

7SR224 Recloser Controller

Overcurrent Relay

Document Release History

This document is issue **2010/05**. The list of revisions up to and including this issue is:

| | |
|---------|-----------------------------------|
| 2010/05 | Document formatted due to rebrand |
| | |

Software Revision History

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|------------------------|--------------------|
| RELAY | 7SR224x-2xAx1-0CA0 |
| SOFTWARE | 2435H80011R2d-1a |
| RELAY IDENTIFER | RECLOSER-M 7SR22 |
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1.1. System Config

| Description | Range | Default | Setting |
|---|------------------------------------|----------|---------|
| Active Group <i>Selects which settings group is currently activated</i> | 1,2...8 | 1 | |
| System Frequency <i>Selects the Power System Frequency from 50 or 60 Hz</i> | 50, 60 | 50Hz | |
| View/Edit Group <i>Selects which settings group is currently being displayed</i> | 1,2...8 | 1 | |
| Setting Dependencies <i>When enabled only active settings are displayed and all others hidden</i> | Disabled, Enabled | Enabled | |
| Favourite Meters Timer <i>Selects the time delay after which, if no key presses have been detected, the relay will begin to poll through any screens which have been selected as favourite instruments</i> | Off, 1, 2, 5, 10, 15, 30, 60 | 60min | |
| Backlight timer <i>Controls when the LCD backlight turns off</i> | Off, 1, 2, 5, 10, 15, 30, 60 | 5min | |
| Date <i>Sets the date, this setting can only be changed on the fascia or via Relay->Control->Set Time and Date</i> | dd/mm/yyyy | 1/1/2000 | |
| Time <i>Sets the time, this setting can only be changed on the fascia or via Relay->Control->Set Time and Date</i> | hh:mm:ss | 00:00:00 | |
| Curr Set Display <i>Select whether the Pickup values are shown in terms of x Nominal, Primary or Secondary values on the Relay Fascia</i> | xNom, Primary, Secondary | xNom | |
| E/F Curr Set Display <i>As Above</i> | xNom, Primary, Secondary | xNom | |
| Export Power/Lag VAR <i>Selects the signs required for exporting power and lagging VARs</i> | +ve/+ve, +ve/-ve, -ve/+ve, -ve/-ve | +ve/+ve | |

| Description | Range | Default | Setting |
|--|--|------------------|---------|
| Select Grp Mode <i>Mode of operation of the group change from status input. Edge triggered ignores the status input once it has changed to the relevant group, where as with Level triggered the relay will only stay in the group it has changed to whilst the status input is being driven, after which it returns to the previous group.</i> | Edge triggered, Level triggered | Edge triggered | |
| Clock Sync. From BI <i>Real time clock may be synchronised using a binary input (See Clock Sync. in Binary Input Menu)</i> | Disabled, Seconds, Minutes | Minutes | |
| Operating Mode <i>Selects the current operating mode of the relay. This can also be changed by a binary input mode selection.</i> | Out Of Service, Local, Remote, Local Or Remote | Local Or Remote | |
| Setting Password <i>Allows a 4 character alpha code to be entered as the password. Note that the display shows a password dependant encrypted code on the second line of the display</i> | (Password) | NONE | |
| Control Password <i>As Above</i> | (Password) | NONE | |
| Trip Alert <i>When Enabled the occurrence of a Trip will cause the relay to display the Trip Alert Screen, the only way to leave this screen is by acknowledging the trip through the TEST/RESET button on the relay fascia</i> | Disabled, Enabled | Enabled | |
| Relay Identifier <i>An alphanumeric string shown on the LCD normally used to identifier the circuit the relay is attached to or the relays purpose</i> | (16 Character String) | RECLOSER-M 7SR22 | |

1.2. CT/VT Config

| Description | Range | Default | Setting |
|---|---|-------------|---------|
| Phase Nom Voltage <i>Selects the nominal voltage setting Vn of the voltage input</i> | 40, 40.1 ... 159.9, 160 | 63.5V | |
| Phase Voltage Trim Magnitude <i>Allows trimming of voltage magnitude, the setting value should be the voltage required to be added to get back to Phase Nom Voltage.</i> | 0, 0.1 ... 19.9, 20 | 0V | |
| Phase Voltage Trim Angle <i>Allows trimming of voltage angle, the setting value is added to the current voltage angle</i> | -45, -44.9 ... 44.9, 45 | 0deg | |
| Phase Voltage Config <i>Required to allow for different types of physical VT connections.</i> | Van,Vbn,Vcn, Vab,Vbc,3V0, Va,Vb,Vc | Van,Vbn,Vcn | |
| Phase VT Ratio <i>VT ratio to scale primary voltage instrument</i> | 3300:40, 3300:40.5 ... 500000:159.5, 500000:160 | 132000:110 | |

| Description | Range | Default | Setting |
|---|--|------------|---------|
| Vx Nom Voltage <i>Selects the nominal voltage setting Vn of the voltage input</i> | 40, 40.1 ... 159.9, 160 | 63.5V | |
| Vx Voltage Trim Magnitude <i>Allows trimming of voltage magnitude, the setting value should be the voltage required to be added to get back to Vx Nom Voltage.</i> | 0, 0.1 ... 19.9, 20 | 0V | |
| Vx Voltage Trim Angle <i>Allows trimming of voltage angle, the setting value is added to the current voltage angle</i> | -45, -44.9 ... 44.9, 45 | 0deg | |
| Vx VT Ratio <i>VT ratio to scale primary voltage instrument</i> | 3300:40, 3300:40.5 ... 500000:159.5, 500000:160 | 132000:110 | |
| Phase Current Input <i>Selects whether 1 or 5 Amp terminals are being used for phase inputs</i> | 1, 5 | 1A | |
| Phase CT Ratio <i>Phase CT ratio to scale primary current instruments</i> | 1:0.2, 1:0.21 ... 5000:6.9, 5000:7 | 2000:1 | |
| Earth Current Input <i>Selects whether 1 or 5 Amp terminals are being used for Measured Earth inputs</i> | 1, 5 | 1A | |
| Earth CT Ratio <i>Measured Earth CT ratio to scale primary current instruments</i> | 1:0.2, 1:0.21 ... 5000:6.9, 5000:7 | 2000:1 | |

1.3. Function Config

| Description | Range | Default | Setting |
|---|-------------------|----------|---------|
| Gn Phase Overcurrent <i>When set to Disabled, no Phase Overcurrent elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i> | Enabled, Disabled | Disabled | |
| Gn Voltage Cont O/C <i>When set to Disabled, no Voltage Cont O/C elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i> | Enabled, Disabled | Disabled | |
| Gn Cold Load <i>When set to Disabled, no Cold Load elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i> | Enabled, Disabled | Disabled | |

| Description | Range | Default | Setting |
|---|-------------------|----------------|----------------|
| Gn Measured E/F <i>When set to Disabled, no Measured E/F elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i> | Enabled, Disabled | Disabled | |
| Gn Sensitive E/F <i>When set to Disabled, no Sensitive E/F elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i> | Enabled, Disabled | Disabled | |
| Gn Restricted E/F <i>When set to Disabled, no Restricted E/F elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i> | Enabled, Disabled | Disabled | |
| Gn NPS Overcurrent <i>When set to Disabled, no NPS Overcurrent elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i> | Enabled, Disabled | Disabled | |
| Gn Under Current <i>When set to Disabled, no Under Current elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i> | Enabled, Disabled | Disabled | |
| Gn Thermal <i>When set to Disabled, no Thermal elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i> | Enabled, Disabled | Disabled | |
| Gn Phase U/O Voltage <i>When set to Disabled, no Phase U/O Voltage elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i> | Enabled, Disabled | Disabled | |
| Gn Vx U/O Voltage <i>When set to Disabled, no Vx U/O Voltage elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i> | Enabled, Disabled | Disabled | |

| Description | Range | Default | Setting |
|--|-------------------|----------|---------|
| <p>Gn NPS Overvoltage</p> <p><i>When set to Disabled, no NPS Overvoltage elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i></p> | Enabled, Disabled | Disabled | |
| <p>Gn Neutral Overvoltage</p> <p><i>When set to Disabled, no Neutral Overvoltage elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i></p> | Enabled, Disabled | Disabled | |
| <p>Gn U/O Frequency</p> <p><i>When set to Disabled, no U/O Frequency elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i></p> | Enabled, Disabled | Disabled | |
| <p>Gn CB Fail</p> <p><i>When set to Disabled, no CB Fail elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i></p> | Enabled, Disabled | Disabled | |
| <p>Gn VT Supervision</p> <p><i>When set to Disabled, no VT Supervision elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i></p> | Enabled, Disabled | Disabled | |
| <p>Gn CT Supervision</p> <p><i>When set to Disabled, no CT Supervision elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i></p> | Enabled, Disabled | Disabled | |
| <p>Gn Broken Conductor</p> <p><i>When set to Disabled, no Broken Conductor elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i></p> | Enabled, Disabled | Disabled | |
| <p>Gn Trip Cct Supervision</p> <p><i>When set to Disabled, no Trip Cct Supervision elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i></p> | Enabled, Disabled | Disabled | |

| Description | Range | Default | Setting |
|--|-------------------|----------|---------|
| Gn Inrush Detector <i>When set to Disabled, no Inrush Detector elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i> | Enabled, Disabled | Disabled | |
| Gn CB Counters <i>When set to Disabled, no Gn CB Counter elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i> | Enabled, Disabled | Disabled | |
| Gn I ² t CB Wear <i>When set to Disabled, no Gn I²t CB Wear elements will be functional and all associated settings will be hidden. (The Setting Dependencies setting being set to Disabled will make all settings visible but will not allow them to operate).</i> | Enabled, Disabled | Disabled | |
| Gn Battery Test | Enabled, Disabled | Disabled | |
| Gn Capacitor Test | Enabled, Disabled | Disabled | |
| Gn 27Sag & 59Swell | Enabled, Disabled | Disabled | |

1.4. Current Prot'n

1.4.1. Phase Overcurrent

| Description | Range | Default | Setting |
|---|---------------------|----------|---------|
| Gn 67 Char Angle <i>Maximum torque angle for phase overcurrent elements</i> | -95, -94 ... 94, 95 | 45deg | |
| Gn 67 Minimum Voltage <i>Selects the directional elements minimum voltage, below which the element will be inhibited</i> | 1, 1.5 ... 19.5, 20 | 1V | |
| Gn 67 2-out-of-3 Logic <i>Selects whether 2 out of 3 voting logic is enabled for phase overcurrent elements</i> | Enabled, Disabled | Disabled | |
| Gn 51/50 Measurement <i>Selects whether the RMS value used by the 51 & 50 elements is True RMS or only calculated at fundamental frequency</i> | RMS, Fundamental | RMS | |

1.4.1.1. 51-1

| Description | Range | Default | Setting |
|--|-------------------------------|----------------|----------------|
| Gn 51-1 Element <i>Selects whether the 51-1 IDMTL Overcurrent element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 51-1 Dir. Control <i>Selects whether 51-1 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 51-1 Setting <i>Pickup level</i> | 0.05, 0.1 ... 2.45, 2.5 | 1xIn | |
| Gn 51-1 Char <i>Selects characteristic curve to be IEC or ANSI IDMTL or DTL</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51-1 Time Mult (IEC/ANSI) <i>Time multiplier (applicable to IEC and ANSI curves but not DTL selection)</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |
| Gn 51-1 Delay (DTL) <i>Delay (applicable only when DTL is selected for characteristic)</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 51-1 Min Operate Time <i>Minimum operate time of element.</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51-1 Follower DTL <i>Additional definite time added after characteristic time</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51-1 Reset <i>Selects between an ANSI decaying reset characteristic or a definite time reset</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |
| Gn 51-1 VTS Action <i>Selects whether 51-1 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |
| Gn 51-1 Inrush Action <i>Selects if the 51-1 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.1.2. 51-2

| Description | Range | Default | Setting |
|--|-------------------------------|----------|---------|
| Gn 51-2 Element <i>Selects whether the 51-2 IDMTL Overcurrent element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 51-2 Dir. Control <i>Selects whether 51-2 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 51-2 Setting <i>Pickup level</i> | 0.05, 0.1 ... 2.45, 2.5 | 1xIn | |
| Gn 51-2 Char <i>Selects characteristic curve to be IEC or ANSI IDMTL or DTL</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51-2 Time Mult (IEC/ANSI) <i>Time multiplier (applicable to IEC and ANSI curves but not DTL selection)</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |
| Gn 51-2 Delay (DTL) <i>Delay (applicable only when DTL is selected for characteristic)</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 51-2 Min Operate Time <i>Minimum operate time of element.</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51-2 Follower DTL <i>Additional definite time added after characteristic time</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51-2 Reset <i>Selects between an ANSI decaying reset characteristic or a definite time reset</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |
| Gn 51-2 VTS Action <i>Selects whether 51-2 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |
| Gn 51-2 Inrush Action <i>Selects if the 51-2 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.1.3. 51-3

| Description | Range | Default | Setting |
|--|----------------------------|----------|---------|
| Gn 51-3 Element <i>Selects whether the 51-3 IDMTL Overcurrent element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 51-3 Dir. Control <i>Selects whether 51-3 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 51-3 Setting <i>Pickup level</i> | 0.05, 0.1 ... 2.45, 2.5 | 1xIn | |
| Gn 51-3 Char <i>Selects characteristic curve to be IEC or ANSI IDMTL or DTL</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51-3 Time Mult (IEC/ANSI) <i>Time multiplier (applicable to IEC and ANSI curves but not DTL selection)</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |

| Description | Range | Default | Setting |
|--|-------------------------------|---------|---------|
| Gn 51-3 Delay (DTL) <i>Delay (applicable only when DTL is selected for characteristic)</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 51-3 Min Operate Time <i>Minimum operate time of element.</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51-3 Follower DTL <i>Additional definite time added after characteristic time</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51-3 Reset <i>Selects between an ANSI decaying reset characteristic or a definite time reset</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |
| Gn 51-3 VTS Action <i>Selects whether 51-3 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |
| Gn 51-3 Inrush Action <i>Selects if the 51-3 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.1.4. 51-4

| Description | Range | Default | Setting |
|--|-------------------------------|----------|---------|
| Gn 51-4 Element <i>Selects whether the 51-4 IDMTL Overcurrent element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 51-4 Dir. Control <i>Selects whether 51-4 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 51-4 Setting <i>Pickup level</i> | 0.05, 0.1 ... 2.45, 2.5 | 1xIn | |
| Gn 51-4 Char <i>Selects characteristic curve to be IEC or ANSI IDMTL or DTL</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51-4 Time Mult (IEC/ANSI) <i>Time multiplier (applicable to IEC and ANSI curves but not DTL selection)</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |
| Gn 51-4 Delay (DTL) <i>Delay (applicable only when DTL is selected for characteristic)</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 51-4 Min Operate Time <i>Minimum operate time of element.</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51-4 Follower DTL <i>Additional definite time added after characteristic time</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51-4 Reset <i>Selects between an ANSI decaying reset characteristic or a definite time reset</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |
| Gn 51-4 VTS Action <i>Selects whether 51-4 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |

| Description | Range | Default | Setting |
|--|--------------|---------|---------|
| Gn 51-4 Inrush Action <i>Selects if the 51-4 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.1.5. 50-1

| Description | Range | Default | Setting |
|--|---------------------------|----------|---------|
| Gn 50-1 Element <i>Selects whether the INST/ DTL Overcurrent element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 50-1 Dir. Control <i>Selects whether 50-1 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 50-1 Setting <i>Pickup level</i> | 0.05, 0.1 ... 49.5, 50 | 1xIn | |
| Gn 50-1 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| Gn 50-1 VTS Action <i>Selects whether 50-1 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |
| Gn 50-1 Inrush Action <i>Selects if the 50-1 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.1.6. 50-2

| Description | Range | Default | Setting |
|--|---------------------------|----------|---------|
| Gn 50-2 Element <i>Selects whether the INST/ DTL Overcurrent element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 50-2 Dir. Control <i>Selects whether 50-2 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 50-2 Setting <i>Pickup level</i> | 0.05, 0.1 ... 49.5, 50 | 1xIn | |
| Gn 50-2 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| Gn 50-2 VTS Action <i>Selects whether 50-2 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |
| Gn 50-2 Inrush Action <i>Selects if the 50-2 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.1.7. 50-3

| Description | Range | Default | Setting |
|--|---------------------------|----------------|----------------|
| Gn 50-3 Element <i>Selects whether the INST/ DTL Overcurrent element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 50-3 Dir. Control <i>Selects whether 50-3 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 50-3 Setting <i>Pickup level</i> | 0.05, 0.1 ... 49.5, 50 | 1xIn | |
| Gn 50-3 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| Gn 50-3 VTS Action <i>Selects whether 50-3 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |
| Gn 50-3 Inrush Action <i>Selects if the 50-3 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.1.8. 50-4

| Description | Range | Default | Setting |
|--|---------------------------|----------------|----------------|
| Gn 50-4 Element <i>Selects whether the INST/ DTL Overcurrent element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 50-4 Dir. Control <i>Selects whether 50-4 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 50-4 Setting <i>Pickup level</i> | 0.05, 0.1 ... 49.5, 50 | 1xIn | |
| Gn 50-4 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| Gn 50-4 VTS Action <i>Selects whether 50-4 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |
| Gn 50-4 Inrush Action <i>Selects if the 50-4 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.2. Voltage Cont O/C

| Description | Range | Default | Setting |
|---|--|----------|---------|
| Gn 51V Element <i>Selects whether the Voltage Controlled Overcurrent element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 51V Setting <i>The voltage below which 51V operates</i> | 5, 5.5 ... 199.5, 200 | 30V | |
| Gn 51V VTS Action <i>Selects whether or not the 51V element is blocked when VTS operates</i> | Off, Inhibit | Off | |
| Gn 51-1 Multiplier <i>Multiplier applied to the 51-1 element when VCO element has operated</i> | 0.25, 0.3, 0.35, 0.4, 0.45, 0.5, 0.55, 0.6, 0.65, 0.7, 0.75, 0.8, 0.85, 0.9, 0.95, 1 | 0.5 | |
| Gn 51-2 Multiplier <i>Multiplier applied to the 51-2 element when VCO element has operated</i> | 0.25, 0.3, 0.35, 0.4, 0.45, 0.5, 0.55, 0.6, 0.65, 0.7, 0.75, 0.8, 0.85, 0.9, 0.95, 1 | 0.5 | |
| Gn 51-3 Multiplier <i>Multiplier applied to the 51-3 element when VCO element has operated</i> | 0.25, 0.3, 0.35, 0.4, 0.45, 0.5, 0.55, 0.6, 0.65, 0.7, 0.75, 0.8, 0.85, 0.9, 0.95, 1 | 0.5 | |
| Gn 51-4 Multiplier <i>Multiplier applied to the 51-4 element when VCO element has operated</i> | 0.25, 0.3, 0.35, 0.4, 0.45, 0.5, 0.55, 0.6, 0.65, 0.7, 0.75, 0.8, 0.85, 0.9, 0.95, 1 | 0.5 | |

