# TRIO-UPS/1AC/24DC/ 5 - Uninterruptible power supply

2866611

https://www.phoenixcontact.com/in/products/2866611

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Uninterruptible power supply with integrated power supply unit. For lead AGM battery module MINI-BAT/24/DC/1.3 AH, QUINT-BAT/24DC 3.4 AH … 12 AH nominal capacity. Input: 1-phase, output: 24 V DC/5 A. Screw connection technology

## Product description

The TRIO UPS module with integrated power supply is particularly space-saving: UPS module and power supply in one housing. Only one battery module is required to complete the UPS system.
Battery modules with lead AGM technology buffer failures lasting up to two hours with 5 A load current.

## Your advantages

- Autonomous – in the event of AC mains failure the industrial PC continues operating without interruption
- Time-saving – when the supply voltage is restored, the industrial PC starts automatically

## Commercial data

| | |
|---|---|
| Item number | 2866611 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | CMU |
| Product key | CMUT13 |
| Catalog page | Page 300 (C-4-2017) |
| GTIN | 4046356311809 |
| Weight per piece (including packing) | 1,108.8 g |
| Weight per piece (excluding packing) | 939 g |
| Customs tariff number | 85044095 |
| Country of origin | CN |

# Technical data

## Input data

DC operation

| | |
|---|---|
| Input voltage | 24 V DC |
| Nominal input voltage range | 100 V AC ... 240 V AC |
| Input voltage range | 85 V AC ... 264 V AC (Derating < 90 V AC: 2.5%V) |
| | 100 V DC ... 350 V DC (UL508: 100 ... 250 V) |
| Input voltage range AC | 85 V AC ... 264 V AC (Derating < 90 V AC: 2.5%V) |
| Input voltage range DC | 100 V DC ... 350 V DC (UL508: 100 ... 250 V) |
| Voltage type of supply voltage | AC/DC |
| Inrush current | < 44 A (< 1.3 $A^2s$) |
| Inrush current integral ($I^2t$) | < 1.3 $A^2s$ |
| AC frequency range | 45 Hz ... 65 Hz |
| Frequency range DC | 0 Hz |
| Mains buffering time | see diagram |
| Buffer period | 20 min. (5 A) |
| Rotary selector switch | adjustable: 0.5 min; 1 min; 2 min; 3 min; 5 min; 10 min; 15 min; 20 min; PC-Mode |
| Current consumption | 0.95 A (230 V AC) |
| | 1.1 A (230 V AC, maximum) |
| | 1.7 A (120 V AC) |
| | 1.8 A (120 V AC, maximum) |
| Protective circuit | Transient surge protection; Varistor |
| Power factor (cos phi) | approx. 0.5 |
| Typical response time | 150 ms (230 V AC) |
| | 200 ms (120 V AC) |
| Input fuse | 6.3 A (slow-blow, internal) |
| Permissible backup fuse | B6 B10 B16 |
| Recommended breaker for input protection | 6 A ... 16 A (Characteristics B, C, D, K) |

## Output data

| | |
|---|---|
| Efficiency | > 88 % (230 V AC, network operation) |
| | > 86 % (120 V AC, network operation) |
| | > 86 % (Battery operation) |
| Nominal output voltage | 24 V DC |
| Setting range of the output voltage ($U_{Set}$) | 22.5 V DC ... 29.5 V DC (Network operation; in the buffer mode, dependent on the battery voltage of 27.9 V DC ... 19.2 V DC) |
| Nominal output current ($I_N$) | 5 A (-25 °C ... 55 °C) |
| Output current limit | max. 6 A (Mains operation) |
| Bridging time | 3600 s |
| Derating | 55 °C ... 70 °C (2.5 %/K) |
| Feedback voltage resistance | 35 V DC |

| | |
|---|---|
| Protection against overvoltage at the output (OVP) | < 35 V DC |
| Control deviation | < 1 % (change in load, static 10 % ... 90 %) |
| Residual ripple | < 10 $mV_{PP}$ |
| Output power | 120 W |
| Nominal power | 120 W |
| Peak switching voltages nominal load | < 25 $mV_{PP}$ |
| Maximum no-load power dissipation | 2 W |
| Power loss nominal load max. | 16 W (230 V AC) |
| | 20 W (120 V AC) |
| Power dissipation battery operation | 4 W |
| Rise time | < 100 ms |
| Connection in parallel | yes, 2 |
| Connection in series | no |

