



- Calibration of instruments for radiation measurements
- Measurement of radiation from UV to IR
- Software for special requirements

The Austrian  
Calibration Measurement Software Company

Instruction Manual  
**J1017-POWER**



PRECISION DC POWER SUPPLY

**Precision** is  
our **business**

**CMS Ing. Dr. Schreder GmbH**  
Lofererstraße 32, A-6322 Kirchbichl  
Tel. : 0043 / (0)5332 / 77056-00  
Fax.: 0043 / (0)5332 / 77056-14  
E-Mail: [info@schreder-cms.com](mailto:info@schreder-cms.com)  
Web.: [www.schreder-cms.com](http://www.schreder-cms.com)

CMS Ing. Dr. Schreder GmbH J1017-POWER

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# 1 User Information

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Thank you for using the system. Make sure to read this instruction manual thoroughly and to understand the contents before starting to operate the instrument. Keep this manual at safe and handy place for whenever it is needed.

For any questions, please contact us at the CMS office given below.

CMS reserve the right to make changes to specifications without prior notice.

## 1.1 Warranty

For warranty terms and conditions, contact CMS or your distributor for further details.

CMS guarantees that the product delivered to customer has been verified, checked and tested to ensure that the product meets the appropriate specifications. The product warranty is valid only if the product has been installed and used according to the directives provided in this instruction manual.

CMS shall in no event be liable for incidental or consequential damages arising from the faulty and incorrect use of the product.

In case of any manufacturing defect, the product will be repaired or replaced under warranty. However, the warranty does not apply if:

- Any modification or repair was done by any person or organization other than CMS service personnel.
- The damage or defect is caused by not respecting the instructions of use as given on the product brochure or the instruction manual.

## 1.2 Contact Information

CMS Ing. Dr. Schreder GmbH

Lofererstraße 32  
6322 Kirchbichl  
Austria

Tel.: +43 (0)5332 / 77056-00

Fax: +43 (0)5332 / 77056-14

E-Mail: [info@schreder-cms.com](mailto:info@schreder-cms.com)

Web: [www.schreder-cms.com](http://www.schreder-cms.com)

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## 2 Safety Information

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This product is designed and manufactured under the consideration of the safety precautions. Please make sure to read and understand this instruction manual thoroughly in order to be able to operate the instrument safely and in the correct manner.

### 2.1 Warning /Caution

#### Setup

- The installation base should have enough load capacity for the instrument to be mounted. Fix the system securely to the base; otherwise, the instrument may drop due to gale or earthquake which may lead to unexpected accidents.
- Make sure the instrument and the cables are installed in a location where they will not get soaked.

### 2.2 Voltage Warning

#### Power Supply

- Make sure to check the power supply voltage and type (AC/DC) before connecting the device to the power grid. Connecting the device to other power supplies than specified will lead to damage and accidents. The device is specified for 88 to 264 VAC (47 to 63 Hz) and 125 to 370 VDC.

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## 3 General Description

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This manual has been written to outline the POWER SUPPLY J1017 (precision DC power supply). An instruction for use of the system, the control software and the installation of the software is given.

The operator should carefully read the following instructions to ensure proper and safe use of this equipment.

After unpacking the device, check for any mechanical damage or loose parts inside. Should there be any transportation damage, inform the supplier immediately and do not operate the device.

The power supply connects via USB to a computer.

The system is a very accurate and adjustable power supply, specially developed for Lamp Transfer Standards like KS-J1011, KL100 and KL200. The power supply stabilizes an adjustable current. It allows a precise and easy handling. The output is protected against overvoltage and reverse voltage. The system is not potential free, because the negative connector is connected to protective earth.

Before operating the device, inspect the case and cables for any physical damage. Do not power-up the device if there are any signs of damage.

The device contains precision analogue electronics, which is sensitive to changes in temperature. For compensation of devices tolerance over a temperature range, it measures the temperature ("interior" temperature) and adjusts the temperature dependend difference of current. So normally the device is in stable state soon after ramping up. Even fast changes of temperature (taking it from frozen outside to inside) will cause temporary differences smaller than 400 $\mu$ A (e.g. heating up from 15°C to 45°C in 15 minutes).

The only problem to take care of, regards to condensation: When the device comes from cold outside to warm inside, humidity will condensate. So it is worst, to take it inside, stay for a while and then power up. Better is, to use it at once, because the self-heating should prevent condensation. Best way would be, to put it into a bag and let it warm up without contact to warm air humidity, before using it.

---

# 4 Front Panel Operation

---

After power-up, the display will show a message "display started..." for a short time. After this, the main screen will appear and it is possible to operate the device.

## 4.1 Keyboard Interface

The device is operated by a small numeric keyboard, containing numbers from [0] to [9] and two additional keys [\*] and [#]. This is sufficient, because it is only necessary to enter numbers, e.g. value of current.

