



Brüel & Kjær Vibro

Instruction

VIBROCONTROL 950/960

Single channel vibration monitoring units



Keep it accessible for future reference.

 Achtung !	 Note!	 Attention!
Vor Inbetriebnahme des Produktes muss die Betriebsanleitung gelesen und verstanden werden. Bei Bedarf die Betriebsanleitung in fehlender EU-Sprache unter folgender Adresse anfordern: www.bkvibro.com	Before operating the product the manual must be read and understood. If necessary you may order the manual in the missing European Union language under the following address: www.bkvibro.com	Avant utilisation du logiciel et de l'appareil, il convient impérativement d'avoir lu et compris ce manuel d'emploi. Si besoin, commander le manuel d'emploi dans la langue manquante à l'adresse suivante : www.bkvibro.com
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Attachments

AC-2112 Protection housing

AC-4111 Power supply



WARNING!

This symbol warns of dangerous situations which can result from misuse of the product.



WARNUNG!

This symbol warns of dangerous electrical voltage..



NOTE!

This symbol provides general and useful information for using the product.

1 Applications

The VIBROCONTROL 950/960 Vibration Monitor is a maintenance free device situated mounted in a DIN rail enclosure. It can be used to monitor vibration parameters in applications with machines like pumps, blowers, ventilators, decanters, separators, centrifuges, mills and milling equipment.

The VIBROCONTROL 950/960 Vibration Monitor continuously keeps track of the vibration level of a machine at the point where the external sensor is fixed to that machine.



VIBROCONTROL 950/960 vibration monitors have different hardware depending on the type of sensor connected to the unit. It is NOT possible to connect a velocity sensor to a VIBROCONTROL 950/960 designed for use with an acceleration sensor, and vice-versa.

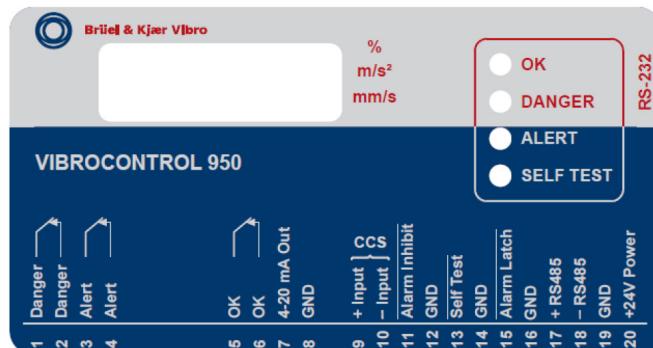
The VIBROCONTROL 950/960 Vibration Monitors have a RS232/RS485 serial interface which can be used to read-out the vibration level and status information. The PC-program used for this is called Compact Setup Software.



2 VIBROCONTROL 900 Series Types

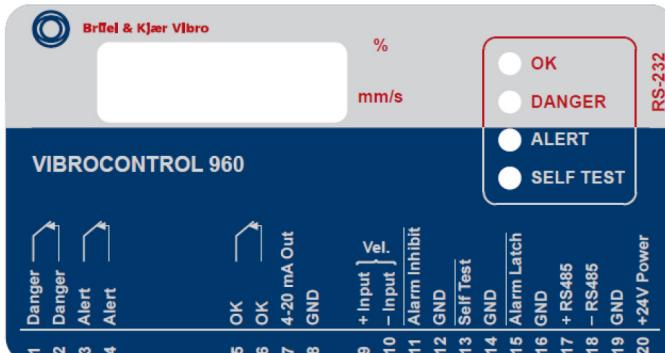


2.1 VIBROCONTROL 950 Accelerometers (CCS)



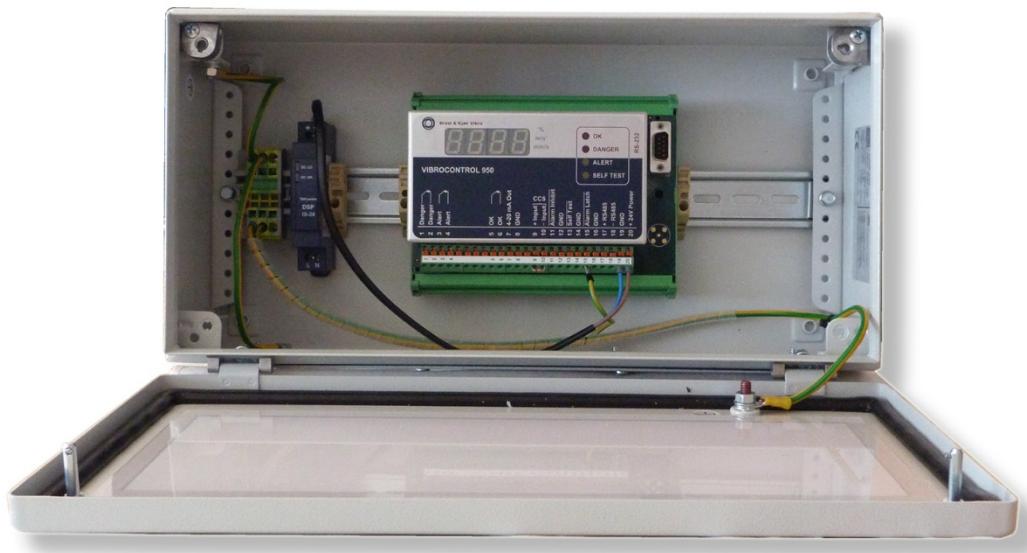
Connecting with acceleration sensors (CCS)

2.2 VIBROCONTROL 960 Velocity Sensors



Connecting with velocity sensors

2.3 VIBROCONTROL 950/01 and VIBROCONTROL 960/01 completely pre-installed in the field housing with 24 V DC power supply



The vibration monitoring units VIBROCONTROL 950 and VIBROCONTROL 960 can be individually installed as standard devices. In addition, fully assembled units in the AC-2112 protective housing are available for field mounting.

The order code for the fully assembled vibration monitoring devices is:

- VIBROCONTROL 950 /01 for **one** VC-950 installed in AC-2112
 - a monitoring device VC-950
 - a power supply AC-4111
 - one terminal block for connection of 230 V AC
 - a protective housing AC-2112
- VIBROCONTROL 960 /01 for **one** VC-960 installed in AC-2112
 - a monitoring device VC-950
 - a power supply AC-4111
 - one terminal block for connection of 230 V AC
 - a protective housing AC-2112

If a 24 V DC power supply is available, it can be connected directly to the monitoring units.

Otherwise, the built-in AC-4111 power supply provides 24 V DC as power supply to the vibration monitor. Since a 230 V AC power connection is routed to the power supply in the housing, the relevant guidelines for 230 V devices must be observed. See also notes in this manual.



3 Hints for safe operation of VIBROCONTROL 950/960

General:

Please carefully read the operating instructions prior to set-up of the device. Make sure that your VIBROCONTROL 950/960 device is suitable for your application without any restrictions.

Intended Use

VC-9XX is designed to measure and monitor machine vibration.

The operation is for up to 2000 m above sea level. M. allowed! Outside, operation without protective housing is not allowed.

Any other use is considered improper.

If the device is used in a manner not described in this manual, the function and protection may be impaired.

Improper use:

Any improper or non-intended use may lead to malfunctions of the VIBROCONTROL 950/960 device or to unwanted effects in your application. If the VIBROCONTROL 9x0 is used in a way not described in the relevant user manuals, function and protection may be impaired and serious personal damage, death or serious, irreversible injuries may result.

EU-directives:

All versions of the VIBROCONTROL 950/960 device conform to the relevant regulations and EC directives.

Installation and operation:

Installation, electrical connection, set-up, operation and maintenance of your VIBROCONTROL 950/960 device(s) must only be carried out by qualified/trained personnel (electrician) authorised by the machine operator in accordance with local- and national regulations for the installation of electrical equipment.

Changing the setup parameters:

Before applying a new set of setup parameters to the VIBROCONTROL 950/960 device, please make sure that doing so cannot cause any damage to persons and/or machinery.

Connecting the sensor(s):

Please make sure to meet the safe extra-low voltage (SELV) criteria when any sensors are connected to the VIBROCONTROL 950/960 device so that no dangerous contact voltages are applied to the sensor and/or transferred to the device.

Sensor cable mounting:

To prevent negative effects on the functioning of the VIBROCONTROL 950/960 device caused by noise voltages, please lay shielded sensor cables and load cables separately.

Connecting the output(s):

For a detailed description of conditions/restrictions with regard to connecting the output(s) of a VIBROCONTROL 950/960 device to the input(s) of the machine's control system, please read section 5.14 in this manual.

Ingress protection (IP):

The VIBROCONTROL 950/960 is ranked as IP20. The VIBROCONTROL 950/960 device must be mounted in a control cabinet with an ingress protection of at least IP54. The control cabinet should be installed in accordance with local- and national rules and regulations.

Mounting:

Mount the VIBROCONTROL 950/960 device on a 35 mm DIN rail inside the control cabinet. Mount the device vertically but make sure to leave enough space between the unit and the top and/or bottom of the control cabinet. Only this way the air circulation will be sufficient to avoid excessive heating of the device.

Connecting to a power supply:

The VIBROCONTROL 950/960 device has a voltage tolerance of +24 VDC $\pm 5\%$

Before connecting the VIBROCONTROL 950/960 device to a +24 VDC supply voltage, please make sure that all terminal blocks are completely inserted.

The external +24 VDC supply voltage must be generated and supplied according to the SELV requirements.

Protect the +24 VDC supply voltage externally with max. 2A. The ground (GND) of the DC supply is directly connected with the ground (GND) of the sensor supply, if any. The SELV criteria must therefore be met for the DC supply (safety extra-low voltage, circuit electrically isolated from other circuits, not grounded). If the DC circuit is to be grounded (e.g. due to national regulations), the protective-extra-low-voltage (PELV) criteria must be adhered to (SELV with circuit galvanic isolated from other circuits).

Maintenance:

If used correctly no maintenance and repair measures are necessary. Only the manufacturer is allowed to repair the unit.

3.1.1 Requirements for personnel

Transportation, storage, installation, assembly, connection, commissioning, maintenance and repair may only be carried out by qualified specialist personnel. Please note:

- this technical documentation
- Warning and safety information and pictograms on the product
- Product-specific regulations and requirements
- all national and regional regulations for safety and accident prevention.

3.1.2 Special hints for VC-950/01 & VC-960/01 in field housing

The operation in the protective housing is for indoor and Außenbereich to 2000 m above sea level. M. allowed!



4 Functionality

The VIBROCONTROL 950/960 Vibration Monitor has a 2-wire sensor input that must be connected to an external accelerometer (CCS) (VC-950) or velocity sensor (VC-960) as well as a number of signal conditioning-, alarm-, test- and output circuitries, many of which have external connections on the enclosure.

The VIBROCONTROL 950/960 Vibration Monitor is designed to monitor mechanical vibrations on machines according to DIN/ISO-10816. In compliance with this standard the machine vibration must be monitored in mm/s and within a frequency bandwidth of 10 – 1000 Hz.

General:

- 4-digit LED display on the top of the enclosure capable of showing the measurement result of pre-filter plus signal processor in m/s², mm/s or in % of the full measurement scale
- The vibration parameter may have an individual alert and/or danger alarm trigger level assigned. If an alert and/or danger alarm is activated, the respective LED(s) on the top of the enclosure will illuminate.
- 2 solid state relays may be assigned to the alert or danger alarm. When activated the relays will “break”.
- 1 analogue 4-20 mA output is assigned to the vibration parameter.
- An internal watchdog monitors the complete monitor. When a system error is detected the “OK” LED on the top of the enclosure will illuminate. In addition a “OK” relay will “break”.
- Possibility to inhibit (all) alarms by assigning the “Alarm Inhibit” digital I/O terminal on the enclosure to ground
- Possibility to latch (all) alarms by assigning the “Alarm Latch” digital I/O terminal on the enclosure to ground
- Possibility to start a complete Self Test of the vibration monitor by connecting the Self Test terminal on the enclosure to ground. If the Self Test is not passed a system failure error will occur. An illuminated Self Test LED on the top of the enclosure indicates an on-going Self Test.

The VIBROCONTROL 950/960 Vibration Monitor measures the momentary true RMS or Peak value of the vibration level, which is then continuously compared with two alarm trigger threshold levels respectively called “Alert” and “Danger”.

If an alarm trigger level has been exceeded, the corresponding enabled alarm relay(s) will become activated and thereby inform the user, e.g. via a connected rotor light, beeper, PLC or by directly shutting down the machine.

The VIBROCONTROL 950/960 Vibration Monitor provides one 4-20 mA DC analogue output signals, which at any time expresses the level of the vibration parameter relative to its measuring range.

The VIBROCONTROL 950/960 Vibration Monitor is provided with a RS232 and a RS485 interface, which allows it to be configured and tested from a computer with the Compact Setup Software.

4.1 Measuring Parameter

VIBROCONTROL 950 is working with accelerometers (measuring parameters either velocity (mm/s) or acceleration (m/s^2)) VIBROCONTROL 960 is working with velocity sensors (velocity (mm/s)). The customer can change the measuring parameter at any time using the Compact Setup.

4.2 Measuring Range

The VIBROCONTROL 950/960 Vibration Monitor will be pre-configured with measuring range: 0-20 mm/s. The customer can change the measuring range at any time using the Compact Commander Setup.

4.3 Frequency Bandwidth

The VIBROCONTROL 950/960 Vibration Monitor will be pre-configured with a frequency bandwidth of 10 Hz – 1,000 Hz. The customer can change the frequency bandwidth at any time using the Compact Setup Software.

4.4 Alert Alarm

The vibration parameter has an “Alert” alarm assigned. This alarm can be enabled or disabled. The alert alarm trigger level is the vibration level that must be exceeded for at least a certain delay time for the alert alarm to become activated. By default the alert delay time will be set at 3 s. The alert alarm is non-latched, i.e. it will go back into the standby mode as soon as the vibration parameter has reached a vibration level below the alarm trigger level for at least the hang time. A general latch is possible. The customer can assign an alarm relay (one out of maximum 2) to the alert alarm. The customer can enable/disable the alert alarm and change the alert limit level, the alert delay time or change the assigned alarm relay at any time using the Compact Setup Software.

