CASSETTE EURO FORMAT UP TO 350W

PRODUCT PROPERTIES AND DATA

FUNCTION:

The HCE series power supplies (**H**igh Voltage-**C**hopper-**P**ower Supply in **E**uro format) are highly stable switch-mode power supplies with low ripple.
Due to the high switching frequency is achieved a low residual ripple in the generated output voltage with high stability, good regulation dynamics, and at the same time only a low amount of stored energy.

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CHARACTERISTICS:

- → Compact size for integration
- → Low weight
- → Permanently short-circuit and flash-over proof
- → Can be operated indefinitely with rated current in case of a short-circuit
- → Can be operated indefinitely with rated power
- → Constant voltage or constant current operation possible, the transfer occurs automatically
- → Control mode display with LEDs
- → Voltage and current can be set via a multi-turn potentiometer on the front panel, using a screwdriver
- → Analog programming/interface with set-point inputs, HV-ON/OFF - input and monitor outputs as standard
- → Measuring sockets for voltage and current monitors on the front panel
- → Any load type; in principle, any passive two-terminal network is possible

POSSIBLE OPTIONS:

- → Lockable ten-turn potentiometer for voltage adjustment

HIGH-VOLTAGE POWER SUPPLY OPERATING MODES:

The HV output's polarity is positive or negative.
You can choose between the INTERNAL and EXTERNAL operating modes.

TECHNICAL SPECIFICATIONS

All data given here apply for voltage and current control during internal operation (LOCAL) and refer to the maximum output values.

DIMENSIONS:

The HCE series power supplies are supplied in EURO cassette format. The height, width and depth of the high-voltage power supply depends on its power rating and output voltage. Detailed information can be found in the type table at the end of this document.
A 19" top frame for 84TE is available as an accessory.

ELECTRICAL SPECIFICATION:

Mains connection:	230V ±10% 47 - 63 Hz The N and PE (protective earth) connections are always required!
Protection class:	I
Overvoltage category:	II
Output:	Output values, voltage / current, see front panel or the type table
Short-circuit resistance:	The power supply is short-circuit and flash-over proof. The maximum current can be drawn at any output voltage, even in the event of a short-circuit.
Output polarity:	The power supply has a fixed output polarity. The polarity is set by the factory and is indicated by a sticker on the front and rear panel. (Positive - red; negative - blue).
Output isolation:	An output pole carries the high voltage, the “0V” terminal is connected to the PE (Ground). Current return preferably takes place via the screen of the output cable.
Voltage setting range:	Using the VOLTAGE potentiometer, approx. 0.1% to 100% of the rated value
Current setting range:	Using the CURRENT potentiometer, approx. 0.1% to 100% of the rated value
Setting resolution:	±1 x 10^{-4} of rated value with analog programming/interface
Displays:	LED for status messages
Reproducibility:	±1 x 10^{-4} of rated value with analog programming/interface
Residual ripple:	<1 x 10^{-4}pp, + 50mV of the rated value, typ. <5 x 10^{-5}pp (measuring band width 30Hz to 10MHz) <3 x 10^{-5}, +20mV of the rated value, typ. <1,5 x 10^{-5} RMS
Control time:	
Voltage control:	<1ms with load changes from 10% to 100% or 100% to 10%, respectively
Current control:	<10ms with load changes that effect a change of less than 10% in the output voltage.
Setting time at rated load:	<200ms type, for changes in the output voltage from 10 to 90% or 90 to 10%, respectively
Discharge time constant:	With output free of load max. 10 sec
Control deviation:	with ±10% network change: <±1 x 10^{-5} of the rated value, with open circuit / full load: 2 x 10^{-4} of the rated value, over 8 hours: <±1 x 10^{-4} of the rated value, with temperature deviations <±1,5 x 10^{-4}/K of the rated value

AMBIENT CONDITIONS:

Operation:	
Operation location:	Only for use in dry indoor areas
Temperature:	0°C bis +40°C
Humidity:	Max. relative humidity 80% up to 31ºC, decreasing linearly down to 50% relative humidity at 40ºC
Altitude:	Up to 2000m above sea level
Pollution degree:	1