There is a consistent concept of usage:

The [#] key executes the current parameters and is equivalent to an "ENTER" key.

The [\*] key goes back for one step and is equivalent to an "ESC" key, but also serves for cycling through menu screens:

Repeated pressing the [\*] key out of main screen, cycles through parameter menus, e.g. setting ramp time. After there was an input, first time pressing [\*] key clears the input, second time it goes back to main menu.

Because there are predefined values, it is possible to leave any parameter menu by pressing [#] key, also when no input was made.

The numeric keys normally just enter a number, but in main screen there is a special usage for key [0] - it cycles through info screens (temperature, device info).

The main screen also provides entry of current, but it doesn't make sense, to enter a current using a leading zero. So after starting with a number, the key [0] also works numeric, e.g. entering "1000" will set current to 1000 mA, entering "01000" will switch to temperature screen and continue to set current to 1000 mA.

Regarding to info screens there is a "fallback time", so when there is an active info screen, it will be shown for "fallback time" and then go back to main screen. When "fallback time" was set to zero, the fallback is deactivated and the info screen will stay.

Finally, when entering a number, it will restart, when exceeding maximum length, e.g. entering a two-digit number, the third input will clear previous input and appear as new first input.



## 4.2 Main screen

This screen is the main user interface in local (front-panel operated) mode, and displays the following information:

- output current (A) +-----+
- output voltage (B) | (A) (B) |
- ramp time (C) | (C) (D) |
- system state (D) +-----+



When the system is "off", it shows the preset values for current and the ramp time. It does not show the output voltage.

### Valid inputs are:

Key [#] starts to ramp up to the preset current. Pressing it again turns ramp direction, respectively ramps down to zero, when system was in regulation state.

Key [\*] cycles through parameter screens

Key [0] cycles through info screens

Key [1] to [9] start input of a volatile current value. "Volatile" means, this value will not be stored and is lost, after device was switched off.

### System states:

"off" the device doesn't spend a current and output is switched off

"up" the device ramps up

"appr" the device slowly approaches the final current, to prevent overshooting

"on" the device is in regulation state

"down" the device ramps down to a lower current, normally zero.

"cal" the device is in calibration state and regulation is switched off.

There is no error state, because this will call an error screen providing detailed error message. This error screen will be inserted to the "info" screens, so using key [0] out of error state would cycle screens "error" → "main" → "temperature" → "info" → "error".

### Remote states:

there is no remote control

"REM" show additional remote control and allows local control.

"LLO" shows exclusive remote control and locked keyboard.

## 4.3 Parameter screen

All parameters will be stored permanently, so these settings outlast switching off the device. Pressing key [#] without input will take the default values, shown in brackets like [default].

## 4.4 New current / store current

In this screen, the user is presented with a prompt to enter an output current. Any value between 100 mA and 6400 mA for the J1017-Power300 (12500 mA for the J1017-Power600) is accepted. Pressing the [#] key sets the output current to the entered value and returns to the main screen. The "new current" screen sets the value temporary until next switch off, the "store current" stores the value permanently.

When the device was in regulation or ramp state (entering a number stops ramping), it will ramp to the new value, otherwise the new value was only set and key [#] must be pressed for ramping to it.

If the entered value is out of range, the value will be set to nearest limit, without leaving "store current" screen.

## 4.5 Ramp time

In this screen, the user is presented with a prompt to enter a new ramp time. Any value between 0 and 99 seconds will be accepted. But regardless of low values (e.g. zero) the ramping up normally will last more than 3 seconds, so very low values just speed up down ramping, e.g. "0" switches off at once.

## 4.6 Fan cooling time

In this screen, the user is presented with a prompt to enter a new fan cooling time. Any value between 0 and 99 minutes will be accepted. A value of "0" will deactivate cooling feature (see below) and activate fan connector permanently.

When a ventilated lamp is switched off after longer burn time, it is better to keep ventilation some time longer. The flow of heat will not stop immediately, when switching off the lamp, but goes on for some time and could overheat the housing. But often people are not aware of that and switching off all power at once. To prevent this, the device offers a "cooling feature" for enhanced control of fan:

The device switches the fan voltage on, when it starts to ramp up, but after switching off the current, the fan voltage remains for the given cooling time (see above, parameter input

of cooling time). The fan voltage even remains, when the device was switched off, because there is a relay inside for keeping supply. When finally the cooling time expired, the device releases the relay and separates completely from power grid.

Entering a fan cooling time of zero disables this feature and switches on fans voltage permanently.

## **4.7 Contrast**

This screen accepts values from 0 to 9 and sets them directly for contrast of LCD display. A value of 0 means less contrast, a value of 9 sets most contrast.

## **4.8 Brightness**

This screen accepts values from 0 to 9 and sets them directly for brightness of LCD display. A value of 0 means less brightness, a value of 9 sets most brightness.

