Charging – Charge Line

HAUG charging systems are intended for the contact-free application of electrostatic charges. These systems are used whenever different materials need to be fixed to one another electrostatically. At least one of these materials must be insulating. The electrostatic fixation is intended to support downstream processes such as the film overlap in packaging machines. HAUG charging machines can be used, among others, in the following applications:

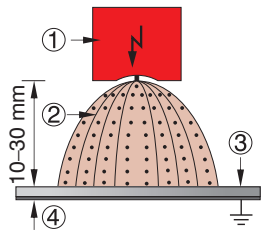
- for fixing and positioning films and foils, paper an cardboard, e.g. on steel sheets, glass panels, wood panels or similar
- for fixing films and foils on packaging machines / film welding machines
- for fixing films and foils on turret film winders, for fixing the wound film against telescoping and glue-less commencement of the film winding process on cardboard tubes

HAUG charging generators are direct voltage generators with different, adjustable output voltages between 0 and 40kV$_{DC}$.

All charging generators are available with positive and negative polarity. Depending on the intented application, three different categories of generators can be supplied: the AG series, the TR series, and the AGW/HW series. The matching electrodes and triodes are available in customized lengths. The distance to the surface to be charged is between 10 – 30 mm (triode).

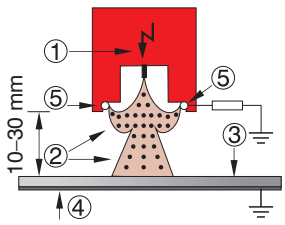
Note: We strongly recommend discharging the surfaces using a HAUG ionizing system before fixing the materials. A suitable counter-electrode is required to charge the different materials. If the counter-electrode is not provided by a metal machine part, it must be created by adding an ionizing bar, for example (refer to application technology 8.20).

Conventional charging



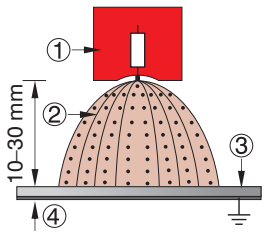
① positive or negative voltage
② electrical field
③ insulator (e.g. foil)
④ counter-electrode
(e.g. earthed metal plate)

Tristat / Triode



① positive or negative voltage
② electrical field
③ insulator (e.g. foil)
④ counter-electrode
(e.g. earthed metal plate)
⑤ intake electrodes

Resistance-coupled charging



① positive or negative voltage
② electrical field
③ insulator (e.g. foil)
④ counter-electrode
(e.g. earthed metal plate)

Generators AG SL / AG 25

Charging generator AG SL

The output of this low-priced generator is set by modifying the distance of the electrode. The **AG SL** has one high-voltage terminal (DC).

The output voltage is displayed by means of an analog measuring instrument.

Charging generator AG 25

This unit has been tested and proven thousands of times. It is suitable for all common applications.

The generator **AG 25** is equipped with one high-voltage terminal (DC). The electronic voltage adjustment is steppless, and there is a choice of analog or digital display intregrated into the unit for the output voltage.

Technical data

Dimensions:	269 × 168 × 150 mm (L×W×H)
Type of protection:	IP 54
Protection class:	I
Rated frequency:	50 – 60 Hz
Power consumption:	approx. 50 VA
Rated output voltage Charging:	approx. 25 kV_{DC}
Short-circuit output current Charging:	$I_k \leq 1.1$ mA
HV-terminals charging: 1	
Operating temperature:	+5 °C to +45 °C
Storage/transport temperature:	-15 °C to +60 °C
Weight:	7 kg
Mains cable:	2.6 m, fixed to the device

Types	Supply voltage	Charging positive / negative	Display	Extras	Order-No.
AG SL **AG SL**	230 V_{AC} 115 V_{AC}	positive positive	- -		09.7445.000 09.7447.000
AG SL **AG SL**	230 V_{AC} 115 V_{AC}	negative negative	- -		09.7446.000 09.7448.000
AG 25 **AG 25**	230 V_{AC} 115 V_{AC}	positive positive	analog analog		09.7479.200 09.7425.200
AG 25	230 V_{AC}	positive	analog	10-way potentiometer	09.7425.201
AG 25 **AG 25**	230 V_{AC} 115 V_{AC}	negative negative	analog analog		09.7426.200 09.7428.200
AG 25 **AG 25**	230 V_{AC} 115 V_{AC}	positive negative	digital/analog digital/analog	25 kV, function monitoring	09.7730.000 09.7732.000

Generator AG 30

The charging generator **AG 30** produces an adjustable high voltage of up to 40 kV_{DC}. The voltage and the current present at the relevant time are indicated at the integrated measuring instruments. Two separate potentiometers allow the high voltage and the current threshold to be set. If the current exceeds the set limit value, an error message is triggered and the high voltage is switched off.

The charging generator **AG 30** can be pulsed externally. The integrated signalling socket can be used to control a signalling device. The generator is available optionally with analog or difital display.

Technical data

Type of protection: IP 54

Protection class: I

Rated frequency: 50 – 60 Hz

Power consumption: 60 VA

Rated output voltage: approx. 40 $kV_{=}$

Short-circuit output current: $I_k \leq 4.5$ mA

HV-terminals: 2

Pulse frequency: 1 Hz, via pulse input

Operating temperature: +5 °C to +45 °C

Storage/transport temperature: -15 °C to +60 °C

Weight: 13 kg

Mains cable: 2.6 m, fixed to the device

Types	Supply voltage	Charging positive / negative	Display	Order-No.
AG 30	230 V_{AC}	2 × positive	analog	09.7700.200
AG 30	115 V_{AC}	2 × positive	analog	09.7701.200
AG 30	230 V_{AC}	2 × negative	analog	09.7702.200
AG 30	115 V_{AC}	2 × negative	analog	09.7703.200
AG 30	230 V_{AC}	2 × positive	digital/analog	09.7800.000
AG 30	115 V_{AC}	2 × positive	digital/analog	09.7801.000
AG 30	230 V_{AC}	2 × negative	digital/analog	09.7802.000
AG 30	115 V_{AC}	2 × negative	digital/analog	09.7803.000
AG 30	230 V_{AC}	2 × positive	analog	09.7780.000
AG 30	115 V_{AC}	2 × positive	analog	09.7781.000
AG 30	230 V_{AC}	2 × negative	analog	09.7782.000
AG 30	115 V_{AC}	2 × negative	analog	09.7783.000

