

Telbit has developed a selection of telby® Universal Broadband Isolation Transformers capable to protect a range of bandwidths suitable for Voice and Data Transmission from POTS to DSL technologies including HDSL, HDSL2, SDSL, SHDSL, G.SHDSL, ADSL, ADSL2 to ADSL2+ from 200 Hz up to 3.5 MHz with up to 12 Mbit/s.

The telby® Universal Broadband Isolation Transformer is designed to isolate the incoming telecommunication line from the customer equipment located in a high-voltage environment (HVE). This method provides a physical barrier between the customer equipment and the incoming line, resulting in a fundamental isolation protection (HVI) within hazardous areas (ZOI), such as power generators, substations, heavy power users, lightning prone areas or where soil conditions provide unsuitable earthing conditions leading to Earth Potential Rise (EPR) / Ground Potential Rise (GPR).

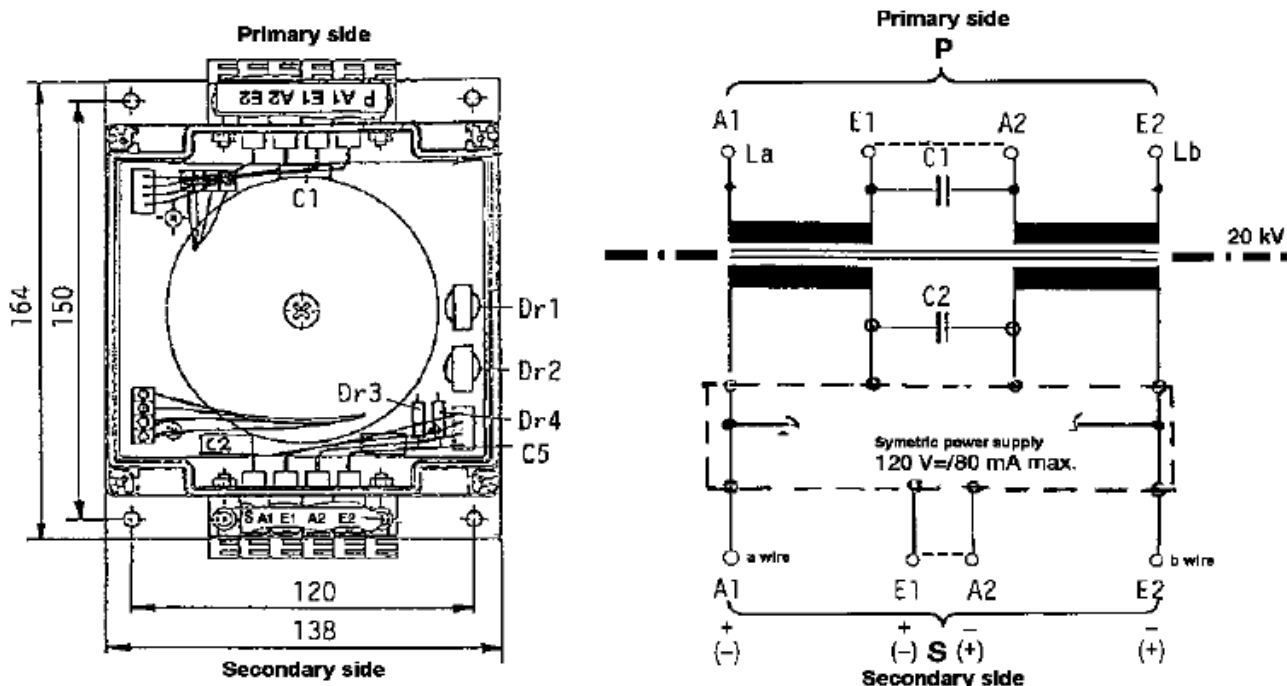
This condition is known to lead to damage not only to customer equipment connected to the incoming copper pair, but also to the Telco providers' exchange equipment. Possible damage to the copper in the ground and other circuits within the cable bundle is also prone to damage in extreme situations. Any of the above situations can lead to expensive repairs, and time-consuming downtime for all involved.

The telby® Universal Broadband Isolation Transformers are fully passive component and do not require any sort of power supply, resulting in an unmatched reliability.

The Line Isolation Transformer is to be placed immediately inside the facility at the first telephone equipment panel. Refer to local codes for enclosure requirements.

For 4-wire connections, two Transformers are required.





**Span power option:** If necessary, an optional secondary 80 mA DC power feed module for up to 120 VDC can be built-in. This can provide power to the Station side span for span powered Network Communication Telephone Equipment (NCTE). A local power source external to the standalone unit is required for this span power feature.

**Warning:** Never install telephone equipment in a wet location or during a lightning storm. When installing or modifying telephone lines, disconnect lines at the network interface before working with uninsulated lines or terminals.

**SPECIFICATION / TECHNICAL DATA**

**ISOLATION SPECIFICATION**

Longitudinal Surge (1.2/50µs)	70kVAC r.m.s.
Lightning Surge (8/20µs)	70kVAC r.m.s.
Continuous Rating (50Hz, 60sec)	15kVAC r.m.s.