## **4.9 Fallback**

In this screen, the user is presented with a prompt to enter a new fallback time. Any value between 0 and 99 seconds will be accepted, but value 0 disables fallback. When fallback is activated and there is an info screen, it will fall back to main screen after fallback time.

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# 5 Remote operation

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This chapter describes the operation of the J1017 power supply by the serial communication port. The power supply is equipped with a USB port, that shows up as a serial device. You will need an USB cable to connect the power supply to a PC.

There is no addressing, because USB ports always are connected to just a single device. This means different devices will be addressed by using different serial ports, one for each USB device.

The communication parameters are:

**Default setting:**

9600 baud

Serial data format is 8 data bit, no parity, 1 stop bit, no handshake.

Data can be received over the serial port at any time, and all data received is stored in a buffer. The contents of the buffer are evaluated (interpreted as a command) as soon as a LF (line feed; '\n', ASCII 10) is received.

**End of Message:**

The end of message is the Line Feed character (ASCII 10). The power supply ignores the Carriage Return (ASCII 13) character. This makes the supply compatible to MS-Windows (sending CR + LF) and to Unix (sending just the LF character).

**Checksum:**

The user may optionally add a checksum to the end of the command. The checksum is "\$" followed by two hex characters. If a command or a query uses a checksum, the response will also do. There is no CR between the command string and the "\$" sign.

**Response time:**

Every command will be answered either by a parameter, by an acknowledgement, or an error message with a typical time of about 300 ms. Just the "RST" command can last up to 800 ms, some other commands answer within 100 ms.

**Setting Remote or Local mode:**

The device will be put into remote mode via serial communication command. Commands that will put the device into remote mode are:

OUT n , PC n , PV n, RMT n (for n values see command description)

There is a local mode (LOC) with active keyboard, and two remote modes, one of them (Local Lockout LLO) deactivates the keyboard completely, the other one (REM) switches back to local mode by any key. So the REM mode displays remote input and the LLO mode in addition excludes local input.

The RST command (Reset) also resets the remote mode to local mode.

## Error messages

If a command causes an error, the power supply will respond with an error message.

| Error Code | Description               |
|------------|---------------------------|
| C01        | Illegal command or query. |
| C02        | Missing parameter.        |
| C03        | Illegal parameter.        |
| C04        | Checksum error.           |

## Initialization control commands

| # | Command | Description  |
|---|---------|--|
| 1 | RMT     | Sets the power supply to local or remote mode:<br>1. RMT 0 or RMT LOC enables the keyboard for local input.<br>2. RMT 1 or RMT REM shows remote control state at the display and also will be activated by sending remote commands.<br>3. RMT 2 or RMT LLO locks the keyboard for exclusive remote control and sets ramp time to zero. |
| 2 | RMT?    | Returns the local or remote setting:<br>1. "LOC" - The device is in local mode.<br>2. "REM" - The last input was a remote command.<br>3. "LLO" - The device is in remote lock mode   |

## ID control commands

| # | Command | Description   |
|---|---------|---|
| 1 | IDN?    | Returns the power supply model identification       |
| 2 | REV?    | Returns the software version.                       |
| 3 | SN?     | Returns the serial number.                          |
| 4 | DATE?   | Returns the date of calibration. Format "yyyymmdd". |

## Output control Commands

| # | Command | Description   |
|---|---------|---|
| 1 | MV?     | Reads the measured output voltage.  |
| 2 | MC?     | Reads the measured output current.  |
| 3 | PC n    | Sets the output current value in Amperes. The range of current values is 0.100 to 6.400A.<br>Example: "PC 6.302" ... 6.302 A.   |
| 4 | PC?     | Reads the output current setting.   |
| 5 | OUT n   | Turns the output on or off and ramps to given output current or zero, using the default ramp time.<br>OUT 1 - Ramp up to preset output current.<br>OUT 0 - Ramp down to zero. |

|   |       |   |
|---|-------|---|
| 6 | OUT?  | Returns the output on/off status:<br>1 - output on.<br>0 - output off.  |
| 7 | RMP n | Sets the ramp time from 1 up to 99 seconds. The value zero disables ramping. Be aware that ramp times less than 10 seconds probably will be exceeded and also "zero time" will last some seconds. |
| 8 | RMP?  | Returns the ramp time in seconds.   |