Accessories:	Signalling cable K1, schielded, for clocking	
	5 m, with plug	06.8941.000
	10 m, with plug	06.8941.001
	20 m, with plug	06.8941.002
	Round plug	X-0616
	Angle plug	X-5718
AG 30 with remote control only	Signalling cable K5, shielded, for connection to remote control box	
	5 m, with plug	06.8911.000
	10 m, with plug	06.8911.001
	20 m, with plug	06.8911.002

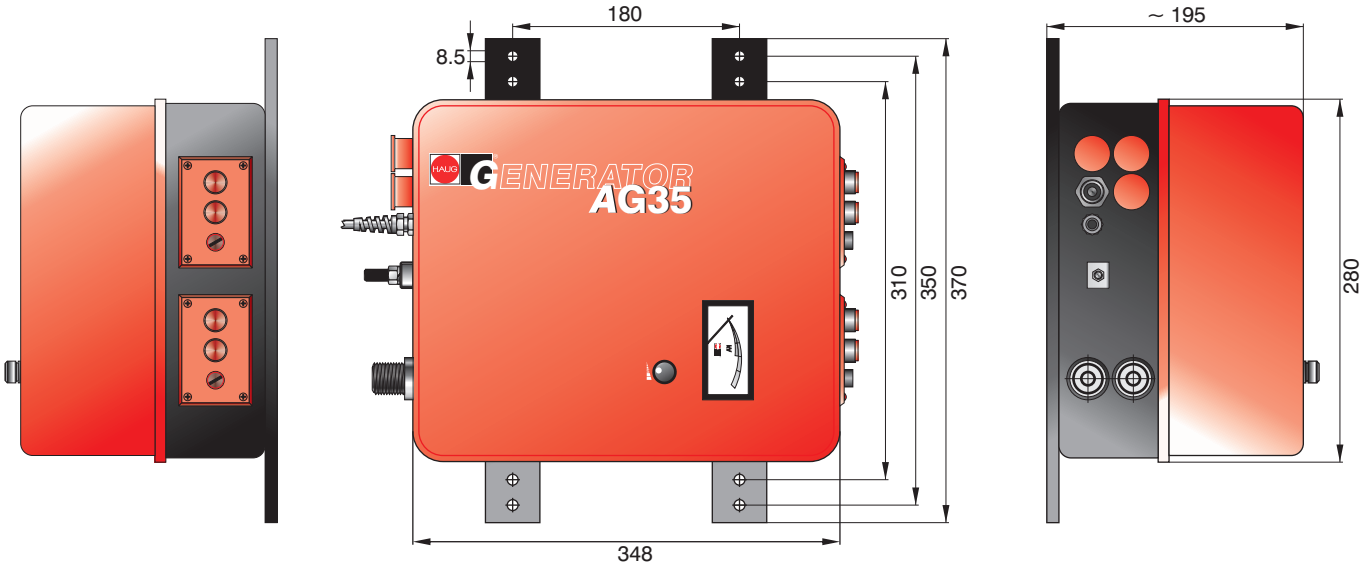
Generator AG 35

Beside its two high-voltage terminals for the charging section, this unit also offers a discharge section with four high voltage terminals and electronic fault and performance monitor.

The electronic voltage adjustment is steppless, and there is an analog voltage output display integrated into the unit.

Technical data

Dimensions:	390 × 280 × 210 mm (L×W×H)
Type of protection:	IP 54
Protection class:	I
Rated frequency:	50 – 60 Hz
Power consumption:	approx. 100 VA
Rated output voltage	
Charging:	approx. 40 kV_{DC}
Discharging:	approx. 7–8 kV_{AC}
Short-circuit output current	
Charging:	$I_k \leq 0.8$ mA
Discharging:	$I_k \leq 5$ mA
Connectable length: (discharging)	max. 18 m (ionizing unit incl. HV-cable)
Operating temperature:	+5°C to +45°C
Storage/transport temperature:	-15°C to +60°C
Weight:	14 kg
Mains cable:	2.6 m, fixed to the device



Types	Supply voltage	Charging positive / negative	Dishcarging	Display	Order-No.
AG 35	230 V_{AC}	2 × positive	4 ×	analog	09.7635.200
AG 35	115 V_{AC}	2 × positive	4 ×	analog	09.7637.200
AG 35	230 V_{AC}	2 × negative	4 ×	analog	09.7636.200
AG 35	115 V_{AC}	2 × negative	4 ×	analog	09.7638.200

Accessories:	Signalling cable K1, shielded	
	5 m, with plug	06.8941.000
	10 m, with plug	06.8941.001
	20 m, with plug	06.8941.002
	Round plug	X-0616
	Angle plug	X-5718

Generator AG 50

The charging generator **AG 50** provides excellent performance with small dimensions. The adjustable high voltage output enables the operation in a voltage-stabilized mode (figure 1).

Two large digital display indicates the high voltage output and the current output. In addition, they signals the states "Overload" and "High voltage output is switched off.“

A signaling socket is the interface to a machine control system or a control console: The high voltage output can be monitored and clocking can be switched back (reset).

The **AG 50** is equipped with a function monitoring. This continuously monitors the components of the ionizing-system, from the charging generator via the high-voltage cables up to the connected charging electrodes.

In the case of short circuit or spark formation, for example by defective cable insulations, the high voltage output will be switched off. This state will be signaled at the signaling socket and via the digital displays.

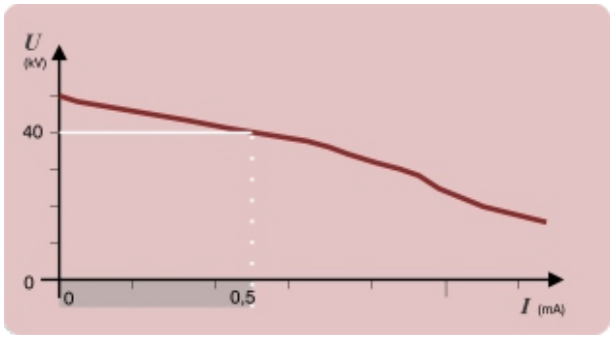


fig. 1: voltage stabilized mode

For example: The high voltage output is set to 40 kV. Up to an output current of approximately 0.5 mA, the high voltage output at the connected charging electrodes remains at 40 kV. Thereafter, the voltage drops in accordance with the electronic power limit and reaching the power limit is indicated.

