CATAN DOR6 UI8

Extension module for Catan controllers, 8 universal inputs, 6 relay outputs

Data sheet
111450_en_01

 2024-10-16

1 Description

The CATAN DOR6 UI8 extension module is housed in a compact REG housing with an overall width of just 6 HP. It extends a Catan controller by eight additional universal inputs and six relay outputs for 230 V AC/16 A. The universal inputs are suitable for temperature sensors, 0 V ... 10 V interfaces or as meters, among other things. The bistable relays have contacts as N/C contacts and N/O contacts. They are designed for very high inrush currents.

Features

- USB-C port for Catan Control Panel
- 2 interfaces for extension bus (Single Pair Ethernet)
- 8 configurable universal inputs (UI)
- 6 power-saving bistable relays with changeover contacts (N/O contact / N/C contact), max. 230 V, 16 A
- Acoustic signaling

Observe these notes

NOTE: Undefined system state
When the module is delivered, the position of the relay contacts is not defined. To prevent undesired system states, perform a complete switching cycle (on/off) before connecting the load.

Observe the documentation for the Catan controller used.

Make sure you always use the latest documentation.
It can be downloaded at: phoenixcontact.com/product/1371364

2 Table of contents

3 Ordering data

Description	Type	Item no.	Pcs./Pkt.
Extension module for Catan controller. 8 universal inputs and 6 digital outputs with bistable relays for 230 V AC/16 A. Local override operation via Catan Control Panel. Connection to the Catan controller via Single Pair Ethernet.	CATAN DOR6 UI8	1371364	1

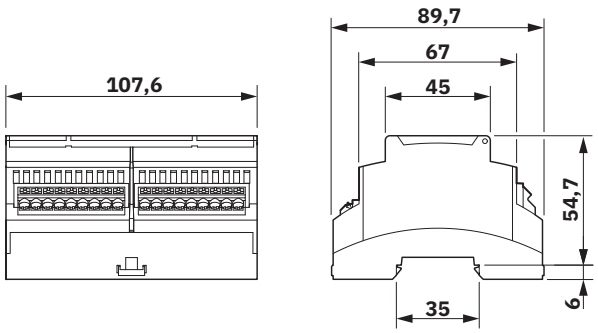
Accessories	Type	Item no.	Pcs./Pkt.
Touch display for local override operation and configuration of Catan controllers and Catan extension modules. Display size 2.4″. Connection via USB-C connector.	CATAN CONTROL PANEL	1371366	1
Mounting set for remote operation of the Catan display	CATAN DISPLAY MOUNT	1478438	1
Extension cable for display for remote operation, length 2 m	NBC-CATAN-UCML/2.0-PVC/UCFL	1665797	1
Extension cable for display for remote operation, length 5 m	NBC-CATAN-UCML/5.0-PVC/UCFL	1665801	1
Insert label, for marking Siemens ET 200SP controllers, Roll, white, unlabeled, can be labeled with: THERMOMARK E.300 (D)/600 (D), THERMOMARK ROLL 2.0, THERMOMARK ROLL, THERMOMARK ROLL X1, THERMOMARK ROLLMASTER 300/600, THERMOMARK X1.2, mounting type: insert, Number of individual labels: 500, text field height: 12.5 mm, text field width: 31 mm (Marking)	EMT (31X12,5)R	0800008	1

Additional ordering data

For information on the controller or the extension modules, please refer to the product-specific documentation.

4 Technical data

Dimensions (nominal sizes in mm)



Dimensions without display connected	
Length	107.6 mm
Width	89.7 mm
Height	60.7 mm
Horizontal pitch	6 Div. (DIN rail housing in accordance with DIN 43871)
Dimensions with display connected	
Length	107.6 mm
Width	89.7 mm
Height	68 mm

General data	
Material	Polycarbonate (Housing)
Flammability rating according to UL 94	V0
Color	Lower housing part: traffic grey A (RAL 7042) Upper housing part: light gray (RAL 7035)
Weight	270 g
Mounting type	DIN rail mounting (on DIN rail in accordance with DIN EN 60715)
Mounting position	horizontal Alternative mounting positions are possible, but can lead to a reduction in thermal performance.

