

# QUINT4-UPS/24DC/24DC/10/485 - Uninterruptible power supply



1322768

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QUINT DC UPS, IQ Technology, RS485, DIN rail mounting, Screw connection, input: 24 V DC, output: 24 V DC / 10 A, charging current: 3 A

## Product description

The intelligent QUINT UPS for integration into established industrial networks: your systems continue to be supplied with uninterrupted power, even in the event of a mains failure. The battery management system with IQ Technology and a powerful battery charger ensures superior system availability.

## Your advantages

- Easy integration into networks using PROFINET, EtherNet/IP, EtherCAT® and USB interfaces
- Evaluation of state of health (SOH) and state of charge (SOC), thanks to the intelligent battery management system (BMS)
- Automatic recognition of the battery capacities and technologies (VRLA-WTR, LI-ION)
- Monitoring of output current and voltage, as well as manual connection and disconnection of the system
- SFB Technology selectively trips standard miniature circuit breakers. Loads connected in parallel continue working.

## Commercial data

Item number	1322768
Packing unit	1 pc
Minimum order quantity	1 pc
Product key	CMUI43
GTIN	4063151611064
Weight per piece (including packing)	504 g
Weight per piece (excluding packing)	456 g
Country of origin	Information on the country of origin is provided with the delivery.

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## Technical data

### Input data

Input voltage	24 V DC
Input voltage range	18 V DC ... 30 V DC
Electric strength, max.	35 V DC (Protected against polarity reversal)
Internal input fuse	no
Typical national grid voltage	24 V DC
Voltage type of supply voltage	DC
Inrush current	≤ 7 A (≤ 4 ms)
Reverse polarity protection	yes
Fixed backup threshold	22 V DC 30 V DC
Dynamic activation threshold	> 1 V / 100 ms
Switch-on time	max. 3 s
Switch-on time during battery operation (Bat.-Start)	8 s
Voltage drop, input/output	0.4 V DC
Current consumption $I_N$ ( $U_N, I_{OUT} = I_N, I_{charge} = 0$ )	10.1 A
Current consumption $I_{max}$ ( $U_N, I_{OUT} = I_{Stat.Boost}, I_{charge} = max$ )	16.2 A
Current consumption $I_{No-Load}$ ( $U_N, I_{OUT} = 0, I_{charge} = 0$ )	48 mA
Current consumption $I_{charge}$ ( $U_N, I_{OUT} = 0, I_{charge} = max$ )	3.5 A
Power consumption $P_N$ ( $U_N, I_{OUT} = I_N, I_{charge} = 0$ )	241 W
Power consumption $P_{max}$ ( $U_N, I_{OUT} = I_{Stat.Boost}, I_{charge} = max$ )	384 W
Power consumption $P_{No-Load}$ ( $U_N, I_{OUT} = 0, I_{charge} = 0$ )	1.2 W
Power consumption $P_{charge}$ ( $U_N, I_{OUT} = 0, I_{charge} = max$ )	90 W

### Output data

Efficiency	typ. 98 %
Number of outputs	1
Short-circuit-proof	yes
No-load proof	yes
Switch-over time	0 ms
UPS connection in parallel	no
UPS connection in series	no
Energy storage device connection in parallel	Yes, 5 (observe line protection)
Energy storage device connection in series	no

### Mains operation

Output voltage	24 V DC ( $U_{OUT} = U_{IN} - 0.4$ V DC)
Output voltage range	18 V DC ... 30 V DC ( $U_{OUT} = U_{IN} - 0.4$ V DC) 18 V DC ... 32 V DC
Output current $I_N$	10 A

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Static Boost ( $I_{Stat.Boost}$ )	12.5 A
Dynamic Boost ( $I_{Dyn.Boost}$ )	20 A (5 s)
Selective Fuse Breaking ( $I_{SFB}$ )	60 A (15 ms)
Output power $P_{OUT}$ ( $U_N, I_{OUT} = I_N$ )	240 W
Output power $P_{OUT}$ ( $U_N, I_{OUT} = I_{stat.Boost}$ )	300 W
Output power $P_{OUT}$ ( $U_N, I_{OUT} = I_{dyn.Boost}$ )	480 W (5 s)
Power dissipation No load ( $U_N, I_{Out} = 0, I_{Charge} = 0$ )	3 W
Power dissipation Nominal load ( $U_N, I_{Out} = I_N, I_{Charge} = 0$ )	8 W

