

QUINT4-S-ORING/12-24DC/1X40/+ - Redundancy module, with protective coating



2907753

<https://www.phoenixcontact.com/us/products/2907753>

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Active QUINT single redundancy module for DIN rail mounting, protective coating, input: 12 V DC ... 24 V DC, output: 12 V DC ... 24 V DC / 1 x 40 A, integrated surge protection <28.8 V DC, incl. mounted UTA 107/30 universal DIN rail adapter

Product description

Active redundancy module for superior system availability and maximum operational reliability. QUINT S-ORING enables the separate structuring of a redundant system. In combination with the new QUINT POWER power supply, the redundant system is monitored continuously.

Your advantages

- Consistent redundancy up to the load
- Input voltage and decoupling section monitored on a permanent basis
- Save energy by decoupling with MOSFET
- Protection against surge voltages in excess of 30 V DC at the output

Commercial data

Item number	2907753
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CM16
Product key	CMR143
GTIN	4055626231914
Weight per piece (including packing)	471.5 g
Weight per piece (excluding packing)	413.78 g
Customs tariff number	85371091
Country of origin	CN

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Technical data

Input data

DC operation

Nominal input voltage range	12 V DC ... 24 V DC
Input voltage range	8 V DC ... 26 V DC (SELV)
Typical national grid voltage	12 V DC
	24 V DC
Voltage type of supply voltage	DC
Current consumption	40 A
Static Boost ($I_{Stat.Boost}$)	45 A
Dynamic Boost ($I_{Dyn.Boost}$)	60 A (5 s)
Selective Fuse Breaking (I_{SFB})	215 A (15 ms)
Reverse polarity protection	yes, < 60 V
Nominal input current (I_N)	40 A (-40 °C ... 60 °C)
Input current I_{Static}	45 A (40 °C)
Input current $I_{Dynamic}$	60 A (5 s)
Input current I_{SFB}	215 A (15 ms)
Transient surge protection	Varistor
Voltage drop, input/output	0.1 V DC

Output data

Efficiency	typ. 99 % (12 V DC)
	typ. 99.2 % (24 V DC)
Nominal output voltage	$U_{in} - 0,1$ V DC
Nominal output current (I_N)	40 A
Static Boost ($I_{Stat.Boost}$)	45 A
Dynamic Boost ($I_{Dyn.Boost}$)	60 A (5 s)
Selective Fuse Breaking (I_{SFB})	215 A (15 ms)
Derating	60 °C ... 70 °C (2.5 %/K)
Protection against overvoltage at the output (OVP)	< 28.8 V DC
Power loss nominal load max.	6.5 W ($I_{OUT} = 40$ A)
	6 W ($I_{OUT} = 40$ A)
Connection in series	no

Signal: OK, 13/14

Output description	Group contact
Maximum switching voltage	max. 30 V AC/DC
Maximum inrush current	≤ 100 mA (short-circuit-proof)

Signal relay 13/14

Default	open
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Signal relay 13/14

Default	closed
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Signal relay 13/14

Default	open
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Signal relay 13/14

Default	open
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Connection data

Input

Connection method	Screw connection
Conductor cross-section, rigid min.	0.5 mm ²
Conductor cross-section, rigid max.	16 mm ²
Conductor cross-section flexible min.	0.5 mm ²
Conductor cross-section flexible max.	16 mm ²
Single conductor/flexible terminal point with ferrule with plastic sleeve, min.	0.5 mm ²
Single conductor/flexible terminal point with ferrule with plastic sleeve, max.	16 mm ²
Single conductor/flexible terminal point with ferrule without plastic sleeve, min.	0.5 mm ²
Single conductor/flexible terminal point with ferrule without plastic sleeve, max.	16 mm ²
Conductor cross-section AWG min.	20
Conductor cross-section AWG max.	6
Stripping length	10 mm
Screw thread	M4
Tightening torque, min	1.2 Nm
Tightening torque max	1.5 Nm

