

# STEP-UPS/24DC/24DC/3/46WH - Uninterruptible power supply



1081430

<https://www.phoenixcontact.com/pc/products/1081430>

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Uninterruptible power supply with integrated battery. The STEP-BAT/LI-ION/18.5DC/46WH battery can be re-ordered separately.

## Product description

UPS modules with integrated battery are particularly space-saving: the UPS module and battery are combined in one housing. It's just a case of connecting a power supply upstream.

## Your advantages

- Stable supply of sensitive loads, thanks to the regulated output voltage
- Safety ensured, thanks to the integrated protective circuit and energy storage temperature monitoring
- Quick and easy installation with integrated battery
- Battery operation can be stopped via remote contact
- Flexible assembly – can be snapped onto the DIN rail or screwed onto a level surface

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1081430       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Product key                          | CMUS43        |
| GTIN                                 | 4055626807850 |
| Weight per piece (including packing) | 663 g         |
| Weight per piece (excluding packing) | 532 g         |
| Customs tariff number                | 85371091      |
| Country of origin                    | DE            |

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## Technical data

### Notes

#### General

|                     |                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note on the battery | This product contains a battery with a limited shelf life that must be charged every few months. The product packaging indicates when the battery must be started up or recharged. The general shelf life can be found in the technical data area under "Latest startup". To prevent deep discharge, store and transport the battery module outside of the uninterruptible power supply. |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Input data

#### DC operation

|                                |                                                                      |
|--------------------------------|----------------------------------------------------------------------|
| Input voltage                  | 24 V DC                                                              |
| Input voltage range            | 22.5 V DC ... 29.5 V DC                                              |
| Voltage type of supply voltage | DC                                                                   |
| Buffer period                  | 90 min (1 A)                                                         |
|                                | 45 min (2 A)                                                         |
|                                | 30 min (3 A)                                                         |
|                                | 22 min (4 A)                                                         |
| Rotary selector switch         | Service                                                              |
|                                | ∞                                                                    |
|                                | 5 min.                                                               |
|                                | 10 min.                                                              |
| Current consumption            | 20 min.                                                              |
|                                | 4.7 A (max.)                                                         |
|                                | < 30 mA (No-load)                                                    |
|                                | < 0.5 A (Charging (I <sub>Charge</sub> = max, I <sub>Out</sub> = 0)) |
| Fixed backup threshold         | < 22.5 V                                                             |
| Variable connect threshold     | 1 V / 1 s                                                            |
| Typical response time          | < 0.5 s                                                              |
| Input fuse                     | 7 A (slow-blow, internal)                                            |

### Output data

|                                          |                                                                       |
|------------------------------------------|-----------------------------------------------------------------------|
| Efficiency                               | > 98 % (for charged battery)                                          |
|                                          | > 95 % (Battery operation)                                            |
| Nominal output voltage                   | 24 V DC                                                               |
| Nominal output current (I <sub>N</sub> ) | 3 A (0 °C ... 40 °C)                                                  |
| Output current limit                     | In mains mode according to connected upstream current limiting device |
|                                          | > 4 A (Battery operation)                                             |
| POWER BOOST (I <sub>Boost</sub> )        | 4 A (0 °C ... 35 °C)                                                  |
| Bridging time                            | 900 s                                                                 |

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|                      |                         |
|----------------------|-------------------------|
| Derating             | 35 °C ... 40 °C (5 %/K) |
| Output power         | 72 W                    |
| Power dissipation    | 0.6 W (No-load)         |
|                      | 2 W (Nominal load)      |
|                      | 4.4 W ( $I_{\max}$ )    |
|                      | 1.1 W (No-load)         |
|                      | 3.8 W (Nominal load)    |
|                      | 10 W ( $I_{\max}$ )     |
|                      |                         |
| Connection in series | no                      |

## Mains operation

|                                  |                                                     |
|----------------------------------|-----------------------------------------------------|
| Nominal output voltage           | 24 V DC                                             |
| Output voltage range             | $U_{\text{Out}} = U_{\text{In}} - 0.3 \text{ V DC}$ |
| Nominal output current ( $I_N$ ) | 3 A (0 °C ... 40 °C)                                |

