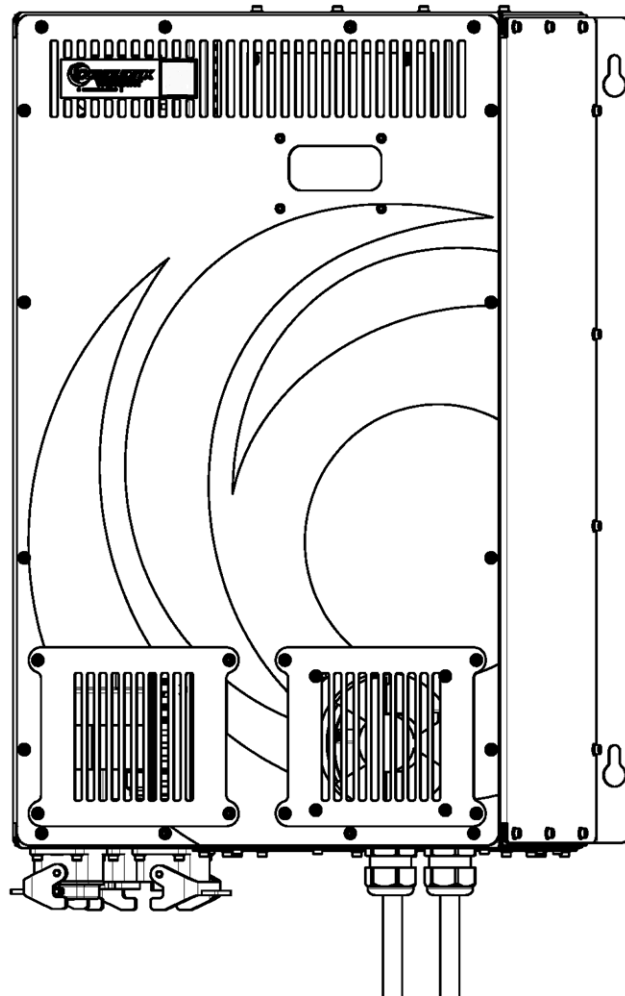


Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

Part Number

- 91008-111-3090673 (80 A, 400-415 V, RAL 7016)
 - 91012-111-3090674 (125 A, 400-415 V, RAL 7016)
 - 91008-111-3090675 (80 A, 480/277 V, RAL 7016)
 - 91012-111-3090676 (125 A, 480/277 V, RAL 7016)
 - 91000-111-3090677 (configurable version)
-



Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

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This Operating Instruction is based on the following Technology-Documentation-No.: OM9100-0123f-EN!

Important:

This manual refers solely to the appliance described. See the system description document for information about the complete system and the interaction between components.

Company names mentioned in this manual that are registered and protected trade names by copyright remain the property of the companies themselves.

In order to improve the energy supply system and its function, we reserve the right to carry out technical modifications of illustrations and statements in this operation manual.

Please find details related to a whole system in the system manuals. Always refer to the system documentation before starting any work on the system or components within the system or before operating the system.

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Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

1 General Advice

1.1. Information to these Operating Instructions

This document describes the component specified on the cover only. The manual does not include details about the interaction of this component with other components within a system.

For information relating to the system please read the system and project documentation. Follow these instructions during any work on the system or operation of the system.

These installation and operating instructions allow the safe and efficient handling of the equipment.

The installation and operating instructions are part of the equipment and must be stored close to the equipment and always available to the personnel. The personnel must have read carefully and understood these installation and operating instructions prior to starting work. The basic requirement for safe working is the observance of all safety advice and guidelines specified in these installation and operating instructions. Moreover you have to observe the local accident prevention guidelines and the general regulations for the application of the equipment.

Illustrations in this documentation are for basic comprehension and can deviate from the real design of the equipment.

All stated values are based on the metric system. If units of measurement have been omitted, millimetres (mm) apply.

Complementary instructions given in track installation manuals for specific applications, i.e. MV9100-0038 for EMS systems, must be observed at all times, if of relevance for the installation and operation of the equipment.

1.2. Limitation of Liability

All information and instructions of this operating manual have been compiled with due regard to the standards and regulations in force, best engineering practice and the findings and experience we have accumulated over many years.

The manufacturer does not accept liability for damage due to:

- Non-observance of the operating instructions
- Improper use
- Use by untrained personnel
- Unauthorized modifications
- Technical modifications
- Use of unauthorized spare parts and accessories
- Improper installation by unqualified installation personnel

The effective volume of delivery may deviate from these explanations and descriptions in case of special design, the utilization of additional order options or on account of the latest technical modifications.

The commitments of the supply contract, the general terms and conditions as well as the manufacturer's terms of delivery and the legal regulations at the time of the conclusion of contract have to be observed.

We reserve the right of technical modifications in the context of revision of useful properties and further developments.

Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

1.3. Copyright

These installation and operating instructions are subject to copyright and intended for customer internal use only.

Providing third parties with the installation and operating instructions, duplications in any form - even in extracts - as well as reuse and/or disclosure of the contents are not permitted without written approval of the manufacturer, except for customer internal purposes.

Violations will be subject to damages. This will not exclude additional claims. The manufacturer is the holder of the copyright. We reserve the right for technical modifications of illustrations and specifications in these operating instructions that serve for the improvement of the systems and their functions.

1.4. Spare Parts



Safety risk due to wrong spare parts!

The utilization of wrong or faulty spare parts may cause danger to persons as well as damage, malfunctions or total failure.

- Use only original spare parts of the manufacturer or spare parts approved by the manufacturer!
- If uncertain always contact the manufacturer.



The product warranty expires with the use of unauthorized spare parts. Spare parts must be ordered from your licensed dealer or directly from the manufacturer. Address see last page of these instructions.

1.5. Warranty

The regulations about warranty are listed in the general business conditions of the manufacturer.

1.6. Customer Service

Our customer service is available for technical questions. For contact data see last page of these instructions. Moreover our staff is constantly interested in new information and experiences, which will arise from the application and which might be valuable for the improvement of our products. Please also contact our customer service in this context.

Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

2 Symbols and Hints



Warning of voltage

This symbol can be found in several places in the operating instructions where special care has to be taken due to a voltage presence which is hazardous to people. Please observe these instructions and be careful in those cases. Please apply all health and safety regulations to other users as well. Always disconnect the system from the main supply prior to carrying out any work on the energy supply system.



Attention - some hints

This sign draws the attention to parts of the operating instructions where the regulations, advice and correct operational sequence must be observed to avoid any damage or destruction to the energy supply system and its components.



Temperature

This sign draws the attention to parts of the operating instructions, where special care must be taken because of hot surfaces or where inductive heating of ferromagnetic material may occur and where special measures have to be taken.

Please pass on the advice to other users as well.

Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

2.1. Requirements Regarding Personnel

2.1.1. Qualification



Risk of injury due to insufficient qualification!

Incorrect handling can cause serious injuries to persons and heavy damage to property.

- All activities must be carried out by qualified staff!

The operating conditions indicate the following qualifications for the various fields of activity:

- **Electrician**
When the cables have been terminated correctly by authorized personnel having received instruction exclusively from Conductix-Wampfler, further work may be performed by an electrician.
- **Instructed personnel/operators**
have been instructed by the operator about the tasks assigned to them and the possible dangers in case of improper behaviour.
- **Specialized staff**
is able to carry out the work assigned to them and realize and avoid any dangers in this regard, based on their training, knowledge, experiences and knowledge of the respective regulations.
- Only those persons are authorized for these works, who are expected to do their work properly. Persons with restricted responsiveness, e.g. due to drugs, alcohol or medication, are not permitted.
- For the selection of personnel observe the age-specific and job-related prescriptions effective at the place of installation.

2.1.2. Unauthorized Persons



Danger caused by unauthorized personnel!

Unauthorized personnel, who do not meet the requirements described hereunder, are not familiar with the dangers that might occur within the working area.

- Keep unauthorized personnel away from the working area.
- In case of doubt clarify authorization and qualification and dismiss unauthorized persons from the working area in case there are any doubts remaining regarding authorization and qualification.
- Interrupt the work as long as there are unauthorized persons within the working area.

Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

2.2. Application in Accordance with the Regulations

The equipment has been exclusively designed and constructed for the intended purpose.



Danger caused by application not in accordance with regulations!

Each application of the equipment not in accordance with and/or different from the regulations can result in dangerous situations.

Only use the equipment in accordance with the regulations.

Any details of these operating instructions must be strictly observed.

The following applications of the equipment are prohibited. Applications not in accordance with regulations are as follows:

- Application of the equipment with accessories not permitted or authorized by the manufacturer.
- Operation of the equipment by not instructed personnel.
- Operation of the equipment outdoors.
- Operation of the equipment with installation on an improper foundation/subsurface.

Any claims due to improper application are excluded.

The operator is responsible for any damage due to improper application.

Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

3 Advisory Information for the User



DANGER!

Electric shock and/or burns and other damage due to improper use!

The device is operated with high voltage and high currents.

- Do not open the device during operation.
- Do not remove covers.
- Do not insert any objects into the device.

The Track Supply has a weight of approx. 56 kg and must not be lifted or moved by an individual person. To move and position it use only suitable equipment and follow the according instructions (see chapter 6 "Technical Data").



WARNING!

Risk of injury due to insufficient qualification!

Improper use can result in serious injury to persons or property damage.

- All electric installation and commissioning work as well as repair work and disassembly have to be carried out by qualified staff (IEC 364 respectively CENELEC HD 384 or DIN VDE 0100 and IEC 664 or DIN VDE 0110 and national safety rules).

All installation and commissioning work as well as repair work and disassembly have to be done according to the present operation manual. The specifications of this document have to be strictly observed. In addition, national regulations and whenever they apply regulations specific to the industry are to be taken into account.



ADVICE!

Qualified staff, according to the safety regulations, are persons who are familiar with the installation, assembly, commissioning and operation of the energy supply system and who have the appropriate qualifications.

Conductix-Wampfler cannot be responsible for damage or breakdowns that have been caused by not observing the instruction manual.

These operating instructions contain exclusively details of the Track Supply component.

We reserve the right to carry out technical modifications of illustrations and statements in this instruction manual. References to other documents specifying the document number do not include the revision index. Refer to the project handbook for a list of relevant documents.

