7SR220 Directional Relay
Settings Guide

(Software Version 2435H85009R7a-7a)

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Contents

Document Release History 2
1. Function Diagram 6
2. Menu Structure 7
3. Relay Settings 8
3.1. System Config 8
3.2. CT/VT Config 9
3.3. Function Config 10
3.4. Current Prot'n 12
3.4.1. Phase Overcurrent 12
3.4.1.1. 51-1 12
3.4.1.2. 51-2 13
3.4.1.3. 51-3 13
3.4.1.4. 51-4 14
3.4.1.5. 50-1 14
3.4.1.6. 50-2 15
3.4.1.7. 50-3 15
3.4.1.8. 50-4 15
3.4.1.9. Voltage Controlled O/C 16
3.4.2. Cold Load 16
3.4.3. Derived E/F 18
3.4.3.1. 51N-1 18
3.4.3.2. 51N-2 19
3.4.3.3. 51N-3 19
3.4.3.4. 51N-4 20
3.4.3.5. 50N-1 20
3.4.3.6. 50N-2 21
3.4.3.7. 50N-3 21
3.4.3.8. 50N-4 21
3.4.4. Measured E/F 22
3.4.4.1. 51G-1 22
3.4.4.2. 51G-2 23
3.4.4.3. 51G-3 23
3.4.4.4. 51G-4 24
3.4.4.5. 50G-1 24
3.4.4.6. 50G-2 25
3.4.4.7. 50G-3 25
3.4.4.8. 50G-4 25
3.4.5. Sensitive E/F 26
3.4.5.1. 51SEF-1 26
3.4.5.2. 51SEF-2 26
3.4.5.3. 51SEF-3 27
3.4.5.4. 51SEF-4 27
3.4.5.5. 50SEF-1 28
3.4.5.6. 50SEF-2 28
3.4.5.7. 50SEF-3 29

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3.4.5.8. 50SEF-4 29
3.4.6. Restricted E/F 29
3.4.7. NPS Overcurrent 29
3.4.7.1. 46IT 29
3.4.7.2. 46DT 30
3.4.8. Under Current 30
3.4.8.1. 37-1 30
3.4.8.2. 37-2 30
3.4.8.3. 37G-1 31
3.4.8.4. 37G-2 31
3.4.8.5. 37SEF-1 31
3.4.8.6. 37SEF-2 31
3.4.9. Thermal 32
3.5. Voltage Protection 32
3.5.1. Phase U/O Voltage 32
3.5.2. 27/59-1 32
3.5.3. 27/59-2 33
3.5.4. 27/59-3 33
3.5.5. 27/59-4 34
3.6. Vx U/O Voltage 34
3.7. NPS Overvoltage 35
3.7.1. 47-1 35
3.7.2. 47-2 35
3.8. Neutral Overvoltage 35
3.8.1. 59NIT 36
3.8.2. 59NDT 36
3.9. U/O Frequency 36
3.9.1. 81-1 36
3.9.2. 81-2 37
3.9.3. 81-3 37
3.9.4. 81-4 37
3.9.5. 81-5 38
3.9.6. 81-6 38
3.10. Supervision 39
3.10.1. CB Fail 39
3.10.2. VT Supervision 39
3.10.3. CT Supervision 40
3.10.4. Broken Conductor 40
3.10.5. Trip CCT Supervision 40
3.10.6. Inrush Detector 41
3.11. Control & Logic 41
3.11.1. Autoreclose Prot'n 41
3.11.2. Autoreclose Config 42
3.11.2.1. P/F Shots 42
3.11.2.2. E/F Shots 43
3.11.2.3. SEF Shots 44
3.11.2.4. Extern Shots 44
3.11.3. Manual Close 45

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3.11.4. Circuit Breaker 46
3.11.5. QUICK LOGIC 47
3.12. Input Config 54
3.12.1. Input Matrix 54
3.12.2. Function Key Matrix 64
3.12.3. Binary Input Config 65
3.12.4. Function Key Config 66
3.12.5. General Alarms 67
3.13. Output Config 67
3.13.1. Output Matrix 67
3.13.2. Binary Output Config 85
3.13.3. LED Config 87
3.13.4. Pickup Config 87
3.14. CB Maintenance 88
3.14.1. CB Counters 88
3.14.2. I^2T CB Wear 88
3.15. Data Storage 89
3.15.1. Demand Data/Log 89
3.15.2. Waveform Storage 89
3.15.3. Fault Storage 90
3.15.4. Event Storage 90
3.15.5. Energy Storage 90
3.15.6. Communications 90

