Operating manual for

DC power supply

EPS/HC 40030-60

in switch mode technology, air cooled

230V AC / 50-60cps

with PFC (Power Factor Control) for reduced phase current)

with integrated total counter

external control mode (external setpoints) selectable

DC output: 30V / 60A

continuously variable

in constant current and constant voltage regulation

Read this operating manual completely before installation.

Not following installation and operation procedures will void the warranty. It also could result in serious injury or death.

List of Contents:

1 General security information

1.1 Class-A device

This device is defined as a **class-A**-device.

Warning: This device is provided to be used only in industrial environment! In other environments, a sufficient electromagnetic tolerance could not be assured without additional installation measures.

1.2 Security

This DC power supply was delivered after a thorough function- and safety-check. Only qualified staff shall connect the rectifier module and put it into operation. Service and maintenance is only to be performed by qualified personnel.

Any manipulation or repairing is life endangering. Observe all instructions of the manufacturer; else, the warranty for DC power supplies and accessories will expire.

Parts carrying a life-endangering voltage potential are installed inside the casing. These are marked with a warning sticker.

Any manipulation of the electrical parts is life endangering and by doing so, including improper operation, cancels the guarantee.

Attention!

Do not operate any DC power supply with one or more loose cable connectors!

If during operation one or more plugs are pulled out of the boards inside the modules, electronic parts and the power unit could be destroyed!

This DC power supply was constructed in consideration of the threat analysis and the relevant safety regulations. Further, all relevant technical specifications are respected. Therefore, this technology is state-of-the-art and guarantees a maximum of safety and functionality.

The safety and functionality can only be kept if the all relevant arrangements are done.

The operator of the installation is responsible for the adherence of safety rules.

Attention!

Don’t use the handles on the front and back side of the device to carry or move the device!

Danger of accident!

Consider the high weight and the sharp metal edges of the device!

Wear individual protective clothing!

The operator has to ensure that

- the DC power supply is only to be used for the application released by the manufacturer

Active loads such as batteries or generators must never be connected to the DC generator (danger of destruction)!

- the installation is only to be put into operation if it is in an accurate condition and all safety devices are checked regularly.
- all requested individual protective equipment for operator and maintenance personnel is available and is be used.
- the operating and maintenance manual is available and in an accurate condition
- mounting, repairing, electrical installation, adjusting and maintenance are only to be performed by qualified personnel.

Security information

The DC-power-supplies of the series EPS/HC 40030-60 can be operated as desktop or rack-mounting units. If they are not installed inside cabinets or other casings, make sure that they are protected against dropping particles, water, dust and vapor!

The manufacturer recommends installing the DC-power-supplies in cabinets or other protective casings.

The DC power supplies are only to be operated in the permissible ranges of current, voltage, environmental temperature and atmospheric humidity according to the rating plate and the operating manual.

1.3 Installation of the DC power supply modules

While mounting the module and the DC connectors, observe especially the following:

- Don‘t tighten screws with a lever, don’t bent any rails or panels.
- The units must be mounted in a horizontal way.
- If mounting the units near the plating tanks is necessary, one has to make sure that they are protected against chemical vapor and dust and dropping particles.
- Ensure an unhindered airflow at the air input and air output.
- Observe the installation instructions of the electrical installation.

1.4 Operation conditions

DC power supplies are not to be operated in an explosive environment. Ensure a sufficient airflow to avoid an internal overheating. Always install the rectifiers directly on to a strong surface and never near an object that may block the airflow.

Keep a distance from

at least 50cm

from air inlet and outlet to walls or other devices.

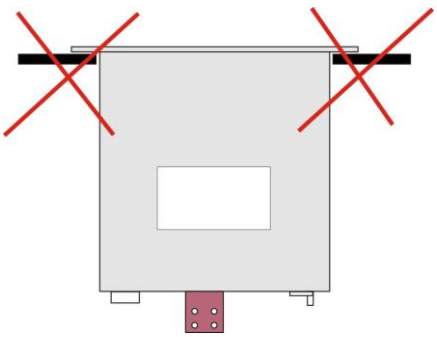
The cooling air must be free from any chemical contamination and free from particles, steam and dust.

The unit must be protected from dropping particles, dripping water and spalsh water.

The DC power supply should be fixed on the installation place by using the mounting holes.

Attention!

Never use the front panel to hang up the device as shown on the sketch below!



2 General description

The DC-power supply type EPS/HC 40030-60 is a sophisticated switch mode type rectifier, designed for the industry. It is designed to fit in a 19”- casing.

The control of the output parameters is done by keys in the front panel of the unit (internal setpoints mode) or via external analog set signals (external setpoints mode). The output values are shown on the large, illuminated display. The display can also show status and warning or error messages.

The electronic regulation guarantees correct output parameters during the operation, even with variable loads at the DC output.

Over temperature protection

The device is temperature protected. In case of rising interior temperature, first the fan speed increases. If the temperature is still increasing, the device decreases the output current automatically; in extreme case, the output is set to zero. After a cooling phase, the output power is increased automatically.

Attention:

Auto-re-start after cooling down!

Do not run the power supply at higher environmental temperatures than 35°C!

2.1 Switch mode technology

This device was designed as switch mode type DC power supply. The advantages of the switch mode technology are:

- very compact design
- maximum regulation accuracy
- very low ripple
- high efficiency; power factor cos. φ 0.95

2.2 PFC technology

The PFC technology (Power Factor Control) allows a reduced phase current by increasing the efficiency of the power part.

2.3 Intended purpose

Device for industrial application

According to the norms

DIN EN 61000-3-12 (VDE 0838-12):2012-06
EN 61000-3-12:2011

this device is only to be used for industrial applications. Offering and selling the device to the general public is not provided.

All other use must be clarified with the technical support of the manufacturer. Otherwise, the installation or other connected devices could be damaged.

3 DC bus bars

The DC output bus bars are located in the rear panel of the device.

Connect the DC output of the DC power supply to the load.

Check for right polarity and proper contact.

Look for the

DIN VDE 0298-4 : 2013-06

admitted cable cross section and the correct polarity.

Attention:

The connection of active loads as batteries or DC-machines to the DC output would cause damages to the unit!

