

QUINT4-UPS/24DC/24DC/20/485 - Uninterruptible power supply



1322782

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QUINT DC UPS, IQ Technology, RS485, DIN rail mounting, input: 24 V DC, output: 24 V DC / 20 A, charging current: 5 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	1322782
Packing unit	1 pc
Minimum order quantity	1 pc
Product key	CMUI43
GTIN	4063151611323
Weight per piece (including packing)	573 g
Weight per piece (excluding packing)	526 g
Country of origin	Country of origin will be provided upon 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	≤ 8 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 , $I_{OUT} = I_N$, $I_{charge} = 0$)	20.1 A
Current consumption I_{max} (U_N , $I_{OUT} = I_{Stat.Boost}$, $I_{charge} = max$)	31.4 A
Current consumption $I_{No-Load}$ (U_N , $I_{OUT} = 0$, $I_{charge} = 0$)	50 mA
Current consumption I_{charge} (U_N , $I_{OUT} = 0$, $I_{charge} = max$)	6.1 A
Power consumption P_N (U_N , $I_{OUT} = I_N$, $I_{charge} = 0$)	474 W
Power consumption P_{max} (U_N , $I_{OUT} = I_{Stat.Boost}$, $I_{charge} = max$)	738 W
Power consumption $P_{No-Load}$ (U_N , $I_{OUT} = 0$, $I_{charge} = 0$)	1.3 W
Power consumption P_{charge} (U_N , $I_{OUT} = 0$, $I_{charge} = max$)	145 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	20 A

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Static Boost ($I_{\text{Stat.Boost}}$)	25 A
Dynamic Boost ($I_{\text{Dyn.Boost}}$)	30 A (5 s)
Selective Fuse Breaking (I_{SFB})	120 A (15 ms)
Output power P_{OUT} (U_{N} , $I_{\text{OUT}} = I_{\text{N}}$)	480 W
Output power P_{OUT} (U_{N} , $I_{\text{OUT}} = I_{\text{stat.Boost}}$)	600 W
Output power P_{OUT} (U_{N} , $I_{\text{OUT}} = I_{\text{dyn.Boost}}$)	720 W (5 s)
Power dissipation No load (U_{N} , $I_{\text{Out}} = 0$, $I_{\text{Charge}} = 0$)	3 W
Power dissipation Nominal load (U_{N} , $I_{\text{Out}} = I_{\text{N}}$, $I_{\text{Charge}} = 0$)	10 W

Battery operation

Output voltage	24 V DC ($U_{\text{OUT}} = U_{\text{BAT}} - 0.4 \text{ V DC}$)
Output voltage range	19 V DC ... 28 V DC ($U_{\text{OUT}} = U_{\text{BAT}} - 0.4 \text{ V DC}$)
Output current I_{N}	20 A
Static Boost ($I_{\text{Stat.Boost}}$)	25 A
Selective Fuse Breaking (I_{SFB})	120 A (15 ms)
Output power P_{OUT} (U_{N} , $I_{\text{OUT}} = I_{\text{N}}$)	480 W
Output power P_{OUT} (U_{N} , $I_{\text{OUT}} = I_{\text{stat.Boost}}$)	600 W
Output power P_{OUT} (U_{N} , $I_{\text{OUT}} = I_{\text{dyn.Boost}}$)	720 W (5 s)
Power dissipation No load (U_{N} , $I_{\text{Out}} = 0$, $I_{\text{Charge}} = 0$)	2 W
Power dissipation Nominal load (U_{N} , $I_{\text{Out}} = I_{\text{N}}$, $I_{\text{Charge}} = 0$)	11 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. 5 A
Nominal capacity (without additional charger)	3 Ah ... 135 Ah
Max. capacity	135 Ah
Charging time	165 min (12 Ah)
Buffer time	22 min (12 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

Interfaces

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

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Signaling

LED signaling

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

Signal state Alarm

Connection labeling	3.2, 3.3
Channel	DO (digital output)
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)

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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 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

Connection labeling	3.7 (+)
Channel (configurable)	DI (digital input) default, AI (analog input)
State (configurable)	Charging current reduced
State condition	Low level
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 _{Bat}
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 family	QUINT DC UPS
MTBF (IEC 61709, SN 29500)	> 1940000 h (25 °C)
	> 1157000 h (40 °C)
	> 568100 h (60 °C)

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Environmental protection directive	RoHS Directive 2011/65/EU
	WEEE
	Reach

Insulation characteristics

Protection class	III (without PE)
Degree of pollution	2

Life expectancy (electrolytic capacitors)

Time	192072 h
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Dimensions

Item dimensions

Width	40 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
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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
Maximum altitude	≤ 4000 m
Climatic class	3K3 (EN 60721)
Max. permissible relative humidity (operation)	≤ 95 % (at 25 °C, non-condensing)
Shock	18 ms, 30g, in each space direction (according to IEC 60068-2-27)
Vibration (operation)	2.3g

Standards and regulations

Overvoltage category

EN 61010-1	II (≤ 4000 m)
EN 61010-2-201	II (≤ 4000 m)