Track Supply 16 kW Module

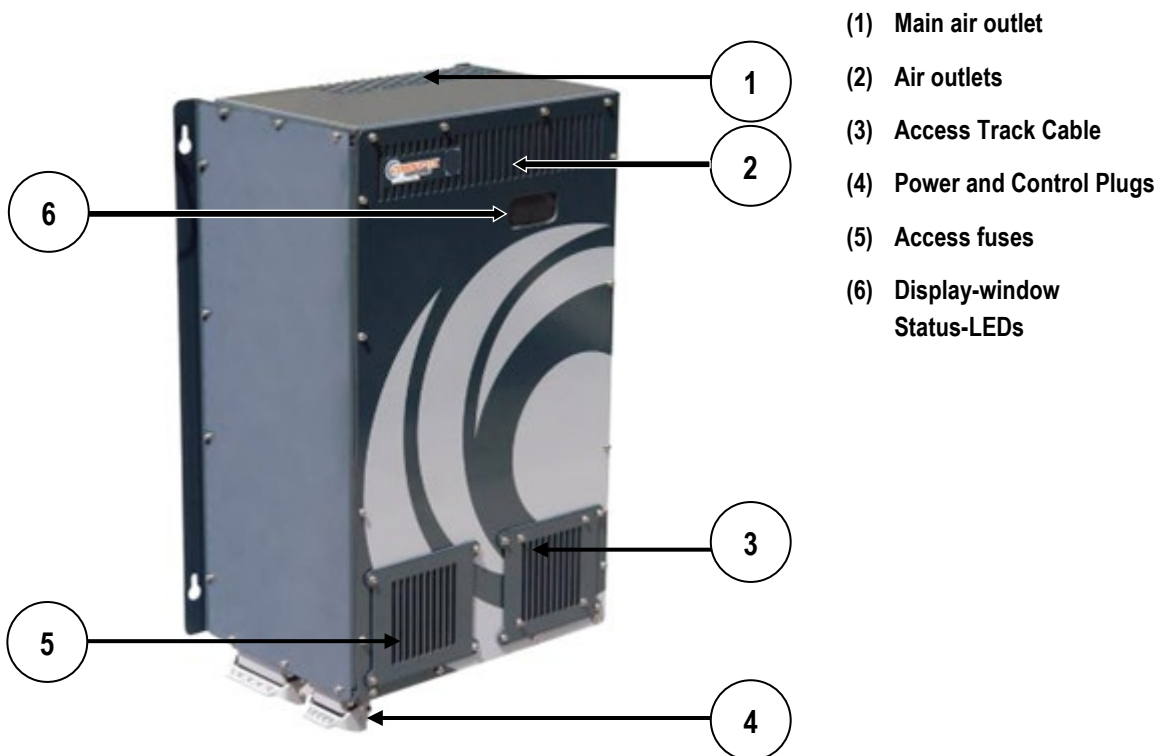
80 A/125 A at 400-415 V/440 V/480 V/277 V

4 Brief Technical Description

The Track Supply serves to supply energy to the secondary components of the system in a defined segment.

The Track Supply converts the mains voltage to a constant 20 kHz sinusoidal current. The alternating output current into the primary track of a system produces a local magnetic field over which power is transferred. So the galvanically isolated power transfer to the consumers is possible (e.g. to the Pickups).

5 Appearance



Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

6 Technical Data

6.1. Electrical Data | Specifications

6.1.1. Electrical Power Data | Specifications for all Versions

■	Output power (cont.)	16 kW at max. 40 °C for 400-415 V and 480 V versions at max. 35 °C for 440 V versions
■	Power De-rating	-3% / °C between 40 °C and 55 °C for 400-415 V and 480 V versions between 35 °C and 55 °C for 440 V versions
■	Peak power	137% (22 kW) for a maximum of 1 minute every 10 minutes and an average load reduction to 13 kW at max. 40 °C for 400-415 V and 480 V versions at max. 35 °C for 440 V versions (up to 55 °C with power derating)
■	Output current	80 A or 125 A ± 2 A @ 20 kHz ± 50 Hz
■	Optimal load track inductance	58 µH (up to 60 µH) for 80 A Track Supply 26 µH (up to 28 µH) for 125 A Track Supply
■	Nominal output voltage range	560 - 665 V rms (80 A), 380 - 475 V rms (125 A). Overloads will increase the voltage.
■	Impedance output to PE	180 Ohm (capacitive reference)
■	Connection to primary cable	Stainless Steel M8 bolts for 35 mm ² and 20 mm ² HF Litz cables. Torque see chapter 10.5.3.

6.1.2. Electrical Input Values | Specifications for Versions with 400-415 V

■	Input nominal supply voltage	400-415 V / 50 Hz, 3-phase symmetric, neutral grounded
■	Supply voltage tolerance	-10% to + 10%, with proportional continuous power de-rating for input voltages other than nominal value (For acceptable transient voltage see chapter 12.2)
■	Efficiency at rated load	94%
■	Power factor (cos φ)	0.89
■	Supply current	29 A at rated power / voltage
■	Input connector	Supplied HAN-6HSB with M32 cable gland. Maximum outside cable diameter is 18 mm. Use flexible cable 6 mm ² .
■	Input leakage current	16 mA rms in standby. Occasional 200 mA peak pulses for 250 µsec at rated load. Ground leakage equipment must be rated accordingly if used.
■	Internal fuses	35 A. Semiconductor and wiring protection, see chapter 20 "Spare Parts".
■	Harmonic currents (rated load)	5th -8.5dB, 7th -18.7dB, 11th -23.2dB, 13th -32.6dB (on fundamental) Values can vary depending on the mains impedance.

Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

6.1.3. Electrical Input Data | Specifications for Versions with 440 V

- Input nominal supply voltage 440 V / 50 Hz, 3-phase symmetric, neutral grounded
- Supply voltage tolerance -10% to +10%, with proportional continuous power de-rating for input voltages other than nominal value
(For acceptable transient voltage see chapter 12.2)
- Efficiency at rated load 94%
- Power factor (cos φ) 0.89
- Supply current 27 A at rated power / voltage
- Input connector Supplied HAN-K12/2 with M32 cable gland.
Maximum outside cable diameter is 18 mm. Use flexible cable 6 mm².
- Input leakage current 19 mA rms in standby. Occasional 200 mA peak pulses for 250 μ sec at rated load. Ground leakage equipment must be rated accordingly if used.
- Internal fuses 35 A. Semiconductor and wiring protection, see chapter 20 "Spare Parts".
- Harmonic current (rated load) 5. -6.8dB, 7. -15.0dB, 11. -24.8dB, 13. -28.6dB (on fundamental)
Values can vary depending on the mains impedance.

6.1.4. Electrical Input Data | Specifications for Versions with 480 V / 277 V

- Input nominal supply voltage 480 V / 277 V / 60 Hz, 3-phase symmetric, neutral grounded
- Supply voltage tolerance -10% to + 10%, with proportional cont. power de-rating for input voltages other than nominal value
(For acceptable transient voltage see chapter 12.2)
- Efficiency at rated load 94%
- Power factor (cos φ) 0.89
- Supply current 24 A at rated power / voltage
- Input connector Supplied HAN-K12/2 with M32 cable gland.
Maximum outside cable diameter is 18 mm.
Use flexible cable 6 mm².
- Input leakage current 19 mA rms in standby. Occasional 200 mA peak pulses for 250 μ sec at rated load. Ground leakage equipment must be rated accordingly if used.
- Internal fuses 30 A. Semiconductor and wiring protection, see chapter 20 "Spare Parts".
- Harmonic current (rated load) 5. -8.5dB, 7. -17dB, 11. -21.4 dB, 13. -28.4dB (on fundamental)
Values can vary depending on the mains impedance.

6.2. Physical Data

- Noise levels During operation 65 dBA (at 1 m distance standing in front of the device)
- Air volume moved 50 m³ / hour (air recirculation)
- Fan 3 axial fans

Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

6.3. Environmental Data

- Ambient temperature +5 °C to +55 °C, see chapter 6.1.1 “Electrical Power Data | Specifications for all Versions” regarding power de-rating



Damage due to extreme differences in temperature!

Frozen and very cold internal components might be the cause for damage of the device or its components at the moment of switch-on or with fast/strong loads.

If the storage temperature or ambient temperature is lower than the specified operating temperature, proceed as follows prior to commissioning the device:

- Store the device at least 12 hour in the range of the operating temperature. Do not operate the device during this time!



Damage due to strong and frequent temperature changes!

Strong and immediate temperature changes will result in a reduction of the life time.

If the device is exposed to strong and frequent temperature changes during operation, the following measures must be taken:

- Demand-oriented heating/cooling of the device.
- Avoid condensation of the humidity.
- Avoid pumping effects due to temperature changes.

- Humidity < 90% non-condensing
- Ambient air No salt water, no conductive dry or wet dust! (E.g. carbon fibers). Avoid extreme environment conditions (e.g. very dusty, oily and/or chemical influences)
- Altitude de-rating 1% of power / 100 m above 1000 m, up to a max. of 3000 m above sea level
- IP classification IP 20 (limited by exhaust vents on top and other ventilation openings)
- Pollution Degree PD = 2. Non conducting pollution present, that may become temporarily conducting if moisture is present after switching off.
- Storage temperature -20 °C to +60 °C
- Transport temperature -20 °C to +70 °C
- Maximum Vibration 3 mm at 2 - 9 Hz, max. acceleration 0,5 g at 9 – 200 Hz
- Maximum operating shock 8 g, 11 ms
- Maximum shipping shock 15 g, 11 ms in packaging / transport box

Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V



The Track Supply requires a sufficient air flow for correct cooling. Ensure free air flow at all times and, if Track Supply is mounted in a cabinet, inspect filters for dust and oil blockage regularly.

Shielded control cables are not strictly required but recommended to use in order to improve the EMC.

In order to avoid induced voltages at 20 kHz, the control cables and other cables should not be run close to the track cable and especially not over distances > 5 m. Shielded twisted pair cable will help reduce the capacitive coupling effect. The shield should be grounded at one end only.

- Space around cabinet

Sufficient air flow has to be guaranteed!