Mains operation

| | |
|---|---|
| Nominal output voltage | 24 V DC |
| Output voltage range | 22.5 V DC ... 29.5 V DC |
| Nominal output current ($I_N$) | 5 A |

Battery operation

| | |
|---|---|
| Nominal output voltage | 24 V DC |
| Output voltage range | 19.2 V DC ... 27.6 V DC ($U_{OUT}$ = $U_{BAT}$ - 0,5 V DC) |
| Nominal output current ($I_N$) | 5 A |

Signal

| | |
|---|---|
| Output voltage | + 24 V |

Signal: Alarm

| | |
|---|---|
| Output description | Transistor switching output |
| Maximum switching voltage | ≤ 24 V |
| Output voltage | 24 V |
| Continuous load current | ≤ 200 mA |

Signal: Battery charge

| | |
|---|---|
| Output description | Transistor switching output |
| Maximum switching voltage | ≤ 24 V |
| Output voltage | 24 V |
| Continuous load current | ≤ 200 mA |

Signal: Battery mode

| | |
|---|---|
| Output description | Transistor switching output |
| Maximum switching voltage | ≤ 24 V |
| Output voltage | 24 V |
| Continuous load current | ≤ 200 mA |

## Energy storage

| | |
|---|---|
| End-of-charge voltage | 25 V DC ... 30 V DC (Default 27.6 V DC) |

| | |
|---|---|
| Charging current | 1.5 A |
| Deep discharge protection | 18 V DC ... 21 V DC (Default 19.2 V DC) |
| Memory medium | external, battery 1.3 Ah / 3.4 Ah / 7.2 Ah / 12 Ah |
| Battery presence check/time interval | 60 s |
| Quality check of battery | 4 h ... 200 h (Default 12 h) |
| Charge characteristic curve | I/U characteristic curve |
| IQ technology | no |
| Temperature compensation | 0 mV/K ... 200 mV/K (42 mV/K by default) |
| Alarm signaling threshold | 18 V DC ... 30 V DC (Default 20.4 V DC) |
| Network management | No |

## Connection data

### Input

| | |
|---|---|
| Connection method | Screw connection |
| Conductor cross section, rigid min. | 0.2 mm² |
| Conductor cross section, rigid max. | 2.5 mm² |
| Conductor cross section flexible min. | 0.2 mm² |
| Conductor cross section flexible max. | 2.5 mm² |
| Conductor cross section AWG min. | 24 |
| Conductor cross section AWG max. | 12 |
| Screw thread | M3 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

### Output

| | |
|---|---|
| Connection method | Screw connection |
| Conductor cross section, rigid min. | 0.2 mm² |
| Conductor cross section, rigid max. | 2.5 mm² |
| Conductor cross section flexible min. | 0.2 mm² |
| Conductor cross section flexible max. | 2.5 mm² |
| Conductor cross section AWG min. | 24 |
| Conductor cross section AWG max. | 12 |
| Stripping length | 8 mm |
| Screw thread | M3 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

### Signal

| | |
|---|---|
| Conductor cross section, rigid min. | 0.2 mm² |
| Conductor cross section, rigid max. | 2.5 mm² |
| Conductor cross section flexible min. | 0.2 mm² |
| Conductor cross section flexible max. | 2.5 mm² |
| Conductor cross section AWG min. | 24 |
| Conductor cross section AWG max. | 12 |

| | |
|---|---|
| Screw thread | M3 |
| Tightening torque, min | 0.5 Nm |
| Tightening torque max | 0.6 Nm |

## Interfaces

| | |
|---|---|
| Interface | IFS (Interface system data port) |

## Signaling

| | |
|---|---|
| Types of signaling | LED |

Signal output

| | |
|---|---|
| Status display | Green LED |
| Note on status display | Mains voltage OK: Green LED, static at |

Signal output: Alarm

| | |
|---|---|
| Status display | Alarm |
| Note on status display | Red LED, static at |

Signal output: Battery charge

| | |
|---|---|
| Status display | Battery (battery charge) is being charged |
| Note on status display | Yellow LED, flashing |