Output

Connection method	Screw connection
Conductor cross-section, rigid min.	0.5 mm ²
Conductor cross-section, rigid max.	16 mm ²
Conductor cross-section flexible min.	0.5 mm ²
Conductor cross-section flexible max.	16 mm ²
Single conductor/flexible terminal point with ferrule with plastic sleeve, min.	0.5 mm ²
Single conductor/flexible terminal point with ferrule with plastic sleeve, max.	16 mm ²
Single conductor/flexible terminal point with ferrule without plastic sleeve, min.	0.5 mm ²
Single conductor/flexible terminal point with ferrule without plastic sleeve, max.	16 mm ²

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Conductor cross-section AWG min.	20
Conductor cross-section AWG max.	6
Stripping length	10 mm
Screw thread	M4
Tightening torque, min	1.2 Nm
Tightening torque max	1.5 Nm

Signal

Connection method	Push-in connection
Conductor cross-section, rigid min.	0.2 mm ²
Conductor cross-section, rigid max.	1.5 mm ²
Conductor cross-section flexible min.	0.2 mm ²
Conductor cross-section flexible max.	1.5 mm ²
Single conductor/flexible terminal point with ferrule with plastic sleeve, min.	0.2 mm ²
Single conductor/flexible terminal point with ferrule with plastic sleeve, max.	0.75 mm ²
Single conductor/flexible terminal point with ferrule without plastic sleeve, min.	0.2 mm ²
Single conductor/flexible terminal point with ferrule without plastic sleeve, max.	1.5 mm ²
Conductor cross-section AWG min.	24
Conductor cross-section AWG max.	16
Stripping length	8 mm

Signaling

Types of signaling	Relay contact, floating, current limited
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Signal output: OK, 13/14

$U_{in} < 8 \text{ V DC}$	LED off, input voltage not present or short circuit at redundancy module output
$U_{in} > 8 \text{ V DC}$	LED lights up green, input voltage present
$U_{in} > 28.8 \text{ V DC}$	LED flashing red, OVP active - input voltage exceeds the permissible voltage value
Redundancy modul faulty	LED lights up red, redundancy module needs to be factory tested

Electrical properties

Insulation voltage input, output / housing	500 V DC
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Product properties

Product type	Redundancy module
Product family	QUINT S-ORING
MTBF (IEC 61709, SN 29500)	> 13486000 h (25 °C)
	> 7314000 h (40 °C)
	> 3379000 h (60 °C)
LED	yes

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Insulation characteristics

Protection class	III
Degree of pollution	2

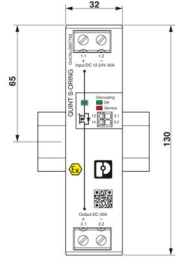
Life expectancy (electrolytic capacitors)

Current	40 A
Temperature	40 °C
Time	160000 h
Additional text	12 V DC

Life expectancy (electrolytic capacitors)

Current	40 A
Temperature	40 °C
Time	149000 h
Additional text	24 V DC

Dimensions

Dimensional drawing	
Width	32 mm
Height	130 mm
Depth	125 mm

Installation dimensions

Installation distance right/left	0 mm / 0 mm
Installation distance top/bottom	40 mm / 20 mm

Alternative assembly

Width	122 mm
Height	130 mm
Depth	35 mm

Mounting

Mounting type	DIN rail mounting
Assembly note	alignable: $P_N \geq 50\%$, 5 mm horizontally, 15 mm next to active components, 50 mm vertically alignable: $P_N < 50\%$, 0 mm horizontally, 40 mm vertically top, 20 mm vertically bottom
Mounting position	horizontal DIN rail NS 35, EN 60715

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Material specifications

Flammability rating according to UL 94 (housing / terminal blocks)	V0
Housing material	Metal
Housing material	Aluminum / stainless steel
Type of housing	Aluminum (AlMg3)
Hood version	Galvanized sheet steel, free from chrome (VI)

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-40 °C ... 70 °C (> 60 °C Derating: 2,5 %/K)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Maximum altitude	≤ 5000 m (> 2000 m, observe derating)
Climatic class	3K22 (in accordance with EN 60721-3-3)
Max. permissible relative humidity (operation)	≤ 100 % (at 25 °C, non-condensing)
Shock	18 ms, 30g, in each space direction (according to IEC 60068-2-27)
Vibration (operation)	< 15 Hz, amplitude ±2.5 mm (according to IEC 60068-2-6) 15 Hz ... 150 Hz, 2.3g, 90 min.
Temp code	T4 (-25 ... +70 °C; > 60 °C, Derating: 2,5 %/K)