## Battery operation

|                                  |                                                                                 |
|----------------------------------|---------------------------------------------------------------------------------|
| Nominal output voltage           | 24 V DC                                                                         |
| Output voltage range             | 23 V DC ... 26.5 V DC (constantly regulated to input voltage (mains operation)) |
| Nominal output current ( $I_N$ ) | 3 A (0 °C ... 40 °C)                                                            |

## Signal: Alarm

|                    |            |
|--------------------|------------|
| Output description | Transistor |
|--------------------|------------|

## Signal: Battery charge

|                    |            |
|--------------------|------------|
| Output description | Transistor |
|--------------------|------------|

## Signal: Battery mode

|                    |            |
|--------------------|------------|
| Output description | Transistor |
|--------------------|------------|

## Energy storage

|                                    |                                                     |
|------------------------------------|-----------------------------------------------------|
| Nominal voltage $U_N$              | 18.5 V DC                                           |
| End-of-charge voltage              | 18.5 V DC ... 21 V DC                               |
| Charging current                   | 0.4 A                                               |
| Nominal capacity                   | 46 Wh                                               |
| Charging time                      | max. 5.5 h                                          |
| Deep discharge protection          | < 15 V DC                                           |
| Battery module service life        | 500 full cycles                                     |
| Latest startup date (battery only) | 12 Months (25 °C)                                   |
| Battery technology                 | Lithium-ion                                         |
| Memory medium                      | Lithium-ion                                         |
| Battery presence check (cyclic)    | 60 s                                                |
| Quality check of battery           | yes, with each charge and cyclically once per month |
| Battery fuse                       | yes, electronic 16 A                                |
| IQ technology                      | no                                                  |

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## Connection data

### Input

| Connection method                                                                  | Screw connection    |
|------------------------------------------------------------------------------------|---------------------|
| Conductor cross-section, rigid min.                                                | 0.2 mm <sup>2</sup> |
| Conductor cross-section, rigid max.                                                | 2.5 mm <sup>2</sup> |
| Conductor cross-section flexible min.                                              | 0.2 mm <sup>2</sup> |
| Conductor cross-section flexible max.                                              | 2.5 mm <sup>2</sup> |
| Single conductor/flexible terminal point with ferrule with plastic sleeve, min.    | 0.2 mm <sup>2</sup> |
| Single conductor/flexible terminal point with ferrule with plastic sleeve, max.    | 2.5 mm <sup>2</sup> |
| Single conductor/flexible terminal point with ferrule without plastic sleeve, min. | 0.2 mm <sup>2</sup> |
| Single conductor/flexible terminal point with ferrule without plastic sleeve, max. | 2.5 mm <sup>2</sup> |
| Conductor cross-section AWG min.                                                   | 24                  |
| Conductor cross-section AWG max.                                                   | 12                  |
| Stripping length                                                                   | 6.5 mm              |
| 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 mm <sup>2</sup> |
| Conductor cross-section, rigid max.                                                | 2.5 mm <sup>2</sup> |
| Conductor cross-section flexible min.                                              | 0.2 mm <sup>2</sup> |
| Conductor cross-section flexible max.                                              | 2.5 mm <sup>2</sup> |
| Single conductor/flexible terminal point with ferrule with plastic sleeve, min.    | 0.2 mm <sup>2</sup> |
| Single conductor/flexible terminal point with ferrule with plastic sleeve, max.    | 2.5 mm <sup>2</sup> |
| Single conductor/flexible terminal point with ferrule without plastic sleeve, min. | 0.2 mm <sup>2</sup> |
| Single conductor/flexible terminal point with ferrule without plastic sleeve, max. | 2.5 mm <sup>2</sup> |
| Conductor cross-section AWG min.                                                   | 24                  |
| Conductor cross-section AWG max.                                                   | 12                  |
| Stripping length                                                                   | 6.5 mm              |
| Screw thread                                                                       | M3                  |
| Tightening torque, min                                                             | 0.5 Nm              |
| Tightening torque max                                                              | 0.6 Nm              |