**Dielectric Strength**

The combined dielectric strength of various dielectric components that make up the insulation of the *telby® Universal 15kV – Broadband Isolation Transformer* is called Basic Impulse Insulation Level or Basic Insulation Level (BIL). This value, usually in kV, indicates the equipment’s ability to withstand overvoltage caused by lightning and switching surges. The BIL voltage is the voltage that the equipment will withstand for the given length of time and the given number of applications without the insulation failing (i.e. without an occurrence of flashovers). It is expressed as an impulse peak voltage with a standard wave lasting not longer than 1.2µ rise time and 50µ fall time.

**Insulation Breakdown**

Earth Potential Rise (EPR) or Ground Potential Rise (GPR) is a safety issue in the coordination of power and telecommunications services. An EPR/GPR event at a site such as an electrical distribution substation may expose personnel, users or structures to hazardous voltages. Any conducting object connected to the substation earth ground, such systems as telephone wires may be energized at the ground potential in the substation. This transferred potential is a hazard to people and equipment connected to these wires.

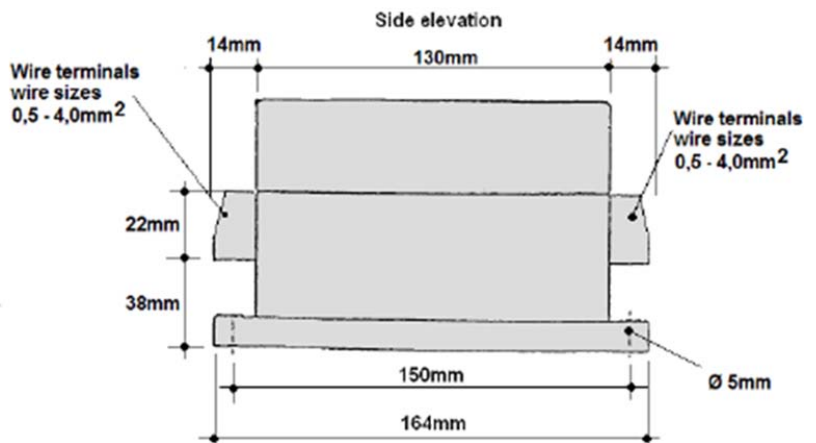
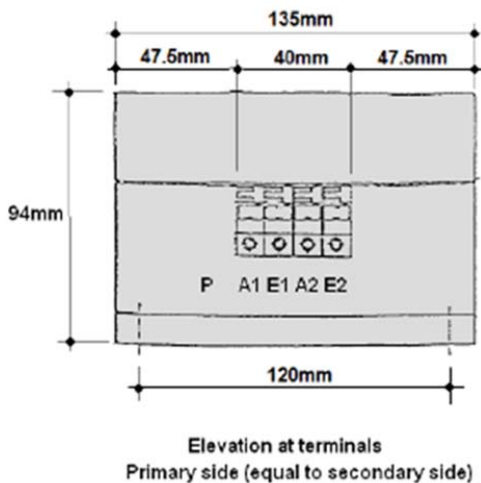
Insulation Transformers used as a High Voltage Interfaces (HVI) must withstand the applied alternating 50/60Hz voltage. The tests performed with alternating voltage are more realistic than the tests performed with D.C. voltage.

A.C. testing is required for testing of the assembled electrical equipment. The A.C. tests performed on assembled electrical equipment are usually “go/no go” types of tests. If the leakage current indicator does not light up, the equipment passed the test. However, these tests are not a guarantee of future performance, nor any indication of how long the equipment may last in case of Earth Potential Rise (EPR) or Ground Potential Rise (GPR) condition.

**TECHNICAL SPECIFICATIONS**

**Physical Characteristics**

HEIGHT	164 mm	6.45"
WIDTH	138 mm	5.43"
DEPTH	94 mm	3.70"



**Technical Data**

- SIGNAL SOURCE AND TERMINATION IMPEDANCES
- RATIO
- FREQUENCY
- ERROR ATTENUATION
- OPERATING ATTENUATION
- SYMETRY
- DATA TRANSFER
- INSULATION TEST VOLTAGE
- Optional Span Power Option (Telbit patented)
- TEMPERATURE RANGE
- HUMIDITY RANGE

- 150 : 150 Ohm / 600 : 600 Ohm
- 1 : 1
- 0.2 – 3500 kHz
- > 20 dB
- < 1.0 dB
- > 52 dB @ 552 kHz
- up to 12 MBit/s
- 15 kVAC r.m.s. / 60 sec.
- 0-120 VDC / 80mA max.
- 40 to + 100° C (-40 to 212° F)
- 0 to 99% Relative Humidity

## **Conclusion:**

The telby® Isolation Transformer is a proven 2-wire passive wire line isolation system, standalone units for high voltage isolation application where equipment and personnel safety are of primary consideration.

The Telbit isolator product line can accommodate virtually every type of communication circuit. The Telbit Isolation Transformer has no moving parts, and does not require cumbersome remote powering arrangements. Its reliability in maintaining communications is unmatched, meeting all the requirements of IEEE 487.

Telbit's passive Isolation Transformer system offers safe, long-term, maintenance-free operation.

## **Telbit AG 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 ANSI/TIA-968-B-3 (November 2016) 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 203 021-2 – 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 2: 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
- ANSI T1.413-1998, Telecommunications – Interface between Networks and Customer Installation – Asymmetric Digital Subscriber Line (ADSL) Metallic Interface
- ANSI T1.418-2000, Technical Requirements for SHDSL Terminal Equipment to Prevent Harm to the Telephone Network
- ANSI Standard T1.417-2001, Spectrum Management for Loop Transmission Systems