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

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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

Standards/regulations	Additional basic standard EN 61000-6-5 (immunity in switching devices), IEC/EN 61850-3 (power supply)
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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 B

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)
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
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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

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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 B

Conducted interference

Standards/regulations	EN 61000-4-6
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Conducted interference

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

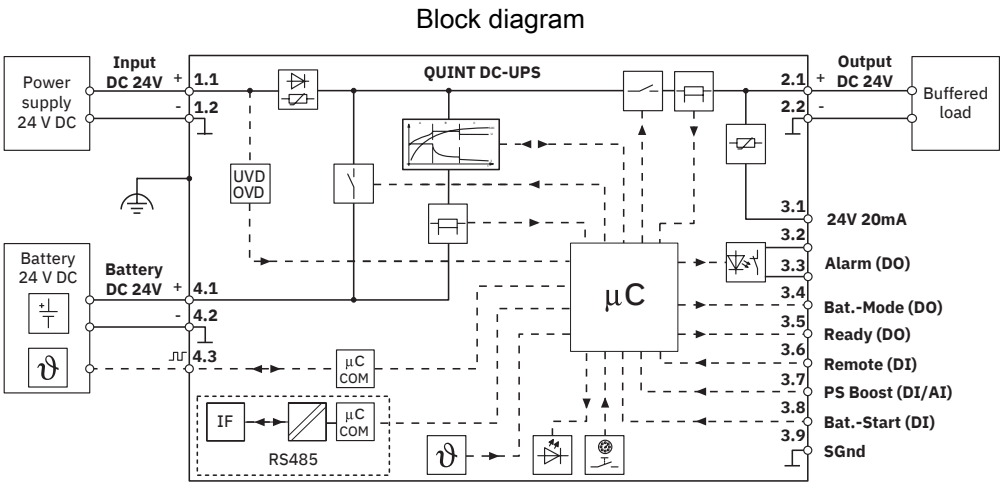
Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.

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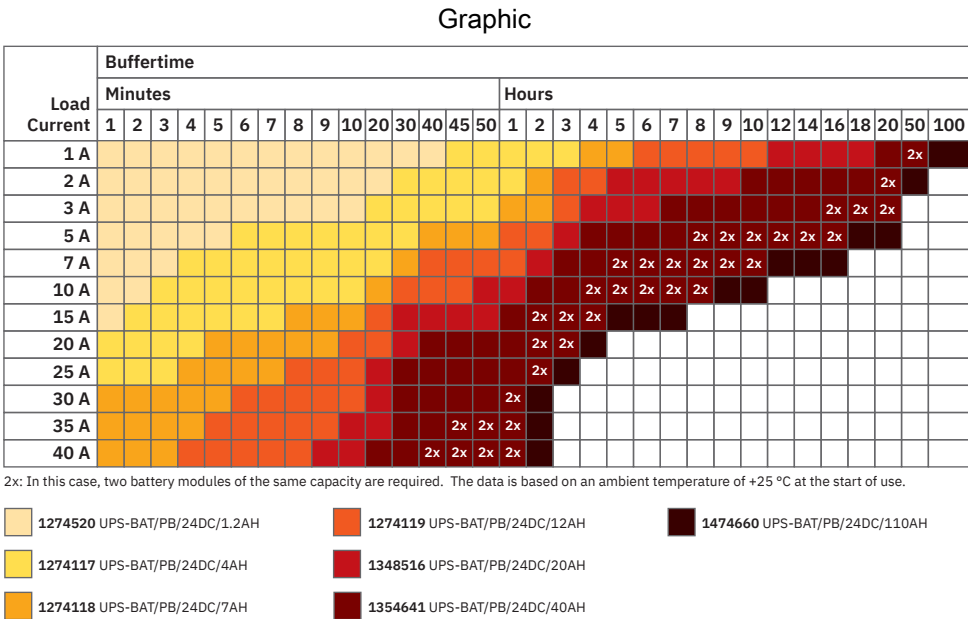
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Drawings



Block diagram



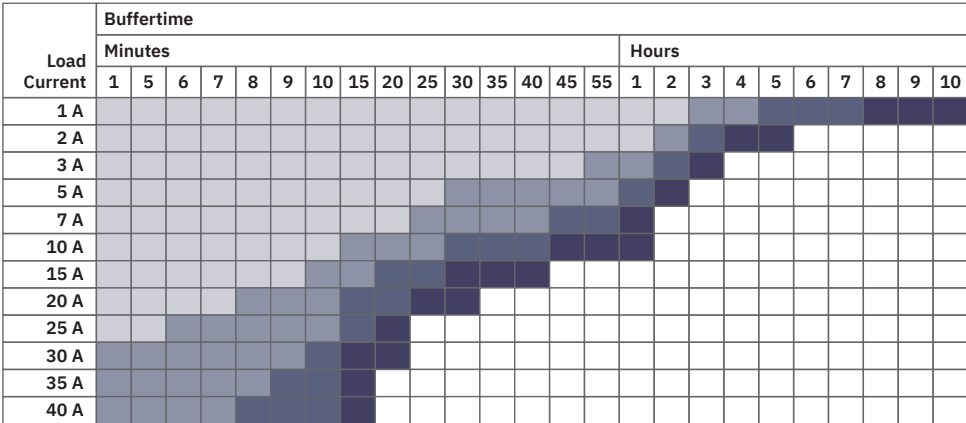
QUINT DC UPS buffer times for PB battery module