Signal output: Battery mode

| | |
|---|---|
| Status display | Battery operation (Battery Mode) |
| Note on status display | LED yellow, static at |

## Electrical properties

| | |
|---|---|
| Insulation voltage input/output | 4 kV (type test) |
| | 2 kV (routine test) |
| Insulation voltage output / PE | 500 V DC (routine test) |
| Insulation voltage input / PE | 2 kV AC (type test) |
| | 2 kV AC (routine test) |

## Product properties

| | |
|---|---|
| Product type | DC UPS |
| IQ technology | no |
| MTBF (IEC 61709, SN 29500) | > 596000 h (40 °C) |

Insulation characteristics

| | |
|---|---|
| Protection class | I |
| Degree of pollution | 2 |

## Dimensions

| | |
|---|---|
| Width | 60 mm |
| Height | 130 mm |
| Depth | 118 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 |
| Assembly note | alignable: horizontally 0 mm, vertically 50 mm |
| Mounting position | horizontal DIN rail NS 35, EN 60715 |

## Material specifications

| | |
|---|---|
| Housing material | Metal |
| Housing material | Aluminum (AlMg3) / sheet steel, zinc-plated |
| Type of housing | Aluminum (AlMg3) + zinc-plated sheet steel, enclosed |

## Environmental and real-life conditions

Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 |
| Ambient temperature (operation) | -25 °C ... 70 °C (> 55° C derating : 2.5%/K) |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C |
| Climatic class | 3K3 (in acc. with 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) | < 15 Hz, amplitude ±2.5 mm (according to IEC 60068-2-6) |
| | 15 Hz ... 150 Hz, 2.3g, 90 min. |

## Standards and regulations

| | |
|---|---|
| Rail applications | EN 50121-4 |
| Standard – Electronic equipment for use in electrical power installations and their assembly into electrical power installations | EN 50178/VDE 0160 (PELV) |
| Standard – Limitation of mains harmonic currents | EN 61000-3-2 |
| Standard - Electrical safety | EN 60950-1/VDE 0805 (SELV) |
| Standard – Protection against shock currents, basic requirements for protective separation in electrical equipment | EN 50178 |
| Standard – Safety extra-low voltage | EN 60950-1 (SELV) |
| | EN 60204 (PELV) |
| Standard - Safe isolation | DIN VDE 0100-410 |

## Approvals

| | |
|---|---|
| Shipbuilding approval | DNV GL (EMC B) |
| UL approvals | UL/C-UL listed UL 508 |
| | UL/C-UL Recognized UL 60950-1 |

## EMC data

| | |
|---|---|
| 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 |
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |
| Noise emission | EN 55011 (EN 55022) |

Electrostatic discharge

| | |
|---|---|
| Standards/regulations | EN 61000-4-2 |
| Housing | Level 3 |

Electrostatic discharge

| | |
|---|---|
| Contact discharge | 6 kV |
| Discharge in air | 8 kV |
| Comments | Criterion B |

Electromagnetic HF field

| | |
|---|---|
| Standards/regulations | EN 61000-4-3 |

Electromagnetic HF field

| | |
|---|---|
| Frequency range | 80 MHz ... 2 GHz |
| Test field strength | 10 V/m |
| Comments | Criterion A |

Fast transients (burst)

| | |
|---|---|
| Standards/regulations | EN 61000-4-4 |

Fast transients (burst)

| | |
|---|---|
| Input | 4 kV (level 4 - asymmetrical: conductor to ground) |
| Output | 2 kV (level 4 - asymmetrical: conductor to ground) |
| Signal | 1 kV (level 4 - asymmetrical: conductor to ground) |
| Comments | Criterion B |

Surge voltage load (surge)

| | |
|---|---|
| Standards/regulations | EN 61000-4-5 |

Surge voltage load (surge)

| | |
|---|---|
| Input | 4 kV (level 4 - asymmetrical: conductor to ground) |
| | 2 kV (level 4 - symmetrical: conductor to conductor) |
| Output | 2 kV (Level 3 - asymmetrical) |
| | 1 kV (Level 3 - symmetrical) |
| Signal | 2 kV (Level 3 - asymmetrical) |
| | 1 kV (Level 3 - symmetrical) |
| Comments | Criterion B |