### Signal

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|                                                                                    |                     |
|------------------------------------------------------------------------------------|---------------------|
| Conductor cross-section, rigid min.                                                | 0.2 mm <sup>2</sup> |
| Conductor cross-section, rigid max.                                                | 2.5 mm <sup>2</sup> |
| Conductor cross-section flexible min.                                              | 0.2 mm <sup>2</sup> |
| Conductor cross-section flexible max.                                              | 2.5 mm <sup>2</sup> |
| Single conductor/flexible terminal point with ferrule with plastic sleeve, min.    | 0.2 mm <sup>2</sup> |
| Single conductor/flexible terminal point with ferrule with plastic sleeve, max.    | 2.5 mm <sup>2</sup> |
| Single conductor/flexible terminal point with ferrule without plastic sleeve, min. | 0.2 mm <sup>2</sup> |
| Single conductor/flexible terminal point with ferrule without plastic sleeve, max. | 2.5 mm <sup>2</sup> |
| Conductor cross-section AWG min.                                                   | 24                  |
| Conductor cross-section AWG max.                                                   | 12                  |
| Stripping length                                                                   | 6.5 mm              |
| Screw thread                                                                       | M3                  |
| Tightening torque, min                                                             | 0.5 Nm              |
| Tightening torque max                                                              | 0.6 Nm              |

## Signaling

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

### Signal output

|                           |             |
|---------------------------|-------------|
| Signalization designation | Power In OK |
| Status display            | LED         |
| Note on status display    | static on   |

### Signal output: Switching output

|                           |           |
|---------------------------|-----------|
| Signalization designation | Alarm     |
| Status display            | LED       |
| Note on status display    | static on |

### Signal output: Switching output

|                           |                |
|---------------------------|----------------|
| Signalization designation | Battery charge |
| Status display            | LED            |
| Note on status display    | flashing       |

### Signal output: Switching output

|                           |              |
|---------------------------|--------------|
| Signalization designation | Battery mode |
| Status display            | LED          |
| Note on status display    | static on    |

### Signal output

|                           |          |
|---------------------------|----------|
| Signalization designation | Overload |
| Status display            | LED      |
| Note on status display    | flashing |

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## Signal output

|                           |                       |
|---------------------------|-----------------------|
| Signalization designation | Service/Battery Error |
| Status display            | LED                   |
| Note on status display    | flashing              |

## Product properties

|                            |                                     |
|----------------------------|-------------------------------------|
| Product family             | STEP DC UPS with integrated battery |
| IQ technology              | no                                  |
| MTBF (IEC 61709, SN 29500) | > 1401000 h (40 °C)                 |

## Insulation characteristics

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

## Dimensions

|        |        |
|--------|--------|
| Width  | 108 mm |
| Height | 90 mm  |
| Depth  | 71 mm  |

## Installation dimensions

|                                  |               |
|----------------------------------|---------------|
| Installation distance right/left | 0 mm / 0 mm   |
| Installation distance top/bottom | 30 mm / 30 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    | Plastic                |
| Housing material    | PC                     |
| Type of housing     | Plastic                |
| Foot latch material | POM (Polyoxymethylene) |

## Environmental and real-life conditions

### Ambient conditions

|                                                |                                    |
|------------------------------------------------|------------------------------------|
| Degree of protection                           | IP20                               |
| Ambient temperature (operation)                | 0 °C ... 40 °C                     |
| Ambient temperature (storage/transport)        | -20 °C ... 45 °C                   |
| Maximum altitude                               | max. 2000 m                        |
| Climatic class                                 | 3K22 (in accordance with EN 60721) |
| Max. permissible relative humidity (operation) | ≤ 95 % (at 25 °C, non-condensing)  |

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|                       |                                                                   |
|-----------------------|-------------------------------------------------------------------|
| Shock                 | 18 ms, 30g, in each space direction (according to IEC 60068-2-27) |
| Vibration (operation) | < 15 Hz, amplitude $\pm 2.5$ mm (according to IEC 60068-2-6)      |
|                       | 15 Hz ... 150 Hz, 2.3g, 90 min.                                   |

## Standards and regulations

|                                                                                                                                  |                          |
|----------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Standard – Electronic equipment for use in electrical power installations and their assembly into electrical power installations | EN 50178/VDE 0160 (PELV) |
| Standard - Electrical safety                                                                                                     | IEC 62368-1 (SELV)       |