## Battery operation

Output voltage	24 V DC ( $U_{OUT} = U_{BAT} - 0.4$ V DC)
Output voltage range	19 V DC ... 28 V DC ( $U_{OUT} = U_{BAT} - 0.4$ V DC)
Output current $I_N$	10 A
Static Boost ( $I_{Stat.Boost}$ )	12.5 A
Selective Fuse Breaking ( $I_{SFB}$ )	60 A (15 ms)
Output power $P_{OUT}$ ( $U_N, I_{OUT} = I_N$ )	240 W
Output power $P_{OUT}$ ( $U_N, I_{OUT} = I_{stat.Boost}$ )	300 W
Output power $P_{OUT}$ ( $U_N, I_{OUT} = I_{dyn.Boost}$ )	480 W (5 s)
Power dissipation No load ( $U_N, I_{Out} = 0, I_{Charge} = 0$ )	2 W
Power dissipation Nominal load ( $U_N, I_{Out} = I_N, I_{Charge} = 0$ )	8 W

## Energy storage

Nominal voltage $U_N$	24 V DC
End-of-charge voltage (temperature-compensated)	25 V DC ... 32 V DC
End-of-charge voltage (configurable)	27.6 V DC
Charging current (configurable)	max. 3 A
Nominal capacity (without additional charger)	1.2 Ah ... 80 Ah
Max. capacity	80 Ah
Charging time	160 min (7.2 Ah)
Buffer time	25 min (7.2 Ah)
Deep discharge protection (configurable)	19.2 V DC
Battery technology	VRLA, VRLA-WTR, LI-ION
Charge characteristic curve	$IU_0U$
IQ-Technology	yes
Temperature sensor	yes
Temperature compensation (configurable)	42 mV/K

## Connection data

### Input

Position	1.x
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### Conductor connection

Connection method	Screw connection
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rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
flexible with ferrule without plastic sleeve	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
flexible with ferrule with plastic sleeve	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
AWG	30 ... 12 (Cu)
Stripping length	6.5 mm (Rigid/flexible/ferrule)
Tightening torque	0.5 Nm ... 0.6 Nm 5 lb <sub>F</sub> -in. ... 7 lb <sub>F</sub> -in.
Drive form screw head	Slotted L

## Output

Position	2.x
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## Conductor connection

Connection method	Screw connection
rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
flexible with ferrule without plastic sleeve	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
flexible with ferrule with plastic sleeve	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
AWG	30 ... 12 (Cu)
Stripping length	6.5 mm (Rigid/flexible/ferrule)
Tightening torque	0.5 Nm ... 0.6 Nm 5 lb <sub>F</sub> -in. ... 7 lb <sub>F</sub> -in.
Drive form screw head	Slotted L

## Signal

Position	3.x
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## Conductor connection

Connection method	Push-in connection
rigid	0.2 mm <sup>2</sup> ... 1 mm <sup>2</sup>
flexible	0.2 mm <sup>2</sup> ... 1 mm <sup>2</sup>
flexible with ferrule without plastic sleeve	0.2 mm <sup>2</sup> ... 0.75 mm <sup>2</sup>
flexible with ferrule with plastic sleeve	0.2 mm <sup>2</sup> ... 0.75 mm <sup>2</sup>
AWG	24 ... 16 (Cu)
Stripping length	8 mm (Rigid/flexible/ferrule)

## Battery

Position	4.x
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## Connection technology

Position marking	4.1 (+), 4.2 (-), 4.3 (⏏  )
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## Conductor connection

Connection method	Screw connection
rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>

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flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
flexible with ferrule without plastic sleeve	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
flexible with ferrule with plastic sleeve	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
AWG	30 ... 12 (Cu)
Stripping length	6.5 mm (Rigid/flexible/ferrule)
Tightening torque	0.5 Nm ... 0.6 Nm 5 lb <sub>f</sub> -in. ... 7 lb <sub>f</sub> -in.
Drive form screw head	Slotted L

## Communication

Position	5.x
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## Conductor connection