Standards and regulations

Standard - Electrical safety	IEC 62368-1
Standard – Safety extra-low voltage	IEC 62368-1

Fire protection in rail vehicles

Standard designation	Fire protection in rail vehicles
Standards/specifications	EN 45545-2 (HL3)

Approvals

Shipbuilding approval	DNV, NK
UL approvals	UL/C-UL listed UL 508
	UL/C-UL Recognized UL 60950-1
	UL 121201 & CSA C22.2 No. 213-17 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location)

Conformity/Approvals

ATEX	⊕ II 3 G Ex ec nC IIC T4 Gc
	SIQ 21 ATEX 183 X / PTB 24 ATEX 2001 X
IECEX	Ex ec nC IIC T4 Gc
	IECEX SIQ 21.0001X / IECEX PTB 24.0003X
Functional Safety in accordance with IEC 61508	SIL3 in accordance with IEC 61508-1 (in combination with product 2904602 QUINT4-PS/1AC/24DC/20)

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EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Low Voltage Directive	Conformance with Low Voltage Directive 2014/35/EC
EMC requirements for noise emission	EN 61000-6-3
	EN 61000-6-4
EMC requirements for noise immunity	EN 61000-6-1
	EN 61000-6-2

Conducted noise emission

Standards/regulations	EN 55016
	EN 61000-6-3 (Class B)

Noise emission

Standards/regulations	Additional basic standard EN 61000-6-5 (immunity in power station)
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Noise emission

Standards/regulations	EN 55016
	EN 61000-6-3 (Class B)

DNV GL conducted noise emissions

DNV	Class A
Additional text	Area power distribution

DNV GL noise radiation

DNV	Class B
Additional text	Bridge and deck area

Electrostatic discharge

Standards/regulations	EN 61000-4-2
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Electrostatic discharge

Contact discharge	8 kV (Test Level 4)
Discharge in air	15 kV (Test Level 4)
Comments	Criterion A

Electromagnetic HF field

Standards/regulations	EN 61000-4-3
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Electromagnetic HF field

Frequency range	80 MHz ... 1 GHz
Test field strength	20 V/m (Test Level 3)
Frequency range	1 GHz ... 6 GHz
Test field strength	10 V/m (Test Level 3)
Comments	Criterion A

Fast transients (burst)

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Standards/regulations	EN 61000-4-4
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Fast transients (burst)

Input	2 kV (Test Level 3 - asymmetrical)
Output	2 kV (Test Level 3 - asymmetrical)
Signal	2 kV (Test Level 4 - asymmetrical)
Comments	Criterion B

Surge voltage load (surge)

Standards/regulations	EN 61000-4-5
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Surge voltage load (surge)

Input	1 kV (Test Level 3 - symmetrical)
	2 kV (Test Level 3 - asymmetrical)
Output	1 kV (Test Level 3 - symmetrical)
	2 kV (Test Level 3 - asymmetrical)
Signal	1 kV (Test Level 2 - asymmetrical)
Comments	Criterion A

Conducted interference

Standards/regulations	EN 61000-4-6
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Conducted interference

Input/output/signal	asymmetrical
Frequency range	0.15 MHz ... 100 MHz
Comments	Criterion A
Voltage	20 V (Test Level 3)

Criteria

Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.

