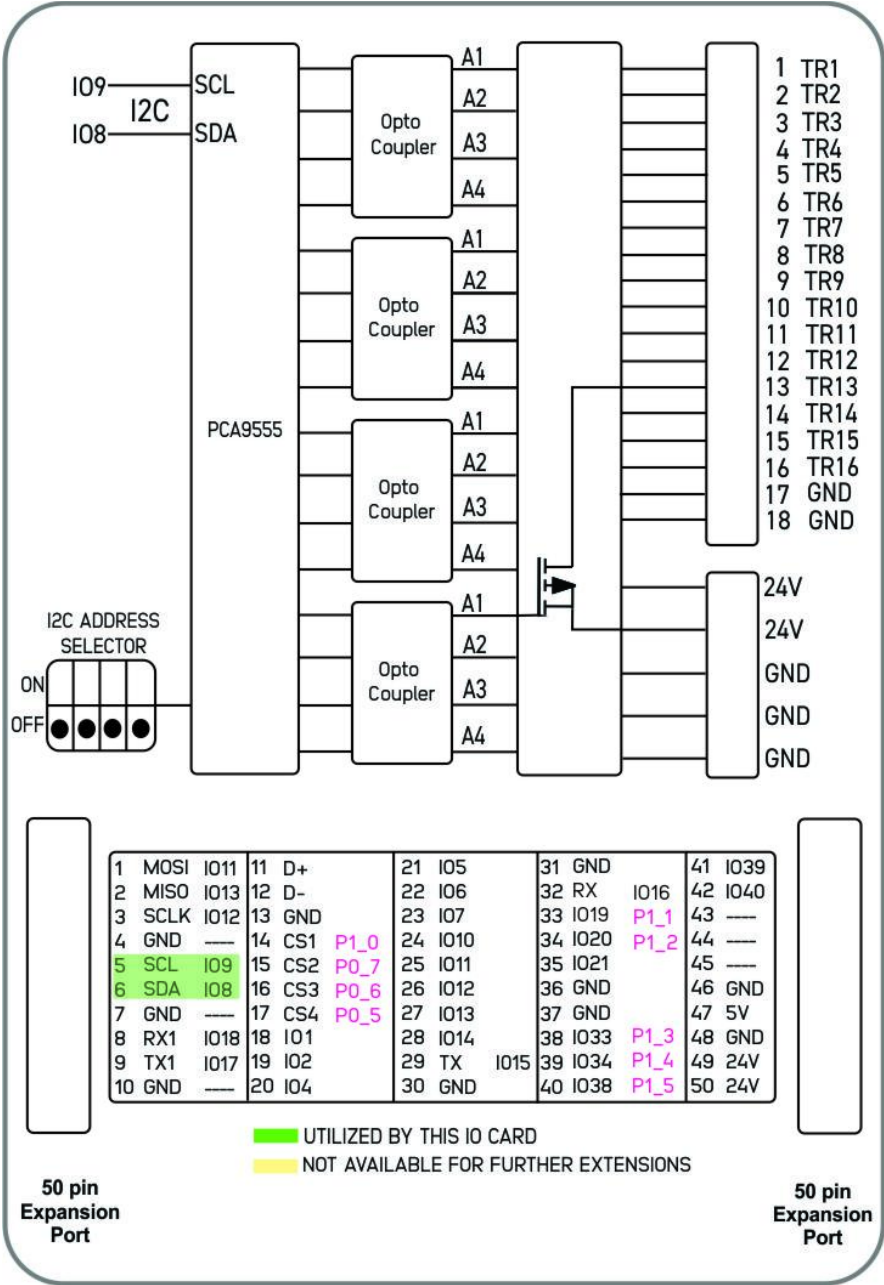
- High-Density Actuator Control
- Complex Signal Management
- Industrial Automation
- High-Density PLC Output Expansion
- Remote Multi-Device Power Management
- Complex Relay and Contactor Logic Switching
- Large LED Matrix/Indicator Arrays



