

HVI-TEC 20kV LIU

Universal broadband protection transformer for wired transmission technology



HVI-TEC has developed a range of universal broadband transmitters that can protect a range of bandwidths used for voice and data transmission. These are suitable for all POTS up to DSL technologies, including HDSL, HDSL2, SDSL, SHDSL, G.SHDSL, ADSL, ADSL2, ADSL2 +, G.lite-ADSL, VDSL2 and G.fast between 200Hz and 85MHz up to 280Mbit/s.

The universal broadband isolation transformer *HVI-TEC 20kV LIU* is used to isolate the incoming telecommunication line from the customer devices in a high voltage environment (HVE). This method represents a physical barrier between customer equipment and the incoming line. This basic insulation protection (HVI) protects people and systems in hazardous areas (ZOI) of power plants, substations, and lightning-prone areas, with an increase in the earth potential (EPR / GPR).

The universal broadband isolation transformers from HVI-TEC are completely passive components and do not require any power supply, which leads to unsurpassed reliability.

The line isolation transformer is to be attached immediately when the communication line is inserted. You can also find additional information and guidelines for the installations in the local regulations.

Warning: Never install telephone devices in a damp place or during a thunderstorm. When installing or changing telephone lines, disconnect the lines on the network interface before working with non-insulated lines or terminals.

Dielectric strength

The combined dielectric strength of various dielectric components that make up the insulation of the *HVI-TEC 20kV LIU* is referred to as the basic pulse insulation level or basic insulation level (BIL). This value, usually in kV, indicates the ability of the device to withstand lightning strikes and switching surges. The BIL voltage is the voltage that the device can withstand for the given time and number of applications without the insulation failing (that is, without flashovers). It is expressed as a peak pulse voltage with a standard wave that lasts no longer than 1.2 μ rise time and 50 μ fall time.

Insulation measurement

The Earth Potential Rise (EPR) or the Ground Potential Rise (GPR) is a security problem in the coordination of electricity and telecommunication services. An EPR / GPR event at a location such as a power plant or substation can expose personnel, users, or plant and equipment to dangerous voltages. Any conductive object connected to the substation ground, such as Telephone cable can be excited with the ground potential in the substation. This transmitted potential is a danger to people and devices that are connected to these cables.

Isolation transformers that are used as high-voltage interfaces (HVI) must withstand the applied AC voltage of 50/60Hz. The tests performed with AC voltage are more realistic than the tests performed with DC voltage.

An AC test is required to test the assembled electrical equipment. The AC tests performed on assembled electrical equipment are typically „go / no go“ tests. If the leakage current indicator does not light up, the device has passed the test. However, these tests are neither a guarantee of future performance nor an indication of how long the device can last in the event of an earth potential rise (EPR) or a ground potential rise (GPR).

Conclusion:

The HVI-TEC isolation transformer is a proven 2-wire isolation system for passive wire lines, independent units for high-voltage isolation applications where the safety of equipment and personnel is paramount.

The HVI-TEC isolator product line can accommodate virtually any type of communication circuit. The HVI-TEC isolating transformer has no moving parts and does not require cumbersome power supplies. Reliability in maintaining communications is second to none and meets all IEEE 487 requirements.

The passive isolation transformer system from HVI-TEC offers safe, long-term and maintenance-free operation.

Technical specifications

	HVI-TEC 10kV LIU	HVI-TEC 15kV LIU	HVI-TEC 20kV LIU
Article number	UB10-LIU	UB15-LIU	UB20-LIU
Isolation voltage	10kV	15kV	20kV
Transfer ratio	1:1		
Adaptation	150:1500hm (> 6kHz) 600:6000hm NF (< 6kHz)		
Frequency range	200Hz - 5MHz (1500hm)	200Hz - 85MHz (1500hm)	
Insertion loss	< 1,0dB	< 1,0dB	< 3,0dB
Error suppression	> 20dB	> 20dB	> 20dB
Test voltage P/S with 50Hz and 10s + 10s + 10s	10kV _{eff} 20Sec.	15kV _{eff} 10/10/10Sec.	20kV _{eff} 10/10/10Sec.
Data rates	< 10Mbit/s	< 10Mbit/s	< 280Mbit/s
Housing material	ABS (Acrylonitrile Butadiene Styrene)		
Protection class	IP 65		
Dimensions L x W x H	164 x 138 x 94mm		
Connection	P: A1 and E2 screwable S: A1 and E2		
Terminals	Drawbar connection 0,5-6mm ²		
Storage temperature	- 40°C to + 70°C		
Operating temperature	- 25°C to + 55°C		
Relative humidity	max 95%		