1.4.3. Cold Load

| Description | Range | Default | Setting |
|--|----------------------------|----------|---------|
| Cold Load <i>Selects whether the Cold Load element is enabled</i> | Disabled, Enabled | Disabled | |
| Pick-up Time <i>Cold Load operate time delay</i> | 1, 1.1 ... 14100, 14400 | 600s | |
| Drop-off Time <i>Cold Load reset time delay</i> | 1, 1.1 ... 14100, 14400 | 600s | |
| Reduced Current <i>Selects whether reduced current functionality is to be used</i> | Disabled, Enabled | Disabled | |
| Reduced Current Level <i>Selects current level below which Reduced Current Time is used for Cold Load reset delay</i> | 0.05, 0.1 ... 2.45, 2.5 | 0.25xIn | |
| Reduced Current Time <i>Cold Load reset time delay used when reduced current active</i> | 1, 1.1 ... 14100, 14400 | 600s | |
| Gn 51c-1 Setting <i>51-1 element parameter used when Cold Load operates</i> | 0.05, 0.1 ... 2.45, 2.5 | 1xIn | |
| Gn 51c-1 Char <i>As Above</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51c-1 Time Mult (IEC/ANSI) <i>As Above</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |

| Description | Range | Default | Setting |
|--|-------------------------------|---------|---------|
| Gn 51c-1 Delay (DTL) <i>As Above</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 51c-1 Min Operate Time <i>As Above</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51c-1 Follower DTL <i>As Above</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51c-1 Reset <i>As Above</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |
| Gn 51c-2 Setting <i>51-2 element parameter used when Cold Load operates</i> | 0.05, 0.1 ... 2.45, 2.5 | 1xIn | |
| Gn 51c-2 Char <i>As Above</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51c-2 Time Mult (IEC/ANSI) <i>As Above</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |
| Gn 51c-2 Delay (DTL) <i>As Above</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 51c-2 Min Operate Time <i>As Above</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51c-2 Follower DTL <i>As Above</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51c-2 Reset <i>As Above</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |
| Gn 51c-3 Setting <i>51-3 element parameter used when Cold Load operates</i> | 0.05, 0.1 ... 2.45, 2.5 | 1xIn | |
| Gn 51c-3 Char <i>As Above</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51c-3 Time Mult (IEC/ANSI) <i>As Above</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |
| Gn 51c-3 Delay (DTL) <i>As Above</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 51c-3 Min Operate Time <i>As Above</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51c-3 Follower DTL <i>As Above</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51c-3 Reset <i>As Above</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |
| Gn 51c-4 Setting <i>51-4 element parameter used when Cold Load operates</i> | 0.05, 0.1 ... 2.45, 2.5 | 1xIn | |
| Gn 51c-4 Char <i>As Above</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51c-4 Time Mult (IEC/ANSI) <i>As Above</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |
| Gn 51c-4 Delay (DTL) <i>As Above</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 51c-4 Min Operate Time <i>As Above</i> | 0, 0.01 ... 19.99, 20 | 0s | |

| Description | Range | Default | Setting |
|--|-------------------------------|---------|---------|
| Gn 51c-4 Follower DTL <i>As Above</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51c-4 Reset <i>As Above</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |

1.4.4. Measured /F

| Description | Range | Default | Setting |
|---|------------------------------|---------|---------|
| Gn 67G Char Angle <i>Maximum torque angle for measured earth fault elements</i> | -95, -94 ... 94, 95 | -15deg | |
| Gn 67G Minimum Voltage <i>Selects the directional elements minimum voltage, below which the element will be inhibited</i> | 0.33, 0.5, 1, 1.5, 2, 2.5, 3 | 0.33V | |
| Gn 51G/50G Measurement <i>Selects whether the RMS value used by the 51G & 50G elements is True RMS or only calculated at fundamental frequency</i> | RMS, Fundamental | RMS | |

1.4.4.1. 51G-1

| Description | Range | Default | Setting |
|---|-------------------------------|----------|---------|
| Gn 51G-1 Element <i>Selects whether the 51G-1 IDMTL measured Earth Fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 51G-1 Dir. Control <i>Selects whether 51G-1 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 51G-1 Setting <i>Pickup level</i> | 0.005, 0.01 ... 0.995, 1 | 0.5xIn | |
| Gn 51G-1 Char <i>Selects characteristic curve to be IEC or ANSI IDMTL or DTL</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51G-1 Time Mult (IEC/ANSI) <i>Time multiplier (applicable to IEC and ANSI curves but not DTL selection)</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |
| Gn 51G-1 Delay (DTL) <i>Delay (applicable only when DTL is selected for characteristic)</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 51G-1 Min Operate Time <i>Minimum operate time of element.</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51G-1 Follower DTL <i>Additional definite time added after characteristic time</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51G-1 Reset <i>Selects between an ANSI decaying reset characteristic or DTL reset</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |
| Gn 51G-1 VTS Action <i>Selects whether 51G-1 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |

| Description | Range | Default | Setting |
|--|--------------|---------|---------|
| Gn 51G-1 Inrush Action <i>Selects if the 51G-1 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.4.2. 51G-2

| Description | Range | Default | Setting |
|--|-------------------------------|----------|---------|
| Gn 51G-2 Element <i>Selects whether the 51G-2 IDMTL measured Earth Fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 51G-2 Dir. Control <i>Selects whether 51G-2 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 51G-2 Setting <i>Pickup level</i> | 0.005, 0.01 ... 0.995, 1 | 0.5xIn | |
| Gn 51G-2 Char <i>Selects characteristic curve to be IEC or ANSI IDMTL or DTL</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51G-2 Time Mult (IEC/ANSI) <i>Time multiplier (applicable to IEC and ANSI curves but not DTL selection)</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |
| Gn 51G-2 Delay (DTL) <i>Delay (applicable only when DTL is selected for characteristic)</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 51G-2 Min Operate Time <i>Minimum operate time of element.</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51G-2 Follower DTL <i>Additional definite time added after characteristic time</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51G-2 Reset <i>Selects between an ANSI decaying reset characteristic or DTL reset</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |
| Gn 51G-2 VTS Action <i>Selects whether 51G-2 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |
| Gn 51G-2 Inrush Action <i>Selects if the 51G-2 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.4.3. 51G-3

| Description | Range | Default | Setting |
|--|---------------------------|----------|---------|
| Gn 51G-3 Element <i>Selects whether the 51G-3 IDMTL measured Earth Fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 51G-3 Dir. Control <i>Selects whether 51G-3 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 51G-3 Setting <i>Pickup level</i> | 0.005, 0.01 ... 0.995, 1 | 0.5xIn | |

| Description | Range | Default | Setting |
|--|-------------------------------|---------|---------|
| Gn 51G-3 Char <i>Selects characteristic curve to be IEC or ANSI IDMTL or DTL</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51G-3 Time Mult (IEC/ANSI) <i>Time multiplier (applicable to IEC and ANSI curves but not DTL selection)</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |
| Gn 51G-3 Delay (DTL) <i>Delay (applicable only when DTL is selected for characteristic)</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 51G-3 Min Operate Time <i>Minimum operate time of element.</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51G-3 Follower DTL <i>Additional definite time added after characteristic time</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51G-3 Reset <i>Selects between an ANSI decaying reset characteristic or DTL reset</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |
| Gn 51G-3 VTS Action <i>Selects whether 51G-3 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |
| Gn 51G-3 Inrush Action <i>Selects if the 51G-3 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.4.4. 51G-4

| Description | Range | Default | Setting |
|---|----------------------------|----------|---------|
| Gn 51G-4 Element <i>Selects whether the 51G-4 IDMTL measured Earth Fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 51G-4 Dir. Control <i>Selects whether 51G-4 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 51G-4 Setting <i>Pickup level</i> | 0.005, 0.01 ... 0.995, 1 | 0.5xIn | |
| Gn 51G-4 Char <i>Selects characteristic curve to be IEC or ANSI IDMTL or DTL</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51G-4 Time Mult (IEC/ANSI) <i>Time multiplier (applicable to IEC and ANSI curves but not DTL selection)</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |
| Gn 51G-4 Delay (DTL) <i>Delay (applicable only when DTL is selected for characteristic)</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 51G-4 Min Operate Time <i>Minimum operate time of element.</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51G-4 Follower DTL <i>Additional definite time added after characteristic time</i> | 0, 0.01 ... 19.99, 20 | 0s | |

| Description | Range | Default | Setting |
|--|-------------------------------|---------|---------|
| Gn 51G-4 Reset <i>Selects between an ANSI decaying reset characteristic or DTL reset</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |
| Gn 51G-4 VTS Action <i>Selects whether 51G-4 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |
| Gn 51G-4 Inrush Action <i>Selects if the 51G-4 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.4.5. 50G-1

| Description | Range | Default | Setting |
|--|----------------------------|----------|---------|
| Gn 50G-1 Element <i>Selects whether the DTL measured Earth fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 50G-1 Dir. Control <i>Selects whether 50G-1 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 50G-1 Setting <i>Pickup level</i> | 0.005, 0.01 ... 24.995, 25 | 0.5xIn | |
| Gn 50G-1 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| Gn 50G-1 VTS Action <i>Selects whether 50G-1 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |
| Gn 50G-1 Inrush Action <i>Selects if the 50G-1 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.4.6. 50G-2

| Description | Range | Default | Setting |
|--|----------------------------|----------|---------|
| Gn 50G-2 Element <i>Selects whether the DTL measured Earth fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 50G-2 Dir. Control <i>Selects whether 50G-2 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 50G-2 Setting <i>Pickup level</i> | 0.005, 0.01 ... 24.995, 25 | 0.5xIn | |
| Gn 50G-2 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| Gn 50G-2 VTS Action <i>Selects whether 50G-2 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |
| Gn 50G-2 Inrush Action <i>Selects if the 50G-2 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.4.7. 50G-3

| Description | Range | Default | Setting |
|--|----------------------------|----------------|----------------|
| Gn 50G-3 Element <i>Selects whether the DTL measured Earth fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 50G-3 Dir. Control <i>Selects whether 50G-3 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 50G-3 Setting <i>Pickup level</i> | 0.005, 0.01 ... 24.995, 25 | 0.5xIn | |
| Gn 50G-3 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| Gn 50G-3 VTS Action <i>Selects whether 50G-3 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |
| Gn 50G-3 Inrush Action <i>Selects if the 50G-3 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.4.8. 50G-4

| Description | Range | Default | Setting |
|--|----------------------------|----------------|----------------|
| Gn 50G-4 Element <i>Selects whether the DTL measured Earth fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 50G-4 Dir. Control <i>Selects whether 50G-4 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 50G-4 Setting <i>Pickup level</i> | 0.005, 0.01 ... 24.995, 25 | 0.5xIn | |
| Gn 50G-4 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| Gn 50G-4 VTS Action <i>Selects whether 50G-4 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |
| Gn 50G-4 Inrush Action <i>Selects if the 50G-4 element is blocked from operating when 2nd Harmonic Inrush Detector operates</i> | Off, Inhibit | Off | |

1.4.5. Sensitive E/F

| Description | Range | Default | Setting |
|--|------------------------------|---------|---------|
| Gn 67SEF Char Angle <i>Maximum torque angle for sensitive earth fault elements</i> | -95, -94 ... 94, 95 | -15deg | |
| Gn 67SEF Minimum Voltage <i>Selects the directional elements minimum voltage, below which the element will be inhibited</i> | 0.33, 0.5, 1, 1.5, 2, 2.5, 3 | 0.33V | |

1.4.5.1. 51SEF-1

| Description | Range | Default | Setting |
|--|-------------------------------|----------|---------|
| Gn 51SEF-1 Element <i>Selects whether the 51SEF-1 IDMTL derived Earth Fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 51SEF-1 Dir. Control <i>Selects whether 51SEF-1 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 51SEF-1 Setting <i>Pickup level</i> | 0.005, 0.01 ... 0.995, 1 | 0.2xIn | |
| Gn 51SEF-1 Char <i>Selects characteristic curve to be IEC or ANSI IDMTL or DTL</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51SEF-1 Time Mult (IEC/ANSI) <i>Time multiplier (applicable to IEC and ANSI curves but not DTL selection)</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |
| Gn 51SEF-1 Delay (DTL) <i>Delay (applicable only when DTL is selected for characteristic)</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 51SEF-1 Min Operate Time <i>Minimum operate time of element.</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51SEF-1 Follower DTL <i>Additional definite time added after characteristic time</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51SEF-1 Reset <i>Selects between an ANSI decaying reset characteristic or DTL reset</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |
| Gn 51SEF-1 VTS Action <i>Selects whether 51SEF-1 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |

1.4.5.2. 51SEF-2

| Description | Range | Default | Setting |
|--|-------------------------------|----------|---------|
| Gn 51SEF-2 Element <i>Selects whether the 51SEF-2 IDMTL derived Earth Fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 51SEF-2 Dir. Control <i>Selects whether 51SEF-2 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 51SEF-2 Setting <i>Pickup level</i> | 0.005, 0.01 ... 0.995, 1 | 0.2xIn | |
| Gn 51SEF-2 Char <i>Selects characteristic curve to be IEC or ANSI IDMTL or DTL</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51SEF-2 Time Mult (IEC/ANSI) <i>Time multiplier (applicable to IEC and ANSI curves but not DTL selection)</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |
| Gn 51SEF-2 Delay (DTL) <i>Delay (applicable only when DTL is selected for characteristic)</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 51SEF-2 Min Operate Time <i>Minimum operate time of element.</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51SEF-2 Follower DTL <i>Additional definite time added after characteristic time</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51SEF-2 Reset <i>Selects between an ANSI decaying reset characteristic or DTL reset</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |
| Gn 51SEF-2 VTS Action <i>Selects whether 51SEF-2 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |

1.4.5.3. 51SEF-3

| Description | Range | Default | Setting |
|---|----------------------------|----------|---------|
| Gn 51SEF-3 Element <i>Selects whether the 51SEF-3 IDMTL derived Earth Fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 51SEF-3 Dir. Control <i>Selects whether 51SEF-3 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 51SEF-3 Setting <i>Pickup level</i> | 0.005, 0.01 ... 0.995, 1 | 0.2xIn | |
| Gn 51SEF-3 Char <i>Selects characteristic curve to be IEC or ANSI IDMTL or DTL</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51SEF-3 Time Mult (IEC/ANSI) <i>Time multiplier (applicable to IEC and ANSI curves but not DTL selection)</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |
| Gn 51SEF-3 Delay (DTL) <i>Delay (applicable only when DTL is selected for characteristic)</i> | 0, 0.01 ... 19.99, 20 | 5s | |

| Description | Range | Default | Setting |
|--|-------------------------------|---------|---------|
| Gn 51SEF-3 Min Operate Time <i>Minimum operate time of element.</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51SEF-3 Follower DTL <i>Additional definite time added after characteristic time</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51SEF-3 Reset <i>Selects between an ANSI decaying reset characteristic or a definite time reset</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |
| Gn 51SEF-3 VTS Action <i>Selects whether 51SEF-3 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |

1.4.5.4. 51SEF-4

| Description | Range | Default | Setting |
|--|-------------------------------|----------|---------|
| Gn 51SEF-4 Element <i>Selects whether the 51SEF-4 IDMTL derived Earth Fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 51SEF-4 Dir. Control <i>Selects whether 51SEF-4 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 51SEF-4 Setting <i>Pickup level</i> | 0.005, 0.01 ... 0.995, 1 | 0.2xIn | |
| Gn 51SEF-4 Char <i>Selects characteristic curve to be IEC or ANSI IDMTL or DTL</i> | DTL, IEC-NI ... 201, 202 | IEC-NI | |
| Gn 51SEF-4 Time Mult (IEC/ANSI) <i>Time multiplier (applicable to IEC and ANSI curves but not DTL selection)</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |
| Gn 51SEF-4 Delay (DTL) <i>Delay (applicable only when DTL is selected for characteristic)</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 51SEF-4 Min Operate Time <i>Minimum operate time of element.</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51SEF-4 Follower DTL <i>Additional definite time added after characteristic time</i> | 0, 0.01 ... 19.99, 20 | 0s | |
| Gn 51SEF-4 Reset <i>Selects between an ANSI decaying reset characteristic or a definite time reset</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |
| Gn 51SEF-4 VTS Action <i>Selects whether 51SEF-4 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |

1.4.5.5. 50SEF-1

| Description | Range | Default | Setting |
|--|---------------------------|----------|---------|
| Gn 50SEF-1 Element <i>Selects whether the DTL measured Earth fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 50SEF-1 Dir. Control <i>Selects whether 50SEF-1 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 50SEF-1 Setting <i>Pickup level</i> | 0.005, 0.01 ... 4.995, 5 | 0.2xIn | |
| Gn 50SEF-1 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| Gn 50SEF-1 VTS Action <i>Selects whether 50SEF-1 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |

1.4.5.6. 50SEF-2

| Description | Range | Default | Setting |
|--|---------------------------|----------|---------|
| Gn 50SEF-2 Element <i>Selects whether the DTL measured Earth fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 50SEF-2 Dir. Control <i>Selects whether 50SEF-2 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 50SEF-2 Setting <i>Pickup level</i> | 0.005, 0.01 ... 4.995, 5 | 0.2xIn | |
| Gn 50SEF-2 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| Gn 50SEF-2 VTS Action <i>Selects whether 50SEF-2 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |

1.4.5.7. 50SEF-3

| Description | Range | Default | Setting |
|--|---------------------------|----------|---------|
| Gn 50SEF-3 Element <i>Selects whether the DTL measured Earth fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 50SEF-3 Dir. Control <i>Selects whether 50SEF-3 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 50SEF-3 Setting <i>Pickup level</i> | 0.005, 0.01 ... 4.995, 5 | 0.2xIn | |
| Gn 50SEF-3 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| Gn 50SEF-3 VTS Action <i>Selects whether 50SEF-3 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |

1.4.5.8. 50SEF-4

| Description | Range | Default | Setting |
|--|---------------------------|----------|---------|
| Gn 50SEF-4 Element <i>Selects whether the DTL measured Earth fault element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 50SEF-4 Dir. Control <i>Selects whether 50SEF-4 element is non-directional, forward or reverse</i> | Non-Dir, Forward, Reverse | Non-Dir | |
| Gn 50SEF-4 Setting <i>Pickup level</i> | 0.005, 0.01 ... 4.995, 5 | 0.2xIn | |
| Gn 50SEF-4 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| Gn 50SEF-4 VTS Action <i>Selects whether 50SEF-4 element is blocked or made non-directional when VTS operates</i> | Off, Inhibit, Non-Dir | Off | |