Ambient conditions	
Installation location	indoor use
Ambient temperature (operation)	-5 °C … 50 °C (up to 3000 m above mean sea level)
Ambient temperature (storage/transport)	-40 °C … 85 °C
Permissible humidity (operation)	5 % … 95 % (non-condensing)
Permissible humidity (storage/transport)	5 % … 95 % (non-condensing)
Air pressure (operation)	70 kPa … 106 kPa (up to 3000 m above sea level)
Air pressure (storage/transport)	58 kPa … 106 kPa (up to 4500 m above mean sea level)
Degree of protection	IP20

Ambient conditions	
Overvoltage category	II (IEC 60664-1, EN 60664-1)
Degree of pollution	2 (IEC 60664-1, EN 60664-1)
Flammability rating according to UL 94	V0

Connection data: Connections 1 ... 19 (relay)	
Connection method	Push-in connection
Nominal cross section	4 mm²
Conductor cross section rigid	0.2 mm² ... 4 mm² (Conductor connection with open terminal point) 0.5 mm² ... 4 mm² (Push-in connection)
Conductor cross section, flexible	0.2 mm² ... 4 mm²
Conductor cross section [AWG]	24 ... 12
Conductor cross section flexible, with ferrule with plastic sleeve	0.25 mm² ... 2.5 mm²
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm² ... 2.5 mm²
Two conductors with the same cross section, flexible, with TWIN ferrule with plastic sleeve	0.5 mm² ... 0.75 mm²
Stripping length	10 mm

Connection data: Connections 31 ... 62 (power supply, link bus, universal inputs)	
Connection method	Push-in connection
Nominal cross section	1.5 mm²
Conductor cross section rigid	0.2 mm² ... 1.5 mm² (Conductor connection with open terminal point) 0.34 mm² ... 1.5 mm² (Push-in connection)
Conductor cross section, flexible	0.5 mm² ... 1.5 mm²
Conductor cross section [AWG]	24 ... 16
Conductor cross section flexible, with ferrule with plastic sleeve	0.25 mm² ... 1.5 mm²
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm² ... 1.5 mm²
Two conductors with the same cross section, flexible, with TWIN ferrule with plastic sleeve	0.5 mm² ... 0.75 mm²
Stripping length	10 mm

Supply	
Supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (including all tolerances, including ripple)
Current consumption	max. 250 mA 100 mA (without external load) 150 mA (with display)
Current carrying capacity of the terminal points	max. 14 A

Interface: Extension bus (link bus)	
Number of interfaces	2 (for extension modules)
Connection method	Push-in connection
Note on the connection method	Single Pair Ethernet (SPE) 10BASE-T1L, shielded
Transmission length	max. 350 m (between two devices)
Transmission speed	10 Mbps
Note	The connections of the extension bus are independent of polarity.

Interface: Connection for Catan Control Panel	
Number of interfaces	1
Connection method	USB 2.0 full speed, socket type C
Transmission speed	max. 12 Mbps

Universal inputs (UI)	
Number of inputs	8
Description of the input	Single-ended
Connection method	Push-in connection
Connection technology	2-conductor (shielded, twisted pair)
Cable length	max. 30 m (For compliance with the requirements in accordance with CE and to ensure compliance with the EMC Directive)
Note	You can use each universal input for one of the listed functions.
Analog current inputs	
Current input signal	0 mA ... 20 mA, 4 mA ... 20 mA
Resolution	0.01 mA
Tolerance, absolute (mA)	max. 0.05 mA (The measurement requires an external parallel resistor of 68 Ω.)
Analog voltage inputs	
Voltage input signal	0 V ... 10 V
Resolution	1 mV
Tolerance, absolute (V)	max. 3 mV
Input resistance of voltage input	> 5 MΩ
Analog temperature inputs	
Sensor types (RTD) that can be used	Pt 1000
Temperature range	-100 °C ... 500 °C
Tolerance, absolute	max. 0.5 K
Resolution	0.1 K
Analog temperature inputs	
Sensor types (RTD) that can be used	Ni 1000, LG-Ni 1000
Temperature range	-50 °C ... 250 °C
Tolerance, absolute	max. 0.5 K
Resolution	0.1 K

Universal inputs (UI)	
Analog temperature inputs	
Sensor types that can be used (TC)	NTC 10k, NTC 20k, NTC 10 k Pre
Temperature range	-30 °C ... 150 °C (NTC 10k) -15 °C ... 150 °C (NTC 20k)
Tolerance, absolute	max. 0.5 K (Cable length 30 m, maximum)
Resolution	0.1 K
Analog resistance inputs	
Resistance range	0 Ω ... 10 kΩ
Tolerance, relative	max. 0.1 % (for resistances >200 Ω)
Resolution	0.01 Ω
Analog resistance inputs	
Resistance range	0 Ω ... 180 kΩ
Tolerance, relative	max. 1 % (for resistances >200 Ω)
Resolution	0.1 Ω
Digital inputs	
Description of the input	EN 61131-2 type 2 and 3
Nominal input voltage	24 V DC
Input voltage range "0" signal	-3 V DC ... 5 V DC (An open input always provides a 0 signal.)
Input voltage range "1" signal	11 V DC ... 30 V DC
Floating contacts	
Description of the input	Open/closed contact
Input current	2 mA
Input resistance range “0” signal	> 15 kΩ
Input resistance range “1” signal	< 1.5 kΩ
Note	Connect the contact to ground.
Counter inputs	
Resolution	1 Impulse
Input frequency	max. 20 Hz (Signal is debounced)
Note	The counter inputs process all signal types that are specified for digital inputs.