Please check:

Do not wire the power supply cable and the DC-cables into a roll or bind the supply cable and the DC-wiring together with other wires. Otherwise, overheating is possible.

4 Mains supply

Supply voltage: 230V AC +/-10% 50-60Hz

Phase current: see ”Technical data”

Use the delivered mains cable.

Mains cable specification:

The mains cable must be selected corresponding to the following regulations:

DIN VDE 0298-4 / 2013-06

Use equivalent regulations that are valid for the country the device is used in.

Provide for an allowable external fuse admitted to

DIN VDE 0636-2 / 2014-09 / DIN EN 60269-2

Check for the correct environmental temperature (max. 35°C).

Please check:

Make sure that the supply cables could be directly connected to your main supply.

Avoid the use of cable extensions and multiple power sockets.

Do not wire the power supply or the DC-cables into a roll or bind the supply and the DC-cables together with other wires. Otherwise, overheating is possible.

5 Operation

5.1 Main switch

The DC-power-supply must be switched on by using the main switch in the front panel (key ON / OFF, to the left hand side).

The LED between the two buttons lights up if the unit is switched on.

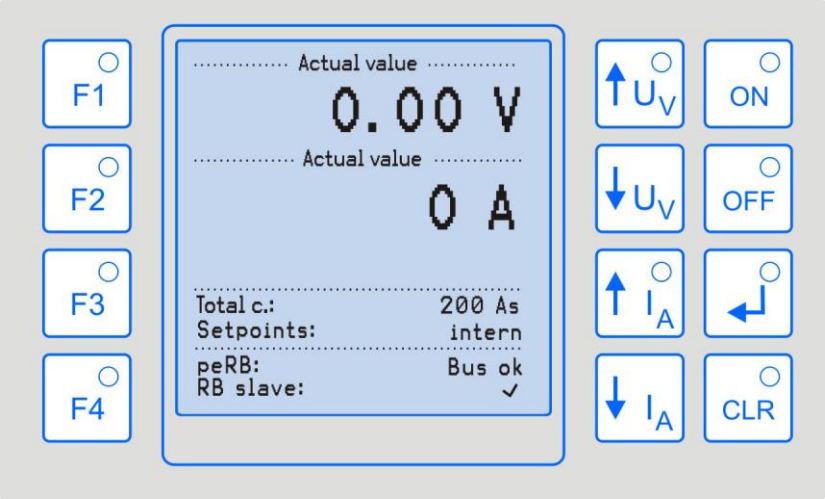
After connection to the main supply the following information appear on the display:

- Checking Memory
- Memory o.k.
- Clearing memory
- Memory cleared
- Initializing memory
- Memory initialized

If the booting sequence is done the pe-logo is shown for a short time.

Afterwards the unit starts the normal operating mode.

5.2 LCD display



In normal operating mode, the digital display shows the actual current and voltage parameters of the connected DC power supply.

Below the current and voltage values, the parameters of the additional functions are shown.

Depending on the operating state, the display can show special parameters and special functions.

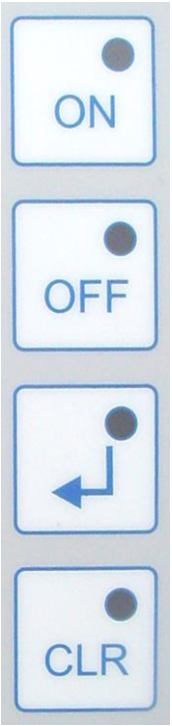
The display can also show error messages.

The display is backlight-illuminated.

The contrast, the display language (menu text) and the illumination can be configured in the “additional Settings” menu.

6 Key pad functions

6.1 The key pads to the right hand side



6.1.1 Key „ON“

- Switch the connected DC power supply on
- ON, if LED lights up

6.1.2 Key „OFF“

- Switch the connected DC power supply OFF.
- OFF, if LED lights up

6.1.3 Key „Enter“

- Open setup menu
- Confirm setting

6.1.4 Key „CLR“

- Cancel procedure, back to the previous menu point or to the operating screen (press several times)
- Relay reset
- Receipt error and warning messages (press key at least 3sec)
- Cancel error and warning messages

6.1.5 Meaning of flashing LED signals in keypad

As a matter of principle:

The LED in the CLR key is flashing if an output relay or the audible alarm signal can be reset. This is done by a simple press on the CLR key.

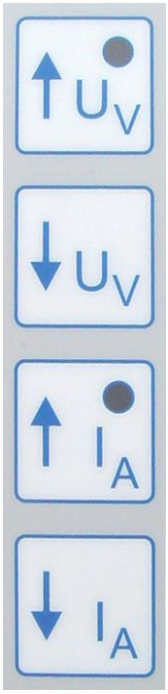
The CLR led is also flashing in case of any internal error.

6.2 Second key pad row

Up – Down keys:

In **internal-setpoints** operating mode, the Up – Down keys are used to adjust the output voltage and current infinitely.

Current and voltage settings:



6.2.1 Key „increase voltage“

Press key to increase the output voltage

If LED lights up: constant voltage regulation mode

6.2.2 Key „decrease voltage“

Press key to decrease the output voltage

6.2.3 Key „increase current“

Press key to increase the output current

If LED lights up: constant current regulation

6.2.4 Key „decrease current“

Press key to decrease the output current

As soon as one of the four keys is pressed, the display switches from operating mode to setting mode for current and voltage setting.

Short pressing on the key changes the value by one digit.

Constant pressing causes continuous change of the value.

The changes can be also be done if the OFF button was pressed (DC power supply switched off).

After two seconds without key actuation the actual values are indicated again.

In setting menu, the arrow keys are used to select an item and to adjust the values.

6.2.5 Special function of the UP / DOWN buttons

If the current UP / down keys or the voltage UP / DOWN keys are pressed at once, there is a special behavior of the value setting. The set values are jumping in three steps:

step 1	step 2	step 3
0A	50% nominal current respectively	100% nominal current
0V	50% nominal voltage	100% nominal voltage

6.3 The key pads to the left hand side, F1 – F4, quick menu

6.3.1 Key „F1“Total counter

Quick menu for “reset actual count”

6.3.2 Key „F2“Manual / Auto (internal / external setp.)

Mode selection:
Manual (LED off) (internal setpoint)
Auto (LED on) (external setpoints via X4 terminal)

Key „F3“

not used in this version

Key „F4“

not used in this version

7 Standard functions: current and voltage regulation

Setting of the output voltage and output current in standard operating mode (Manual mode)

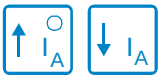
7.1 Up – Down keys

The Up – Down keys are used to adjust the output voltage and current infinitely.