Technical data

Type of protection:	IP 54
Protection class:	I
Supply voltage:	100 — 240 V_{AC} (50 - 60 Hz)
Mains cable: (fixed to the device)	2.6 m
Power consumption:	50 VA
Output voltage approx.:	0 — 50 kV_{DC}
Short-circuit output curren:	≤ 2 mA
Signalling socket:	K1
Signalling contacts load rating:	25 V_{AC} / 35 V_{DC} ≤ 50 mA
HV-terminals:	2
Weight:	8,5 kg
Dimensions: (L x H x B)	240 x 150 x 280 mm
Operating temperature:	+5 °C — +45 °C
Storage/transport temperature:	-15 °C — +60 °C

Types	Supply voltage	Charging positive / negative	Signaling socket	Display	Order-No.
AG 50	100 — 240 V_{AC}	2 × positive	K1	digital	09.8400.000
AG 50	100 — 240 V_{AC}	2 × negative	K1	digital	09.8402.000

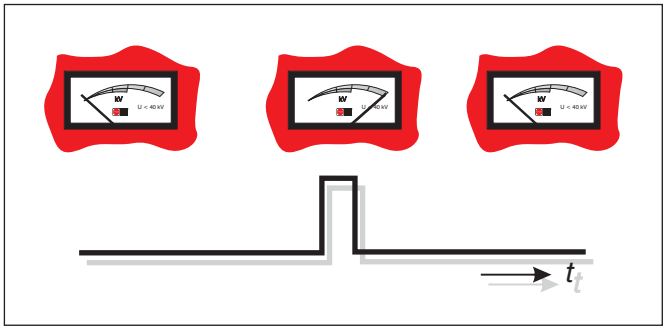
Accessories:	Signalling cable K1, shielded	
	5 m, with plug	06.8941.000
	10 m, with plug	06.8941.001
	20 m, with plug	06.8941.002
	Round plug	X-0616
	Angle plug	X-5718

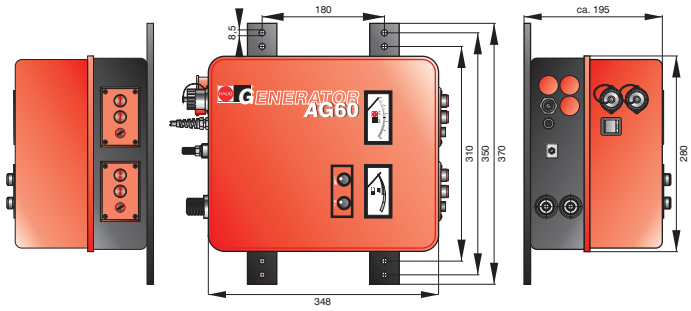
Generator AG 60

The charging generator **AG 60** generates an adjustable high voltage of 40 kV_{DC}. The unit is available with positive and negative polarity. The voltage and the actual current are indicated on the integrated measuring instruments.

The high voltage the current threshold can be set using two separate potentiometers. If the actual current exceeds the set value, an error message is triggered and the high voltage is switched of.

The charging section of the charging generator AG 60 can be pulsed externally. The discharging section allows a signalling device to be controlled using the integrated signalling socket.





Technical data

Dimensions:	390 × 280 × 210 mm (L×W×H)
Type of protection:	IP 54
Protection class:	I
Rated frequency:	50 – 60 Hz
Power consumption:	approx. 140 VA
Output voltage	
Charge:	approx. 40 kV_{DC}
Discharge:	approx. 7 – 8 kV_{AC}
Short-circuit output current	
Charge:	$I_k \leq 4.5$ mA
Discharge:	$I_k \leq 5$ mA
Signalling contacts monitoring:	Load rating 24 V_{AC} / 35 V_{DC}; max. 50 mA
Connectable length (discharge):	max. 18 m (ionizing unit incl. HV-cable)
Operating temperature:	+5 °C to +45 °C
Storage/transport temperature:	-15 °C to +60 °C
Weight:	16 kg
Mains cable:	2.6 m, fixed to the device

Types	Supply voltage	Charging positive / negative	Discharging	Display	Order-No.
AG 60	230 V_{AC}	2 x positive	4 × disch. Multistat	analog	09.7660.200
AG 60	115 V_{AC}	2 x positive	4 × disch. Multistat	analog	09.7661.200
AG 60	230 V_{AC}	2 x negative	4 × disch. Multistat	analog	09.7662.200
AG 60	115 V_{AC}	2 x negative	4 × disch. Multistat	analog	09.7663.200

Accessories:	Signalling cable K1, shielded	
	5 m, with plug	06.8941.000
	10 m, with plug	06.8941.001
	20 m, with plug	06.8941.002
	Round plug	X-0616
	Angle plug	X-5718

Generator AGW (PUR Profibus)

The charging generator **AGW** / **AGW PUR Profibus** gene-rates a stabilized adjustable high voltage. The units are available with positive and negative polarity.

On the **AGW**, the voltage and the actual current are indicated on the integrated digital measuring instruments. In the case of the **AGW PUR Profibus**, these measured values can also be output through the bus system.

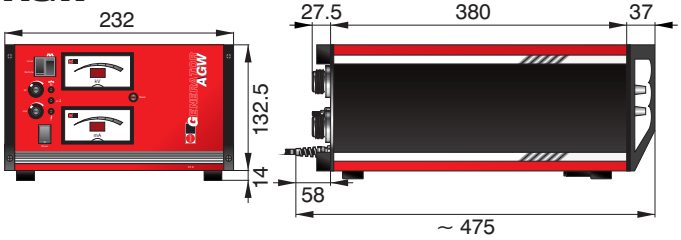
The output voltage and the maximum output current of the **AGW** can be set optionally using two potentiometers or an external control voltage. The charging generator **AGW** can be pulsed externally. The integrated communications socket allows a signalling device to be controlled.

The **AGW PUR Profibus** allows the output voltage and the maximum current to be adjusted through the bus system. All functions of this unit can be controlled via a Profibus system.