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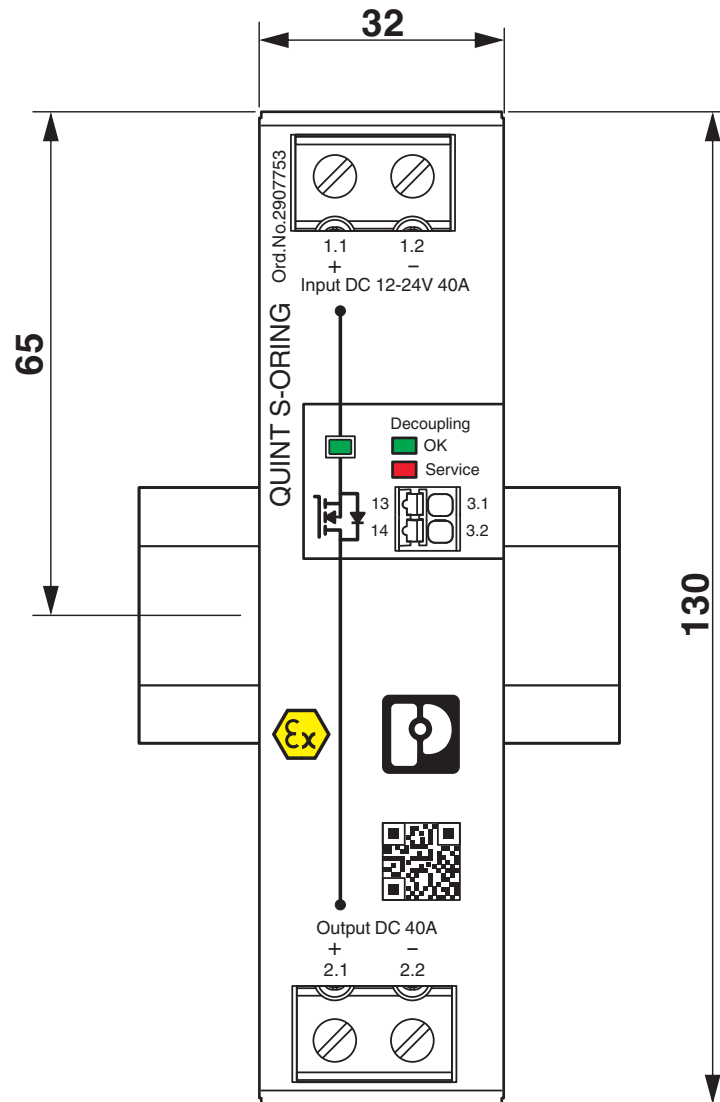