7.2 Constant current regulation

If a constant current is needed, follow these terms:

First move the output voltage to the highest admitted level for your process by using the “Voltage Up” or “Voltage Down” key.



Now use the “Current Up key” or “Current Down key” to adjust your DC-current.

The selected output voltage and current values are shown on the digital displays.

The LED in keypad “Current Up” 

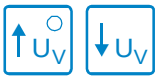
lights up if the current set value is reached at the DC output.

After two seconds without key actuation the actual values are indicated again.

7.3 Constant voltage regulation

If a constant voltage is needed, follow these terms:

First move the output current to the highest admitted level for your process by using the “Current Up” or “Current Down” key.



Now use the “Voltage Up key” or “Voltage Down key” to adjust your DC-voltage.

The selected output voltage and current values are shown on the digital displays.

The LED in keypad “Voltage Up” 

lights up if the voltage set value is reached at the DC output.

After two seconds without key actuation the actual values are indicated again.

8 The total counter

8.1 General description

The total counter allows the measurement of the actual current with switchable measuring ranges ampere hours, ampere minutes, ampere seconds, 1/10 000Ah and gram-silver, gram gold.

The actual counter reading is shown down in the display (line: “Total c.“)

Possible settings for the total counter

The following counting ranges are available:

Ah	= Ampere hours
Am	= Ampere minutes
As	= Ampere seconds
0.0001Ah	= 1 ten-thousandth part of ampere hour
gS	= Gram silver
gG	= Gram Gold (single weighted 3-weighted)

- Set decimal point

Attention

Each digit set after the decimal point reduces the digits before the decimal point!

Example:

If you set ampere-hours with three digits after the decimal point only two digits before the decimal point can be shown (99.999Ah).

If you set zero digits after the decimal point five digits before the decimal point can be shown (99999Ah)

- Delete actual count

- Delete overflow indication

Attention:

The actual values (Ah, Am, As, 0.0001Ah, gS, gG) are deleted by switching the unit or changing the decimal places!

The actual count is stored if the main switch of the unit is switched off or if the unit is disconnected from mains.

9 External setpoints

In “External mode”, the DC power supply is controlled via external setpoints (terminal X4, see wiring scheme).

If “External setpoints” is activated the current and voltage Up / Down keys are deactivated.

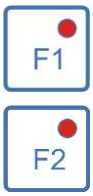
The switching is done via key F2.

The display shows: Setpoints: extern

In “External setpoints mode”, the control signals for current and voltage I-set and U-set are 0 … 10V each. These signals are supplied at terminal X4.

The digital displays will show the actual output values. The readback values are given out indirect-coupled on the X4-terminal (signals: **0 … 10V** each).

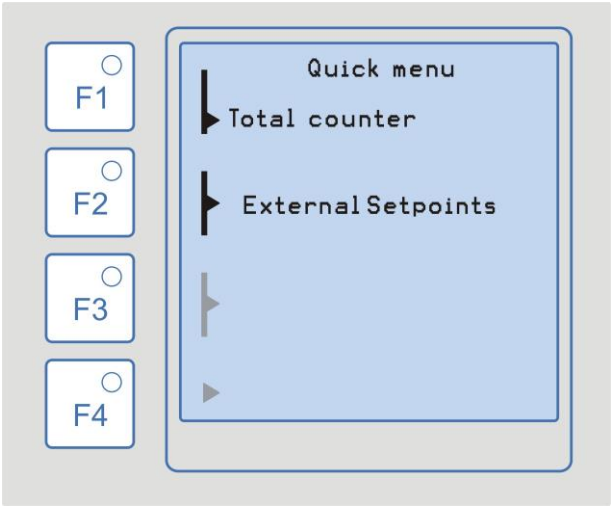
10 Quick menu



F1 key: Quick menu for the total counter (reset the actual count).

F2 key: External setpoints

By pressing any F key in standard operating mode the following display is shown:



Press F1 to reset the actual count

Press F1 to toggle between Manual and Auto mode

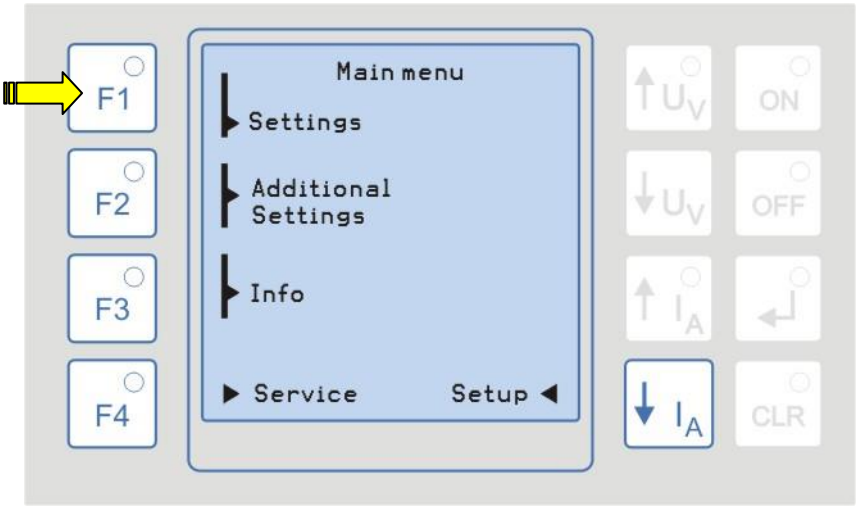
By using the quick menu function you can set the parameters of the additional functions directly.

11 Setting in main menu

11.1 General description

Open the main menu by pressing the **ENTER key**.

The display shows:



Select the desired menu point by pressing the corresponding key.

(Press CLR-key to come back to the main menu screen.)

If no optional features like Ah counter, Preset counter, Timer, Ramp or external control are released, the menu item “Settings” is deactivated (the text color is grey).

