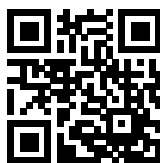


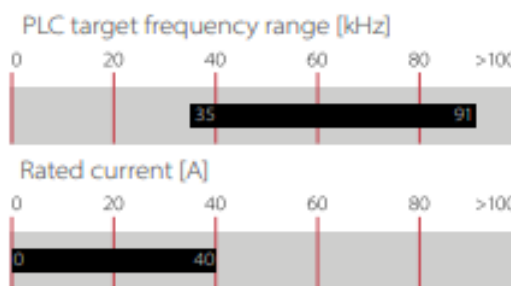
Smart Meter Shield for Power Line Communication



- To be installed between smart meter and home installation
- Improves signal-to-noise ratio on smart meter side
- Reduces PLC signal on house-hold side
- Low power consumption
- Low reactive power loss
- Effect focussed on PLC frequency spectrum < 100 kHz



Performance indicators



Approvals & Compliances



Features and Benefits

- Small and cost effective solution to improve PLC communication
- Compatible to one-phase smart meters up to 40 A rated current
- Compatible to G3-PLC and PLAN+ (CENELEC A)
- Creates an impedance 25 - 72 Ohm between 37.8 kHz and 91 kHz
- Typical Signal-To-Noise-Ratio Enhancement (SNRE): 28 - 40 dB in the CENELEC A band at 1 Ohm load impedance
- No interruption of the power line. The impedance is induced to the line.
- No high current termination / connection required

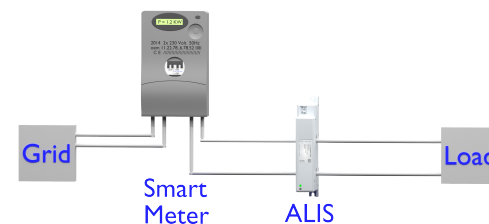
Typical Applications

- Roll-out of PLC smart meter infrastructure
- Clean-up process after smart meter roll-out
- Trouble shooting at PLC networks
- Low impedance load de-coupling

Technical Specifications

Impedance (uk)	25 - 72 Ohm in the CENELEC A band
Energy absorption	3.4 W typical (7.5 W maximum)
Nominal Current	0 to 40 A rms
Peak Current	90 A
Nominal operating voltage	230 V AC +/- 10 %
Rated operating voltage	185 - 264 V AC
Overvoltage category	III, according IEC 62052-3
Temperature range (operation and storage)	-25 °C to +70 °C
Climatic category	25/085/21 acc. IEC60068-1
Pollution degree	PD2 acc. IEC 60664-1
Protection category	IP20
Rated currents	0 to 40 A @50°C
Flammability corresponding to	UL94-V0

Typical electrical schematic



Power lines are looped through the 15 mm apertures in the housing.

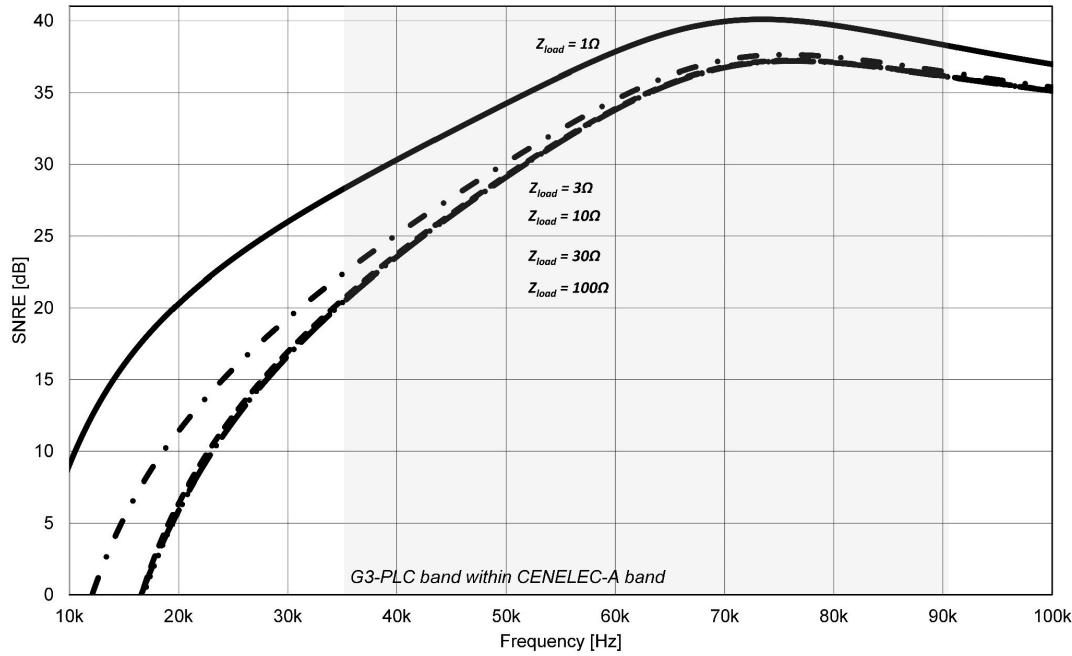
Not in the picture: Auxiliary power connection of typical 160 mA at 230V AC.