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Drawings

Dimensional drawing

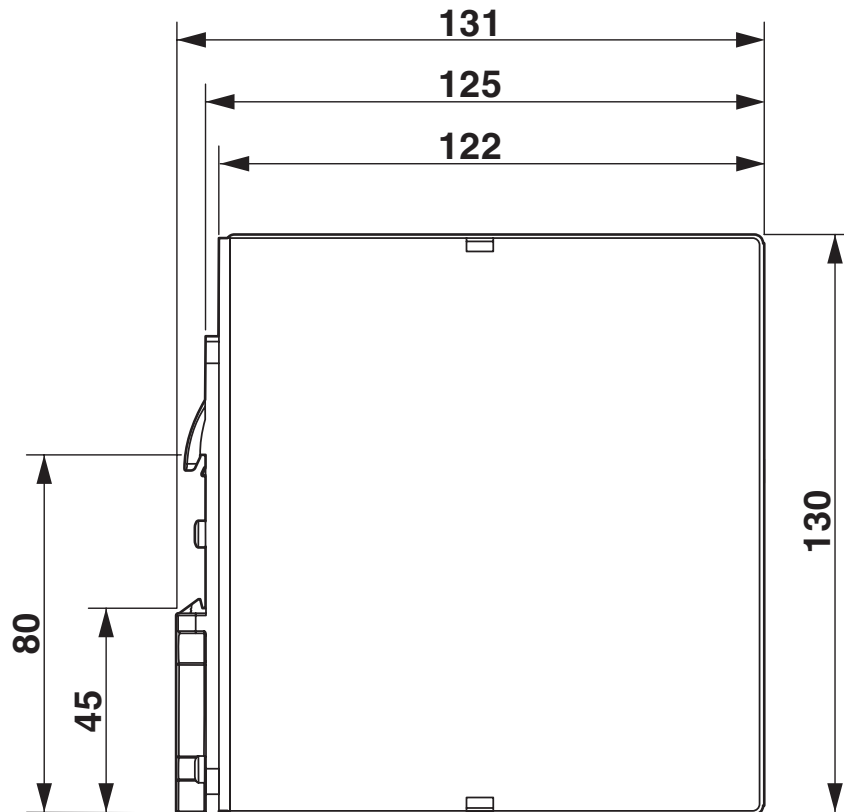


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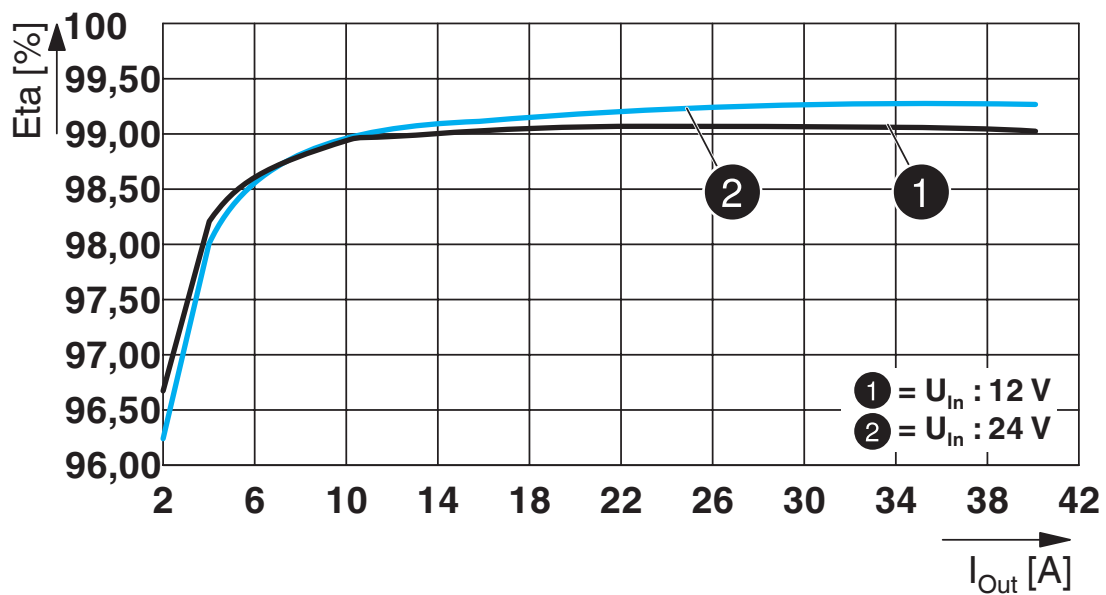
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Dimensional drawing