11.2 Settings

The SETTINGS menu is the menu for the process settings:

- Total counter
- External setpoints

Press the **F1-key** to come to this menu

Select the remaining sub items of this menu point by pressing the corresponding keys (F2, F3, F4 and „decrease current“).

11.3 „Additional Settings“

contains the adjustments for:

- Display language
- Key click
- Display illumination
- Display contrast
- Relay assignment

If you want to adjust one of these items, press the **F2 key** in the main menu.

Attention:

All additional settings can interfere with the function of the unit, and should only be carried out after an agreement with the service-section of manufacturer.

By opening the menu “additional settings” a warning message appears. If you are sure to carry out changes confirm the message with the **F4 key**.

11.4 Info

contains the information (no settings!) about:

- Version No.
- Build counter
- Nominal output voltage
- Nominal output current
- Max. output voltage
- Max. output current
- Serial No.

If you want to see one of these information press the **F3 key** (in main menu).

11.5 Service

In this menu item, you find the manufacturer address, telephone- and facsimile Number.

If service or maintenance is required, several default settings can be revised, after entering the access code.

11.5.1 Reset to default settings

To reestablish the default settings of the unit the

Code: 130

is to be entered here (press **F1 key** in the submenu “Service”, then set up the value to 130, by using the “**Current up/down keys**”).

11.5.2 “Optional features”

In the submenu „Settings” all available optional features are listed.

Any function has to be unlocked with a releasing-code delivered by manufacturer.

11.5.3 Releasing optional features

To release optional features, press the **„Voltage increase“ key** in the menu item “Service”.

In this menu, the following optional features can be activated (for every feature that is not released by the manufacturer, a releasing code is requested):

- **Total counter / preset counter (enabled)**
- **RS485-BUS controlling (enabled)**
- Ramps
- Timer
- DC steps
- Chopper Timer
- **Voltage or current monitoring (enabled)**
- Pole changer
- Current density regulation
- Operating hour counter

Attention:

Not all functions can be combined with each other!

It is not possible to enable all functions simultaneous.

Some features are only available with special hardware equipment and cannot simply be released by software code.

Please ask our sales manager for further information!

11.6 Setup

The settings in this menu point are only available for the ***manufacturer service team***. General device parameters are set here.

To enter this menu point a releasing code is requested.

End of main menu.

Press the CLR key once or several times to come back to the previous menu points and back to operating mode.

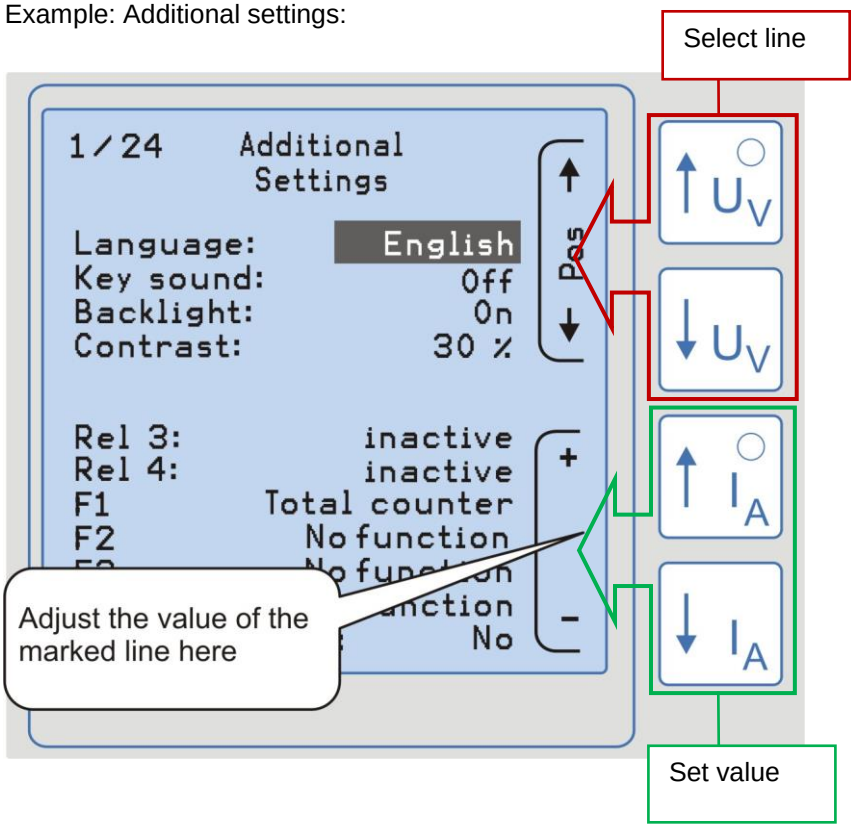
12 Set values, select settings

In the menu points described above you can set values or select functions.

12.1 Principle of settings

Use the  keys to select the line whose parameters you want to change.

Example: Additional settings:



Set the desired value or selection point by the Up / Down keys 

Confirm with ENTER.

Press the CLR key once or several times to come back to the previous menu points and back to operating mode.

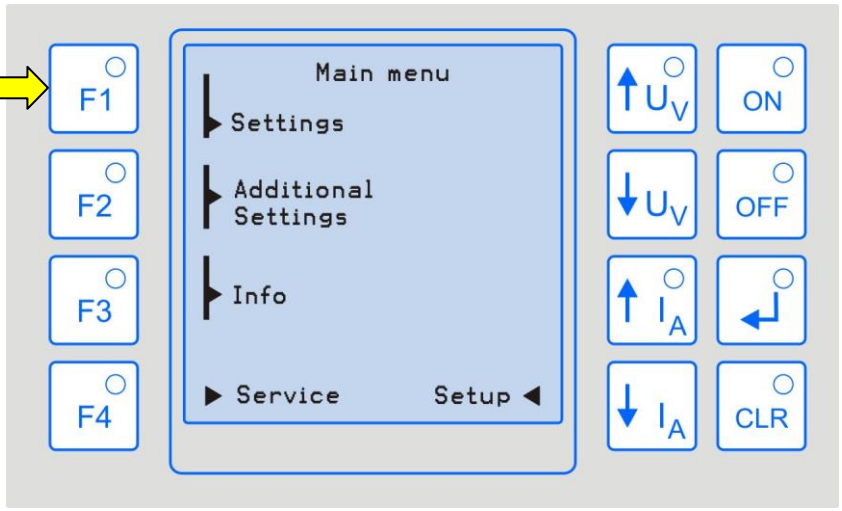
This principle is effective for all settings.