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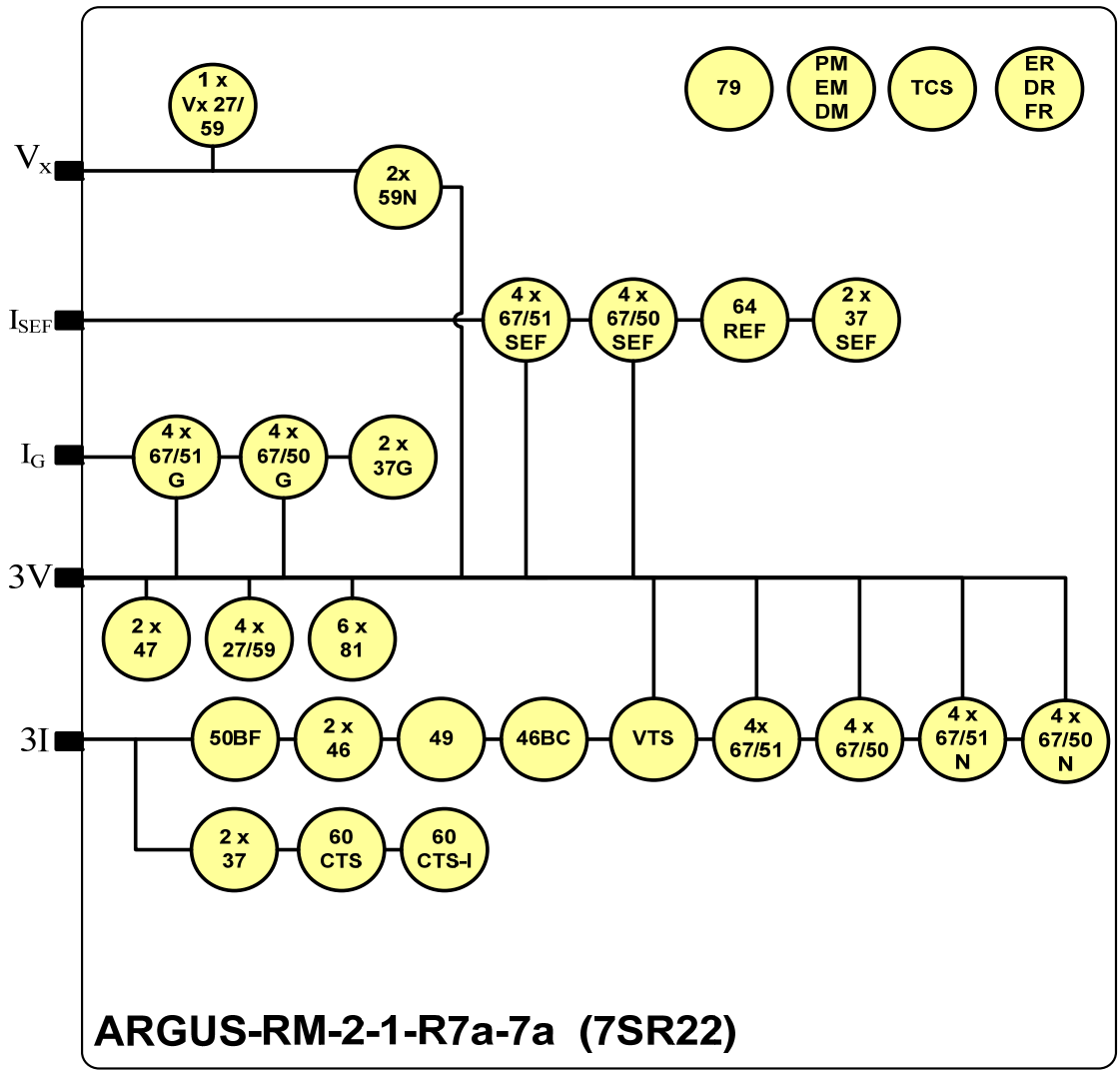
1.Function Diagram