1.4.6. Restricted E/F

| Description | Range | Default | Setting |
|--|-----------------------------|----------|---------|
| Gn 64H Element <i>High impedance restricted earth fault current element</i> | Disabled, Enabled | Disabled | |
| Gn 64H Setting <i>Pickup level</i> | 0.005, 0.01 ... 0.945, 0.95 | 0.2xIn | |
| Gn 64H Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0s | |

1.4.7. NPS Overcurrent

1.4.7.1. 46IT

| Description | Range | Default | Setting |
|--|---|----------|---------|
| Gn 46IT Element <i>Selects whether the 46IT IDMTL/DTL negative phase sequence current element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 46IT Setting <i>Pickup level</i> | 0.05, 0.06 ... 2.49, 2.5 | 0.25xIn | |
| Gn 46IT Char <i>Selects characteristic curve to be IEC or ANSI IDMTL or DTL</i> | DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI | IEC-NI | |
| Gn 46IT Time Mult (IEC/ANSI) <i>Time multiplier (applicable to IEC and ANSI curves but not DTL selection)</i> | 0.025, 0.05 ... 1.575, 1.6 | 1 | |
| Gn 46IT Delay (DTL) <i>Delay (applicable only when DTL is selected for characteristic)</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 46IT Reset <i>Selects between an ANSI decaying reset characteristic or a definite time reset</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |

1.4.7.2. 46DT

| Description | Range | Default | Setting |
|--|--------------------------|----------|---------|
| Gn 46DT Element <i>Selects whether the 46DT INST/DTL negative sequence current element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 46DT Setting <i>Pickup level</i> | 0.05, 0.06 ... 3.99, 4 | 0.1xIn | |
| Gn 46DT Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0.02s | |

1.4.8. Under Current

1.4.8.1. 37-1

| Description | Range | Default | Setting |
|--|--------------------------|----------|---------|
| Gn 37-1 Element <i>Phase under current element 37-1</i> | Disabled, Enabled | Disabled | |
| Gn 37-1 Setting <i>Pickup level</i> | 0.05, 0.1 ... 4.95, 5 | 0.25xIn | |
| Gn 37-1 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0s | |

1.4.8.2. 37-2

| Description | Range | Default | Setting |
|--|--------------------------|----------|---------|
| Gn 37-2 Element <i>Phase under current element 37-2</i> | Disabled, Enabled | Disabled | |
| Gn 37-2 Setting <i>Pickup level</i> | 0.05, 0.1 ... 4.95, 5 | 0.25xIn | |
| Gn 37-2 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0s | |

1.4.9. Thermal

| Description | Range | Default | Setting |
|---|--------------------------|-----------|---------|
| Gn 49 Thermal Overload <i>Selects whether the thermal overload protection element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 49 Overload Setting <i>Pickup level</i> | 0.1, 0.11 ... 2.99, 3 | 1.05xIn | |
| Gn 49 Time Constant <i>Thermal time constant</i> | 1, 1.5 ... 999.5, 1000 | 10m | |
| Gn 49 Capacity Alarm <i>Selects whether thermal capacity alarm enabled</i> | Disabled, 50 ... 99, 100 | Disabled% | |
| 49 Reset Therm State <i>Control that allows thermal state to be manually reset</i> | No, Yes | No | |

1.5. Voltage Prot'n

1.5.1. Phase U/O Voltage

| Description | Range | Default | Setting |
|--|-----------------------|---------|---------|
| Gn Voltage Input Mode <i>Selects Ph-Ph or Ph-N voltages for U/V guard element & 27/59 elements operation.</i> | Ph-N, Ph-Ph | Ph-N | |
| Gn 27/59 U/V Guard Setting <i>Selects voltage level below which the guard element is applied.</i> | 1, 1.5 ... 199.5, 200 | 5V | |

1.5.1.1. 27/59-1

| Description | Range | Default | Setting |
|--|--------------------------|----------|---------|
| Gn 27/59-1 Element <i>Selects whether the Under/Over voltage element stage 1 is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 27/59-1 Operation <i>Selects between Undervoltage and Overvoltage pickup for this element</i> | Under, Over | Over | |
| Gn 27/59-1 Setting <i>Under or over voltage pickup level</i> | 5, 5.5 ... 199.5, 200 | 80V | |
| Gn 27/59-1 Hysteresis <i>Sets the pickup to dropoff thresholds e.g. 3% on Overlevel picks up above pickup setting and drops off below 97% of setting, 3% on Underlevel picks up below setting and drops off above 103% of setting</i> | 0, 0.1 ... 79.9, 80 | 3% | |
| Gn 27/59-1 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0.1s | |
| Gn 27/59-1 U/V Guarded <i>Selects whether U/V Guard element can block the operation of this element</i> | No, Yes | No | |
| Gn 27/59-1 VTS Inhibit <i>Selects whether element is blocked or not when VTS operates</i> | No, Yes | No | |
| Gn 27/59-1 O/P Phases <i>Selects whether element operates for any phase picked up or only when all phases are picked up</i> | Any, All | Any | |

1.5.1.2. 27/59-2

| Description | Range | Default | Setting |
|---|-----------------------|----------|---------|
| Gn 27/59-2 Element <i>Selects whether the Under/Over voltage element stage 2 is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 27/59-2 Operation <i>Selects between Undervoltage and Overvoltage pickup for this element</i> | Under, Over | Over | |
| Gn 27/59-2 Setting <i>Under or over voltage pickup level</i> | 5, 5.5 ... 199.5, 200 | 80V | |

| Description | Range | Default | Setting |
|--|--------------------------|---------|---------|
| Gn 27/59-2 Hysteresis <i>Sets the pickup to dropoff thresholds e.g. 3% on Overlevel picks up above pickup setting and drops off below 97% of setting, 3% on Underlevel picks up below setting and drops off above 103% of setting</i> | 0, 0.1 ... 79.9, 80 | 3% | |
| Gn 27/59-2 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0.1s | |
| Gn 27/59-2 U/V Guarded <i>Selects whether U/V Guard element can block the operation of this element</i> | No, Yes | No | |
| Gn 27/59-2 VTS Inhibit <i>Selects whether element is blocked or not when VTS operates</i> | No, Yes | No | |
| Gn 27/59-2 O/P Phases <i>Selects whether element operates for any phase picked up or only when all phases are picked up</i> | Any, All | Any | |

1.5.1.3. 27/59-3

| Description | Range | Default | Setting |
|--|--------------------------|----------|---------|
| Gn 27/59-3 Element <i>Selects whether the Under/Over voltage element stage 3 is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 27/59-3 Operation <i>Selects between Undervoltage and Overvoltage pickup for this element</i> | Under, Over | Under | |
| Gn 27/59-3 Setting <i>Under or over voltage pickup level</i> | 5, 5.5 ... 199.5, 200 | 50V | |
| Gn 27/59-3 Hysteresis <i>Sets the pickup to dropoff thresholds e.g. 3% on Overlevel picks up above pickup setting and drops off below 97% of setting, 3% on Underlevel picks up below setting and drops off above 103% of setting</i> | 0, 0.1 ... 79.9, 80 | 3% | |
| Gn 27/59-3 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0.1s | |
| Gn 27/59-3 U/V Guarded <i>Selects whether U/V Guard element can block the operation of this element</i> | No, Yes | Yes | |
| Gn 27/59-3 VTS Inhibit <i>Selects whether element is blocked or not when VTS operates</i> | No, Yes | No | |
| Gn 27/59-3 O/P Phases <i>Selects whether element operates for any phase picked up or only when all phases are picked up</i> | Any, All | Any | |

1.5.1.4. 27/59-4

| Description | Range | Default | Setting |
|--|--------------------------|----------|---------|
| Gn 27/59-4 Element <i>Selects whether the Under/Over voltage element stage 4 is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 27/59-4 Operation <i>Selects between Undervoltage and Overvoltage pickup for this element</i> | Under, Over | Under | |
| Gn 27/59-4 Setting <i>Under or over voltage pickup level</i> | 5, 5.5 ... 199.5, 200 | 50V | |
| Gn 27/59-4 Hysteresis <i>Sets the pickup to dropoff thresholds e.g. 3% on Overlevel picks up above pickup setting and drops off below 97% of setting, 3% on Underlevel picks up below setting and drops off above 103% of setting</i> | 0, 0.1 ... 79.9, 80 | 3% | |
| Gn 27/59-4 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0.1s | |
| Gn 27/59-4 U/V Guarded <i>Selects whether U/V Guard element can block the operation of this element</i> | No, Yes | Yes | |
| Gn 27/59-4 VTS Inhibit <i>Selects whether element is blocked or not when VTS operates</i> | No, Yes | No | |
| Gn 27/59-4 O/P Phases <i>Selects whether element operates for any phase picked up or only when all phases are picked up</i> | Any, All | Any | |

1.5.2. Vx U/O Voltage

| Description | Range | Default | Setting |
|---|--------------------------|----------|---------|
| Gn Vx 27/59 Element <i>Selects whether the Under/Over voltage element for Vx is enabled</i> | Disabled, Enabled | Disabled | |
| Gn Vx 27/59 Operation <i>Selects between Undervoltage and Overvoltage pickup for this element</i> | Under, Over | Over | |
| Gn Vx 27/59 Setting <i>Under or over voltage pickup level</i> | 5, 5.5 ... 199.5, 200 | 80V | |
| Gn Vx 27/59 Hysteresis <i>Sets the pickup to dropoff thresholds e.g. 3% on Overlevel picks up above pickup setting and drops off below 97% of setting, 3% on Underlevel picks up below setting and drops off above 103% of setting</i> | 0, 0.1 ... 79.9, 80 | 3% | |
| Gn Vx 27/59 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0.1s | |

1.5.3. NPS Overvoltage

1.5.3.1. 47-1

| Description | Range | Default | Setting |
|--|--------------------------|----------|---------|
| Gn 47-1 Element <i>Selects whether the definite time NPS overvoltage element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 47-1 Setting <i>Pickup level</i> | 1, 1.5 ... 89.5, 90 | 20V | |
| Gn 47-1 Hysteresis <i>Sets the pickup to drop-off thresholds e.g. 3% picks up at setting and drops off below 97% of setting</i> | 0, 0.1 ... 79.9, 80 | 3% | |
| Gn 47-1 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 1s | |

1.5.3.2. 47-2

| Description | Range | Default | Setting |
|--|--------------------------|----------|---------|
| Gn 47-2 Element <i>Selects whether the definite time NPS overvoltage element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 47-2 Setting <i>Pickup level</i> | 1, 1.5 ... 89.5, 90 | 20V | |
| Gn 47-2 Hysteresis <i>Sets the pickup to drop-off thresholds e.g. 3% picks up at setting and drops off below 97% of setting</i> | 0, 0.1 ... 79.9, 80 | 3% | |
| Gn 47-2 Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0.5s | |

1.5.4. Neutral Overvoltage

| Description | Range | Default | Setting |
|---|--------|---------|---------|
| Gn 59N Voltage Source <i>Selects voltage source between calculated 3V0 (Vn) or measured 3V0 through Vx input</i> | Vn, Vx | Vn | |

1.5.4.1. 59NIT

| Description | Range | Default | Setting |
|--|-------------------------|----------|---------|
| Gn 59NIT Element <i>Selects whether the inverse time neutral over voltage element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 59NIT Setting <i>Pickup level</i> | 1, 1.5 ... 99.5, 100 | 5V | |
| Gn 59NIT Char <i>Selects characteristic curve to be IDMTL or DTL</i> | DTL, IDMTL | IDMTL | |
| Gn 59NIT Time Mult (IDMTL) <i>Time multiplier (applicable to IDMTL curve but not DTL selection)</i> | 0.1, 0.2 ... 139.5, 140 | 1 | |

| Description | Range | Default | Setting |
|---|-------------------------------|---------|---------|
| Gn 59NIT Delay (DTL) <i>Delay (applicable only when DTL is selected for characteristic)</i> | 0, 0.01 ... 19.99, 20 | 5s | |
| Gn 59NIT Reset <i>Selects between an instantaneous reset characteristic or a definite time reset</i> | (ANSI) Decaying, 0 ... 59, 60 | 0s | |

1.5.4.2. 59NDT

| Description | Range | Default | Setting |
|--|--------------------------|----------|---------|
| Gn 59NDT Element <i>Selects whether the definite time neutral over voltage element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 59NDT Setting <i>Pickup level</i> | 1, 1.5 ... 99.5, 100 | 5V | |
| Gn 59NDT Delay <i>Sets operate delay time</i> | 0, 0.01 ... 14300, 14400 | 0.01s | |

1.5.5. U/O Frequency

| Description | Range | Default | Setting |
|---|-----------------------|---------|---------|
| Gn 81 U/V Guard Setting <i>Selects voltage level below which the guard element is applied.</i> | 5, 5.5 ... 199.5, 200 | 5V | |

1.5.5.1. 81-1

| Description | Range | Default | Setting |
|---|----------------------------|----------|---------|
| Gn 81-1 Element <i>Selects whether the Under/Over frequency element stage 1 is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 81-1 Operation <i>Selects between Underfrequency and Overfrequency pickup for this element</i> | Under, Over | Under | |
| Gn 81-1 Setting <i>Under or over frequency pickup level</i> | 40, 40.01 ... 69.98, 69.99 | 49.5Hz | |
| Gn 81-1 Hysteresis <i>Sets the pickup to dropoff thresholds e.g. 3% on Overlevel picks up above pickup setting and drops off below 97% of setting, 3% on Underlevel picks up below setting and drops off above 103% of setting</i> | 0, 0.1 ... 79.9, 80 | 0.1% | |
| Gn 81-1 Delay <i>Sets operate delay time</i> | 0, 0.1 ... 14300, 14400 | 1s | |
| Gn 81-1 U/V Guarded <i>Selects whether U/V Guard element can block the operation of this element</i> | No, Yes | Yes | |

1.5.5.2. 81-2

| Description | Range | Default | Setting |
|---|----------------------------|----------|---------|
| Gn 81-2 Element <i>Selects whether the Under/Over frequency element stage 2 is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 81-2 Operation <i>Selects between Underfrequency and Overfrequency pickup for this element</i> | Under, Over | Under | |
| Gn 81-2 Setting <i>Under or over frequency pickup level</i> | 40, 40.01 ... 69.98, 69.99 | 49Hz | |
| Gn 81-2 Hysteresis <i>Sets the pickup to dropoff thresholds e.g. 3% on Overlevel picks up above pickup setting and drops off below 97% of setting, 3% on Underlevel picks up below setting and drops off above 103% of setting</i> | 0, 0.1 ... 79.9, 80 | 0.1% | |
| Gn 81-2 Delay <i>Sets operate delay time</i> | 0, 0.1 ... 14300, 14400 | 0.8s | |
| Gn 81-2 U/V Guarded <i>Selects whether U/V Guard element can block the operation of this element</i> | No, Yes | Yes | |

1.5.5.3. 81-3

| Description | Range | Default | Setting |
|---|----------------------------|----------|---------|
| Gn 81-3 Element <i>Selects whether the Under/Over frequency element stage 3 is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 81-3 Operation <i>Selects between Underfrequency and Overfrequency pickup for this element</i> | Under, Over | Under | |
| Gn 81-3 Setting <i>Under or over frequency pickup level</i> | 40, 40.01 ... 69.98, 69.99 | 48Hz | |
| Gn 81-3 Hysteresis <i>Sets the pickup to dropoff thresholds e.g. 3% on Overlevel picks up above pickup setting and drops off below 97% of setting, 3% on Underlevel picks up below setting and drops off above 103% of setting</i> | 0, 0.1 ... 79.9, 80 | 0.1% | |
| Gn 81-3 Delay <i>Sets operate delay time</i> | 0, 0.1 ... 14300, 14400 | 0.6s | |
| Gn 81-3 U/V Guarded <i>Selects whether U/V Guard element can block the operation of this element</i> | No, Yes | Yes | |

1.5.5.4. 81-4

| Description | Range | Default | Setting |
|---|----------------------------|----------------|----------------|
| Gn 81-4 Element <i>Selects whether the Under/Over frequency element stage 4 is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 81-4 Operation <i>Selects between Underfrequency and Overfrequency pickup for this element</i> | Under, Over | Under | |
| Gn 81-4 Setting <i>Under or over frequency pickup level</i> | 40, 40.01 ... 69.98, 69.99 | 47.5Hz | |
| Gn 81-4 Hysteresis <i>Sets the pickup to dropoff thresholds e.g. 3% on Overlevel picks up above pickup setting and drops off below 97% of setting, 3% on Underlevel picks up below setting and drops off above 103% of setting</i> | 0, 0.1 ... 79.9, 80 | 0.1% | |
| Gn 81-4 Delay <i>Sets operate delay time</i> | 0, 0.1 ... 14300, 14400 | 0.4s | |
| Gn 81-4 U/V Guarded <i>Selects whether U/V Guard element can block the operation of this element</i> | No, Yes | Yes | |

1.6. Supervision

1.6.1. CB Fail

| Description | Range | Default | Setting |
|---|--------------------------|----------|---------|
| Gn 50BF Element <i>Selects whether the Circuit Breaker Fail element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 50BF Setting <i>Breaker Fail Current Pickup level. If the current falls below this level then the CB is deemed to have opened and the element is reset.</i> | 0.05, 0.055 ... 1.995, 2 | 0.2xIn | |
| Gn 50BF-1 Delay <i>Delay before Circuit Breaker Fail stage 1 operates</i> | 0, 5 ... 59995, 60000 | 60ms | |
| Gn 50BF-2 Delay <i>Delay before Circuit Breaker Fail stage 2 operates</i> | 0, 5 ... 59995, 60000 | 120ms | |

1.6.2. VT Supervision

| Description | Range | Default | Setting |
|---|--|----------|---------|
| Gn 60VTS Element <i>Selects whether the VT supervision element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 60VTS Component <i>Selects whether NPS or ZPS quantities are used by the VT supervision element</i> | NPS, ZPS | NPS | |
| Gn 60VTS V <i>Level above which there is a possible 1 or 2 phase VT fuse failure</i> | 7, 8 ... 109, 110 | 7V | |
| Gn 60VTS I <i>Level above which a 1 or 2 phase fault condition is assumed so VTS inhibited</i> | 0.05, 0.1, 0.15, 0.2, 0.25, 0.3, 0.35, 0.4, 0.45, 0.5, 0.55, 0.6, 0.65, 0.7, 0.75, 0.8, 0.85, 0.9, 0.95, 1 | 0.1xIn | |
| Gn 60VTS Vpps <i>Level below which there is a possible 3 phase VT fuse failure</i> | 1, 2 ... 109, 110 | 15V | |
| Gn 60VTS Ipps Load <i>Level current must be above before 3 phase VTS will be issued</i> | 0.05, 0.1, 0.15, 0.2, 0.25, 0.3, 0.35, 0.4, 0.45, 0.5, 0.55, 0.6, 0.65, 0.7, 0.75, 0.8, 0.85, 0.9, 0.95, 1 | 0.1xIn | |
| Gn 60VTS Ipps Fault <i>Level above which 3 phase fault is assumed so VTS inhibited</i> | 0.05, 0.1 ... 19.95, 20 | 10xIn | |
| Gn 60VTS Delay <i>Sets operate delay time</i> | 0.03, 0.04 ... 14300, 14400 | 10s | |