Technologies for data transmission						Line isolation unit for high voltage isolation on analog phone lines with broadband service					
ISDN		0 Hz	-	120 kHz	144 kbit/s	HVI-TEC PCM-FLU 20kV Isolation Transformer	HVI-TEC PCM-FLU 15kV Isolation Transformer	HVI-TEC PCM-FLU 10kV Isolation Transformer	HVI-TEC 15kV Universal Broadband Isolation Transformer	HVI-TEC 10kV Universal Broadband Isolation Transformer	HVI-TEC 20kV Universal Broadband Isolation Transformer
HDSL	(ITU-T G.991.1)	0 Hz	-	292 kHz	2 Mbit/s						
HDSL2	(ITU-T G.991.1)	0 Hz	-	292 kHz	2 Mbit/s						
SHDSL	(ITU-T G.991.2)	0 kHz	-	384 kHz	2,3 Mbit/s						
G.SHDSL	(ITU-T G.991.2)	0 kHz	-	384 kHz	2,3 Mbit/s						
SHDSL 32TCPAM	(ITU-T G.991.2)	0 kHz	-	712 kHz	5,7 Mbit/s						
ADSL	(ITU-T G.992.1)	138 kHz	-	1,1 MHz	8 Mbit/s						
ADSL2	(ITU-T G.992.3)	138 kHz	-	1,1 MHz	8 Mbit/s						
ADSL2+	(ITU-T G.992.5)	138 kHz	-	2,2 MHz	25 Mbit/s						
ADSL2+ Annex J	(ITU-T G.992.5)	0 kHz	-	2,2 MHz	25 Mbit/s						
VDSL	(ITU-T G.993.1)	25 kHz	-	12 MHz	52 Mbit/s						
VDSL2 profil 8a	(ITU-T G.993.2)	138 kHz	-	8,8 MHz	50 Mbit/s						
VDSL2 profil 8b	(ITU-T G.993.2)	138 kHz	-	8,8 MHz	50 Mbit/s						
VDSL2 profil 8c	(ITU-T G.993.2)	138 kHz	-	8,5 MHz	50 Mbit/s						
VDSL2 profil 8d	(ITU-T G.993.2)	138 kHz	-	8,8 MHz	50 Mbit/s						
VDSL2 profil 12a	(ITU-T G.993.2)	138 kHz	-	12 MHz	68 Mbit/s						
VDSL2 profil 12b	(ITU-T G.993.2)	138 kHz	-	12 MHz	68 Mbit/s						
VDSL2 profil 17a	(ITU-T G.993.2)	138 kHz	-	18,1 MHz	100 Mbit/s						
VDSL2 profil 30a	(ITU-T G.993.2)	138 kHz	-	30 MHz	200 Mbit/s						
VDSL2 profil 30b	(ITU-T G.993.2)	138 kHz	-	35.3 MHz	400 Mbit/s						
G.fast	(ITU-T G.9700 und G.9701)	138 kHz	-	50 MHz	1000 Mbit/s						

HVI-TEC certifies that the product listed above complies with the following Rules and Regulations:

- Federal Communications Commission's ("FCC") Rules and Regulations 47 CFR part 68 and FCC part 15, subpart B
- Administrative Council on Terminal Attachments ("ACTA")-adopted technical criteria TIA-968-A, TIA-968-B-1, TIA-968-B-2, and TIA 968-B-3 Telecommunications – Telephone Terminal Equipment – Technical Requirements for Connection of Terminal Equipment to the Telephone Network.
- ANSI/IEEE Standard 487-2015 Standard for the Electrical Protection of Communications Facilities Serving Electric Supply Locations.
- ETSI ES 203 021-3 – Access and Terminals (AT) Harmonized basic attachment requirements for Terminals for connection to analogue interfaces of the Telephone Networks: Update of the technical contents of TBR 021, EN 301 437, TBR 015, TBR 017; Part 3: Basic transmission and protection of the network from harm.
- ANSI T1.601 American National Standard for Telecommunications – ISDN Basic Access Interface for use on Metallic Loops for Application on the Network Side of the NT.
- BS EN 60950-1:2006+A2:2013 Information Technology Equipment – Safety