4.5 Danger Alarm

The vibration parameter has a “Danger” alarm assigned. This alarm can be enabled or disabled. The danger alarm trigger level is the vibration parameter level that must be exceeded for at least a certain delay time for the danger alarm to become activated. By default the danger delay time will be set at 1 s. The customer can assign an alarm relay (one out of maximum 2) to the danger alarm. The customer can enable/disable the danger alarm and change the danger limit level, the danger delay time or change the assigned alarm relay at any time using the Compact Setup Software.

4.6 Alarm Relays

The VIBROCONTROL 950/960 Vibration Monitor has two alarm relays that can be assigned to the alert and/or danger alarm. By default relay #1 is assigned to the Alert alarm and relay #2 to the Danger alarm. All relays are in the “break” mode only, i.e. the contacts are closed when standby and open when activated. Therefore the relay(s) appear to be activated when the main power fails. The alarm relays are the direct warning tools of the vibration monitor and can be used to trigger a protective procedure to avoid substantial damage of the monitored machine. The outputs of the alarm relays can be found at the following terminals on the enclosure: “Danger” (#1 and #2) and “Alert” (#3 and #4). It is possible to latch the relay(s), i.e. let the activation of the relay continue beyond the hang time. The customer can at any time enable/disable relays by using the Compact Setup Software.



The alarm relays are PhotoMOS Solid State relays. Excessive current and/or voltage will destroy the relays. For this reason please do not apply any power source directly to the relay. Protect the relay with a resistor in series that will limit the current.

The following conditions for the relays should not be exceeded in your application:

- | | |
|------------------------|--------|
| - Insulation | 30 V |
| - Maximum current load | 100 mA |
| - Max load voltage | 30 V |

4.7 System Failure (OK function)

The VIBROCONTROL 950/960 has an internal surveillance system, including a watchdog. As soon as an internal fault is detected, such as a transducer bias error, a processor error, or a not-passed Self Test, this is considered to be a very serious situation and a system failure procedure will be activated. In general a System Failure is non-latched and therefore will end as soon as the error no longer exists.

Whenever a system failure is detected the following actions are taken:

- System OK relay will be activated (break)
- The analogue output drops to 0 mA (and NOT 4 mA). Measurable at PLC level
- The “OK” LED on the top of the enclosure will light up **Red**

The system OK relay is a direct warning tool of the vibration monitor and can be used to trigger an immediate protective procedure to avoid substantial damage of the monitored machine. The system OK relay has a “break” function so a power failure will be detected and considered to be a system failure as well.

The outputs of the system OK relay can be found at the terminals #5 and #6 on the enclosure.



Some system failures are latched and can only be removed by either performing a complete successful Self-Test or by removing the main power from the unit during a few seconds.



The system OK relay is a PhotoMOS Solid State relays. Excessive current and/or voltage will destroy the relay. For this reason please do not apply any power source directly to the relay. Protect the relay with a resistor in series that will limit the current.

The following conditions for the relays should not be exceeded in your application:

- | | |
|------------------------|--------|
| - Insulation | 30 V |
| - Maximum current load | 100 mA |
| - Max load voltage | 30 V |

4.8 Self Test

The VIBROCONTROL 950/960 includes a Self Test function that can be activated externally by connecting a ground (GND) signal to terminal #13 on the enclosure.

Alternatively the Self Test can be activated using the Compact Setup Software.

The Self Test checks a large number of functions inside the VIBROCONTROL 950/960 Vibration monitor. If the Self Test is not passed without flaw, the system OK function will be activated.

The user will have to specify/set the vibration level of the Self Test signal in % of full scale. A maximum value of 102 % is accepted to ensure that there will be a minimum of at least 20 mA at the DC analogue output whenever the Self Test is activated. Total system performance is checked by PLC(s) connected to analogue output and/or relay(s).

If the Self Test signal level during a Self Test exceeds the trigger level for an enabled alarm this alarm will be activated.

Only the output of the vibration analyser and the output signal of the analogue output are affected by a Self Test, which will also be visible on the 4-digit LED display on the top of the enclosure.

Self test is also a method to remotely reset some types of activated system failure.

4.9 System Failure (OK) Delay Time

The system failure procedure includes two delay times:

- Watchdog delay time of 1.6 seconds
- Sensor error delay time of 0.1 seconds

Upon delivery the manufacturer will preset the system failure delay times according to the delay times just mentioned in this paragraph. These delay times cannot be changed on customer request, but will always be fixed by the manufacturer Brüel & Kjær Vibro at these levels.

4.10 Hang Time

The "Hang" time is the time an alert or danger alarm remains activated even though the vibration level has decreased to below the trigger level. The hang time gives the PLC time to react on short lived alarms. The hang time is set for all alarms at once at a typical value of **1 s**.

The system OK relay has no hang time, but will remain activated until the system failure condition has ended, i.e. after a complete successful Self Test or by removing the main power from the unit for a period of time of 5 s or more.

The customer can change the general alarm hang time at any time using the Compact Setup Software.

4.11 Latch Function

The latch feature of the VIBROCONTROL 950/960 Vibration Monitor ensures that all alarms stay triggered, even though the vibration level is reduced to a level below the alarm trigger level for a period longer than the hang time.

Applying a ground (GND) signal to terminal #15 (marked: "Alarm Latch") on the enclosure will latch the alarms for as long as this condition exists.

Some system failure alarms are latched by default.



4.12 Overload

The VIBROCONTROL 950/960 Vibration Monitor is provided with an overload detection system that detects the occurrence of an overload situation, i.e., when the vibration level exceeds the maximum vibration level of the sensors.

The overload detection feature has a hang time of approximately 1 second.



**The detection of an overload condition generates a system failure (NOK status).
The OK relay is active. The OK LED shows NOK.**



The alert and danger relays are inactive.



The DC analogue output will move to 0 mA to indicate the overload condition as a failure.



The display is blinking E122 (error status).

4.13 Over range

The VIBROCONTROL 950/960 Vibration Monitor is provided with an over range detection system that detects the occurrence of an over range situation, i.e., when the vibration level exceeds the maximum vibration level of the measuring range.



**The detection of an over range will not generate a system failure (OK failure).
The OK relay is inactive.**



The DC analogue output will move to 20,5 mA to indicate the over range condition.



The status of the alarm relays are active.



The display is blinking (Value 20.5 mA).

4.14 Analogue DC Output Current (4-20 mA)

At terminal #7 the DC analogue output will be available, which is direct proportional to the level of the vibration parameter. An output current of 4 mA at the DC output represents a velocity of 0, e.g. 0 mm/s, while 20 mA at the output represents full scale, e.g. 100 mm/s. Any value between 0 mm/s and 100 mm/s will then be positioned directly linear between 4 mA and 20 mA at the analogue output.

Example 1: the vibration level is a known 60 mm/s. The analogue output should show:

$$I_{\text{out}} = 4 \text{mA} + \frac{\text{Velocity}}{\text{Full scale}} * (16 \text{mA}) = 4 \text{mA} + \frac{60 \frac{\text{mm}}{\text{s}}}{100 \frac{\text{mm}}{\text{s}}} * (16 \text{mA}) = 13,6 \text{mA}$$

Example 2: the analogue output shows 15 mA. The velocity is:

$$\text{Velocity} = \text{Full scale} * \frac{I_{\text{out}} - 4 \text{mA}}{16 \text{mA}} = 100 \frac{\text{mm}}{\text{s}} * \frac{15 \text{mA} - 4 \text{mA}}{16 \text{mA}} = 68,75 \frac{\text{mm}}{\text{s}}$$



The load impedance on the analogue DC current output should not exceed 400 Ω.



4.15 Light Emitting Diodes (LEDs)

Failure (OK):

The red “OK” LED will light up during an on-going system failure and remains in this state until the system failure is reset.

Danger:

The red “DANGER” LED will light up as soon as the danger alarm is triggered and remains in this state until the danger alarm is ended/reset.

Alert:

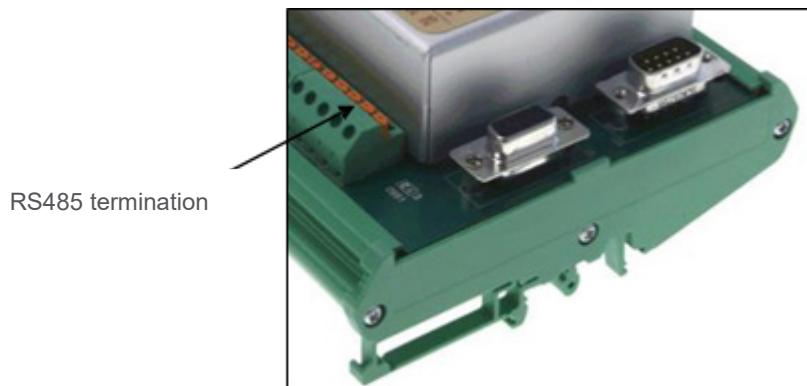
The yellow “ALERT” LED will light up as soon as the alert alarm is triggered and remains in this state until the alert alarm is ended/reset.

Self Test:

The yellow “SELF TEST” LED will light up for as long as the Self Test function is activated.

RS485:

A LED behind terminals #17 and #18 indicates whether a $120\ \Omega$ termination resistor is in place between these terminals in case the vibration monitor in question is the last one in a chain of units on a RS485 bus. The LED is (de-)activated by left/right sliding of a small button that can be found on the right side behind a small hole in the enclosure.



4.16 Cable Short and Cable Break

The VIBROCONTROL 950/960 Vibration Monitor has an internal “cable short” and “cable break” detector continuously checking the cable connection between the vibration monitor and the sensor. When a cable short or cable break event has been detected a non-latched system failure will be activated. The 4-digit display on top of the enclosure will show “E115”.

The VIBROCONTROL 950/960 will automatically perform a complete Self Test as soon as the cable error event has ended. No further action is needed.

4.18 Reset of Alarms

When the vibration level is reduced below the Alarm trigger level, the Alert and Danger alarms will automatically disappear. If alarms are latched, they can be reset by disconnecting "Alarm Latch" at terminal #20 from "GND".

Latched alarms will also be reset after an enabled "Alarm Inhibit" (at terminal #18) is disabled.

This procedure will reset **all** alert and danger alarms at once.

 Please note that some latched system failure(s) can NOT be reset using the procedure described in this paragraph. In that case, please disconnect the device from the main power for at least 5 seconds.

4.19 Inhibit Alarms

Alarms can be inhibited, i.e. they become inactive. This feature is useful when e.g. a new piece of raw material is placed in or taken out of the machine under observation.

Inhibit is activated by connecting terminal #18 on the enclosure (marked: "Alarm Inhibit") to ground (GND), e.g. terminal #17.

This procedure will inhibit **all** alarms at once.

 Please note that inhibit overrules the latch function. Any latched alarms (except the system failure alarm) will be reset after "Alarm Inhibit" has ended.

 Inhibit should be used with care. Leaving the vibration monitor with "Inhibit" ON would disable all alarms and it would therefore be as if the vibration monitor does not exist in the overall safety system.



5 Setup the VIBROCONTROL 950/960

The VIBROCONTROL 950/960 Vibration Monitor is provided with a RS232 and a RS485 interface, which allows the user to change many of the setup parameters. The RS232/RS485 interface can also be used to read out a number of registers inside the vibration monitor with status information or the actual vibration level.

The PC program used for this purpose is called Compact Setup Software.

The VIBROCONTROL 950/960 Vibration Monitor is delivered with a pre-configured setup. The Compact Setup Software will overwrite this setup when it is used to change the changeable parameters in the device, thus declaring the official factory setup void.

5.1 RS232 interface

To use the RS232 interface, connect a null-modem cable between the VIBROCONTROL 950/960 Vibration Monitor and the COM-port on the computer. The male 9-pin D-sub socket marked "RS232" is placed at the right side of the VIBROCONTROL 950/960 Vibration Monitor.

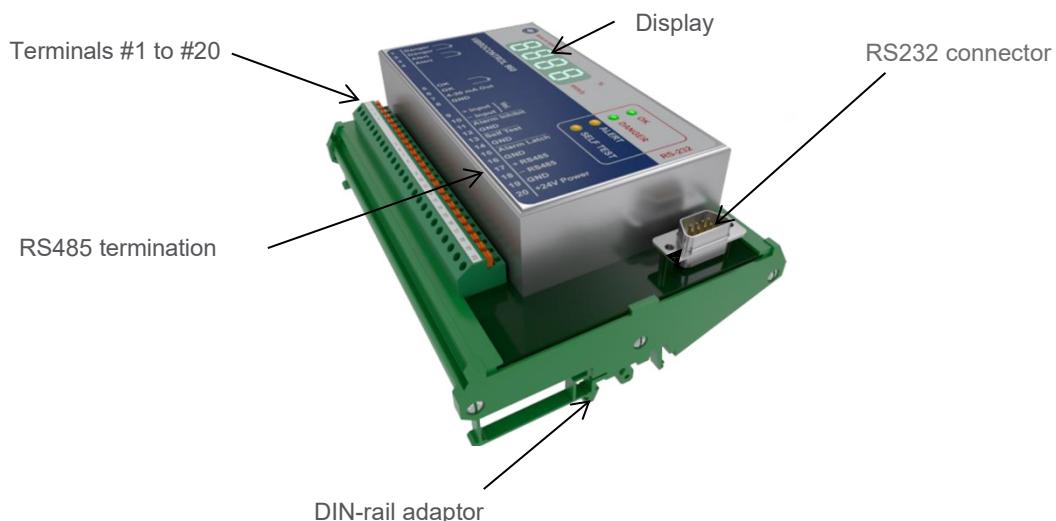
Using the RS232 interface overrules the RS485 interface, which will automatically be disabled. To connect with USB port please use RS232/USB adapter.

5.2 RS485 interface

The VIBROCONTROL 950/960 Vibration Monitor allows "multi-drop", i.e. up to 255 devices can be addressed individually in a RS485 chain of devices.

To use the RS485 interface, connect terminal #17 (marked: "+RS485") and terminal #18 (marked: "-RS485") of the VIBROCONTROL 950/960 Vibration Monitor to the RS485 chain of devices using a **shielded cable**.