### Miscellaneous Commands

| #  | Command            | Description  |
|----|--------------------|--|
| 1  | PST?               | Returns power state of device:<br>0 - Device just started, try again later.<br>1 - Switched on and connected to power grid (ready for use).<br>2 - Switched off, but keeps power for fan wake.<br>3 - Switched off, but USB powered. |
| 3  | TMP? n             | TMP? 0 reads temperature "interior".<br>TMP? 1 reads temperature of heat sink.   |
| 4  | CAL n              | CAL 0 turns calibration mode off and regulation on.<br>CAL 1 turns calibration mode on and disables regulation.<br>CAL 2 saves calibration values to nonvolatile memory and writes checksum.   |
| 5  | CAL16<br>adr ?     | Reads 16bit calibration value from addresses less than 18  |
| 6  | CAL16 adr<br>num16 | Writes 16bit calibration value "num16" to "adr" less than 18.  |
| 7  | CAL32<br>adr ?     | Reads 32bit calibration value from addresses less than 9.  |
| 8  | CAL32 adr<br>num32 | Writes 32bit calibration value "num32" to "adr" less than 9.   |
| 9  | ADC? n             | Reads ADC values directly for calibration:<br>0: Current 17 bit<br>1: Voltage 16 bit<br>2: Interior temperature 10 bit<br>3: Heat sink temperature 10 bit  |
| 10 | DAC? n             | Reads DAC settings directly for calibration:<br>0: Output current 16bit<br>1: Source voltage 16 bit  |
| 11 | DAC n<br>num16     | Ramps DAC n to num16:<br>0: Output current<br>1: Source voltage  |
| 12 | PV n               | Compatibility command, saves value "n" to memory   |
| 13 | PV?                | Compatibility command, gets value "n" from memory  |

|    |       |  |
|----|-------|--|
| 14 | PCM n | Sets the predefined output current value in Amperes to nonvolatile memory  |
| 15 | PCM?  | Reads the predefined output current out of nonvolatile memory  |
| 16 | RST   | Reset restarts the hardware and restores settings out of nonvolatile memory. An active fan time won't be affected. |

Only upper-case is recognised for commands.

Parameters (everything between the command and \$ or \n) may be up to 12 characters in length.

Valid ranges for PC are 0.1 (0.100) to 6.4 (6.400), the accepted resolution is 1 mA. This is the resolution, the device can stabilise for sure, because of measuring nearly ten times more accurate (100µA/Digit).

### Detailed informations about remote control operations

There are some details to consider, when using the device by remote functions, because some operations might work in an unexpected way. The device was especially designed to avoid overshooting and it controls the current by measurement, so it works in a very slow way and normally uses a ramp time of several seconds. Also it is just a current source and controlling it's pre-voltage for itself, so the "PV" command doesn't make sense.

Those details might confuse existing software, because it will last some time, until the measured value will match the programmed value and common sequences of programming are not necessary. For example a software, which wants to ramp a lamp would send something like that:

"RMT 2", "OUT 1", "PV 12.0", "PC 1.0", "PC 2.0", "PC 3.0" and so on:

"RMT 2" sets ramp time to zero, so the program can set currents at maximum speed.  
 "OUT 1" not only activates the output, but starts ramping to predefined current!  
 "PV 12.0" doesn't work, the device just stores "12.0" for answer of "PV?".  
 "PC 1.0" sets a new current and replaces the ongoing ramp (started by "OUT 1") by fast approaching the programmed current.  
 "PC 2.0" sets a new current for fast approaching.

Some alternate sequences to ramp a lamp, using the features of J1017-POWER:

Predefined Ramp:

"OUT 1" switches on output and uses default ramp time to ramp up to default current  
 "OUT 0" uses default ramp time to ramp down to zero and switches off output.

Setting Current:

"PC 6.3" switches on output and uses default ramp time to ramp up to 6.3 A.  
 "PC 3.0" uses default ramp time to ramp from 6.3 A to 3.0 A.  
 "PC 0" uses default ramp time to ramp to 0 A and switches off output. "OUT 0" also

could be used at this place.

Using local lockout:

"RMT 2" sets ramp time to zero and locks keyboard of power supply.  
"RMP 15" sets ramp time to 15 seconds.  
"PC 6.3" switches on output and ramps up to 6.3 A for 15 seconds.

Using presets for repeated ramping:

"RMT 2" only necessary for keyboard lock.  
"RMP 30" setting temporary ramp time.  
"PCM 6.3" programming current 6.3 A to nonvolatile memory.  
"OUT 1" switches on output and ramps up to 6.3 A for 30 seconds.  
"OUT 0" ramp down to 0 A for 30 seconds and switches off output.  
"OUT 1" repeats switch on output and ramp up to 6.3 A for 30 seconds.  
...  
"OUT 0" ramp down to 0 A for 30 seconds and switches off output.  
"RMT 0" shows local mode and restores ramp time out of nonvolatile memory.

Please be aware, that the "PCM 6.3" remains, after remote control ends. For temporary setting of a current the "PC" command must be used, in this case the "RMT 0" would restore the programmed current.



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## 6 Handling of problems

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The device checks for various problems and tells about them by showing an error screen. This error message is part of "info" screens and using key [0], it is possible to view other screens, e.g. temperature measurement, when there is a temperature problem. But when there is an error pending, it is not possible to operate the device and every input just will return to the error message.

### Temperature control

The power supply is equipped with a temperature sensor on the heat sink and the measurement electronics. When the heat sinks temperature exceeds 100°C ("*Heatsink too hot*"), or the electronics temperature exceeds 70°C ("*Interior too hot*"), the device goes to error state and ramps down. This error state recovers automatically, when the temperature sinks for 2°C beneath these threshold temperatures.