Recommended clearances:

- 200 mm over the Track Supply
- 200 mm in front of the Track Supply
- 100 mm sides of the Track Supply

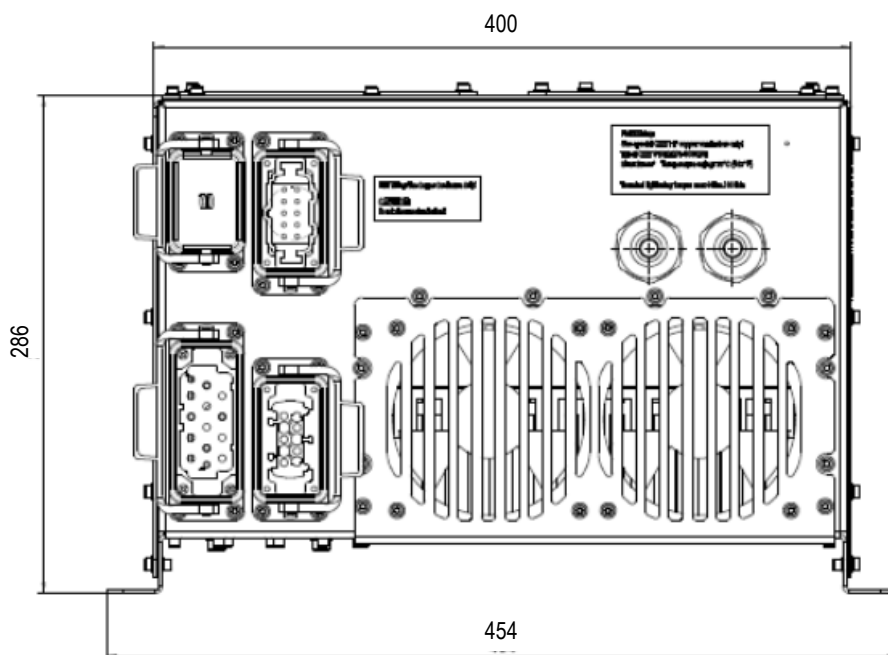
Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

6.4. Mechanical Data

- | | |
|--------------------------------|---|
| ■ Cabinet Sheet | Metal housing |
| ■ Dimensions | See the following drawing |
| ■ Nom. color housing (outside) | RAL XXXX; delivered color see type plate on Track Supply ¹ |
| ■ Weight | ~ 56 kg |

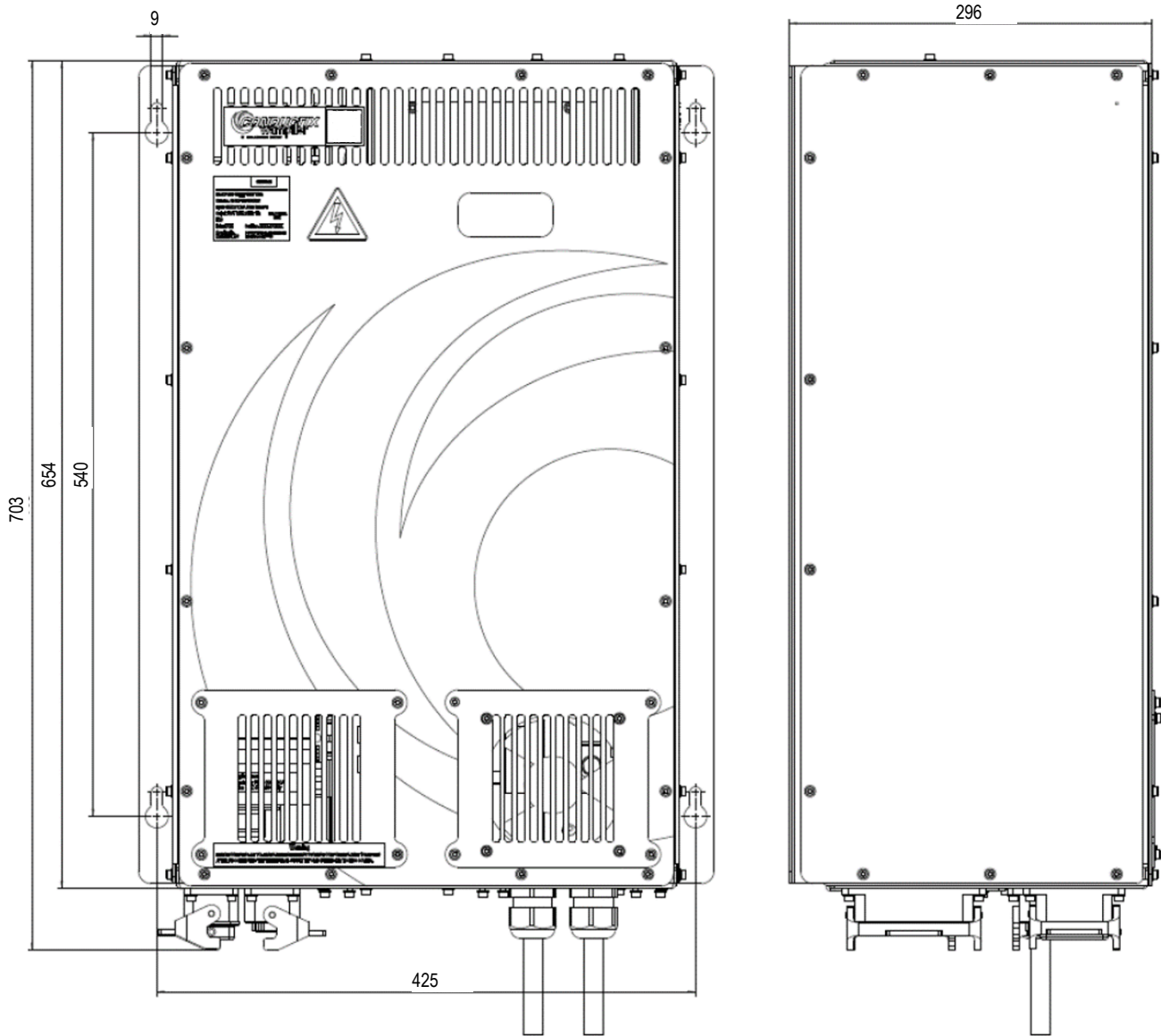
Dimensions



¹ Colors are configurable prior to production.

Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V



Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

6.5. Interfaces

X1: Track connection (all versions)

– Screwed connections

Pin	Function	Remarks
1	Track cable 1	20 mm ² (80 A) – 35 mm ² (125 A) HF litz cables Cable lugs with M8 opening – soldering only!
2	Track cable 2	

X2: Connection to AC mains supply (400-415 V version)

- Harting HAN-6HSB / Han-16B housing

Pin	Function	Rating	Remarks
1	L1	35 A	Current depending on load and input voltage
2	L2	35 A	Current depending on load and input voltage
3	L3	35 A	Current depending on load and input voltage
PE	PE		

X2: Connection to AC mains supply (440 V and 480/277 V versions)

- Harting HAN-K12/2 / Han-16B housing

Pin	Function	Rating	Remarks
1	L1	40 A	Current depending on load and input voltage
2	L2	40 A	Current depending on load and input voltage
3	L3	40 A	Current depending on load and input voltage
PE	PE		

X3: Control and Synchronization (all versions)

- Harting HAN-10E

Pin	Function	Rating	Remarks
1	Start +	24 V	24 V present = start
2	Start -	0 V	
3	/Reset +	24 V	0 V = reset
4	/Reset -	0 V	
5	Error Relay	1 A	Normally closed, open on error
6	Error Relay	24 V	
7	24 V supply	100 mA	Not for external distribution!
8	0 V		
9	Synchronization	±15 V	
10	Synchronization		

X4 – X5: for commissioning only

For more details on X1, X2 and X3 and their connection refer to chapter 10.5 “Electrical Connection”.

Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

6.6. General Features

- | | |
|-----------------------------|---|
| ■ Input line chokes | Will drop 4% from the mains voltage at rated load |
| ■ EMC filtering | Built in line filter included |
| ■ Start-up inrush current | < 10 A |
| ■ Mains to output isolation | High frequency isolation transformer |
| ■ Internal cooling fans | 3 axial fans |

6.7. Design Standards

6.7.1. Design Standards for 400-415 V and 440 V Versions

- | | |
|----------------|---|
| ■ EN 50178 | Equipment of power plants with electronic equipment; German version EN 50178: 1997 |
| ■ EN 61000-6-2 | Electromagnetic compatibility (EMC) - part 6-2: General information Standards - interference resistance in the industrial sector |
| ■ EN 55011 | Industrial, scientific and medical high frequency units (ISM-units) – radio interference Limit values and measurement process (IEC/ CISPR 11: 1997) |

6.7.2. Additional Design Standards for 480/277 V Versions

- | | |
|-----------|---|
| ■ UL 508A | Standards for Industrial Control Panels |
|-----------|---|

6.8. Protection Features of Track Supply

- | | |
|---------------------------------|---|
| ■ Over temperature | 4 built-in temperature sensors and switches |
| ■ Over load | Output load monitoring |
| ■ Over current | Internal current monitoring |
| ■ Output over voltage | Output voltage monitoring |
| ■ Input over voltage | Built-in varistors against external voltage transients (see chapter 12.2) |
| ■ Ground fault monitoring | Monitoring of leakage current to ground |
| ■ Current sensor failure detect | Detects if track current sensor is not functioning correctly |
| ■ Track detuning | Monitors track and detects if the tuning is out of range |
| ■ Input line loss | Detects if line phase is missing |
| ■ Fuses | Integrated fast fuses |
| ■ Input to output isolation | 2500 V AC for 1 min |

Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

6.9. Grounding

The Track Supply has to be grounded professionally at the installation place and connected preferably to a symmetrical neutral grounded three-phase WYE supply. Although the Track Supply may well function in supply systems with other grounding, such as grounded delta, the electromagnetic compatibility and reliability may be compromised.

Metal structures which run close and parallel to the primary track cable over significant distances have to be grounded professionally too. For best results multiple grounding should be applied. In order to avoid induced voltages at 20 kHz, the control cables and other cables should not be run close to the track cable and especially not over distances > 5 m. Shielded twisted pair cable will help reduce the capacitive coupling effect, but the shield should be grounded at one end only.

7 Control Board Hardware and Fault Indication

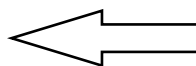
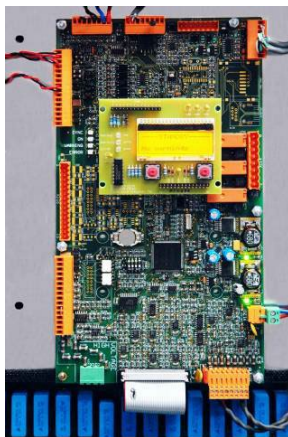
7.1. Track Supply Control Board (for specially trained personnel only)



ADVICE!

Because of potential safety hazard and/or damages due to ESD, the front cover should only be removed if absolutely necessary and only by trained and qualified personnel!

The control board is located in the upper part of the Track Supply and is visible if the front cover is removed.



There are 2 PCB's:

- Control board
- Display board sitting on top of the control board, see chapter 7.2



WARNING!

Risk of damage, fire or explosion!

Replace battery by same type only! Use of other battery may present a risk of damages, fire or explosion.

Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

7.1.1. Control Board LED Indication

The control board LEDs are only visible when the front cover is removed.



Risk of injury due to insufficient qualification!
The front cover must only be removed by trained personnel.

Therefore these LEDs are intended for advanced error analysis only.

The two green LEDs (V503 and V504) indicate the correct functioning of the on-board power supplies (12 V and 5 V) and should always be on.

