

STEP-CAP/24VDC/2/0.4KJ - Capacity module



1519633

<https://www.phoenixcontact.com/pc/products/1519633>

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STEP capacity module, with maintenance-free energy storage based on double-layer capacitor, DIN rail mounting, input: 24 V DC, output: 24 V DC / 2 A / 0.4 kJ

Product description

The compact STEP DC UPS with integrated capacitor can bridge power failures lasting up to one minute. The space-saving capacity module combines an electronic switch-over unit and energy storage in the same housing. The capacity module stores the energy required to bridge mains failures in maintenance-free double-layer capacitors. This ensures high system availability.

Your advantages

- Space savings, thanks to the compact design
- Maintenance-free double layer condensators
- High system availability due to long capacitor service life
- Modular and flexible for various applications: -25°C ... +60°C

Commercial data

Item number	1519633
Packing unit	1 pc
Minimum order quantity	1 pc
Product key	CMUSC3
GTIN	4063151987343
Weight per piece (including packing)	313.3 g
Weight per piece (excluding packing)	233 g
Customs tariff number	85322900
Country of origin	IN

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Technical data

Input data

Input voltage	24 V DC (SELV)
Input voltage range	23.7 V DC ... 26.5 V DC
Fixed backup threshold	> 23.8 V DC ($\pm 2\%$)
	< 21.8 V DC ($\pm 2\%$)
Reverse polarity protection	yes
Current consumption $I_{\text{No-Load}}$ (U_N , $I_{\text{OUT}} = 0$, $I_{\text{charge}} = 0$)	0.1 A
Current consumption I_{charge} (U_N , $I_{\text{OUT}} = 0$, $I_{\text{charge}} = \text{max}$)	0.7 A
Power consumption P_N (U_N , $I_{\text{OUT}} = I_N$, $I_{\text{charge}} = 0$)	50 W
Buffer time	39 s (0.5 A)
	10 s (2 A)
	29 s (0.5 A)
	6 s (2 A)
Charging time	142 s (Pos. A)
	119 s (Pos. B)
Recharging time	71 s (Pos. A)
	51 s (Pos. B)
Inrush current	< 15 A (At an ambient temperature of 20°C)
Internal input fuse	yes (3 A)
Dielectric strength	< 32.5 V DC

Output data

Efficiency	> 95 %
Connection in parallel	yes, for increasing the buffer period
Connection in series	no

Mains operation

Output voltage	24 V DC $\pm 2\%$ (Mains operation)
Output current I_N	2 A
Output power P_{OUT} (U_N , $I_{\text{OUT}} = I_N$)	48 W
Power dissipation No load (U_N , $I_{\text{OUT}} = 0$, $I_{\text{Charge}} = 0$)	1.4 W
Power dissipation Nominal load (U_N , $I_{\text{Out}} = I_N$, $I_{\text{Charge}} = 0$)	2.3 W
Maximum no-load power dissipation	1.4 W
Short-circuit-proof	yes (with internal 3 A fuse)
Idling-proof	yes

Battery operation

Output voltage	23 V DC $\pm 2\%$ (Battery operation)
Output current I_N	2 A
Output power P_{OUT} (U_N , $I_{\text{OUT}} = I_N$)	48 W
Maximum no-load power dissipation	1.3 W (<0.1 A)
Output current limit	2.4 A $\pm 10\%$

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Short-circuit-proof	yes
Idling-proof	yes

Energy storage

Input

Nominal capacity	0.4 kJ
Charging current	< 1 A (at 24 V DC)
Charging voltage	2.8 V (Position A)
	2.4 V (Position B)

General

Capacity	0.4 kJ
Energy	270 J (Position B)
	416 J (Position A)
Service life	2.5 Years ... 5 Years (Position A)
	10 Years ... 20 Years (Position B)
Storage medium	Double-layer capacitor
Buffer time	39 s (0.5 A)
	10 s (2 A)
	29 s (0.5 A)
	6 s (2 A)

Connection data

Input

Position	1.x
Identification	1.1 (+), 1.2 (-)

Conductor connection

Connection method	Screw connection
rigid	0.14 mm ² ... 1.5 mm ²
flexible	0.14 mm ² ... 1.5 mm ²
flexible with ferrule without plastic sleeve	0.25 mm ² ... 1 mm ²
flexible with ferrule with plastic sleeve	0.25 mm ² ... 1.5 mm ²
rigid (AWG)	26 ... 16
Stripping length	6 mm
Tightening torque	0.5 Nm ... 0.6 Nm
Drive form screw head	Slotted L

2-conductor connection

rigid	0.14 mm ² ... 0.75 mm ²
flexible	0.14 mm ² ... 0.75 mm ²
flexible with TWIN ferrule with plastic sleeve	0.5 mm ² ... 0.75 mm ²

Output

Position	2.x
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Identification	2.1 (+), 2.2 (-)
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Conductor connection

Connection method	Screw connection
rigid	0.14 mm ² ... 1.5 mm ²
flexible	0.14 mm ² ... 1.5 mm ²
flexible with ferrule without plastic sleeve	0.25 mm ² ... 1 mm ²
flexible with ferrule with plastic sleeve	0.25 mm ² ... 1.5 mm ²
rigid (AWG)	26 ... 16
Stripping length	6 mm
Tightening torque	0.5 Nm ... 0.6 Nm
Drive form screw head	Slotted L

2-conductor connection

rigid	0.14 mm ² ... 0.75 mm ²
flexible	0.14 mm ² ... 0.75 mm ²
flexible with TWIN ferrule with plastic sleeve	0.5 mm ² ... 0.75 mm ²

Signal

Position	3.x
Identification	3.1 (PF), 3.2 (SGnd), 3.3 (SoH)