Filter Selection Table

Filter	Rated current @50 Hz [A]	Phases	Impedance* Z [Ohm]	Typical power loss [W]	Weight [g]
LIS140C-1E	40	1	25 - 72	3,4	330

* In the frequency range of CENELEC A

Typical Signal-to-Noise-ratio Enhancement (SNRE)



Standards And Compliances

Design Standard

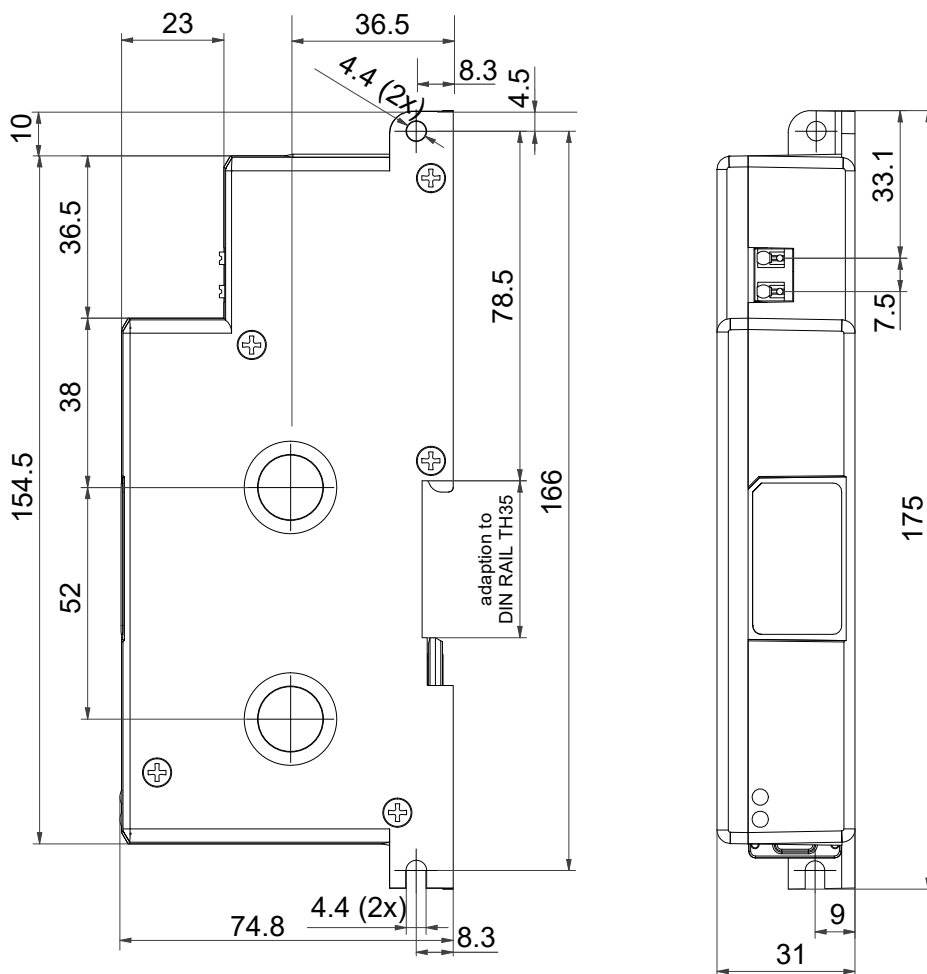
Electricity metering equipment (AC) - General requirements, tests and test conditions:

- IEC EN 62052-11 Metering equipment
- IEC EN 62052-31 Product safety requirements and tests