13 Configuration of the total counter

If you are in normal operating mode (current and voltage display):

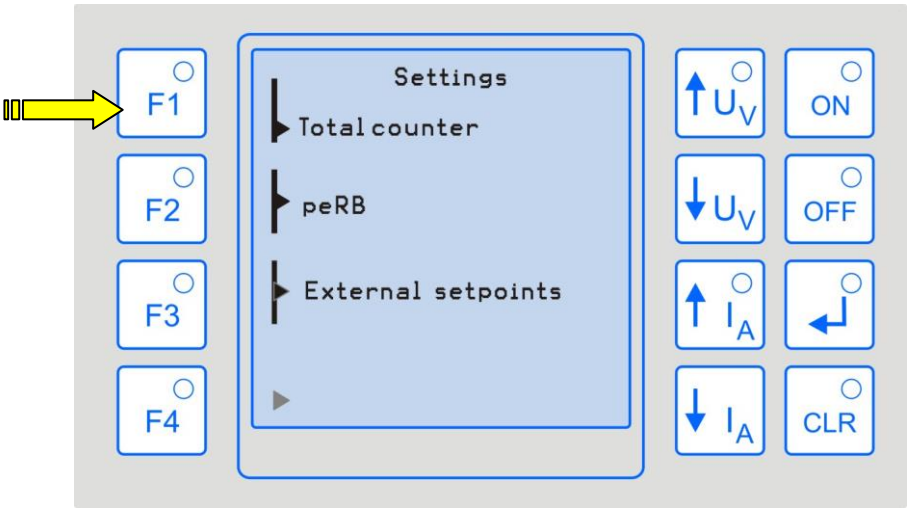
Open the main menu by pressing the ENTER key.

The display shows:



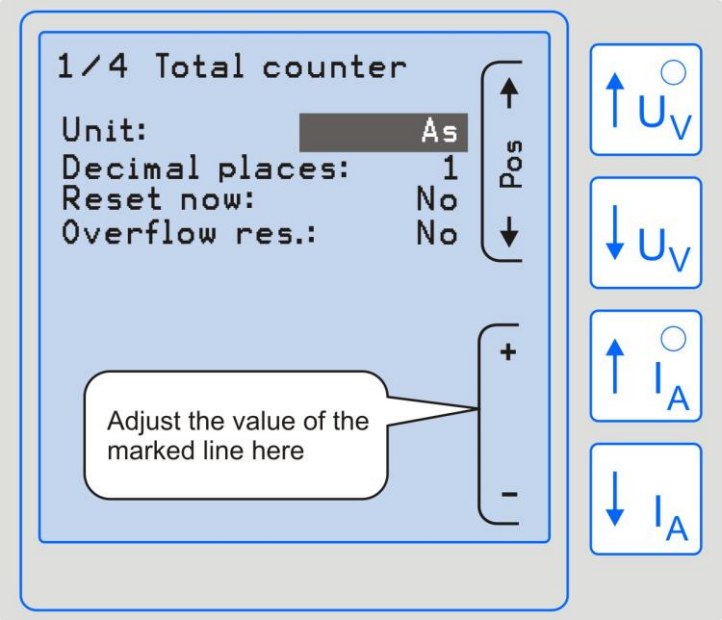
Press the F1-key:

The display shows:



Press the F1-key:

The display shows:



Select the line by voltage UP / DOWN keys.

13.1 Possible settings of the total counter

The following counting ranges (unit) are available:

Ah	(Ampere hours)
Am	(Ampere minutes)
As	(Ampere seconds)
0.0001Ah	(1 ten-thousandth part of ampere hour)
GramSil	(Gram silver)
GrGold I	(Gram gold, univalent)
GrGo III	(Gram gold, trivalent)

The setting is done by the  keys.

Confirm with ENTER. 

Further items in this menu point:

Decimal places:	0, 1, 2, 3
Reset now (delete actual count)	yes / no
Overflow reset	yes / no

Confirm each setting with ENTER. 

Attention:

The actual values are deleted by changing the unit (Ah, Am, As, 0,0001Ah, gS, gG) or changing the decimal places!

The actual count is stored if the main switch of the unit is switched off or if the unit is disconnected from mains.

14 Configuration of the peRB

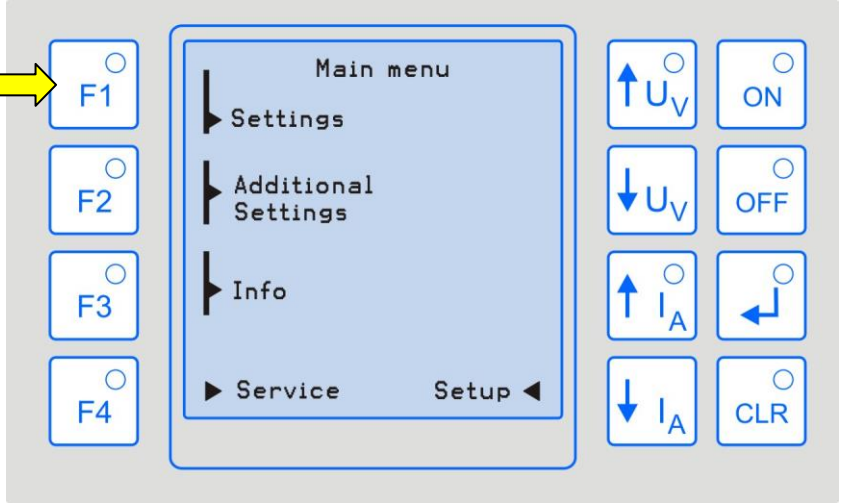
No setting to be done by customer in this menu point!