1.6.3. CT Supervision

| Description | Range | Default | Setting |
|--|--|----------|---------|
| Gn 60CTS Element <i>Selects whether the CT supervision element is enabled (NPS current in the absence of NPS voltage)</i> | Disabled, Enabled | Disabled | |
| Gn 60CTS Inps <i>Arm if NPS Current (Inps) is above this level</i> | 0.05, 0.1, 0.15, 0.2, 0.25, 0.3, 0.35, 0.4, 0.45, 0.5, 0.55, 0.6, 0.65, 0.7, 0.75, 0.8, 0.85, 0.9, 0.95, 1 | 0.1xIn | |
| Gn 60CTS Vnps <i>Inhibit if NPS Voltage (Vnps) is above this level</i> | 7, 8 ... 109, 110 | 10V | |
| Gn 60CTS Delay <i>CTS Operate delay</i> | 0.03, 0.04 ... 14300, 14400 | 10s | |

1.6.4. Broken Conductor

| Description | Range | Default | Setting |
|---|-----------------------------|----------|---------|
| Gn 46BC Element <i>Selects whether the definite time broken conductor element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 46BC Setting <i>NPS Current to PPS Current ratio</i> | 20, 21 ... 99, 100 | 20% | |
| Gn 46BC Delay <i>Sets operate delay time</i> | 0.03, 0.04 ... 14300, 14400 | 20s | |

1.6.5. Trip CCT Supervision

| Description | Range | Default | Setting |
|--|-----------------------|----------|---------|
| Gn 74TCS-1 <i>Selects whether the trip circuit supervision element 74TCS-1 is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 74TCS-1 Delay <i>Time delay before trip circuit supervision operates</i> | 0, 0.02 ... 59.98, 60 | 0.4s | |
| Gn 74TCS-2 <i>Selects whether the trip circuit supervision element 74TCS-2 is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 74TCS-2 Delay <i>Time delay before trip circuit supervision operates</i> | 0, 0.02 ... 59.98, 60 | 0.4s | |
| Gn 74TCS-3 <i>Selects whether the trip circuit supervision element 74TCS-3 is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 74TCS-3 Delay <i>Time delay before trip circuit supervision operates</i> | 0, 0.02 ... 59.98, 60 | 0.4s | |

1.6.6. Inrush Detector

| Description | Range | Default | Setting |
|--|-------------------------|----------|---------|
| Gn 81HBL2 Element <i>Selects whether the phase inrush detector 81HBL2 is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 81HBL2 Bias <i>Selects the bias method used for magnetising inrush. Phase – Segregated, each phase blocks itself. Cross – Blocked, each phase can block the operation of other phases. Sum - Of Squares, each phase blocks itself using the square root of the sum of squares of the 2nd harmonic.</i> | Phase, Cross, Sum | Cross | |
| Gn 81HBL2 Setting <i>The magnetising inrush detector operates when the 2nd harmonic current exceeds a set percentage of the fundamental current</i> | 0.1, 0.11 ... 0.49, 0.5 | 0.2xl | |

1.6.7. Battery Test

| Description | Range | Default | Setting |
|--|---|-----------------|---------|
| Battery Element <i>Selects whether the Battery Element is enabled</i> | Disabled, Enabled | Disabled | |
| Battery Nominal Voltage <i>Selects battery nominal voltage</i> | 24, 30, 48, 110, 220 | 48V | |
| Battery Test Rate <i>Frequency of battery tests</i> | Every 12 Hours, Every Day ... Every Nov 1st, Every Dec 1st | Every Month 1st | |
| Battery Test Time <i>Hour of the day at which test will take place</i> | 0, 1 ... 22, 23 | 12 | |
| Battery Test Load <i>Load resistance applied during test</i> | 2.5, 2.6 ... 99.9, 100 | 6.8ohms | |
| Battery Volts Drop <i>Max step change in voltage allowed when test load is applied.</i> | 0.5, 0.75, 1, 1.25, 1.5, 1.75, 2, 2.25, 2.5, 2.75, 3, 3.25, 3.5 | 2.5V | |

1.6.8. Capacitor Test

| Description | Range | Default | Setting |
|---|---------------------|----------|---------|
| Cap Element <i>Selects whether the Capacitor Element is enabled</i> | Disabled, Enabled | Disabled | |
| Cap Holdup Time <i>If capacitor test load applied for this time & capacitor is still above test threshold the load test will be classed as a pass.</i> | 0, 0.02 ... 9.9, 10 | 5s | |

1.6.9. Power Quality

| Description | Range | Default | Setting |
|--|-------------|---------|---------|
| Gn Voltage Input Mode <i>Selects Ph-Ph or Ph-N voltages elements operation.</i> | Ph-N, Ph-Ph | Ph-N | |

1.6.9.1. 27SAG

| Description | Range | Default | Setting |
|--|------------------------------------|----------|---------|
| Gn 27Sag Element <i>Selects whether the 27Sag Element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 27Sag SARFI Threshold <i>Percentage of nominal voltage below which 27Sag SARFI is raised.</i> | 10, 20, 30, 40, 50, 60, 70, 80, 90 | 70% | |
| Gn 27Sag VTS Block <i>Selects whether element is blocked or not when VTS operates</i> | Disabled, Enabled | Disabled | |
| Gn 27Sag SIARFI Delay <i>Time below which the SIARFI count is incremented.</i> | 0, 0.01 ... 55, 60 | 0.5s | |
| Gn 27Sag SMARFI Delay <i>Time below which the SMARFI count is incremented, if greater than SIARFI Delay.</i> | 0, 0.01 ... 55, 60 | 5s | |
| Gn 27Sag STARFI Delay <i>Time below which the STARFI count is incremented, if greater than SMARFI Delay. If voltage dip longer than this time it is classed as an interruption.</i> | 0, 0.01 ... 55, 60 | 60s | |

1.6.9.2. 59SWELL

| Description | Range | Default | Setting |
|---|--------------------|----------|---------|
| Gn 59Swell Element <i>Selects whether the 59Swell Element is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 59Swell SARFI Threshold <i>Percentage of nominal voltage above which 59 SARFI is raised.</i> | 110, 120, 130, 140 | 120% | |
| Gn 59Swell SIARFI Delay <i>Time below which the SIARFI count is incremented.</i> | 0, 0.01 ... 55, 60 | 0.5s | |
| Gn 59Swell SMARFI Delay <i>Time below which the SMARFI count is incremented, if greater than SIARFI Delay.</i> | 0, 0.01 ... 55, 60 | 5s | |
| Gn 59Swell STARFI Delay <i>Time below which the STARFI count is incremented, if greater than SMARFI Delay.</i> | 0, 0.01 ... 55, 60 | 60s | |

1.6.10. Control & Logic

1.6.11. Autoreclose Prot'n

| Description | Range | Default | Setting |
|--|---|--|----------------|
| Gn 79 P/F Inst Trips <i>Selects which phase fault protection elements are classed as Instantaneous elements and start an autoreclose sequence. These will be blocked from operating during Delayed autoreclose sequences. See autoreclose section of manual for detail of what elements can cause only Delayed protection to be used.</i> | Combination of (51-1, 51-2, 51-3, 51-4, 50-1, 50-2, 50-3, 50-4) | ----- | |
| Gn 79 E/F Inst Trips <i>Selects which earth fault protection elements are classed as Instantaneous elements and start an autoreclose sequence. These will be blocked from operating during Delayed autoreclose sequences. See autoreclose section of manual for detail of what elements can cause only Delayed protection to be used.</i> | Combination of (51G-1, 51G-2, 51G-3, 51G-4, 50G-1, 50G-2, 50G-3, 50G-4) | ----- | |
| Gn 79 SEF Inst Trips <i>Selects which sensitive earth fault protection elements are classed as Instantaneous elements and start an autoreclose sequence. These will be blocked from operating during Delayed autoreclose sequences. See autoreclose section of manual for detail of what elements can cause only Delayed protection to be used.</i> | Combination of (51SEF-1, 51SEF-2, 51SEF-3, 51SEF-4, 50SEF-1, 50SEF-2, 50SEF-3, 50SEF-4) | ----- | |
| Gn 79 P/F Delayed Trips <i>Selects which phase fault protection are classed as Delayed elements, any selected elements operating will start an autoreclose sequence.</i> | Combination of (51-1, 51-2, 51-3, 51-4, 50-1, 50-2, 50-3, 50-4) | 51-1, 51-2, 51-3, 51-4, 50-1, 50-2, 50-3, 50-4 | |
| Gn 79 E/F Delayed Trips <i>Selects which earth fault protection are classed as Delayed elements, any selected elements operating will start an autoreclose sequence.</i> | Combination of (51G-1, 51G-2, 51G-3, 51G-4, 50G-1, 50G-2, 50G-3, 50G-4) | 51G-1, 51G-2, 51G-3, 51G-4, 50G-1, 50G-2, 50G-3, 50G-4 | |
| Gn 79 SEF Delayed Trips <i>Selects which sensitive earth fault elements are classed as Delayed elements, any selected elements operating will start an autoreclose sequence.</i> | Combination of (51SEF-1, 51SEF-2, 51SEF-3, 51SEF-4, 50SEF-1, 50SEF-2, 50SEF-3, 50SEF-4) | 51SEF-1, 51SEF-2, 51SEF-3, 51SEF-4, 50SEF-1, 50SEF-2, 50SEF-3, 50SEF-4 | |
| Gn 79 P/F HS Trips <i>Selects which phase fault elements are classed as High Set elements, any selected elements operating will start an autoreclose sequence.</i> | Combination of (50-1, 50-2, 50-3, 50-4) | ---- | |
| Gn 79 E/F HS Trips <i>Selects which earth fault elements are classed as High Set elements, any selected elements operating will start an autoreclose sequence.</i> | Combination of (50G-1, 50G-2, 50G-3, 50G-4) | ---- | |

1.6.12. Autoreclose Config

| Description | Range | Default | Setting |
|---|----------------------------------|----------|---------|
| Gn 79 Autoreclose <i>If disabled then all attempts to control the AR IN/OUT status will fail and the AR will be permanently Out Of Service. When enabled the AR IN/OUT state may be controlled via the CONTROL MODE menu option, via Binary Input or via local or remote communications.</i> | Disabled, Enabled | Disabled | |
| Gn 79 Num Shots <i>Selects the number of auto-reclose attempts before the Autorecloser locks out</i> | 1, 2, 3, 4 | 1 | |
| Gn 79 Retry Enable <i>Selects whether the Retry close functionality is enabled</i> | Disabled, Enabled | Disabled | |
| Gn 79 Retry Attempts <i>Selects the number of retries allowed per shot</i> | 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 | 1 | |
| Gn 79 Retry Interval <i>Time delay between retries</i> | 0, 1 ... 599, 600 | 60s | |
| Gn 79 Reclose Blocked Delay <i>Specifies the maximum time that the Autorecloser can be blocked before proceeding to the lockout state. (NOTE: The block delay timer only starts after the Deadtime.)</i> | 0, 1 ... 599, 600 | 60s | |
| Gn 79 Sequence Fail Timer <i>Time before lockout occurs on an incomplete reclose sequence. (i.e Trip & starter conditions have not been cleared after Sequence Fail Time.)</i> | 0, 1 ... 599, 600 | 60s | |
| Gn 79 Minimum LO Delay <i>The time after entering lockout before any further external close commands are allowed.</i> | 0, 1 ... 599, 600 | 2s | |
| Gn 79 Reset LO By Timer <i>Select whether Lockout is automatically reset after a time delay.</i> | Disabled, Enabled | Enabled | |
| Gn 79 Sequence Co-ord <i>Selects whether Sequence co-ordination functionality is used or not.</i> | Disabled, Enabled | Enabled | |
| Gn 79 Cold Load Action <i>Selects whether whist Cold Load is active the relay will perform only Delayed Trips or not.</i> | Off, Delayed | Off | |

1.6.12.1. P/F Shots

| Description | Range | Default | Setting |
|---|---------------|---------|---------|
| Gn 79 P/F Prot'n Trip 1 <i>Selects whether the first phase fault trip is Instantaneous or Delayed. When set to Delayed all P/F Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Inst | |

| Description | Range | Default | Setting |
|--|----------------------------|----------------|----------------|
| Gn 79 P/F Dearthime 1 <i>Time period between the fault being cleared and the close pulse being issued</i> | 0.08, 0.1 ... 14300, 14400 | 5s | |
| Gn 79 P/F Prot'n Trip 2 <i>Selects whether the second phase fault trip is Instantaneous or Delayed. When set to Delayed all P/F Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Inst | |
| Gn 79 P/F Dearthime 2 <i>Time period between the fault being cleared and the close pulse being issued</i> | 2, 2.1 ... 14300, 14400 | 5s | |
| Gn 79 P/F Prot'n Trip 3 <i>Selects whether the third phase fault trip is Instantaneous or Delayed. When set to Delayed all P/F Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Delayed | |
| Gn 79 P/F Dearthime 3 <i>Time period between the fault being cleared and the close pulse being issued</i> | 2, 2.1 ... 14300, 14400 | 5s | |
| Gn 79 P/F Prot'n Trip 4 <i>Selects whether the fourth phase fault trip is Instantaneous or Delayed. When set to Delayed all P/F Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Delayed | |
| Gn 79 P/F Dearthime 4 <i>Time period between the fault being cleared and the close pulse being issued</i> | 30, 30.1 ... 14300, 14400 | 30s | |
| Gn 79 P/F Prot'n Trip 5 <i>Selects whether the fifth phase fault trip is Instantaneous or Delayed. When set to Delayed all P/F Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Delayed | |
| Gn 79 P/F HS Trips To Lockout <i>Selects how many High Set trips are allowed before going to Lockout</i> | 1, 2, 3, 4, 5 | 5 | |
| Gn 79 P/F Delayed Trips To Lockout <i>Selects how many Delayed trips are allowed before going to Lockout</i> | 1, 2, 3, 4, 5 | 5 | |

1.6.12.2. E/F Shots

| Description | Range | Default | Setting |
|--|----------------------------|----------------|----------------|
| Gn 79 E/F Prot'n Trip 1 <i>Selects whether the first earth fault trip is Instantaneous or Delayed. When set to Delayed all E/F Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Inst | |
| Gn 79 E/F Dearthime 1 <i>Time period between the fault being cleared and the close pulse being issued</i> | 0.08, 0.1 ... 14300, 14400 | 5s | |
| Gn 79 E/F Prot'n Trip 2 <i>Selects whether the second earth fault trip is Instantaneous or Delayed. When set to Delayed all E/F Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Inst | |

| Description | Range | Default | Setting |
|--|---------------------------|----------------|----------------|
| Gn 79 E/F Deadtime 2 <i>Time period between the fault being cleared and the close pulse being issued</i> | 2, 2.1 ... 14300, 14400 | 5s | |
| Gn 79 E/F Prot'n Trip 3 <i>Selects whether the third earth fault trip is Instantaneous or Delayed. When set to Delayed all E/F Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Delayed | |
| Gn 79 E/F Deadtime 3 <i>Time period between the fault being cleared and the close pulse being issued</i> | 2, 2.1 ... 14300, 14400 | 5s | |
| Gn 79 E/F Prot'n Trip 4 <i>Selects whether the fourth earth fault trip is Instantaneous or Delayed. When set to Delayed all E/F Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Delayed | |
| Gn 79 E/F Deadtime 4 <i>Time period between the fault being cleared and the close pulse being issued</i> | 30, 30.1 ... 14300, 14400 | 30s | |
| Gn 79 E/F Prot'n Trip 5 <i>Selects whether the fifth earth fault trip is Instantaneous or Delayed. When set to Delayed all E/F Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Delayed | |
| Gn 79 E/F HS Trips To Lockout <i>Selects how many High Set trips are allowed before going to Lockout</i> | 1, 2, 3, 4, 5 | 5 | |
| Gn 79 E/F Delayed Trips To Lockout <i>Selects how many Delayed trips are allowed before going to Lockout</i> | 1, 2, 3, 4, 5 | 5 | |

1.6.12.3. SEF Shots

| Description | Range | Default | Setting |
|--|----------------------------|----------------|----------------|
| Gn 79 SEF Prot'n Trip 1 <i>Selects whether the first sensitive earth fault trip is Instantaneous or Delayed. When set to Delayed all SEF Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Inst | |
| Gn 79 SEF Deadtime 1 <i>Time period between the fault being cleared and the close pulse being issued</i> | 0.08, 0.1 ... 14300, 14400 | 5s | |
| Gn 79 SEF Prot'n Trip 2 <i>Selects whether the second sensitive earth fault trip is Instantaneous or Delayed. When set to Delayed all SEF Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Inst | |
| Gn 79 SEF Deadtime 2 <i>Time period between the fault being cleared and the close pulse being issued</i> | 2, 2.1 ... 14300, 14400 | 5s | |
| Gn 79 SEF Prot'n Trip 3 <i>Selects whether the third sensitive earth fault trip is Instantaneous or Delayed. When set to Delayed all SEF Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Delayed | |

| Description | Range | Default | Setting |
|--|---------------------------|----------------|----------------|
| Gn 79 SEF Deadtime 3 <i>Time period between the fault being cleared and the close pulse being issued</i> | 2, 2.1 ... 14300, 14400 | 5s | |
| Gn 79 SEF Prot'n Trip 4 <i>Selects whether the fourth sensitive earth fault trip is Instantaneous or Delayed. When set to Delayed all SEF Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Delayed | |
| Gn 79 SEF Deadtime 4 <i>Time period between the fault being cleared and the close pulse being issued</i> | 30, 30.1 ... 14300, 14400 | 30s | |
| Gn 79 SEF Prot'n Trip 5 <i>Selects whether the fifth sensitive earth fault trip is Instantaneous or Delayed. When set to Delayed all SEF Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Delayed | |
| Gn 79 SEF Delayed Trips To Lockout <i>Selects how many Delayed trips are allowed before going to Lockout</i> | 1, 2, 3, 4, 5 | 5 | |