Conducted interference

| | |
|---|---|
| Standards/regulations | EN 61000-4-6 |

Conducted interference

| | |
|---|---|
| I/O/S | Level 3 |
| Frequency range | 10 kHz ... 80 MHz |
| Comments | Criterion A |
| Voltage | 10 V |

Voltage dips

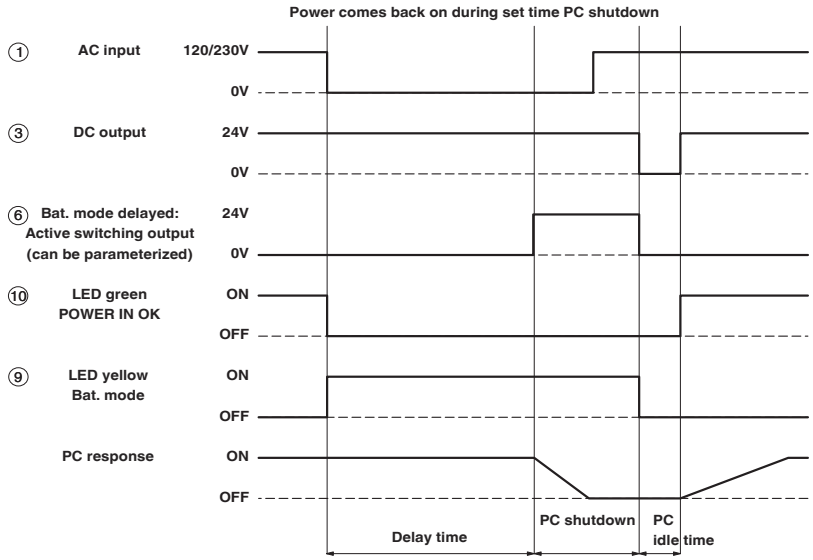
| | |
|---|---|
| Standards/regulations | EN 61000-4-11 |

Emitted interference

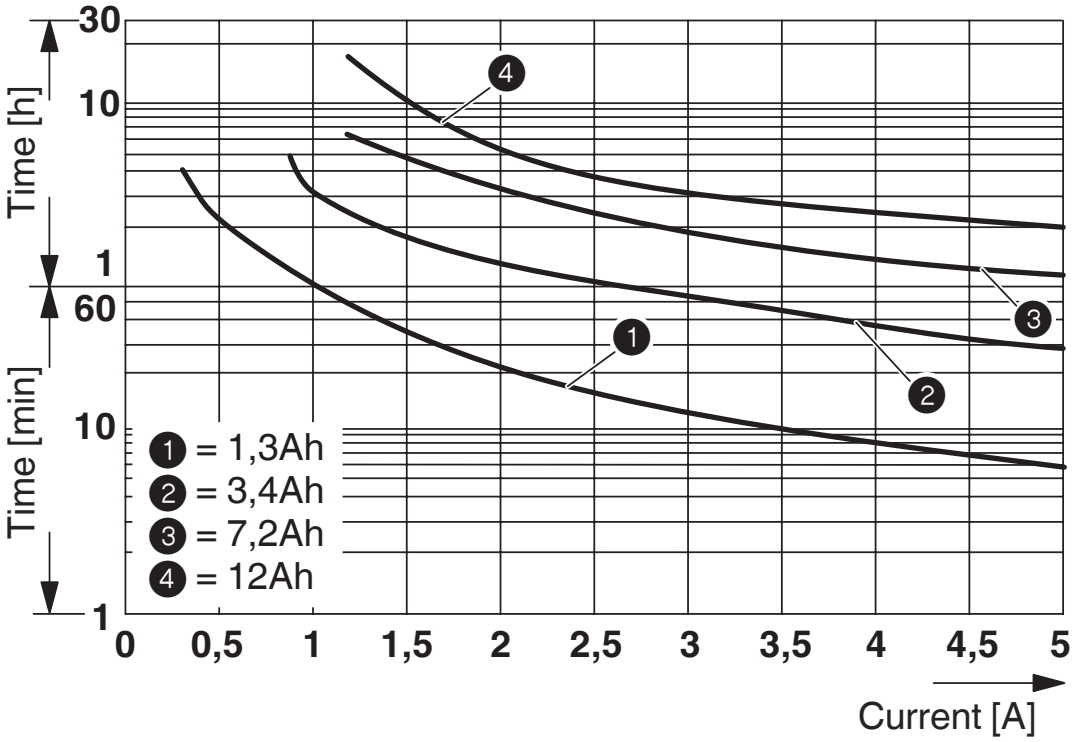
| | |
|---|---|
| Standards/regulations | EN 61000-6-3 |
| Radio interference voltage in acc. with EN 55011 | EN 55011 (EN 55022) Class B, area of application: Industry and residential |
| Emitted radio interference in acc. with EN 55011 | EN 55011 (EN 55022) Class B, area of application: Industry and residential |