Protection type:	IP20
Cooling:	The heat generated in the power supply unit is dissipated by convection.
Transport / Storage:	
Temperature:	-20°C bis +50°C
Humidity:	No precipitation and max. relative humidity of 80%
Storage rooms:	Dust-free and dry

DC POWER SUPPLY COMPONENTS

FRONT VIEW WITH CONTROLS OF THE 7W OR 35W VERSION, RESPECTIVELY

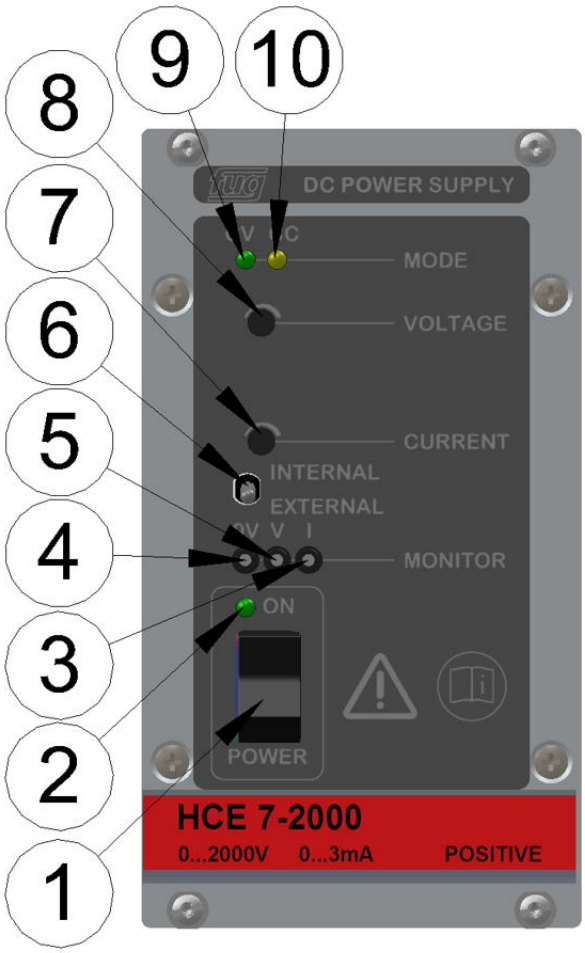


Figure: Front Panel – HCE 7-2000 (POSITIVE). Different dimensions apply for DC power supplies with higher performance

1	AC power switch with indicator light Disconnects the power supply from the mains, two-pole switching	6	INTERNAL / EXTERNAL toggle switch (programming switch) between internal and external operation
2	LED-ON is illuminated when Power ON	7	CURRENT setting with a screwdriver
3	I Measuring value of the current output current 0…+10V corresponds to 0...I_{Rated} Internal resistance approx. 10kOhm	8	VOLTAGE setting with a screwdriver
4	0V voltage reference of the monitors, must not be under current load	9	CV Constant Voltage LED for Constant Voltage control mode
5	V Measuring value of the current output voltage 0…+10V corresponds to 0...U_{Rated} Internal resistance approx. 10kOhm	10	CC Constant Current (LIMIT) LED for Constant Current control mode