An temperature less than -5°C of the electronic is treated as temperature problem "*Interior frozen*". It will recover, when temperature exceeds -3°C. So for every limit value there is a hysteresis of 2°C to prevent the device from flickering.

### Load control

Another error handling checks the regulation state of the device - it switches off, or ramps down, when the device is not able to regulate current. First error is no-load condition, e.g. lamp is not attached to the device. This case the output voltage will rise to the limit value of 48V and when touching it, the device checks amount of current. When there is no current, it switches off ("*No load detected*"), when there is less current, it ramps down ("*Load too low*"). This second error tells, that the load is not able to draw the nominal current.

To recover the error state it is only necessary to confirm the message by pressing any key.

### Measurement control

The device checks the analog digital converters ("ADCs") of current and voltage for plausible values and for timeout of measurement. When there is a problem the message "ADC voltage fail" or "ADC current fail" will be shown and the device ramps down. Because this is a serious hardware problem, there is no other recovery than switching device off and on. Most likely this kind of message tells of a damaged device and needs a repair to recover.

### Control of configuration

There is a checksum to prevent usage of wrong settings, e.g. wrong calibration of current. Every time when the device reads the basic settings out of flash ROM, it calculates the checksum and reports "*Config checksum*" error, when there is a difference to original checksum. This problem recovers when a new calibration is written to flash ROM, because this time also the checksum is newly written.