Product Compliances

- EMC directive 2014/30/EU
- Low voltage directive 2014/35/EU

Dimensions*



*LED Indication

- PWR - Power On
- OVLD - Overload / Error

Electrical Connections

Load connection 40 A

- No conductive connection is needed
- P & N are looped through $\varnothing 15\text{mm}$ holes

Auxiliary Power Connection

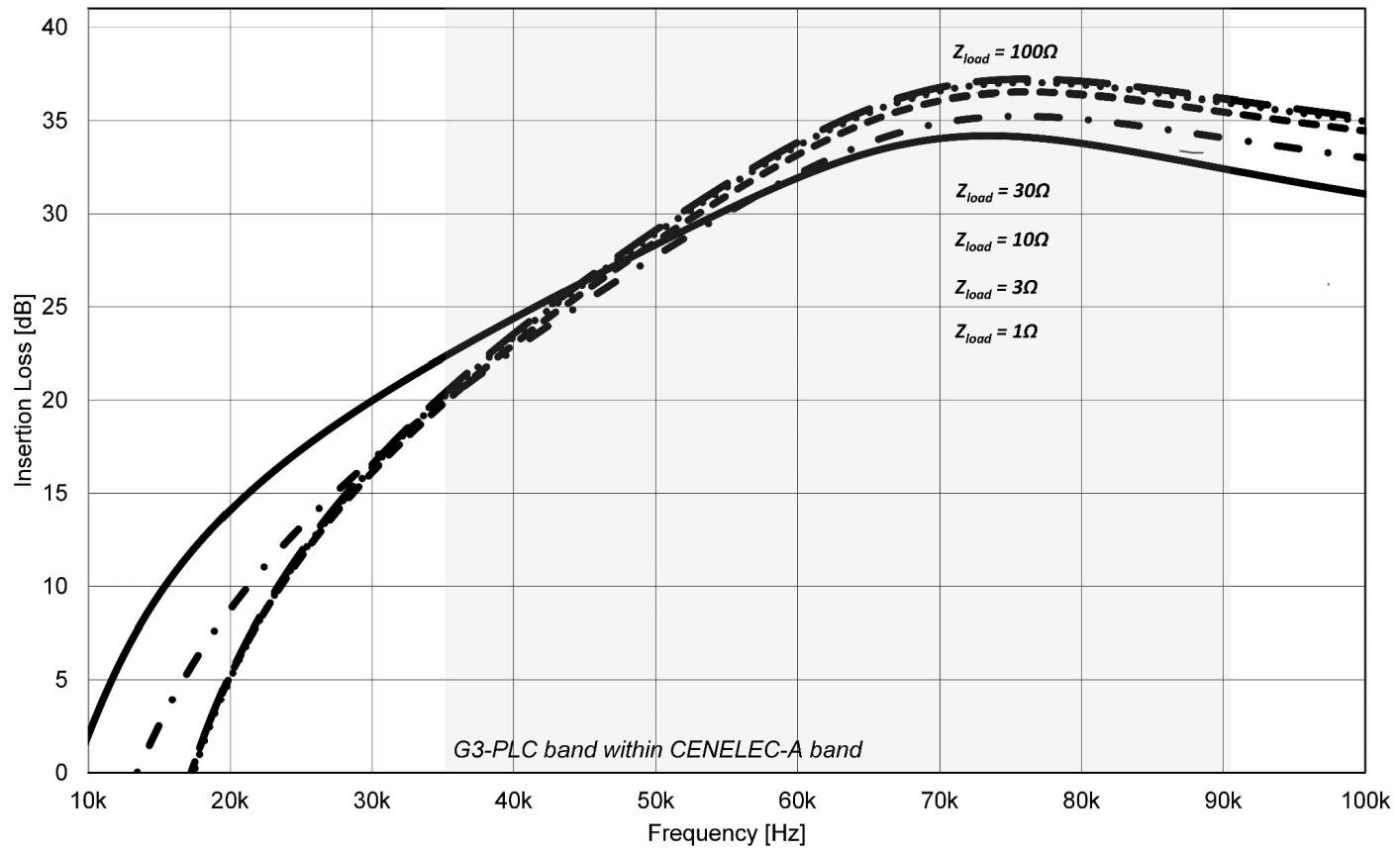
- Push-in terminal
- Solid and litz wires
- Maximum size $1,5\text{mm}^2$ / AWG14
- Typical input 160 mA rms @ 230 Vac

*under review.

