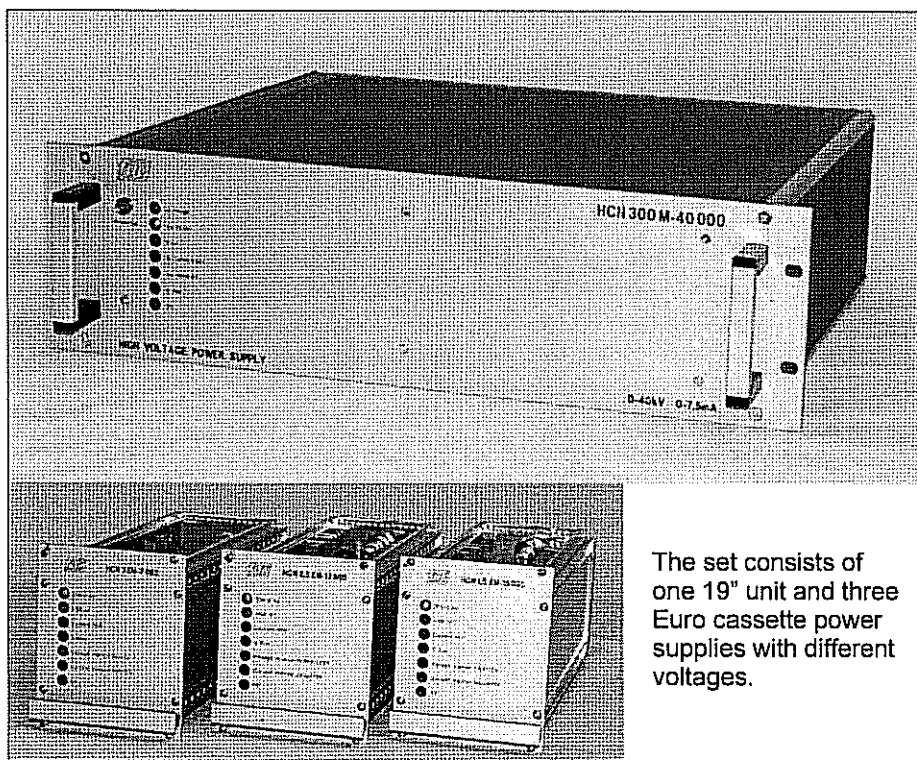


# Power Supplies for Picture Tube Test Equipments

Types: **HCN 300M-40000 / HCN 2EM-2000**  
**HCN 2,5EM-12500 / HCN 1,5 EM-15000**



## Features / Application

The power supplies are specially designed for the requirements of picture tube tests.

### External control

All units are remote controlled by 0-10V analog programming, instruments and internal setting potentiometers are not provided.

### Technical data all units

Input voltage, all units: 230V  $\pm$  10% 47-63Hz

Safety standards VDE 0100/0160

The power supplies are short-circuit proof.

Max. ambient temperature: 0 - 50 °C

Max. humidity: 90 %

All boards with lacquer coating

Mains transformers: Sealed

HV-components >10kV: Moulded in silicon

### HCN 1.5 EM - 15 000

Output voltage: 0 - 15 000 V, adjustable

Output current: max. 100  $\mu$ A

Accuracy:  $< \pm 1 \times 10^{-4}$

Measuring accuracy:  $< 0.1\%$  (on monitoring instruments)

Residual ripple:  $< 0.1\%$

On-period:  $< 600$  msec (from 0 to 99% of adjusted output voltage)

Regulation time:  $< 75$  msec (for  $\pm 10\%$  voltage change)

Off-period:  $< 600$  msec to 1% of adjusted voltage

On/off: switch-off supply voltage via relay contact  
 Relay is controlled via ext floating contact

Measuring sockets Voltage monitoring on front panel:

0 - 1.5 V = 0 - 15 kV (default)

0 - 10 V = 0 - 15 kV

Accuracy:  $< 1\%$

With compliments

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Current monitoring: 0 - 10 V = 0 - 100  $\mu$ A  
Accuracy: < 1%  
Display on front panel: Mains voltage on (yellow LED) "stand by"  
Voltage regulation (green LED) "VG3 on"  
Current regulation (red LED) "Current limit"  
Output on the rear: Connector Lemo 3415  
Mains input on the rear: Connector Amphenol T3110-000, series C16-1  
Reference, control inputs on the rear, and measuring outputs on Sub-D15 connector  
Reference input voltage: 0 - 7.5 V = 0 - 15 kV (default)  
0 - 10 V = 0 - 15 kV  
Monitor voltage: 0 - 10 V = 0 - 15 kV  
Accuracy: < 1%  
On/Off: External contact closed = on