The 4 LEDs on the control board inform about the state of operation of the Track Supply:

- SYNC (green LED)
- ON (green LED)
- WARNING (yellow LED)
- ERROR (red LED)

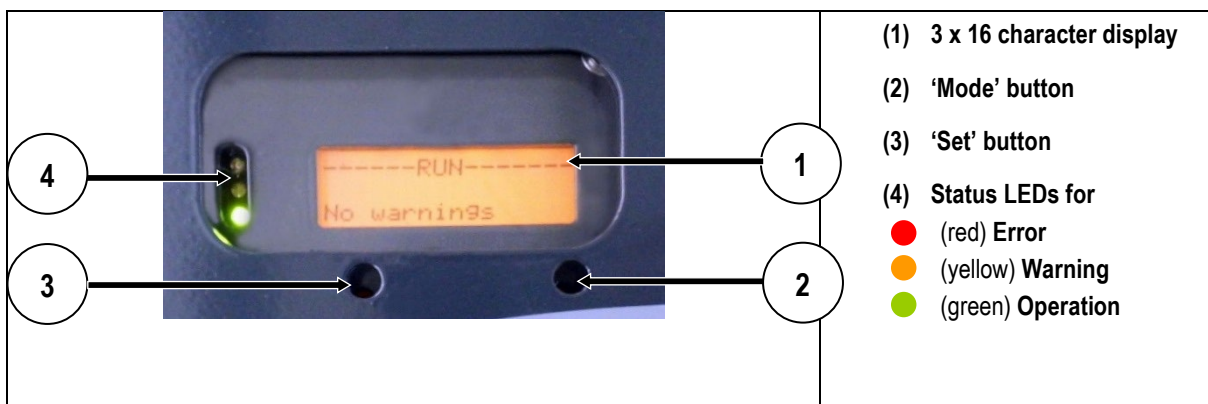


The indication of the 'On', 'Warning' and 'Error' LEDs corresponds to the one of the three LEDs located on the Track Supply display board (see chapter 7.2.1).

In addition the 'Sync' LED indicates whether an external 20 kHz synchronization signal is present or not.

7.2. Track Supply Display Board

The Track Supply display board contains a backlit 3 x 16 character display, 3 LEDs and two push buttons for user interaction assembled.









Track Supply 16 kW Module

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7.2.1. LED Indication

The behavior of the three display board LEDs is as follows:






LED green	Status	Cause
 Off	Track Supply not powered or error → see red LED	Possible causes: ■ Track Supply is disconnected from the mains power ■ Problem with control board
 Flashing	Track Supply in standby mode	Normal condition due to absence of START signal on X3
 On	Track Supply is running	Normal condition: START and RESET signals are present on X3

LED red	Status	Cause
 Off	Track Supply not powered or no error → see green LED	Normal condition if there is no error.
 Flashing	Track Supply in reset mode	Normal condition due to absence of RESET signal on X3
 On	Track Supply error → see yellow LED / LCD	See display for error code. Error codes are described in chapter 7.2.6.

The yellow LED warns the user of critical operating conditions. Warnings will not stop operation of the Track Supply, however, a persistent warning may subsequently lead to an error if left unattended. If more than one warning is present at a time, only the most important one will be shown (in the table below importance increases from top to bottom). Example: if tuning and overload warning both are present, the warning LED will be on. The LCD, however, will display both warnings, see chapter 7.2.5.

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LED yellow	Status	Cause
 Off	No warnings	
 1 brief flash every 2 s	Real Time Clock warning	Real Time Clock has stopped due to weak battery and may be out of date. Track Supply will continue to operate, however, errors will no longer be time stamped correctly.
 2 brief flashes every 2 s	Tuning warning	Track inductance is too low or too high. Track Supply can continue to operate, however, an over temperature condition may result. Causes: <ul style="list-style-type: none"> ■ Incorrect commissioning ■ Pickups added after commissioning ■ Damaged track tuning capacitors ■ Track/ Feeds repositioned or lengthened
 Flashing slowly	Over temperature warning	One or more of the following causes: <ul style="list-style-type: none"> ■ Air intake or exhaust blocked ■ Fan(s) blocked by dust or defect ■ Heat sink blocked by dust ■ Overloading, too many loads ■ Ambient temperature too high Track Supply will continue to operate, however, an over temperature condition may result.
 On	Overload warning	Too many loads on track. Track Supply will continue to operate, however, an over temperature, over current or over voltage condition may result.

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7.2.2. Software Version Number

After switching on the LCD displays, a welcome screen with software revision number and compilation time and date is visible for 5 seconds.

```
Version 1234567a  
13:07  
17-Mai-09
```

The Track Supply may start operation prior to the expiry of 5 s delay depending on the START input!

7.2.3. Modes of Operation

During operation the LCD provides basic information about the operating mode of the Track Supply. The following modes have been defined:

The Track Supply is powered but does not receive a high level signal on its RESET input. Output is disabled.

```
-----RESET-----  
  
No warnings
```

The Track Supply is powered but does not receive a high level signal on the START input. Output is disabled.

```
----STANDBY----  
  
No warnings
```

The Track Supply is operating normally.

```
-----RUN-----  
  
No warnings
```

The Track Supply detected an error. Error code with time and date of occurrence are displayed. Refer to chapter 7.2.6 for details on error codes. Output is disabled.

```
-----ERROR-----  
E001          15:01  
                26.05.09
```


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7.2.4. Setting Language, Time and Date

There are two buttons located beneath the LCD that allow the user to change basic settings. Settings may be changed in any mode, except in RESET mode. If the RESET mode is entered (RESET input low) while settings are being changed, any unsaved changes made are lost!

To start changing settings, the MODE button must be held down for 5 seconds. Once this delay has expired the right hand screen will be displayed. Subsequent presses of the SET button will step through the four available display languages.

```
SELECT LANGUAGE
English
```

- English
- German
- French
- Italian

Pressing the MODE button will advance to the next setting screen shown below.

The time setting is displayed in 24 h hh:mm format. The buttons function as follows:

- Pressing or holding the SET button will increase the setting marked by the cursor.
- Pressing the MODE button will advance the cursor to the minute setting or the next screen respectively.

```
SET TIME
15:01
hh:mm
```

The date is displayed in dd.mm.yy format. The button function as follows:

- Pressing or holding the SET button will increase the setting marked by the cursor.
- Pressing the MODE button will advance the cursor to the next setting or the next screen respectively.

```
SET DATE
26:05.09
tt:mm:jj
```

If any changes were made, the user is prompted to confirm or discard these.

- Pressing the MODE button will discard any changes.

```
SAVE ?
Yes           No
```

- Pressing the SET button will save the new settings, which is confirmed by the right hand screen.

```
Settings saved!
```

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7.2.5. Warning Messages

While in modes RESET, STANDBY and RUN, additional warning messages may be displayed. These are reflected in the status of the yellow LED. If more than one warning is present at a time, warning messages will alternate every second. The following warning messages are available:

- No warnings
- Warning Over load (Overload)
- Warning Over Temperature (Over temperature)
- Warning Tuning
- Warning RTC

Refer to chapter 7.2.1 “LED Indication” for a detailed description and possible causes.

7.2.6. Error Codes

Note that one and the same problem can lead to different error codes, depending on the time of occurrence. This is because the error detection methods and reaction times differ for each type of error and also due to the mainly sequential processing by the microprocessor. Once an error is detected, subsequent errors are ignored.

Error code	Description	Meaning/Cause
E001	Phase loss	<ul style="list-style-type: none"> ■ Input line phase missing or weak ■ Blown line fuse(s) ■ Fuse receptacle is not shut or screwed down properly
E002	IGBT error	<ul style="list-style-type: none"> ■ IGBT or IGBT driver board defective ■ EMC disturbance
E003	Internal current hardware limit	<ul style="list-style-type: none"> ■ High peak load ■ Track is open circuited ■ Track is detuned
E004	Ground fault	<ul style="list-style-type: none"> ■ Isolation of Track Supply or track installation damaged ■ Water present on track ■ Ground fault level set too low
E005	Door open	<ul style="list-style-type: none"> ■ Pins 11 and 12 of X104 not bridged ■ Loose connection
E006	No track current	Track current sensor defect or wire broken
E007	Temperature high on sensor 1	<ul style="list-style-type: none"> ■ Air intake or exhaust blocked ■ Overloading, too many loads ■ Ambient temperature too high ■ Damaged track tuning capacitors ■ Axial fan defect / Fan fuse blown
E008	Temperature high on sensor 2	See E007

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Error code	Description	Meaning/Cause
E009	Temperature sensor 1 defect	<ul style="list-style-type: none"> ■ Defect sensor ■ Loose connection
E010	Temperature sensor 2 defect	<ul style="list-style-type: none"> ■ Defect sensor ■ Loose connection
E011	Temperature high on heat sink sensor 1	See E007
E012	Temperature high on heat sink sensor 2	See E007
E013	Heat sink temperature sensor 1 short circuited	Temperature sensor wiring problem
E014	Heat sink temperature sensor 1 open circuited	Temperature sensor wiring problem
E015	Heat sink temperature sensor 2 short circuited	Temperature sensor wiring problem
E016	Heat sink temperature sensor 2 open circuited	Temperature sensor wiring problem
E017	Temperature switch 1 open circuited	<ul style="list-style-type: none"> ■ Loose connection ■ See E007
E018	Temperature switch 2 open circuited	<ul style="list-style-type: none"> ■ Loose connection ■ See E007
E019	LCD	<ul style="list-style-type: none"> ■ LCD defect ■ Loose connection between display and control boards
E020	Output (Track) voltage high	Track is detuned
E021	Output (Track) current high	Control board failure
E022	Output power high	Too many loads on the track
E023	Soft-start error	Soft-start circuit failure
E024	Watchdog	Software problem
E025	Brownout	<ul style="list-style-type: none"> ■ Control board supply voltage failure ■ Control board on-board power supply failure
E026	Track Supply output open circuited	<ul style="list-style-type: none"> ■ Track not connected ■ Track cable damaged or cut
E027	DC bus voltage high	<ul style="list-style-type: none"> ■ Mains overvoltage, e.g. lightning or other disturbance ■ Secondary Pickup load suddenly removed
E028	DC bus voltage low	<ul style="list-style-type: none"> ■ Phase of mains supply missing, e.g. fuse blown ■ Weak mains supply
E029	Internal current software limit	<ul style="list-style-type: none"> ■ High peak load ■ Track is open circuited ■ Track is detuned

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Error code	Description	Meaning/Cause
E030	DC bus voltage unstable	At power up no stable DC bus voltage could be detected due to a mains supply disturbance
E031	Inductance high	<ul style="list-style-type: none"> ■ Track tuning capacitor aging, failure or loose connection inside capacitor box ■ Incorrect commissioning ■ Pickups added after commissioning ■ Track/ Feeds repositioned or lengthened after commissioning
E032	Inductance low	<ul style="list-style-type: none"> ■ Track tuning capacitor aging, failure or loose connection inside capacitor box ■ Incorrect commissioning ■ Pickups added after commissioning ■ Track/ Feeds repositioned or lengthened after commissioning
E033	3.3 V on board power supply failure	Communication power supply overload/failure
E034	3.3 V on board power supply failure	Micro power supply overload/failure
E035	3.3 V on board power supply failure	Analog power supply overload/failure
E036	3.3 V on board power supply failure	FPGA power supply overload/failure
E037	5 V on board power supply failure	5 V power supply overload/failure
E038	24 V control board supply failure	<ul style="list-style-type: none"> ■ 24 V power supply overload/failure ■ 24 V on X3 being used inappropriately
E039	FPGA configuration error	<ul style="list-style-type: none"> ■ FPGA failure ■ Flash memory failure ■ SPI bus problem
E040	FPGA SPI bus error	SPI bus problem
E041	Invalid output voltage measurement	FPGA failure
E042	Invalid output current measurement	FPGA failure
E043	Invalid internal current measurement	FPGA failure
E044	Oscillator error	Micro oscillator failure
E045	FPGA software error	Software not compatible
E046	Zone controller 1 error	Zone controller fault report (external)
E047	Zone controller 2 error	Zone controller fault report (external)
E048	DIP switch	Wrong DIP-switch setting
E049	Output peak power high	See E022; to many loads on the track or power demand to high

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8 Fuses



Danger of electric shock!