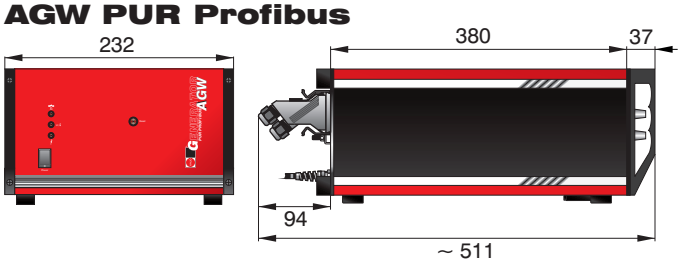
Technical data

Type of protection:	IP 30
Class of protection:	I
Power consumption:	140 VA
Rated frequency:	50 – 60 Hz
Rated output voltage:	25 kV_{DC}
Output voltage:	max. 2.5 mA
External control voltage:	0 – 10 V
Load rating signalling contacts:	24 V_{AC} / 35 V_{DC}; max. 50mA
HV-terminals:	2
Operating temperature:	+5 °C to +45 °C
Storage/transport temperature:	-15 °C to +60 °C
Weight:	7.5 kg
Mains cable:	2.6 m; fixed to the device

AGW



AGW PUR Profibus



Typen	Supply voltage	Charging	Display	Extras	Order-No.
AGW	230 V_{AC}	2 × positive	digital/analog	-	09.7715.001
AGW	115 V_{AC}	2 × positive	digital/analog	-	09.7716.001
AGW	230 V_{AC}	2 × negative	digital/analog	-	09.7717.001
AGW	115 V_{AC}	2 × negative	digital/analog	-	09.7718.001
AGW DUO	230 V_{AC}	2 × 2 bipolar	digital/analog	external	09.7740.000
AGW DUO	115 V_{AC}	2 × 2 bipolar	digital/analog	control voltage	09.7741.000
AGW PUR Profibus	230 V_{AC}	2 × positive	-	-	09.7715.110
	230 V_{AC}	2 × negative	-	-	09.7717.110

Accessories:	Signalling cable K4, shielded	
	5 m, with control signalling plug	06.8970.000
	10 m, with control signalling plug	06.8970.001
	20 m, with control signalling plug	06.8970.002
	Control signalling plug	X-6155
	Bus plug Profibus	X-7431

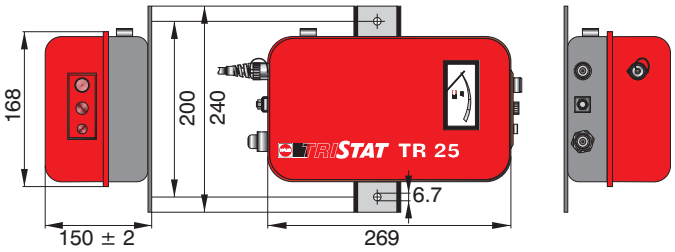
Generator Tristat TR 15 / TR 25

The Charging generators **Tristat TR 15** / **TR 25** supply an adjustable high voltage of approx. 22 kV_{DC}. The units are available in positive or negative poparity. In case of the **TR 25**, the voltage set is displayed on the integrated measuring instrument. The high voltage can be steplessly adjusted on a potentiometer. The charging generators Tristat **TR 15** / **TR 25** can be pulsed using an external control.

The HAUG Chraging generators **Tristat TR 15** or **TR 25** are high-voltage generators developed specifically for the supply of charging electrodes (types **ALT**, **ALM** and **ANT**).

Technical data

Type of protection:	IP 54
Protection class:	I
Rated frequency:	50 – 60 Hz
Rated output voltage:	approx. 22 kV_{DC}
Short-circuit output current:	$I_k \leq 3$ mA
HV-terminals:	1
Power consumption:	approx. 15 VA
Pulse frequency:	1 Hz, pulse via floating normally open contact
Operating temperature:	+5 °C to +45 °C
Storage/transport temperature:	-15 °C to +60 °C
Weight:	7 kg
Mains cable:	2.6 m, fixed to the device



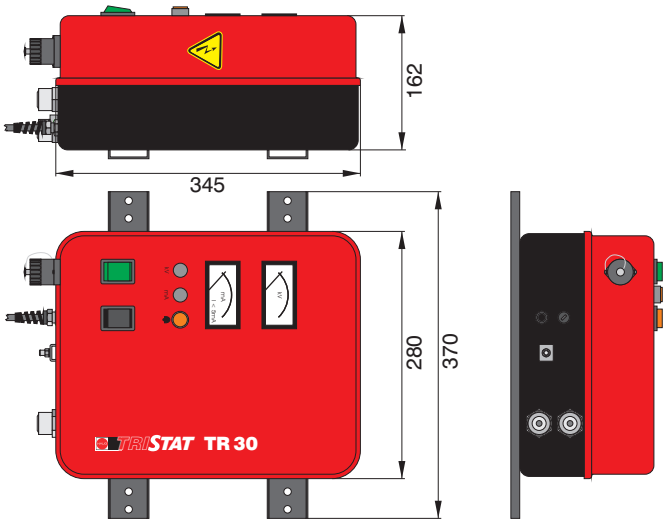
Types	Supply voltage	Charging	Display	Clocking socket	Fixed clocking cable	Order-No.
TR 15	230 V_{AC}	positive	-	-	yes	09.7640.000
TR 15	115 V_{AC}	positive	-	-	yes	09.7641.000
TR 15	230 V_{AC}	negative	-	-	yes	09.7642.000
TR 15	115 V_{AC}	negative	-	-	yes	09.7643.000
TR 25	230 V_{AC}	positive	HV-display	yes	-	09.7650.000
TR 25	115 V_{AC}	positive	HV-display	yes	-	09.7651.000
TR 25	230 V_{AC}	negative	HV-display	yes	-	09.7652.000
TR 25	230 V_{AC}	negative	HV-display	yes	-	09.7653.000

Accessories:	Signalling cable K1, shielded	
	5 m, with round plug	06.8941.000
	10 m, with round plug	06.8941.001
	20 m, with round plug	06.8941.002
	Round plug	X-0616
	Angle plug	X-5718

Generator Tristat TR 30

The charging generator TR 30 is a high-voltage generator which was specially developed to feed type ALM triodes. The current threshold of this device can be adjusted. The output voltage can also be controlled. An analog display shows the current and the voltage.