Relay outputs	
Number of outputs	6 (Changeover contacts)
Connection method	Push-in connection
Contact material	$AgSnO_2$
Inrush current	320 A (2 ms, maximum)
Switching voltage	max. 250 V
Limiting continuous current	16 A (Resistive load)
Switching capacity	max. 4000 VA
Switching frequency	min. 20 Hz (without load); min. 0.1 Hz (at nominal load)
Typical response time	10 ms
Typical release time	10 ms

Relay outputs	
Service life electrical	5 x 10^4 switching cycles with ohmic load 250 V AC, 16 A
Mechanical service life	10^6 cycles

Bistable relays can independently change their switching state due to vibrations that may occur during transport or installation. A defined switching state cannot be guaranteed at the moment of switch-on after transport or installation.

Electrical isolation/isolation of the voltage areas	
Test section	**Test voltage**
Extension bus/communications	500 V AC, 50 Hz, 1 min.
Logic/functional ground	500 V AC, 50 Hz, 1 min.
Relay contact / logic	4 kV AC, 50 Hz, 1 min. / Safe isolation in accordance with DIN EN IEC 61010-1, DIN EN IEC 61010-2-201
Relay contact / functional ground	4 kV AC, 50 Hz, 1 min. / Safe isolation in accordance with DIN EN IEC 61010-1, DIN EN IEC 61010-2-201
Relay contact/relay contact (open contact)	1 kV, 50 Hz, 1 min.

Extension bus/logic, logic/functional ground:

The insulation is used for separation of functions and does not satisfy the safety regulations for protection against hazardous voltages.

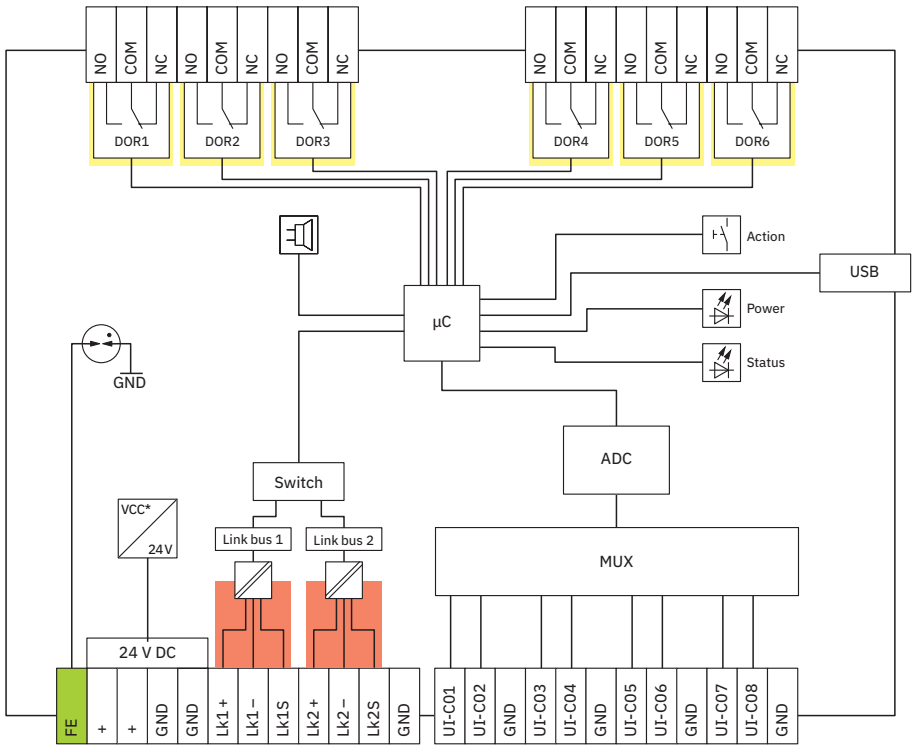
Mechanical tests	
Vibration resistance in accordance with EN 60068-2-6/IEC 60068-2-6	5g
Shock in accordance with EN 60068-2-27/IEC 60068-2-27	20g (contact interruption) / 5g (contact closure)
Continuous shock in accordance with EN 60068-2-27/IEC 60068-2-27	10g