REAR VIEW WITH SINGLE-PHASE AC INPUT OF THE 7W OR 35W VERSION, RESPECTIVELY

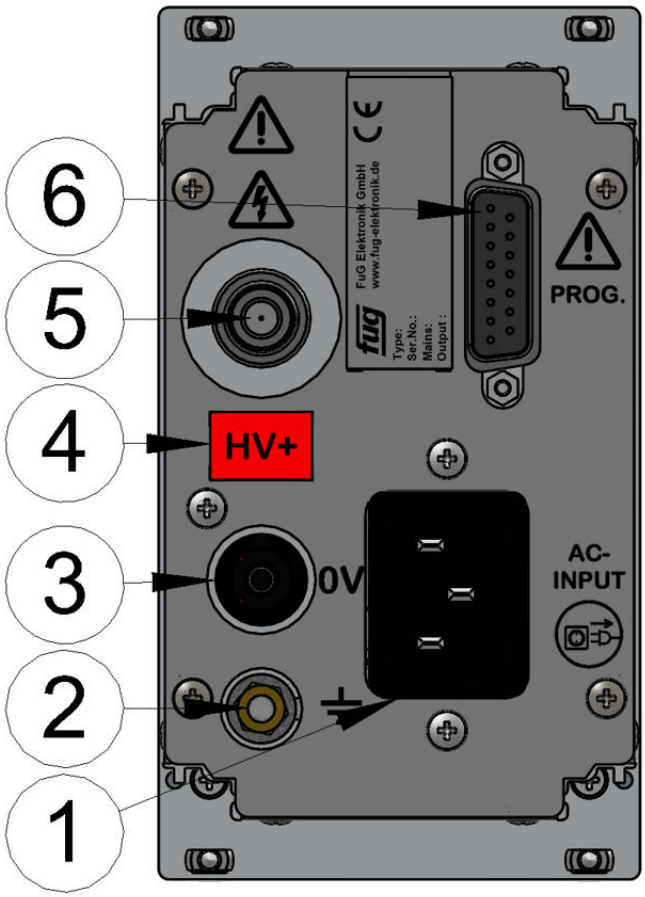


Figure: Rear panel – sample HCE 7-2000 (POSITIVE). For DC power supplies with higher performance or other voltages, other dimensions may apply. The elements' layout may vary from that shown here.

1	AC input IEC connector (as illustrated)
2	Earth bolt: This connection is provided for connecting to the ground of the load.
3	0V load connection, internally connected to the 0V of the electronics. This 0V connection is permanently connected to the protective conductor (PE).
4	Polarity indication: RED: POSITIVE, BLUE: NEGATIVE
5	HV Output
6	15-pin Sub-D connector for analog programming, active with EXTERNAL switch position (front panel)

FRONT VIEW WITH CONTROLS OF THE 140W OR 350W VERSION, RESPECTIVELY

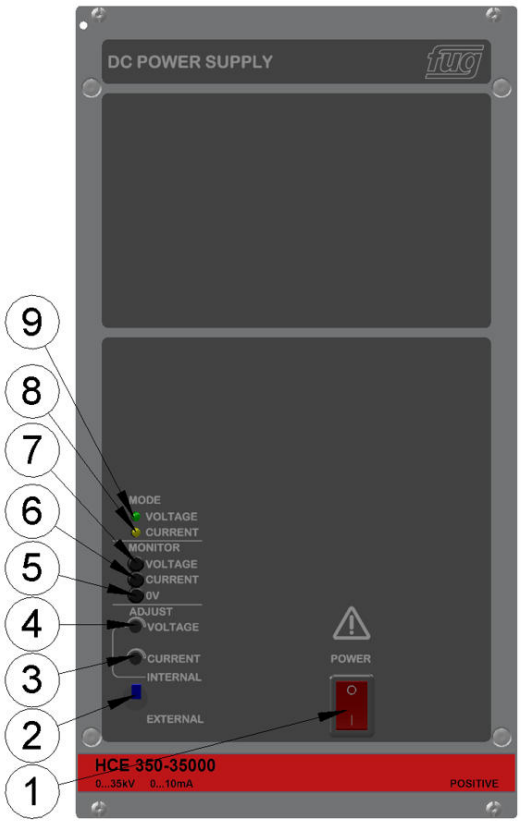


Figure: Sample HCE 350-35000 (POSITIVE). For DC power supplies with higher performance or other voltages, other dimensions may apply. The elements' layout may vary from that shown here.