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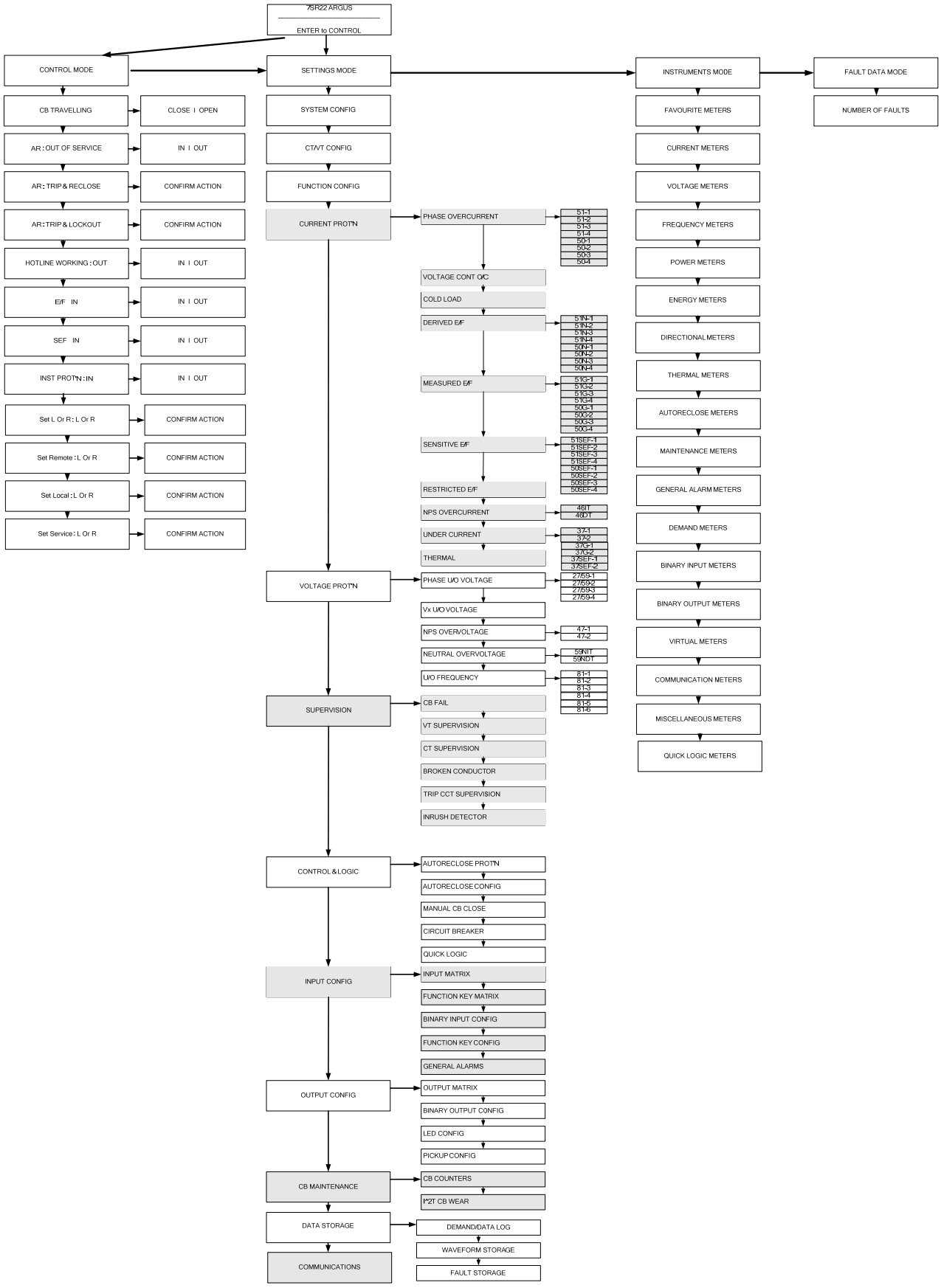
2.Menu Structure



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3.Relay Settings

3.1. System Config

Description	Range	Default	Setting
Active Group *Selects which settings group is currently activated*			
System Frequency *Selects the Power System Frequency from 50 or 60 Hz*	50, 60	50Hz	
View/Edit Group *Selects which settings group is currently being displayed*			
Setting Dependencies *When enabled only active settings are displayed and all others hidden*	Disabled, Enabled	Enabled	
Favourite Meters Timer *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*	Off, 1, 2, 5, 10, 15, 30, 60	60min	
Backlight timer *Controls when the LCD backlight turns off*	Off, 1, 2, 5, 10, 15, 30, 60	5min	
Date *Sets the date, this setting can only be changed on the fascia or via Relay->Control->Set Time and Date*			
Time *Sets the time, this setting can only be changed on the fascia or via Relay->Control->Set Time and Date*			
Curr Set Display *Select whether the Pickup values are shown in terms of x Nominal, Primary or Secondary values on the Relay Fascia*	xNom, Primary, Secondary	xNom	
E/F Curr Set Display *As Above*	xNom, Primary, Secondary	xNom	
SEF/REF Curr Set Display *As Above*	xNom, Primary, Secondary	xNom	
Export Power/Lag VAr *Selects the signs required for exporting power and lagging VArs*	+ve/+ve, +ve/-ve, -ve/+ve, -ve/-ve	+ve/+ve	
Select Grp Mode *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.*	Edge triggered, Level triggered	Edge triggered	
Clock Sync. From BI *Real time clock may be synchronised using a binary input (See Clock Sync. in Binary Input Menu)*	Disabled, Seconds, Minutes	Minutes	
Operating Mode *Selects the current operating mode of the relay. This can also be changed by a binary input mode selection.*	Out Of Service, Local, Remote, Local Or Remote	Local Or Remote	
Setting Password *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*	(Password)	NONE	
Control Password *As Above*	(Password)	NONE	

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Description	Range	Default	Setting
Trip Alert *When Enabled the occurance 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*	Disabled, Enabled	Enabled	
General Alarm Alert	Disabled, Enabled	Enabled	
Relay Identifier *An alphanumeric string shown on the LCD normally used to identifier the circuit the relay is attached to or the relays purpose*	(16 Character String)	ARGUS-M 7SR22	
Circuit Identifier	(16 Character String)		