Conformance with EMC directive	
Immunity test in accordance with EN IEC 63044-5-2	
Electrostatic discharge (ESD)	Criterion A, ±4 kV contact discharge, ±8 kV air discharge
Electromagnetic fields	Criterion A, Field intensity: 10 V/m
Fast transients (burst)	Criterion A, ±500 V, Criterion B, ±1000 V
Transient overvoltage (surge)	Criterion B
Conducted disturbance	Criterion A, Test voltage 10 V
Noise emission test in accordance with EN IEC 63044-5-2	Class B

Approvals and manufacturer's declarations	
The latest documents can be found at:	www.phoenixcontact.com/product/1371364

5 Internal circuit diagram

Figure 1 Internal wiring of the terminal points



Key:

Relay

Acoustic signal generator

µC Microcontroller

Button

LED

USB USB interface

Gas discharge tube

ADC Analog/digital converter

Power supply unit without electrical isolation

Link bus Extension bus interface (Single Pair Ethernet)

Transmitter/isocoupler

Electrically isolated areas

6 For your safety

6.1 Intended use

Use Catan modules only in accordance with the specifications in this data sheet.

If the equipment is used in a manner not specified, the protection provided by the equipment may be impaired.

6.2 Qualification of users

The use of products described in this data sheet is oriented exclusively to electrically skilled persons or persons instructed by them. The users must be familiar with the relevant safety concepts of automation technology as well as applicable standards and other regulations.

6.3 Electrical safety

WARNING: loss of electrical safety

If used incorrectly, device safety may be impaired.

Observe the information given in this data sheet during installation, commissioning and operation.

WARNING: Loss of electrical safety when using unsuitable power supplies. Dangerous shock currents.

The extension module is intended exclusively for operation with protective extra-low voltage (PELV) in accordance with EN 60204-1.

- Only use power supply units that ensure safe isolation in accordance with EN 61010-2-201. They prevent short circuits between the primary and secondary circuits.

WARNING: loss of electrical safety

Do not use the temperature sensors (RTD/TC) connected to the device to measure temperatures at hazardous live parts.

WARNING: loss of electrical safety

There is no double/reinforced insulation between the channels.

Do not operate the relay channels (DOR1 ... DOR6) at mixed circuits of low voltage and safety extra-low voltage (SELV) or protective extra-low voltage (PELV).

Only one of these operating states is permitted on one device:

– All outputs used switch low voltage.
– All outputs used switch extra-low voltage (PELV or SELV).

WARNING: dangerous contact voltage in the event of ground faults

- The relays must only be operated in grounded networks.

6.4 Installation

The device has the enclosure rating IP20. Install the device in closed control cabinets or control boxes (junction boxes) with IP54 enclosure rating or higher.

CAUTION - Fire hazard

– The device must be installed in the final protective housing, which provides sufficient resistance to mechanical strain and protection against the spreading of fire in accordance with the standards UL/IEC/EN 61010-1 and UL/IEC/EN 61010-2-201.
– The supply and external circuits intended to be connected to this device shall be galvanically separated from the mains supply or hazardous live voltage by reinforced or double insulation and meet the requirements of SELV/PELV (Class III) circuits of UL/CSA/IEC/EN 61010-1, UL/CSA/IEC/EN 61010-2-201.

NOTE: damage to the contacts

Physical overloads can result in damage to the terminal points.

- Relieve strain in the connected cables.

NOTE: Damage to contacts or malfunction

- Before any work on the module, disconnect the peripheral I/O devices and the module from the power supply.

To ensure compliance with the EMC Directive, connect the FE (functional ground) connection to PE (protective ground) on the installation side.

Use only products approved by Phoenix Contact at the USB ports.

6.5 Applications with UL approval

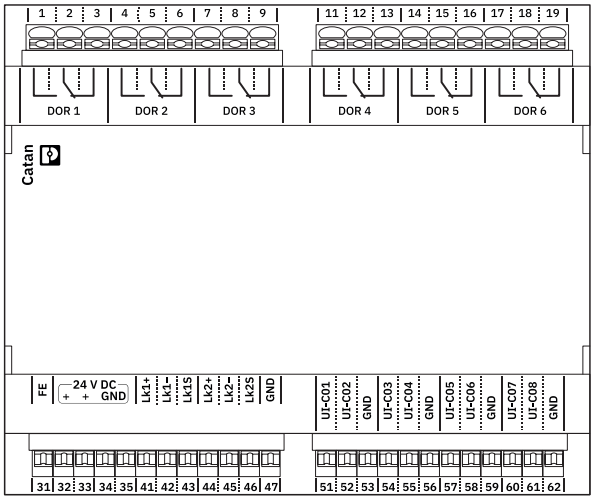
Information:

To install the device in accordance with the UL/CSA/EN/IEC standards, the following rules must be observed.

