MRAW
Pilot Wire Intertrip Relay

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1] **Summary**

The MRAW relay is of a standard modular construction of the drawout style, suitable for either flush or rack mounting. MRAW relays are voltage operated attracted armature units of compact design with a positive action and a high degree of mechanical stability. An internal DC filter reduces the susceptibility of the relay to AC voltages. The relay is housed in a size 50 case.

2] **Applications**

The MRAW relay is intended for the intertripping of switchgear via pilot wires, which may be induced with an AC voltage. The use of a special internal filter inhibits operation of the relay due to the AC to typically 110V AC 50/60Hz (48V relay) or 220V AC 50/60Hz (110V relay). The relay is also designed to consume a high pick up current i.e. >100mA at initial energisation.

3] **Characteristics and Features**

- Hand or self reset contacts
- MRAW-1 Single element relay fitted with 4 change-over contacts as standard all wired to terminals.
- High initial switch on current typically 100-170mA with 200Ω pilot resistance.
- High AC rejection.
- Voltage ranges: 48V, 110V DC
- Relays comply with BS 142 1966 and IEC 255
- MRAW-2 Intertrip send and receive relay fitted with one element (receive) with AC rejection and one (send) standard element each with 4 C/O contacts.

4] **Circuit Diagram**

[Diagram of MRAW-1 and MRAW-2 relays]
5] Technical Specification

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Voltage Rating</th>
<th>AC Rejection</th>
<th>Operate Time</th>
<th>Pilot Resistance</th>
<th>Maximum Pilot Resistance</th>
<th>Pick Up Current (Initial Transient)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating</td>
<td>48/54V DC 110/125V DC</td>
<td>Typical @ 50/60Hz</td>
<td>110V AC</td>
<td>&lt;50ms</td>
<td>200Ω</td>
<td>Pilot resistance 0Ω 200mA</td>
</tr>
<tr>
<td>AC rejection</td>
<td></td>
<td></td>
<td>220V AC</td>
<td>&lt;50ms</td>
<td>200Ω</td>
<td>Pilot resistance 200Ω 100mA</td>
</tr>
<tr>
<td>Operate time</td>
<td></td>
<td>Pilot resistance</td>
<td></td>
<td>&lt;70ms</td>
<td>200Ω</td>
<td>Pilot resistance 200Ω 150mA</td>
</tr>
<tr>
<td>Pilot resistance</td>
<td>0Ω</td>
<td>30-60V</td>
<td></td>
<td>&lt;70ms</td>
<td>200Ω</td>
<td>Pilot resistance 200Ω 200mA</td>
</tr>
<tr>
<td>Operate range</td>
<td>200Ω</td>
<td>40-60V</td>
<td></td>
<td></td>
<td>200Ω</td>
<td>Pilot resistance 200Ω 200mA</td>
</tr>
<tr>
<td>Maximum pilot resistance</td>
<td>200Ω</td>
<td></td>
<td></td>
<td></td>
<td>200Ω</td>
<td></td>
</tr>
<tr>
<td>Pick up current (initial transient)</td>
<td>Pilot resistance 200Ω 100mA</td>
<td></td>
<td></td>
<td></td>
<td>200Ω</td>
<td></td>
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6] Housing

Throughout the MR series range a modular housing system has been employed, utilizing the latest high quality UK manufactured industry standard case components. This approach affords maximum flexibility for both the relay scheme designer and the maintenance engineer. The relay modules are fully withdrawable for ease of maintenance and where applicable incorporate automatic short-circuiting CT connections to avoid dangerous open circuit CT overvoltages. A clear plastic removable front cover is provided for inspection purposes.

The MRAW is supplied in standard height (179mm≈7in.) size 50 case, complying with IEC 297 size 4U.

The rigid case wall is manufactured from a single sheet of hot dipped galvanized steel coated externally with Plastisol PVC and internally with a low gloss alkyd paint finish. This construction technique provides improved thermal transfer characteristics over plastic walled cases and combines exceptional corrosion and flame resilience with good electromagnetic and electrostatic screening properties allowing many relays to be freely situated in close proximity and hazardous environments. When the relay is inserted a leaf spring along the top edge of the module makes contact with a solidly bonded nickel plated steel strip on the interior of the case, providing excellent earth continuity. This strip is brought out at the rear of the case, above the terminal block, where it forms a separate earthing terminal. A rigid front mounting flange is provided allowing the entire range of standard cases to be flush mounted without alteration. These flanges are also used to mount the relay inspection cover which is secured by thumbscrews. Securely bonded channels can be provided on the top and bottom surfaces toward the rear of the case allowing large rigid assemblies to be created by the use of joining strips located in these channels.

This uniform but highly flexible housing system integrates excellent mechanical strength with good electrical practice in industry standard sizes.
7] Connection Details

The rear terminal block accepts both pre-insulated screw and push-on blade type connectors which may be used singly or in combination. Each terminal has 1 screw type and 2 blade type connectors.

Screw: Each connection uses a 4mm (M4) screw outlet and accepts standard L-shaped ring type connectors designed for 4mm screws.

Blade: Each connection facilitates 2 pre-insulated push-on blades 4.8mm wide 0.8mm thick complying with BS5057.

Combination: Each terminal will accept either;
- 2 ring type connectors
- or 2 push-on blade type connectors
- or 1 ring type connector & 1 push-on blade type connector

All information subject to change without notice.

Publication number MRAW 01/96A
Order Form

Pilot Wire Intertrip Relay

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<thead>
<tr>
<th>QUANTITY</th>
<th>MRAW</th>
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<td>9 L</td>
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</table>

Number of elements 1 2

* Aux Voltage 1 2

Contact Arrangement: 4C/O 9
Self reset S
Hand reset H

Housing 19" Rack
Flush mounting A

* Non-standard voltages available on request

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