The device has two high-voltage terminals for the connection of **ALM, ALT** or **ANT** charging electrodes.



Technical data

Dimensions:	370 × 370 × 162 mm
Type of protection:	IP 54
Protection class:	I
Rated frequency:	50 – 60 Hz
Power consumption:	approx. 50 VA
Rated output voltage:	approx. 25 $kV_{=}$
Short-circuit output current:	$I_k \leq 3.3$ mA
HV-terminals:	2
Pulse frequency:	1 Hz , via floating normally open contact
Operating temperature:	+5 °C to +45 °C
Storage/transport temperature:	-15 °C to +60 °C
Weight:	13 kg
Mains cable:	2.6 m, fixed to the device

Typen	Supply voltage	Charging	Display	Extras	Order-No.
TR 30	230 V_{AC}	positive	analog	-	09.7710.200
TR 30	115 V_{AC}	positive	analog	-	09.7711.200
TR 30	230 V_{AC}	negative	analog	-	09.7712.200
TR 30	115 V_{AC}	negative	analog	-	09.7713.300
TR 30	230 V_{AC}	positive	digital	-	09.7900.000
TR 30	115 V_{AC}	positive	digital	-	09.7901.000
TR 30	230 V_{AC}	negative	digital	-	09.7902.000
TR 30	230 V_{AC}	negative	digital	-	09.7903.000
TR 30	230 V_{AC}	positive	analog	with remote control	09.7790.000
TR 30	115 V_{AC}	positive	analog	with remote control	09.7791.000
TR 30	230 V_{AC}	negative	analog	with remote control	09.7792.000
TR 30	115 V_{AC}	negative	analog	with remote control	09.7793.000

Accessories:	Signalling cable K1, shielded	
	5 m, with round plug	06.8941.000
	10 m, with round plug	06.8941.001
	20 m, with round plug	06.8941.002
	Round plug	X-0616
	Angle plug	X-5718
	Signalling cable K 5, shielded	
	5 m, with plug	06.8911.000
	10 m, with plug	06.8911.001
	20 m, with plug	06.8911.002

Generators AG / TR / HW 150

The charging generator **AG 150** is available with either positive or negative polarity. The direct voltage output of the charging generator can be set steplessly, and a remote option is also available.

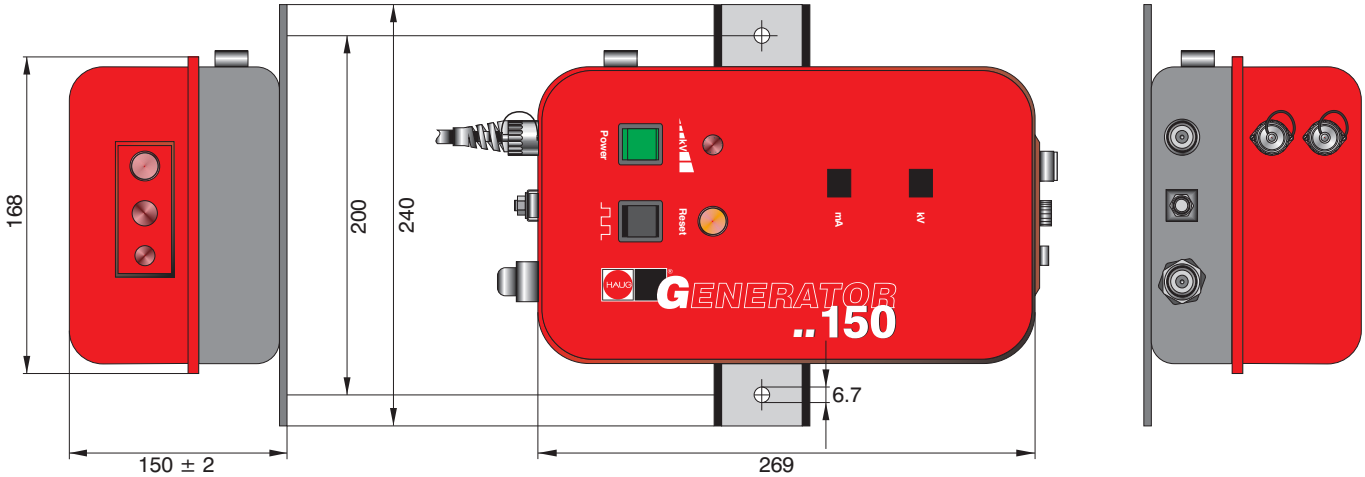
The charging bar **ALS** is suitable for connection to the charging generator **AG 150**.

The charging generator **TR 150** is available eith in positive or negative polarity. The direct voltage output of the charging generator can be set steplessly, and a remote option is also available.

The triodes ALT and ALM are suitable for connection to the charging generator **TR 150**.

The resistance-coupled charging generator **HW 150** is available in either positive or negative polarity. The direct voltage output of the charging generator can be set stepplessly, and a remote option is also available.

The resistance-coupled charging electrode ALW is suitable for connection to the charging generator **HW 150**.



Generators AG / TR / HW 150

Technical data

Dimensions:	270 × 170 × 150 (B×H×T)
Type of protection:	IP 54
Protection class:	I
HV-terminals:	1 (AG)
Power consumption:	approx. 30 VA
Output voltage:	$U_{max.}$ = 15 kV ±10%
Output current:	$I_{max.}$ = 0.3 mA ±15%
Signalling contacts monitoring:	Contact rating max. 24 V_{AC} / 35 V_{DC}, max. 50 mA
Pulse frequency via pulse input:	max. 1 Hz (max. 10^6 cycles)
Recorery time after overload switch-off:	< 10 s
Operating temperature:	+5 °C to +45 °C
Storage/transport temperature:	-15 °C to +60 °C
Weight:	7 kg
Mains cable:	2,6 m, fixed to the device

Variants

	Digital display	Over current	Remote control	Pulsing	Reset	Monitor output
A	Voltage and current	Switch-off	-	floating normally open contact	floating normally open contact	0 – 10 V
S	-	Switch-off	0 – 10 V	24 V_{DC}	24 V_{DC}	0 – 10 V
P	-	Switch-off	4 – 20 mA	floating normally open contact	floating normally open contact	4 – 20 mA