Connection method	Screw connection
rigid	0.2 mm <sup>2</sup> ... 1 mm <sup>2</sup>
flexible	0.2 mm <sup>2</sup> ... 1 mm <sup>2</sup> 0.5 mm <sup>2</sup> (recommended)
flexible with ferrule without plastic sleeve	0.2 mm <sup>2</sup> ... 0.75 mm <sup>2</sup> (Cu) 0.5 mm <sup>2</sup> (recommended)
flexible with ferrule with plastic sleeve	0.2 mm <sup>2</sup> ... 0.75 mm <sup>2</sup> 0.5 mm <sup>2</sup> (recommended)
rigid (AWG)	24 ... 16 (Cu)
Stripping length	6.5 mm (rigid/flexible)
Tightening torque	0.5 Nm ... 0.6 Nm
Drive form screw head	Slotted

## Interfaces

Interface	RS485
Number of interfaces	1
Connection method	Screw, 3-pole
Supported protocols	Modbus/RTU
Topology	Point-to-point

## Signaling

### LED signaling

Types of signaling	DC OK (green) Alarm (red) Bat.-Mode (yellow) SOC (red, green) Data (red, green)
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### Signal state Alarm

Connection labeling	3.2, 3.3
Channel	DO (digital output)

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Switch contact (floating)	OptoMOS
State (configurable)	Group alarm
State condition (configurable)	Alarm threshold
Switching voltage	max. 30 V AC/DC
State - signal assignment	NC (Normally Closed)
Current carrying capacity	max. 100 mA
LED status indicator	red (Alarm)

## Signal state Bat.-Mode

Connection labeling	3.4 (+)
Channel	DO (digital output)
Semiconductor output	MOSFET
State (configurable)	Bat.-Mode
State condition (configurable)	$U_{IN} < 18 \text{ V DC}$ , $U_{IN} > 30 \text{ V DC}$ , Bat.-Start
Output voltage	19 V DC ... 28 V DC (buffered)
Output can be loaded	max. 20 mA
State - signal assignment	active - high
Reference potential	3.9 (SGnd, identical to 1.2, 2.2, 4.2)
LED status indicator	Yellow (Bat.-Mode)

## Signal state Ready

Connection labeling	3.5 (+)
Channel	DO (digital output)
Semiconductor output	MOSFET
State (configurable)	Ready
State condition (configurable)	SOC = 100 %
Output voltage	19 V DC ... 28 V DC (buffered)
Output can be loaded	max. 20 mA
State - signal assignment	active - high
Reference potential	3.9 (SGnd, identical to 1.2, 2.2, 4.2)
LED status indicator	Green (state of charge - SOC)

## Signal state Remote

Connection labeling	3.6 (+)
Channel	DI (digital input)
State (configurable)	Disconnection
State condition	Low level
Low signal	Input connected with SGnd (3.9) or $< 5 \text{ V DC}$
High signal	Input not connected or connected with 13 ... 30 V DC
Signal - state assignment	low - active
Reference potential	3.9 (SGnd, identical to 1.2, 2.2, 4.2)
LED status indicator	Green, flashing (DC OK)

## Signal state PS Boost

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Connection labeling	3.7 (+)
Channel (configurable)	DI (digital input) default, AI (analog input)
State (configurable)	Charging current reduced
State condition	Low level
Low signal	Input connected with SGnd (3.9), <5 V DC or not connected
High signal	Input connected with 13 ... 30 V DC
Signal - state assignment	low - active
Analog	4 mA ... 20 mA (Offset zero point)
Reference potential	3.9 (SGnd, identical to 1.2, 2.2, 4.2)
Unit signal	I (mA)
Resistance	390 Ω

## Signal state Bat.-Start

Connection labeling	3.8 (+)
Channel	DI (digital input)
State condition	Low level (30 ms)
Low signal	Input connected with SGnd (3.9) or <u>Bat</u>
High signal	Input not connected or connected with >U <sub>Bat</sub>
Signal - state assignment	low - active
Reference potential	3.9 (SGnd, identical to 1.2, 2.2, 4.2)
LED status indicator	Yellow (Bat.-Mode)

## Signal output 24V DC 20 mA, SGnd

Connection labeling	3.1 (+), 3.9 (SGnd)
Output voltage	24 V DC
Output can be loaded	max. 20 mA
Reference potential	3.9 (SGnd, identical to 1.2, 2.2, 4.2)