The Track Supply is de-energized only if the voltage supply has been interrupted for at least 20 minutes by switching off or unplugging the power plug.

- Wait at least 20 minutes after switch-off, so that voltages of the intermediate circuit condensers can fall down to < 60 V DC.

For control and replacement of the main fuses observe the following:

- Remove the Track Supply from the power supply voltage and protect it from a restart or resetting.
- **Before** you open the Track Supply wait at least 20 minutes so that the internal discharge can fall down to < 60 V DC.
- Remove the safety cover (left cover).
- Then check the condition of the fuses.



ADVICE!

If one of the fuses must be replaced, please always replace all **three** fuses together! Only use the prescribed fuses. See chapter 20 "Spare Parts".

- Ensure that the fuses are properly seated and receptacle is fully closed.
- Replace the cover into its position and restart the operation of the Track Supply.
- Connect the Track Supply to the mains supply and switch it on again.

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9 Transport, Packaging and Storage

9.1. Transport

9.1.1. Safety Instructions for Transport



Damage from improper transport!

Improper transport can result in substantial property damage.

- Proceed with care when unloading packaged parts upon delivery or during internal transport, and observe the symbols and notes on the packaging.
- Only move, lift and transport the Track Supply with appropriate lifting and transport equipment (weight see chapter 6.4 "Mechanical Data").
- When using a forklift or similar transport device, ensure that the housing will not be damaged.
- Only remove packaging material immediately prior to starting the installation.

9.1.2. Transport Inspection

Check the shipment for completeness and transport damage immediately upon receipt.

If transport damage is externally visible, proceed as follows:

- Do not accept the shipment, or accept it only with reservations.
- Note the scope of damage on the transport documents or on the transporter's delivery note.
- Initiate a complaint



ADVICE!

Claim every defect as soon as it is detected. Damage compensation claims may only be made within the applicable claim periods.

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9.2. Packaging

The individual packages must be packed according to the transport conditions to be expected. Only environmentally friendly materials have been used for packaging.

The packaging must protect the individual components from transport damage, corrosion and other damage until the installation will be made. Therefore do not destroy the packaging and remove it only immediately before the installation.

Handling of packaging materials:

Dispose of packaging material according to the valid legal regulations and local guidelines.



Environmental damage due to improper disposal!

Packaging material is a valuable resource and can be reused, processed or recycled in many cases.

- Dispose of packaging materials in an environmentally appropriate manner.
- Observe the locally applicable disposal guidelines; if necessary, engage a specialist for disposal.

9.3. Storage of Packages

Store packages under the following conditions:

- Do not store outdoors.
- Store in a dry and dust-free place.
- Do not expose to aggressive media.
- Protect from direct sunlight.
- Avoid mechanical vibrations.
- Storage temperature: -20 °C to +60 °C
- Humidity: < 90% non-condensing
- When storing for more than 3 months, check the general condition of all parts and the packaging at regular intervals. If necessary renew or replace the preservative.



ADVICE!

Under some circumstances, there may be instructions for storage on the packages which go beyond the requirements listed here. Follow them appropriately.

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10 Installation

10.1. Who is allowed to do the Installation?



Risk of injury due to insufficient qualification!

Improper use can result in serious injury to persons or property damage.

- All works for installation and commissioning as well as for maintenance and disassembly must be carried out by qualified staff (observe IEC 364 resp. CENELEC HD 384 or DIN VDE 0100 and IEC 664 or DIN VDE 0110 and the national accident prevention regulations).
- All works for installation und commissioning must be carried out according to these mounting instructions. Any notes listed in this document must be strictly observed. It is moreover required to observe the general national prescriptions and specific factory regulations.



Qualified staff, according to the safety regulations, are persons that are familiar with the installation, assembly, commissioning and operation of energy supply systems and that have the appropriate qualifications.

10.2. General Installation Recommendations

- After having received the component(s) and prior to starting the installation works unpack the components and check exactly for any damage that may have occurred due to transport or storage (damage at the housings and isolation, missing parts etc.).
- Check the data on the identification plate to make sure that the components fulfill the requirements regarding nominal power and voltage.
- Ensure and verify completeness of the documents, if the documents comply with the supplied component(s).
- If several Track Supplies are applied in one single system, they might need to be synchronized. Conductix-Wampfler provides the documentation with the synchronization components.
- Prior to the installation ensure that the Track Supply is securely placed on a plane subsoil. The Track Supply must be fixed on site so that it will have a safe position under all circumstances.
- The balance point of the Track Supply is in the center. Observe the instructions of the housing manufacturer to fix the housing at the floor! For the fixation use components recommended by the manufacturer.
- For the installation of the Track Supply ensure that it is mounted safely and firmly. It must be fixed on site so that a safe position of the Track Supply will always be ensured.



Wrong installation of the power supply has some negative effects on function, efficiency and lifetime. It is therefore important to observe the specification regarding the determination of the installation site. If this is not observed the warranty will expire!

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10.3. Place and Conditions of Installation

Install the Track Supply in a dry and ventilated space. The Track Supply must be installed in a vertical position and mounted onto a solid subsoil.

The waste heat of the Track Supply will be dissipated by ventilators via outlet openings in the housing or via the laterally installed air conditioning unit. Therefore absolutely ensure during the assembly that the air flow at the intake and outlet opening will not be hindered.

The ambient temperature should not be below 5 °C and must not exceed the specification of 40 °C. The relative humidity should be below 90% and there must not be any condensation. Negative ambient conditions must be avoided.

Any application beyond these conditions may result in changes of the performance parameters. For further information, see chapter 6 "Technical Data".

In case the Track Supply is installed in a cabinet or small room, a sufficient air flow must be ensured. The temperature inside the cabinet shall not exceed 40 °C. Install filters and/or air-conditioning in order to meet the necessary IP protection classification.

The climatic conditions for the storage and operation must be observed according to the specifications, see chapter 6.3 "Environmental Data".

A distance of 200 mm between the sides of the Track Supply to walls and other cabinets is recommended for maximum performance, especially if neighboring equipment is also generating heat.

10.4. Electrical Regulations

The general electrical operating conditions according to VDE 0100 (installation and operation of electrical equipment up to 1000 V) have to be observed. If necessary observe the local regulations when they go beyond these requirements.

The internal fuses in the Track Supply are for limiting damage within the Track Supply in the event of a component failure. Appropriate protection should be given to the three-phase supply cable according to local regulations.

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10.5. Electrical Connection

10.5.1. Mains Connection (X2)

The power cables of the supply lines L1, L2, L3 and PE have to be chosen as follows:

- 1 Use only applicable cables that are approved according to VDE, UL or CUL.
- 2 The Track Supply is designed for connection to a neutral grounded 3-phase supply system. While operation on alternative supply systems such as corner grounded Delta maybe possible, it is unadvisable and may void the warranty. Please discuss with Conductix-Wampfler if in doubt.
- 3 The nominal voltage of the cables must be at least 600 V.
- 4 The core cross-section has to be planned according to the relevant standards but recommended is 6 mm² / AWG10.
- 5 Grounding is to be realized according to VDE, NEC and IEC (see chapter 6.9 "Grounding").
- 6 The 3-phase input supply connection to X2 requires a flexible stranded core type cable for connection to the supplied Harting connector. Maximum cable outer diameter is 18 mm with supplied M32 cable gland.

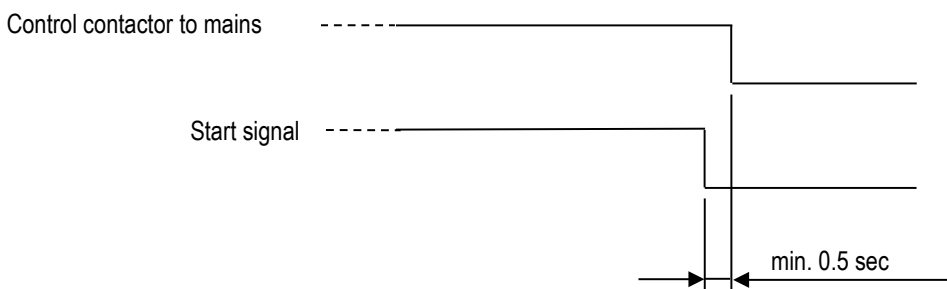
For 440 V and 480/277 V systems only:

- Defined crimper must be used! Crimper orderable separately (see chapter 21 "Tools").
- Copper conductors only (75 °C).
- Branch circuit protection has to be provided by customer.
- **Only matching plugs are allowed!**



Damage to the input fuses!

To avoid damaging the input fuses it is mandatory that the 3-phase mains supply be only removed when the START signal is (X3 pins 1 and 2) is first removed. A delay of at least 0.5 seconds is recommended.



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10.5.2. Configuration of Control Plug (X3)

Inputs:

/Reset Between Reset+ (Pin 3) and Reset - (Pin 4) 24 V DC are to be applied, otherwise the Track Supply remains in a reset state.



ADVICE!

To reset the Track Supply the Reset signal must go low for at least 0.5 seconds. /Reset inputs are optically isolated and should be connected to an external 24 V DC supply. Giving the reset signal when an error occurs deletes all information about the error code on the display.

Start 24 V DC and GND must be supplied to turn the Track Supply on. When there is a difference in potential of 24 V DC between Start+ (Pin 1) and Start- (Pin 2) the Track Supply output is energized. Otherwise the output is deactivated.



ADVICE!

Start inputs are optically isolated and should be connected to an external 24 V DC supply. See chapter 10.5.5.

Sync For synchronizing Track Supplies together to the same frequency and phase. Use only Conductix-Wamplifier approved equipment.

When using several Track Supplies synchronization may be required.

Both Start and /Reset inputs are optically isolated and may be connected to an external 24 V DC supply or the provided 24 V output.

Outputs:

Error Switch is open on error, if the mains supply is disconnected or if the Track Supply is in Reset mode. Otherwise it is closed.

0 and 24 V Used for commissioning.



CAUTION!

May be used to provide 24V to the Start und /Reset inputs (i.e. through switches) under following conditions:

- must not be distributed over cables longer than 2 m
- must not be used for any other equipment (relay, fan, display...)
- must not be referenced to any other potential

Connections to the internal 24V supply (X3 pins 7 and 8) increase the risk of disturbance to the internal controls: leave unconnected whenever possible.



