

ISOBE5600

Isolated Probe Systems

- ISOBE5600 Isolation system
- ISOBE5600 Transient recorder

Features and Benefits

ISOBE5600 Isolation system

- Cost-effective
- Fiber-optic isolation
- Analogue-in to analogue-out
- Isolation for existing systems

ISOBE5600 Transient recorder

- Transient recorder plus Isolation
- Up to 4 channels maximum
- Software controlled
- 1st Class price-performance

ISOBE5600 isolation system:

Offers external fiber-optic isolation for existing measurement systems. The ISOBE5600 isolated system comprises of a transmitter unit (ISOBE5600t or ISOBE5600tm) connected via fiber-optic cable to the ISOBE5600r receiver. The input as well as the output is an analog signal which makes this system as easy to use as a probe or sensor. There is no software involved, no data stored or recorded.

ISOBE5600 transient recorder:

Fiber-optic isolated transient recorder for up-to 4 channels. The ISOBE5600 transient recorder comprises of a transmitter unit (ISOBE5600t or ISOBE5600tm) connected via fiber-optic cable to the ISOBE5600m receiver unit with integrated memory for data acquisition..

This system requires the Perception software option to form a transient recorder and can perform single-sweep recordings.

The measured data is transferred from the receiver's memory to the PC after the recording is finished. Unlike other GenDAQ systems, there is no StatStream or Review-while-recording available.

The ISOBE5600 transient recorder is the perfect solution for high-voltage applications with up to 4 channels and is therefore the ideal replacement for SIGMA100HV.

Overall system specifications

Analog monitor output (Specification from Analog-In to Analog-Out)

Component	Unit Description	Value
Bandwidth ¹	@ - 3 dB (wideband)	20 MHz
	@ - 3 dB (filtered)	10 MHz
Pass band flatness ¹	DC to 1 MHz	± 0.3 dB (± 3.4 %)
	1 MHz to 10 MHz (wideband)	1 dB (± 11 %)
Rise time	@ max. bandwidth	18 ns
CMRR	@ 80 Hz	100 dB
MSE		0.3% FS ± 50 µV RTI
Offset error		0.3% FS ± 50 µV RTI
Noise (RMS)		0.07% FS ± 0.1mV RTI
Non-linearity		± 0.05 %
Propagation delay	Delay from input to output with 1 meter of optical cable	650 ns ± 50 ns
	Per added meter for additional cable length	5 ns

Notes

(1) See the following “Bandwidth plot” diagrams.

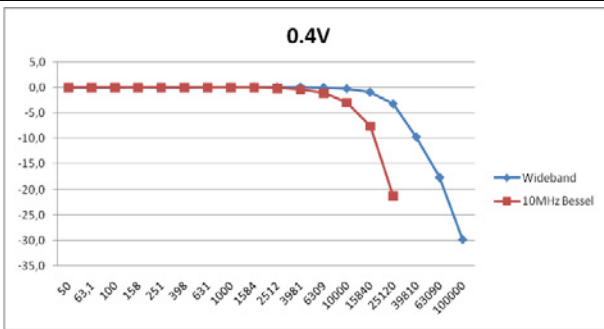


Figure 1.1: Bandwidth plot in 0.4 V range

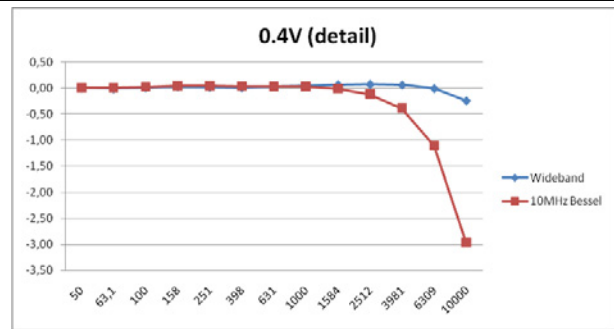


Figure 1.2: Bandwidth plot in 0.4 V range (detail)

