



## Product Cross Reference and Selection Guide

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## Trip, Auxiliary and Supervision Relay Functional Cross Reference

### High Speed Trip Relays

| RMS Mors Smitt  | Function  | Competitors                                    |
|-----------------|---|--|
| 6RJ11, Alpha TR | Low burden<br>Self-reset contacts<br>Hand-reset flag indicator                          | MVAJ11, MVAJ051*, MVAJ101*<br>TR112, 7PG1511-2 |
| 6RJ13, Alpha TR | Low burden<br>Hand-reset contacts & flag indicator                                      | MVAJ13, MVAJ053*, MVAJ103*<br>TR121, 7PG1512-1 |
| 6RJ14, Alpha TR | Low burden<br>Electrical reset contacts<br>Independent hand-reset flag indicator        | MVAJ14, MVAJ054*, MVAJ104*<br>TR131, 7PG1513-1 |
| 6RJ15, Alpha TR | Low burden<br>Hand & Electrical reset contacts<br>Independent hand-reset flag indicator | MVAJ15, MVAJ055*, MVAJ105*<br>TR141, 7PG1514-1 |

\* Can be High or Low burden

| RMS Mors Smitt  | Function   | Competitors                                    |
|-----------------|--|--|
| 6RJ21, Alpha TR | High burden<br>Self-reset contacts<br>Hand-reset flag indicator                          | MVAJ21, MVAJ051*, MVAJ101*<br>TR212, 7PG1521-2 |
| 6RJ23, Alpha TR | High burden<br>Hand-reset contacts & flag indicator                                      | MVAJ23, MVAJ053*, MVAJ103*<br>TR221, 7PG1522-1 |
| 6RJ24, Alpha TR | High burden<br>Electrical reset contacts<br>Independent hand-reset flag indicator        | MVAJ24, MVAJ054*, MVAJ104*<br>TR231, 7PG1523-1 |
| 6RJ25, Alpha TR | High burden<br>Hand & Electrical reset contacts<br>Independent hand-reset flag indicator | MVAJ25, MVAJ055*, MVAJ105*<br>TR241, 7PG1524-1 |

\* Can be High or Low burden

| RMS Mors Smitt | Function  | Competitors                           |
|----------------|---|---------------------------------------|
| 6RJ21-20       | High burden<br>Self-reset contacts<br>Hand-reset flag indicator<br>20 contacts                          | MVAJ51, MVAJ201*<br>TRA212, 7PG1821-2 |
| 6RJ23-20       | High burden<br>Hand-reset contacts & flag indicator<br>20 contacts                                      | MVAJ53, MVAJ203*<br>TRA221, 7PG1822-1 |
| 6RJ24-20       | High burden<br>Electrical reset contacts<br>Independent hand-reset flag indicator<br>20 contacts        | MVAJ54, MVAJ204*<br>TRA231, 7PG1823-1 |
| 6RJ25-20       | High burden<br>Hand & Electrical reset contacts<br>Independent hand-reset flag indicator<br>20 contacts | MVAJ55, MVAJ205*<br>TRA241, 7PG1824-1 |

\* Can be High or Low burden

## Auxiliary Relays

| RMS Mors Smitt  | Function  | Competitors                |
|-----------------|---|----------------------------|
| 6RA11, Alpha AR | Self-reset contacts<br>Hand-reset flag indicator                          | MVAA11<br>AR111, 7PG1111-1 |
| 6RA13, Alpha AR | Hand-reset contacts & flag indicator                                      | MVAA13<br>AR112, 7PG1111-2 |
| 6RA15, Alpha AR | Hand & electrical reset contacts<br>Independent hand-reset flag indicator | MVAA15<br>AR113, 7PG1111-3 |
| 6RA20           | CT shorting relay   |                            |
| 6RA21, Alpha AR | Self-reset contacts<br>Hand-reset flag indicator<br>Double element        | MVAA21<br>AR211, 7PG1121-1 |
| 6RA23, Alpha AR | Hand-reset contacts & flag indicator<br>Double element                    | MVAA23<br>AR212, 7PG1122-1 |

## Trip Circuit Supervision Relays

| RMS Mors Smitt   | Function        | Competitors                     |
|------------------|-----------------|---------------------------------|
| 6RX21, Alpha XR5 | Single pole TCS | MVAX21<br>XR250, XR251, 7PG1752 |
| 6RX31, Alpha XR5 | Single pole TCS | MVAX31<br>XR350, XR351, 7PG1753 |

## Trip Supply Supervision Relays

| RMS Mors Smitt   | Function                | Competitors                     |
|------------------|-------------------------|---------------------------------|
| 6RX12, Alpha XR5 | Trip supply supervision | MVAX12<br>XR152, XR153, 7PG1741 |

## Trip Relay Supervision Relays

| RMS Mors Smitt   | Function               | Competitors              |
|------------------|------------------------|--------------------------|
| 6RX11, Alpha XR5 | Trip relay supervision | MVAX11<br>XR151, 7PG1751 |

