



HV Impulse Attenuator

Features and Benefits

- Designed for HV impulse testing
- Interface between voltage divider and measurement system
- LEMO input; BNC output
- Passive attenuator 50:1
- 2 kV RMS input
- Output matching with ISOBE5600t and 6600HV

HV impulse attenuator

The High Voltage impulse attenuator together with the ISOBE5600 transient recorder and the Perception High Voltage Impulse Analysis option (HV-IA) form an application specific measurement solution.

Together the three components offer a cost effective solution for the HV impulse testing applications (Lightning impulse, Switching impulse and Current impulse).

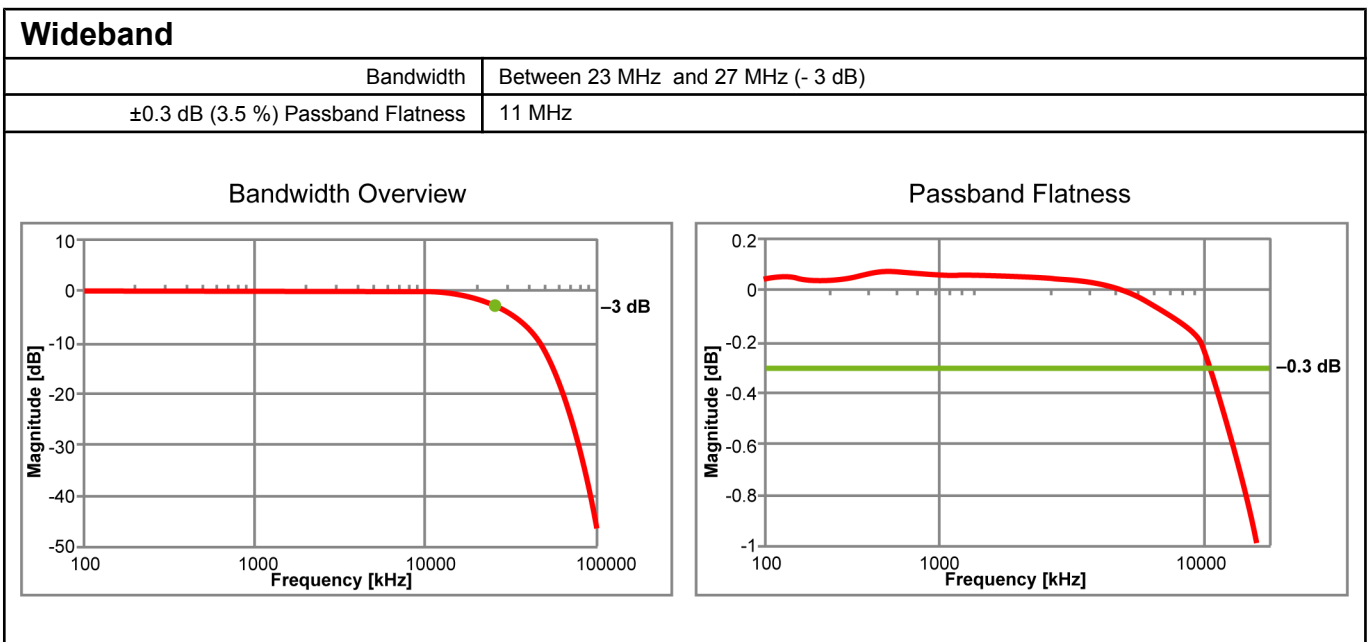
The HV impulse attenuator provides a simple and effective method of interfacing with the customer installation (voltage divider).

The input LEMO connector type of the HV impulse attenuator matches the commonly used output connector type of voltage dividers while the output BNC connector matches the ISOBE5600t or 6600HV.

With an input voltage of 2 kV RMS and an attenuation ratio of 50:1, the typical output signals of the voltage divider in the test hall are reduced to more suitable amplitude levels. The HV impulse attenuators high input impedance of 2 MΩ allows the unit to work with capacitive as well as resistive voltage dividers. In cases where the voltage divider needs to feed signal into a low impedance input, the feed through LEMO connector can be used for an appropriate termination.

Capabilities Overview	
Model	G045
Attenuator	
Input/output ratio ⁽¹⁾	50:1 Including termination resistor of 1 MΩ ± 2 %; connected to the BNC output
DC gain error ⁽¹⁾	± 0.25 % Including termination resistor of 1 MΩ ± 2 %; connected to the BNC output
Gain error drift	± 10 ppm / °C (± 18 ppm / °F)
Input	
Maximum Voltage	2 kV RMS
Impedance	2.0 MΩ ± 0.1 % // 27 pF ± 10 % Including termination resistor of 1 MΩ ± 2 %; connected to the BNC output
Connector	LEMO - ERA.4S.250.CTL
Termination connector	LEMO - ERA.4S.250.CTL
Output	
Connector	Coaxial BNC adapter
Cable ⁽²⁾	RG58 Coaxial, 0.25 m length, 50 Ω
Shielding	Aluminum ⁽³⁾

- (1) The **DC gain error** is achieved when the impulse attenuator is connected to any 6600HV or ISOBE5600t unit. As all units have slightly different input impedance this will affect the overall **DC gain error**.
If higher DC accuracy is required, one can combine the impulse attenuator with a 6600HV or ISOBE5600t and measure the attenuation ratio exactly for this given combination. The result may be slightly different to 50:1, for example the result could be 50.035:1. This result is only valid for the given combination of equipment. The accuracy will then mostly depend on the calibration setup and not the possible variation of input impedances.
- (2) Use only the cable supplied by HBM. Changing this cable may impact the trimming of the instrument defined in the **Pulse Response Calibration** procedure.
- (3) Housing machined out of a solid block of Aluminum, EMI gaskets between bottom part of housing and cover, cover fixed with 18 screws.