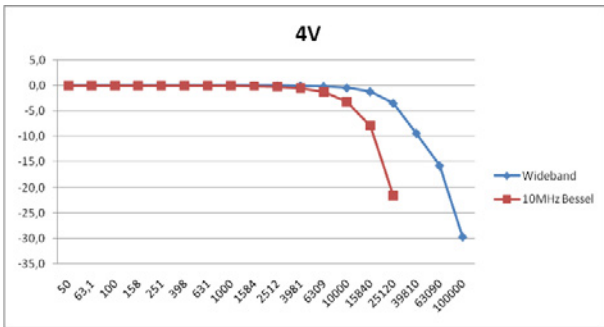


Figure 1.3: Bandwidth plot in 4 V range

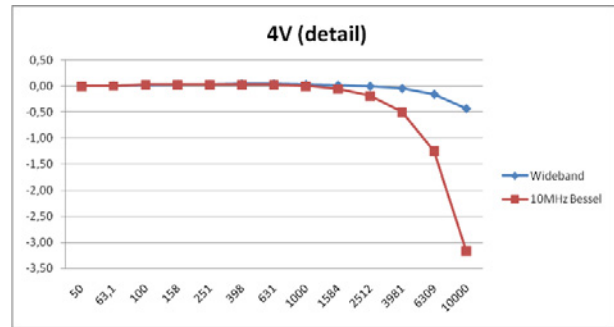


Figure 1.4: Bandwidth plot in 4 V range (detail)

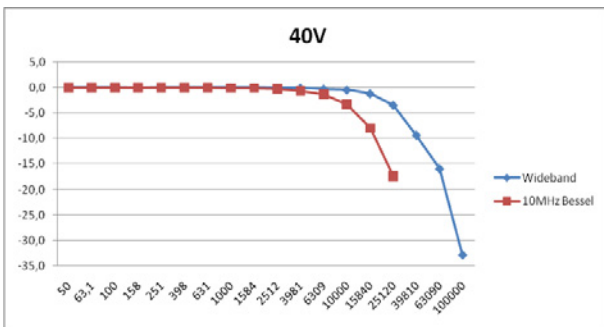


Figure 1.5: Bandwidth plot in 40 V

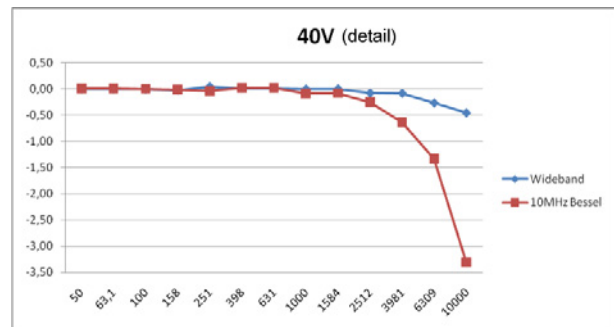


Figure 1.6: Bandwidth plot in 40 V range (detail)

Fiber-optic link		
Component	Unit Description	Value
Light source	Class 1 laser product	1
Connector	LC duplex	1
	Transfer rate	2 Gbit/s
	Wavelength	850 nm
Cable type	Multimode	50/125 μ m
Cable specifications	Isolation	10^{15} Ω /m
	Cable length	3 m, 15 m or 50 m
	Maximum length	50 m

Front-end specifications (Transmitter)		
Analog input section		
Component	Unit Description	Value
Channels	Per front-end	1
Input type	Single-ended to isolated common (unbalanced differential)	
Coupling	AC / DC / GND	
	AC coupling	1.6 Hz
Connector	Fully isolated BNC	1
Ranges	Full scale in 1, 2, 5 steps	± 100 mV to ± 50 V
Impedance		1 M Ω (± 2 %) // 38 pF (± 5 %)
Bandwidth	@ - 3 dB	25 MHz
CMRR	@ 80 Hz	100 dB
MSE	Maximum static error	0.1 % FS ± 50 μ V RTI
Offset error		0.1 % FS ± 50 μ V RTI
Noise (RMS)		0.05 % FS ± 0.1 mV RTI
Bias current		< 2 nA
Rise time		14 ns
Recovery time ¹	Within 10 % of full-scale	≤ 10 ns ²
	Within MSE specification	≤ 50 ns ²
Isolation		500 V _{peak}
Overload	Protected for ranges < ± 2 V	125 V _{peak}
	Protected for ranges $\geq \pm 2$ V	250 V _{peak}
Anti-alias filter	Low-pass at 10 MHz	6 th order Bessel