Types	Supply voltage	Charging positive / negative	Display	Extras	Order-No.
AG 150 A **AG 150 A**	230 V_{AC} 115 V_{AC}	1 × positive 1 × negative	digital digital	- -	09.7770.001 09.7772.001
AG 150 S **AG 150 S**	230 V_{AC} 115 V_{AC}	1 × positive 1 × negative	- -	- -	09.7770.002 09.7772.000
HW 150 A **HW 150 A**	230 V_{AC} 115 V_{AC}	1 × positive 1 × negative	digital digital	- -	09.7760.001 09.7762.000
HW 150 B **HW 150 B**	230 V_{AC} 115 V_{AC}	1 × positive 1 × negative	- -	with profibus with profibus	09.7760.004 09.7762.004
HW 150 S **HW 150 S**	230 V_{AC} 115 V_{AC}	1 × positive 1 × negative	- -	remote controlled remote controlled	09.7760.002 09.7762.002
TR 150 A **TR 150 A**	230 V_{AC} 115 V_{AC}	1 × positive 1 × negative	digital digital	triggering via potentiometer	09.7720.001 09.7722.001
TR 150 P **TR 150 P**	230 V_{AC} 115 V_{AC}	1 × positive 1 × negative	- -	triggering with 4 – 20 mA	09.7720.002 09.7722.002
TR 150 S **TR 150 S**	230 V_{AC} 115 V_{AC}	1 × positive 1 × negative	- -	triggering with 0 – 10 V	09.7720.003 09.7722.003

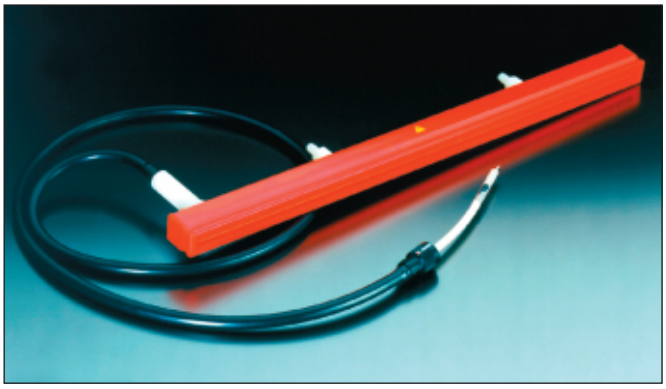
Accessories:	Signalling cable K1, shielded	
	5 m, with plug	06.8941.000
	10 m, with plug	06.8941.001
	20 m, with plug	06.8941.002
	Round plug	X-0616
	Angle plug	X-5718
	Signalling cable K2, shielded	
	5 m, mit cable plug	06.6198.000
	10 m, mit cable plug	06.6198.001
	20 m, mit cable plug	06.6198.002
	Cable plug	X-6198
	Cable angle plug	X-6236

Charging bars ALS A / ALS R

The HAUG charging bar **ALS** is suitable for most applications where material webs are to be fixed relative to each other. The charging bar can be supplied using any HAUG AG-series charging generator.

The charging bar **ALS** must be attached at a distance of approx. 10 – 20 mm above the material to be charged, directly above the counter-electrode. The grounded counter-electrode must make contact with the material to be charged.

The charging bar **ALS** is available both with axial and radial exit of the high-voltage cable. The high-voltage cable and the pin strip can be simply replaced.



Technical data

Dimensions: 30 × 40 mm (ALS A, ALS R)

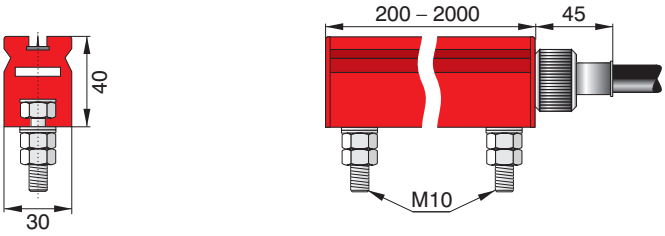
Bar length: available from 200 mm to 2000 mm

Operting temperature: +5 °C to + 45 °C

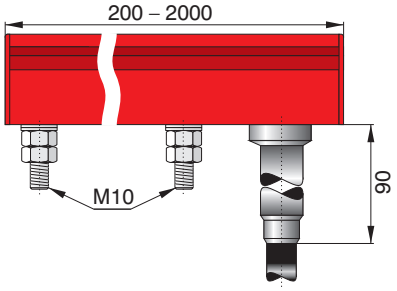
Storage/transport temperature: -15 °C to +60 °C

Construction: special synthetic material made to stand high-voltage, compact desing, enclosed all round. Mounting screws M10×40, T-nut running the whole length of the bar, optimal installation possible

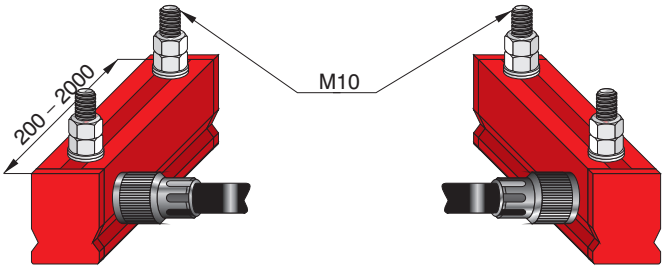
ALS A 08.8710.000



ALS R 08.8711.000
radial



ALS R radial **right** 08.8725.000 **left** 08.8726.000



Types	Lengths	Specification	Order-No.
ALS A	200 – 2.000	standard version with detachable HC-cable, axial cable connection	08.8710.000
ALS R	200 – 2.000	standard version with detachable HV-cable, radial cable connection	08.8711.000
ALS R	200 – 2.000	radial cable connection, cable outgoing on the right	08.8725.000
ALS R	200 – 2.000	radial cable connection, cable outgoing on the left	08.8726.000