## Drawings

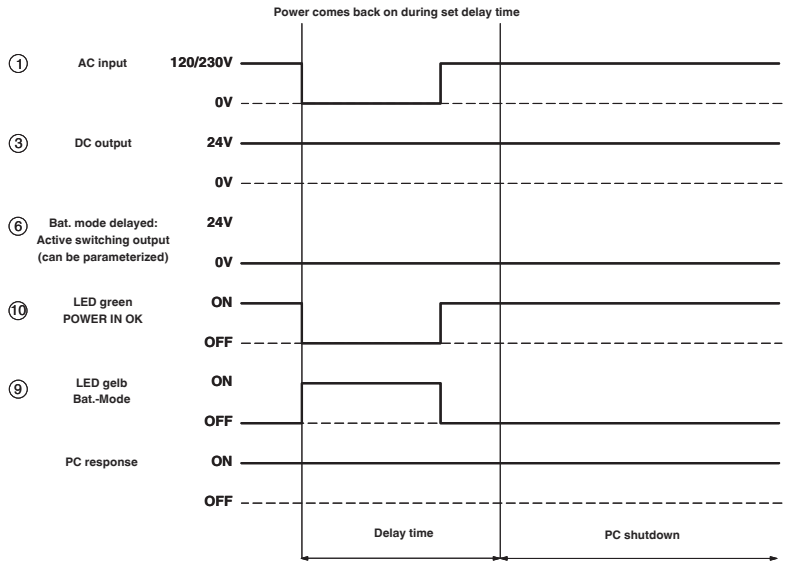
Diagram



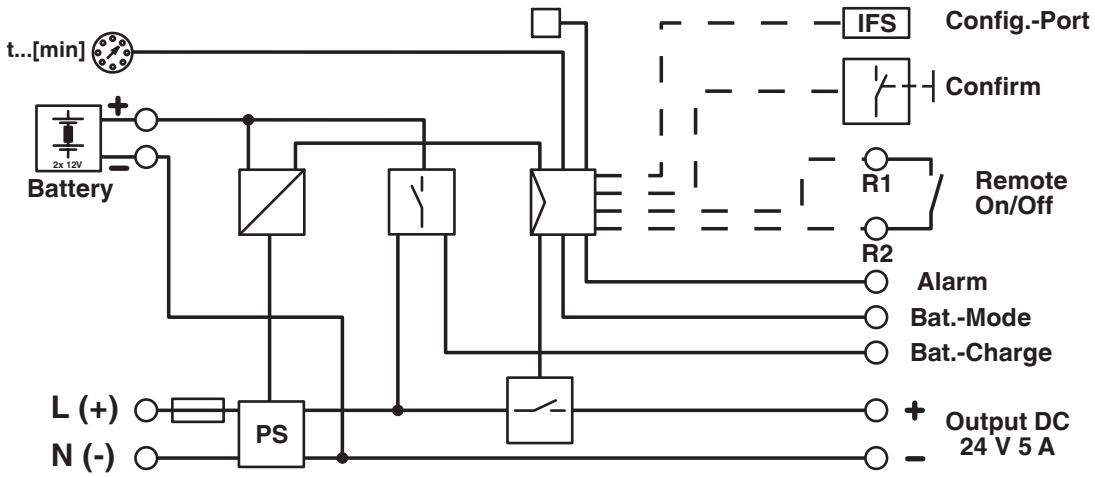

Diagram



## Diagram




## Block diagram



## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/in/products/2866611

**cUL Recognized**
Approval ID: FILE E 211944

**UL Recognized**
Approval ID: FILE E 211944

**EAC**
Approval ID: EAC-Zulassung

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

**UL Listed**
Approval ID: FILE E 123528

**cUL Listed**
Approval ID: FILE E 123528

**EAC**
Approval ID: RU-DE.B.00184/20

**KC**
Approval ID: R-R-PCK-2866611

**IECEE CB Scheme**
Approval ID: DE/PTZ/0053

**IECEE CB Scheme**
Approval ID: DE/PTZ/0053

**cULus Recognized**

| |
|---|
| **cULus Listed** |

## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-11.0 | 27040705 |
| ECLASS-12.0 | 27040705 |
| ECLASS-13.0 | 27040705 |