---

# 7 Appendix

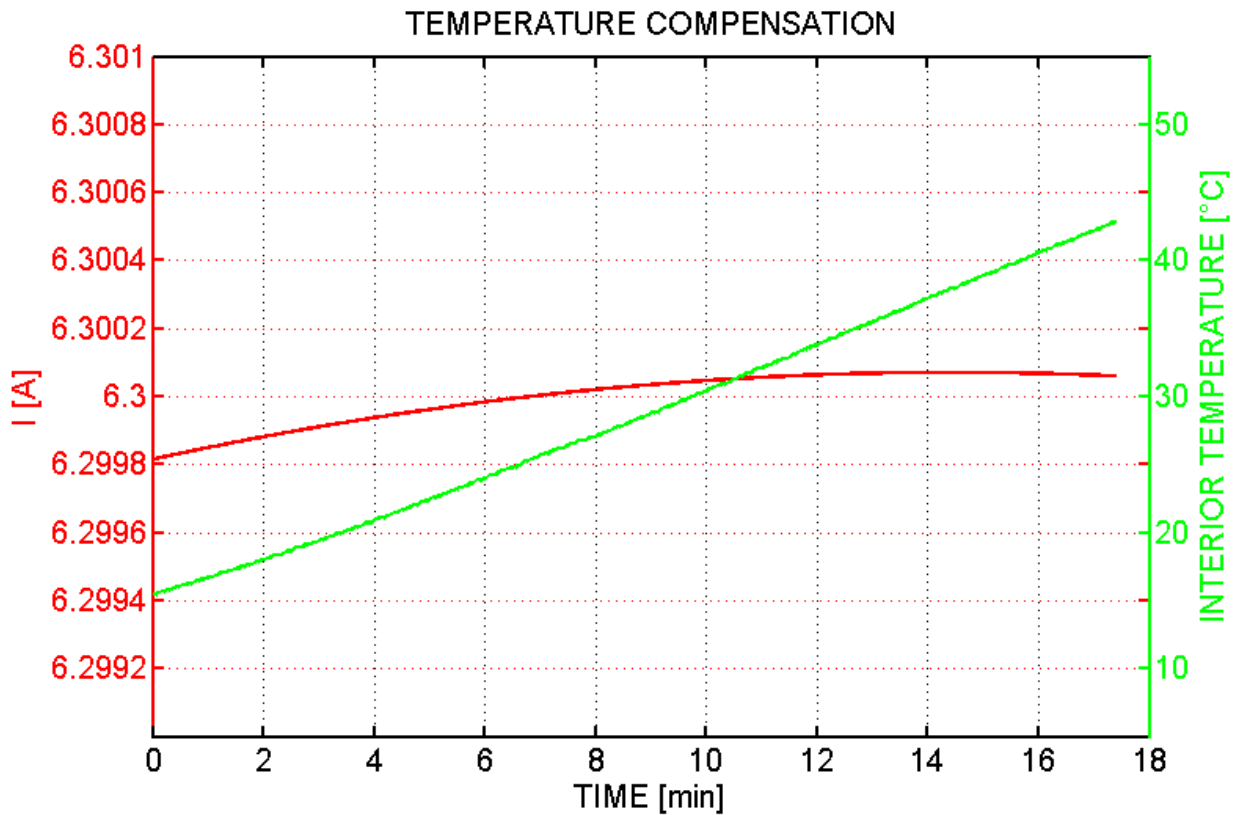
---

## 7.1 Specifications

|   | J1017_Power300                       | J1017_Power600                       |
|---|--------------------------------------|--------------------------------------|
| Main voltage:                           | 88 to 264 VAC, 47 to 63 Hz           | 88 to 264 VAC, 47 to 63 Hz           |
| Maximum output current                  | 6.4 A d.c.                           | 12.4 A d.c.                          |
| Maximum output voltage                  | 48 V d.c.                            | 48 V d.c.                            |
| Maximum output power                    | 300 W at max. voltage of 46 V        | 300 W at max. voltage of 46 V        |
| Resolution of current                   | 1 mA                                 | 1 mA                                 |
| Operation                               | Current controlled mode              | Current controlled mode              |
| ON/OFF                                  | Ramp function, programmable (99 sec) | Ramp function, programmable (99 sec) |
| Display                                 | LCD, 2 lines                         | LCD, 2 lines                         |
| Housing                                 | Bench top                            | Bench top                            |
| Size (WxHxD)                            | 470x150x320 mm, 3HE, 84TE            |                                      |
| Weight                                  | 6.3 kg                               | 7.3 kg                               |
| Output voltage range                    | 0 - 48 V                             | 0 - 48 V                             |
| Output current                          | 0.1 A - 6.4 A                        | 0.1 A - 12.4 A                       |
| Resolution of current measurement       | 100 $\mu$ A                          | 100 $\mu$ A                          |
| Resolution of voltage measurement       | 1 mV                                 | 1 mV                                 |
| Resolution of current setting           | 200 $\mu$ A                          | 200 $\mu$ A                          |
| Output voltage of fan connector         | 12 V                                 | 12 V                                 |
| Maximum output current of fan connector | 1 A, protected by resettable fuse.   | 1 A, protected by resettable fuse.   |

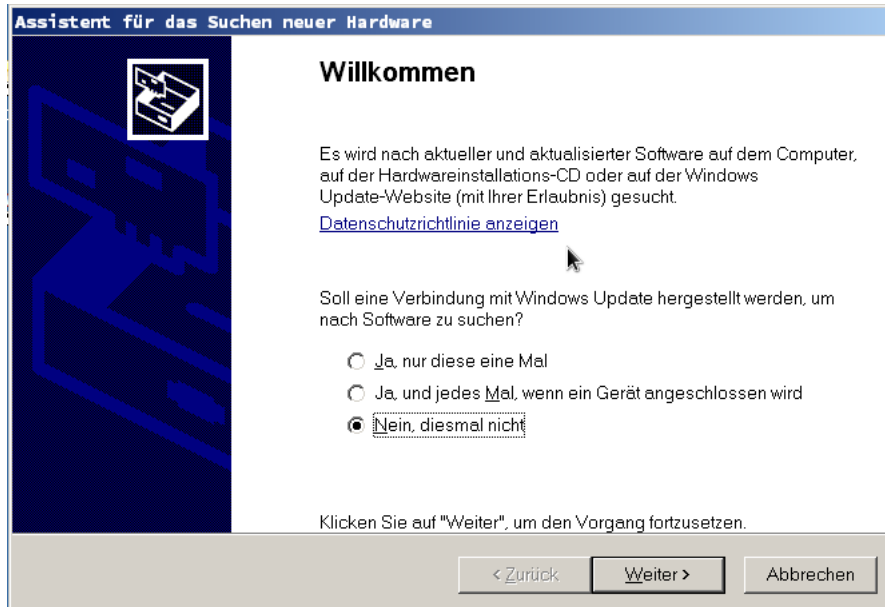
## 7.2 Measurement of temperature compensation

The power supply is able to deliver the selected current direct after switching on with the rated accuracy. The plot below presents the behavior during the internal temperature stabilisation phase of the power supply. Even in a low or high temperature situation of the internal electronic, the deviation of the selected current is less than 200  $\mu\text{A}$ .