## Compact High Speed Trip Relays

| RMS Mors Smitt | Function  | Competitors  |
|----------------|---|--|
| TRD4-1         | High burden<br>Self-reset contacts<br>Hand-reset Mechanical flag indicator<br>4 contacts              | RF-4R, RF-4R HB<br>REL9122, REL9123                    |
| TRD4-4         | High burden<br>Hand & Electrical reset contacts<br>Hand-reset Mechanical flag indicator<br>4 contacts | BF-4R, BF-4RP, BF-4R HB, BF-4RP HB<br>REL9126, REL9127 |

## Compact Auxiliary Relays

| RMS Mors Smitt | Function   | Competitors     |
|----------------|--|-----------------|
| ARD4-1         | Self-reset contacts<br>Hand-reset Mechanical flag indicator<br>4 contacts              | RF-4<br>REL9120 |
| ARD4-4         | Hand & Electrical reset contacts<br>Hand-reset Mechanical flag indicator<br>4 contacts | BF-4            |

## Compact Supervision Relays

| RMS Mors Smitt | Function  | Competitors       |
|----------------|---|-------------------|
| 1X10           | Fuse supervision or<br>Supply supervision                         |                   |
| 1X20           | Fuse supervision or<br>Trip coil and supply supervision           |                   |
| 1X30           | Trip circuit supervision and supply<br>supervision                |                   |
| XRD-4          | Trip supply supervision, hand reset<br>Mechanical flag indicator  | RUT-4<br>REL9135  |
| XRD-5          | Trip supply supervision, self-reset LED<br>alarm                  | RUT-4<br>REL9135  |
| XRD-6          | Trip circuit supervision, hand reset<br>Mechanical flag indicator | VDF-10<br>REL9132 |
| XRD-7          | Trip circuit supervision, self-reset LED<br>alarm                 | VDF-10<br>REL9132 |

## Test Block and Test Plug Functional Cross Reference

### Test Blocks and Test Plugs

| RMS Mors Smitt | Function              | Competitors  |
|----------------|-----------------------|--|
| 4M200          | 14 circuit Test Block | Directly interchangeable with:<br>MMLG, 2RMLG, 7XG2220 |
| 4M220          | 14 circuit Test Plug  | MMLB, 2RMLB, 7XG2240                                   |
| 4M400          | 14 circuit Test Block | MMLG, 2RMLG, 7XG2220, P991, RTXP 8, TSB-14             |
| 4M420          | 14 circuit Test Plug  | MMLB, 2RMLB, 7XG2240, P992, RTXH 8, TSB-14-P           |
| 4M402          | 28 circuit Test Block | RTXP 18, RTXP 24                                       |
| 4M422          | 28 circuit Test Plug  | RTXH 18, RTXH 24                                       |
| 4M300          | 14 circuit Test Block | MMLG, 2RMLG, 7XG2220                                   |
| 4M320          | 14 circuit Test Plug  | MMLB, 2RMLB, 7XG2240                                   |

**Note: only the 4M200/4M220 system is physically interchangeable with the MMLG/MMLB/2RMLG/2RMLB systems**

## Other Product Portfolio Alternatives

### Arc Fault Protection

| Arc Fault Monitors | Function  | Sensors Required                        |
|--------------------|---|---|
| 1S20               | Up to 2 zones and up to 3 point sensors<br>2 Trip outputs   | 1S30 point sensor                       |
| 1S23               | Single zone and up to 2 sensors<br>Interfaces with relay binary inputs only                           | 1S30 point sensor                       |
| 1S24               | Up to 16 zones and up to 16 point sensors or<br>12 point sensors + 2 linear sensors<br>3 Trip outputs | 1S30 point sensor<br>1S40 linear sensor |
| 1S25               | Up to 4 zones and up to 8 point sensors<br>9 Trip outputs   | 1S30 point sensor                       |
| 1S26               | Up to 4 zones and up to 8 point sensors<br>Integrated current check<br>13 Trip outputs                | 1S30 point sensor                       |
| 1S27               | Up to 2 zones and up to 4 point sensors or<br>4 point sensors + 1 linear sensor<br>4 Trip outputs     | 1S30 point sensor<br>1S40 linear sensor |

### Digital Time Delay Relay

| RMS Mors Smitt | Function  | Competitors                                      |
|----------------|---|--|
| 2T105          | Four user settable time ranges:<br>0-0.99s, 0-9.9s, 0-99s, 0-990s | MVTT14, MVTT15<br>DDB1, DDB5, DDB7, DDB11, DDB12 |

### Pilot Wire Intertripping Relays

| RMS Mors Smitt | Function   | Competitors  |
|----------------|--|--|
| 3A20           | Pilot Wire DC Intertrip Send &<br>Receive Relays | MVAWA12, MVAWA22, MHOP02, MHOP03<br>Type GF, B22, B74, B75 |

### Current Check Relays

| RMS Mors Smitt | Function             | Competitors      |
|----------------|----------------------|------------------|
| 2C65           | Current check relays | MCTI140<br>2DABT |

### Sensitive Earth Fault Relays

| RMS Mors Smitt | Function              | Competitors |
|----------------|-----------------------|-------------|
| 2C138          | Sensitive Earth Fault | MCSU<br>DAC |