Notes

- (1) Measured with a 1 kHz square wave signal at an input range of 1 V, wideband.
(2) The Time, it takes to reach the original input, after a 200 % input overload.

Power requirement (ISOBE5600t)		
Component	Unit Description	Value
Battery	1x removable, rechargeable, Li-ion (2nd battery optional)	11.1 V @ 6600 mAh
Operation Time	1 battery	12 hours
Recharge	External charger (not included)	12.6 V DC, 2.5 to 4 Amps @ 25 °C (77 °F)

Power requirement (ISOBE5600tm)		
Component	Unit Description	Value
Power supply	12 VA maximum, Isolated up to 10 kV	115/230 VAC @ 47 - 63 Hz
Fuse(s)	Slow blow (T)	2 x 250 mA 5 x 20 mm
Battery	Internal, rechargeable, NiMH	12 V @ 300 mAh
Operation Time	Continuous (AC powered); 5 minutes (battery operated, with new and fully charged battery)	
Recharge	Built-in charger	

Consult www.hbm.com/highspeed for more information.

Physical and environmental specifications (transmitter)		
Component	Unit Description	Value
Dimensions	ISOBE5600tm:	
	Width including handles, etc.	175 mm (6.86")
	Depth	265 mm (10.44")
	Height	119 mm (4.69")
	ISOBE5600t:	
	Width including handles, etc.	175 mm (6.86")
	Depth	280 mm (11.3")
	Height	119 mm (4.69")