The cable must be terminated with a 120 Ω resistor in both ends, i.e. on the PC side and at the **last** device on the RS485 chain of devices. The VIBROCONTROL 950/960 Vibration Monitor has a built-in 120 Ω resistor, which can be used for this purpose. To switch the resistor ON, use the small sliding switch on the right side of the enclosure. A LED behind terminals #17 and #18 will show green light to indicate that the 120 Ω termination resistor is in place.





The RS485 interface will be disabled as soon as the device senses that the RS232 interface is used.



Please make sure that you do not add a new device to your FieldBus that has an address occupied by another device in the chain.

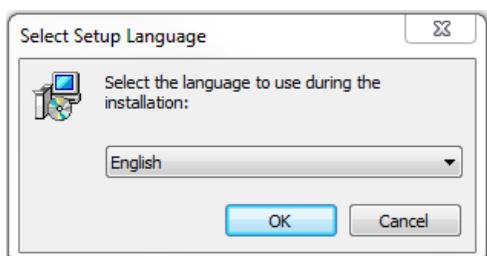
5.3 The Compact Setup Software

To change the set-up parameters of the VIBROCONTROL 950/960 Vibration Monitor and read the measurement results using a PC use the Compact Setup Software.

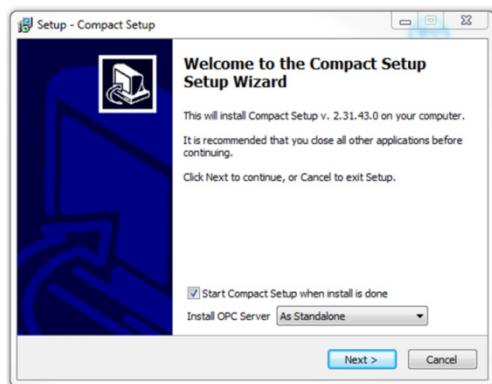
First you have to install the Software; therefore a number of installation windows will guide you through the installation process:

The Compact Setup Software is supporting Microsoft Windows 7, 8 & 10.

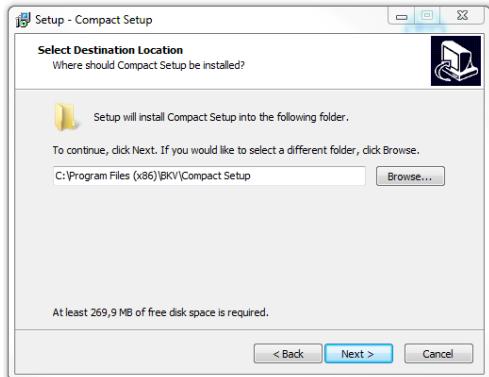
1. Insert the Vibration Studio installation CD in the CD drive.
2. Open the directory for the CD drive e.g. E:\ and open the Compact Setup v.xxx.exe program:



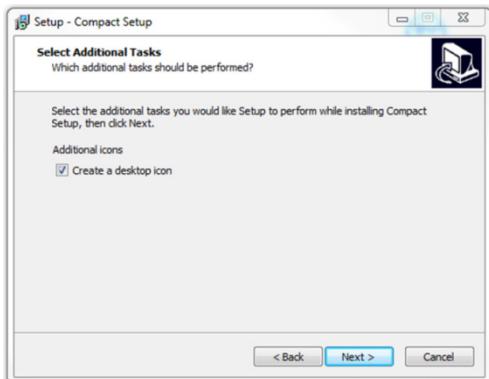
- Select your language for application and click **Next**.



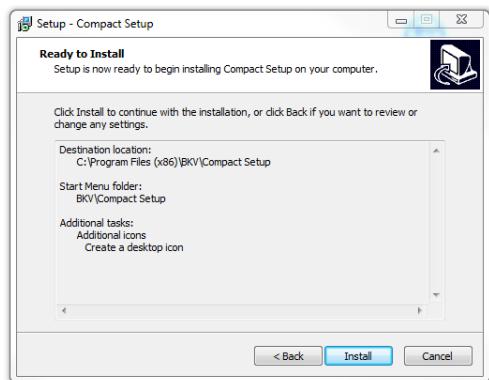
- Click on **Next**.



- Click on **Next**.



- Select whether you want a **desktop icon** to be created on the screen and confirm with **Next**.



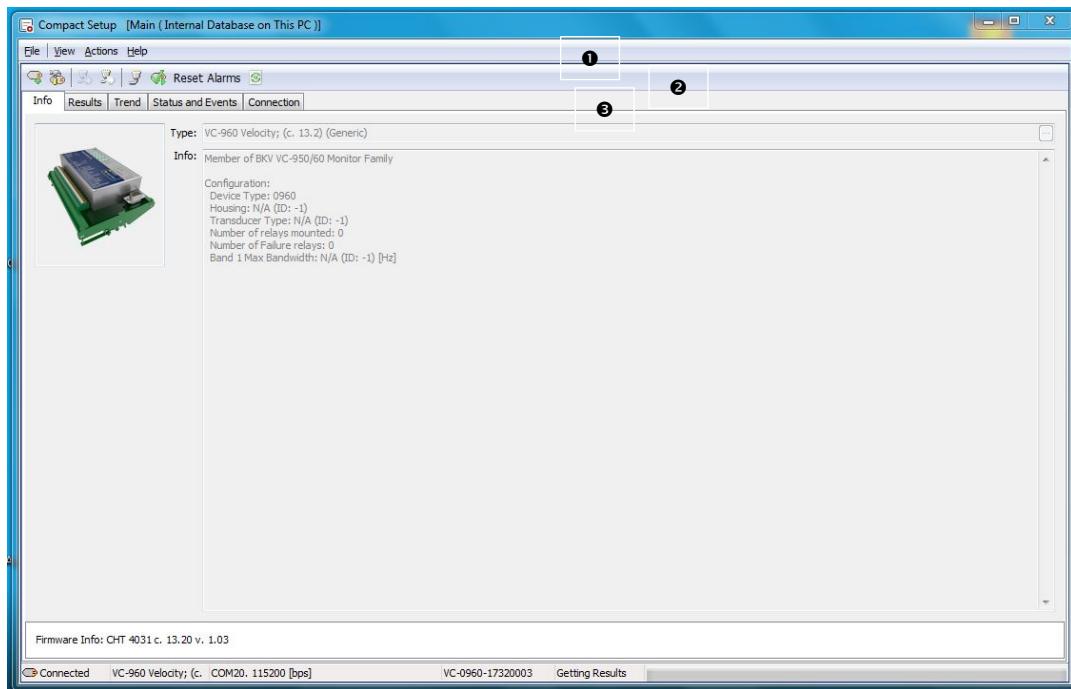
- Click on **Install** to finalize the installation.

Program Start Icon

To start the program •click on the start icon in the menu bar and click on the Compact Setup icon (Depending on your PC setup, please start the program “Run as administrator”).



Main Menu



Menu bar

- File: Administers the user accounts, Exit of the program
- View: Set your language, opens the Explorer
- Actions: Enables to do Actions in connection with the device: Add Device, Edit, Enable or Disable, Connection Settings Reset Alarms, Upgrade device
- Help: Program information

Tool Bar

- Add device
- Editing device
- Enable device
- Disable device
- Troubleshoot
- Connection Test
- Upgrade device



Register

- Info: Gives Information around the device
- Results: Shows the measurement results
- Trend: Trendview
- Status and Events: Informs about the status of the device and events
- Connection: Information about the Connection

Add a device



When using an USB adapter as a connection between VC-9xx series and the Computer, the interface has to be set up first. Therefore open the device manager on the computer and open the settings of used port. insert 115200 in the field for bits/s.

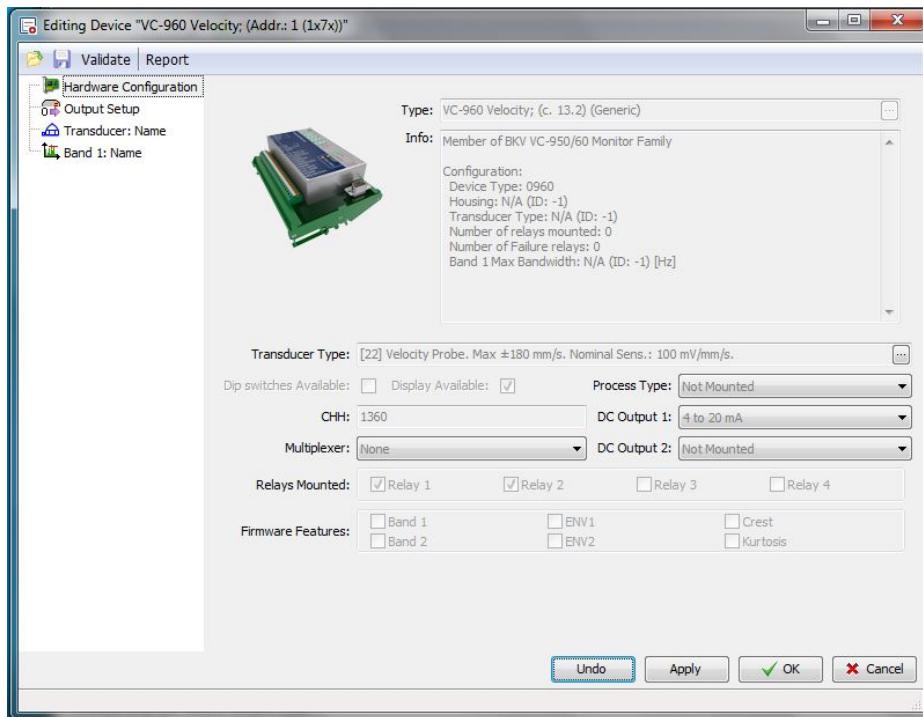
- Click on the **Add device icon** and tick on the option “**Search for devices**”. Then insert following information in the drop-down menu:
 - Connection Type: RS232
 - Com Port: Number of the used port
 - Baudrate: 115200

- Confirm with **Next**.

When the search was successful the main window appears and the selected device including its configuration is shown under the info register.

Editing Device

- Click on the „**Editing Device**“ Icon



The menu bar allows either to

- Open a **setup file**
- Save a **setup file**
- **Validate** the settings or
- under **Report** to export the data as .txt-file

In the menu tree following information/setups are available:

- Under **Hardware Configuration** the predefined settings for the connected VC-950/960 devices are shown. If in the connection program the device was automatically connected this fields are already filled out and greyed out, so that there is nothing to do manually.
- Click on **Output Setup** in the Menu tree.



6 Installation of Delivery variants VC-9x0 as single mounting or VC-9x0/01 completely pre-installed in field housing

6.1 Installation of single units on DIN-rail

The vibration monitors VIBROCONTROL 950/960 are prepared for installation on standard DIN rails.



The assembly may only be carried out in a de-energized state.

During installation work for commissioning the monitoring devices themselves, a de-energized state must also be ensured. Only after completion of all connection work may the power supply be switched on.



Improper opening of the product or removal of components, improper use, incorrect installation or operation may result in personal injury or property damage.



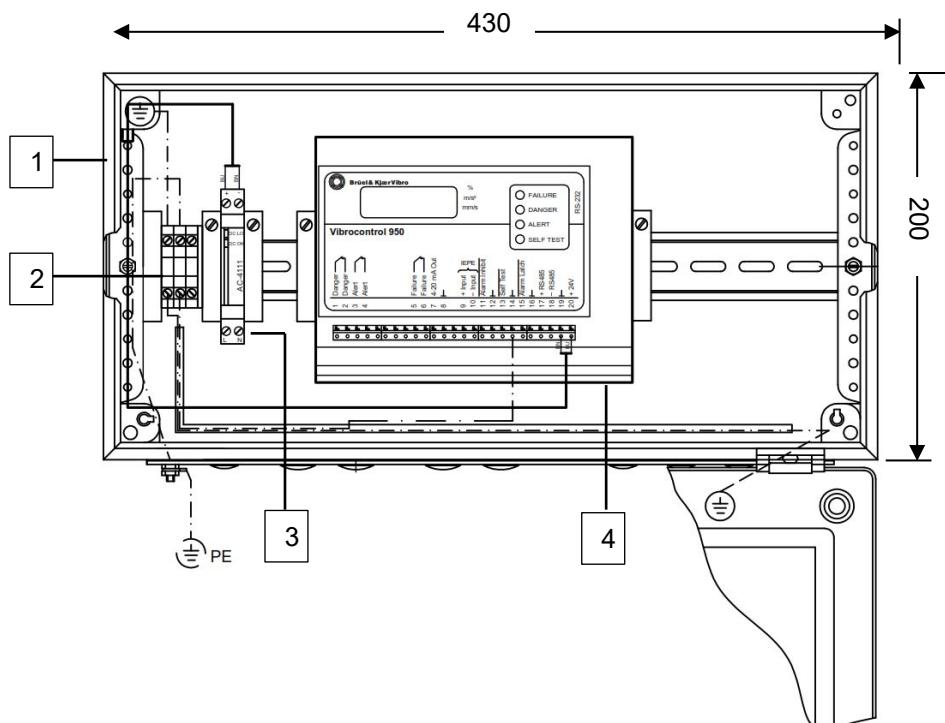
Cables connected to the VC-9X0 / 01 or VC-9X0 / 01/0 must be suitable for an ambient temperature of 0 °C to + 70 °C.

- Clamping area connection terminals (VC-9x0) for cable max. 1.0 mm².

Terminal #	Function	Terminal #	Function
1 & 2	Relay: R1 – LIM1 , Alert	9	+Input IEPE
3 & 4	Relay: R2 – LIM2 , Danger	10	– Input IEPE
4	R2 – Danger	11	Alarm Inhibit
		12	GND
5 & 6	Relay: R5 OK-REL (System Failure)	13	Self Test
7	4-20 mA Out	14	GND
8	GND	15	Alarm Latch
		16	GND
		17	+RS485
		18	-RS485
		19	GND
		20	+24 V (Power Supply)

6.2 VIBROCONTROL 950/01 and VIBROCONTROL 960/01 completely mounted in the field housing with 230 V AC/ 24 V DC power supply

VIBROCONTROL 9x0/01 is supplied in a protective housing which offers both mechanical and environmental protection. Thus, the monitoring unit VC-9x0 can be installed in the field. In this variant, the AC-2112 is mounted on a DIN rail in the AC-2112 protective housing, and the AC-4111 power supply unit also supplies the 24 V DC power supply.