1.6.12.4. Extern Shots

| Description | Range | Default | Setting |
|--|----------------------------|----------------|----------------|
| Gn 79 Extern Prot'n Trip 1 <i>Selects whether the first external trip is Instantaneous or Delayed</i> | Not Blocked, Blocked | Not Blocked | |
| Gn 79 Extern Deadtime 1 <i>Time period between the fault being cleared and the close pulse being issued</i> | 0.08, 0.1 ... 14300, 14400 | 5s | |
| Gn 79 Extern Prot'n Trip 2 <i>Selects whether the second external trip is Instantaneous or Delayed</i> | Not Blocked, Blocked | Not Blocked | |
| Gn 79 Extern Deadtime 2 <i>Time period between the fault being cleared and the close pulse being issued</i> | 2, 2.1 ... 14300, 14400 | 5s | |
| Gn 79 Extern Prot'n Trip 3 <i>Selects whether the third external trip is Instantaneous or Delayed</i> | Not Blocked, Blocked | Not Blocked | |
| Gn 79 Extern Deadtime 3 <i>Time period between the fault being cleared and the close pulse being issued</i> | 2, 2.1 ... 14300, 14400 | 5s | |
| Gn 79 Extern Prot'n Trip 4 <i>Selects whether the fourth external trip is Instantaneous or Delayed</i> | Not Blocked, Blocked | Not Blocked | |
| Gn 79 Extern Deadtime 4 <i>Time period between the fault being cleared and the close pulse being issued</i> | 30, 30.1 ... 14300, 14400 | 30s | |
| Gn 79 Extern Prot'n Trip 5 <i>Selects whether the fifth external trip is Instantaneous or Delayed</i> | Not Blocked, Blocked | Not Blocked | |
| Gn 79 Extern Trips To Lockout <i>Selects how many external trips are allowed before going to Lockout</i> | 1, 2, 3, 4, 5 | 5 | |

1.6.13. Manual Close

| Description | Range | Default | Setting |
|---|----------------------|-------------|---------|
| Gn Line Check Trip <i>Selects whether line check trip is enabled, if enabled no AR sequence initiated</i> | Disabled, Enabled | Enabled | |
| Gn P/F Line Check Trip <i>Selects whether a phase fault line check trip is Instantaneous or Delayed. When set to Delayed all P/F Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Inst | |
| Gn E/F Line Check Trip <i>Selects whether an earth fault line check trip is Instantaneous or Delayed. When set to Delayed all E/F Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Inst | |
| Gn SEF Line Check Trip <i>Selects whether a sensitive earth fault line check trip is Instantaneous or Delayed. When set to Delayed all SEF Inst Trips will be Inhibited for this shot.</i> | Inst, Delayed | Inst | |
| Gn Extern Line Check Trip <i>Selects whether an external line check trip is Instantaneous or Delayed</i> | Not Blocked, Blocked | Not Blocked | |

1.6.14. Circuit Breaker

| Description | Range | Default | Setting |
|--|--|---------|---------|
| Gn Close CB Delay <i>Delay between a Close CB control being received and the Close CB contacts being operated to allow operator walk away.</i> | 0, 1 ... 59900, 60000 | 10000ms | |
| Gn Close CB Pulse <i>Specifies the duration of the circuit breaker close pulse</i> | 0.1, 0.2 ... 59.9, 60 | 2s | |
| Gn Reclaim Timer <i>The period of time after a CB has closed and remained closed before the reclosure is deemed to be successful and the AR is re-initialised. If the CB remains open at the end of the reclaim time then the AR goes to lockout.</i> | 0, 1 ... 599, 600 | 2s | |
| Gn Blocked Close Delay <i>Selects the maximum time that the manual Close CB may be blocked by interlocking before the command or control is cancelled. The relay will signal "Blocked by Interlocking".</i> | 0, 1 ... 599, 600 | 5s | |
| Gn Open CB Delay <i>Delay between an Open CB control being received and the Open CB contacts being operated.</i> | 0, 1 ... 59900, 60000 | 10000ms | |
| Gn Open CB Pulse <i>Selects the maximum time of the Open CB pulse. If the CB is not closed when this timer expires then an alarm will be raised to signify failure to close.</i> | 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2 | 1s | |

| Description | Range | Default | Setting |
|---|------------------------|---------|---------|
| Gn CB Travel Alarm <i>Selects the maximum time that the CB should take to either Open or Close before a failure is recorded.</i> | 0.01, 0.02 ... 1.99, 2 | 1s | |
| Gn CB Controls Latched <i>Selects whether Binary Input triggers of Close CB and Open CB are latched.</i> | Disabled, Enabled | Enabled | |

1.6.15. Quick Logic

| Description | Range | Default | Setting |
|--|------------------------------|----------|---------|
| Quick Logic <i>Enable or Disable all logic equations</i> | Disabled, Enabled | Disabled | |
| E1 Equation <i>Enable or Disable logic equation E1</i> | Disabled, Enabled | Disabled | |
| E1 <i>Specify logic equations of the form En = <Operand><Operator><Operand>using the following:0123456789=Digit() = Parenthesis! = NOT operation. = AND operation^ = EXCLUSIVE OR operationE(followed by a digit) = Equation numberF (Followed by a digit) = Function Key numberI(Followed by a digit) = Binary Input numberL(Followed by a digit) = LED numberO(Followed by a digit) = output relay numberV(Followed by a digit) =Virtual Input/Output number.ExamplesMake a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix)E1 = F3^L11</i> | (20 Character String) | | |
| E1 Pickup Delay <i>Time before equation output operates, after equation satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E1 Dropoff Delay <i>Time before equation output resets, after equation no longer satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E1 Counter Target <i>Select number of times equation must be satisfied before equation output operates</i> | 1, 2 ... 998, 999 | 1 | |
| E1 Counter Reset Mode <i>Select type of counter reset mode</i> | Off, Multi-shot, Single-shot | Off | |
| E1 Counter Reset Time <i>Select counter reset time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E2 Equation <i>Enable or Disable logic equation E2</i> | Disabled, Enabled | Disabled | |

| Description | Range | Default | Setting |
|---|------------------------------|----------|---------|
| E2 Specify logic equations of the form $E_n = \langle \text{Operand} \rangle \langle \text{Operator} \rangle \langle \text{Operand} \rangle$ using the following: 0123456789=Digit() = Parenthesis! = NOT operation. = AND operation ^ = EXCLUSIVE OR operation E (followed by a digit) = Equation number F (Followed by a digit) = Function Key number L (Followed by a digit) = Binary Input number O (Followed by a digit) = LED number V (Followed by a digit) = output relay number =Virtual Input/Output number. Examples: Make a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix) $E1 = F3 \wedge L11$ | (20 Character String) | | |
| E2 Pickup Delay Time before equation output operates, after equation satisfied | 0, 0.01 ... 14300, 14400 | 0s | |
| E2 Dropoff Delay Time before equation output resets, after equation no longer satisfied | 0, 0.01 ... 14300, 14400 | 0s | |
| E2 Counter Target Select number of times equation must be satisfied before equation output operates | 1, 2 ... 998, 999 | 1 | |
| E2 Counter Reset Mode Select type of counter reset mode | Off, Multi-shot, Single-shot | Off | |
| E2 Counter Reset Time Select counter reset time | 0, 0.01 ... 14300, 14400 | 0s | |
| E3 Equation Enable or Disable logic equation E3 | Disabled, Enabled | Disabled | |
| E3 Specify logic equations of the form $E_n = \langle \text{Operand} \rangle \langle \text{Operator} \rangle \langle \text{Operand} \rangle$ using the following: 0123456789=Digit() = Parenthesis! = NOT operation. = AND operation ^ = EXCLUSIVE OR operation E (followed by a digit) = Equation number F (Followed by a digit) = Function Key number L (Followed by a digit) = Binary Input number O (Followed by a digit) = LED number V (Followed by a digit) = output relay number =Virtual Input/Output number. Examples: Make a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix) $E1 = F3 \wedge L11$ | (20 Character String) | | |
| E3 Pickup Delay Time before equation output operates, after equation satisfied | 0, 0.01 ... 14300, 14400 | 0s | |
| E3 Dropoff Delay Time before equation output resets, after equation no longer satisfied | 0, 0.01 ... 14300, 14400 | 0s | |
| E3 Counter Target Select number of times equation must be satisfied before equation output operates | 1, 2 ... 998, 999 | 1 | |

| Description | Range | Default | Setting |
|--|------------------------------|----------|---------|
| E3 Counter Reset Mode <i>Select type of counter reset mode</i> | Off, Multi-shot, Single-shot | Off | |
| E3 Counter Reset Time <i>Select counter reset time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E4 Equation <i>Enable or Disable logic equation E4</i> | Disabled, Enabled | Disabled | |
| E4 <i>Specify logic equations of the form En = <Operand><Operator><Operand>using the following:0123456789=Digit() = Parenthesis! = NOT operation. = AND operation^ = EXCLUSIVE OR operationE(followed by a digit) = Equation numberF (Followed by a digit) = Function Key numberl(Followed by a digit) = Binary Input numberL(Followed by a digit) = LED numberO(Followed by a digit) = output relay numberV(Followed by a digit) =Virtual Input/Output number.ExamplesMake a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix)E1 = F3^L11</i> | (20 Character String) | | |
| E4 Pickup Delay <i>Time before equation output operates, after equation satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E4 Dropoff Delay <i>Time before equation output resets, after equation no longer satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E4 Counter Target <i>Select number of times equation must be satisfied before equation output operates</i> | 1, 2 ... 998, 999 | 1 | |
| E4 Counter Reset Mode <i>Select type of counter reset mode</i> | Off, Multi-shot, Single-shot | Off | |
| E4 Counter Reset Time <i>Select counter reset time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E5 Equation <i>Enable or Disable logic equation E5</i> | Disabled, Enabled | Disabled | |
| E5 <i>Specify logic equations of the form En = <Operand><Operator><Operand>using the following:0123456789=Digit() = Parenthesis! = NOT operation. = AND operation^ = EXCLUSIVE OR operationE(followed by a digit) = Equation numberF (Followed by a digit) = Function Key numberl(Followed by a digit) = Binary Input numberL(Followed by a digit) = LED numberO(Followed by a digit) = output relay numberV(Followed by a digit) =Virtual Input/Output number.ExamplesMake a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix)E1 = F3^L11</i> | (20 Character String) | | |
| E5 Pickup Delay <i>Time before equation output operates, after equation satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |

| Description | Range | Default | Setting |
|---|------------------------------|----------|---------|
| E5 Dropoff Delay <i>Time before equation output resets, after equation no longer satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E5 Counter Target <i>Select number of times equation must be satisfied before equation output operates</i> | 1, 2 ... 998, 999 | 1 | |
| E5 Counter Reset Mode <i>Select type of counter reset mode</i> | Off, Multi-shot, Single-shot | Off | |
| E5 Counter Reset Time <i>Select counter reset time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E6 Equation <i>Enable or Disable logic equation E6</i> | Disabled, Enabled | Disabled | |
| E6 <i>Specify logic equations of the form $E_n = \langle \text{Operand} \rangle \langle \text{Operator} \rangle \langle \text{Operand} \rangle$ using the following: 0123456789=Digit() = Parenthesis! = NOT operation. = AND operation ^ = EXCLUSIVE OR operation E (followed by a digit) = Equation number F (Followed by a digit) = Function Key number I (Followed by a digit) = Binary Input number L (Followed by a digit) = LED number O (Followed by a digit) = output relay number V (Followed by a digit) = Virtual Input/Output number. Examples Make a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix) E1 = F3 ^ L11</i> | (20 Character String) | | |
| E6 Pickup Delay <i>Time before equation output operates, after equation satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E6 Dropoff Delay <i>Time before equation output resets, after equation no longer satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E6 Counter Target <i>Select number of times equation must be satisfied before equation output operates</i> | 1, 2 ... 998, 999 | 1 | |
| E6 Counter Reset Mode <i>Select type of counter reset mode</i> | Off, Multi-shot, Single-shot | Off | |
| E6 Counter Reset Time <i>Select counter reset time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E7 Equation <i>Enable or Disable logic equation E7</i> | Disabled, Enabled | Disabled | |

| Description | Range | Default | Setting |
|---|------------------------------|----------|---------|
| E7 Specify logic equations of the form $E_n = \langle \text{Operand} \rangle \langle \text{Operator} \rangle \langle \text{Operand} \rangle$ using the following: 0123456789=Digit() = Parenthesis! = NOT operation. = AND operation ^ = EXCLUSIVE OR operation E (followed by a digit) = Equation number F (Followed by a digit) = Function Key number L (Followed by a digit) = Binary Input number O (Followed by a digit) = LED number V (Followed by a digit) = output relay number =Virtual Input/Output number. Examples: Make a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix) $E1 = F3 \wedge L11$ | (20 Character String) | | |
| E7 Pickup Delay Time before equation output operates, after equation satisfied | 0, 0.01 ... 14300, 14400 | 0s | |
| E7 Dropoff Delay Time before equation output resets, after equation no longer satisfied | 0, 0.01 ... 14300, 14400 | 0s | |
| E7 Counter Target Select number of times equation must be satisfied before equation output operates | 1, 2 ... 998, 999 | 1 | |
| E7 Counter Reset Mode Select type of counter reset mode | Off, Multi-shot, Single-shot | Off | |
| E7 Counter Reset Time Select counter reset time | 0, 0.01 ... 14300, 14400 | 0s | |
| E8 Equation Enable or Disable logic equation E8 | Disabled, Enabled | Disabled | |
| E8 Specify logic equations of the form $E_n = \langle \text{Operand} \rangle \langle \text{Operator} \rangle \langle \text{Operand} \rangle$ using the following: 0123456789=Digit() = Parenthesis! = NOT operation. = AND operation ^ = EXCLUSIVE OR operation E (followed by a digit) = Equation number F (Followed by a digit) = Function Key number L (Followed by a digit) = Binary Input number O (Followed by a digit) = LED number V (Followed by a digit) = output relay number =Virtual Input/Output number. Examples: Make a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix) $E1 = F3 \wedge L11$ | (20 Character String) | | |
| E8 Pickup Delay Time before equation output operates, after equation satisfied | 0, 0.01 ... 14300, 14400 | 0s | |
| E8 Dropoff Delay Time before equation output resets, after equation no longer satisfied | 0, 0.01 ... 14300, 14400 | 0s | |
| E8 Counter Target Select number of times equation must be satisfied before equation output operates | 1, 2 ... 998, 999 | 1 | |

| Description | Range | Default | Setting |
|---|------------------------------|----------|---------|
| E8 Counter Reset Mode <i>Select type of counter reset mode</i> | Off, Multi-shot, Single-shot | Off | |
| E8 Counter Reset Time <i>Select counter reset time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E9 Equation <i>Enable or Disable logic equation E9</i> | Disabled, Enabled | Disabled | |
| E9 <i>Specify logic equations of the form En = <Operand><Operator><Operand>using the following:0123456789=Digit() = Parenthesis! = NOT operation. = AND operation^ = EXCLUSIVE OR operationE(followed by a digit) = Equation numberF (Followed by a digit) = Function Key numberI(Followed by a digit) = Binary Input numberL(Followed by a digit) = LED numberO(Followed by a digit) = output relay numberV(Followed by a digit) =Virtual Input/Output number.ExamplesMake a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix)E1 = F3^L11</i> | (20 Character String) | | |
| E9 Pickup Delay <i>Time before equation output operates, after equation satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E9 Dropoff Delay <i>Time before equation output resets, after equation no longer satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E9 Counter Target <i>Select number of times equation must be satisfied before equation output operates</i> | 1, 2 ... 998, 999 | 1 | |
| E9 Counter Reset Mode <i>Select type of counter reset mode</i> | Off, Multi-shot, Single-shot | Off | |
| E9 Counter Reset Time <i>Select counter reset time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E10 Equation <i>Enable or Disable logic equation E10</i> | Disabled, Enabled | Disabled | |
| E10 <i>Specify logic equations of the form En = <Operand><Operator><Operand>using the following:0123456789=Digit() = Parenthesis! = NOT operation. = AND operation^ = EXCLUSIVE OR operationE(followed by a digit) = Equation numberF (Followed by a digit) = Function Key numberI(Followed by a digit) = Binary Input numberL(Followed by a digit) = LED numberO(Followed by a digit) = output relay numberV(Followed by a digit) =Virtual Input/Output number. Examples Make a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix)E1 = F3^L11</i> | (20 Character String) | | |
| E10 Pickup Delay <i>Time before equation output operates, after equation satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |

| Description | Range | Default | Setting |
|---|------------------------------|----------|---------|
| E10 Dropoff Delay <i>Time before equation output resets, after equation no longer satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E10 Counter Target <i>Select number of times equation must be satisfied before equation output operates</i> | 1, 2 ... 998, 999 | 1 | |
| E10 Counter Reset Mode <i>Select type of counter reset mode</i> | Off, Multi-shot, Single-shot | Off | |
| E10 Counter Reset Time <i>Select counter reset time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E11 Equation <i>Enable or Disable logic equation E11</i> | Disabled, Enabled | Disabled | |
| E11 <i>Specify logic equations of the form En = <Operand><Operator><Operand>using the following:0123456789=Digit() = Parenthesis! = NOT operation. = AND operation^ = EXCLUSIVE OR operationE(followed by a digit) = Equation numberF (Followed by a digit) = Function Key numberI(Followed by a digit) = Binary Input numberL(Followed by a digit) = LED numberO(Followed by a digit) = output relay numberV(Followed by a digit) =Virtual Input/Output number.ExamplesMake a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix)E1 = F3^L11</i> | (20 Character String) | | |
| E11 Pickup Delay <i>Time before equation output operates, after equation satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E11 Dropoff Delay <i>Time before equation output resets, after equation no longer satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E11 Counter Target <i>Select number of times equation must be satisfied before equation output operates</i> | 1, 2 ... 998, 999 | 1 | |
| E11 Counter Reset Mode <i>Select type of counter reset mode</i> | Off, Multi-shot, Single-shot | Off | |
| E11 Counter Reset Time <i>Select counter reset time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E12 Equation <i>Enable or Disable logic equation E12</i> | Disabled, Enabled | Disabled | |

