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
- Neglectable reactive power drawn
- Effect focussed on PLC frequency spectrum < 100 kHz

Performance indicators

<table>
<thead>
<tr>
<th>PLC target frequency range [kHz]</th>
<th>0</th>
<th>20</th>
<th>40</th>
<th>60</th>
<th>80</th>
<th>&gt;100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Rated current [A]</td>
<td>0</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>&gt;100</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40</td>
</tr>
</tbody>
</table>

Technical specifications

- Impedance: 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 62052-31
- 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
- Flammability corresponding to: UL94-V0

Approvals & Compliances

CE ROHS

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

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 - 37 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 installation schematic

Power lines are looped through the 15 mm apertures in the housing.
Not in the picture: Auxiliary power connection of typical 40 mA at 230V AC.

Typical applications include:
- 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
Filter selection table

<table>
<thead>
<tr>
<th>Filter</th>
<th>Rated current @50 Hz [A]</th>
<th>Phases</th>
<th>Impedance Z [Ohm]</th>
<th>Typical power loss [W]</th>
<th>Weight [g]</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIS140C-1B</td>
<td>40</td>
<td>1</td>
<td>25 - 72</td>
<td>3.4</td>
<td>320</td>
</tr>
</tbody>
</table>

* In the frequency range of CENELEC A

Impedance vs. Frequency

![Impedance vs. Frequency graph]

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

LED Indication
- PWR - Power On
- OVLD - Overload / Error

Electrical Connections

**Load connection 40 A**
- No conductive connection is needed
- P & N are looped through ø15mm holes

**Auxiliary Power Connection**
- Push-in terminal
- Solid and litz wires
- Maximum size 1.5mm² / AWG14
- Typical input 40 mA rms @ 230 Vac

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