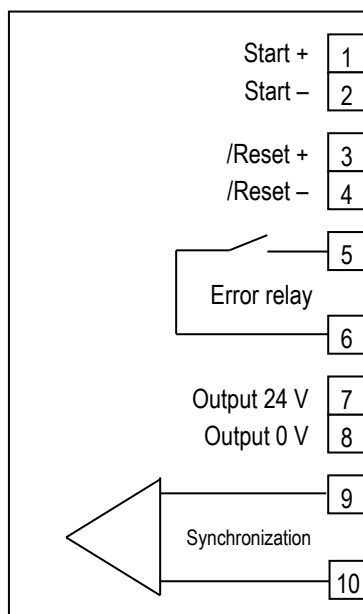
WARNING!

Do not locally distribute this 24 V DC supply output over control cables! Do not reference 0 V to other potentials!

Track Supply 16 kW Module

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Reference for input and output



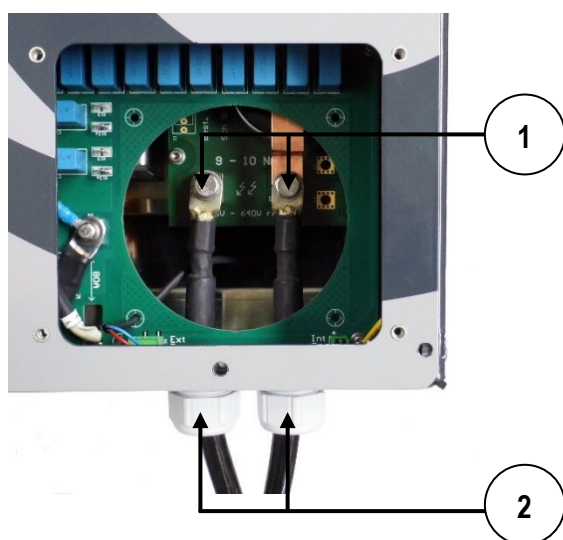
Harting HAN-10E

Attention at 480/277 V version:

- min. cross section 1,5 mm² / AWG16
- copper conductors only (75 °C)

10.5.3. Connection Track Cable (X1)

Torque for the track cable connections X1.1 and X1.2: 9 - 10 Nm

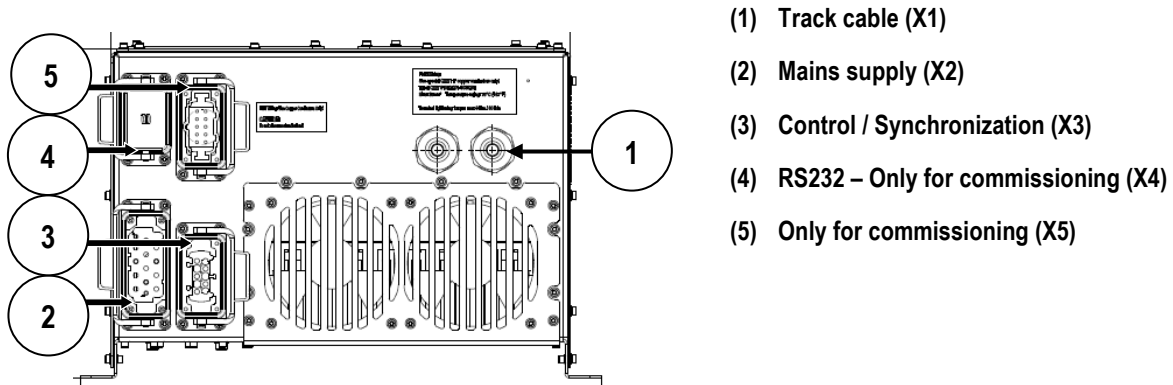


- (1) Connection terminals
Track cable
(X1.1 and X1.2)
- (2) Cable outlets

Track Supply 16 kW Module

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10.5.4. Layout of the External Connections (X1, X2, X3, X4, X5)



Housing bottom



ADVICE!

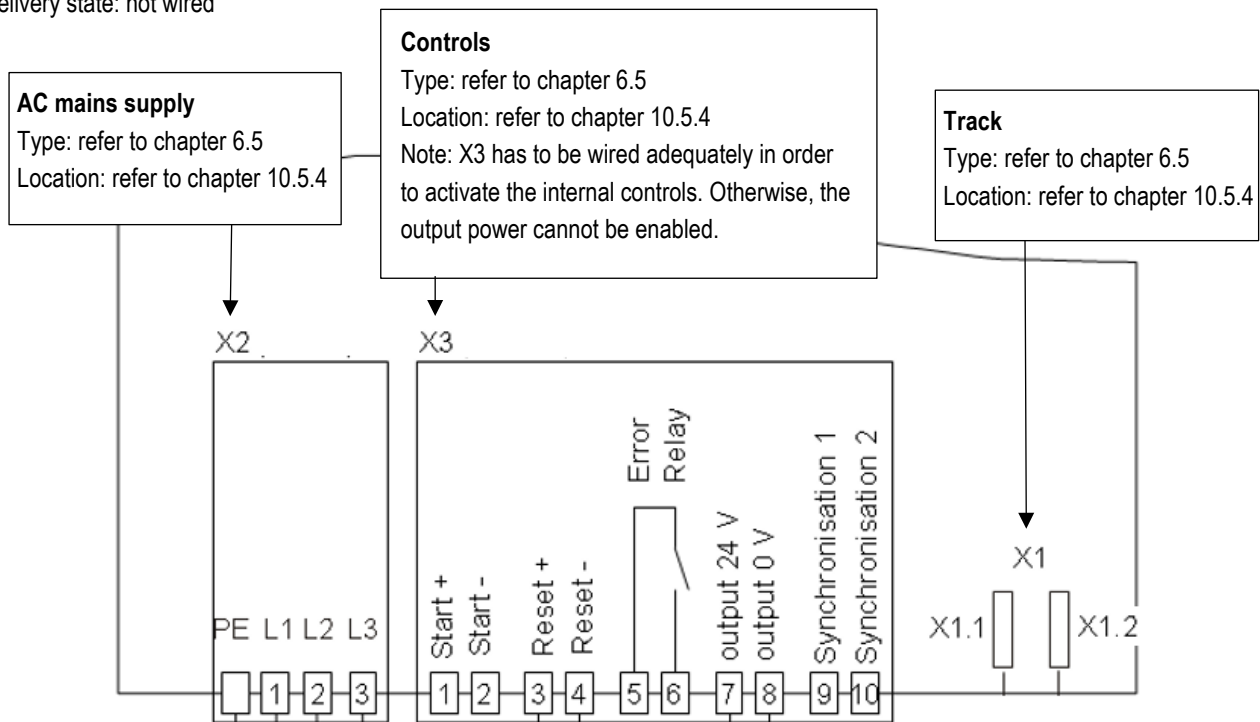
Ensure that the cable ends are long enough to make connections. Conductix-Wampfler recommends to use a flexible cable.

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10.5.5. Wiring of the Track Supply

Delivery state: not wired



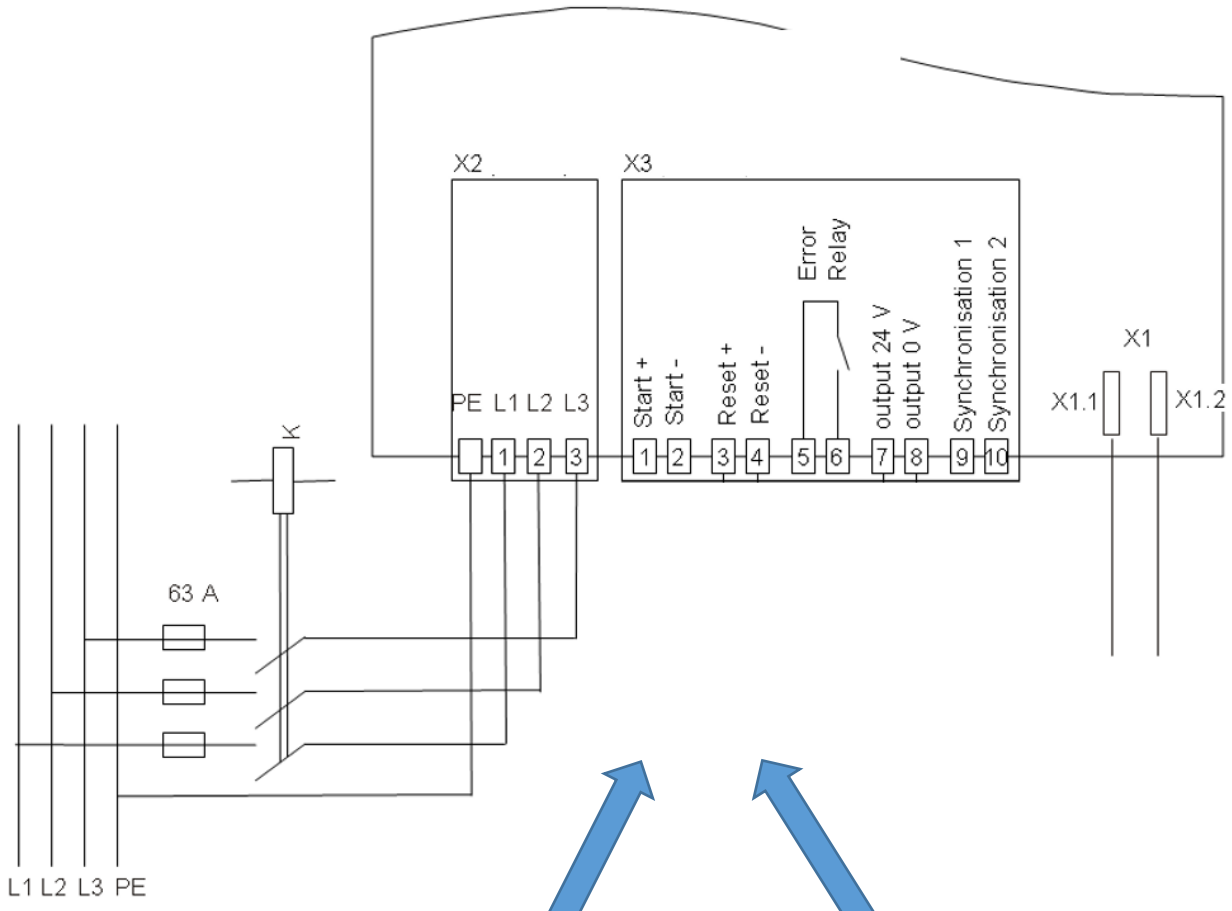
Wiring examples:



Refer to the chapter 10.5 in its entirety.