15 Configuration of the external setpoints

If you are in normal operating mode (current and voltage display):

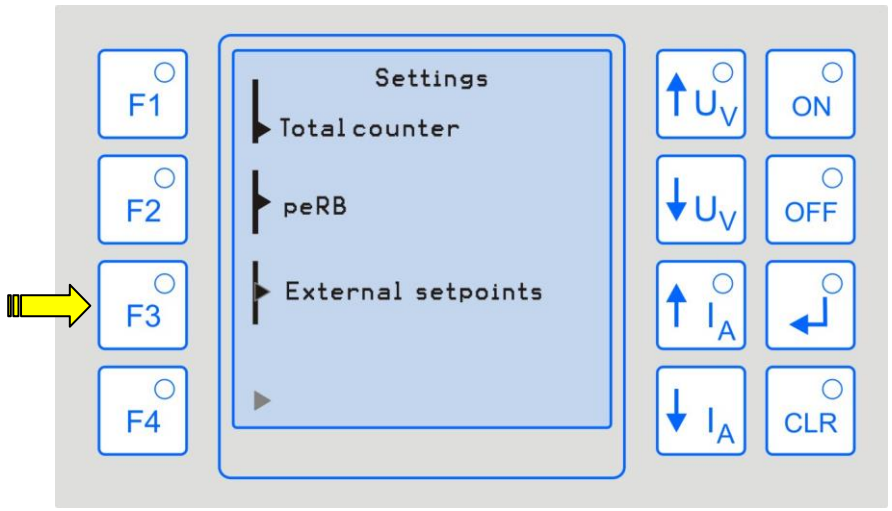
Open the main menu by pressing the ENTER key. 

The display shows:



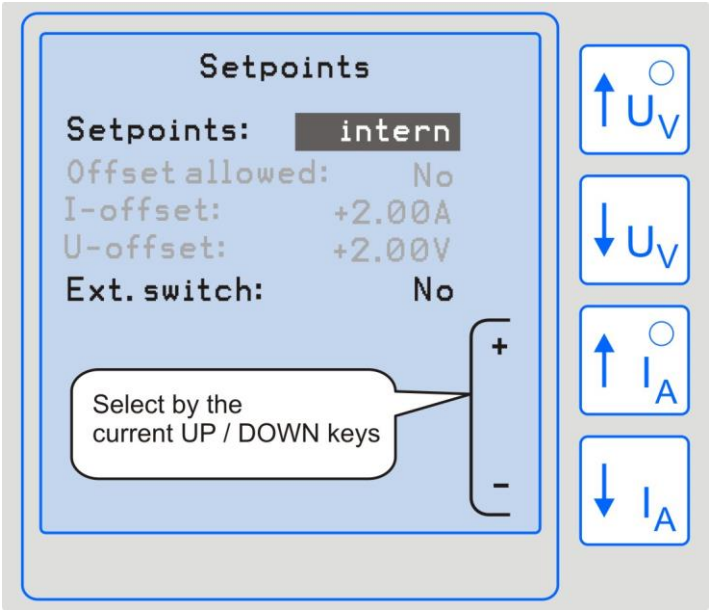
Press the F1-key. 

The display shows:



Press the F3-key. 

The display shows:



Select via keys  between “internal” or “external setpoints”

Quick menu: The switching is done via key F2.

Ext. switch: This setting must be set to **“No”**!

16 Password

The password menu is used to protect the settings areas (menu „Settings“ and menu „Additional settings“)

If the password is set, the protected areas could just be opened if the password is entered.

There are eight digits to be set.

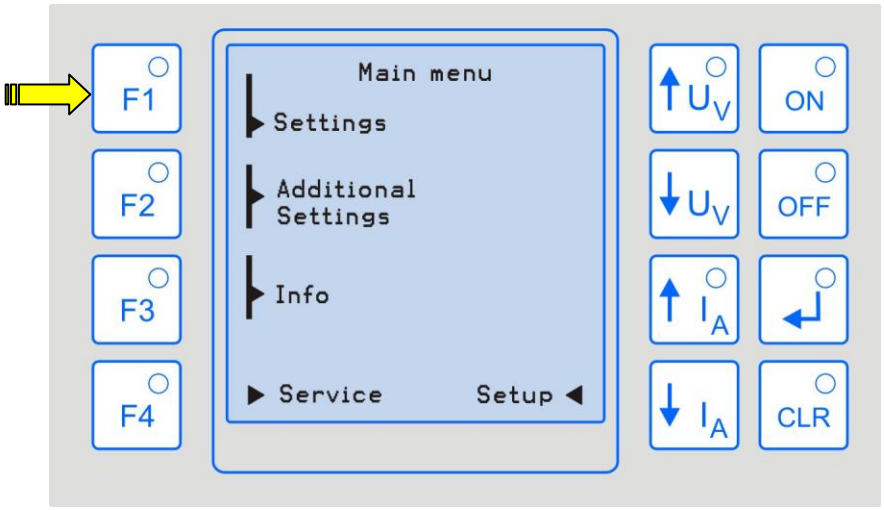
Disable password: set all digits to zero (0 0 0 0 0 0 0 0)

16.1 Setting

If you are in normal operating mode (current and voltage display):

Open the main menu by pressing the ENTER key. 

The display shows:



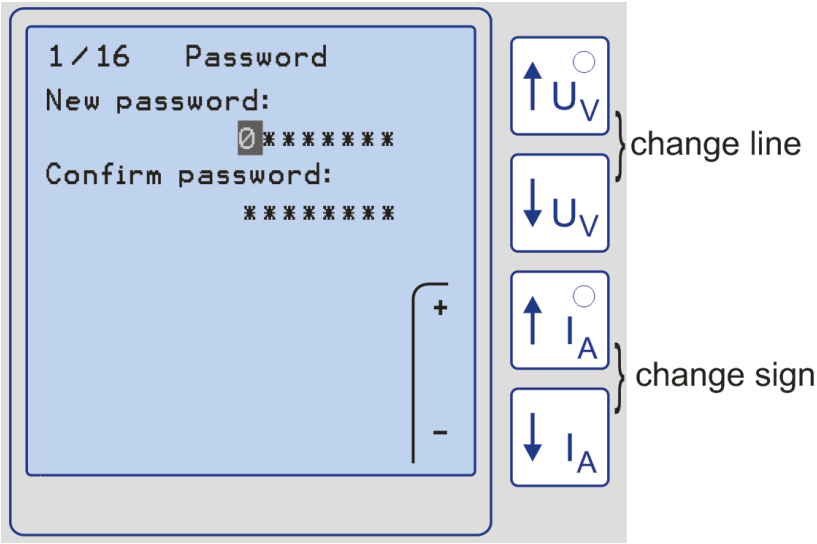
Press the F1-key: 

Press the “Voltage-UP / Voltage-DOWN” keys to change the menu page.