#### HCN 2 EM - 2 000

Output voltage: 0 - 2 000 V, adjustable  
Output current: max. 1 mA  
Accuracy: <  $\pm 1 \times 10^{-4}$   
Measuring accuracy: < 0.1% (on monitoring instruments)  
Residual ripple: < 0.1%  
On-period: < 50 msec (from 0 to 99% of adjusted outputvoltage)  
Regulation time: < 20 msec (for  $\pm 10\%$  voltage change)  
Off-period: < 100 msec to 5% of adjusted voltage  
On/off: switch-off supply voltage via relay contact  
Relay is controlled via ext floating contact  
Measuring sockets Voltage monitoring on front panel:  
0 - 2 V = 0 - 2 kV  
Accuracy: < 1%  
Current monitoring: 0 - 10 V = 0 - 1 mA  
Accuracy: < 1%  
Display on front panel: Mains voltage on (yellow LED) "stand by"  
Voltage regulation (green LED) "VG2 on"  
Current regulation (red LED) "Current limit"  
Output on the rear: Connector Radial SHV  
Mains input on the rear: Connector Amphenol T3110-000, series C16-1  
Reference, control inputs on the rear, and measuring outputs on Sub-D15 connector  
Reference input voltage: 0 - 10 V = 0 - 2 kV  
Monitor voltage: 0 - 10 V = 0 - 2 kV  
Accuracy: < 1%  
On/Off: External contact closed = on

#### HCN 2.5 EM - 12 500

Output voltage: 0 - 12 500 V, adjustable  
Output current: max. 200  $\mu$ A  
Accuracy: <  $\pm 1 \times 10^{-4}$   
Measuring accuracy: < 0.1% (on monitoring instruments)  
Residual ripple: < 0.1%  
On-period: < 250 msec (from 0 to 99% of adjusted outputvoltage)  
Regulation time: < 20 msec (for  $\pm 10\%$  voltage change)  
Off-period: < 500 msec to 1% of adjusted voltage  
On/off: switch-off supply voltage via relay contact  
Relay is controlled via ext floating contact  
Measuring sockets Voltage monitoring on front panel:  
0 - 10 V = 0 - 12,5 kV  
Accuracy: < 1%

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Current monitoring: 0 - 10 V = 0 - 200  $\mu$ A  
0 - 2 V = 0 - 200  $\mu$ A  
Accuracy: < 1%  
Display on front panel: Mains voltage on (yellow LED) "stand by"  
Voltage regulation (green LED) "VG3 on"  
Current regulation (red LED) "Current limit"  
Output on the rear: Connector Lemo 3415  
Mains input on the rear: Connector Amphenol T3110-000, series C16-1  
Reference, control inputs on the rear, and measuring outputs on Sub-D15 connector  
Reference input voltage: 0 - 10 V = 0 - 12,5 kV  
0 - 10 V = 0 - 10 kV  
0 - 6,25 V = 0 - 12,5 kV  
Monitor voltage: 0 - 10 V = 0 - 15 kV  
0 - 10 V = 0 - 10 kV  
0 - 6,25 V = 0 - 12,5 kV  
Accuracy: < 0,1%  
Monitor current 1: 0 - 2 V = 0 - 200  $\mu$ A  
Accuracy: < 0,1%  
Monitor current 2: 0 - 10 V = 0 - 200  $\mu$ A  
Accuracy: < 0,1%  
On/Off: External contact closed = on

### HCN 300M - 40 000

Output voltage: 0 - 40 000 V, adjustable, polarity positive  
Output current: max. 7,5 mA  
Output isolation: The "0V"-terminal is floating, but limited to 90V by an arrestor.  
  
Linearity: <  $\pm$  0,5% between 20kV and 40kV  
Residual ripple: < 40V pp, with an external load of 2 nF  
Voltage change: < 100V at 100% load change  
Stability: < 0,01% / h, after 30min. warm up time, 0,05 % / 8h  
Temperature coefficient: <  $\pm$  0,01 % / K  
Regulation time: < 100 ms for  $\pm$ 10% voltage change  
Switching ON: < 90 ms from 10% to 90% of adjusted output voltage:  
Switching OFF: < 900ms from 90% to 10% output voltage, without external capacitor  
< 1,02s from 90% to 10% output voltage, with external capacitor of 2 nF  
< 1,9s from 90% to 10% output voltage, with external capacitor of 5nF  
Output : HV output on the rear, a mating connector "GES" for coaxial cable is included.  
**LED indicators on the front panel**  
Power ON: ON, when the mains switch is switched on.  
Within the range: ON, when unit is in voltage constant mode.  
Va > 12,5kV: ON, when output voltage is >12,5kV .  
Error: ON, when unit in current limitation.  
**Measuring terminals on the front panel**  
Vref: Test terminal for the voltage set value on the rear input "Control"  
Va Voltage monitor: 0 - 4V = 0 - 40kV (Rout = 2 k $\Omega$  ; Accuracy = 1%)  
Ia Current monitor: 0 - 7,5V = 0 - 7,5mA (Rout = 2 k $\Omega$  ; Accuracy = 1%)  
0V Common for Vref, Va and Ia.

Subject to alteration , mistakes excepted.  
2000

February