3.2. CT/VT Config

Description	Range	Default	Setting
Phase Nom Voltage *Selects the nominal voltage setting Vn of the voltage input*	40, 40.1 ... 159.9, 160	63.5V	
Phase Voltage Trim Magnitude *Allows trimming of voltage magnitude, the setting value should be the voltage required to be added to get back to Phase Nom Voltage.*	-20, -19.9 ... 19.9, 20	0V	
Phase Voltage Trim Angle *Allows trimming of voltage angle, the setting value is added to the current voltage angle*	-45, -44.9 ... 44.9, 45	0deg	
Phase Voltage Config *Required to allow for different types of physical VT connections.*	Van,Vbn,Vcn, Vab,Vbc,3V0, Va,Vb,Vc	Van,Vbn,Vcn	
Phase VT Ratio Prim	(6 Character String)	132000	
Phase VT Ratio Sec	40, 40.5 ... 159.5, 160	110808596273	
Vx Nom Voltage *Selects the nominal voltage setting Vn of the voltage input*	40, 40.1 ... 159.9, 160	63.5V808596273	
Vx Voltage Trim Magnitude *Allows trimming of voltage magnitude, the setting value should be the voltage required to be added to get back to Vx Nom Voltage.*	-20, -19.9 ... 19.9, 20	0V808596273	
Vx Voltage Trim Angle *Allows trimming of voltage angle, the setting value is added to the current voltage angle*	-45, -44.9 ... 44.9, 45	0deg808596273	
Vx VT Ratio Prim	(6 Character String)	132000	
Vx VT Ratio Sec	40, 40.5 ... 159.5, 160	110808596273	
Phase Current Input *Selects whether 1 or 5 Amp terminals are being used for phase inputs*	1, 5	1A808596273	
Phase CT Ratio *Phase CT ratio to scale primary current instruments*	1:0.2, 1:0.21 ... 5000:6.9, 5000:7	2000:1808596273	
Earth Current Input *Selects whether 1 or 5 Amp terminals are being used for Measured Earth inputs*	1, 5	1A808596273	

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Description	Range	Default	Setting
Earth CT Ratio *Measured Earth CT ratio to scale primary current instruments*	1:0.2, 1:0.21 ... 5000:6.9, 5000:7	2000:1808596273	
SEF/REF Current Input *Selects whether 1 or 5 Amp terminals are being used for SEF/REF inputs*	1, 5	1A808596273	
SEF/REF CT Ratio *SEF/REF CT ratio to scale primary current instruments*	1:0.2, 1:0.21 ... 5000:6.9, 5000:7	2000:1808596273	

3.3. Function Config

Description	Range	Default	Setting
Gn Phase Overcurrent *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).*	Enabled, Disabled	Disabled	
Gn Voltage Cont O/C *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).*	Enabled, Disabled	Disabled	
Gn Cold Load *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).*	Enabled, Disabled	Disabled	
Gn Derived E/F *When set to Disabled, no Derived 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).*	Enabled, Disabled	Disabled	
Gn Measured E/F *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).*	Enabled, Disabled	Disabled	
Gn Sensitive E/F *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).*	Enabled, Disabled	Disabled	
Gn Restricted E/F *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).*	Enabled, Disabled	Disabled	
Gn NPS Overcurrent *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).*	Enabled, Disabled	Disabled	
Gn Under Current *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).*	Enabled, Disabled	Disabled	
Gn Thermal *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).*	Enabled, Disabled	Disabled	

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Description	Range	Default	Setting
Gn Phase U/O Voltage *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).*	Enabled, Disabled	Disabled	
Gn Vx U/O Voltage *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).*	Enabled, Disabled	Disabled	
Gn NPS Overvoltage *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).*	Enabled, Disabled	Disabled	
Gn Neutral Overvoltage *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).*	Enabled, Disabled	Disabled	
Gn U/O Frequency *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).*	Enabled, Disabled	Disabled	
Gn CB Fail *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).*	Enabled, Disabled	Disabled	
Gn VT Supervision *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).*	Enabled, Disabled	Disabled	
Gn CT Supervision *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).*	Enabled, Disabled	Disabled	
Gn Broken Conductor *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).*	Enabled, Disabled	Disabled	
Gn Trip Cct Supervision *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).*	Enabled, Disabled	Disabled	
Gn Inrush Detector *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).*	Enabled, Disabled	Disabled	
Gn CB Counters *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).*	Enabled, Disabled	Disabled	
Gn I^2t CB Wear *When set to Disabled, no Gn I^2t 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).*	Enabled, Disabled	Disabled	

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Description	Range	Default	Setting
Gn Demand *When set to Disabled, no Demand 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).*			

3.4. Current Prot'n

3.4.1. Phase Overcurrent

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

3.4.1.1. 51-1

Description	Range	Default	Setting
Gn 51-1 Element *Selects whether the 51-1 IDMTL Overcurrent element is enabled*	Disabled, Enabled	Disabled	
Gn 51-1 Dir. Control *Selects whether 51-1 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 51-1 Setting *Pickup level*	0.05, 0.06 ... 2.49, 2.5	1xIn	
Gn 51-1 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51-1 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51-1 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51-1 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	
Gn 51-1 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51-1 Reset *Selects between an ANSI decaying reset characteristic or a definite time reset*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51-1 VTS Action *Selects whether 51-1 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	

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Description	Range	Default	Setting
Gn 51-1 Inrush Action *Selects if the 51-1 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.1.2. 51-2