1	AC power switch is illuminated when Power ON Disconnects the power supply from the mains, two-pole switching	6	V Measuring value of the current output voltage 0…+10V corresponds to 0...U_{Rated} Internal resistance approx. 10kOhm
2	INTERNAL / EXTERNAL toggle switch (programming switch) between internal and external operation	7	I Measuring value of the current output current 0…+10V corresponds to 0...I_{Rated} Internal resistance approx. 10kOhm
3	CURRENT setting with a screwdriver	8	CC Constant Current (LIMIT) LED for Constant Current control mode
4	VOLTAGE setting with a screwdriver	9	CV Constant Voltage LED for Constant Voltage control mode
5	0V voltage reference of the monitors, must not be under current load	10	

REAR VIEW WITH CONTROLS OF THE 140W OR 350W VERSION, RESPECTIVELY

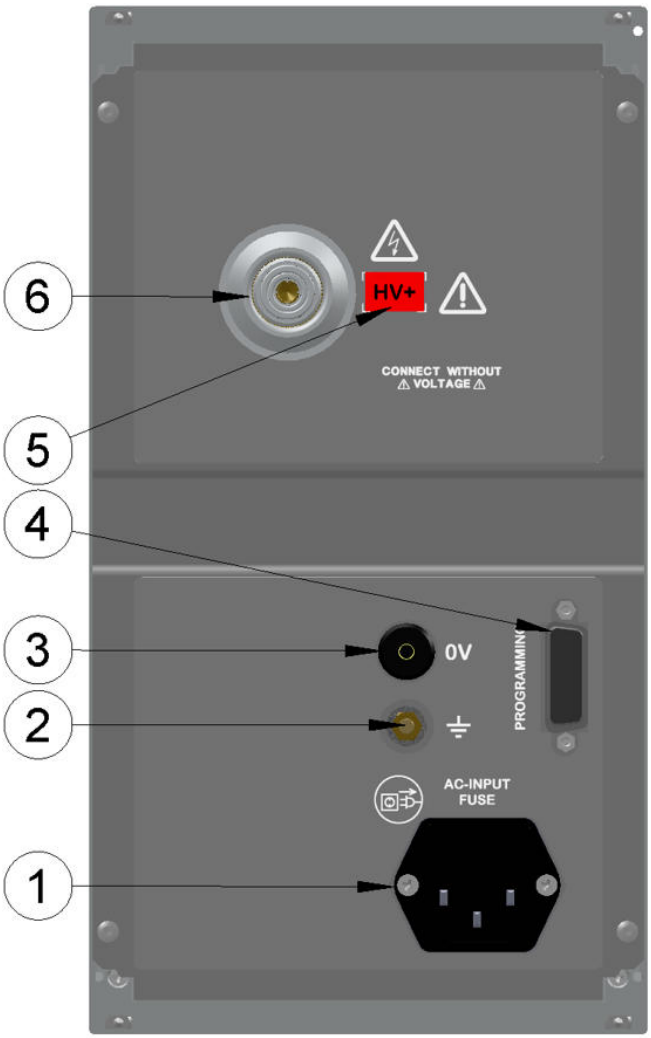
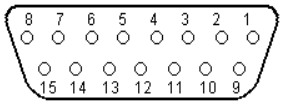


Figure: HCE 350-35000 (POSITIVE). For DC power supplies with higher performance or other voltages, other dimensions may apply. The elements' layout may vary from that shown here.

1	AC input IEC connector (as illustrated)
2	Earth bolt: This connection is provided for connecting to the ground of the load.
3	0V load connection, internally connected to the 0V of the electronics. This 0V connection is permanently connected to the protective conductor (PE).
4	15-pin Sub-D connector for analog programming, active with EXTERNAL switch position (front panel)
5	Polarity indication: RED: POSITIVE, BLue: NEGATIVE
6	HV Output

OVERVIEW OF THE ANALOG PROGRAMMING/INTERFACE

View of the solder side pin 

pin assignment:

Pin	Identification	Type	Function
1	CC	Digital output	Supplies approx. +15V, if device is in constant current control corresponds to LED CC Ri approx. 10kΩ
2	CV	Digital output	Supplies approx. +15V, if device is in constant voltage control corresponds to LED CV Ri approx. 10kΩ
3	I-MON	Analog output	Monitor voltage of the output current 0…10V corresponds to 0…I_{Rated} Ri approx. 10kΩ
4	VPS	Analog output	Slave drive of the voltage potentiometer on the front panel 0…+10V for 0…U_{Rated} Ri approx. 10kΩ
5	IPS	Analog output	Slave drive of the current potentiometer on the front panel 0…+10V for 0…I_{Rated} Ri approx. 10kΩ
6	0VD	D-GND	Digital ground, may be under current load
7		not connected	unused
8	V-SET	Analog input	0…+10V corresponds to 0…U_{Rated} Ri toward 0V approx. 10MOhm
9	0V	A-GND	Reference for analog signals, must not be under current load
10	+10VREF	Analog output	+10V reference voltage, can tolerate loads up to max. 3mA
11	V-MON	Analog output	Measuring value of the current output voltage Analog output, 0…+10V corresponds to 0…U_{Rated} Ri approx. 10kΩ
12	OUTPUT ON	Digital input	Pin (12) open OUTPUT = OFF, Pin (12) connected to 0VD Pin (6) = OUTPUT ON
13		not connected	unused
14		not connected	unused
15	I-SET	Analog input	0…+10V corresponds to 0…I_{Rated} Ri toward 0V approx. 10MOhm