VIBRONTROL 9x0/01 consists of the following components::

- 1) AC-2112 protective housing
- 2) Distribution block
- 3) Power Supply AC-4111
- 4) VIBROCRONTROL 9x0

Types	VC-9X0/01	Supply	P _{max}
VC-950/01 and VC-960/01	1x	90... 264 V AC	6,5 W

For connection to 24 V DC power supply



The monitoring devices VC-950 and VC-960 may **only** be operated with 24 V DC.



The enclosed operating instructions of the housing AC-2112 and the power supply AC-4111 (DSP10-24) must be considered.



The assembly may only be carried out in a de-energized state. The device may only be operated mounted on the wall. It must be positioned so that the cable glands are accessible below.



No other components may be installed in the protective housing!



The connection between the VC-9XX and the built-in power supplies AC-4111 is already established.



When closing the cover, pay attention to the tightness of the housing seal to ensure IP protection.



Strain relief of the cables outside the housing is recommended.

6.2.1 Power supply VC-9x0/01

VIBROCONTROL 9x0 must be operated with 24 V DC.

If only 90 ... 264 V AC is available, the power supply unit AC-4111 provides 24 V DC.

- L (brown) for L1 phase clamp (+)
- N (blue) for N neutral (-)
- Terminal PE (green / yellow) for PE protective conductor



- Terminal block (e.g., 230V)
- Clamping range terminals (L / N):
 - For rigid cable: 0.08 mm² - 4 mm², AWG: 28 - 12
 - For flexible cable: 0.08 mm² - 2.5 mm², AWG: 28 - 14
- Clamping range terminals (green / yellow or PE)
 - For rigid cable: 0.08 mm² - 6 mm², AWG: 28 - 10
 - For flexible cable: 0.08 mm² - 4 mm², AWG: 28 – 12



The device VC-9x0 is connected to the protective earth via the terminal / PIN 14! To ensure electrical safety, the connection must not be disconnected. If required, GND can also be tapped on the PE terminal strip.

Cables connected to the VC-9X0 / 01 must be suitable for an ambient temperature of 0 ° C to + 70 ° C.



7 Technical data

Vibration measuring parameters:	VIBROCONTROL 950: Velocity in mm/s (default) OR Acceleration in m/s ² VIBROCONTROL 960: Velocity in mm/s Other parameters selectable by software from setup databank
Measuring range (full scale):	Other full scales selectable by software from setup databank
Frequency range and filter	Default: 10 Hz – 1000 Hz @ -1dB, > -24 dB/octave Non-linearity: ± 1.2 % = 0.2 dB (typical, depending on type of filter) Other ranges/filters selectable by software from setup databank
Alert & Danger alarm trigger levels	Selectable by software: 1-102 % of the full scale
Alarm Delay Time	Default: Alert = 3 s & Danger = 1 s Selectable by software
Alarm Hang Time	Default: 1 s Selectable by software
One 4-20 mA DC analogue output	4-20 mA ± 0.3 % (typical) Shows output proportional to vibration parameter Load resistance range 0-400 Ω.
Three alarm relay outputs	The monitor is equipped with two relays with break function These relays are assigned to the Alert/Danger alarms One additional relay is dedicated to system failure only Relay maximum load: 30 V, 100 mA
Self Test	A Self Test can be remotely activated by Software or digitally at a terminal on the enclosure. The Alert and Danger relays are only activated after the duration of their respective delay times if the preset vibration level during Self Test is higher than the alarm trigger level
Alarm Latch	Forced general latching of all alarms
Alarm Inhibit	Forced general inhibition of all alarms, except system failure
RS232	One unit can connect to PC with null-modem cable Full control of parameter setup and data analysis with Compact Setup Software.
RS485	Up to 255 units in a ModBus chain that can communicate with PC Full control of parameter setup and data analysis with Compact Setup Software. Possibility to activate 120 Ω termination resistor
Power Failure	If the power is cut, all relays will become activated, i.e. break, thus FAIL SAFE
Power supply	+24 V DC ± 7 % typical 2.1 W Power Consumption max. 2.6 W
Enclosure dimensions, incl. DIN-rail mounting parts	Height 66 mm Width 127 mm Length 163 mm

 compliance	EMC Directive 2004/108/EC ROHS Directive 2011/65/EC with EN 50581
Temperature	EN 60068-2-1: 2007 Cold EN 60068-2-2: 2007 Dry heat Operating: -10 to +50°C Storage : -40 to +85°C Storage: -40 to +85°C
Maximum Humidity	EN 60068-2-78: 2001 ; 95 % RH (non-condensing at +40 °C)
Mechanical Vibration (non-operating)	EN 60068-2-6: 2008 : 0.3 mm, 20 m/s ² , 10-500 Hz
Mechanical Shock (non-operating)	EN 60068-2-27:1997 : 750 m/s ²
Mechanical Bump (non-operating)	EN 60068-2-29:1997 : 1000 bumps at 250 m/s ²
Enclosure	EN 60529+A1: 2002 : Ingress Protection IP20

8 Maintenance

The VIBROCONTROL 950/960 Vibration Monitor is maintenance free.

If you experience an error code E115, this means that the connection between the vibration monitor and the acceleration sensor is disconnected. Please check the integrity of the connection cable on both sides, i.e. at the side of the sensor and at terminals #9 and #10 on the enclosure of the vibration monitor.

In the unlikely event that you experience erroneous behaviour of the device, e.g. a system failure, we advise you to carry out a complete Self Test for a couple of minutes.

In case the system failure is still present after such a complete Self Test we strongly recommend you to contact the manufacturer for a repair of the device.

Whenever you contact the manufacturer for a repair of the device you are kindly requested to have the following information at hand:

- The type number of the vibration monitor: "VIBROCONTROL 950/960"
- The serial number of the device, visible on a label on the enclosure
- The error code in the 4-segment LED display on the top of the enclosure, if any
- The status indicators in the Compact Setup Software that are active, if any

Please contact the manufacturer for a Return Merchandise Authorization (RMA) in order to arrange the return of goods to the supplier and to have the product repaired or replaced or in order to receive a refund or credit for another product within the product's warranty period.



8.1 Calibration

We recommend to calibrate the VIBROCONTROL 1500 every 5 years. Thus, on the one hand the functionality of the device is checked and on the other hand a certification according to quality standards is supported.

8.2 Cleaning

The device can be cleaned on the outside with a slightly damp cloth



Do not introduce moisture such as water or other liquids into the device!

9 Disassembly and Disposal

Dismantling is done by pulling on the mounting bracket of the DIN rail holder.



Dismantling may only be carried out in the de-energized state.

After use, dispose of the systems, cables and sensors in an environmentally friendly manner, in accordance with the applicable national provisions.



WEEE Reg. No. DE 69572330

10 CE-Declaration



Brüel & Kjær Vibro

EU-Konformitätserklärung / EU- Declaration of conformity

Hiermit bescheinigt das Unternehmen / The company

Brüel & Kjær Vibro GmbH
Leydheckerstraße 10
D-64293 Darmstadt



die Konformität des Produkts / herewith declares conformity of the product

Einkanal-Schwingungsüberwachungsgerät / Single channel vibration monitor

VIBROCONTROL 950, VIBROCONTROL 960

Typ / Type

VC-950, VC-960
VC-950/01, VC-960/01

mit folgenden einschlägigen Bestimmungen / with applicable regulations below
EU-Richtlinie / EU-directive

2014/30/EU EMV-Richtlinie / EMC-Directive

2011/65/EU Richtlinie zur Beschränkung der Verwendung bestimmter
gefährlicher Stoffe in Elektro- und Elektronikgeräten/ EU Directive for the
restriction of the use of certain hazardous substances in electrical and
electronic equipment

2014/35/EU Niederspannungsrichtlinie / Low Voltage Directive
(nur für / only for VC-950/01; VC-960/01)

Angewendete harmonisierte Normen / Harmonized standards applied

EN 61326-1: 2013
EN 50581 : 2012

Bereich / Division
Brüel & Kjær Vibro GmbH

Unterschrift / Signature
CE-Beauftragter / CE-Coordinator

Ort/Place Darmstadt
Datum / Date 11.10.2018


(Niels Karg)



Brüel & Kjær Vibro

EN

Contact

Brüel und Kjaer Vibro GmbH

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64293 Darmstadt

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Phone: +49 6151 428-0

Fax: +49 6151 428-1000

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AC – 2112 Schutzgehäuse mit Sichtfenster Protective Housing with Window Boîtier de raccordement avec fenêtre



Abbildung / figure / figure 1
AC-2112 geschlossen / closed / fermé

Anwendung

- Schutzgehäuse für ein VC-9x0/01. Voreingebaut mit einem Netzteil AC-4111
- Schutzgehäuse für einen VC-6000 Compact monitor. Die zusätzliche Installation eines RS-232-Konverters (AC-5003) ist möglich.
- Schutzgehäuse für ein oder zwei VC-920.
- Schutzgehäuse für einen VC-1500.

Lieferumfang

- 1 x Wandgehäuse mit montierter Tragschiene (EN 50022) u. montierten Erdungsklemmen
- Kabelverschraubungen
 - 4x M12x1,5
 - 4x M16x1,5
- Verschlussschrauben
 - 4x M12 x 1,5
 - 4x M16 x 1,5
- 4x Wandhalter
- 1x Erdungsschraube

Application

- Protective housing for a VC 9x0 / 01. Pre-installed with a AC adapter AC-4111
- Protective housing for one VC-6000 Compact monitor. The additional installation of a RS-232-Converter (AC-5003) is possible.
- Protective housing for one or two VC-920.
- Protective housing for one VC-1500.

Delivery extent

- 1 x Housing for wall or panel mounting with cable fittings and a built-in mounting rail (EN 50022)
- Cable gland
 - 4x M12 x 1,5
 - 4x M16 x 1,5
- Plug screws
 - 4x M12 x 1,5
 - 4x M16 x 1,5
- 4x wall holder
- 1x grounding screw

Utilisation

- Boîtier de protection pour un VC 9x0 / 01. Pré-installé avec un adaptateur secteur AC-4111
- Boîtier de protection pour un VC-6000 Compact monitor. L'installation additionnelle d'un RS-232-Converter (AC-5003) est possible
- Boîtier de protection pour un ou deux VC-920
- Boîtier de protection pour un VC-1500

Etendue de livraison

- 1 x boîtier mural avec raccords de câble à vis et rail monté (EN 50022)
- Presse-étoupes
 - 4x M12 x 1,5
 - 4x M16 x 1,5
- Vis d'arrêt
 - 4x M12 x 1,5
 - 4x M16 x 1,5
- 4x Cadre support
- 1x Vis pour mise à terre

Technische Daten

Technical Data

Caractéristiques Techniques

Gehäuse

Schutzart
IP 65 (EN 60529)

Werkstoff
Stahlblech: 1,25 mm

Lackierung außen
RAL 7035

Gewicht
ca. 4 kg

**Weitere Informationen
(Einbauhinweise) entnehmen
Sie dem Handbuch zum**

- VC-920
- VC-1500
- **VC-6000™ Compact monitor.**

Housing

Protection class
IP 65 (EN 60529)

Material
steel sheet: 1,25 mm

External paint colour
RAL 7035

Weight:
approx. 4 kg

**For more Information refer to
the manual for the**

- VC-920
- VC-1500
- **VC-6000™ Compact monitor.**

Boîtier

Indice de protection
IP 65 (EN 60529)

Matériau
Tôle d'acier: 1,25 mm

Peinture extérieure
RAL 7035

Poids
env.: 4 kg

**Pour plus d'informations,
consultez le manuel de**

- **VC-920**
- **VC-1500**
- **VC-6000™ Compact monitor.**

Maßzeichnung

Dimensioned drawing

Pan de côté

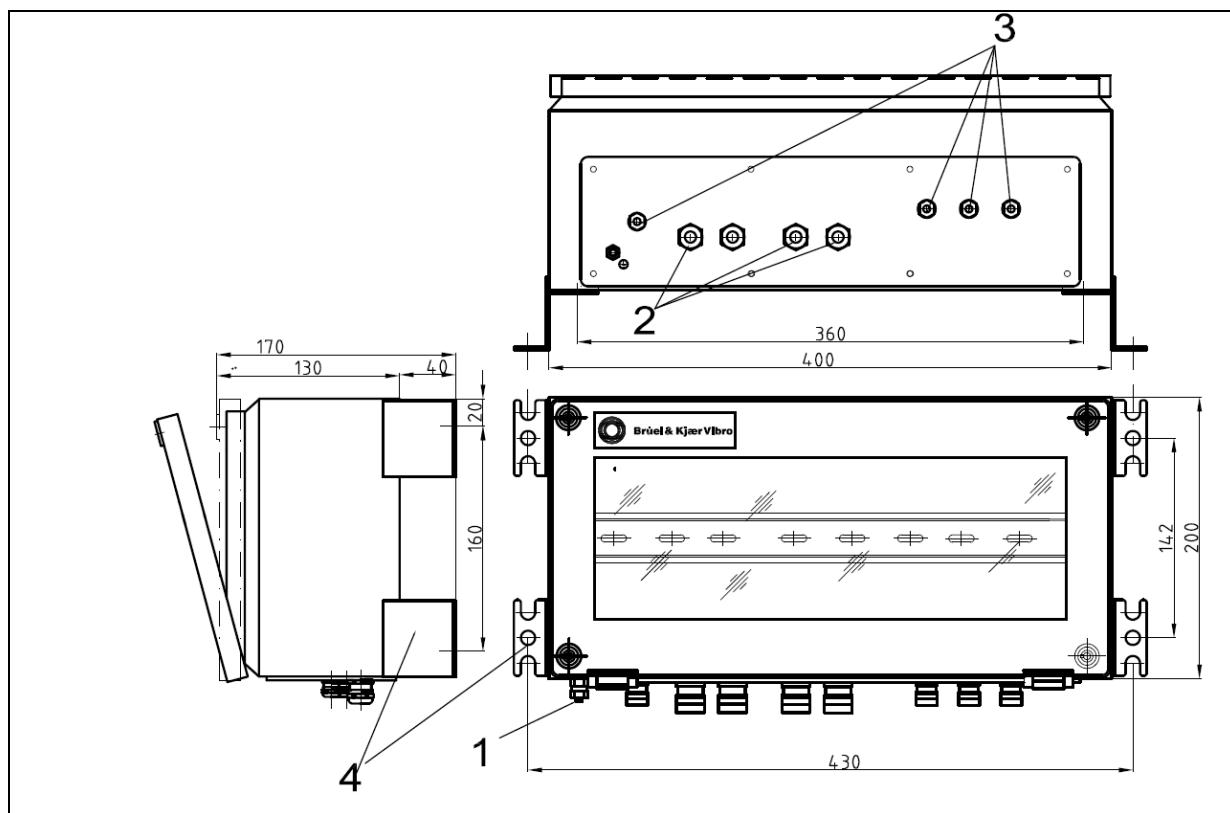


Abbildung / figure / figure 2

1. Wandhalter
2. Erdungsanschluss
3. 4 x M 12
4. 14 x M 16

1. Wall holder
2. Grounding connection
3. 4 x M 12
4. 14 x M 16

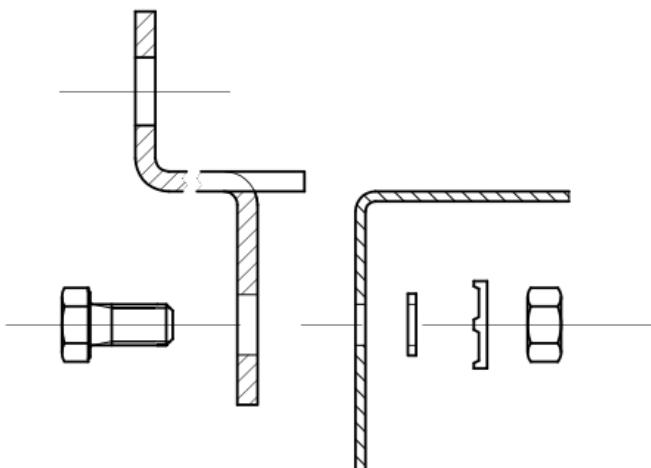
1. Cadre support
2. mise à terre
3. 4 x M 12
4. 14 x M 16