Description	Range	Default	Setting
Gn 51-2 Element *Selects whether the 51-2 IDMTL Overcurrent element is enabled*	Disabled, Enabled	Disabled	
Gn 51-2 Dir. Control *Selects whether 51-2 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 51-2 Setting *Pickup level*	0.05, 0.06 ... 2.49, 2.5	1xIn	
Gn 51-2 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51-2 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51-2 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51-2 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	
Gn 51-2 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51-2 Reset *Selects between an ANSI decaying reset characteristic or a definite time reset*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51-2 VTS Action *Selects whether 51-2 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 51-2 Inrush Action *Selects if the 51-2 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.1.3. 51-3

Description	Range	Default	Setting
Gn 51-3 Element *Selects whether the 51-3 IDMTL Overcurrent element is enabled*	Disabled, Enabled	Disabled	
Gn 51-3 Dir. Control *Selects whether 51-3 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 51-3 Setting *Pickup level*	0.05, 0.06 ... 2.49, 2.5	1xIn	
Gn 51-3 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51-3 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51-3 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51-3 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	

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Description	Range	Default	Setting
Gn 51-3 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51-3 Reset *Selects between an ANSI decaying reset characteristic or a definite time reset*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51-3 VTS Action *Selects whether 51-3 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 51-3 Inrush Action *Selects if the 51-3 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.1.4. 51-4

Description	Range	Default	Setting
Gn 51-4 Element *Selects whether the 51-4 IDMTL Overcurrent element is enabled*	Disabled, Enabled	Disabled	
Gn 51-4 Dir. Control *Selects whether 51-4 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 51-4 Setting *Pickup level*	0.05, 0.06 ... 2.49, 2.5	1xIn	
Gn 51-4 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51-4 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51-4 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51-4 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	
Gn 51-4 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51-4 Reset *Selects between an ANSI decaying reset characteristic or a definite time reset*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51-4 VTS Action *Selects whether 51-4 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 51-4 Inrush Action *Selects if the 51-4 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.1.5. 50-1

Description	Range	Default	Setting
Gn 50-1 Element *Selects whether the INST/ DTL Overcurrent element is enabled*	Disabled, Enabled	Disabled	
Gn 50-1 Dir. Control *Selects whether 50-1 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 50-1 Setting *Pickup level*	0.05, 0.06 ... 49.5, 50	1xIn	

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Description	Range	Default	Setting
Gn 50-1 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 50-1 VTS Action *Selects whether 50-1 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 50-1 Inrush Action *Selects if the 50-1 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.1.6. 50-2

Description	Range	Default	Setting
Gn 50-2 Element *Selects whether the INST/ DTL Overcurrent element is enabled*	Disabled, Enabled	Disabled	
Gn 50-2 Dir. Control *Selects whether 50-2 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 50-2 Setting *Pickup level*	0.05, 0.06 ... 49.5, 50	1xIn	
Gn 50-2 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 50-2 VTS Action *Selects whether 50-2 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 50-2 Inrush Action *Selects if the 50-2 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.1.7. 50-3

Description	Range	Default	Setting
Gn 50-3 Element *Selects whether the INST/ DTL Overcurrent element is enabled*	Disabled, Enabled	Disabled	
Gn 50-3 Dir. Control *Selects whether 50-3 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 50-3 Setting *Pickup level*	0.05, 0.06 ... 49.5, 50	1xIn	
Gn 50-3 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 50-3 VTS Action *Selects whether 50-3 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 50-3 Inrush Action *Selects if the 50-3 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.1.8. 50-4

Description	Range	Default	Setting
Gn 50-4 Element *Selects whether the INST/ DTL Overcurrent element is enabled*	Disabled, Enabled	Disabled	
Gn 50-4 Dir. Control *Selects whether 50-4 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	

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Description	Range	Default	Setting
Gn 50-4 Setting *Pickup level*	0.05, 0.06 ... 49.5, 50	1xIn	
Gn 50-4 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 50-4 VTS Action *Selects whether 50-4 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 50-4 Inrush Action *Selects if the 50-4 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.1.9. Voltage Controlled O/C

Description	Range	Default	Setting
Gn 51V Element (Ph-Ph)	Disabled, Enabled	Disabled	
Gn 51V Setting *The voltage below which 51V operates*	5, 5.5 ... 199.5, 200	30V	
Gn 51V VTS Action *Selects whether or not the 51V element is blocked when VTS operates*	Off, Inhibit	Off	
Gn 51-1 Multiplier *Multiplier applied to the 51-1 element when VCO element has operated*	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 *Multiplier applied to the 51-2 element when VCO element has operated*	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 *Multiplier applied to the 51-3 element when VCO element has operated*	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 *Multiplier applied to the 51-4 element when VCO element has operated*	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	

3.4.2. Cold Load

Description	Range	Default	Setting
Cold Load *Selects whether the Cold Load element is enabled*	Disabled, Enabled	Disabled	
Pick-up Time *Cold Load operate time delay*	1, 1.1 ... 14100, 14400	600s	
Drop-off Time *Cold Load reset time delay*	1, 1.1 ... 14100, 14400	600s	
Reduced Current *Selects whether reduced current functionality is to be used*	Disabled, Enabled	Disabled	
Reduced Current Level *Selects current level below which Reduced Current Time is used for Cold Load reset delay*	0.05, 0.1 ... 2.45, 2.5	0.25xIn	
Reduced Current Time *Cold Load reset time delay used when reduced current active*	1, 1.1 ... 14100, 14400	600s	
Gn 51c-1 Setting *51-1 element parameter used when Cold Load operates*	0.05, 0.06 ... 2.49, 2.5	1xIn	

