multitek

PowerRelay
The combination transducer relay
**POWER RELAY**

The M570-PR* PowerRelay is a combination of multifunctional relay and AC power transducer. The RS485 communication port provides Modbus output of all parameters measured and allows programming of the 4 relays as well as programming of CT and VT ratios, demand times etc.

**Parameters**
- 20 different parameters can be assigned to the relays.

**Reset (%) Range**
- The reset (differential) can be adjusted between 1 and 120% of nominal input.

**Group Logic**
- Allows the relay to trip on 1, 2, 3 phases, the sum or the average of the systems assigned parameter when limits are reached.

**Relay Mode**
- The relay can be assigned so that it operates as an over, under or window type.

**Time Delay**
- The time delay can be set between 40msec to 2 minutes in 1 second steps.

**Attach to Relay**
- The parameter can be attached to relay 1, relay 2 or relay 3.

**Trip (% Range)**
- The trip-point (setpoint) can be adjusted between 10 and 120% of nominal input.

**Attach to Relay**
- The parameter can be attached to relay 1, relay 2 or relay 3.

**Reset (%) Range**
- The reset (differential) can be adjusted between 1 and 120% of nominal input.

**Group Logic**
- Allows the relay to trip on 1, 2, 3 phases, the sum or the average of the systems assigned parameter when limits are reached.

**Time Delay**
- The time delay can be set between 40msec to 2 minutes in 1 second steps.

**Attach to Relay**
- The parameter can be attached to relay 1, relay 2 or relay 3.

**Relay Action**
- The relay can be programmed to energise on trip or de-energise on trip.

**RELAY SETUP**

The M570-PR* PowerRelay Setup allows programming of the 4 independent relays and any 8 parameters out of 18 assignable can be assigned to 3 of these relays. Each relay has adjustable parameters, such as setpoint, time delay etc. The 4th relay is an option and can be used for pulsed output for W.h VAR.h VA.h A.h.
**PULSED OUTPUT RELAY**
The fourth relay is an option and is used as an energy relay providing a pulse output corresponding to either Watt hour Import or Export, VAR hour Import or Export, VA hour or Ampere hour. Pulse width can be selected as well as the relay divisor which allows relay to pulse every 1, 10 or 100 counts.

**RELAYS STATE**
The free set up and monitor software allows monitoring of the state of each relay as well as indicating the parameters assigned. See below the exceptions screen.

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### Select Parameter
- Select either
  - W.h import or export
  - VAR import or export
  - VA.h or A.h

### Units
- The pulsed output will either be h or k.h or M.h this is automatically set by C.T. and V.T. ratios of the system.

### State Reference
- Key to relay conditions
  - Under/Over/Window
  - Over condition red band.
  - Under condition green band.
  - Window condition blue band.

### Exceptions
- This shows the parameter, the relay that it is assigned to and the state that relay is in. Colour band indicates over, under or window.

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### Relay Mode (F1 for help)
- Select Parameter:
  - W.h import or export
  - VAR import or export
  - VA.h or A.h

- Units:
  - The pulsed output will either be h or k.h or M.h this is automatically set by C.T. and V.T. ratios of the system.

- State Reference:
  - Key to relay conditions
    - Under/Over/Window
      - Over condition red band.
      - Under condition green band.
      - Window condition blue band.

- Display Energy Settings
  - Tick this box and the monitor displays the energy relay settings.

- Units:
  - The pulsed output will either be h or k.h or M.h this is automatically set by C.T. and V.T. ratios of the system.

- Exception Status
  - This shows the parameter, the relay that it is assigned to and the state that relay is in. Colour band indicates over, under or window.
**COMMUNICATION**

PowerRelay uses RS485 Modbus protocol. This enables remote reading and programming of the PowerRelay via a host computer. The RS485 allows up to 32 PowerRelays to be connected in parallel, allowing them to be used with PC, PLC, RTU, Data loggers and Scada programs. RS485 to USB converters now available.

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**SYSTEM MONITOR**

The System Monitor program displays all 42 parameters being measured. CT and VT ratios demand times, etc. all can be set via this program. The System Monitor enables programming of the 4 relays as well as data logging. System Monitor is free and contains help files and operating instructions. It can be downloaded from Multitek website: www.multitek-ltd.com

<table>
<thead>
<tr>
<th>Type</th>
<th>Displays system type i.e. 3 phase 4 wire, 3 phase 3 wire etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voltage Current</strong></td>
<td>Voltage and Current ratios can be programmed and the values are displayed.</td>
</tr>
<tr>
<td><strong>Monitor / Log</strong></td>
<td>Display 6 parameters at a time, showing the instantaneous value.</td>
</tr>
</tbody>
</table>

**System Monitor**

The System Monitor program displays all 42 parameters being measured. CT and VT ratios demand times, etc. all can be set via this program. The System Monitor enables programming of the 4 relays as well as data logging. System Monitor is free and contains help files and operating instructions. It can be downloaded from Multitek website: www.multitek-ltd.com

**Start Log**

User goes into the log screen and logging of up to 6 parameters can be performed.