Montage

- Montage der Wandhalter

Assembly

- Mounting the wall bracket

**Montage**

- Montage du support mural

- Erdungsschraube montieren (Abb. 4) und mit Erdungsklemme auf der Hutschiene verbinden (Abb. 2, Pos. 1).
- Passende Kabelverschraubungen befestigen.
- Nicht genutzte Löcher mit Verschlusschrauben schließen.
- Gehäuse montieren.
 - nicht an schwingenden Maschinenteilen befestigen.
 - Temperatur am Montageort beachten.
- Stahlschutzschlauch
Bei Kabelverlegung in Stahlschutzschlauch muss dieser unmittelbar vor der Kabelverschraubung abgefangen werden.
- Zur Erreichung einer optimalen Schirmwirkung ist der Kabelschirm an den Kabelverschraubungen aufzulegen.
- Das Gehäuse muss an der äußeren Erdanschlussenschraube niederohmig geerdet werden.
- Beim Schließen des Deckels auf Dichtheit der Gehäusedichtung achten.

- Mount the grounding screw (figure 4) and connect with the grounding terminal on the DIN rail (fig. 2, pos. 1).
- Fix suitable cable gland.
- Close not used holes with plug screws.
- Mount housing.
 - do not attach to vibrating parts of the machine.
 - observe temperature at place of installation.
- Steel protective hose
If the cables are laid in a steel protective conduit, the conduit must be intercepted directly before the cable gland.
- For achieving an optimum shield effect, the cable screen as to be connected to the conduit thread.
- The housing has to be connected to the with low resistance to the grounding screw.
- When closing the fitting take care of the tightness of the seal lip.

- Assembler la vis pour mise à terre (Figure 4) et connecter avec la borne de terre sur le rail DIN (fig. 2, pos. 1).
- Monter les presse-étoupes.
- Fermer trous non utilisés avec fermeture à vis.
- Monter la boîte à bornes.
 - Ne pas la fixer aux pièces vibrantes de la machine.
 - Observer la température au lieu d'implantation.
- Gaine métallique de protection
En cas de pose des câbles dans une gaine métallique de protection, cela-ci doit directement être intercepté avant le boulonnage par câble.
- Pour atteindre une efficacité optimale de l'écran il faut raccorder le blindage du câble dans la presse étoupe.
- Le boîtier doit être connecter à la vis pour mise à terre exterérieur en basse terre.
- S'assurer de l'étanchéité du joint à lèvre lors de la fermeture du couvercle.

Abbildung / figure / figure 3

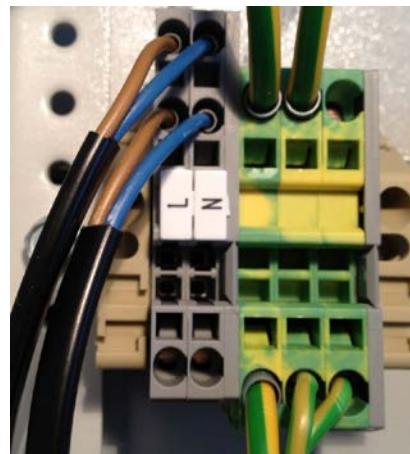


Abbildung / figure / figure 3

- Anschlussklemmenblock (z.B. 230 V)
- Klemmbereich Anschlussklemmen (L/N oder +/-):
 - Für starres Kabel: 0,08 mm² - 4 mm², AWG: 28 - 12
 - Für flexibles Kabel: 0,08 mm² - 2,5 mm², AWG: 28 - 14
- Klemmbereich Anschlussklemmen (grün/gelb bzw. PE)
 - Für starres Kabel: 0,08 mm² - 6 mm², AWG: 28 - 10
 - Für flexibles Kabel: 0,08 mm² - 4 mm², AWG: 28 - 12
- Terminal block (e.g. 230 V)
- Clamping range terminals (L / N or +/-):
 - For rigid cable: 0.08 mm² - 4 mm², AWG: 28 - 12
 - For flexible cable: 0.08 mm² - 2.5 mm², AWG: 28 - 14
- Clamping range terminals (green / yellow or PE)
 - For rigid cables: 0.08 mm² - 6 mm², AWG: 28 - 10
 - For flexible cable: 0.08 mm² - 4 mm², AWG: 28 - 12
- bornes de jonction (par ex. 230 V)
- Bornes de plage de serrage (L / N ou +/-):
 - Pour câble rigide: 0,08 mm² - 4 mm², AWG: 28 - 12
 - Pour câble flexible: 0,08 mm² - 2,5 mm², AWG: 28 - 14
- Bornes de la gamme de serrage (vert / jaune ou PE)
 - Pour câbles rigides: 0,08 mm² - 6 mm², AWG: 28 - 10
 - Pour câble flexible: 0,08 mm² - 4 mm², AWG: 28 - 12

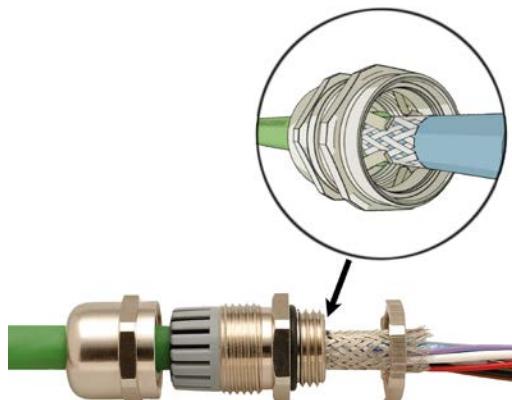


Abbildung / figure / figure 4

- Auflegen des Kabelschirms in der Kabelverschraubung.
- M12: Ø 3,0 – 6,5 mm
- M16: Ø 5,0 – 10,0 mm.
- Connecting the cable screen to the conduit thread.
- M12: Ø 3,0 – 6,5 mm
- M16: Ø 5,0 – 10,0 mm.
- Raccordement du blindage du câble dans la presse étoupe.
- M12: Ø 3,0 – 6,5 mm
- M16: Ø 5,0 – 10,0 mm

Erdungskonzept (PE)

Grounding concept (PE)

Recommandations de mise à la terre (PE)

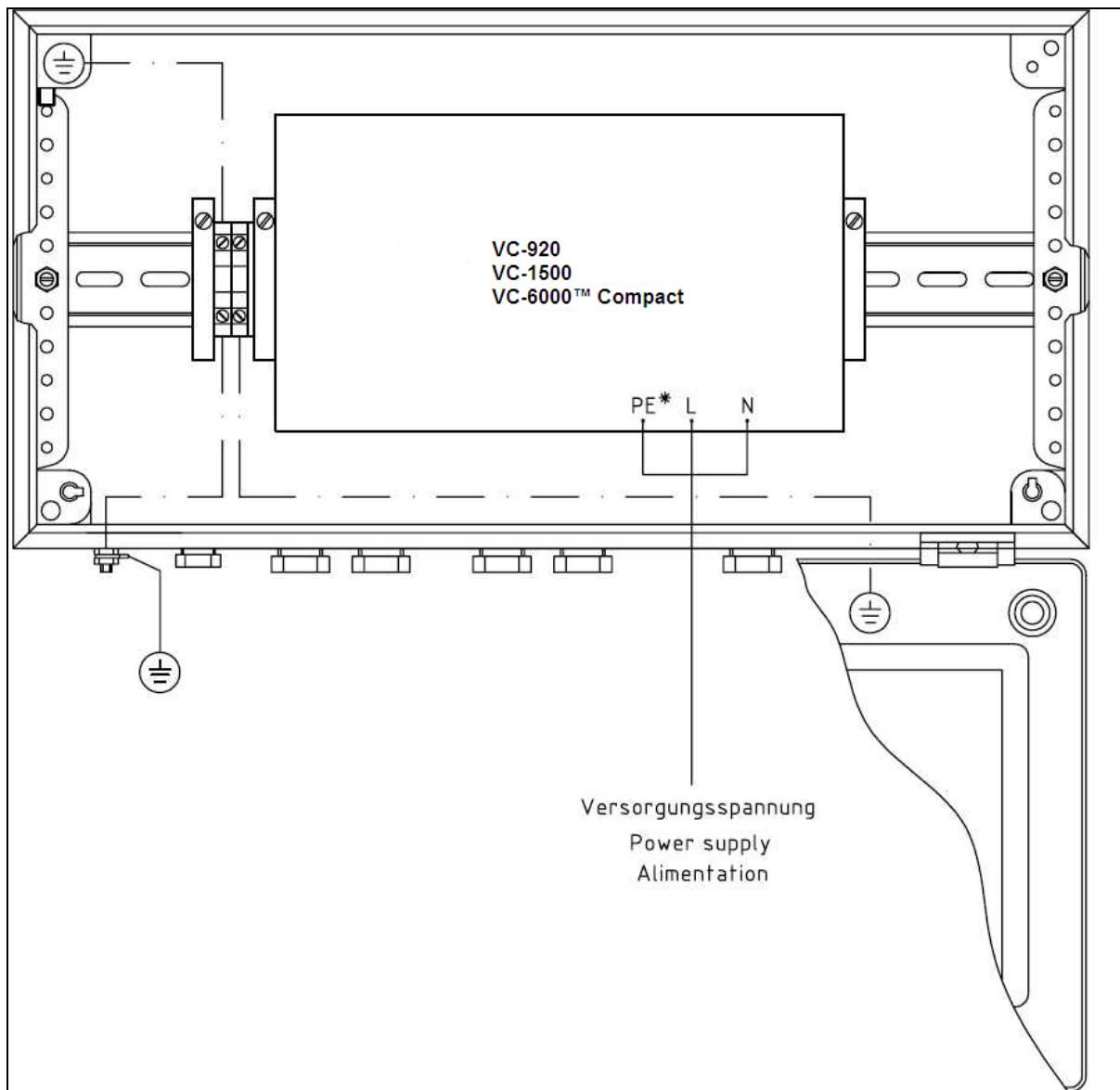


Abbildung / figure / figure 4

*Bei DC-Versorgung kann der PE-Anschluss des jeweiligen Gerätes auch auf die Erdungsklemme der Hutschiene des AC-2112 gelegt werden.

*If DC power supply is used, the grounding connection of the device can also be laid on the Ground terminal (PE) on the DIN rail of the AC-2112.

*Si l'alimentation en courant continu (DC) est utilisée, le PE de connexion de l'appareil peut également être mis sur la borne de terre (PE) sur le rail DIN de l'AC-2112.

Demontage und Entsorgung



Die Demontage darf nur im spannungslosen Zustand durchgeführt werden!



Dieses Produkt unterliegt dem Elektro- und Elektronikgerat e-Abfallgesetz.

Werfen Sie das Gerät nicht in den Hausmüll und beachten Sie die örtlichen Vorschriften zur Abfallbeseitigung. Sie können das Gerät auch an Brüel & Kjaer Vibro - Leydheckerstrasse 10 - 64293 Darmstadt - Deutschland zurücksenden.

WEEE-Reg.-Nr. DE 69572330

Disassembly and Disposal



The assembly may only be undertaken in the idle state!



The driver is subject to the Waste Disposal Act for Electrical and Electronic Equipment.

Do not dispose of the device in the regular household waste and observe local waste disposal regulations. You may also return the device to Brüel & Kjaer Vibro - Leydheckerstraße 10 - 64293 Darmstadt - Germany.

WEEE Reg. No. DE 69572330

Démontage et Élimination



Le démantèlement ne peut être effectué qu'à l'état hors tension!



Le driver est soumis à la loi sur les déchets électriques et électroniques.

