COMMUNICATION NETWORKS

MCD80
Power Line Carrier Coupling Device
### Coupling device functions
- Injection and extraction of PLC signals on high voltage (HV) overhead lines and cables
- Through connections in intermediate stations
- Matching of HV line and PLC equipment impedances
- Electrical insulation between HV plant and PLC equipment

### The modular MCD80 series
The MCD80 modular coupling devices form the interface between the HV transmission line and the PLC equipment and fully comply with the previously listed requirements with respect to compatibility and flexibility.

The units of the MCD80 series provide optimum PLC end-to-end links, RF through-connections and junction networks on all HV transmission systems.

All MCD80 devices conform to the latest IEC and ANSI recommendations.

### MCD80 – advantages and features
- **High degree of modularity**
  - Compact unit with variable complement of modules
- **Maximum personnel protection**
  - Insulated enclosure and special design features minimize electrical hazards
- **Programmable**
  - One high-pass version for different system parameters, programmable on site
- **Weather-proof and tropicalized**
  - Corrosion inhibited by fiberglass reinforced polyester enclosure
- **High carrier power rating**
  - Up to 1000 W PEP
- **ISO 9001 quality**
- **Simple integration in PLC system**
  - As a supplier of complete PLC systems, ABB knows what is required of a coupling device — ABB coupling device type MCD80

A reliable component for PLC communication.

### Technical data and applications

#### Single-phase coupling
Since a single phase to ground fault close to the station (on the phase used for the PLC link) can short-circuit the signal, PLC signals may only be coupled to just one phase of the power system when transmission reliability in the event of a power system fault is of secondary importance.

A phase-to-phase coupling scheme consists of two coupling devices, one of which includes a hybrid module.

#### Phase-to-phase coupling

#### Technical data

<table>
<thead>
<tr>
<th>Filter</th>
<th>Nominal Impedance PLC equipment-side Z₂</th>
<th>Nominal Impedance transmission line-side Z₁</th>
<th>Range of coupling capacitance</th>
<th>Composite loss within passband</th>
<th>Return loss within passband</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-pass filter A9BS/A9BT</td>
<td>75 Ω and 125 Ω, unbalanced</td>
<td>240/320 Ω</td>
<td>1.5 to 13 nF</td>
<td>≤ 1.0 dB typical</td>
<td>≥ 12 dB typical</td>
</tr>
</tbody>
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<th>Composite loss within passband</th>
<th>Return loss within passband</th>
</tr>
</thead>
<tbody>
<tr>
<td>Band-pass filter A9BP/A9BR</td>
<td>as desired</td>
<td>as desired</td>
<td>min. 0.5 nF</td>
<td>≤ 1.0 dB typical</td>
<td>≥ 12 dB typical</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Common filter properties</th>
<th>Nominal peak power P.E.P. at 50 kHz</th>
<th>≥ 400 W</th>
</tr>
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<tbody>
<tr>
<td>Harmonic distortion</td>
<td>≥ 80 dB</td>
<td></td>
</tr>
<tr>
<td>Power frequency test voltage</td>
<td>Transformer (primary/secondary)</td>
<td>10 kVA</td>
</tr>
<tr>
<td>Impulse test voltage</td>
<td>wave shape 1.2/50 μs</td>
<td>Transformer (input line-side to ground)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Earthling switch</th>
<th>Rated current</th>
<th>300 Arms continuously</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-time current</td>
<td>16 kA</td>
<td>1 s</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Permissible ambient temperature range</th>
<th>-40 °C to + 70 °C</th>
</tr>
</thead>
</table>

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<tr>
<th>Dimensions (H x W x D)</th>
<th>405 mm x 305 mm x 200 mm</th>
</tr>
</thead>
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<tr>
<th>Weight (per unit)</th>
<th>A9BS, A9BP approx.</th>
<th>9 kg (20 lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A9BT, A9BR approx.</td>
<td>10 kg (22 lbs)</td>
<td></td>
</tr>
</tbody>
</table>

Designed and manufactured in accordance with requirements and recommendations of IEC 60481, SEV 3062 and ANSI C93.4.

### Transport of Electrical Energy

- **HV Overhead Line**
- Line trap
- Coupling capacitor
- A9BS
- Coupling device

### Transmission of Data, Speech and Protection Signals

- **HV Overhead Line**
- Line trap
- Coupling capacitor
- A9BT
- Coupling device

### Commun. Circuit 2

- Coupling device MCD80
- PLC Terminal
- Line trap
- A9BS

### Circuit 1

- Coupling device MCD80
- PLC Terminal
- Line trap
- A9BT