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Graphic

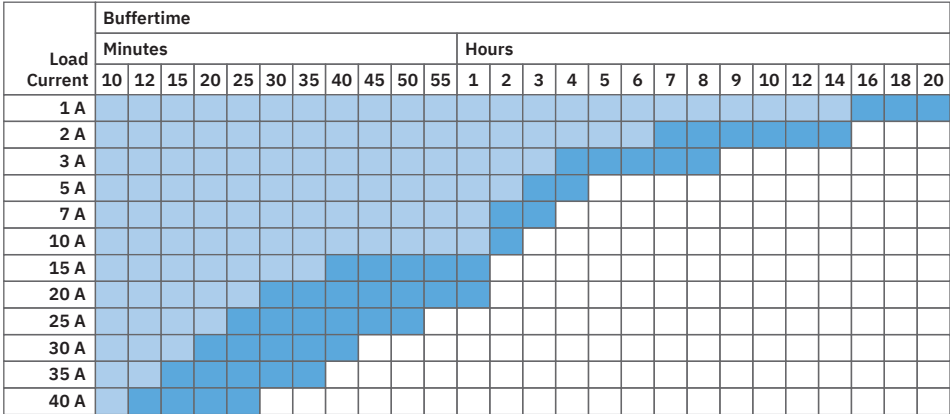


The data is based on an ambient temperature of +25 °C at the start of use.

1460921 UPS-BAT/LI/24DC/64WH 1460922 UPS-BAT/LI/24DC/189WH
1396415 UPS-BAT/LI/24DC/128WH 1460923 UPS-BAT/LI/24DC/284WH

QUINT DC UPS buffer times for LI battery module

Graphic



The data is based on an ambient temperature of +25 °C at the start of use.

2320416 UPS-BAT/VRLA-WTR/24DC/13AH 2320429 UPS-BAT/VRLA-WTR/24DC/26AH

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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Mandatory accessories

UPS-BAT/PB/24DC/4AH - Battery module

1274117

<https://www.phoenixcontact.com/pc/products/1274117>



Battery module (device with battery), VRLA-AGM, 24 V DC, 4 Ah, automatic detection and communication with QUINT UPS-IQ

UPS-BAT/PB/24DC/7AH - Battery module

1274118

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Battery module (device with battery), VRLA-AGM, 24 V DC, 7 Ah, automatic detection and communication with QUINT UPS-IQ

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UPS-BAT/PB/24DC/12AH - Battery module

1274119

<https://www.phoenixcontact.com/pc/products/1274119>



Battery module (device with battery), VRLA-AGM, 24 V DC, 12 Ah, automatic detection and communication with QUINT UPS-IQ

UPS-BAT/PB/24DC/20AH - Battery module

1348516

<https://www.phoenixcontact.com/pc/products/1348516>



Battery module (device with battery), VRLA-AGM, 24 V DC, 20 Ah, automatic detection and communication with QUINT UPS-IQ

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UPS-BAT/PB/24DC/40AH - Battery module

1354641

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Battery module (device with battery), VRLA-AGM, 24 V DC, 40 Ah, automatic detection and communication with QUINT UPS-IQ

UPS-BAT/LI/24DC/128WH - Battery module

1396415

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Battery module (device with battery), Lithium-Ion (LiFePO₄), 24 V DC, 128 Wh. For use with a QUINT UPS for ambient temperatures (charging) of 0°C ... 60°C and a maximum charging current of 5 A. For charging below 0°C, please note the permissible UPS V/C level. 2 x 1446073 are required as replacement batteries.

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UPS-BAT/VRLA-WTR/24DC/13AH - Battery module

2320416

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Battery module (device with battery), lead AGM, VRLA technology 24 V DC, 13 Ah, tool-free battery change, automatic detection, and communication with QUINT UPS-IQ

UPS-BAT/VRLA-WTR/24DC/26AH - Battery module

2320429

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Battery module (device with battery), lead AGM, VRLA technology 24 V DC, 26 Ah, tool-free battery change, automatic detection, and communication with QUINT UPS-IQ

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UPS-BAT/LI/24DC/64WH - Battery module

1460921

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Battery module (device with battery), Lithium-Ion (LiFePO_4), 24 V DC, 64 Wh. 1 x 1446073 is required as a replacement battery.

UPS-BAT/LI/24DC/189WH - Battery module

1460922

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Battery module (device with battery), Lithium-Ion (LiFePO_4), 24 V DC, 189 Wh. 2 x 1532141 are required as replacements batteries.

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UPS-BAT/LI/24DC/284WH - Battery module

1460923

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Battery module (device with battery), Lithium-Ion (LiFePO₄), 24 V DC, 284 Wh.
3 x 1532141 are required as replacement batteries.

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