Ne pas jeter l'objet dans les ordures ménagères et respecter les dispositions locales d'élimination des déchets. L'appareil peut aussi être renvoyé à Brüel & Kjaer Vibro - Leydheckerstraße 10 - 64293 Darmstadt - Allemagne
Nº d'enr. WEEEDE 69572330



Brüel & Kjær Vibro

EU-Konformitätserklärung / EU- Declaration of conformity

Hiermit bescheinigt das Unternehmen / *The company*

**Brüel & Kjær Vibro GmbH
Leydheckerstraße 10
D-64293 Darmstadt**



die Konformität des Produkts / *herewith declares conformity of the product*

Schutzgehäuse für VC-1500 / Protection housing for VC-1500

Typen / *Types*

AC-2112, AC-2113

mit folgenden einschlägigen Bestimmungen / *with applicable regulations below*
EU-Richtlinie / *EU-directive*

**2011/65/EU Richtlinie zur Beschränkung der Verwendung bestimmter
gefährlicher Stoffe in Elektro- und Elektronikgeräten**

**2011/65/EU Directive for the restriction of the use of certain hazardous
substances in electrical and electronic equipment**

Angewendete harmonisierte Normen / *Harmonized standards applied*

EN 50581 : 2012

Bereich / Division
Brüel & Kjær Vibro GmbH

Unterschrift / Signature
CE-Beauftragter / CE-Coordinator

Ort/Place **Darmstadt**
Datum / Date **11.12.2017**



(Niels Karg)



Brüel & Kjær Vibro

Product Information

Brüel & Kjær Vibro Data:

BKV Type: AC-4111

Description: DSP10 Series

Original Equipment Manufacturer Data:

TDK Lambda

OEM Type: DSP10-xx

For further Information, please contact: Siemens AG

AC-4111

Brüel & Kjær Vibro Revision Date: 2017-12-06

General Safety Instructions:ENGLISH

READ SAFETY INSTRUCTIONS

Servicing:

These products are not customer serviceable. TDK-Lambda UK LTD. and their authorised agents only are permitted to carry out repairs.

Critical Components:

These products are not authorised for use as critical components in nuclear control systems, life support systems or equipment for use in hazardous environments without the express written approval of the Managing Director of TDK-Lambda EMEA.

Product Usage:

These products are designed for use within a host equipment which restricts access to authorised competent personnel.

Environmental:

These products are IPX0, and therefore chemicals/solvents, cleaning agents and other liquids must not be used.

Environment:

This power supply is a switch mode power supply for use in applications within a Pollution Degree 2, overvoltage category II environment. Material Group IIIb PCB's are used within it.

Output Loading:

The output power taken from the power supply must not exceed the rating stated on the power supply label, except as stated in the product limitations in this handbook.

Input Parameters:

This product must be operated within the input parameters stated in the product limitations in this handbook.

End of Life Disposal:

The unit contains components that require special disposal. Make sure that the unit is properly disposed of at the end of its service life and in accordance with local regulations.



RISK OF ELECTRIC SHOCK

High Voltage Warning:

Dangerous voltages are present within the power supply. The professional installer must protect service personnel from inadvertent contact with these dangerous voltages in the end equipment.

This product must be reliably earthed and professionally installed in accordance with the prevailing local electrical wiring regulations and safety standards.

The (+) or (-) output(s) can be earthed or left floating.

An internal fuse protects the unit and must not be replaced by the user. In case of internal defect, the unit must be returned to TDK-Lambda UK LTD or one of their authorised agents.



HOT SURFACE

External Hot Surfaces:

In accordance with local regulations for Health and Safety at work, manufacturers have an obligation to protect service engineers as well as users. In order to comply with this, a label must be fitted to these products which is clearly visible to service personnel accessing the overall equipment, and which legibly warns that surfaces of these products may be hot and must not be touched when the products are in operation.

The ventilation openings on these products must not be impeded. Ensure that there is at least 25mm spacing between any obstruction and the ventilation openings.

The unit cover/chassis is designed to protect skilled personnel from hazards. They must not be used as part of the external covers of any equipment where they may be accessible to operators, since under full load conditions, part or parts of the unit chassis may reach temperatures in excess of those considered safe for operator access.

Allgemeine Sicherheitsvorschriften:DEUTSCH

LESEN SIE DIE SICHERHEITSVORSCHRIFTEN

Wartung:

Diese Produkte können nicht durch den Kunden gewartet werden. Nur TDK-Lambda UK LTD. und deren zugelassene Vertriebshändler sind zur Durchführung von Reparaturen berechtigt.

Kritische Komponenten:

Diese Produkte sind nicht für die Verwendung als kritische Komponenten in nuklearen Kontrollsystmen, Lebenserhaltungssystemen oder Geräten in gefährlichen Umgebungen geeignet, sofern dies nicht ausdrücklich und in Schriftform durch den Geschäftsführer von TDK-Lambda EMEA genehmigt wurde.

Produktverwendung:

Diese Produkte sind zur Verwendung innerhalb von Host-Anlagen gedacht, die einen auf das Fachpersonal beschränkten Zugang haben.

Umwelt:

Diese Produkte sind IPX0, aus diesem Grund dürfen keine Chemikalien/Lösungsmittel, Reinigungsmittel und andere Flüssigkeiten verwendet werden.

Umgebung:

Dieses Netzteil ist ein Schaltnetzteil zur Verwendung in einer Umgebung mit einem Verschmutzungsgrad 2, Überspannungskategorie II. Materialgruppe IIIb mit darin verwendeten PCBs.

Ausgangsstrom:

Der Ausgangsstrom des Netzteiles darf die Leistung, die auf dem Label des Netzteiles vermerkt ist, nur dann überschreiten, wenn dies in den Produktgrenzen dieses Handbuchs ausgezeichnet ist.

Eingangsparameter:

Dieses Produkt muss innerhalb der Eingangsparameter, die in den Produktgrenzen dieses Handbuchs angegeben sind, betrieben werden.

Entsorgung am Ende der Betriebszeit:

Das Gerät enthält Komponenten die unter Sondermüll fallen. Das Gerät muss am Ende der Betriebszeit ordnungsgemäß und in Übereinstimmung mit den regionalen Bestimmungen entsorgt werden.

NUR AC-DC PRODUKTE

GEFAHR DURCH ELEKTRISCHEN SCHLAG

Hochspannungswarnung:

Innerhalb des Netzteiles gibt es gefährliche Spannungen. Der Elektroinstallateur muss das Wartungspersonal vor versehentlichem Kontakt mit den gefährlichen Spannungen im Endgerät schützen.

Dies Produkt muss sicher geerdet und von qualifiziertem Personal in Übereinstimmung mit den gültigen regionalen Bestimmungen zu Verdrahtungen sowie den Sicherheitsstandards installiert werden.

Die (+) oder (-) Ausgänge können geerdet werden oder unangeschlossen bleiben.

Eine interne Sicherung schützt das Gerät und darf durch den Benutzer nicht ausgetauscht werden. Im Fall von internen Defekten muss das Gerät an TDK-Lambda UK LTD oder einen der autorisierten Vertriebshändler zurückgeschickt werden.

**HEISSE OBERFLÄCHEN****Äußere heiße Oberflächen:**

In Übereinstimmung mit den regionalen Bestimmungen für Gesundheit und Sicherheit bei der Arbeit ist der Hersteller für den Schutz von Wartungspersonal und Benutzern verantwortlich. Um diesen Bestimmungen gerecht zu werden, muss auf den Produkten ein Label angebracht werden, das deutlich sichtbar für das Wartungspersonal mit Zugriff auf die gesamte Anlage ist, und das gut lesbar auf die eventuell heiße Oberfläche des Gerätes hinweist und das Berühren des Produktes in Betrieb untersagt.

Die Belüftungsöffnungen an diesem Produkt dürfen nicht blockiert werden. Achten Sie darauf, dass mindestens 50 mm Abstand zwischen Hindernissen und den Belüftungsöffnungen bleibt.

Die Geräteabdeckung/das Gehäuse ist so entworfen, dass das Fachpersonal vor Gefahren geschützt wird. Sie dürfen nicht als Teil der externen Abdeckung für Geräte verwendet werden, die für den Betreiber zugänglich sein müssen, da Teile oder das gesamte Gerätegehäuse unter voller Auslastung übermäßige Temperaturen erreichen kann, die für den Zugang des Betreibers nicht mehr als sicher betrachtet werden.

Consignes de sécurité générale:FRANÇAIS**LIRE LES CONSIGNES DE SECURITE****Entretien:**

Ces produits ne peuvent pas être réparés par le client. Seul, TDK-Lambda UK LTD et ses agents agréés sont autorisés à effectuer des réparations.

Composants critiques:

Ces produits ne doivent pas être utilisés en tant que composants critiques dans des systèmes de commande nucléaire, dans des systèmes de sauvetage ou dans des équipements utilisés dans des environnements dangereux, sans l'autorisation écrite express du directeur général de TDK-Lambda EMEA.

Utilisation du produit:

Ces produits sont conçus pour être utilisés dans un équipement hôte dont l'accès n'est autorisé qu'aux personnes compétentes.

Environnement:

Ces produits sont IPX0, et donc on ne doit pas utiliser des produits chimiques/solvants, des produits de nettoyage et d'autres liquides.

Environnement:

Cette alimentation fonctionne en mode commutation pour utilisation dans des applications fonctionnant dans un environnement avec Pollution Degré 2 et catégorie surtension II. Elle utilise des cartes de circuits imprimés (PCB) Groupe IIIb.

Intensité soutirée:

L'intensité soutirée de l'alimentation ne doit pas dépasser l'intensité nominale marquée sur la plaque signalétique, sauf indications contraires dans les limitations du produit dans ce manuel.

Paramètres d'entrée:

Ce paramètre doit être utilisé à l'intérieur des paramètres d'entrée indiqués dans les limitations du produit dans ce manuel.

Elimination en fin de vie:

L'alimentation contient des composants nécessitant des mesures spéciales pour leur élimination. Vérifiez que cette alimentation est éliminée correctement en fin de vie utile et conformément aux réglementations locales.

PRODUITS AC-DC SEULEMENT**RISQUE DE CHOC ELECTRIQUE****Attention-Danger haute tension:**

Des tensions dangereuses sont présentes dans l'alimentation. L'installateur doit protéger le personnel d'entretien contre un contact involontaire avec ces tensions dangereuses dans l'équipement final.

Ce produit doit être raccordé à une terre fiable et installé par des professionnels en respectant les réglementations locales de câblages électriques en vigueur et les normes de sécurité.

Les sorties (+) ou (-) peuvent être raccordées à la terre ou laissées flottantes.

Un fusible interne protège le module et ne doit pas être remplacé par l'utilisateur. En cas de défaut interne, le module doit être renvoyé à TDK-Lambda UK LTD ou l'un de ses agents agréés.



SURFACE CHAUDE

Surfaces chaudes extérieures:

Conformément aux réglementations locales concernant la santé et la sécurité sur les lieux de travail, les fabricants doivent protéger les techniciens d'entretien et les utilisateurs. Pour cela, une plaque signalétique doit être installée sur ces produits, et cette plaque doit être bien visible pour les techniciens d'entretien intervenant sur l'équipement, et elle doit indiquer de manière bien visible que les surfaces de ces produits peuvent être chaudes et qu'elles ne doivent pas être touchées lorsque les produits fonctionnent.

Les orifices de ventilation sur ces produits ne doivent pas être obstrués. Vérifiez qu'il y a un espace libre d'au moins 50 mm entre une obstruction et l'orifice de ventilation.

Le couvercle et le châssis du module sont conçus pour protéger des personnels expérimentés. Ils ne doivent pas être utilisés comme couvercles extérieurs d'un équipement, accessible aux opérateurs car en condition de puissance maximum, des parties du châssis peuvent atteindre des températures considérées comme dangereuses pour l'opérateur.

Norme generali di sicurezza:ITALIANO

SI PREGA DI LEGGERE LE NORME DI SICUREZZA

Manutenzione:

Il cliente non può eseguire alcuna manutenzione su questi prodotti. L'esecuzione delle eventuali riparazioni è consentita solo a TDK-Lambda UK LTD e ai suoi agenti autorizzati.

Componenti critici:

Non si autorizza l'uso di questi prodotti come componenti critici all'interno di sistemi di controllo nucleari, sistemi necessari alla sopravvivenza o apparecchiature destinate all'impiego in ambienti pericolosi, senza l'esplicita approvazione scritta dell'Amministratore Delegato di TDK-Lambda EMEA.

Uso dei prodotti:

Questi prodotti sono progettati per l'uso all'interno di un'apparecchiatura ospite che limita l'accesso al solo personale competente e autorizzato.

Condizioni ambientali:

Questi prodotti sono classificati come IPX0, dunque non devono essere utilizzati sostanze chimiche/solventi, prodotti per la pulizia o liquidi di altra natura.

Ambiente:

Questo prodotto è un alimentatore a commutazione, destinato all'uso in applicazioni rientranti in ambienti con le seguenti caratteristiche: Livello inquinamento 2, Categoria sovratensione II. Questo prodotto contiene schede di circuiti stampati in materiali di Gruppo IIIb.

Carico in uscita:

La potenza in uscita ottenuta dall'alimentatore non deve superare la potenza nominale indicata sulla targhetta dell'alimentatore, fatto salvo dove indicato nei limiti per i prodotti specificati in questo manuale.

Parametri di alimentazione:

Questo prodotto deve essere utilizzato entro i parametri di alimentazione indicati nei limiti per il prodotto, specificati in questo manuale.

Smaltimento:

L'unità contiene componenti che richiedono procedure speciali di smaltimento. Accertarsi che l'unità venga smaltita in modo corretto al termine della vita utile e nel rispetto delle normative locali.

SOLO PER I PRODOTTI A CA-CC

RISCHIO DI SCOSSA ELETTRICA

Avvertimento di alta tensione:

All'interno dell'alimentatore sono presenti tensioni pericolose. Gli installatori professionali devono proteggere il personale di manutenzione dal rischio di contatto accidentale con queste tensioni pericolose all'interno dell'apparecchiatura finale.

Questo prodotto deve essere messo a terra in modo affidabile e installato in modo professionale, nel rispetto delle norme di sicurezza e dei regolamenti vigenti in ambito locale in materia di collegamenti elettrici.

Le uscite (+) o (-) possono essere messa a terra o lasciate isolate.

Un fusibile interno protegge l'unità e non deve essere sostituito dall'utente. Nell'eventualità di un difetto interno, restituire l'unità a TDK-Lambda UK LTD o a uno dei suoi agenti autorizzati



SUPERFICIE CALDA

Superfici esterne calde:

Coerentemente con le norme locali in materia di salute & sicurezza professionali, i produttori sono tenuti a salvaguardare i tecnici di manutenzione, e inoltre gli utenti. Per far fronte a tali obblighi, i prodotti devono presentare una targhetta, chiaramente visibile al personale di manutenzione che accede all'apparecchiatura nel complesso e che risulti inoltre leggibile e avverte gli addetti del rischio che le superfici di questi prodotti possono scottare e non vanno toccate con i prodotti in funzione.