– Minimum temperature rating of the cables to be connected to the field wiring terminals:
  100 °C
– Use copper conductors only.

7 Terminal point assignment

Figure 2 Terminal point assignment



Terminal point	Designation	Function	
	Status	Status LED	*
	Power	LED for supply voltage	*
	USB	USB port	
	Action	Button, operating element	*
	*	Below the hinged housing cover	
Floating contacts / bistable relays			
1	DOR 1	Relay 1	N/O contact
2			Common connection
3			N/C contact
4	DOR 2	Relay 2	N/O contact
5			Common connection
6			N/C contact
7	DOR 3	Relay 3	N/O contact
8			Common connection
9			N/C contact
11	DOR 4	Relay 4	N/O contact
12			Common connection
13			N/C contact
14	DOR 5	Relay 5	N/O contact
15			Common connection
16			N/C contact
17	DOR 6	Relay 6	N/O contact
18			Common connection
19			N/C contact

Terminal point	Designation	Function	
Power supply			
31	FE (⏚)	Functional ground	
32	+	Positive power supply (24 V DC)	
33	+		
34	GND	Ground (0 V)	
35	GND		
Extension bus (link bus)			
41	Lk1+	Link bus 1	+
42	Lk1-		-
43	Lk1S		Shield
44	Lk2+	Link bus 2	+
45	Lk2-		-
46	Lk2S		Shield
47	GND	Ground	

Terminal point	Designa-tion	Function	
Universal inputs (UI)			
51	UI-C01	Universal input	01
52	UI-C02	Universal input	02
53	GND	Ground	
54	UI-C03	Universal input	03
55	UI-C04	Universal input	04
56	GND	Ground	
57	UI-C05	Universal input	05
58	UI-C06	Universal input	06
59	GND	Ground	
60	UI-C07	Universal input	07
61	UI-C08	Universal input	08
62	GND	Ground	

8 Local diagnostic and status indicators

LEDs for status and supply voltage

Designation				
Power		**Status**		
Color	**State**	**Color**	**State**	**Description**
Operating states				
Green	On	Green	On	Normal operation
		Red	On	There is a fault in the I/O module controller. The I/O module is in the failsafe state.
	Flashing 1 s on, 1 s off		Flashing 1 s on, 1 s off	Module identification
Update signaling				
Orange	On	Orange	Flashing at 10 Hz	I/O module is updated.
I/O module error				
Orange	On	Orange	On	The I/O module cannot be activated. The device must be returned for repair.
	Short on followed by off		Short on followed by off	An error occurred when starting the I/O module. Follow the instructions for resetting the firmware.
	On	Red	On	An undervoltage of the supply voltage is present. The module function has been stopped. The module automatically restarts when the supply voltage returns.
Red	On	Red	On	An unknown error has occurred in the I/O module. The I/Os are not ready for operation. Switch the device off for 10 s and then back on.

Acoustic signal generator

Designation	State	Description
Acoustic signal	Output of a sequence of tones	Module identification has been started in the Workbench. Identification must be terminated with the Workbench.

Module identification

To identify a device, you can initiate module identification in the Workbench via “Identify”.

In this case, the Status and Power LEDs on the device flash green at a speed of 1 s on, 1 s off. At the same time, the acoustic signal generator outputs a defined sequence of tones and thus enables the device to be located.

You can stop module identification with “Stop Identify”.

9 Enable local override operation

To enable local override operation for a Catan controller or Catan extension module, enter the required PIN via the connected Catan Control Panel. The default setting for the PIN is 42.

If you change the PIN, this change only applies to the module to which the display is connected.

10 Open source software

10.1 Licensing information

Licensing information regarding open source software can be downloaded at the following address in the “Product details, Downloads, Data sheets” area:

www.phoenixcontact.com/product/1371364

10.2 Requesting the source code

This product contains software components which are licensed by the rights holder as free software or open source software under the GNU General Public License, version 2.

You can request the source code of these software components in the form of a CD or DVD-ROM for a processing fee of 50 euros within three years after delivery of the product.

To do this, please contact the After Sales Service of Phoenix Contact in writing at

Phoenix Contact GmbH & Co. KG
After Sales Service
Flachsmarktstraße 8
32825 Blomberg, Germany

Subject: Source code for CATAN DOR6 UI8