## 7.3 Installation of windows driver for serial connection

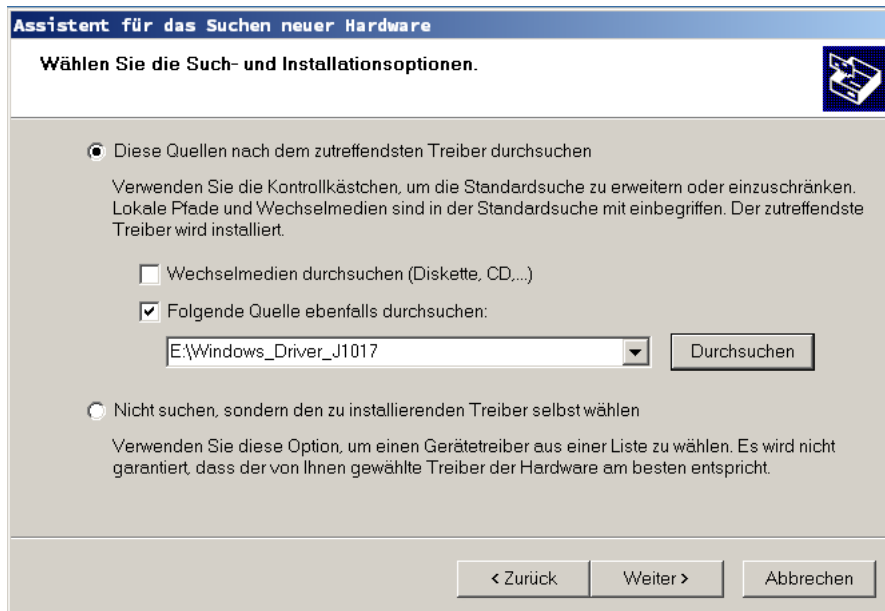
While Linux recognises the powersupply automatically as "/dev/ttyACM0" for MS-Windows it is necessary to install a hardware driver. This driver is delivered together with the powersupply and when connecting the powersupply to the USB port, MS-Windows will recognise the new hardware and ask for the driver:



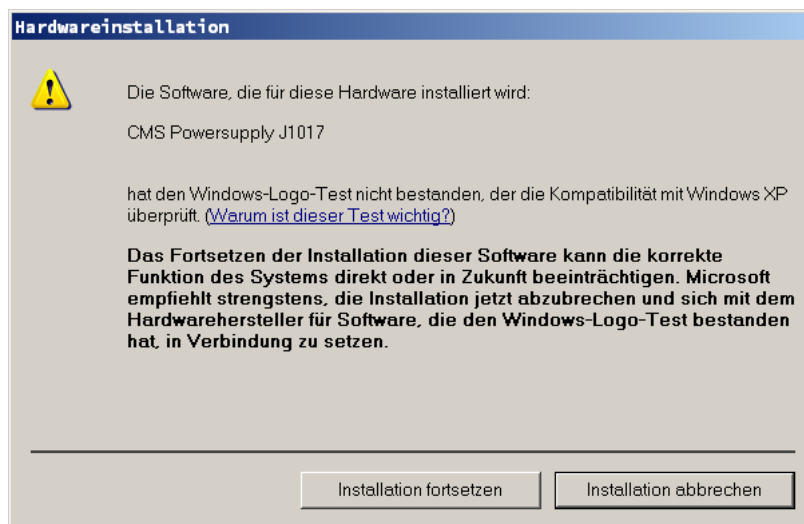
First question is to look for a standard windows driver and this won't work, because it is a driver for this special unit.



Next the installer offers an automatic driver search, but normally the driver will be automatically not found, so it is better to tell, where the driver is located:



The driver is located in the shown directory, but the name of drive can change, eg. "D:" or "F:" instead of "E:".



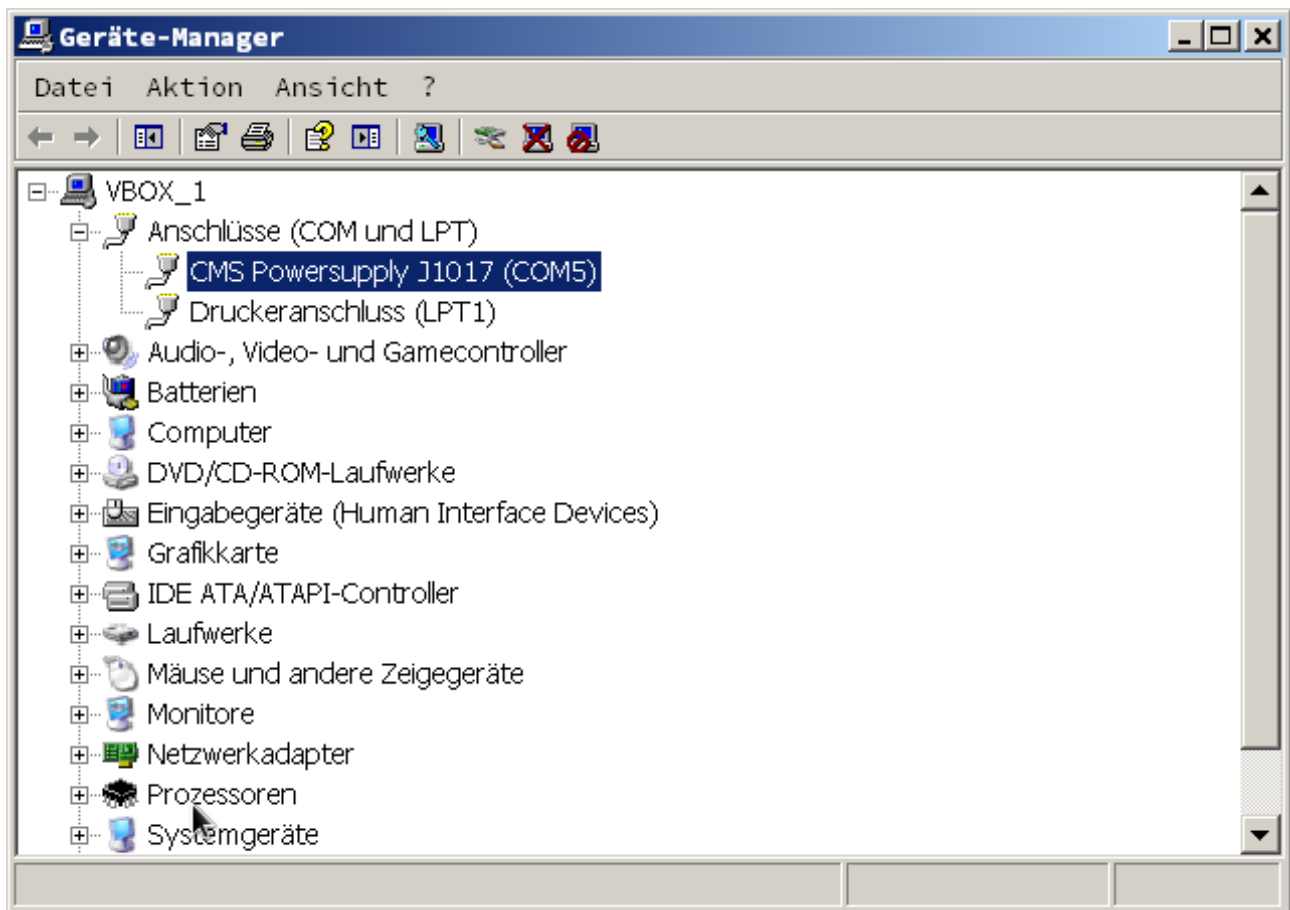
This is a superfluous question, because naturally the CMS driver doesn't provide a Windows-Logo. It is possible to deactivate this message inside of devicemanager, but also you simply can go on with installation.