### ETIM

| | |
|---|---|
| ETIM 9.0 | EC000382 |

### UNSPSC

| | |
|---|---|
| UNSPSC 21.0 | 39121000 |

## 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) |

## Accessories

### UPS-BAT/PB/24DC/1.2AH - Battery module

1274520

https://www.phoenixcontact.com/in/products/1274520

Battery module, VRLA-AGM, 24 V DC, 1.2 Ah, automatic detection and communication with QUINT UPS-IQ

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

1274117

https://www.phoenixcontact.com/in/products/1274117

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

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

1274118

https://www.phoenixcontact.com/in/products/1274118

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

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

1274119

https://www.phoenixcontact.com/in/products/1274119

Battery module, 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/in/products/1348516

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

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

1354641

https://www.phoenixcontact.com/in/products/1354641

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

## MINI-BAT/24DC/1.3AH - Battery module

2866417

https://www.phoenixcontact.com/in/products/2866417

Battery module, lead AGM, VRLA technology, 24 V DC, 1.2 Ah.

## QUINT-BAT/24DC/ 3.4AH - Battery module

2866349

https://www.phoenixcontact.com/in/products/2866349

Battery module, lead AGM, VRLA technology, 24 V DC, 4 Ah. Connection via pin cable lug.

## QUINT-BAT/24DC/ 7.2AH - Battery module

2866352

https://www.phoenixcontact.com/in/products/2866352

Battery module, lead AGM, VRLA technology, 24 V DC, 7.2 Ah. Connection via pin cable lug, 14 mm.

## QUINT-BAT/24DC/12AH - Battery module

2866365

https://www.phoenixcontact.com/in/products/2866365

Battery module, lead AGM, VRLA technology, 24 V DC, 12 Ah. Connection via pin cable lug, 14 mm.

## SI FORM C 15 A DIN 72581 - Fuse

0913676

https://www.phoenixcontact.com/in/products/0913676


Flat-type plug-in fuse, type C, color code: light blue, nominal current: 15 A

## SI FORM C 25 A DIN 72581 - Fuse

0913757

https://www.phoenixcontact.com/in/products/0913757


Flat-type plug-in fuse, type C, color code: white, nominal current: 25 A

## IFS-USB-PROG-ADAPTER - Programming adapter

2811271

https://www.phoenixcontact.com/in/products/2811271

Programming adapter with USB interface, for programming with software. The USB driver is included in the software solutions for the products to be programmed, such as measuring transducers or motor managers.

## QUINT-PS-ADAPTERS7/2 - Mounting adapter

2938206

https://www.phoenixcontact.com/in/products/2938206

Assembly adapter for QUINT POWER 10A on S7-300 rail

## UWA 182/52 - Mounting adapter

2938235

https://www.phoenixcontact.com/in/products/2938235

Universal wall adapter for securely mounting the device in the event of strong vibrations. The device is screwed directly onto the mounting surface. The universal wall adapter is attached on the top/bottom.

## UTA 107 - DIN rail adapter

2853983

https://www.phoenixcontact.com/in/products/2853983

Universal DIN rail adapter, for screwing on switchgear

## IFS-CONFSTICK-L - Memory block

2901103

https://www.phoenixcontact.com/in/products/2901103

Multi-functional memory block with handle for the INTERFACE system; for easy storage and back up of the configuration.

## IFS-CONFSTICK - Memory block

2986122

https://www.phoenixcontact.com/in/products/2986122

Multi-functional memory block for the INTERFACE systemf for easy storage and backup of the configuration.

## IFS-USB-DATACABLE - Data cable

2320500

https://www.phoenixcontact.com/in/products/2320500

Used for communicating between industrial PCs and Phoenix Contact devices with the 12-pos. IFS data port, such as QUINT UPS or TRIO UPS.



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