## Approvals

|              |                               |
|--------------|-------------------------------|
| UL approvals | UL/C-UL listed UL 508         |
|              | UL/C-UL Recognized UL 60950-1 |

## EMC data

|                                     |                                           |
|-------------------------------------|-------------------------------------------|
| Electromagnetic compatibility       | Conformance with EMC Directive 2014/30/EU |
| EMC requirements for noise immunity | EN 61000-6-2                              |

### Electrostatic discharge

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-2 |
|-----------------------|--------------|

### Electrostatic discharge

|                   |                     |
|-------------------|---------------------|
| Contact discharge | 6 kV (Test Level 3) |
| Discharge in air  | 8 kV (Test Level 3) |
| Comments          | Criterion A         |

### Electromagnetic HF field

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

### Electromagnetic HF field

|                     |                       |
|---------------------|-----------------------|
| Frequency range     | 80 MHz ... 1 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    | 2 kV (Test Level 3 - asymmetrical) |
| Output   | 2 kV (Test Level 3 - asymmetrical) |
| Signal   | 2 kV (Test Level 4 - asymmetrical) |
| Comments | Criterion A                        |

### Surge voltage load (surge)

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

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## Surge voltage load (surge)

|          |                                    |
|----------|------------------------------------|
| Input    | 1 kV (Test Level 2 - symmetrical)  |
|          | 2 kV (Test Level 3 - asymmetrical) |
| Output   | 1 kV (Test Level 2 - 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 |
|-----------------------|--------------|

## Conducted interference

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

## Emitted interference

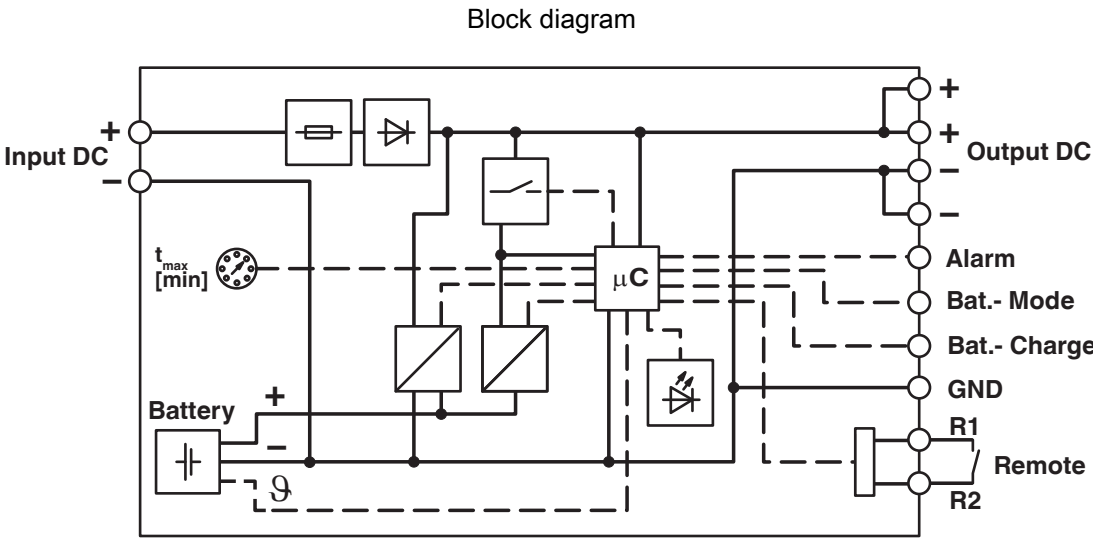
|                                                  |                                                                            |
|--------------------------------------------------|----------------------------------------------------------------------------|
| Standards/regulations                            | 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 |