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TYPE TABLE

Type		Voltage	Current	Width	Height	Depth	Weight
HCE 7 - 125	●	0 - 125 V	0 - 50 mA	14 TE / 71 mm	3 HE / 133 mm	170 mm	1,2 kg
HCE 35 - 125	●	0 - 125 V	0 - 250 mA	21 TE / 107 mm	3 HE / 133 mm	170 mm	1,5 kg
HCE 140 - 125		0 - 125 V	0 - 1 A	21 TE / 107 mm	6 HE / 262 mm	230 mm	3,0 kg
HCE 350 - 125		0 - 125 V	0 - 2,5 A	21 TE / 107 mm	6 HE / 262 mm	230 mm	4,0 kg
HCE 7 - 200	●	0 - 200 V	0 - 30 mA	14 TE / 71 mm	3 HE / 133 mm	170 mm	1,2 kg
HCE 35 - 200	●	0 - 200 V	0 - 150 mA	21 TE / 107 mm	3 HE / 133 mm	170 mm	1,5 kg
HCE 140 - 200		0 - 200 V	0 - 600 mA	21 TE / 107 mm	6 HE / 262 mm	230 mm	3,0 kg
HCE 350 - 200		0 - 200 V	0 - 1,5 A	21 TE / 107 mm	6 HE / 262 mm	230 mm	4,0 kg
HCE 7 - 350	●	0 - 350 V	0 - 20 mA	14 TE / 71 mm	3 HE / 133 mm	170 mm	1,2 kg
HCE 35 - 350	●	0 - 350 V	0 - 100 mA	21 TE / 107 mm	3 HE / 133 mm	170 mm	1,5 kg
HCE 140 - 350		0 - 350 V	0 - 400 mA	21 TE / 107 mm	6 HE / 262 mm	230 mm	3,0 kg
HCE 350 - 350		0 - 350 V	0 - 1 A	21 TE / 107 mm	6 HE / 262 mm	230 mm	4,0 kg
HCE 7 - 650	●	0 - 650 V	0 - 10 mA	14 TE / 71 mm	3 HE / 133 mm	170 mm	1,2 kg
HCE 35 - 650	●	0 - 650 V	0 - 50 mA	21 TE / 107 mm	3 HE / 133 mm	170 mm	1,5 kg
HCE 140 - 650		0 - 650 V	0 - 200 mA	21 TE / 107 mm	6 HE / 262 mm	230 mm	3,0 kg
HCE 350 - 650		0 - 650 V	0 - 500 mA	21 TE / 107 mm	6 HE / 262 mm	230 mm	4,0 kg
HCE 7 - 1250	●	0 - 1250 V	0 - 5 mA	14 TE / 71 mm	3 HE / 133 mm	170 mm	1,2 kg
HCE 35 - 1250	●	0 - 1250 V	0 - 25 mA	21 TE / 107 mm	3 HE / 133 mm	170 mm	1,5 kg
HCE 140 - 1250		0 - 1250 V	0 - 100 mA	21 TE / 107 mm	6 HE / 262 mm	230 mm	3,0 kg
HCE 350 - 1250		0 - 1250 V	0 - 250 mA	21 TE / 107 mm	6 HE / 262 mm	230 mm	4,0 kg
HCE 7 - 2000	●	0 - 2000 V	0 - 3 mA	14 TE / 71 mm	3 HE / 133 mm	170 mm	1,2 kg
HCE 35 - 2000	●	0 - 2000 V	0 - 15 mA	21 TE / 107 mm	3 HE / 133 mm	170 mm	1,5 kg
HCE 140 - 2000		0 - 2000 V	0 - 60 mA	21 TE / 107 mm	6 HE / 262 mm	230 mm	3,0 kg
HCE 350 - 2000		0 - 2000 V	0 - 150 mA	21 TE / 107 mm	6 HE / 262 mm	230 mm	4,0 kg
HCE 7 - 3500	●	0 - 3500 V	0 - 2 mA	14 TE / 71 mm	3 HE / 133 mm	170 mm	1,2 kg
HCE 35 - 3500	●	0 - 3500 V	0 - 10 mA	21 TE / 107 mm	3 HE / 133 mm	170 mm	1,5 kg
HCE 140 - 3500		0 - 3500 V	0 - 40 mA	21 TE / 107 mm	6 HE / 262 mm	230 mm	3,0 kg
HCE 350 - 3500		0 - 3500 V	0 - 100 mA	28 TE / 142 mm	6 HE / 262 mm	230 mm	4,0 kg
HCE 7 - 6500	●	0 - 6500 V	0 - 1 mA	14 TE / 71 mm	3 HE / 133 mm	170 mm	1,3 kg
HCE 35 - 6500	●	0 - 6500 V	0 - 5 mA	21 TE / 107 mm	3 HE / 133 mm	170 mm	1,5 kg
HCE 140 - 6500		0 - 6500 V	0 - 20 mA	21 TE / 107 mm	6 HE / 262 mm	230 mm	5,0 kg
HCE 350 - 6500		0 - 6500 V	0 - 50 mA	28 TE / 142 mm	6 HE / 262 mm	230 mm	6,0 kg
HCE 7 - 12500	●	0 - 12500 V	0 - 0,5 mA	14 TE / 71 mm	3 HE / 133 mm	170 mm	1,3 kg
HCE 35 - 12500	●	0 - 12500 V	0 - 2,5 mA	21 TE / 107 mm	3 HE / 133 mm	170 mm	1,8 kg
HCE 140 - 12500		0 - 12500 V	0 - 10 mA	28 TE / 142 mm	6 HE / 262 mm	230 mm	5,0 kg
HCE 350 - 12500		0 - 12500 V	0 - 25 mA	28 TE / 142 mm	6 HE / 262 mm	230 mm	6,0 kg
HCE 7 - 20000	●	0 - 20000 V	0 - 0,3 mA	21 TE / 107 mm	3 HE / 133 mm	170 mm	2,3 kg
HCE 35 - 20000	●	0 - 20000 V	0 - 1,5 mA	21 TE / 107 mm	3 HE / 133 mm	170 mm	2,5 kg
HCE 140 - 20000		0 - 20000 V	0 - 6 mA	28 TE / 142 mm	6 HE / 262 mm	230 mm	5,0 kg

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HCE 350 - 20000		0 - 20000 V	0 - 15 mA	28 TE / 142 mm	6 HE / 262 mm	230 mm	6,0 kg
HCE 7 - 35000	●	0 - 35000 V	0 - 0,2 mA	28 TE / 142 mm	3 HE / 133 mm	170 mm	2,5 kg
HCE 35 - 35000	●	0 - 35000 V	0 - 1 mA	28 TE / 142 mm	3 HE / 133 mm	170 mm	2,8 kg
HCE 140 - 35000		0 - 35000 V	0 - 4 mA	28 TE / 142 mm	6 HE / 262 mm	230 mm	5,0 kg
HCE 350 - 35000		0 - 35000 V	0 - 10 mA	28 TE / 142 mm	6 HE / 262 mm	230 mm	6,0 kg

All specifications are subject to change without further notice.

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