Select the „Password“ menu:

Press the corresponding F-key to open the menu.

The display shows:



For each digit, select the cipher 0 to 9 by using the keys

Press ENTER to confirm each digit.

Confirm password:

Use the keys to change the line:

Repeat the password setting here in this line.

Confirm each digit with ENTER.

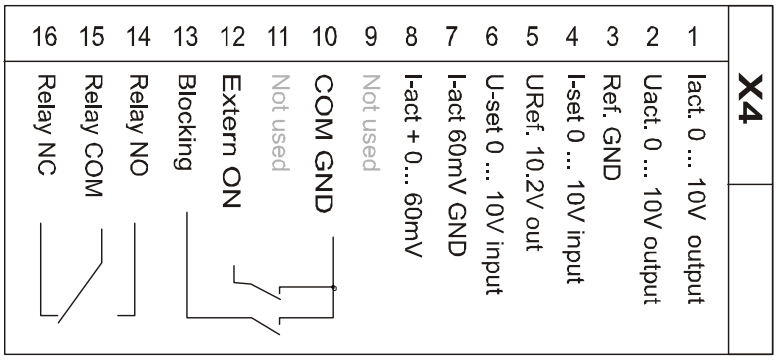
Make sure the password is noted somewhere!

Disable password: set all signs to zero (0 0 0 0 0 0 0 0)

Press the CLR key once or several times to come back to the previous menu points and back to operating mode.

17 Signals on terminal X4

17.1 X4 connecting scheme



17.2 Extern ON

To switch the **DC power supply ON, use the Extern-ON function**. It is wired to pin 10 (GND) and pin 12 (ON) of the X4-terminal.

Attention:

The unit is not disconnected from mains if the function is set to OFF!

Use only potential free contacts!

Consider:

If the BLOCKING contact (see below) is closed, the unit could not be switched on! The BLOCKING function has priority!

17.3 Blocking (switching the DC output OFF)

To switch the **DC output OFF, use the BLOCKING function**. It is wired to pin 10 (GND) and pin 13 (BLOCKING) of the X4-terminal.

Attention:

The unit is not disconnected from mains if the DC output is set to BLOCKING!

Use potential free contacts!

17.4 Constant current regulation (CC)

If a constant current is needed, follow these terms:

First move the output voltage to the highest admitted level for your process using the voltage set signal **U-set**: Supply 10V DC to X4/6 (related to X4/3, GND). If possible, use the **Uref.** signal 10.2V DC at **X4/5** to set the output voltage to maximum. If another signal than the Uref. signal is used, the GND potential of the external control signal is to be connected to X4/3.

Now use the current set signal **I-set** to adjust your DC-current: Supply 0 … 10V DC to **X4/4** (related to X4/3, GND) to set the output current from 0A to I_{nom}. If possible, use the **Uref.** signal 10.2V DC at **X4/5** to set the output current to maximum. If another signal than the Uref. signal is used, the GND potential of the external control signal is to be connected to X4/3.

Both, the current and the voltage readout value I-act. and U-act. , will be given out at X4/1 and X4/2 (0 … 10V each, related to GND).

Attention:

If one set signal, the current or voltage one, is set to zero the DC output is blocked!

17.5 Constant voltage regulation (CV)

If a constant voltage is needed, follow these terms:

First move the output current to the highest admitted level for your process using the current set signal **I-set**: Supply 10V DC to X4/4 (related to X4/3, GND). If possible, use the **Uref.** signal 10.2V DC at **X4/5** to set the output current to maximum. If another signal than the Uref. signal is used, the GND potential of the external control signal is to be connected to X4/3.

Now use the voltage set signal **U-set** to adjust your DC-voltage: Supply 0 … 10V DC to **X4/6** (related to X4/3, GND) to set the output voltage from 0V to U_{nom}. If possible, use the **Uref.** signal 10.2V DC at **X4/5** to set the output voltage to maximum. If another signal than the Uref. signal is used, the GND potential of the external control signal is to be connected to X4/3.

Both, the current and the voltage readout value I-act. and U-act. , will be given out at X4/1 and X4/2 (0 … 10V each, related to GND).

Attention:

If one set signal, the current or voltage one, is set to zero the DC output is blocked!

17.6 Readout values for current and voltage

The read out values I-act. and U-act. are wired up to the terminal X4 pin 1 (I-act.) and pin 2 (U-act).

The signals are

0 ... 10V for 0A ... I_{nom}

and

0 ... 10V for 0V ... U_{nom}.

The signals I-act. and U-act. are related to Ref. GND (pin X4/3).

17.7 I-act.-Signal 0 … 60mV

The I-act. signal 0 … 60mV is a reference signal for the actual output current.

Signal:

0 … 60mV for **0 … I_{nom}** : X4/7 = 60mV GND, X4/8 = +0 … 60mV

17.8 Error relay

The error relay is an internal relay that indicates if the DC power supply is in operation, or if the system is off. The relay contacts are connected to pin 14 – 16 of the service connector X4.

15 = COM 16 = NC 14 = NO

- **relay contact X4/14 and X4/15 closed** = in operation
- **relay contact X4/16 and X4/15 closed** = mains supply OFF, or internal error.

Attention:

The Extern-ON function and the BLOCKING function do not influence the error relay!

The error relay is switching to “Error / OFF” position (15 / 16 closed) if there is an internal error, missing phase or low voltage.

Attention!

Do not overload the relay contacts!

Max. load of the error **relay contacts: 48V / 500mA**

18 Back plane

1 = Main supply

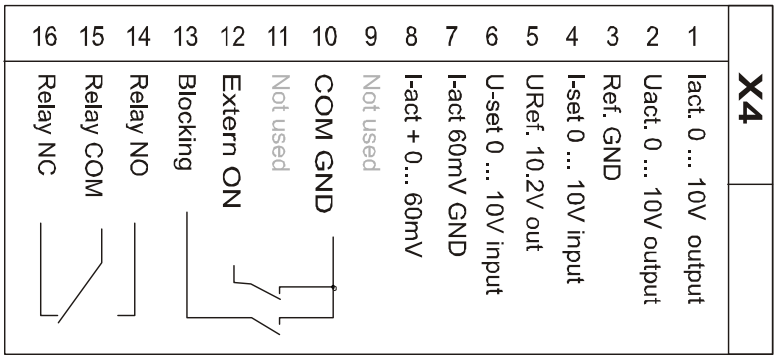
2 = Terminal X4

3 = DC output

4 = Cooling air inlet

5 = Fuses

18.1 Wiring scheme X4



19 Preventative maintenance

This device is extensively maintenance-free.