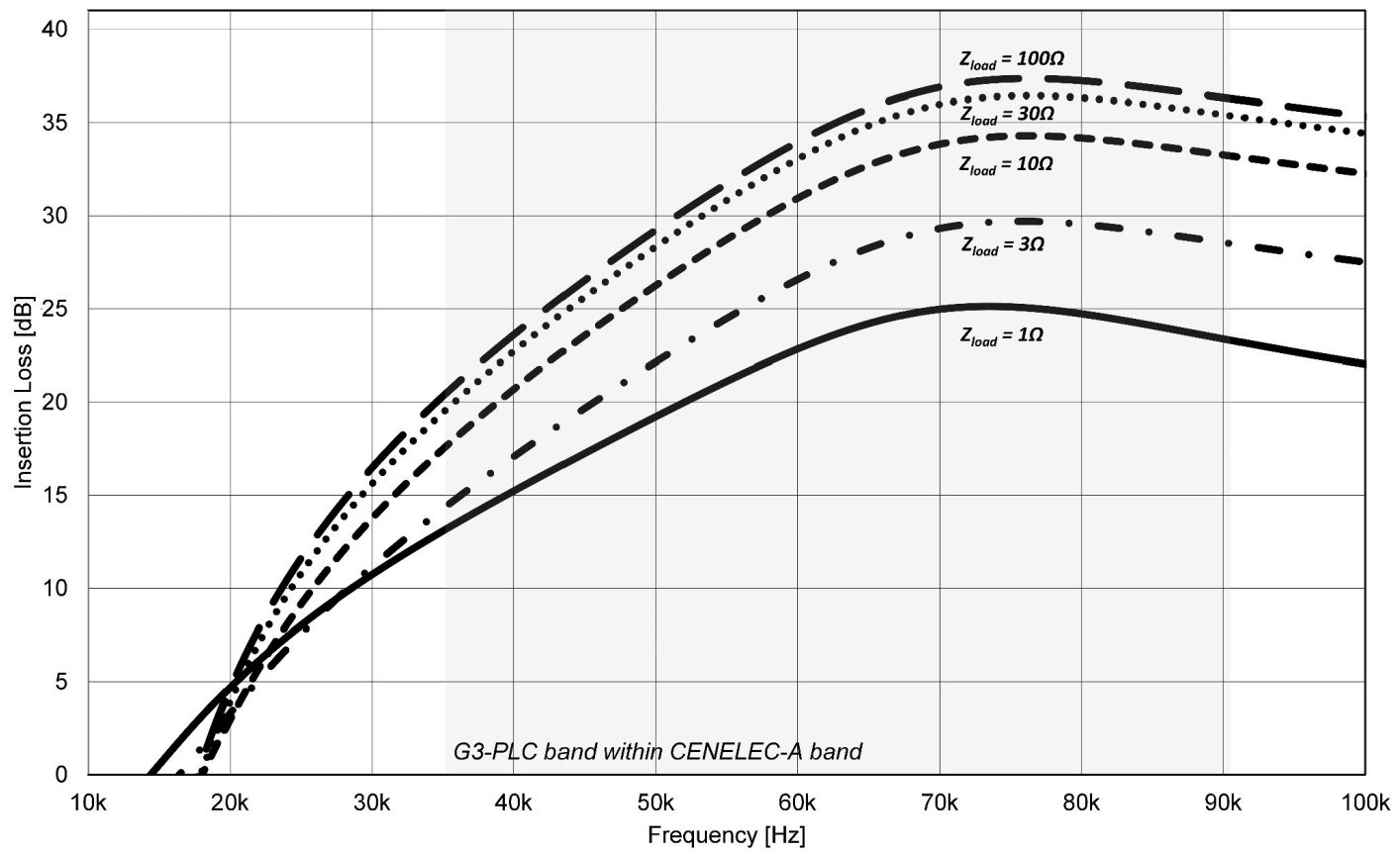
For dimensions [mm] without tolerances: ISO2768-m/EN22768-m applies

Insertion Loss At Different Grid Impedances

Typical Insertion Loss Characteristics LIS140C-1E - with $Z_{grid} = 1\Omega$



Typical Insertion Loss Characteristics LIS140C-1E - with $Z_{grid} = 5\Omega$



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