## Criteria

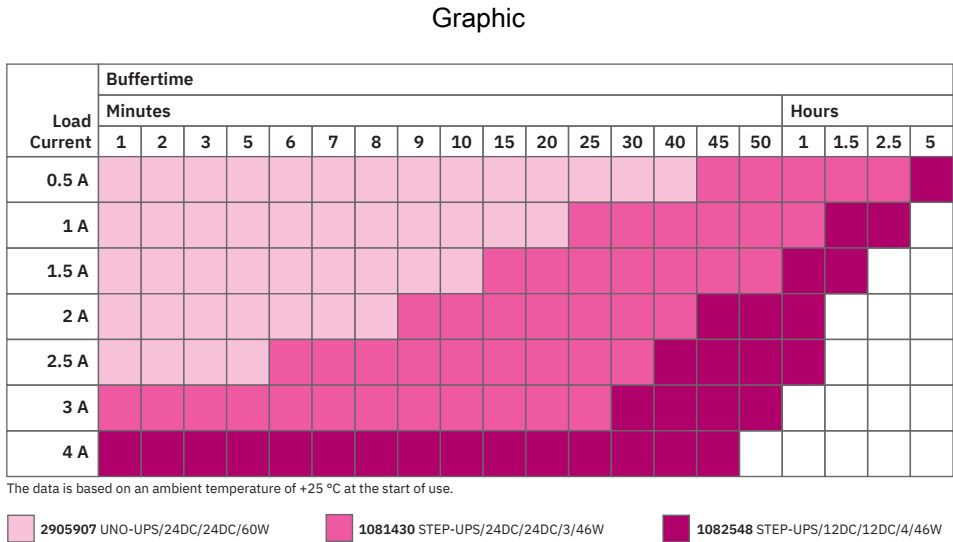
|             |                                                                                      |
|-------------|--------------------------------------------------------------------------------------|
| Criterion A | Normal operating behavior within the specified limits.                        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



Drawings



Block diagram



Buffer times for STEP DC UPS with integrated battery

# STEP-UPS/24DC/24DC/3/46WH - Uninterruptible power supply



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/pc/products/1081430>

|                                                                                     |                                                    |
|-------------------------------------------------------------------------------------|----------------------------------------------------|
|    | <b>cULus Listed</b><br>Approval ID: FILE E 214596  |
|    | <b>cULus Listed</b><br>Approval ID: FILE E 123528  |
|    | <b>EAC</b><br>Approval ID: RU S-DE.BL08.W.00764    |
|  | <b>KC</b><br>Approval ID: R-R-PCK-1081430          |
|  | <b>IECEE CB Scheme</b><br>Approval ID: DE/PTZ/0121 |

# STEP-UPS/24DC/24DC/3/46WH - Uninterruptible power supply



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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27040705 |
| ECLASS-15.0 | 27040705 |

### ETIM

|           |          |
|-----------|----------|
| ETIM 10.0 | EC000382 |
|-----------|----------|

### UNSPSC

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

# STEP-UPS/24DC/24DC/3/46WH - Uninterruptible power supply



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## Environmental product compliance

### EU RoHS

|                                         |              |
|-----------------------------------------|--------------|
| Fulfills EU RoHS substance requirements | Yes          |
| Exemption                               | 6(c), 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                                | 95873f77-72b3-4b8a-a0a5-4fc13d820fff |

### EF3.1 Climate Change

|         |                |
|---------|----------------|
| CO2e kg | 17.185 kg CO2e |
|---------|----------------|

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## Accessories

### STEP-BAT/LI-ION/18.5DC/46WH - Battery module

1081355

<https://www.phoenixcontact.com/pc/products/1081355>

Battery module (device with battery), lithium-ion, 18.5 V DC, 46 Wh



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### STEP-PS/ 1AC/24DC/4.2 - Power supply

2868664

<https://www.phoenixcontact.com/pc/products/2868664>

Primary-switched STEP POWER power supply for DIN rail mounting, input: 1-phase, output: 24 V DC/4.2 A



# STEP-UPS/24DC/24DC/3/46WH - Uninterruptible power supply



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## STEP3-PS/1AC/24DC/4/PT - Power supply

1140066

<https://www.phoenixcontact.com/pc/products/1140066>



Primary-switched power supply unit STEP POWER, Push-in connection, DIN rail or direct mounting, input: 1-phase, output: 24 V DC / 4 A, adjustable from 22 V DC ... 27 V DC

## STEP3-PS/1AC/24DC/5/PT - Power supply

1088478

<https://www.phoenixcontact.com/pc/products/1088478>



Primary-switched power supply unit STEP POWER, Push-in connection, DIN rail or direct mounting, input: 1-phase, output: 24 V DC / 5 A, adjustable from 22 V DC ... 27 V DC

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