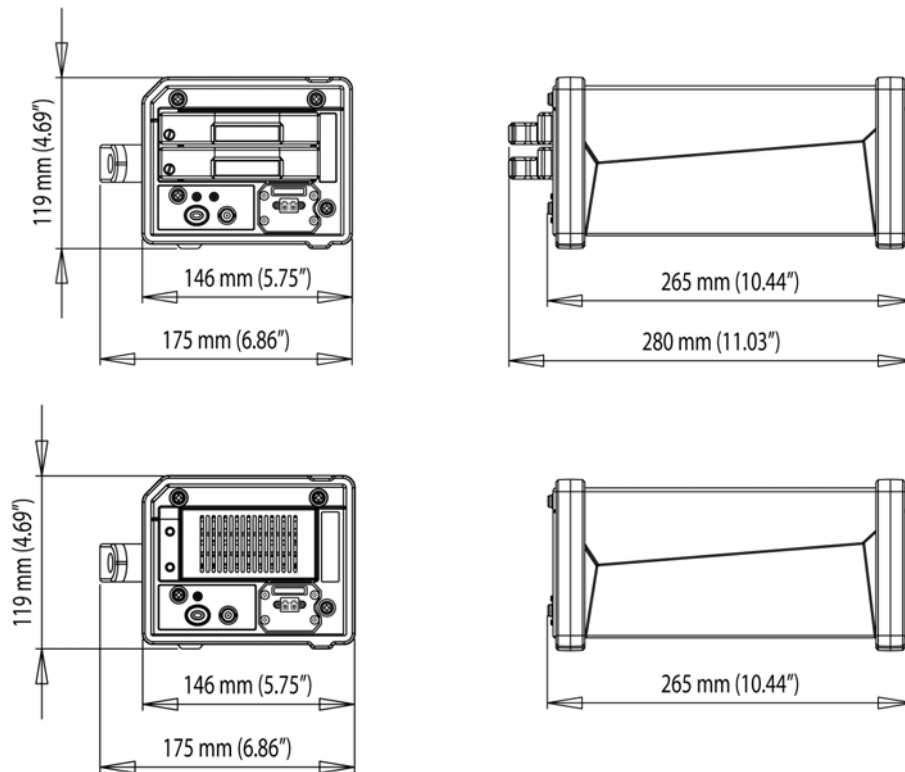


Figure 1.7: Dimensions ISOBE5600t (top) and ISOBE5600tm (bottom) frontends

Physical and environmental specifications (transmitter)		
Component	Unit Description	Value
Weight	ISOBE5600tm:	
	Maximum	3 kg (6.6 lb.)
	ISOBE5600t:	
	Maximum including batteries	4 kg (8.8 lb.)
Shielding	Single metal shielding in plastic housing. Correct operation has been verified by placing the frontend cabinet within 1 meter of an EMC field created by a 80 kA current	
Operating temp.	ISOBE5600tm:	0 °C to +40 °C (+32 °F to +104 °F)
	ISOBE5600t:	-15 °C to +50 °C (+5 °F to +122 °F)
Vibration ¹ (Non-operational)	acc. IEC 60068-2-6	
	3-axis	0.30 mm _{p-p} or 2 g, 1 oct/min
	Sine sweep	5 - 500 Hz
Shock ¹ (Half-sine) (Non-operational)	acc. IEC 60068-2-27	
	3-axis Half-sine	10 g for 11 ms 25 g for 6 ms
Humidity ²	Relative humidity (non-condensing)	0 % to 80 %
Altitude		2000 m (6100 ft)
Protection	IP Class	IP20

Notes

- (1) During shock and vibration tests the ISOBE5600 (receiver and transmitter) was fully operational. The system electronics continued to operate without any problem. However, no operational guarantee can be given due to the unknown quality of the cables and connectors in use. Therefore specifications are given as non-operational.
- (2) When moving the device from a cold to a warm environment the device has to be left turned off for a period of 30 minutes to avoid short circuits by condensation.

Consult www.hbm.com/highspeed for more information.

Receiver specifications		
Receiver ISOBE5600r and ISOBE5600m		
Component	Unit Description	Value
Channels	Per front-end	1
Connector	Non-isolated BNC, one BNC per channel on receiver front panel	1
Conversion	D-to-A converter per channel	Single
Conversion rate		100 MS/s
DAC Resolution		14 bit (0.006 %)
Output filter	6-pole Bessel, reconstruction filter	40 MHz @ - 3 dB
Output impedance		50 Ω ±2 %
Output level	Full scale (1 MΩ load)	± 2 V
	Full scale (50 Ω load)	± 1 V

Receiver ISOBE5600m only		
Component	Component	Value
Memory length ¹	Per channel	8 MS/Ch.
Aggregate memory	Available memory per receiver	32 MS
Trigger	Signal trigger: Available on all channels	
	External trigger: Available on all channels	TTL

Notes

(1) Maximum available memory if only 1 channel in use - 32 MS

Power requirements		
Component	Unit Description	Value
Power supply Input		90 - 264 Vac, 47 - 63 Hz
Power consumption	Maximum	40 VA
Fuse(s)	Slow blow (T)	2 x 1 A, 5 x 20 mm

Physical and environmental specifications (receiver)		
Component	Unit Description	Value
Dimensions	Width including handles, etc.	221 mm (8.7")
	Depth	271 mm (10.67")
	Height	91 mm (3.58")