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Description	Range	Default	Setting
Gn 51c-1 Char *As Above*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51c-1 Time Mult (IEC/ANSI) *As Above*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51c-1 Delay (DTL) *As Above*	0, 0.01 ... 19.99, 20	5s	
Gn 51c-1 Min Operate Time *As Above*	0, 0.01 ... 19.99, 20	0s	
Gn 51c-1 Follower DTL *As Above*	0, 0.01 ... 19.99, 20	0s	
Gn 51c-1 Reset *As Above*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51c-2 Setting *51-2 element parameter used when Cold Load operates*	0.05, 0.06 ... 2.49, 2.5	1xIn	
Gn 51c-2 Char *As Above*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51c-2 Time Mult (IEC/ANSI) *As Above*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51c-2 Delay (DTL) *As Above*	0, 0.01 ... 19.99, 20	5s	
Gn 51c-2 Min Operate Time *As Above*	0, 0.01 ... 19.99, 20	0s	
Gn 51c-2 Follower DTL *As Above*	0, 0.01 ... 19.99, 20	0s	
Gn 51c-2 Reset *As Above*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51c-3 Setting *51-3 element parameter used when Cold Load operates*	0.05, 0.06 ... 2.49, 2.5	1xIn	
Gn 51c-3 Char *As Above*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51c-3 Time Mult (IEC/ANSI) *As Above*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51c-3 Delay (DTL) *As Above*	0, 0.01 ... 19.99, 20	5s	
Gn 51c-3 Min Operate Time *As Above*	0, 0.01 ... 19.99, 20	0s	
Gn 51c-3 Follower DTL *As Above*	0, 0.01 ... 19.99, 20	0s	
Gn 51c-3 Reset *As Above*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51c-4 Setting *51-4 element parameter used when Cold Load operates*	0.05, 0.06 ... 2.49, 2.5	1xIn	
Gn 51c-4 Char *As Above*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51c-4 Time Mult (IEC/ANSI) *As Above*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51c-4 Delay (DTL) *As Above*	0, 0.01 ... 19.99, 20	5s	
Gn 51c-4 Min Operate Time *As Above*	0, 0.01 ... 19.99, 20	0s	

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

3.4.3. Derived E/F

Description	Range	Default	Setting
Gn 67N Polarizing Quantity *Allows the directional element to select which quantities to use.*	ZPS, NPS	ZPS	
Gn 67N Char Angle *Maximum torque angle for derived earth fault elements*	-95, -94 ... 94, 95	-15deg	
Gn 67N Minimum Voltage *Selects the directional elements minimum voltage, below which the element will be inhibited*	0.33, 0.5, 1, 1.5, 2, 2.5, 3	0.33V	

3.4.3.1. 51N-1

Description	Range	Default	Setting
Gn 51N-1 Element *Selects whether the 51N-1 IDMTL derived Earth Fault element is enabled*	Disabled, Enabled	Disabled	
Gn 51N-1 Dir. Control *Selects whether 51N-1 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 51N-1 Setting *Pickup level*	0.05, 0.06 ... 2.49, 2.5	0.5xIn	
Gn 51N-1 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51N-1 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51N-1 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51N-1 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	
Gn 51N-1 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51N-1 Reset *Selects between an ANSI decaying reset characteristic or a definite time reset*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51N-1 VTS Action *Selects whether 51N-1 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 51N-1 Inrush Action *Selects if the 51N-1 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

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3.4.3.2. 51N-2

Description	Range	Default	Setting
Gn 51N-2 Element *Selects whether the 51N-2 IDMTL derived Earth Fault element is enabled*	Disabled, Enabled	Disabled	
Gn 51N-2 Dir. Control *Selects whether 51N-2 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 51N-2 Setting *Pickup level*	0.05, 0.06 ... 2.49, 2.5	0.5xIn	
Gn 51N-2 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51N-2 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51N-2 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51N-2 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	
Gn 51N-2 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51N-2 Reset *Selects between an ANSI decaying reset characteristic or a definite time reset*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51N-2 VTS Action *Selects whether 51N-2 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 51N-2 Inrush Action *Selects if the 51N-2 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.3.3. 51N-3

Description	Range	Default	Setting
Gn 51N-3 Element *Selects whether the 51N-3 IDMTL derived Earth Fault element is enabled*	Disabled, Enabled	Disabled	
Gn 51N-3 Dir. Control *Selects whether 51N-3 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 51N-3 Setting *Pickup level*	0.05, 0.06 ... 2.49, 2.5	0.5xIn	
Gn 51N-3 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51N-3 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51N-3 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51N-3 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	
Gn 51N-3 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51N-3 Reset *Selects between an ANSI decaying reset characteristic or a definite time reset*	(ANSI) Decaying, 0 ... 59, 60	0s	