**Response Time**

User can set response time.

**Node**

Node (address) can be set between 1 and 247.
PARAMETERS MEASURED

- Phase Voltage (V)
- Line Voltage (V)
- Phase Current (I)
- Frequency (Hz)
- Active Power per phase (W)
- System Active Power (W)
- Reactive Power per phase (VAR)
- System Reactive Power (VAR)
- Apparent Power per phase (VA)
- System Apparent Power (VA)
- Import Active Energy (W.h)
- Export Active Energy (W.h)
- Import Reactive Energy (VAR.h)
- Export Reactive Energy (VAR.h)
- Apparent Energy (VA.h)
- Ampere Energy (Ah)
- Amp Demand (Ad)
- Import Watt Demand (Wd)
- Export Watt Demand (Wd)
- VA Demand (VAd)

PARAMETERS ASSIGNABLE TO RELAYS

- Phase Voltage (V)
- Phase Current (I)
- Phase Balance (V)
- Frequency (Hz)
- Reverse Power. (-W)
- Reverse VAR (-VAR)
- System Active Power (W)
- System Reactive Power (VAR)
- Apparent Power per phase (VA)
- System Apparent Power (VA)
- Import Active Energy (W.h)
- Export Active Energy (W.h)
- Import Reactive Energy (VAR.h)
- Export Reactive Energy (VAR.h)
- Apparent Energy (VA.h)
- Ampere Energy (Ah)
- Amp Demand (Ad)
- Import Watt Demand (Wd)
- Export Watt Demand (Wd)
- VA Demand (VAd)

SYSTEMS

- Single Phase: M570-PR1
- Single Phase 3 wire: M570-PR1-3
- 3 phase 3 wire unbalanced load: M570-PR4
- 3 phase 4 wire unbalanced load: M570-PR9

MEMORY

All data including, energy registers, current and voltage ratios relay trip points and calibration data is stored in a non volatile eeprom. Under power down (power loss) conditions this data is retained.

APPLICATIONS

Applications include generating sets, switchgear, management systems, distribution feeders, control panels, UPS systems, process control, generating systems, power management and control.

AUTO-CONFIGURABLE

The PowerRelay communication port is auto-configurable meaning that when connected to an existing Modbus network it will automatically set Baud rate, Parity and Stop bits.

A green LED is provided to indicate power is present, and the unit is communicating correctly.

OUTPUT RELAYS

Relay type: Single Pole A or B contact.
Material: AgSnInO
AC Rating: 250V  5A    DC Rating: 30V 1A
Relay’s R1 and R2 are normally open
Relay R3 is normally closed.
Relay R4 is normally open and closes when unit counts energy etc.
Terminal 19 is common to all 4 relays

RELAY ACCURACY

Specified @ 23°C 10%-Un 10%-In
Voltage & Current:-
Accuracy ± 1% of range
Resolution ± 1%
Frequency:-
Accuracy ± 0.02Hz
Repeatability ±0.02Hz
All other Parameters:-
Accuracy ± 2%
Repeatability ± 1%
GENERAL SPECIFICATION

 INPUT
 Rated Un  Direct connected voltages between 57.8 and 600 V. Specify nominal.
 Range  10-120% Un
 Overload  1.5 x Un cont. 4 x Un for 1 sec
 Rated In  1 or 5 amp
 Range  10-120% In
 Burden  0.5VA per phase Volts & Amps
 Overload  4 x In continuous. 50 x In for 1 sec
 Frequency  50 / 60 Hz nominal range 45/65Hz

 MODBUS ACCURACY
 Specified @ 23°C  10%-Un  10%-In
 Parameters unless stated  Class 0.3% to IEC 688
 Volts and Amps  Class 0.25% to IEC 688
 Frequency  Class 0.1Hz to IEC 688
 Power Factor  Class 1.0% to IEC 688
 Active & Reactive Energy 1% of reading IEC1036

 INSULATION
 Test Voltage  4 kV RMS 50 Hz for 1 min
 Impulse Test  EMC 5kV transient complying with IEC 801 / EN 55020 HF
 Surge withstand  IEC 801 / EN55020
 Interference  EHF 2.5 kV 1Mhz complying with IEC 255-4
 Protection Class  II complying with IEC348

 APPLIED STANDARDS
 General  IEC 688 BSEN60688, BS4889, IEC 359
 EMC  Emissions EN61326-1
 Safety  EN61010-1

 AUXILIARY
 AC voltage  115, 230, 277, 400 volts (±15%)
 DC voltage  12, 24, 48, 110, 125, volts (±15%)
 Specify nominal voltage.

 ENVIRONMENTAL
 Working Temperature  -25 to +70 deg C
 Storage Temperature  -40 to +85 deg C
 Temperature Coefficient  0.01% per deg C

 APPROVALS
 UL, C-UL, CSA

 CASE DIMENSIONS

 CONNECTION DIAGRAMS
 Single Phase 3 Wire  Single Phase
 3 Ph 3 W Unbalanced Load  3 Ph 4 W Unbalanced Load

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