### DC Current Sensing Relays

| RMS Mors Smitt | Function                  | Competitors |
|----------------|---------------------------|-------------|
| 2C81           | DC Current Sensing relays |             |

### Shaft Overcurrent Relays

| RMS Mors Smitt | Function                       | Competitors |
|----------------|--------------------------------|-------------|
| 2C139          | 150Hz AC shaft current sensing |             |

### Auto Reclose Relays

| RMS Mors Smitt | Function           | Competitors |
|----------------|--------------------|-------------|
| 1B230          | Multi-shot Reclose | MVTR01      |



## High Impedance Differential Busbar/ Restricted Earth Fault (REF)

| RMS Mors Smitt | Function                                | Competitors    |
|----------------|---|----------------|
| 2V73           | High Impedance Relay (Voltage set)      | MFAC<br>5B3    |
| 2V68-S         | CT Supervision Relay                    | MVTP           |
| 2V75           | Metrosil/Resistor Module                | Metrosil       |
| 1M123          | High Impedance Busbar Protection scheme | MCAG34, MFAC34 |

## CT Supervision Relays

| RMS Mors Smitt | Function             | Competitors |
|----------------|----------------------|-------------|
| 2V68-S         | CT Supervision Relay | MVTP        |

## Frequency Relays

| RMS Mors Smitt | Function                                  | Competitors                       |
|----------------|---|-----------------------------------|
| 2H34-S         | Under Frequency / Over Frequency<br>ROCOF | MFVU21<br>Argus 8, 7SG118, 7SR158 |

## Synchronism Check Relays

| RMS Mors Smitt | Function          | Competitors             |
|----------------|-------------------|-------------------------|
| 2SY212-S       | Synchronism Check | Argus 7, 7SG117, 7SR157 |

## Under / Over Voltage Relays

| RMS Mors Smitt | Function                     | Competitors                       |
|----------------|------------------------------|-----------------------------------|
| 2V67-S         | Under Voltage / Over Voltage | MVTU11<br>Argus 8, 7SG118, 7SG158 |
| 2V76           | Under Voltage / Over Voltage | MVTU11<br>Argus 8, 7SG118, 7SG158 |



## Neutral Displacement Relays

| RMS Mors Smitt | Function                     | Competitors                       |
|----------------|------------------------------|-----------------------------------|
| 2V76           | Under Voltage / Over Voltage | MVTU11<br>Argus 8, 7SG118, 7SG158 |

## Phase Failure Relays

| RMS Mors Smitt | Function   | Competitors |
|----------------|--|-------------|
| 2P49           | Phase Failure and 3 phase under voltage relay (self powered) |             |
| 2P740          | Phase Failure and 3 phase under voltage relay (self powered) |             |

## Potential Selecting Relays

| RMS Mors Smitt | Function   | Competitors |
|----------------|--|-------------|
| 2P48           | Potential Selection via either phase failure or 3 phase under voltage detection (Self powered) |             |

## Voltage Regulation Relays

| RMS Mors Smitt | Function   | Competitors                               |
|----------------|--|---|
| 2V164-S        | Transformer Voltage Regulating Relay                                 | MVGC, KVGC<br>MicroTAPP, 7SG15, SuperTAPP |
| 1M122A         | Parallel Transformer Voltage Regulation Scheme (Master Follower)     | MVGC, KVGC<br>MicroTAPP, 7SG15, SuperTAPP |
| 2V200          | Tap Position Transducer (Voltage divider, resistor chain, BCD input) |   |
| 4D200          | Tap Position Indicator (Frequency, BCD/BIN input)                    |   |

## Alarm Panels

| RMS Mors Smitt | Function                                      | Competitors |
|----------------|---|-------------|
| 1A54           | 4, 8 or 16 point Alarm panel                  |             |
| 6RM Quad       | 4 Element Flag Relay<br>(based on 6RM relays) |             |

The complete product portfolio may be found at: [www.morssmitt.com/rms](http://www.morssmitt.com/rms)

## ANSI Codes – Condensed List

| ANSI Code | Function                                |
|-----------|---|
| 25        | Synchronism Check                       |
| 27        | Undervoltage                            |
| 30        | Annunciator                             |
| 47        | Phase-Sequence or Phase Balance Voltage |
| 50        | Instantaneous Overcurrent               |
| 51        | Time Overcurrent                        |
| 52        | Circuit Breaker                         |
| 59        | Overvoltage                             |
| 62        | Time Delay                              |
| 74        | Alarm                                   |
| 79        | Auto Reclose                            |
| 81        | Frequency                               |
| 83        | Automatic Transfer                      |
| 86        | Lockout                                 |
| 87        | Differential                            |
| 90        | Regulating Device                       |
| 94        | Tripping                                |

### Disclaimer

This cross reference is a guide only and any relay choice must be fully assessed against the end user's specific application requirements.

While the information and guidance given in this document is believed to be correct, no liability shall be accepted for any loss or damage caused by any error or omission, whether such error or omission is the result of negligence or any other cause. Any and all such liability is disclaimed.