It is recommended to perform the following maintenance tasks at regular intervals:

- Clean the fan and the air duct
- Check up the fan on functionality and unusual noises
- Verify the quality and cleanliness of the cooling air
- Visual check of the casing (protecting grade still kept?)
- Visual check of all accessible electrical connections within the casing
- Check up all connections done by the customer

The maintenance intervals are to be defined by the customer and / or operator. The intervals are depending on the environmental conditions and operation cycles.

Do not clean the units with strong cleaning agents. Adjustment and maintenance work should only be done under strict safety precautions, especially if the work must be done while the device is switched on. Inside the unit, there are no controls to be used during operation.

This device was manufactured under high quality standards and has passed several function and safety tests during the production process. If there should be any trouble however, please contact the manufacturer.

20 Technical data

Device type:		EPS/HC 40030-60
Function:		DC power supply
Mains voltage:		1~ 230V AC +/-10% 50-60Hz
Phase current::		9.5A / phase at nominal DC output and nominal supply voltage (PFC technology)
Neutral:		no
Advised cable cross section for mains cable:		according to DIN VDE 0298-4 / 2013-06
DC-output voltage:		0 ... 30V, infinitely variable
DC-output current:		0 ... 60A, infinitely variable
Display resolution:		10mV / 100mA
Advised cable cross section for DC cable:		according to DIN VDE 0298-4 / 2013-06
Ripple:		< 1% of nominal voltage at 300cps *)
Regulation inaccuracy:		voltage: < 0.5%; current: < 1% *)
Cyclic duration factor:		100 %
Environmental temperature:		0 to +35°C
Noise suppression:		according to EN 55011 curve A
Protection grade:		IP20
Cooling:		Air, by fan
Cooling air consumption:		100m^3/h
Weight:		app. 25kg
Dimensions:		482 x 134 x 520 (W x H x D)
Casing (color):		stainless steel

*) valid for 2 – 100% of the nominal values

Other features:

- automatic turn off at under- and over voltage with defined start level
- protection against short circuit and open circuit
- over temperature protected
- efficiency > 85 % (switch mode technology)
- power factor cos. φ 0.95

21 Error and function messages

Function messages	Description	What to do?
Warning thresh.: U/I Monitoring	Exceeding of the preset warning threshold (only if U/I monitoring is activated)	Check the tank contacts and the internal resistance of the tank. Preset current respectively voltage values are achieved?
Alarm thresh.: U/I Monitoring	Exceeding of the preset alarm threshold (only if U/I monitoring is activated)	Check the tank contacts and the internal resistance of the tank. Preset current respectively voltage values are achieved?
Error: Overload detected!	Overload (short circuit) on the output detected (only at overload detection)	Check short circuit at the tank / work piece→ check the tank!
Error messages (in alphabetical order)	**Description**	**What to do?**
Error: Operation relay off!	Indication relay of the power supply not operated	Check the operating state of the power supply: - Main supply at the power supply is missing -Excess temperature Contact service
Error: Bus logging Card full!	MMC/SD logging defective (only for devices with MMC/SD card)	Install card with free memory capacity
Error: Bus logging Buffer full!	MMC/SD logging defective (only for devices with MMC/SD card)	Replace card Without success: contact service
Error: Bus logging Write error!	MMC/SD logging defective (only for devices with MMC/SD card)	Check card for correct formatting and for free memory capacity
RAM- Error: „Memory check failed!"	RAM defective	Contact service
EEPROM- Error: "Setup Error#X"	Saved setup data are defective	Reset to manufacturer setting (see operating manual) Without success: contact service
EEPROM- Error: " Config#X"	Saved configuration data are defective	Check configuration Reset to manufacturer setting (see operating manual) Contact service
EEPROM- Error: " Setpoint Error#X"	Saved set value data are defective	Enter set values again (continued processing possible) Contact service
EEPROM- Error: " Actual Value Error#X"	Actual values lost	Contact service (continued processing possible)
Error: End switch 0x0000	End switch of pole changing defective (only for devices with mechanical pole changing)	Check the end switch of the polechanger unit Without success: contact service
Error: Reference missing!	Reference voltage of the power supply is missing	Check main supply Check LEDs Check wiring / connector from control unit to power supply Without success: contact service

Error messages (in alphabetical order)	Description	What to do?
Error: Voltage tolerance	Voltage error (in BUS operation, if voltage regulation is active)	Check the tank contacts and the internal resistance of the tank. Preset current respectively voltage values are achieved?
Error: Current tolerance	Current error (in BUS operation, if current regulation is active)	Check the tank contacts and the internal resistance of the tank. Preset current respectively voltage values are achieved?
Error: High temperature!	Temperature too high	<u>For water cooled devices:</u> Check water throughput, inlet temperature, outlet temperature Contact service <u>For air cooled devices:</u> Check environmental temperature, air duct, fan grill, filter. Does the fan turn? Is the device polluted? Contact service
Error: Bus timeout	Preset time for timeout exceeded →Switch off	Check control software
Warning: Load out of range!	Current density regulation identifies error. Surface of goods out of range (only if current density regulation is active)	Adjust surface value, re-configuration of current density regulation
Warning: Powerfail detected! Count: 1(4=Stop!)	<u>Powerfail:</u> The supply voltage did fall for a short period of time below the admitted tolerance <u>Number of registered powerfails:</u> At each powerfail the process relevant data of the control unit are saved. If while 10 minutes more than 3 powerfails are detected the software is stopped.	Check the stability of the supply voltage of your control unit. If more than 3 powerfails are detected: (“count: 4(4=Stop!”) the control unit has to be reset.

22 Warranty and delivery conditions

The general trading conditions of the manufacturer are effective.