Diagram

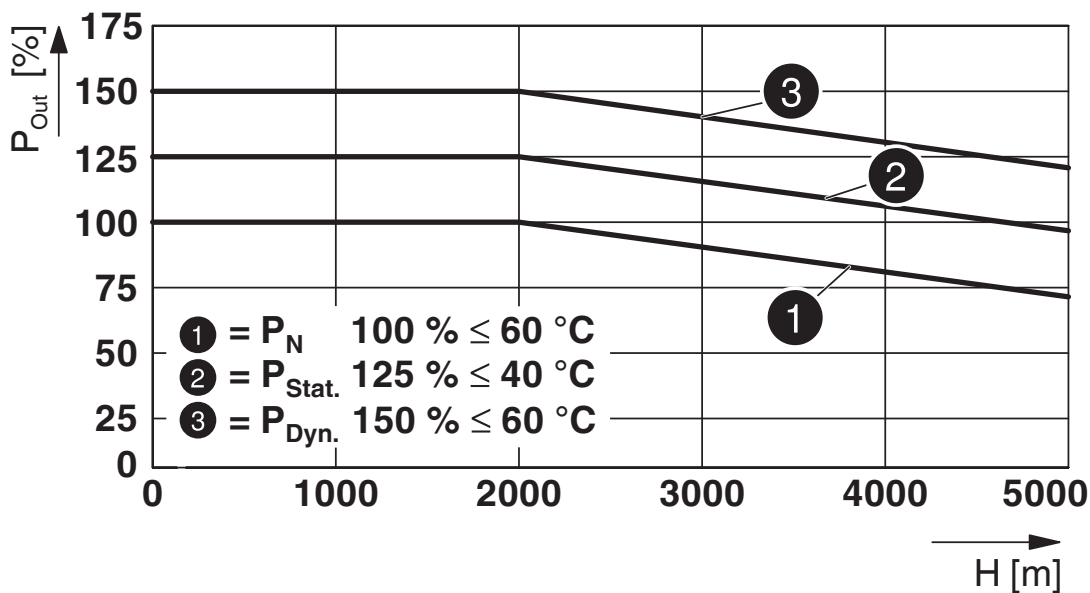


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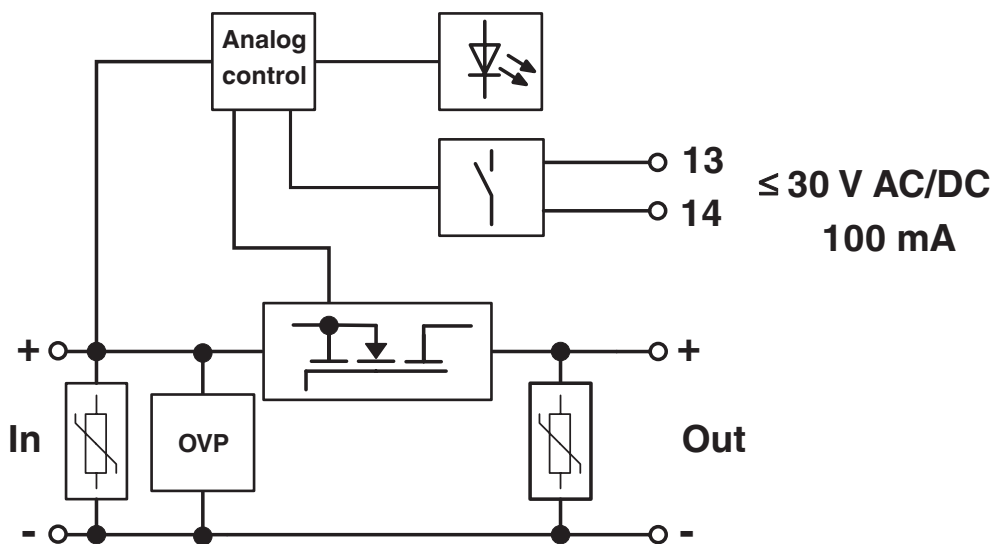
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Diagram



Block diagram



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Approvals

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cUL Recognized
Approval ID: E211944



UL Recognized
Approval ID: E211944



EAC
Approval ID: RU S-DE.BL08.W.00764



UL Listed
Approval ID: E123528



cUL Listed
Approval ID: E123528

DNV

Approval ID: TAA000011F



IECEE CB Scheme
Approval ID: DE/PTZ/0048



NK
Approval ID: TA25015M



UL Recognized
Approval ID: E211944



IECEE CB Scheme
Approval ID: DE/PTZ/0048



cUL Recognized
Approval ID: E211944

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cUL Listed

Approval ID: E123528



UL Listed

Approval ID: E123528

ClassNK

NK

Approval ID: TA25015M

DNV

Approval ID: TAA000011F



EAC Ex

Approval ID: KZ 7500525010102095



IEC Ex

Approval ID: IECEx SIQ 21.0001X



cUL Listed

Approval ID: E199827



UL Listed

Approval ID: E199827



ATEX

Approval ID: SIQ 21 ATEX 183 X



NEPSI-EX

Approval ID: GYJ21.1004X



UKCA-EX

Approval ID: EXV21UKEX1072X_00

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ATEX

Approval ID: PTB 24 ATEX 2001 X



UL Listed

Approval ID: E199827



cUL Listed

Approval ID: E199827



IECEx

Approval ID: IECEx SIQ 21.0001X



EAC Ex

Approval ID: KZ 7500525010102095



IECEx

Approval ID: IECEx PTB 24.0003X



ATEX

Approval ID: SIQ 21 ATEX 183 X



UKCA-EX

Approval ID: EXV21UKEX1072X_00



NEPSI-EX

Approval ID: GYJ21.1004X



CCC

Approval ID: 2021322303003918



CCC

Approval ID: 2021322303003918

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Classifications

ECLASS

ECLASS-13.0	27371010
ECLASS-15.0	27371010

ETIM

ETIM 10.0	EC000683
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UNSPSC

UNSPSC 21.0	32151500
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Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	6(c), 7(a), 7(c)-I

China RoHS

Environment friendly use period (EFUP)	EFUP-25
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
SCIP	50e006be-a325-447c-83fd-9bc9751ce8d8

EF3.1 Climate Change

CO2e kg	11.26 kg CO2e
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