## Product properties

Product type	DC UPS
Product family	QUINT DC UPS
MTBF (IEC 61709, SN 29500)	> 2065000 h (25 °C)
	> 1184000 h (40 °C)
	> 522600 h (60 °C)
Environmental protection directive	RoHS Directive 2011/65/EU
	WEEE
	Reach

## Insulation characteristics

Protection class	III (without PE)
Overvoltage category (EN 61010-1)	II (≤ 4000 m)
Overvoltage category (EN 61010-2-201)	II (≤ 4000 m)
Degree of pollution	2

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## Life expectancy (electrolytic capacitors)

Time	137895 h
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## Dimensions

### Item dimensions

Width	35 mm
Height	138 mm
Depth	132 mm
Depth (Device depth (DIN rail mounting))	125 mm (Device depth (DIN rail mounting))

### Item dimensions with alternative mounting

Width	123 mm
Height	130 mm

### Installation dimensions

Installation distance right/left (active)	5 mm / 5 mm ( $P_{Out} \geq 50\%$ )
Installation distance right/left (passive)	0 mm / 0 mm ( $P_{Out} \geq 50\%$ )
Installation distance right/left (active, passive)	0 mm / 0 mm ( $P_{Out} \leq 50\%$ )
Installation distance top/bottom (active)	50 mm / 50 mm ( $P_{Out} \geq 50\%$ )
Installation distance top/bottom (passive)	40 mm / 20 mm ( $P_{Out} \geq 50\%$ )
Installation distance top/bottom (active, passive)	40 mm / 20 mm ( $P_{Out} \leq 50\%$ )

## Mounting

Mounting type	DIN rail mounting
Mounting position	On horizontal DIN rail NS 35/7.5 and NS 35/15 acc. to EN 60715

## Material specifications

Flammability rating according to UL 94 (housing / terminal blocks)	V0
Housing material	Metal
Hood version	Stainless steel X6Cr17
Side element version	Aluminum AlMg3

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20 IP20
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C Derating: 2,5 %/K)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Ambient temperature (start-up type tested)	-40 °C
Max. permissible relative humidity (operation)	≤ 95 % (at 25 °C, non-condensing)

## Standards and regulations

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## Protective extra-low voltage

Standard designation	Protective extra-low voltage
Standards/specifications	IEC 61010-1 (SELV)
	IEC 61010-2-201 (PELV)

## Approvals

### UL approval

Identification	UL/C-UL Listed UL 61010-1
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### UL approval

Identification	UL/C-UL Listed UL 61010-2-201
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### UL approval

Identification	UL/C-UL Listed ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location)
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### CSA

Identification	CAN/CSA-C22.2 No. 61010-1-12
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### CSA

Identification	CAN/CSA-IEC 61010-2-201
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### CSA

Identification	CAN/CSA-C22.2 No. 213 Class I, Division 2, Groups A, B, C, D T4 (Hazardous Location)
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### CB scheme

Identification	IEC 61010-1
	IEC 61010-2-201

### DNV

Identification	Class Guideline DNVGL-CG-0339
Note	Location classes: Temperature D (see Application/Limitation), Humidity B, Vibration A/C, EMC B

## 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
Noise immunity	Immunity in accordance with EN 61000-6-1 (residential), EN 61000-6-2 (industrial), and EN 61000-6-5 (switching devices), IEC/EN 61850-3 (power supply)

### Noise emission

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Standards/regulations	Additional basic standard EN 61000-6-5 (immunity in switching devices), IEC/EN 61850-3 (power supply)
Electrostatic discharge	
Standards/regulations	EN 61000-4-2
Electrostatic discharge	
Contact discharge	8 kV (Test Level 4)
Discharge in air	15 kV (Test Level 4)
Comments	Criterion B
Electromagnetic HF field	
Standards/regulations	EN 61000-4-3
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)
Frequency range	1 GHz ... 6 GHz
Test field strength	10 V/m (Test Level 3)
Comments	Criterion A
Fast transients (burst)	
Standards/regulations	EN 61000-4-4
Fast transients (burst)	
Input	4 kV (Test Level 4 - asymmetrical)
Output	4 kV (Test Level 4 - asymmetrical)
Signal	4 kV (Test Level 4 - asymmetrical)
Comments	Criterion B
Surge voltage load (surge)	
Standards/regulations	EN 61000-4-5
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 B
Conducted interference	
Standards/regulations	EN 61000-4-6
Conducted interference	