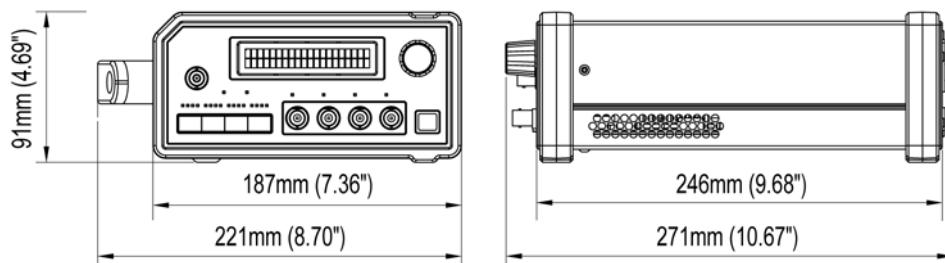


Figure 1.8: Dimensions ISOBE5600r/ISOBE5600m receiver

Physical and environmental specifications (receiver)		
Component	Unit Description	Value
Weight	Maximum	1.4 kg (3.0 lb.)
Shielding	Metal housing with plastic front/back	
Power supply		90/264 Vac, 47 - 63 Hz, 40 VA
Operating temp.		0 °C to +40 °C (+32 °F to +104 °F)
Vibration ¹ (Non-operational)	acc. IEC 60068-2-6 3-axis	0.30 mm _{p-p} or 2 g, 1 oct/min
	Sine sweep	5 - 500 Hz
Shock (half sine) (Non-operational)	acc. IEC 60068-2-27 3-axis	10 g for 11 ms 25 g for 6 ms
Humidity ²	Relative humidity (non-condensing)	0 % to 80 %
Altitude		2000 m (6100 ft)
Protection	IP Class	IP20

Notes

- (1) During shock and vibration tests the ISOBE5600 (receiver and transmitter) was fully operational. The system electronics continued to operate without any problem. However, no operational guarantee can be given due to the unknown quality of the cables and connectors in use. Therefore specifications are given as non-operational.
- (2) When moving the device from a cold to a warm environment the device has to be left turned off for a period of 30 minutes to avoid short circuits by condensation.

Ordering information		
Model	Description	Order Number
ISOBE5600t 1 ch Transmitter	ISOBE5600t transmitter HV, 100 MS/s, 14 bit, 25 MHz, one Li Ion battery, LC connector, 2nd empty battery slot.	1-GENIS-1T-2
ISOBE5600tm 1 ch Transmitter	ISOBE5600tm transmitter MV, 100 MS/s, 14 bit, 25 MHz, built-in power supply with 10 kV isolation, LC connector.	1-GENIS-1TM-2
ISOBE5600r 4ch Receiver	ISOBE5600r receiver, 4 channels, 4 x LC in, 4 x BNC out, LCD display for channel setup, overall system BW of transmitter and analog-out 20 MHz.	1-GENIS-4R-2
ISOBE5600m 4ch Receiver	ISOBE5600m receiver with memory, 64 MB RAM (8 MS/ch), 4 channels, 4 x LC in, 4 x BNC out, LCD display for channel setup, overall system BW depending on signal path.	1-GENIS-4M-2

Accessories		
ISOBE5600 Fiber-Optic Cables		
Type	Description	Order Number
KAB281	3 m Fiber-optic cable One needed per transmitter, LC-LC connectors	1-KAB281-3
	15 m Fiber-optic cable One needed per transmitter, LC-LC connectors	1-KAB281-15
	50 m Fiber-optic cable One needed per transmitter, LC-LC connectors	1-KAB281-50
ISOBE5600 Battery Charger - <i>Must order one or more sufficient for the number of batteries to be charged simultaneously</i>		
G109	2 bay charger Battery charger, 2 slots for batteries.	1-G109-2
G033	10 bay charger Li Ion 10 bay battery charger for 6600HV and ISOBE5600 batteries	1-G033-2

Accessories and Options		
Type	Description	Order Number
G301	Battery with carrier 2nd rechargeable Li Ion battery unit for ISOBE5600 (with carrier to be used as 2nd battery)	1-G301-2
G034	Battery only Spare rechargeable Li Ion battery unit for ISOBE5600, 6600HV and LIBERTY	1-G034-2

Note For Perception ordering information please see the Perception data sheet on our website www.hbm.com in the Products > Software section.

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