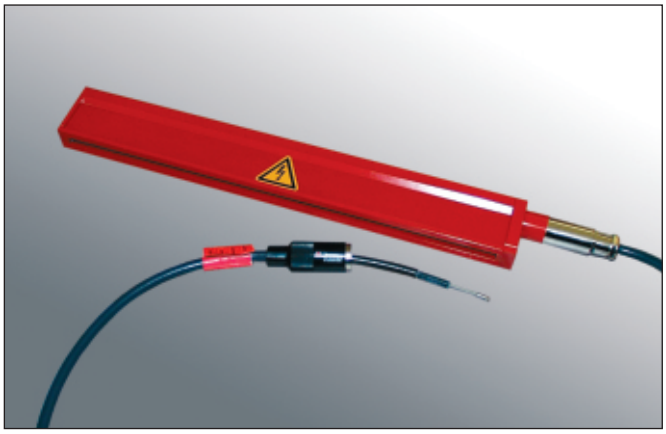
Accessories:	HV-cable for axial cable connections	06.2220.000
	HV-cable for radial cable connections	06.2225.000
	Single cable for ALS A	06.2220.001
	Single cable for ALS R	06.2225.001
	Pin strip for ALS A, exchangeable	06.8938.001
	Pin strip for ALS R, exchangeable	06.8938.002
	Cover for partial screening	X-5099
	Bar holder (plastics), straight version	10.0197.000
	Bar holder (plastics), angle version	10.0198.000
	Mounting screw (plastics) M10	X-4357
	Nut (plastics) M10	X-4185
	Disc (plastics) Ø 10.5	X-4145

Resistance-coupled charging electrode ALW

By limiing the current using resistors, the generation of hard sparks can be reliably prevented, thus signi-ficantly reducing possible damage to or impairment of electronic machine controls.

The charging electrode **ALW** is connected with a detachable, shielded high-voltage cable and can be supplied with a radial or axial HV-connection. The bar profile is manufactured from glass fiber reinforced plastics which is also suitable for use at higher temperatures. A t-slot along the back of the **ALW** allows convenient installation over the whole width of the bar.

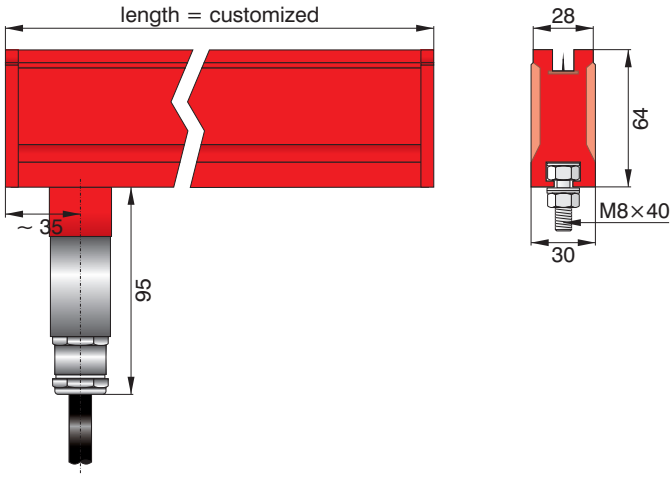
The resistance-coupled charging electrode ALW is recommended, in particular, for applications with increased risk of spark generation and consequently of damage to high-grade surfaces or electronoc components. Conceivable scenarios include situations where the counter-electrode required for charging is not always covered completely by the material to be charged, e.g. where two-dimensional material webs of varying width are charged or where there is an uncovered gap between cut or individual materials on the substrate acting as counter-electrode.



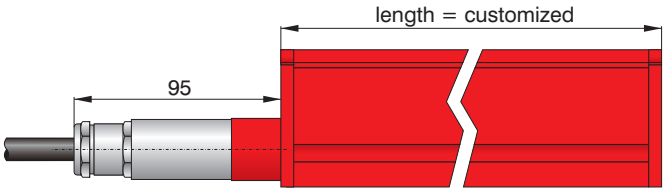
Technical data

Bar profile:	glass fibre reinforced plastics, compact design
Dimensions:	30 × 64 mm
Bar length:	minimum length: 80 mm maximum length: 2000 mm length intervals: 30 mm

ALW radial connection



ALW axial connection



Types	Lengths	Specification	Order-No.
ALW A	80 – 2.000	axial cable connection	08.8790.000
ALW R	80 – 2.000	radial cable connection	08.8791.000

Accessories:	HV-cable for axial connections HV-cable for radial connections	06.2268.000 06.2269.000
	Single cable for ALW A Single cable for ALW R	06.2268.001 06.2269.001

Charging triodes ALT / ANT / ALM

HAUG charging triodes are characterized by a very homogenous field at the charging pins. As a result of the special geometric design of the charging triode, spark-overs to the counter-electrode are impossible. The charging triode can therefore be mounted at a distance of as little as approx. 10 mm from the material to be charged. The charging triode provides a very high charge even at low voltages and thus ensures very good adhesion.

Due to their simple design using magnetic clamps, worn charging pins can be easily exchanged. The charging triode is connected using a shielded high-voltage cable.

The triodes **ANT** and **ALM** / **ALT** are suitable for use for connection to charging generators of the TR-series.

Anti-neck-in-Triode ANT

The anti-neck-in-triode **ANT** guarantees the optimal exploitation of the rim of the fusing field and simultaneously serves to suppress the well-known "neck-in-effect" in the extrusion of film. The triode is heat-resistant up to approx. +130 °C.