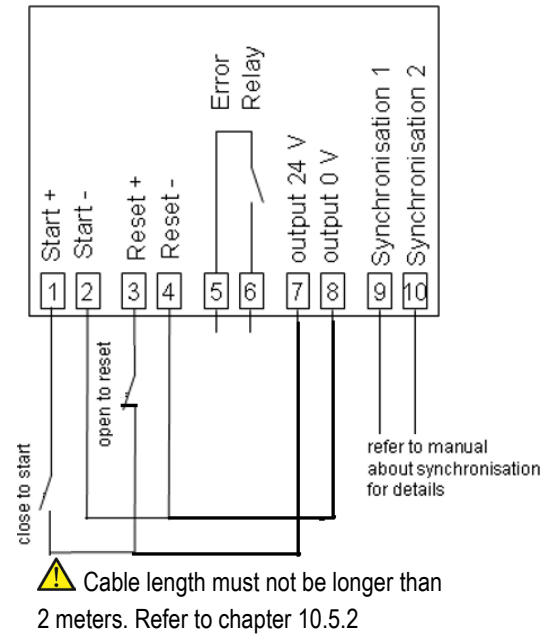
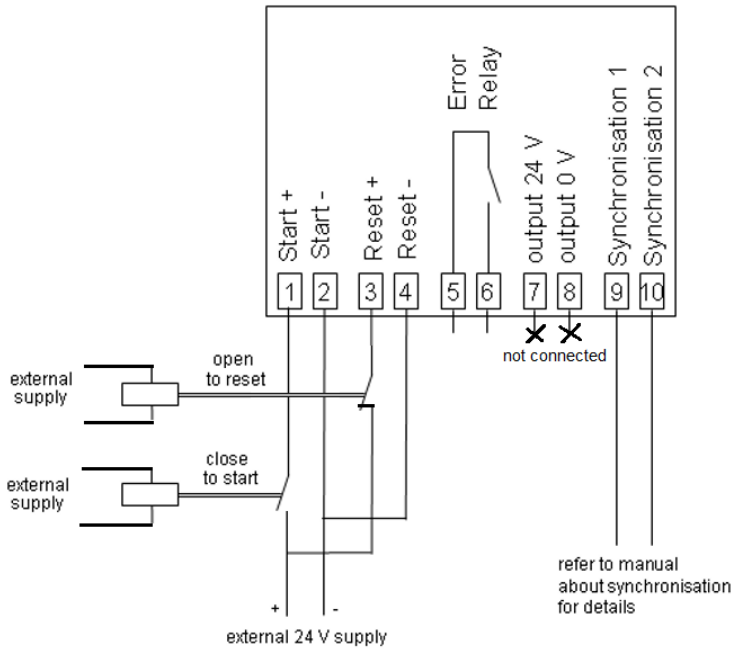
Track Supply 16 kW Module

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X3 connection example 1
with external supply

X3 connection example 2
with internal supply only



Track Supply 16 kW Module

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Danger of electric shock!

The Track Supply is de-energized only when the plug or the power supply is disconnected for more than 20 minutes.

- Prior to opening the Track Supply wait at least 20 minutes!
- Observe the safety regulation and ensure that nobody else has access to the open Track Supply.



(1) Track Connection

(2) Fuses



ADVICE!

For maintenance work the service covers can be removed.



Example figure above: Cable connection through the opening on the right side. For the fixation of the stainless steel M8 screws use a torque of 9 to 10 Nm. Fuses are behind the left cover.

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11 Warnings and Precautions



Danger of life due to electric shock!

Although the Track Supply is isolated from the mains supply by a transformer, the output with ground conductor is equipped with Y-connected noise suppressing condensers. This means a potential voltage exists with respect to the PE that might cause electric shock and even death.

- Do not touch non isolated parts of the mains supply!
- Do not touch any electrical components of the Track Supply power supply!
- Observe safety precautions before and after covers and housing have been removed.
- Avoid risk of life by appropriate safety measures!



Danger due to improper use!

The Track Supply is only intended for operation in connection with other, accordingly dimensioned components.

- If you are not sure that this is the case, contact Conductix-Wampfler. Do not start operation of the Track Supply/system in this case!



Interference of the operation by intrusion of dirt and dust!

Operation of the Track Supply without its covers may allow the intrusion of dirt and dust, thereby reducing the functioning and reliability according to the specification.

- Avoid operation with removed covers and/or open cover.
- Tighten cable glands at the lower end in the housing and ensure that the covers are screwed properly. All cable connections in the housing must be fixed.



Risk of injury due to insufficient qualification!

Improper use can result in serious injury to persons or property damage.

- All works for installation and commissioning as well as for maintenance and disassembly must be carried out by qualified staff (observe IEC 364 resp. CENELEC HD 384 or DIN VDE0100 and IEC 664 or DIN VDE 0110 and the national accident prevention regulations).
- All works for installation und commissioning must be carried out according to these mounting instructions. Any notes listed in this document must be strictly observed. It is moreover required to observe the general national prescriptions and specific factory regulations.



Qualified staff, according to the safety regulations, are persons that are familiar with the installation, assembly, commissioning and operation of energy supply systems and that have the appropriate qualifications.

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12 Commissioning

12.1. Safety

Track Supplies have to be commissioned in connection with the respective components of the rail systems. For commissioning it is necessary to mount the secondary components (Pickups and Regulators) on all vehicles. Access to secondary Pickups and Regulators on all vehicles is necessary.

The primary system has to be installed completely before commissioning of the Track Supplies. Commissioning on site requires the correct adjustment of the primary track cable impedance where the Track Supply is connected to. For the general operation of the inductive energy supply system the local conditions will be considered and optimum resonance conditions for the system will be provided with the help of capacitors and coils. These adjustments at the Track Supply must only be made by trained personnel.



Danger due to unauthorized personnel!

Unauthorized personnel who do not meet the requirements described here do not understand the dangers in the working area.

- Keep unauthorized personnel away from the working area.
- Identify dangerous areas by warning signs and secure those with a barrier tape from access by unauthorized persons are from contact with current-carrying components.
- In case of doubt, address these persons and direct them away from the working area.
- Stop any works as long as unauthorized personnel is in the working area.

For the implementation of the commissioning the following requirements must be fulfilled:

- Free access to the site.
- Free access to the voltage supply.
- Free access to all components.
- Safe storage of the equipment required for commissioning (components, tools, auxiliaries etc.).
- Possibility to remove or to short-cut Pickups.
- Possibility to add load to the Pickups / power regulators step by step.
- Access to the external control signals to the Track Supply.



Any changes to the system (e.g. more vehicles) or in the environment after commissioning requires additional commissioning.

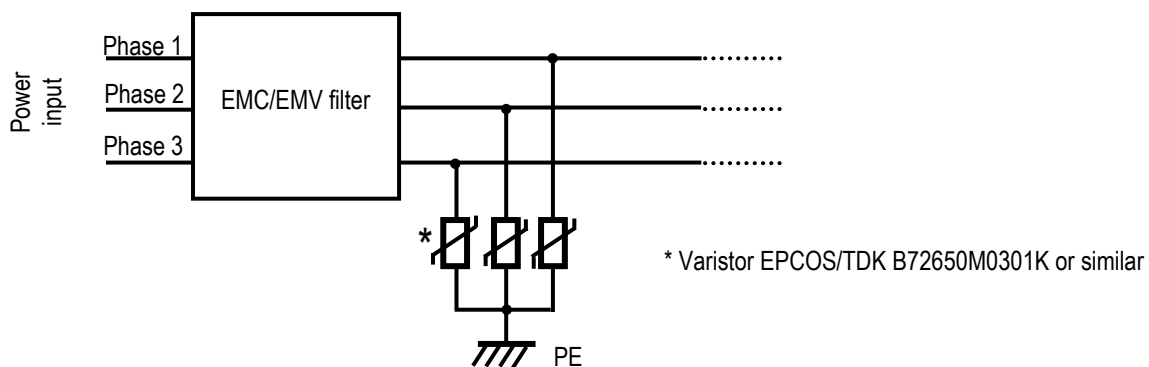
Track Supply 16 kW Module

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12.2. System Conditions

The permissible transient fluctuation of the mains supply voltage is between -10% and +10% of the nominal voltage. If the values are lower or higher than these, the technical data of the Track Supply cannot be guaranteed any longer and destruction of some components may be the consequence.

In order to protect the semiconductors against external transients, varistors are integrated as shown in the following sketch. If the specifications of the varistor types are not observed, there is a risk of destruction of some of the components.



Line to earth protection

12.3. System Protection

The system operator must install fuses or overload switches in the area of the power input according to the relevant regulations of the NEC and all local regulations. The operation level must be coordinated with the internal fusing and the expected load.

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13 Start and Operation



WARNING!

The Track Supply is not designed for independent operation. It has to be operated in conjunction with corresponding rail components. Therefore no specific details about the operation are given in this document.

Prior to switching-on the Track Supply ensure that the installation and commissioning were executed correctly. Always attend to the valid safety regulations!



DANGER!

Danger of life due to electric shock!

After having connected the Track Supply to the line voltage the components of the power circuit are connected to the voltage network as well.

- Never touch these components!
- It is obligatory to keep all doors and covers closed.

Prior to any intervention into an electrical or mechanical component of the energy supply system the complete system always has to be disconnected from the supply voltage!

Connecting and disconnecting measuring instruments is only allowed under off-circuit conditions and must only be carried out by trained personnel.



WARNING!

Danger of injury due to improper operation!

Improper operation can result in serious injury to persons or property damage.

- Carry out all operating steps according to these operating instructions.
- Before starting work, ensure that all covers and safety systems are installed and are working properly.
- Do not switch on without output cable connected.
- Never put safety systems out of order during operation.

Reconstruction or modifications at the energy supply system or its components on one's own authority are excluded from the guarantee.



WARNING!

Danger for unauthorized personnel!

Unauthorized personnel who do not meet the requirements described here do not understand the dangers in the working area.

- Keep unauthorized personnel away from the working area.
- In case of doubt, address these persons and direct them away from the working area.
- Stop any works as long as unauthorized personnel are in the working area.

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1. Connect the device to the mains supply
2. At Start+ (Pin1) and Start- (Pin 2) 24 V DC are to be applied (X3).

For information on the LED indication, see chapter 7.2.1.



ADVICE!

Between Reset+ (Pin 3) and Reset - (Pin 4) 24 V DC are to be applied, otherwise the Track Supply remains in a reset state.



ADVICE!

Prior to any intervention into an electrical or mechanical component of the energy supply system the complete system always has to be disconnected from the supply voltage! Connecting and disconnecting measuring instruments is only allowed under off-circuit conditions and must only be carried out by trained personnel.



ADVICE!

Reconstruction or modifications at the energy supply system or its components on one's own authority are excluded from the guarantee. Any necessary reconstructions or modifications - especially on electrical components - are only allowed if they have been approved by Conductix-Wamplifier.

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14 Switching-off

As described in chapter 10.5 "Electrical Connection" first switch-off the Track Supply by switching the START-input to "OFF" and after this disconnect the line voltage (i.e. by a load switch)



Danger of electric shock!

The Track Supply is de-energized only if the voltage supply has been interrupted for at least 20 minutes by switching off or unplugging the power plug.

- After disconnection of the energy supply system from the supply voltage, components or power terminals must not be touched immediately afterwards.
- Wait at least 20 minutes after switch-off before starting any works at the energy supply system or its component, so that voltages of the intermediate circuit condensers can fall down to < 60 V DC.