| Description | Range | Default | Setting |
|--|------------------------------|----------|---------|
| E12 Specify logic equations of the form $E_n = \langle \text{Operand} \rangle \langle \text{Operator} \rangle \langle \text{Operand} \rangle$ using the following: 0123456789=Digit() = Parenthesis! = NOT operation. = AND operation ^ = EXCLUSIVE OR operation E (followed by a digit) = Equation number F (Followed by a digit) = Function Key number L (Followed by a digit) = Binary Input number O (Followed by a digit) = LED number V (Followed by a digit) = output relay number =Virtual Input/Output number. Examples: Make a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix) $E1 = F3 \wedge L11$ | (20 Character String) | | |
| E12 Pickup Delay Time before equation output operates, after equation satisfied | 0, 0.01 ... 14300, 14400 | 0s | |
| E12 Dropoff Delay Time before equation output resets, after equation no longer satisfied | 0, 0.01 ... 14300, 14400 | 0s | |
| E12 Counter Target Select number of times equation must be satisfied before equation output operates | 1, 2 ... 998, 999 | 1 | |
| E12 Counter Reset Mode Select type of counter reset mode | Off, Multi-shot, Single-shot | Off | |
| E12 Counter Reset Time Select counter reset time | 0, 0.01 ... 14300, 14400 | 0s | |
| E13 Equation Enable or Disable logic equation E13 | Disabled, Enabled | Disabled | |
| E13 Specify logic equations of the form $E_n = \langle \text{Operand} \rangle \langle \text{Operator} \rangle \langle \text{Operand} \rangle$ using the following: 0123456789=Digit() = Parenthesis! = NOT operation. = AND operation ^ = EXCLUSIVE OR operation E (followed by a digit) = Equation number F (Followed by a digit) = Function Key number L (Followed by a digit) = Binary Input number O (Followed by a digit) = LED number V (Followed by a digit) = output relay number =Virtual Input/Output number. Examples: Make a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix) $E1 = F3 \wedge L11$ | (20 Character String) | | |
| E13 Pickup Delay Time before equation output operates, after equation satisfied | 0, 0.01 ... 14300, 14400 | 0s | |
| E13 Dropoff Delay Time before equation output resets, after equation no longer satisfied | 0, 0.01 ... 14300, 14400 | 0s | |
| E13 Counter Target Select number of times equation must be satisfied before equation output operates | 1, 2 ... 998, 999 | 1 | |

| Description | Range | Default | Setting |
|---|------------------------------|----------|---------|
| E13 Counter Reset Mode <i>Select type of counter reset mode</i> | Off, Multi-shot, Single-shot | Off | |
| E13 Counter Reset Time <i>Select counter reset time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E14 Equation <i>Enable or Disable logic equation E14</i> | Disabled, Enabled | Disabled | |
| E14 <i>Specify logic equations of the form En = <Operand><Operator><Operand>using the following:0123456789=Digit() = Parenthesis! = NOT operation. = AND operation^ = EXCLUSIVE OR operationE(followed by a digit) = Equation numberF (Followed by a digit) = Function Key numberI(Followed by a digit) = Binary Input numberL(Followed by a digit) = LED numberO(Followed by a digit) = output relay numberV(Followed by a digit) =Virtual Input/Output number.ExamplesMake a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix)E1 = F3^L11</i> | (20 Character String) | | |
| E14 Pickup Delay <i>Time before equation output operates, after equation satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E14 Dropoff Delay <i>Time before equation output resets, after equation no longer satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E14 Counter Target <i>Select number of times equation must be satisfied before equation output operates</i> | 1, 2 ... 998, 999 | 1 | |
| E14 Counter Reset Mode <i>Select type of counter reset mode</i> | Off, Multi-shot, Single-shot | Off | |
| E14 Counter Reset Time <i>Select counter reset time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E15 Equation <i>Enable or Disable logic equation E15</i> | Disabled, Enabled | Disabled | |
| E15 <i>Specify logic equations of the form En = <Operand><Operator><Operand>using the following:0123456789=Digit() = Parenthesis! = NOT operation. = AND operation^ = EXCLUSIVE OR operationE(followed by a digit) = Equation numberF (Followed by a digit) = Function Key numberI(Followed by a digit) = Binary Input numberL(Followed by a digit) = LED numberO(Followed by a digit) = output relay numberV(Followed by a digit) =Virtual Input/Output number.ExamplesMake a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix)E1 = F3^L11</i> | (20 Character String) | | |
| E15 Pickup Delay <i>Time before equation output operates, after equation satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |

| Description | Range | Default | Setting |
|---|------------------------------|----------|---------|
| E15 Dropoff Delay <i>Time before equation output resets, after equation no longer satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E15 Counter Target <i>Select number of times equation must be satisfied before equation output operates</i> | 1, 2 ... 998, 999 | 1 | |
| E15 Counter Reset Mode <i>Select type of counter reset mode</i> | Off, Multi-shot, Single-shot | Off | |
| E15 Counter Reset Time <i>Select counter reset time</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E16 Equation <i>Enable or Disable logic equation E16</i> | Disabled, Enabled | Disabled | |
| E16 <i>Specify logic equations of the form En = <Operand><Operator><Operand>using the following:0123456789=Digit() = Parenthesis! = NOT operation. = AND operation^ = EXCLUSIVE OR operationE(followed by a digit) = Equation numberF (Followed by a digit) = Function Key numberI(Followed by a digit) = Binary Input numberL(Followed by a digit) = LED numberO(Followed by a digit) = output relay numberV(Followed by a digit) =Virtual Input/Output number.ExamplesMake a function key LED toggle when function key is pressed (requires E1 to drive L11 in output matrix)E1 = F3^L11</i> | (20 Character String) | | |
| E16 Pickup Delay <i>Time before equation output operates, after equation satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E16 Dropoff Delay <i>Time before equation output resets, after equation no longer satisfied</i> | 0, 0.01 ... 14300, 14400 | 0s | |
| E16 Counter Target <i>Select number of times equation must be satisfied before equation output operates</i> | 1, 2 ... 998, 999 | 1 | |
| E16 Counter Reset Mode <i>Select type of counter reset mode</i> | Off, Multi-shot, Single-shot | Off | |
| E16 Counter Reset Time <i>Select counter reset time</i> | 0, 0.01 ... 14300, 14400 | 0s | |

1.7. Input Config

1.7.1. Input Config

| Description | Range | Default | Setting |
|--|---|----------------|---------|
| Inhibit 51-1 <i>Selects which inputs inhibit the 51-1 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 51-2 <i>Selects which inputs inhibit the 51-2 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 51-3 <i>Selects which inputs inhibit the 51-3 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 51-4 <i>Selects which inputs inhibit the 51-4 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 50-1 <i>Selects which inputs inhibit the 50-1 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 50-2 <i>Selects which inputs inhibit the 50-2 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 50-3 <i>Selects which inputs inhibit the 50-3 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 50-4 <i>Selects which inputs inhibit the 50-4 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 51G-1 <i>Selects which inputs inhibit the 51G-1 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |

| Description | Range | Default | Setting |
|--|---|----------------|----------------|
| Inhibit 51G-2 <i>Selects which inputs inhibit the 51G-2 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 51G-3 <i>Selects which inputs inhibit the 51G-3 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 51G-4 <i>Selects which inputs inhibit the 51G-4 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 50G-1 <i>Selects which inputs inhibit the 50G-1 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 50G-2 <i>Selects which inputs inhibit the 50G-2 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 50G-3 <i>Selects which inputs inhibit the 50G-3 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 50G-4 <i>Selects which inputs inhibit the 50G-4 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 51SEF-1 <i>Selects which inputs inhibit the 51SEF-1 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 51SEF-2 <i>Selects which inputs inhibit the 51SEF-2 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 51SEF-3 <i>Selects which inputs inhibit the 51SEF-3 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |

| Description | Range | Default | Setting |
|--|---|----------------|----------------|
| Inhibit 51SEF-4 <i>Selects which inputs inhibit the 51SEF-4 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 50SEF-1 <i>Selects which inputs inhibit the 50SEF-1 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 50SEF-2 <i>Selects which inputs inhibit the 50SEF-2 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 50SEF-3 <i>Selects which inputs inhibit the 50SEF-3 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 50SEF-4 <i>Selects which inputs inhibit the 50SEF-4 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 64H <i>Selects which inputs inhibit the 64H element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 46IT <i>Selects which inputs inhibit the 46IT element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 46DT <i>Selects which inputs inhibit the 46DT element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 37-1 <i>Selects which inputs inhibit the 37-1 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 37-2 <i>Selects which inputs inhibit the 37-2 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |

| Description | Range | Default | Setting |
|--|---|----------------|----------------|
| Inhibit 49 <i>Selects which inputs inhibit the 49 thermal element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Reset 49 <i>Selects which inputs resets the 49 thermal model element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 27/59-1 <i>Selects which inputs inhibit the 27/59-1 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 27/59-2 <i>Selects which inputs inhibit the 27/59-2 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 27/59-3 <i>Selects which inputs inhibit the 27/59-3 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 27/59-4 <i>Selects which inputs inhibit the 27/59-4 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit Vx 27/59 <i>Selects which inputs inhibit the Vx 27/59 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 47-1 <i>Selects which inputs inhibit the 47-1 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 47-2 <i>Selects which inputs inhibit the 47-2 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 59NIT <i>Selects which inputs inhibit the 59N IDMTL/DTL element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |

| Description | Range | Default | Setting |
|---|---|----------------|----------------|
| Inhibit 59NDT <i>Selects which inputs inhibit the 59N INST/DTL element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 81-1 <i>Selects which inputs inhibit the 81-1 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 81-2 <i>Selects which inputs inhibit the 81-2 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 81-3 <i>Selects which inputs inhibit the 81-3 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 81-4 <i>Selects which inputs inhibit the 81-4 element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 60CTS <i>Selects which inputs inhibit the CT Supervision element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 46BC <i>Selects which inputs inhibit the 46 Broken Conductor element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| 74TCS-1 <i>Selects which inputs are monitoring trip circuits</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| 74TCS-2 <i>As Above</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| 74TCS-3 <i>As Above</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |

| Description | Range | Default | Setting |
|--|---|----------------|----------------|
| Trig Trip Contacts <i>Selects which inputs will trigger the Trip contacts</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 50BF <i>Selects which inputs inhibit the 50BF element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| 50BF Ext Trip <i>Selects which inputs can also start the 50BF element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 60VTS <i>Selects which inputs inhibit the VT Supervision element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Ext Trig 60VTS <i>Selects MCB inputs to VT Supervision element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Ext Reset 60VTS <i>Selects which inputs reset the VT Supervision element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Reset CB Total Trip <i>Selects which inputs Reset the CB Total Trip count</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Reset CB Delta Trip <i>Selects which inputs Reset the CB Delta Trip count</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Reset ARBlock Count <i>Selects which inputs Reset the AR Block count</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Reset Freq Ops Count <i>Selects which inputs Reset the Frequent Ops count</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |

| Description | Range | Default | Setting |
|--|---|----------------|----------------|
| Reset CB LO Count <i>Selects which inputs Reset the CB Lockout operations count</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Reset I ² t CB Wear <i>Selects which inputs Reset the I²t CB Wear element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Trigger I ² t CB Wear <i>Selects which inputs will cause an external trigger of the I²t CB Wear element</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| General Alarm 1 <i>Selects which inputs will activate the General Alarm 1 text</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| General Alarm 2 <i>Selects which inputs will activate the General Alarm 2 text</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| General Alarm 3 <i>Selects which inputs will activate the General Alarm 3 text</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| General Alarm 4 <i>Selects which inputs will activate the General Alarm 4 text</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| General Alarm 5 <i>Selects which inputs will activate the General Alarm 5 text</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| General Alarm 6 <i>Selects which inputs will activate the General Alarm 6 text</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| General Alarm 7 <i>Selects which inputs will activate the General Alarm 7 text</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |

| Description | Range | Default | Setting |
|---|---|----------------|----------------|
| General Alarm 8 <i>Selects which inputs will activate the General Alarm 8 text</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| General Alarm 9 <i>Selects which inputs will activate the General Alarm 9 text</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| General Alarm 10 <i>Selects which inputs will activate the General Alarm 10 text</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| General Alarm 11 <i>Selects which inputs will activate the General Alarm 11 text</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| General Alarm 12 <i>Selects which inputs will activate the General Alarm 12 text</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| BatteryTestRequired <i>Selects which inputs will initiate a Battery test</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| ExtPowerGood <i>Selects which inputs are used to indicate External power to battery is good.</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| InhibitBatteryTest <i>Selects which inputs will inhibit a Battery test.</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| CapMon Input 1 <i>Selects which inputs will monitor Capacitor level 1</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| CapMon Input 2 <i>Selects which inputs will monitor Capacitor level 2</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |

| Description | Range | Default | Setting |
|---|---|----------------|----------------|
| Capacitor Test <i>Selects which inputs will initiate a Capacitor test.</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit Cap Test <i>Selects which inputs will inhibit a Capacitor test.</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Reset SagSwell Count <i>Selects which inputs will reset the 27Sag & 59Swell counts.</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 27Sag <i>Selects which inputs will inhibit the 27Sag elements</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inhibit 59Swell <i>Selects which inputs will inhibit the 59Swell elements</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Close CB <i>Selects which inputs will issue a manual close to the circuit breaker.</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Block Close CB <i>Selects which inputs will block the manual closing of the circuit breaker.</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Open CB <i>Selects which inputs will issue an open to the circuit breaker.</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| CB Closed <i>Selects which inputs are connected to the circuit breaker closed contacts</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| CB Open <i>Selects which inputs are connected to the circuit breaker open contacts</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |

| Description | Range | Default | Setting |
|---|---|----------------|----------------|
| 79 Out <i>Selects which inputs will switch the Auto-recloser out of service</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| 79 In <i>Selects which inputs will switch the Auto-recloser in service</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| 79 Trip & Reclose <i>Selects which inputs will trigger a trip & reclose</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| 79 Trip & Lockout <i>Selects which inputs will trigger a trip & lockout</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| 79 Ext Trip <i>Selects which input will start an external Auto-relay sequence</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| 79 Ext Pickup <i>Selects which input should be connected to the pickup of the external elements required to start an Auto-reclose sequence</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| 79 Block Reclose <i>Selects which inputs will block the Auto-recloser</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| 79 Reset Lockout <i>Selects which inputs will force the Auto-recloser into the Lockout state</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| 79 Line Check <i>Selects which inputs will start the Line Check functionality of the Auto-recloser</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| 79 Lockout <i>Selects which inputs will force the Auto-recloser into the Lockout state</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |

| Description | Range | Default | Setting |
|--|---|----------------|----------------|
| Hot Line Out <i>Selects which inputs will switch out Hot Line Working</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Hot Line In <i>Selects which inputs will switch in Hot Line Working</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inst Prot'n Out <i>Selects which inputs will switch out the instantaneous protection elements</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Inst Prot'n In <i>Selects which inputs will switch in the instantaneous protection elements</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| E/F Out <i>Selects which inputs will switch out the E/F protection elements</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| E/F In <i>Selects which inputs will switch in the E/F protection elements</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| SEF Out <i>Selects which inputs will switch out the SEF protection elements</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| SEF In <i>Selects which inputs will switch in the SEF protection elements</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Trigger Wave Rec <i>Selects which inputs can trigger a waveform record</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Trigger Fault Rec <i>Selects which inputs can trigger a fault record</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |

| Description | Range | Default | Setting |
|--|---|----------------|----------------|
| Select Group 1 <i>Switches active setting group to group 1</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Select Group 2 <i>Switches active setting group to group 2</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Select Group 3 <i>Switches active setting group to group 3</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Select Group 4 <i>Switches active setting group to group 4</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Select Group 5 <i>Switches active setting group to group 5</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Select Group 6 <i>Switches active setting group to group 6</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Select Group 7 <i>Switches active setting group to group 7</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Select Group 8 <i>Switches active setting group to group 8</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Out Of Service Mode <i>Selects which inputs will put the relay into Out Of Service Mode</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Local Mode <i>Selects which inputs will put the relay into Local Mode</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |

| Description | Range | Default | Setting |
|--|---|----------------|----------------|
| Remote Mode <i>Selects which inputs will put the relay into Remote Mode</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Local Or Remote Mode <i>Selects which inputs will put the relay into Local Or Remote Mode</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Clock Sync. <i>Selects which input is used to synchronise the real time clock</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| Reset LEDs & O/Ps <i>Selects which inputs will reset the latched LEDs and binary outputs</i> | Combination of (BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BI11, BI12, BI13, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |

1.7.2. Function Key Matrix

| Description | Range | Default | Setting |
|--|-------------------------------------|----------------|----------------|
| Open CB <i>Selects which function key will issue an open to the circuit breaker.</i> | Combination of (1, 2, 3, 4, 5, 6) | ----- | |
| Close CB <i>Selects which function key will issue a close to the circuit breaker.</i> | Combination of (1, 2, 3, 4, 5, 6) | ----- | |
| 79 In/Out <i>Selects which function key will toggle Autoreclose In & Out</i> | Combination of (1, 2, 3, 4, 5, 6) | ----- | |
| 79 Trip & Reclose <i>Selects which inputs will trigger a trip & reclose</i> | Combination of (1, 2, 3, 4, 5, 6) | ----- | |
| 79 Trip & Lockout <i>Selects which inputs will trigger a trip & lockout</i> | Combination of (1, 2, 3, 4, 5, 6) | ----- | |
| Hot Line Work In/Out <i>Selects which function key will toggle Hot Line Working In & Out</i> | Combination of (1, 2, 3, 4, 5, 6) | ----- | |
| E/F In/Out <i>Selects which function key will toggle E/Fprotection In & Out</i> | Combination of (1, 2, 3, 4, 5, 6) | ----- | |
| SEF In/Out <i>Selects which function key will toggle SEF protection In & Out</i> | Combination of (1, 2, 3, 4, 5, 6) | ----- | |
| Inst Prot'n In/Out <i>Selects which function key will toggle Instantaneous protection elements In & Out</i> | Combination of (1, 2, 3, 4, 5, 6) | ----- | |
| BatteryTestRequired | Combination of (1, 2, 3, 4, 5, | ----- | |

| Description | Range | Default | Setting |
|---|-------|---------|---------|
| Selects which function key will initiate a battery test sequence. | 6) | | |