Technical data ANT

Operating temperature: +5 °C to +130 °C

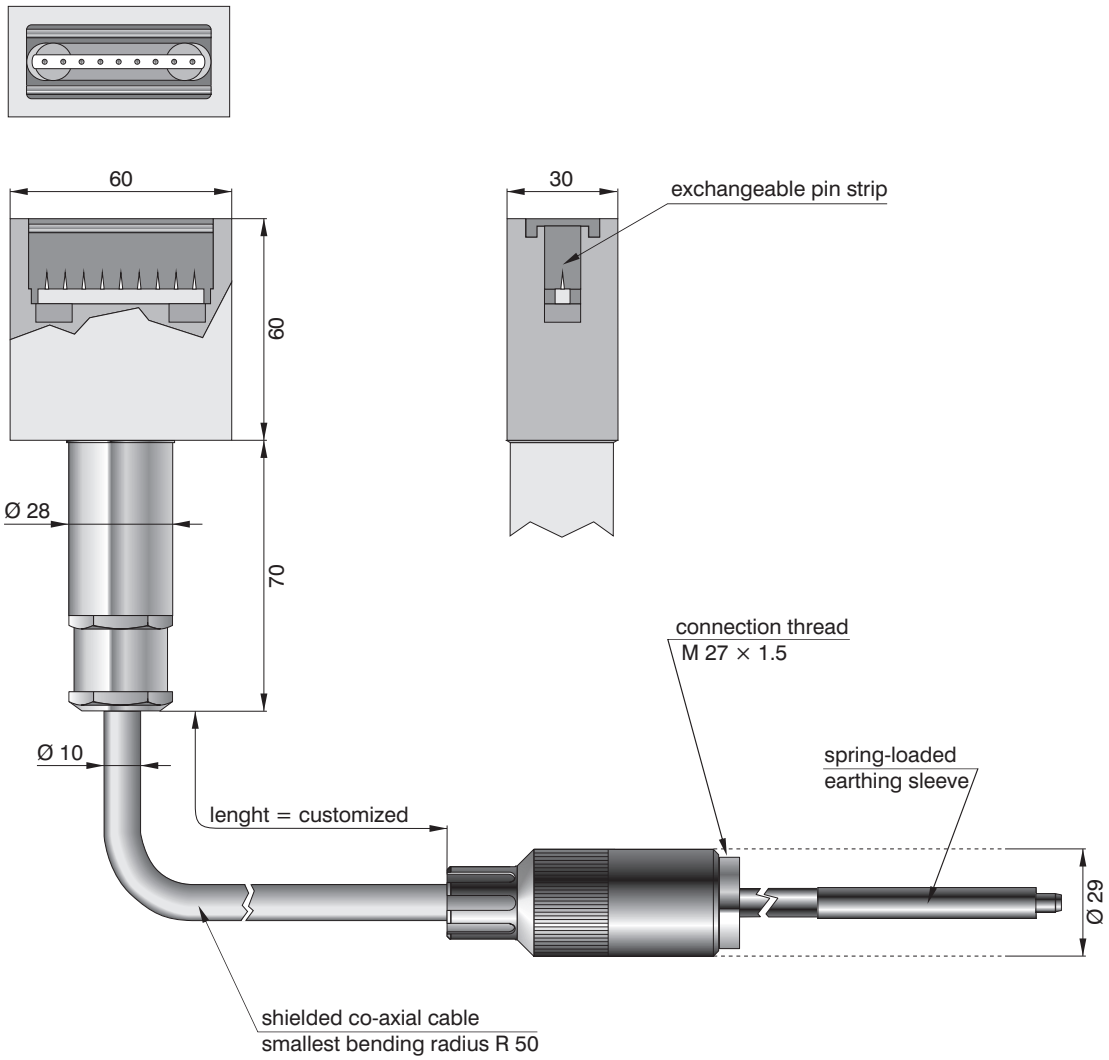
Storage/transport temperature: -15 °C to +60 °C

Technical data ALM / ALT

Operating temperature: +5 °C to +50 °C

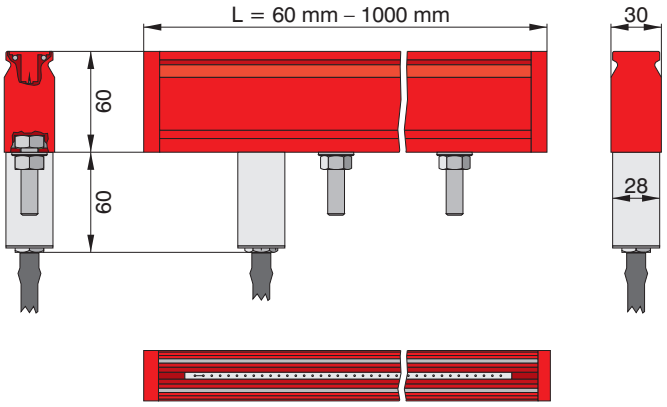
Storage/transport temperature: -15 °C to +60 °C

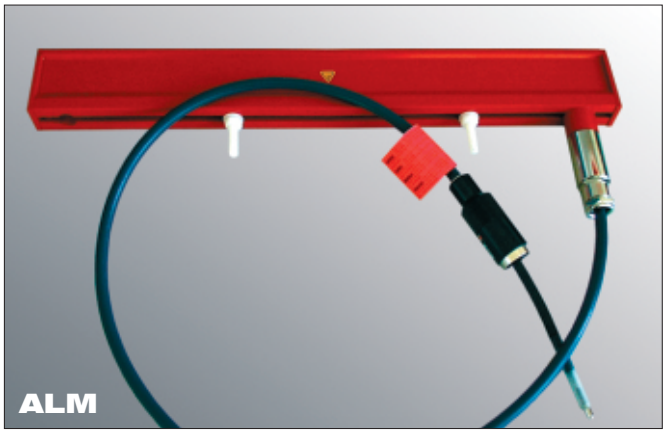
ALT



Charging triodes ALT / ANT / ALM

ALM





Types	Dimensions	Specification	Order-No.
ALT	60 × 50 × 30	with co-axial contact, cable outgoing centered	08.8650.000

Accessoreis:	Pin strip, exchangeable HV-cable, standard length 2 m Single cable, co-axial	X-1696 06.2250.200 06.2250.001

Type	Dimensions	Specification	Order-No.
ANT	110 × 60 × 30	with co-axial contact, cable outgoing centered	08.8750.110

Accessories:	Pin strip, exchangeable HV-cable, standard length 2 m Single cable, co-axial	X-2314 06.2252.200 06.2252.001

Types	Dimensions	Specifications	Order-No.
ALM A	60 × 30	Length 200 – 1000 mm, with co-axial contact, axial cable outgoing	08.8752.000
ALM R	60 × 30	Length 200 – 1000 mm, with co-axial contact, radial cable outgoing	08.8751.000
ALM GFK A	64 × 30	Length 200 – 4000 mm, reinforced version, with co-axial contact, axial cable outgoing	08.8781.000
ALM GFK R	64 × 30	Length 200 – 4000 mm, reinforced version, with co-axial contact, radial cable outgoing	08.8780.000

Accessories:	Pin strip, exchangeable HV-cable, standard length 2 m Single cable, co-axial Cover for partial screening	06.8938.001 06.2251.200 06.2254.001 X-5099