Dimensions	
Width	113 mm (4.45")
Depth inc. connector	118 mm (4.64") 130 mm (5.11")
Height	56.6 mm (2.22")
Weight	1150 grams

Dimensions

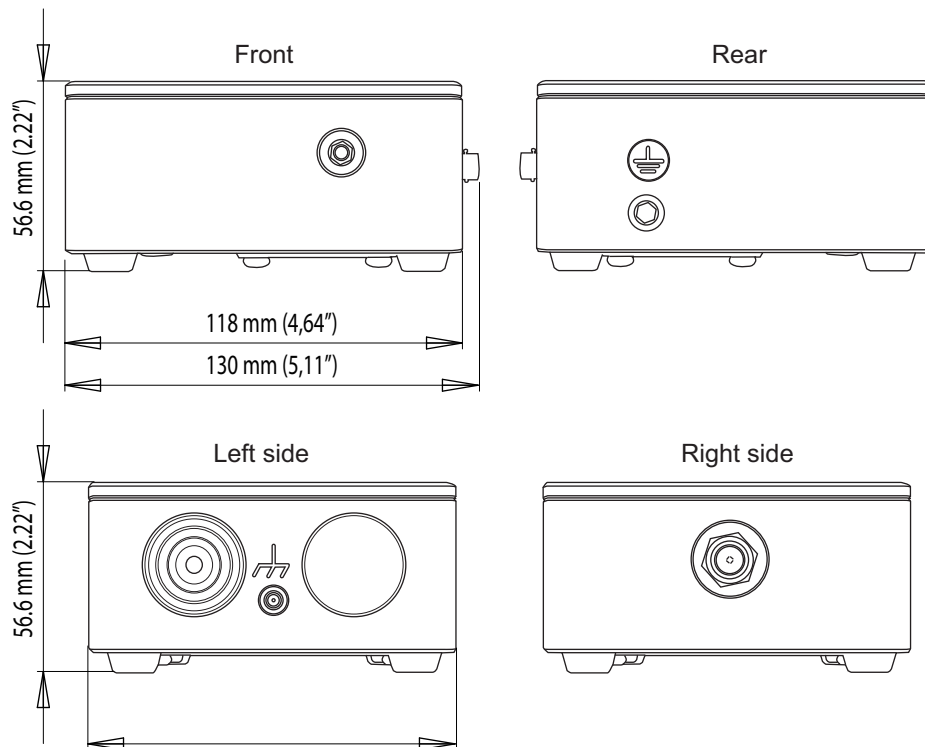


Figure 1.1: Dimensions of the HV Impulse Attenuator

Environmental Specifications

Shock: Acc. IEC 60068-2-27

Operational	Half-sine 10 g/11 ms; 3-axis, tested in positive and negative direction
Non-Operational	Half-sine 25 g/6 ms; 3-axis, tested in positive and negative direction

Vibration: Acc. IEC 60068-2-34

Operational	1 g RMS, ½ h; 3-axis, random 5 to 500 Hz
Non-Operational	2 g RMS, 1 h; 3-axis, random 5 to 500 Hz

Temperature range

Operational	-15 °C to 50 °C (5 °F to 122 °F)
Non-Operational (Storage)	-20 °C to 60 °C (-4 to 140 °F)

Relative humidity 0 % to 80 %; non-condensing; operational

Protection class IP20


Altitude Maximum 2000 m; (6562 feet) operational

Operational environmental tests

Cold test IEC60068-2-1 Test Ad	-5 °C (+23 °F) for 2 hours
Dry Heat test IEC-60068-2-2 Test Bd	+40 °C (+104 °F) for 2 hours
Damp Heat test IEC60068-2-3 Test Ca	+40 °C (+104 °F), humidity >93 % RH for 4 days

Non-Operational (Storage) environmental tests

Cold test IEC-60068-2-1 Test Ab	-25 °C (-13 °F) for 72 hours
Dry Heat test IEC-60068-2-2 Test Bd	+70 °C (+158 °F) humidity <50% RH for 96 hours
Change of Temperature Test IEC60068-2-14 Test Na	-25 °C to +70 °C (-13 °F to +158 °F), 5 Cycles Rate 2 to 3 minutes, Dwell time 3 hours
Damp Heat cyclic test IEC60068-2-30	+25 °C / +40 °C (+77 °F/ +104 °F), humidity >95/90 % RH
Test Db variant 1	6 Cycles, cycle duration 24 hours

Ordering Information			
Article		Description	Order No.
The High Voltage Impulse Attenuator		50:1 Impulse Attenuator for 6600HV and ISOBE5600; contains two LEMO ERA.4S. 250 input connectors, Accepts 4S.250 series male plug and offers a parallel feed-through connector for a terminator. Includes a BNC output cable and a blind connector cover.	1-G045-2

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