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Description	Range	Default	Setting
Gn 51N-3 VTS Action *Selects whether 51N-3 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 51N-3 Inrush Action *Selects if the 51N-3 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.3.4. 51N-4

Description	Range	Default	Setting
Gn 51N-4 Element *Selects whether the 51N-4 IDMTL derived Earth Fault element is enabled*	Disabled, Enabled	Disabled	
Gn 51N-4 Dir. Control *Selects whether 51N-4 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 51N-4 Setting *Pickup level*	0.05, 0.06 ... 2.49, 2.5	0.5xIn	
Gn 51N-4 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51N-4 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51N-4 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51N-4 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	
Gn 51N-4 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51N-4 Reset *Selects between an ANSI decaying reset characteristic or a definite time reset*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51N-4 VTS Action *Selects whether 51N-4 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 51N-4 Inrush Action *Selects if the 51N-4 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.3.5. 50N-1

Description	Range	Default	Setting
Gn 50N-1 Element *Selects whether the DTL derived Earth fault element is enabled*	Disabled, Enabled	Disabled	
Gn 50N-1 Dir. Control *Selects whether 50N-1 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 50N-1 Setting *Pickup level*	0.05, 0.06 ... 49.5, 50	0.5xIn	
Gn 50N-1 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 50N-1 VTS Action *Selects whether 50N-1 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	

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Description	Range	Default	Setting
Gn 50N-1 Inrush Action *Selects if the 50N-1 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.3.6. 50N-2

Description	Range	Default	Setting
Gn 50N-2 Element *Selects whether the DTL derived Earth fault element is enabled*	Disabled, Enabled	Disabled	
Gn 50N-2 Dir. Control *Selects whether 50N-2 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 50N-2 Setting *Pickup level*	0.05, 0.06 ... 49.5, 50	0.5xIn	
Gn 50N-2 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 50N-2 VTS Action *Selects whether 50N-2 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 50N-2 Inrush Action *Selects if the 50N-2 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.3.7. 50N-3

Description	Range	Default	Setting
Gn 50N-3 Element *Selects whether the DTL derived Earth fault element is enabled*	Disabled, Enabled	Disabled	
Gn 50N-3 Dir. Control *Selects whether 50N-3 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 50N-3 Setting *Pickup level*	0.05, 0.06 ... 49.5, 50	0.5xIn	
Gn 50N-3 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 50N-3 VTS Action *Selects whether 50N-3 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 50N-3 Inrush Action *Selects if the 50N-3 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.3.8. 50N-4

Description	Range	Default	Setting
Gn 50N-4 Element *Selects whether the DTL derived Earth fault element is enabled*	Disabled, Enabled	Disabled	
Gn 50N-4 Dir. Control *Selects whether 50N-4 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 50N-4 Setting *Pickup level*	0.05, 0.06 ... 49.5, 50	0.5xIn	
Gn 50N-4 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	

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Description	Range	Default	Setting
Gn 50N-4 VTS Action *Selects whether 50N-4 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 50N-4 Inrush Action *Selects if the 50N-4 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.4. Measured E/F

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

3.4.4.1. 51G-1

Description	Range	Default	Setting
Gn 51G-1 Element *Selects whether the 51G-1 IDMTL measured Earth Fault element is enabled*	Disabled, Enabled	Disabled	
Gn 51G-1 Dir. Control *Selects whether 51G-1 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 51G-1 Setting *Pickup level*	0.005, 0.006 ... 0.995, 1	0.5xIn	
Gn 51G-1 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51G-1 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51G-1 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51G-1 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	
Gn 51G-1 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51G-1 Reset *Selects between an ANSI decaying reset characteristic or DTL reset*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51G-1 VTS Action *Selects whether 51G-1 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 51G-1 Inrush Action *Selects if the 51G-1 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

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3.4.4.2. 51G-2

Description	Range	Default	Setting
Gn 51G-2 Element *Selects whether the 51G-2 IDMTL measured Earth Fault element is enabled*	Disabled, Enabled	Disabled	
Gn 51G-2 Dir. Control *Selects whether 51G-2 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 51G-2 Setting *Pickup level*	0.005, 0.006 ... 0.995, 1	0.5xIn	
Gn 51G-2 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51G-2 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51G-2 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51G-2 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	
Gn 51G-2 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51G-2 Reset *Selects between an ANSI decaying reset characteristic or DTL reset*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51G-2 VTS Action *Selects whether 51G-2 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 51G-2 Inrush Action *Selects if the 51G-2 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.4.3. 51G-3

Description	Range	Default	Setting
Gn 51G-3 Element *Selects whether the 51G-3 IDMTL measured Earth Fault element is enabled*	Disabled, Enabled	Disabled	
Gn 51G-3 Dir. Control *Selects whether 51G-3 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 51G-3 Setting *Pickup level*	0.005, 0.006 ... 0.995, 1	0.5xIn	
Gn 51G-3 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51G-3 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51G-3 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51G-3 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	
Gn 51G-3 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51G-3 Reset *Selects between an ANSI decaying reset characteristic or DTL reset*	(ANSI) Decaying, 0 ... 59, 60	0s	