Conductor connection

Connection method	Screw connection
rigid	0.14 mm ² ... 1.5 mm ²
flexible	0.14 mm ² ... 1.5 mm ²
flexible with ferrule without plastic sleeve	0.25 mm ² ... 1 mm ²
flexible with ferrule with plastic sleeve	0.25 mm ² ... 1.5 mm ²
rigid (AWG)	26 ... 16
Stripping length	6 mm
Tightening torque	0.5 Nm ... 0.6 Nm
Drive form screw head	Slotted L

Signaling

LED signaling

Types of signaling	LED
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Signal state Power Failure

Connection labeling	3.1
Channel	Open collector
Switching contact	Transistor
Output voltage	30 V
Output can be loaded	10 mA
Signal - state assignment	low - active
Reference potential	SGnd
LED status indicator	green

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Resistance	10 Ω (at 24 V)
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Signal state State of health (SOH)

Connection labeling	3.3
Channel	Open collector
Switching contact	Transistor
Output voltage	30 V
Output can be loaded	10 mA
Signal - state assignment	low - active
Reference potential	SGnd
LED status indicator	red
Resistance	10 Ω (at 24 V)

Signal ground SGnd

Connection labeling	3.2
Switching voltage	0 V
Current carrying capacity	20 mA
Function	Power Failure (PF), State of Health (SOH)
Reference potential	SGnd

Electrical properties

Insulation voltage input, output / housing	500 V
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Product properties

Product type	DC UPS with integrated capacitor
Product family	STEP capacity module
MTBF (IEC 61709, SN 29500)	> 500000 h (@ 25 °C)

Insulation characteristics

Protection class	III
Overvoltage category	II
Degree of pollution	2

Dimensions

Item dimensions

Width	80 mm
Height	125 mm
Depth	60 mm

Installation dimensions

Installation distance right/left	0 mm / 0 mm
Installation distance top/bottom	50 mm / 50 mm

Mounting

Mounting type	DIN rail mounting
Mounting position	On horizontal DIN rail NS 35 in acc. with EN 60715

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Material specifications

Flammability rating according to UL 94 (housing / terminal blocks)	V0
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Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-25 °C ... 60 °C
Ambient temperature (storage/transport)	-30 °C ... 70 °C
Maximum altitude	≤ 2000 m
Climatic class	3K3 (EN 60721)
Max. permissible relative humidity (operation)	< 90 % (non-condensing)
Shock	30g, 18 ms
Vibration (operation)	18 Hz ... 1000 Hz (1.14 g RMS)

Approvals

Electronic devices in rail vehicles

Shock (operation)	30g, 18 ms, half sine
Vibration (operation)	18 Hz ... 1000 Hz

EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Interference emission	Interference emission in accordance with EN 61000-6-3 (residential and commercial) and EN 61000-6-4 (industrial)

Electrostatic discharge

Standards/regulations	EN 61000-4-2
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Electrostatic discharge

Contact discharge	6 kV (Test Level 3)
Discharge in air	8 kV (Test Level 3)
Comments	Criterion B

Electromagnetic HF field

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

Frequency range	80 MHz ... 6 GHz
Test field strength	10 V/m
Comments	Criterion A

Fast transients (burst)

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

Input	2 kV
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Output	2 kV
Signal	1 kV

Surge voltage load (surge)

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

Input	symmetrical 0.5 kV
	asymmetrical 1 kV
Output	symmetrical 0.5 kV
	asymmetrical 1 kV
Signal	asymmetrical 1 kV
Comments	Criterion B

Conducted interference

Standards/regulations	EN 61000-4-6
Typical deviation from the measuring range final value	80 %

Conducted interference

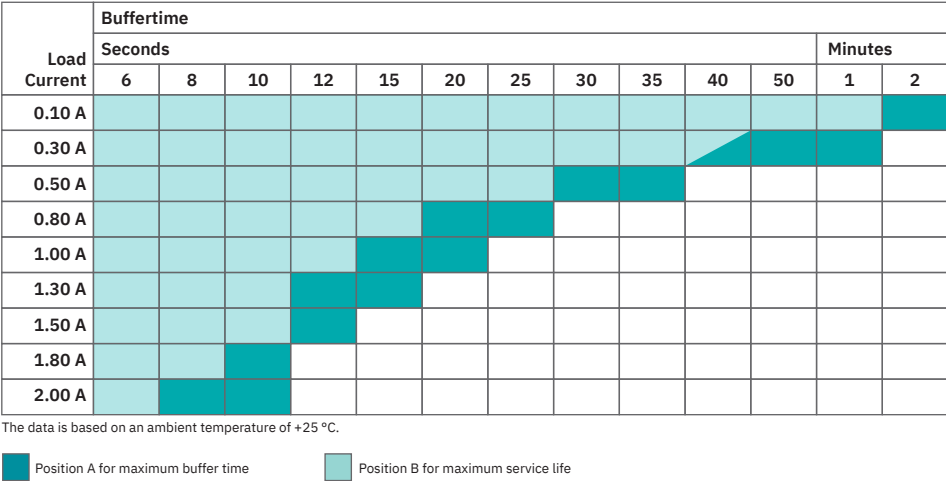
Frequency range	150 kHz ... 80 MHz
Comments	Criterion A
Voltage	10 V

Criteria

Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.
Criterion C	Temporary adverse effects on the operating behavior, which the device corrects automatically or which can be restored by actuating the operating elements.

Drawings

Graphic



Buffer times for STEP-CAP

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Classifications

ECLASS

ECLASS-11.0	27040705
ECLASS-13.0	27040705

ETIM

ETIM 9.0	EC000382
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Environmental product compliance

EU RoHS	
Fulfills EU RoHS substance requirements	Yes
Exemption	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	e51fbe43-fedd-4971-a6e7-856a84198cb2