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Product Block Diagram



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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-Q16
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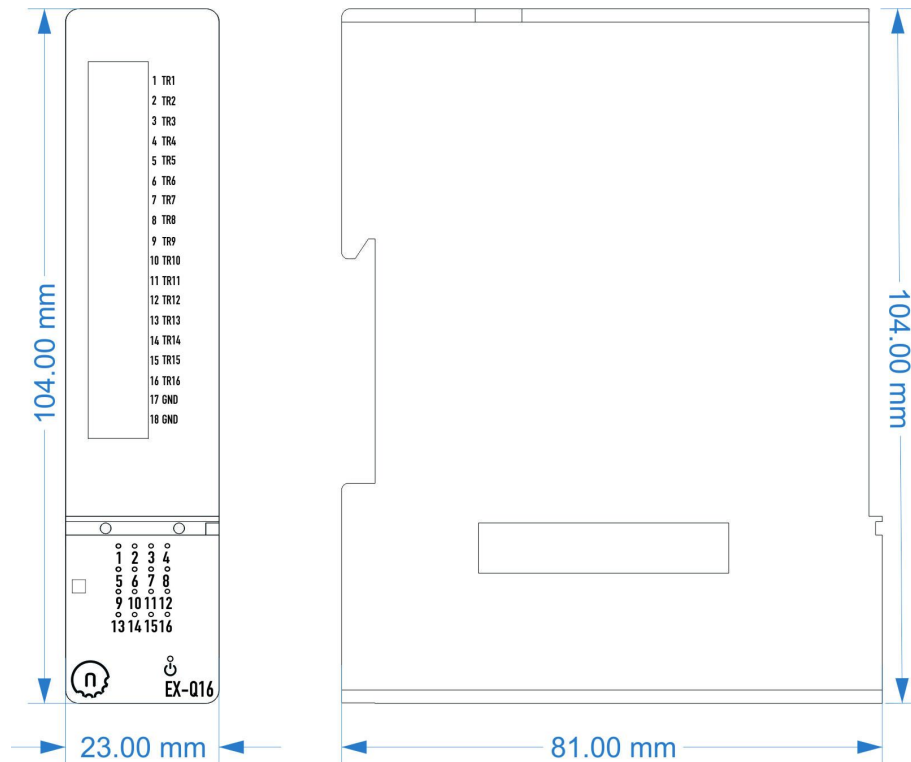
Mechanical Properties

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

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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

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I/O Specifications

Parameter	Specification
Number of Outputs	16 Transistor Output Channels
Output Type	High-Side Switch
Switching Transistor	P-Channel MOSFET
Isolation Type	Optocoupler Isolation
Operating Voltage	24V DC Nominal
Protection (Per Channel)	Per-channel resettable PTC fuse
Switching Frequency	High-Speed
Output Diagnostics	Individual LED indicators
Field Connector	18-Pin Terminal Block

Terminal Configuration

No.	Terminal	Description
1	TR1	Transistor Output 1
2	TR2	Transistor Output 2
3	TR3	Transistor Output 3
4	TR4	Transistor Output 4
5	TR5	Transistor Output 5
6	TR6	Transistor Output 6
7	TR7	Transistor Output 7
8	TR8	Transistor Output 8
9	TR9	Transistor Output 9
10	TR10	Transistor Output 10
11	TR11	Transistor Output 11
12	TR12	Transistor Output 12
13	TR13	Transistor Output 13
14	TR14	Transistor Output 14
15	TR15	Transistor Output 15
16	TR16	Transistor Output 16

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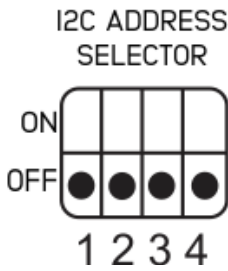
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17	GND	Ground
18	GND	Ground

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	OFF	×	0x27
ON	OFF	OFF	×	0x26
OFF	ON	OFF	×	0x25
ON	ON	OFF	×	0x24
OFF	OFF	ON	×	0x23
ON	OFF	ON	×	0x22
OFF	ON	ON	×	0x21
ON	ON	ON	×	0x20

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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	

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33	P1_1	P1_1	PCA9539 I2C Address 0x75
34	P1_2	P1_2	
35	IO21	IO21	ESP32-S3
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	

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