1.7.3. Binary Input Config

| Description | Range | Default | Setting |
|---|--|---------|---------|
| Inverted Inputs Selects which inputs pickup when voltage is removed. | Combination of (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13) | ----- | |
| BI 1 Pickup Delay Delay on pickup of DC Binary Input 1 | 0, 0.005 ... 14300, 14400 | 0.02s | |
| BI 1 Dropoff Delay Delay on dropoff of DC Binary Input 1 | 0, 0.005 ... 14300, 14400 | 0s | |
| BI 2 Pickup Delay Delay on pickup of DC Binary Input 2 | 0, 0.005 ... 14300, 14400 | 0.02s | |
| BI 2 Dropoff Delay Delay on dropoff of DC Binary Input 2 | 0, 0.005 ... 14300, 14400 | 0s | |
| BI 3 Pickup Delay Delay on pickup of DC Binary Input 3 | 0, 0.005 ... 14300, 14400 | 0.02s | |
| BI 3 Dropoff Delay Delay on dropoff of DC Binary Input 3 | 0, 0.005 ... 14300, 14400 | 0s | |
| BI 4 Pickup Delay Delay on pickup of DC Binary Input 4 | 0, 0.005 ... 14300, 14400 | 0.02s | |
| BI 4 Dropoff Delay Delay on dropoff of DC Binary Input 4 | 0, 0.005 ... 14300, 14400 | 0s | |
| BI 5 Pickup Delay Delay on pickup of DC Binary Input 5 | 0, 0.005 ... 14300, 14400 | 0.02s | |
| BI 5 Dropoff Delay Delay on dropoff of DC Binary Input 5 | 0, 0.005 ... 14300, 14400 | 0s | |
| BI 6 Pickup Delay Delay on pickup of DC Binary Input 6 | 0, 0.005 ... 14300, 14400 | 0.02s | |
| BI 6 Dropoff Delay Delay on dropoff of DC Binary Input 6 | 0, 0.005 ... 14300, 14400 | 0s | |
| BI 7 Pickup Delay Delay on pickup of DC Binary Input 7 | 0, 0.005 ... 14300, 14400 | 0.02s | |
| BI 7 Dropoff Delay Delay on dropoff of DC Binary Input 7 | 0, 0.005 ... 14300, 14400 | 0s | |
| BI 8 Pickup Delay Delay on pickup of DC Binary Input 8 | 0, 0.005 ... 14300, 14400 | 0.02s | |
| BI 8 Dropoff Delay Delay on dropoff of DC Binary Input 8 | 0, 0.005 ... 14300, 14400 | 0s | |
| BI 9 Pickup Delay Delay on pickup of DC Binary Input 9 | 0, 0.005 ... 14300, 14400 | 0.02s | |
| BI 9 Dropoff Delay Delay on dropoff of DC Binary Input 9 | 0, 0.005 ... 14300, 14400 | 0s | |
| BI 10 Pickup Delay Delay on pickup of DC Binary Input 10 | 0, 0.005 ... 14300, 14400 | 0.02s | |
| BI 10 Dropoff Delay Delay on dropoff of DC Binary Input 10 | 0, 0.005 ... 14300, 14400 | 0s | |

| Description | Range | Default | Setting |
|--|---------------------------|---------|---------|
| BI 11 Pickup Delay <i>Delay on pickup of DC Binary Input 11</i> | 0, 0.005 ... 14300, 14400 | 0.02s | |
| BI 11 Dropoff Delay <i>Delay on dropoff of DC Binary Input 11</i> | 0, 0.005 ... 14300, 14400 | 0s | |
| BI 12 Pickup Delay <i>Delay on pickup of DC Binary Input 12</i> | 0, 0.005 ... 14300, 14400 | 0.02s | |
| BI 12 Dropoff Delay <i>Delay on dropoff of DC Binary Input 12</i> | 0, 0.005 ... 14300, 14400 | 0s | |
| BI 13 Pickup Delay <i>Delay on pickup of DC Binary Input 13</i> | 0, 0.005 ... 14300, 14400 | 0.02s | |
| BI 13 Dropoff Delay <i>Delay on dropoff of DC Binary Input 13</i> | 0, 0.005 ... 14300, 14400 | 0s | |

1.7.4. Function Key Config

| Description | Range | Default | Setting |
|---|-----------------------|----------------|---------|
| Function Key 1 Text <i>User definable text that will be used in the HMI function key confirmation screen when Function key 1 is pressed.</i> | (20 Character String) | Function Key 1 | |
| Function Key 2 Text <i>User definable text that will be used in the HMI function key confirmation screen when Function key 2 is pressed.</i> | (20 Character String) | Function Key 2 | |
| Function Key 3 Text <i>User definable text that will be used in the HMI function key confirmation screen when Function key 3 is pressed.</i> | (20 Character String) | Function Key 3 | |
| Function Key 4 Text <i>User definable text that will be used in the HMI function key confirmation screen when Function key 4 is pressed.</i> | (20 Character String) | Function Key 4 | |
| Function Key 5 Text <i>User definable text that will be used in the HMI function key confirmation screen when Function key 5 is pressed.</i> | (20 Character String) | Function Key 5 | |

| Description | Range | Default | Setting |
|---|-----------------------|----------------|---------|
| Function Key 6 Text <i>User definable text that will be used in the HMI function key confirmation screen when Function key 6 is pressed.</i> | (20 Character String) | Function Key 6 | |

1.7.5. General Alarms

| Description | Range | Default | Setting |
|--|-----------------------|----------|---------|
| General Alarm-1 <i>Defines the text to be displayed for General Alarm 1</i> | (16 Character String) | ALARM 1 | |
| General Alarm-2 <i>Defines the text to be displayed for General Alarm 2</i> | (16 Character String) | ALARM 2 | |
| General Alarm-3 <i>Defines the text to be displayed for General Alarm 3</i> | (16 Character String) | ALARM 3 | |
| General Alarm-4 <i>Defines the text to be displayed for General Alarm 4</i> | (16 Character String) | ALARM 4 | |
| General Alarm-5 <i>Defines the text to be displayed for General Alarm 5</i> | (16 Character String) | ALARM 5 | |
| General Alarm-6 <i>Defines the text to be displayed for General Alarm 6</i> | (16 Character String) | ALARM 6 | |
| General Alarm-7 <i>Defines the text to be displayed for General Alarm 7</i> | (16 Character String) | ALARM 7 | |
| General Alarm-8 <i>Defines the text to be displayed for General Alarm 8</i> | (16 Character String) | ALARM 8 | |
| General Alarm-9 <i>Defines the text to be displayed for General Alarm 9</i> | (16 Character String) | ALARM 9 | |
| General Alarm-10 <i>Defines the text to be displayed for General Alarm 10</i> | (16 Character String) | ALARM 10 | |
| General Alarm-11 <i>Defines the text to be displayed for General Alarm 11</i> | (16 Character String) | ALARM 11 | |
| General Alarm-12 <i>Defines the text to be displayed for General Alarm 12</i> | (16 Character String) | ALARM 12 | |

1.8. Output Config

1.8.1. Output Matrix

| Description | Range | Default | Setting |
|---|--|-------------------------|---------|
| Protection Healthy <i>Relays selected are energised whilst relay self-monitoring does NOT detect any hardware or software errors and DC Supply is healthy. A changeover contact or normally closed contact may be used to generate Protection Defective from this output</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | BO1 | |
| 51-1 <i>51-1 IDMTL/DTL Overcurrent operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 51-2 <i>51-2 IDMTL/DTL Overcurrent operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 51-3 <i>51-3 IDMTL/DTL Overcurrent operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 51-4 <i>51-4 IDMTL/DTL Overcurrent operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 50-1 <i>50-1 INST/DTL Overcurrent operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 50-2 <i>50-2 INST/DTL Overcurrent operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, | ----- ----- | |

| Description | Range | Default | Setting |
|---|--|-------------------------|---------|
| | BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- | |
| 50-3 <i>50-3 INST/DTL Overcurrent operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 50-4 <i>50-4 INST/DTL Overcurrent operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 51G-1 <i>51G-1 IDMTL/DTL measured Earth Fault operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L4 | |
| 51G-2 <i>51G-2 IDMTL/DTL measured Earth Fault operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L4 | |
| 51G-3 <i>51G-3 IDMTL/DTL measured Earth Fault operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L4 | |
| 51G-4 <i>51G-4 IDMTL/DTL measured Earth Fault operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L4 | |
| 50G-1 | Combination of (BO1, BO2, | L4 | |

| Description | Range | Default | Setting |
|---|--|----------------|----------------|
| <i>50G-1 INST/DTL measured Earth Fault operated</i> | BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | | |
| <i>50G-2 50G-2 INST/DTL measured Earth Fault operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L4 | |
| <i>50G-3 50G-3 INST/DTL measured Earth Fault operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L4 | |
| <i>50G-4 50G-4 INST/DTL measured Earth Fault operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L4 | |
| <i>51SEF-1 51SEF-1 IDMTL/DTL sensitive Earth Fault operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L5 | |
| <i>51SEF-2 51SEF-2 IDMTL/DTL sensitive Earth Fault operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L5 | |
| <i>51SEF-3 51SEF-3 IDMTL/DTL sensitive Earth Fault operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L5 | |

| Description | Range | Default | Setting |
|--|--|-------------------------|---------|
| 51SEF-4 <i>51SEF-4 IDMTL/DTL sensitive Earth Fault operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L5 | |
| 50SEF-1 <i>50SEF-1 INST/DTL sensitive Earth Fault operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L5 | |
| 50SEF-2 <i>50SEF-2 INST/DTL sensitive Earth Fault operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L5 | |
| 50SEF-3 <i>50SEF-3 INST/DTL sensitive Earth Fault operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L5 | |
| 50SEF-4 <i>50SEF-4 INST/DTL sensitive Earth Fault operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L5 | |
| 64H <i>64H Restricted Earth Fault element operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Cold Load Active <i>Cold Load settings are active</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, | ----- ----- ----- | |

| Description | Range | Default | Setting |
|--|--|-------------------------|---------|
| | V14, V15, V16) | | |
| 46IT <i>IDMTL/DTL NPS Overcurrent operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 46DT <i>INST/DTL NPS Overcurrent operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 37-1 <i>37-1 Under Current operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 37-2 <i>37-2 Under Current operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 49 Trip <i>Thermal capacity trip operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 49 Alarm <i>Thermal capacity alarm operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 27/59-1 <i>Under/Overvoltage stage 1 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, | ----- ----- ----- | |

| Description | Range | Default | Setting |
|--|--|-------------------------|---------|
| | V9, V10, V11, V12, V13, V14, V15, V16) | | |
| 27/59-2 <i>Under/Overvoltage stage 2 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 27/59-3 <i>Under/Overvoltage stage 3 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 27/59-4 <i>Under/Overvoltage stage 4 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Vx 27/59 <i>Under/Overvoltage Vx stage operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 47-1 <i>INST/DTL NPS Overvoltage stage 1 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 47-2 <i>INST/DTL NPS Overvoltage stage 2 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 59NIT <i>Neutral Overvoltage IDMTL/DTL operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, | ----- ----- ----- | |

| Description | Range | Default | Setting |
|---|--|-------------------------|---------|
| | V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | | |
| 59NDT <i>Neutral Overvoltage INST/DTL operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 81-1 <i>Under/Over frequency stage 1 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 81-2 <i>Under/Over frequency stage 2 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 81-3 <i>Under/Over frequency stage 3 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 81-4 <i>Under/Over frequency stage 4 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 60CTS <i>CT Supervision element operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 46BC <i>46 Broken Conductor element operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, | ----- ----- ----- | |

| Description | Range | Default | Setting |
|---|--|-------------------------|---------|
| | L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | | |
| 74TCS-1 <i>Selects which inputs are monitoring trip circuits</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 74TCS-2 <i>As Above</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 74TCS-3 <i>As Above</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| General Pickup <i>General Pickup operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 50BF-1 <i>Circuit Breaker Fail stage 1 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 50BF-2 <i>Circuit Breaker Fail stage 2 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 60VTS <i>VT Supervision element operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, | ----- ----- ----- | |

| Description | Range | Default | Setting |
|--|--|-------------------------|---------|
| | L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | | |
| CB Total Trip Count <i>Total CB trip count exceeded</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| CB Delta Trip Count <i>Delta CB trip count exceeded</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| CB Count To ARBlock <i>Count To AR Block CB trip count exceeded</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| CB Freq Ops Count <i>CB Frequent Operations count exceeded</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| CB LO Handle Ops <i>CB Lockout Handle Operations count exceeded</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| I ² t CB Wear <i>I²t CB Wear limit exceeded</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Battery Test <i>Battery Test is in progress. This can be used to disable battery charger during a battery</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, | ----- ----- ----- | |

| Description | Range | Default | Setting |
|--|--|-------------------------|---------|
| <i>test.</i> | BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | | |
| Battery Load Test <i>Battery Load Test is in progress. This can be used to apply the battery test load during a battery test.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Battery Test Pass <i>Indicates whether the last battery test passed.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Battery Test Fail <i>Indicates whether the last battery test failed.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Recovery Fail <i>Indicates whether the battery failed to recover back to its pre-test voltage after last battery test.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Ext. Power Good <i>Indicates whether the the external battery supply ok.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Battery Healthy <i>Indicates whether the current battery voltage is healthy</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Capacitor Ready <i>Indicates whether the current capacitor</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, | ----- ----- | |

| Description | Range | Default | Setting |
|--|--|-------------------------|---------|
| <i>status is ready to trip and close.</i> | BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- | |
| CapacitorSupplyFail <i>Indicates whether the current capacitor status is Supply Failed.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Capacitor Only Trip <i>Indicates whether the current capacitor status is Only Trip</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Capacitor DBI <i>Indicates whether the current capacitor status is DBI condition.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Cap Test Active <i>Indicates whether the current capacitor status is Supply Failed.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Cap Test Pass <i>Indicates whether the capacitor test passed.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Cap Test Fail <i>Indicates whether the capacitor test failed.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Cap Recovery Fail | Combination of (BO1, BO2, | ----- | |

| Description | Range | Default | Setting |
|---|--|-------------------------|---------|
| <i>Indicates whether the capacitor voltage failed to recover after the last capacitor test.</i> | BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| 27Sag Pole1 SARFI <i>Voltage has dropped below the defined SARFI level on Pole 1.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 27Sag Pole2 SARFI <i>Voltage has dropped below the defined SARFI level on Pole 2.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 27Sag Pole3 SARFI <i>Voltage has dropped below the defined SARFI level on Pole 3.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 59Swell Pole1 SARFI <i>Voltage has risen above the defined SARFI level on Pole 1.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 59Swell Pole2 SARFI <i>Voltage has risen above the defined SARFI level on Pole 2.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 59Swell Pole3 SARFI <i>Voltage has risen above the defined SARFI level on Pole 2.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |

| Description | Range | Default | Setting |
|--|--|-------------------------|---------|
| Phase A <i>A phase A element operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L1 | |
| Phase B <i>A phase B element operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L2 | |
| Phase C <i>A phase C element operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | L3 | |
| Forward P/F <i>The Phase fault is in the forward direction. Note this output is presented EVEN when relay elements are set to be non-directional.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Reverse P/F <i>The Phase fault is in the reverse direction. Note this output is presented EVEN when relay elements are set to be non-directional.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Forward E/F <i>The fault is in the forward direction. Note this output is presented EVEN when relay elements are set to be non-directional.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Reverse E/F <i>The fault is in the reverse direction. Note this output is presented EVEN when relay elements are set to be non-directional.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |

| Description | Range | Default | Setting |
|--|--|-------------------------|---------|
| | V14, V15, V16) | | |
| Forward SEF <i>The fault is in the forward direction. Note this output is presented EVEN when relay elements are set to be non-directional.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Reverse SEF <i>The fault is in the reverse direction. Note this output is presented EVEN when relay elements are set to be non-directional.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Close CB Blocked <i>Indicates that the Close CB control is blocked by its interlocking logic.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Open CB <i>Open pulse due to Manual open being issued</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| CB Closed <i>Indicates that the circuit breaker is in the closed position.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| CB Open <i>Indicates that the circuit breaker is in the open position.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| CB Alarm <i>Indicates the CB is either in an illegal state or is stuck neither open or closed.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, | ----- ----- ----- | |

| Description | Range | Default | Setting |
|---|--|-------------------------|---------|
| | V9, V10, V11, V12, V13, V14, V15, V16) | | |
| Manual Close CB <i>Close pulse due to Manual close being issued</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 79 AR Close CB <i>Close pulse due to auto-reclose sequence</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 79 Trip & Reclose <i>Indicates that a trip & reclose has been issued</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 79 Trip & Lockout <i>Indicates that a trip & lockout has been issued</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 79 Lockout <i>Indicates that the Auto-recloser is in the Lockout state</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 79 Out Of Service <i>Indicates the auto-recloser is out of service</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 79 In Service <i>Indicates the auto-recloser is in service</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, | ----- ----- ----- | |

| Description | Range | Default | Setting |
|--|--|-------------------------|---------|
| | V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | | |
| 79 In Progress <i>Indicates an auto-reclose sequence is in progress</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 79 Block Extern <i>Indicates that Extern for the current shot has been selected to be delayed. (This may be used to block external tripping elements in the same way as the internal protection elements are blocked to achieve Instantaneous / Delayed operation.)</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 79 CB Fail To Close <i>Indicates the CB was not closed at the end of the Close Pulse</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 79 Close Onto Fault <i>Indicates an element starter or trip operated during the Close Pulse</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| 79 Successful AR <i>Indicates that after a reclose and at the end of the Reclaim time the CB was closed and there were no auto-reclose trip elements operated. (This is issued for 2 secs)</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Successful Man Close <i>Indicates that after a manual close and at the end of the Reclaim time the CB was closed and there were no auto-reclose trip elements operated. (This is issued for 2 secs)</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Hot Line Working <i>Indicates that Hot LineWorking functionality has been selected</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, | ----- ----- ----- | |

| Description | Range | Default | Setting |
|---|--|-------------------------|---------|
| | L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | | |
| Inst Prot'n Out <i>Indicates that the instantaneous protection elements are switched out.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| E/F Out <i>Indicates that the instantaneous protection elements are switched out.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| SEF Out <i>Indicates that the SEF protection elements are switched out.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| New Wave Stored <i>The waveform recorder has stored new information Note: this is a pulsed output</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| New Fault Stored <i>The fault recorder has stored new information Note: this is a pulsed output</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Out Of Service Mode <i>Indicates that the relay is in Out Of Service Mode</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| Local Mode <i>Indicates that the relay is in Local Mode</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, | ----- ----- ----- | |

| Description | Range | Default | Setting |
|--|--|-------------------------|---------|
| | L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | | |
| Remote Mode <i>Indicates that the relay is in Remote Mode</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| BI 1 Operated <i>DC Binary Input 1 has operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| BI 2 Operated <i>DC Binary Input 2 has operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| BI 3 Operated <i>DC Binary Input 3 has operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| BI 4 Operated <i>DC Binary Input 4 has operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| BI 5 Operated <i>DC Binary Input 5 has operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| BI 6 Operated <i>DC Binary Input 6 has operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, | ----- ----- ----- | |

| Description | Range | Default | Setting |
|--|--|-------------------------|---------|
| | BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | | |
| BI 7 Operated <i>DC Binary Input 7 has operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| BI 8 Operated <i>DC Binary Input 8 has operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| BI 9 Operated <i>DC Binary Input 9 has operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| BI 10 Operated <i>DC Binary Input 10 has operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| BI 11 Operated <i>DC Binary Input 11 has operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| BI 12 Operated <i>DC Binary Input 12 has operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| BI 13 Operated <i>DC Binary Input 13 has operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, | ----- ----- | |

| Description | Range | Default | Setting |
|--|--|-------------------------|---------|
| | BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- | |
| E1 <i>Quick Logic equation 1 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| E2 <i>Quick Logic equation 2 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| E3 <i>Quick Logic equation 3 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| E4 <i>Quick Logic equation 4 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| E5 <i>Quick Logic equation 5 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| E6 <i>Quick Logic equation 6 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| E7 | Combination of (BO1, BO2, | ----- | |

| Description | Range | Default | Setting |
|--|--|-------------------------|---------|
| <i>Quick Logic equation 7 operated</i> | BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- | |
| E8 <i>Quick Logic equation 8 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| E9 <i>Quick Logic equation 9 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| E10 <i>Quick Logic equation 10 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| E11 <i>Quick Logic equation 11 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| E12 <i>Quick Logic equation 12 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| E13 <i>Quick Logic equation 13 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |

| Description | Range | Default | Setting |
|--|--|-------------------------|---------|
| E14 <i>Quick Logic equation 14 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| E15 <i>Quick Logic equation 15 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |
| E16 <i>Quick Logic equation 16 operated</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16) | ----- ----- ----- | |