Le griglie di ventilazione su questi prodotti non devono essere ostruite. Verificare che vi sia una distanza minima di 50 mm fra le griglie di ventilazione e qualsiasi eventuale ostruzione.

Il coperchio/telaio dell'unità è realizzato per proteggere il personale esperto dai pericoli. Non deve essere usato come parte degli involucri esterni di qualsiasi apparecchiatura, se risulta accessibile da parte degli addetti, poiché è possibile che in condizioni di pieno carico una o più parti del telaio dell'unità giunga/giungano a temperature superiori ai limiti considerati sicuri per l'accesso da parte degli addetti.

Instrucciones generales de seguridad:ESPAÑOL

LEA LAS INSTRUCCIONES DE SEGURIDAD

Servicio:

Estos productos no pueden ser reparados por los clientes. TDK-Lambda UK LTD. y sus agentes autorizados son los únicos que pueden llevar a cabo las reparaciones.

Componentes fundamentales:

Estos productos no pueden ser utilizados como componentes fundamentales en sistemas de control nuclear, sistemas de soporte vital o equipos a utilizar en entornos peligrosos sin el consentimiento expreso por escrito del Director General de TDK-Lambda EMEA.

Uso de los productos:

Estos productos han sido diseñados para ser utilizados en un equipo central que restrinja el acceso al personal cualificado autorizado.

Medioambiental:

Estos productos son IPX0 y, por tanto, no pueden utilizarse sustancias químicas/disolventes, agentes de limpieza ni otros líquidos.

Medio ambiente:

Esta fuente de alimentación es una fuente de alimentación de modo comutado a utilizar en aplicaciones dentro de un entorno con un Grado de contaminación 2 y una Categoría de sobretensión II. En él se utilizan policloruros de bifenilo del Grupo de materiales IIIb.

Carga de salida:

La potencia de salida tomada de la fuente de alimentación no puede sobrepasar el valor nominal indicado en la etiqueta de la fuente de alimentación, excepto en los casos indicados en las limitaciones del producto en este manual.

Parámetros de entrada:

Este producto debe ser utilizado dentro de los parámetros de entrada indicados en las limitaciones del producto en este manual.

Desecho de la unidad:

La unidad contiene componentes que deben ser desechados de una manera especial. Asegúrese de desechar correctamente la unidad al final de su vida útil y conforme a las normas locales vigentes.

SÓLO PRODUCTOS CA-CC

PELIGRO DE DESCARGAS ELÉCTRICAS

Advertencia de alta tensión:

En esta fuente de alimentación hay tensiones peligrosas. El instalador profesional debe proteger al personal de servicio contra cualquier contacto accidental con estas tensiones peligrosas en el equipo final.

Este producto se puede conectar de forma fiable a tierra e instalar profesionalmente de conformidad con las regulaciones locales para los cableados eléctricos y las normas de seguridad vigentes.

La salida o salidas (+) o (-) pueden conectarse a tierra o se las puede dejar flotando.

Un fusible interno protege la unidad y este no debe ser nunca reemplazado por el usuario. En caso de existir algún defecto interno, la unidad debe ser enviada a TDK-Lambda UK LTD o a uno de sus agentes autorizados.



SUPERFICIE CALIENTE

Superficies externas calientes:

Según las normas locales relativas a la Salud y Seguridad en el trabajo, los fabricantes están obligados a proteger a los ingenieros de servicio además de a los usuarios. Para que esto se cumpla, debe colocarse una etiqueta en estos productos que pueda ser vista claramente por el personal de servicio que accede al equipo general, y con advertencias legibles de que las superficies de estos productos pueden estar calientes y no deben tocarse cuando los productos se encuentran en funcionamiento.

Las aberturas de ventilación de estos productos no deben obstruirse jamás. Asegúrese de que quede una separación de 50 mm por lo menos entre cualquier obstrucción y las aberturas de ventilación.

La cubierta/chasis de la unidad ha sido diseñada para que proteja a las personas cualificadas de los peligros. No deben ser utilizadas como parte de las cubiertas externas de cualquier equipo al que pueden acceder los operarios, ya que bajo unas condiciones de carga completa, la pieza o piezas del chasis de la unidad pueden alcanzar temperaturas superiores a las consideradas seguras para el acceso de los operarios.

Instruções gerais de segurança:**PORTUGUÊS****LEIA AS INSTRUÇÕES DE SEGURANÇA****Manutenção:**

Estes produtos não são podem ser submetidos a manutenção por parte do cliente. Apenas a TDK-Lambda UK LTD e os seus agentes autorizados têm permissão para realizar reparações.

Componentes essenciais:

Não é autorizada a utilização destes produtos como componentes essenciais de sistemas de controlo nuclear, sistemas de suporte de vida ou equipamento para utilização em ambientes perigosos sem a expressa autorização por escrito do Director-Geral da TDK-Lambda EMEA.

Utilização do produto:

Estes produtos foram concebidos para utilização dentro de um equipamento de alojamento que apenas permita o acesso a pessoal qualificado autorizado.

Ambiental:

Estes produtos são IPX0 e, como tal, não se devem utilizar químicos/solventes, agentes de limpeza e outros líquidos.

Ambiente:

Esta fonte de alimentação é uma fonte de alimentação do modo de comutação para utilização em aplicações com um Nível de Poluição 2 e ambientes da categoria de sobretensão II. São utilizadas placas de circuitos impressos do grupo de materiais IIIb.

Carga de saída:

A potência de saída extraída da fonte de alimentação não deve exceder a classificação assinalada na etiqueta da fonte de alimentação, excepto quando indicado nas limitações do produto neste guia.

Parâmetros de entrada:

Este produto deve ser utilizado dentro dos parâmetros de entrada indicados nas limitações do produto neste guia.

Eliminação no fim de vida:

A unidade contém componentes que necessitam de procedimentos especiais de eliminação. Certifique-se de que a unidade é devidamente eliminada no fim da sua vida útil e que tal é feito em conformidade com os regulamentos locais.

APENAS PRODUTOS CA-CC**RISCO DE CHOQUE ELÉCTRICO****Aviso de alta tensão:**

Estão presentes tensões perigosas dentro da fonte de alimentação. O profissional que realizar a instalação deve proteger o pessoal de assistência contra contactos inadvertidos com estas tensões perigosas do equipamento final.

Este produto deve ser ligado à terra de forma fiável e instalado por um profissional, de acordo com as normas de segurança e os regulamentos locais vigentes em relação a cablagens eléctricas.

As saídas (+) e (-) podem ser ligadas à terra ou deixadas soltas.

Existe um fusível interno que protege a unidade e que não deve ser substituído pelo utilizador. Em caso de defeito interno, a unidade deve ser devolvida à TDK-Lambda UK LTD ou a um dos seus agentes autorizados.



SUPERFÍCIE QUENTE

Superfícies quentes externas:

Segundo com os regulamentos locais sobre saúde e segurança no local de trabalho, os fabricantes têm a obrigação de proteger os técnicos de manutenção, bem como os utilizadores. De forma a respeitar este regulamento, estes produtos deverão ter uma etiqueta que seja facilmente visível ao pessoal de assistência que acceda ao equipamento em geral, e que alerte, de forma legível, para o facto de as superfícies destes produtos poderem estar quentes, não devendo ser tocadas quando os produtos estão em funcionamento.

As aberturas de ventilação destes produtos não devem ser obstruídas. Certifique-se de que existe um espaçamento de pelo menos 50 mm entre qualquer obstrução e as aberturas de ventilação.

O chassis/cobertura da unidade está concebido de forma a proteger o pessoal especializado de perigos. Não devem ser utilizados como parte das coberturas externas de qualquer equipamento em que possam estar acessíveis aos operadores, uma vez que em condições de carga máxima, algumas peças do chassis da unidade podem atingir temperaturas superiores às consideradas seguras para o acesso do operador.

Special Safety Instructions

Standard Specific Safety Instructions:

Whilst all individual outputs are classed as SELV outputs in accordance with the standard IEC/EN/UL/CSA60950-1 (<60Vdc or 42.4V peak), seriesed combinations of these outputs may exceed these values and become hazardous output voltages.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

If the units are to be installed as Direct Plug-in Power Units and full compliance to UL1310 is required, the units must be installed in an airtight distributor box that conforms to the requirements of UL1310.

Environmental Specifications:

Description	Operation	Storage
Use	Indoor	-
Temperature	-25°C - +71°C (derating at 2.5%/°C from 55°C)	-25°C - +85°C
Humidity	20 - 95% RH, non-condensing	20 - 95% RH, non-condensing
Altitude	2000M	
Orientation	See Fig 1	ALL
Material Group	IIIb	
Pollution Degree	2	
Class	II (Double insulated no earth connection required)	

Level of Insulation:

Dielectric Strength testing is carried out as follows:

Primary mains circuit to earth: - 1500KVAC, 2121VDC

Primary mains circuits to secondary: 3kVAC, 4142VDC*

*This test is not possible with Y capacitors fitted to the unit as damage to these capacitors will occur. It is also necessary to short circuit the output together and to earth.

Safety Approvals:

UL508

UL/cUL60950-1 (2nd Edition)

IEC / EN60950-1(2nd Edition)

CE marking when applied to any **DSP10-xx** product indicates compliance with the Low Voltage Directive (2006/95/EC) in that it complies with EN60950-1 (2nd Edition) and the EMC Directive 2004/108/EC in that it complies with EN61024-3, EN61000-6-3, EN61000-6-2 and EN55024.

Fusing: Internal fuses (F1): Single fuse in the L line, T1AH, 250V, 5x20mm.

Symbols:

~

N

L

AC

N – Neutral L – Live

If the earth terminal of the DSP10-XX PSU is connected to the main incoming earth conductor of the end equipment, the installer must cover the earth symbol with a label bearing the earth symbol of IEC60417-5019.

Input Parameters:

Description	Operation
Nominal input voltage	90 – 264VAC
Input frequency range	47 – 63Hz
Inrush current maximum	30A

Output Parameters:

Output Watts	Vout (V)	Adjustment range (V)	Output current (A)
10W	5	None	1.5
	12		0.83
	15		0.67
	24		0.42

Adjusting output voltage beyond the stated range may cause overvoltage protection (OVP) to operate, whereby the output will latch off. To reset for normal operation simply adjust the potentiometer to reduce the output voltage to within its range and cycle the input off then on.

All outputs are SELV **except** under the following circumstance: Outputs connected in series are non-SELV if the total output voltage exceeds 60Vdc

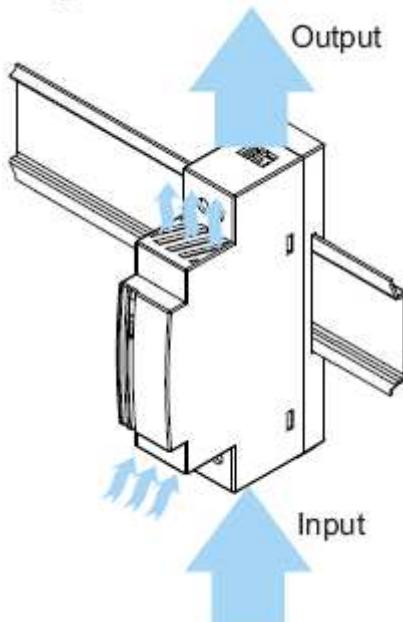
If the total voltage of outputs connected in series exceed the 60Vdc SELV limit then all outputs must be considered non-SELV.

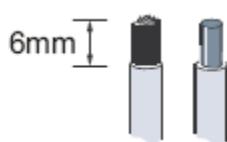
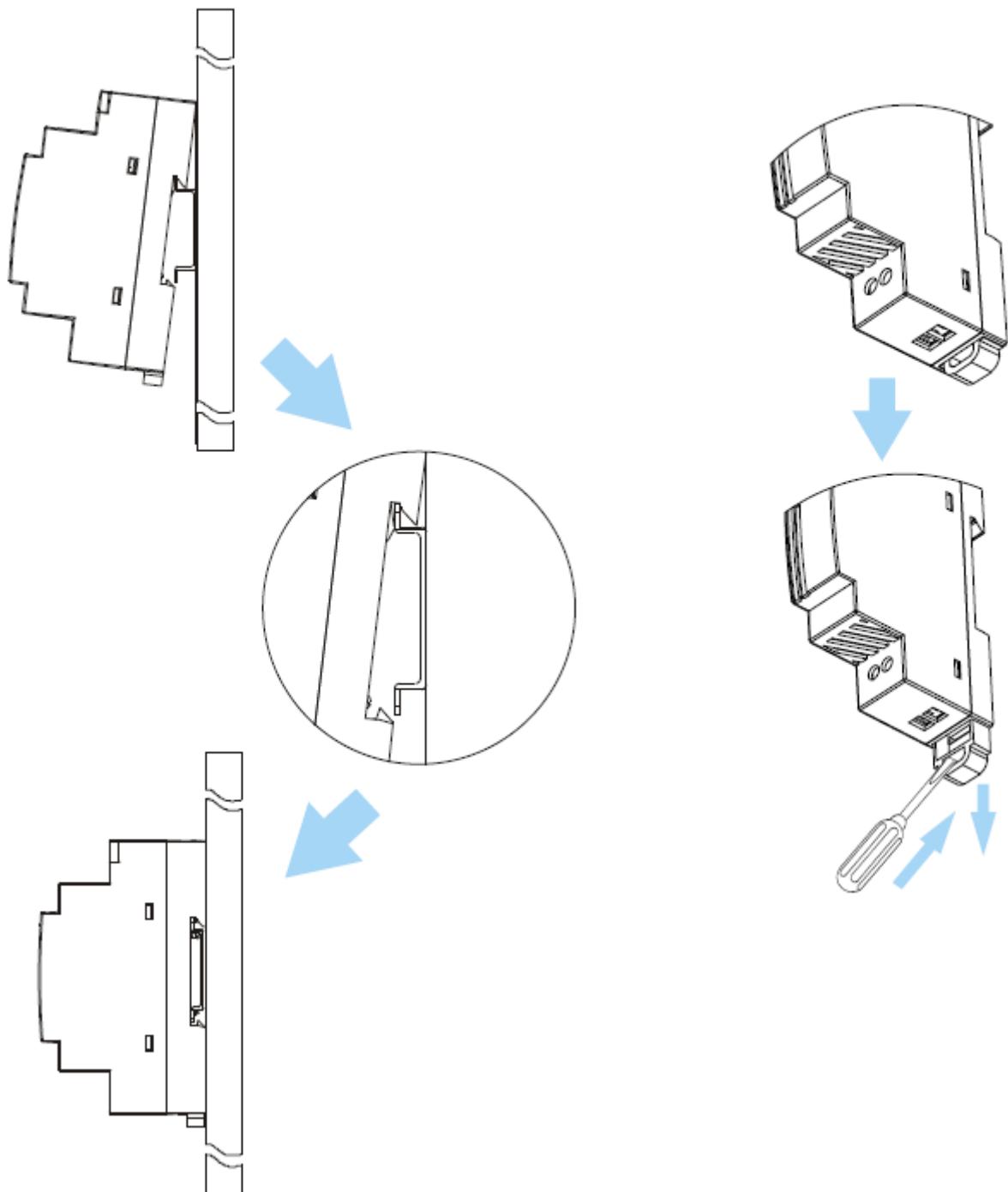
Non-SELV outputs are hazardous and must not be made user accessible. Consideration must be given to service engineers making inadvertent contact with the output terminals in the end equipment.