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Input/output/signal	asymmetrical
Frequency range	0.15 MHz ... 80 MHz
Comments	Criterion A
Voltage	10 V (Test Level 3)

## Power frequency magnetic field

Standards/regulations	EN 61000-4-8
Frequency	16.67 Hz
	50 Hz
	60 Hz
Test field strength	100 A/m
Additional text	60 s
Comments	Criterion A
Frequency	50 Hz
	60 Hz
Frequency range	50 Hz ... 60 Hz
Test field strength	1 kA/m
Additional text	3 s
Frequency	0 Hz
Test field strength	300 A/m
Additional text	DC, 60 s

## Criteria

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



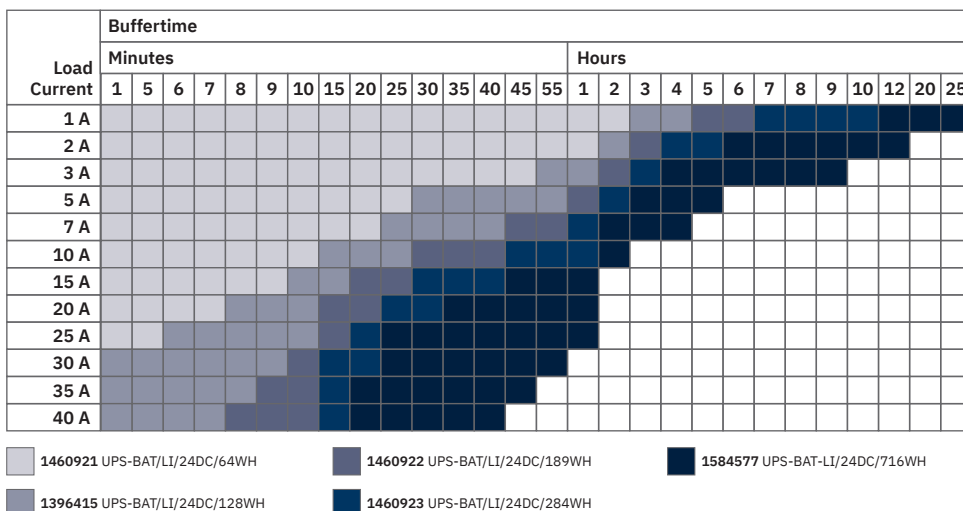
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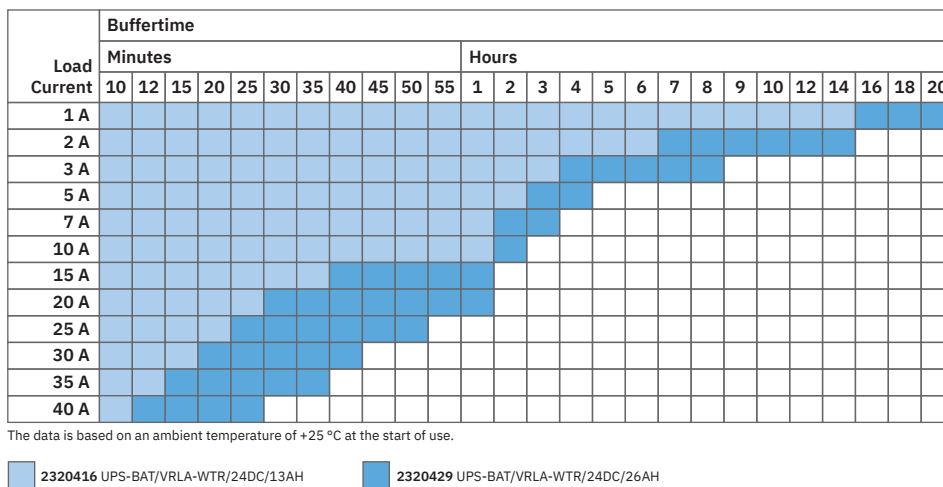
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Graphic



QUINT DC UPS buffer times for LI battery module

Graphic



QUINT DC UPS buffer times and VRLA-WTR battery module

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## Classifications

### ECLASS

ECLASS-13.0	27040705
ECLASS-15.0	27040705

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PHOENIX CONTACT Ltd  
Halesfield 13, Telford  
Shropshire, TF7 4PG  
01952 681700  
[info@phoenixcontact.co.uk](mailto:info@phoenixcontact.co.uk)