1.8.2. Binary Output Config

| Description | Range | Default | Setting |
|--|---|---|---------|
| Trip Contacts <i>The Binary Outputs selected by this setting are classed as Trip contacts. (When any of these BOs operate the Trip LED is lit, CB Fail is started, if enabled, & a Fault Record is stored)</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14) | ----- | |
| Hand Reset Outputs <i>Relays selected, as Hand Reset will remain latched until manually reset from front panel or via communications link or by removing DC Supply. By default relays are Self Resetting and will reset when the driving signal is removed.</i> | Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14) | L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14 | |
| Min Operate Time 1 <i>Minimum operate time of output relay 1</i> | 0, 0.01 ... 59, 60 | 0.1s | |
| Min Operate Time 2 <i>Minimum operate time of output relay 2</i> | 0, 0.01 ... 59, 60 | 0.1s | |
| Min Operate Time 3 <i>Minimum operate time of output relay 3</i> | 0, 0.01 ... 59, 60 | 0.1s | |
| Min Operate Time 4 <i>Minimum operate time of output relay 4</i> | 0, 0.01 ... 59, 60 | 0.1s | |
| Min Operate Time 5 <i>Minimum operate time of output relay 5</i> | 0, 0.01 ... 59, 60 | 0.1s | |
| Min Operate Time 6 <i>Minimum operate time of output relay 6</i> | 0, 0.01 ... 59, 60 | 0.1s | |
| Min Operate Time 7 <i>Minimum operate time of output relay 7</i> | 0, 0.01 ... 59, 60 | 0.1s | |
| Min Operate Time 8 <i>Minimum operate time of output relay 8</i> | 0, 0.01 ... 59, 60 | 0.1s | |
| Min Operate Time 9 <i>Minimum operate time of output relay 9</i> | 0, 0.01 ... 59, 60 | 0.1s | |
| Min Operate Time 10 <i>Minimum operate time of output relay 10</i> | 0, 0.01 ... 59, 60 | 0.1s | |
| Min Operate Time 11 <i>Minimum operate time of output relay 11</i> | 0, 0.01 ... 59, 60 | 0.1s | |
| Min Operate Time 12 <i>Minimum operate time of output relay 12</i> | 0, 0.01 ... 59, 60 | 0.1s | |
| Min Operate Time 13 <i>Minimum operate time of output relay 13</i> | 0, 0.01 ... 59, 60 | 0.1s | |
| Min Operate Time 14 <i>Minimum operate time of output relay 14</i> | 0, 0.01 ... 59, 60 | 0.1s | |

1.8.3. LED Config

| Description | Range | Default | Setting |
|---|--|---|---------|
| Green LEDs <i>Selects which LEDs will be green when driven</i> | Combination of (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14) | ----- | |
| Red LEDs <i>Selects which LEDs will be red when driven</i> | Combination of (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14) | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 | |

1.8.4. Pickup Config

| Description | Range | Default | Setting |
|---|--|---|---------|
| Gn P/F Pickups <i>When any of the selected pickups operate General Pickup is driven.</i> | Combination of (51-1, 51-2, 51-3, 51-4, 50-1, 50-2, 50-3, 50-4) | 51-1, 51-2, 51-3, 51-4, 50-1, 50-2, 50-3, 50-4 | |
| Gn E/F Pickups <i>As Above</i> | Combination of (51G-1, 51G-2, 51G-3, 51G-4, 50G-1, 50G-2, 50G-3, 50G-4) | 51G-1, 51G-2, 51G-3, 51G-4, 50G-1, 50G-2, 50G-3, 50G-4 | |
| Gn SEF/REF Pickups <i>As Above</i> | Combination of (51SEF-1, 51SEF-2, 51SEF-3, 51SEF-4, 50SEF-1, 50SEF-2, 50SEF-3, 50SEF-4, 64H) | 51SEF-1, 51SEF-2, 51SEF-3, 51SEF-4, 50SEF-1, 50SEF-2, 50SEF-3, 50SEF-4, 64H | |
| Gn Voltage Pickups <i>As Above</i> | Combination of (27/59-1, 27/59-2, 27/59-3, 27/59-4, Vx 27/59, 47-1, 47-2, 59NIT, 59NDT) | 27/59-1, 27/59-2, 27/59-3, 27/59-4, Vx 27/59, 47-1, 47-2, 59NIT, 59NDT | |
| Gn Freq Pickups <i>As Above</i> | Combination of (81-1, 81-2, 81-3, 81-4) | 81-1, 81-2, 81-3, 81-4 | |
| Gn Misc Pickups <i>As Above</i> | Combination of (46IT, 46DT, 37-1, 37-2) | 46IT, 46DT, 37-1, 37-2 | |

1.9. CB Maintenance

1.9.1. CB COUNTERS

| Description | Range | Default | Setting |
|--|----------------------|----------|---------|
| Gn CB Total Trip Count <i>Selects whether the CB Total Trip Count counter is enabled</i> | Disabled, Enabled | Disabled | |
| Gn CB Total Trip Count Target <i>Selects the number of CB trips allowed before CB Total Trip Count counter output operates</i> | 0, 1 ... 9999, 10000 | 100 | |
| Gn CB Total Trip Count Reset <i>Resets CB Total Trip Count counter</i> | No, Yes | No | |
| Gn CB Delta Trip Count <i>Selects whether the CB Delta Trip Count counter is enabled</i> | Disabled, Enabled | Disabled | |
| Gn CB Delta Trip Count Target <i>Selects the number of CB trips allowed before CB Delta Trip Count counter output operates</i> | 0, 1 ... 9999, 10000 | 100 | |
| Gn CB Delta Trip Count Reset <i>Resets CB Delta Trip Count counter</i> | No, Yes | No | |
| Gn CB Count To AR Block <i>Selects whether the CB Count To AR Block counter is enabled</i> | Disabled, Enabled | Disabled | |
| Gn CB Count To AR Block Target <i>Selects the number of CB trips allowed before CB Count To AR Block counter output operates. While count is above target the Autorecloser will only perform 1 x Delayed Shot and Lockout</i> | 0, 1 ... 9999, 10000 | 100 | |
| Gn CB Count To AR Block Reset <i>Resets CB Count To AR Block counter</i> | No, Yes | No | |
| Gn CB Freq Ops Count <i>Selects whether the CB Frequent Operations Counter is enabled</i> | Disabled, Enabled | Disabled | |
| Gn CB Freq Ops Count Target <i>Selects the number of CB trips allowed before CB Frequent Operations Counter output operates. While count is above target the Autorecloser will only perform 1 x Delayed Shot and Lockout</i> | 0, 1 ... 9999, 10000 | 10 | |
| Gn CB Freq Ops Count Reset <i>Resets CB Frequent Operations Counter</i> | No, Yes | No | |
| Gn CB LO Handle Ops <i>Selects whether the CB Lockout operations Counter is enabled</i> | Disabled, Enabled | Disabled | |
| Gn CB LO Handle Ops Target <i>Selects the number of CB Lockout handle operations allowed before CB LO Handle Ops Count counter output operates</i> | 0, 1 ... 9999, 10000 | 100 | |

| Description | Range | Default | Setting |
|--|---------|---------|---------|
| Gn CB LO Handle Ops Reset <i>Resets CB Lockout Handle Operations Counter.</i> | No, Yes | No | |

1.9.2. I²T CB Wear

| Description | Range | Default | Setting |
|---|--------------------------|---------------------|---------|
| Gn I ² t Counter <i>Selects whether the I²t CB Wear monitor is enabled</i> | Disabled, Enabled | Disabled | |
| Gn Alarm Limit <i>Sets limit before alarm is issued</i> | 10, 11 ... 99000, 100000 | 10MA ² s | |
| Gn Separation Time <i>Sets the time for CB mechanism to start moving, time before contacts start to separate</i> | 0, 0.001 ... 0.199, 0.2 | 0.02s | |
| Gn Clearance Time <i>Time for CB to clear fault</i> | 0, 0.001 ... 0.199, 0.2 | 0.04s | |
| Reset I ² t Count <i>Reset the CB wear count</i> | No, Yes | No | |

1.10.Data Storage

| Description | Range | Default | Setting |
|--|--|---|---------|
| Gn P/F Trig Storage <i>Select which elements trigger a waveform record</i> | Combination of (51-1, 51-2, 51-3, 51-4, 50-1, 50-2, 50-3, 50-4) | 51-1, 51-2, 51-3, 51-4, 50-1, 50-2, 50-3, 50-4 | |
| Gn E/F Trig Storage <i>As Above</i> | Combination of (51G-1, 51G-2, 51G-3, 51G-4, 50G-1, 50G-2, 50G-3, 50G-4) | 51G-1, 51G-2, 51G-3, 51G-4, 50G-1, 50G-2, 50G-3, 50G-4 | |
| Gn SEF/REF Trig Storage <i>As Above</i> | Combination of (51SEF-1, 51SEF-2, 51SEF-3, 51SEF-4, 50SEF-1, 50SEF-2, 50SEF-3, 50SEF-4, 64H) | 51SEF-1, 51SEF-2, 51SEF-3, 51SEF-4, 50SEF-1, 50SEF-2, 50SEF-3, 50SEF-4, 64H | |
| Gn Misc Current Storage <i>As Above</i> | Combination of (46IT, 46DT, 37-1, 37-2, 49 Trip, 49 Alarm) | ----- | |
| Gn Voltage Trig Storage <i>As Above</i> | Combination of (27/59-1, 27/59-2, 27/59-3, 27/59-4, Vx 27/59, 47-1, 47-2, 59NIT, 59NDT) | ----- | |
| Gn Freq Trig Storage <i>As Above</i> | Combination of (81-1, 81-2, 81-3, 81-4) | ---- | |
| Pre-trigger Storage <i>Select Percentage of waveform record stored before the fault is triggered</i> | 10, 20, 30, 40, 50, 60, 70, 80, 90 | 20% | |
| Record Duration <i>Select waveform record duration</i> | 10 Rec x 1 Sec, 5 Rec x 2 Sec, 2 Rec x 5 Sec, 1 Rec x 10 Sec | 10 Rec x 1 Sec | |
| Trigger Waveform <i>Trigger waveform storage</i> | No, Yes | No | |
| Clear Waveforms <i>Clear all stored waveform records</i> | No, Yes | No | |
| Gn Max Fault Rec Time <i>Maximum time Fault record information will be stored and classed as same fault</i> | 0, 1 ... 59900, 60000 | 2000ms | |
| Clear Faults <i>Clear all stored fault records</i> | No, Yes | No | |
| Clear Events <i>Clear all stored event records</i> | No, Yes | No | |
| Data Log <i>Selects whether the Data Logger is enabled</i> | Disabled, Enabled | Disabled | |
| Data Log Period <i>Selects period between stored samples</i> | 1, 2 ... 1380, 1440 | 1min | |
| Clear Data Log <i>Clear the Data Log</i> | No, Yes | No | |

| Description | Range | Default | Setting |
|--|---------|---------|---------|
| Clear Energy <i>Clear all energy values</i> | No, Yes | No | |

1.11.Communications

| Description | Range | Default | Setting |
|--|---|-----------------|---------|
| Station Address <i>IEC 60870-5-103 Station Address</i> | 0 ... 254 | 0 | |
| COM1-RS485 Protocol <i>Selects protocol to use for COM1-RS485</i> | OFF, IEC60870-5-103, MODBUS-RTU, DNP3 | IEC60870-5-103 | |
| COM1-RS485 Baud Rate <i>Sets the communications baud rate for COM1-RS485</i> | 75 110 150 300 600 1200 2400 4800 9600 19200 38400 | 19200 | |
| COM1-RS485 Parity <i>Selects whether parity information is used</i> | NONE, ODD, EVEN | EVEN | |
| COM2-USB Protocol <i>Selects protocol to use for COM2-USB</i> | OFF, IEC60870-5-103, MODBUS-RTU, ASCII, DNP3 | IEC60870-5-103 | |
| COM2-USB Baud Rate <i>Sets the communications baud rate for COM2-USB</i> | 75 110 150 300 600 1200 2400 4800 9600 19200 38400 57600 115200 230400 460800 921600 | 57600 | |
| COM2-USB Parity <i>Selects whether parity information is used</i> | NONE, ODD, EVEN | EVEN | |
| COM3 Protocol <i>Selects protocol to use for COM3</i> | OFF, IEC60870-5-103, MODBUS-RTU, DNP3 | IEC6-0870-5-103 | |
| COM3 Baud Rate <i>Sets the communications baud rate for COM3</i> | 75 110 150 300 600 1200 2400 4800 9600 19200 38400 57600 115200 | 57600 | |
| COM3 Parity <i>Selects whether parity information is used</i> | NONE, ODD, EVEN | EVEN | |
| COM3 Line Idle <i>Selects the communications line idle sense</i> | LIGHT ON, LIGHT OFF | LIGHT OFF | |
| COM3 Data Echo <i>Enables echoing of data from RX port to TX port when operating relays in a Fibre Optic ring configuration</i> | ON, OFF | OFF | |
| COM4 Protocol <i>Selects protocol to use for COM4</i> | OFF, IEC60870-5-103, MODBUS-RTU, DNP3 | OFF | |
| COM4 Baud Rate <i>Sets the communications baud rate for COM4</i> | 75 110 150 300 600 1200 2400 4800 9600 19200 38400 | 19200 | |
| COM4 Parity <i>Selects whether parity information is used</i> | NONE, OFF, EVEN | EVEN | |
| COM4 Line Idle <i>Selects the communications line idle sense</i> | LIGHT ON, LIGHT OFF | LIGHT OFF | |
| COM4 Data Echo <i>Enables echoing of data from RX port to TX port when operating relays in a Fibre Optic ring configuration</i> | ON, OFF | OFF | |

1.12.Relay Instrumentation

| Instrument | Description |
|--|--|
| <p>FAVOURITE METERS</p> <p>→to view</p> | <p>This allows the user to view his previously constructed list of 'favourite meters' by pressing TEST/RESET ► button and the READ DOWN button to scroll through the meters added to this sub-group</p> <p>To construct a sub-group of favourite meters, first go to the desired meter then press ENTER this will cause a message to appear on the LCD 'Add To Favourites YES' pressing ENTER again will add this to the FAVOURITE METERS Sub-menu. To remove a meter from the FAVOURITE METERS sub-menu go to that meter each in the FAVOURITE METERS sub-menu or at its Primary location press ENTER and the message 'Remove From Favourites' will appear press ENTER again and this meter will be removed from the FAVOURITE METERS sub-group</p> |
| <p>CURRENT METERS</p> <p>→to view</p> | <p>This is the sub-group that includes all the meters that are associated with Current TEST/RESET ► allows access to this sub-group</p> |
| <p>Primary Current</p> <p>la 0.00kA</p> <p>lb 0.00kA</p> <p>lc 0.00kA</p> | <p>Displays the 3 phase currents Primary RMS values</p> |
| <p>Secondary Current</p> <p>la 0.00A</p> <p>lb 0.00A</p> <p>lc 0.00A</p> | <p>Displays the 3 phase currents Secondary RMS values</p> |
| <p>Nom Current</p> <p>la 0.00xIn ----</p> <p>lb 0.00xIn ----</p> <p>lc 0.00xIn ----</p> | <p>Displays the 3 Phase currents Nominal RMS values & phase angles with respect to PPS voltage.</p> |
| <p>Pri Earth Current</p> <p>In 0.000kA</p> <p>Ig 0.000kA</p> <p>Isef 0.000kA</p> | <p>Displays the 3 Earth currents Primary RMS values</p> |
| <p>Sec Earth Current</p> <p>In 0.000kA</p> <p>Ig 0.000kA</p> <p>Isef 0.000kA</p> | <p>Displays the 3 Earth currents Secondary RMS values</p> |
| <p>Nom Earth Current</p> <p>In 0.000xIn----</p> <p>Ig 0.000xIn----</p> <p>Isef 0.000xIn----</p> | <p>Displays the 3 Earth currents Nominal RMS values & phase angles with respect to PPS voltage.</p> |
| <p>I Seq Components</p> <p>Izps 0.00xIn----</p> <p>Ipps 0.00xIn----</p> <p>Inps 0.00xIn----</p> | <p>Displays the Current Sequence components Nominal RMS values & phase angles with respect to PPS voltage.</p> |

| | | |
|---|--|---|
| 2 nd Harmonic Current Ia Ib Ic | 0.00xIn 0.00xIn 0.00xIn | Displays the 3 phase currents' 2 nd Harmonic components Nominal RMS values. |
| VOLTAGE METERS →to view | | This is the sub-group that includes all the meters that are associated with Voltage TEST/RESET ► allows access to this sub-group |
| Prim Ph-Ph Voltage Vab Vbc Vca | 0.00kV 0.00kV 0.00kV | Displays the Phase to Phase Voltage Primary RMS values |
| Sec Ph-Ph Voltage Vab o Vbc o Vca o | 0.00V ---- 0.00V ---- 0.00V ---- | Displays the Phase to Phase Voltage Secondary RMS values & Angles with respect to PPS voltage. |
| Nominal Ph-Ph Voltage Vab Vbc Vca | 0.00V 0.00V 0.00V | Displays the Phase to Phase Voltage Nominal RMS values |
| Prim Ph-N Voltage Va Vb Vc | 0.00kV 0.00kV 0.00kV | Displays the Phase to Neutral Voltage Primary RMS values |
| Sec Ph-N Voltage Va o Vb o Vc o | 0.00V ---- 0.00V ---- 0.00V ---- | Displays the Phase to Neutral Voltage Secondary RMS values & Angles with respect to PPS voltage. |
| Nom Ph-N Voltage Va Vb Vc | 0.00V 0.00V 0.00V | Displays the Phase to Neutral Voltage Nominal RMS values |
| V Seq Components Izps o Ipps o Inps o | 0.00V ---- 0.00V ---- 0.00V ---- | Displays the Voltage Sequence components Nominal RMS values & phase angles with respect to PPS voltage. |
| Calc Earth Voltage Pri Sec | 0.00kV 0.00V ----o | Displays the calculated Earth voltage both primary and secondary which also shows the secondary angle |
| CS/NVD Voltage (Vx) Pri Sec | 0.00kV 0.00V ---- o | Displays the 4th voltage (Vx) both primary and secondary which also shows the secondary angle. This voltage can be used for NVD, Vx 27/59 or where available Checksync. |