All outputs have functional spacing to earth, and due consideration must be given to this in the end product design.

Cooling for unit

The unit must be mounted on a DIN rail with the output connection uppermost (toward the top of the equipment/installation) as below.

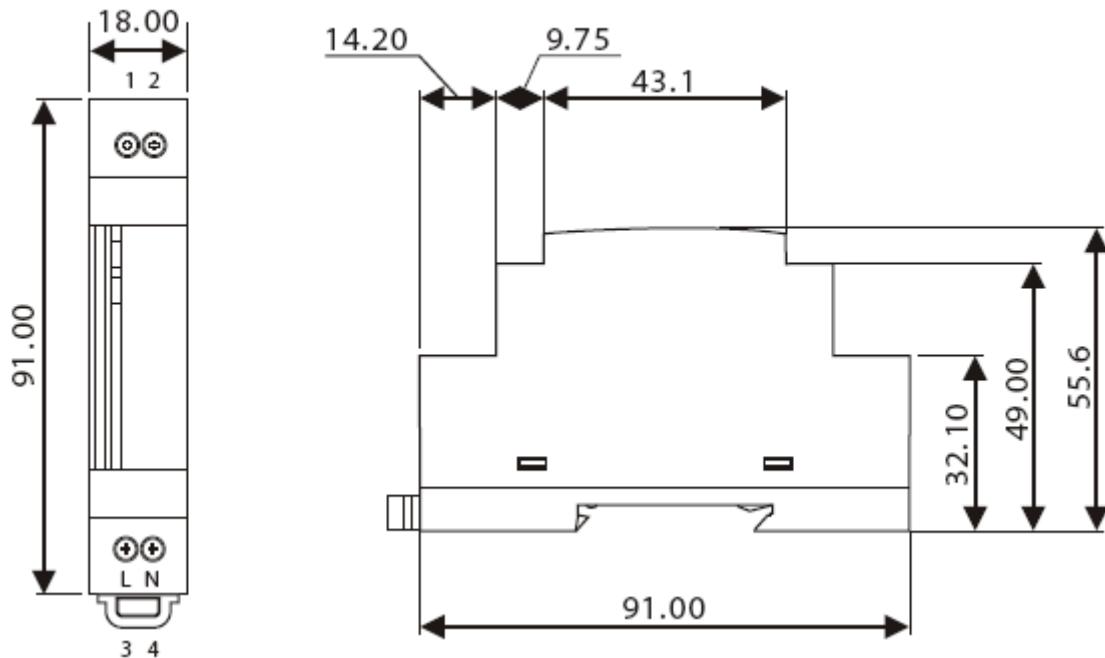
Fig. 1

Placement**Removal****Fig. 2**

Standard screw type connection:
AWG24 to AWG12 can be used,
maximum torque rating for the
input/output connector is 0.65Nm (5.5
Pound-inches).

Mechanical Outline Drawings:

mm [inch]



Pin number	Ident	Description	Function
1	+	Positive DC output terminal	Output
2	-	Negative DC output terminal	
3	L	Live AC input	Input
4	N	Neutral AC Input	
	DC ON	Green LED lit	
	DC LOW	Red LED Lit	

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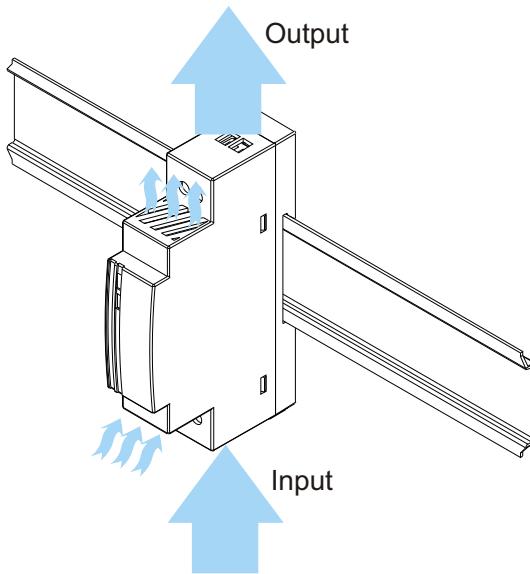
TDK-Lambda

DSP10 Series Din Rail Power

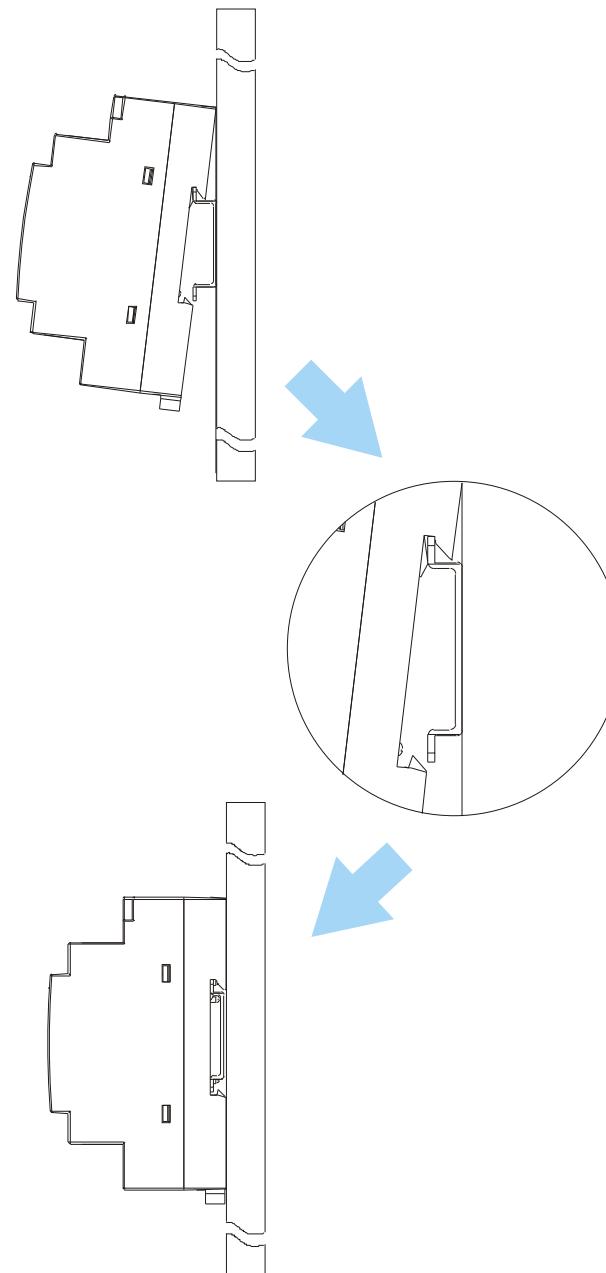


Technical Data
Installation and Operation

► Fig. 1

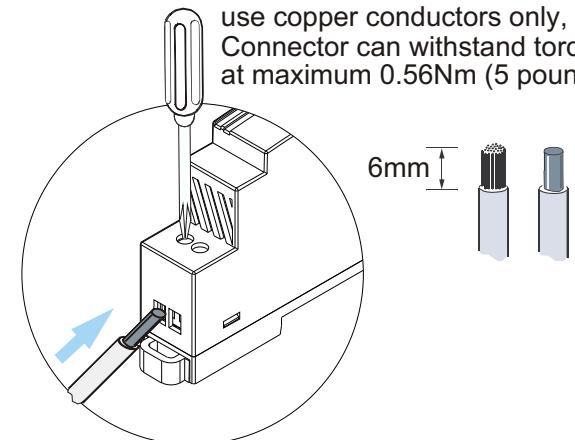


► Fig. 2



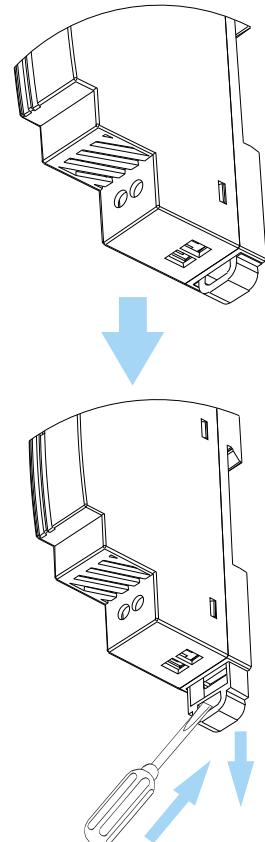
► Fig. 3

Connector size range
AWG26 - 12
use copper conductors only, 60/75°C
Connector can withstand torque
at maximum 0.56Nm (5 pound-inches.)



Max. surrounding air temperature of 55°C

► Fig. 4





Safety notes

Read Instructions!

Before working with this unit, read these instructions carefully and completely. Make sure that you have understood all the information!

This unit complies with UL1310* for the requirements of NEC Class 2 power only.

Disconnect system from supply network

Before any installation, maintenance or modification work: Disconnect your system from the supply network. Ensure that it cannot be re-connected inadvertently!

Before start of operation

Ensure appropriate installation

Warning! Improper installation / operation impair safety and result in operational difficulties or complete failure of the unit. The unit must be installed and put into service appropriately by qualified personnel. Compliance with the relevant regulations must be ensured. Before operation is begun the following conditions must be ensured, in particular:

- Connection to main power supply in compliance with VDE01000 and EN50178.
- With stranded wires: all strands must be secured in the terminal blocks (potential danger of short circuit).
- Unit and power supply cables must be properly fused; if necessary a manually controlled disconnecting element must be used to disengage from supply mains.
- All output lines must be rated for the power supply output current and must be connected with the correct polarity.
- Sufficient air-cooling must be ensured.
- Pollution Degree 2 environment.

In operation: No modifications!

As long as the unit is in operation: do not modify the installation! The same applies also to the secondary side. Risk of electric arcs and electric shock (fatal)!

Only connect/disconnect when the power is off!

Convection cooling (See Fig. 1)

Do not cover any ventilation holes!

Leave sufficient space around the unit **for cooling!**

Warning: High voltage! Store energy!

The unit contains unprotected conductors carrying a lethal high voltage, and components storing substantial amounts of energy. Improper handling may result in an electric shock or serious burn!

- The unit must not be opened except appropriately trained personnel!
- Do not introduce any object into the unit!
- Keep away from fire and water!

Installation

Mounting (See Fig. 1)

Permissible mounting position: keep ventilation holes clear, leave space for cooling! Recommended to have 25mm free space at all sides:

Snap on support rail (See Fig. 2)

- Tilt the unit slightly rearwards.
- Fit the unit over top hat rail.
- Slide it downward until it hits the stop.
- Press against the bottom front side for locking.
- Shake the unit slightly to check the locking action.

Connection (See Fig. 3)

- Use only commercial cables designed for the indicated voltage and current values!
- With flexible cables: make sure that all stranded cable are secured in the terminal.
- Ensure proper polarity at output terminals!

Removal from DIN Rail (See Fig. 4)

Push the slider downwards (unlock). Gently lift lower front edge of the unit (tipping) and remove.

Technical Data

All specifications are typical at nominal line, full load, 25°C; Unless otherwise specified.

Description	Model No.			
	DSP10-05	DSP10-12	DSP10-15	DSP10-24
Input				
Rated input Voltage			100Vac ~ 240 Vac	
AC Voltage Range			90Vac ~ 264Vac	
DC Voltage Range			120-370 Vdc	
Frequency			47-63Hz	
Rated input Current (max)			300mA	
Inrush Current (115Vac/230Vac)			< 15A / < 30A	
Efficiency (Typ)	>74%	>78%	>78%	>80%
Output				
Overvoltage protection			120-145 %	
Line regulation			<1.0 %	
Load regulation			<1.0 %	
DC ON indicate(Green LED)	>3V	>9V	>11V	>20V
Ripple			<50mVp-p	
Nominal Current	1500 mA	830 mA	670 mA	420 mA
Rated over load protection			110%~160%	
Current Limit	Fold Forward (Currentrises, voltage drops to maintain constant power during overload)			
Holdup Time(230Vac)	> 30ms			
General				
Temperature	Storage : -25 to + 85 °C , Operation : -25 to+ 71°C			
Derating (115/230 VAC)	2.5% / °C from 55°C to 71°C			
Humidity	20%-90% RH			
Case	Plastic			
MAX. Required free space	25mm in all sides			
Dimensions	3.58 x 0.71 x 2.19 (91 x 18 x 55.6)			
H x W x D inches (mm)				
Weight	60g			
Approvals And Standard				
UL / cUL	UL508 Listed UL1310 Listed Class 2 power, UL 60950-1 Recognized			
TUV	EN60950-1			
CE	EN61000-6-3, EN55022 Class B EN61000-3-2, EN61000-3-3 EN61000-6-2, EN55024, EN61000-4-2, EN61000-4-3, EN61000-4-4 EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11			

* If the units are to be installed as Direct Plug-in Power Units and full compliance to UL1310 is required, the units must be installed in an airtight distributor box that conforms to the requirements of UL1310.