ADVICE!

Component lifetime may be extended by turning off the Track Supply when the system is not needed, for instance during the night or on weekends.

15 Emergency Measures



Danger of electric shock!

The Track Supply is de-energized only if the voltage supply has been interrupted for at least 20 minutes by switching off or unplugging the power plug.

- Wait at least 20 minutes after switch-off before starting any works at the energy supply system or its component, so that voltages of the intermediate circuit condensers can fall down to < 60 V DC.



Risk of personal injury and property damage!

In the event of smoke or sparks in the housing or danger of personal injury or property damage, immediately disconnect the Track Supply from the power supply.

- Switch feeding line power off.
- Pull power plug X2, if it is safe to do so.



ADVICE!

Unauthorized switching on by a third person has to be prevented by removing the line fuses of the mains supply or by other adequate measures on site.



ADVICE!

The dangerous zone has to be provided with warning signs and secured with a shutoff tape against entry by unauthorized people.

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16 Fault Diagnosis

In case of faults at the Track Supply, e.g. no energy supply to the secondary components, check the display for indication of a possible cause. See chapter 7 "Control Board Hardware and Fault Indication".



Attempts to repair or restart should be avoided! Do not use the system anymore as long as the error has not been located and repaired or defective components have been replaced by trained personal.

After conclusion of the fault analysis, the Track Supply has to be protected against touching of live parts by closed housing/ covers. See safety advice in chapter 10.2 "General Installation Recommendations".

Fault indication on the outside:



LCD Window

Indication on the outside

- Green: Mains connected, Track Supply is operational
- Yellow: Warning
(In operation, but conditions critical)
- Red: Fault
(Stopped due to faulty conditions)

For advanced status analysis see chapter 7 "Control Board Hardware and Fault Indication".

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17 Maintenance and Servicing



Danger of electric shock!

The Track Supply is de-energized only if the voltage supply has been interrupted for at least 20 minutes by switching off or unplugging the power plug.

- Prior to starting maintenance works disconnect the Track Supply from the mains supply.
- During maintenance and repair work the Track Supply must be secured against unexpected and unintended switch on.



Danger of injury due to improperly executed maintenance tasks!

Improper maintenance can result in serious personnel injury or property damage.

- Before starting work, ensure that there is sufficient space for assembly.
- Maintain order and cleanliness in the assembly area! Loosely stacked or scattered components and tools are a source of accidents.
- If components have been removed, be careful to reinstall them properly, replace all fastening elements, and observe screw tightening torques.



Risk of injury due to insufficient qualification!

Improper use can result in serious injury to persons or property damage.

- All works for installation and commissioning as well as for maintenance and disassembly must be carried out by qualified staff (observe IEC 364 resp. CENELEC HD 384 or DIN VDE 0100 and IEC 664 or DIN VDE 0110 and the national accident prevention regulations).
- All works for installation und commissioning must be carried out according to these mounting instructions. All the notes listed in this document must be strictly observed. It is moreover required to observe the general national prescriptions and specific factory regulations.



Qualified personnel, according to the safety regulations, are persons that are familiar with the installation, assembly, commissioning and operation of energy supply systems and that have the appropriate qualifications.

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The following maintenance and inspection works should be carried out every 3 months:

- Visual inspection for external damage and damage due to special ambient conditions (e.g. damage of the housing cover, splash water, oil etc.)
- Inlet and outlet air are free - free airflow must be ensured. Ensure that the airflow and the air ducts are not blocked by any objects.
- Ensure that the Track Supply is dry, clean and free from dust and oil. If the Track Supply is very dirty, check the IP-protection and contact Conductix-Wampfler regarding appropriate cleaning measures.



ADVICE!

If the operating conditions are challenging and the environment is not clean, Conductix-Wampfler recommends shorter intervals.

For a qualified check of the operating parameters of the system, please contact Conductix-Wampfler. Thus you can compare the currently measured values with those obtained during commissioning or the last inspection. Here you can also check free airflow inside the housing and specific torques.



WARNING!

Risk of personal injury and property damage!

Improper attachment of the housing cover can cause severe injuries to persons or damage to components.

- After having completed the maintenance and repair works, close the housing covers again, prior to restarting the system.

18 Repair

If repair works or the replacement of faulty components are required and possible on site these works have to be carried out by trained personnel or by an Conductix-Wampfler technician, but the relevant safety regulations must be observed. If fault analysis or repair is not possible on site, it is required to send the faulty part to Conductix-Wampfler. Please contact our service department in this case for further information.

To decide about the procedure we require the following information:

- Product designation
- Material number
- Serial number
- For configurable versions: specification from type plate
- System data (technical and system-specific data)
- Circuit diagram of the system (if available)
- Pictures / photos (if available)
- Description of the fault or the failure scenario
- Presumptions for the failure analysis

General and local safety regulations must be observed. See also chapter 10 "Installation" and chapter 11 "Warnings and Precautions".

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19 Disassembly and Disposal

19.1. Safety



Danger of injury due to improper disassembly!

Stored residual energies, sharp components, points, and edges on and in the device or the tools needed can cause injury.

- Prior to starting work, ensure that there is sufficient space.
- Handle open, sharp-edges components carefully.
- Maintain order and cleanliness in the work area! Loosely stacked or scattered components and tools are a source of accidents.
- Dismount components properly. Observe the heavy net weight of some components. If required use lifting devices.
- Secure components so that they cannot fall down or tip over.
- Involve the manufacturer in case of any unclear points.



Risk of injury due to insufficient qualification!

Improper use can result in serious injury to persons or property damage.

- All works for installation and commissioning as well as for maintenance and disassembly must be carried out by qualified staff (observe IEC 364 resp. CENELEC HD 384 or DIN VDE 0100 and IEC 664 or DIN VDE 0110 and the national accident prevention regulations).



Qualified personnel, according to the safety regulations, are persons that are familiar with the installation, assembly, commissioning and operation of energy supply systems and that have the appropriate qualifications.

19.2. Reuse



If it is necessary to replace the Track Supply due to damage or to install it in another place, verify that no damage can occur during disassembly.



Risk of personal injury and property damage!

Improper use, faulty installation or handling may result in serious personal damage or property damage.

- For installation at another location observe the described mounting and commissioning activities.

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19.3. Disassembly

When the device has reached the end of its useful life, disassemble it and dispose of it in an environmentally compatible way.

1. Disconnect Track Supply from the mains voltage.
2. After disconnecting the Track Supply from the supply voltage wait at least 20 minutes for internal discharging to < 60 V DC before opening the Track Supply.
3. Dismount the Track Supply.
4. Dispose of components in a specific way → recycling (see chapter 19.4 "Disposal")

19.4. Disposal

If return or disposal arrangements have not been made, use decomposed components for recycling:

- Scrap metals.
- Provide plastic elements for recycling.
- Dispose of remaining components separately according the material consistence.



Environmental damage due to incorrect disposal!

Electronic scrap, electronic components, lubricants and other auxiliary material are considered as hazardous waste and may only be disposed of by authorized specialized service centers!

The local authority or specialized service centers for disposal give advice as to environmentally compatible disposal.

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20 Spare Parts

Only the fuses are to be changed by the operator of the plant! All other parts have to be changed or repaired by trained and qualified Conductix-Wampfler personnel.

Designation	Product Identification	Conductix-Wampfler Mat.-No.	Used quantity	Remarks
Fuse 35 A	Siba 5012434.35 14x51 class gRL(gS)	3092095	3	For 400-415 V and 440 V versions only! To be replaced only by qualified personnel.
Fuse 30 A	Siba 5012434.30 14x51 class gRL(gS)	3092176	3	For 480/277 V versions only! To be replaced only by qualified personnel.
Fuse 2,5 A	24 V DC size 5x20 JDYX	on request	3	For 480/277 V versions only! To be replaced only by qualified personnel.
Control board G4 progr.	91-P600-0266	3103277	1	Only by qualified Conductix-Wampfler personnel.
Display board G4 progr.	91-P600-0233	3087294	1	Only by qualified Conductix-Wampfler personnel.
Battery (for above mentioned control board)				Replace battery only with the same type! The use of other batteries may cause damage, fire or explosion.
Spare set fan TS6/16kW front		3189820	1	To be replaced only by qualified personnel.
Spare set fan TS6/16kW bottom		3189833	1	To be replaced only by qualified personnel.

Others on request

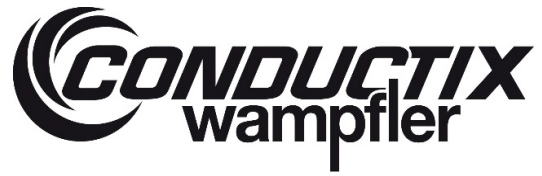
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21 Tools

Descriptions	Size / Specification	Remarks
Open ended or ring spanner wrench	13 mm	Connection track cable (20 and 35 mm ² Litz cable)
Flat Screw driver	5 - 7 mm	Plug HAN-6HSB earth screw
Flat Screw driver	3 - 4 mm	Plug HAN-6HSB and HAN-10E
Hex Allen Key	3 mm	Open covers of Track Supply
Crimper	Harting 3100950	For HAN-K12/2 (440 V and 480/277 V versions only!)
Crimper for cable end sleeve	0,5 - 6 mm ²	Plug HAN-6HSB and HAN-10E
Tools to strip the cables	-	-
Side Cutter	-	-

For the commissioning further tools and measuring instruments are needed.



Track Supply 16 kW Module

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22 Commissioning Report

Track Supply ____ A ____ V @ ____ Hz

Material-No.:

Serial number

Name of the project or line

Environmental conditions on the place

Following values were measured or adjusted:

Inductance without track tuning / Adjustment (µH)

Inductance after track tuning / Adjustment (µH)

Output voltage track (V)

Output current (A)

Inverter current (A)

Input line supply (V)

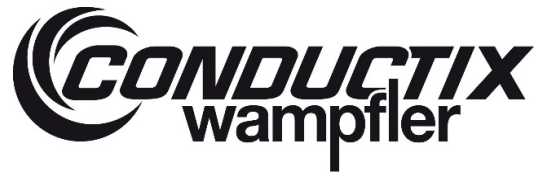
Remarks/Hints:

Recommended date for the next inspection:

Date

Name

Signature



Track Supply 16 kW Module

80 A/125 A at 400-415 V/440 V/480 V/277 V

23 Inspection Report

Inspection Report _____

Track Supply ____ A ____ V @ ____ Hz

Material-No.: _____

Serial number

Name of the project or line

Environmental conditions on the place

Following values were measured or adjusted:

	Last	Current	OK
Inductance without track tuning / Adjustment (μ H)
Inductance after track tuning / Adjustment (μ H)
Output voltage track (V)
Output current (A)
Inverter current (A)
Input line supply (V)

Remarks/Hints:

.....
.....

Recommended date for the next inspection:

State of the Track Supply: Ready for operation

.....
.....
.....

Date

Name

Signature

Operation Manual



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