This message tells, that the driver was succesful located and installation is going on.



This is the final message of successful installation and you should finish now. The result of the installation will be shown inside of the devicemanager, where the new COM connection to the powersupply is located. You need to get the number of the COM connection (e.g. "COM5") for accessing the powersupply by software.



## 7.4 Declaration of EC-conformity

### **EG-Konformitätserklärung** *Declaration of EC-conformity*

Für das folgend beschriebene Gerät  
*The following described item*

**J1017-Powersupply**

wird hiermit bestätigt, dass es mit den Schutzanforderungen der folgenden Richtlinien übereinstimmt.

*herewith is declared to be conform with the safety requirements stated in the EEC-regulation.*

#### **Niederspannungsrichtlinie (2006/95/EC)** **Elektromagnetische Verträglichkeit (2004/108/EG)**

Diese Erklärung gilt für alle Exemplare und verliert ihre Gültigkeit bei mit uns nicht abgestimmten Änderungen.

*This specification applies to all specimens and is voided by not with us coordinated changes made.*

Zur Beurteilung des Erzeugnisses hinsichtlich der elektromagnetischen Verträglichkeit wurde folgende Normen herangezogen:

*For judging the products conformity the following standards have been applied:*

**EN 60950-1:2006 + A11:2009 + A1:2010**  
**EN 61000-3-3:2008**  
**EN 61000-4-2:2009**  
**EN 61000-6-1:2007**  
**EN 61000-6-3:2007**  
**EN 55022:2010**

Die Konformität dieses Produktes ist sichergestellt. Der Hersteller erklärt damit die alleinige Verantwortung für von ihm vertriebene Geräte des oben angegebenen Typs.  
*The conformity of this product is secured. The manufacturer declares hereby the sole responsibility for appliances mentioned above and produced by the manufacturer himself.*

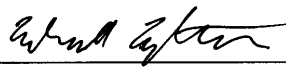
|  |   |
|--|---|
| Hersteller/Importeur:<br><i>Producer / Importer</i>    | <b>CMS - Ing. Dr. Schreder GmbH</b>                 |
| Anschrift:<br><i>Address</i>                           | Lofererstrasse 32 · 6322 Kirchbichl · Austria       |
| Telefon / Telefax:<br><i>Telephone / Telefax</i>       | +43 (0)5332 77056-00 / +43 (0)5332 77056-14         |
| E-Mail / Web:<br><i>E-Mail / Web</i>                   | info@schreder-cms.com / http://www.schreder-cms.com |
| Name des Unterzeichners:<br><i>Name of signer</i>      | <b>Edzard Egberts, Dipl.-Ing.(FH)</b>               |
| Stellung im Unternehmen:<br><i>Position in Company</i> | <b>Application Engineer</b>                         |

**Kirchbichl**

**01.03.2013**

Ort  
*place*

Datum  
*date*

  
rechtsverbindliche Unterschrift  
*legal signature*