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Description	Range	Default	Setting
Gn 51G-3 VTS Action *Selects whether 51G-3 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 51G-3 Inrush Action *Selects if the 51G-3 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.4.4. 51G-4

Description	Range	Default	Setting
Gn 51G-4 Element *Selects whether the 51G-4 IDMTL measured Earth Fault element is enabled*	Disabled, Enabled	Disabled	
Gn 51G-4 Dir. Control *Selects whether 51G-4 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 51G-4 Setting *Pickup level*	0.005, 0.006 ... 0.995, 1	0.5xIn	
Gn 51G-4 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51G-4 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51G-4 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51G-4 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	
Gn 51G-4 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51G-4 Reset *Selects between an ANSI decaying reset characteristic or DTL reset*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51G-4 VTS Action *Selects whether 51G-4 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 51G-4 Inrush Action *Selects if the 51G-4 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.4.5. 50G-1

Description	Range	Default	Setting
Gn 50G-1 Element *Selects whether the DTL measured Earth fault element is enabled*	Disabled, Enabled	Disabled	
Gn 50G-1 Dir. Control *Selects whether 50G-1 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 50G-1 Setting *Pickup level*	0.005, 0.006 ... 24.95, 25	0.5xIn	
Gn 50G-1 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 50G-1 VTS Action *Selects whether 50G-1 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	

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Description	Range	Default	Setting
Gn 50G-1 Inrush Action *Selects if the 50G-1 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.4.6. 50G-2

Description	Range	Default	Setting
Gn 50G-2 Element *Selects whether the DTL measured Earth fault element is enabled*	Disabled, Enabled	Disabled	
Gn 50G-2 Dir. Control *Selects whether 50G-2 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 50G-2 Setting *Pickup level*	0.005, 0.006 ... 24.95, 25	0.5xIn	
Gn 50G-2 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 50G-2 VTS Action *Selects whether 50G-2 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 50G-2 Inrush Action *Selects if the 50G-2 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.4.7. 50G-3

Description	Range	Default	Setting
Gn 50G-3 Element *Selects whether the DTL measured Earth fault element is enabled*	Disabled, Enabled	Disabled	
Gn 50G-3 Dir. Control *Selects whether 50G-3 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 50G-3 Setting *Pickup level*	0.005, 0.006 ... 24.95, 25	0.5xIn	
Gn 50G-3 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 50G-3 VTS Action *Selects whether 50G-3 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 50G-3 Inrush Action *Selects if the 50G-3 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.4.8. 50G-4

Description	Range	Default	Setting
Gn 50G-4 Element *Selects whether the DTL measured Earth fault element is enabled*	Disabled, Enabled	Disabled	
Gn 50G-4 Dir. Control *Selects whether 50G-4 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 50G-4 Setting *Pickup level*	0.005, 0.006 ... 24.95, 25	0.5xIn	
Gn 50G-4 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	

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Description	Range	Default	Setting
Gn 50G-4 VTS Action *Selects whether 50G-4 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	
Gn 50G-4 Inrush Action *Selects if the 50G-4 element is blocked from operating when 2nd Harmonic Inrush Detector operates*	Off, Inhibit	Off	

3.4.5. Sensitive E/F

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

3.4.5.1. 51SEF-1

Description	Range	Default	Setting
Gn 51SEF-1 Element *Selects whether the 51SEF-1 IDMTL Sensitive Earth Fault element is enabled*	Disabled, Enabled	Disabled	
Gn 51SEF-1 Dir. Control *Selects whether 51SEF-1 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 51SEF-1 Setting *Pickup level*	0.005, 0.006 ... 0.995, 1	0.2xIn	
Gn 51SEF-1 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51SEF-1 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51SEF-1 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51SEF-1 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	
Gn 51SEF-1 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51SEF-1 Reset *Selects between an ANSI decaying reset characteristic or DTL reset*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51SEF-1 VTS Action *Selects whether 51SEF-1 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	

3.4.5.2. 51SEF-2

Description	Range	Default	Setting
Gn 51SEF-2 Element *Selects whether the 51SEF-2 IDMTL derived Earth Fault element is enabled*	Disabled, Enabled	Disabled	
Gn 51SEF-2 Dir. Control *Selects whether 51SEF-2 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 51SEF-2 Setting *Pickup level*	0.005, 0.006 ... 0.995, 1	0.2xIn	

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Description	Range	Default	Setting
Gn 51SEF-2 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51SEF-2 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51SEF-2 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51SEF-2 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	
Gn 51SEF-2 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51SEF-2 Reset *Selects between an ANSI decaying reset characteristic or DTL reset*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51SEF-2 VTS Action *Selects whether 51SEF-2 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	

3.4.5.3. 51SEF-3

Description	Range	Default	Setting
Gn 51SEF-3 Element *Selects whether the 51SEF-3 IDMTL derived Earth Fault element is enabled*	Disabled, Enabled	Disabled	
Gn 51SEF-3 Dir. Control *Selects whether 51SEF-3 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 51SEF-3 Setting *Pickup level*	0.005, 0.006 ... 0.995, 1	0.2xIn	
Gn 51SEF-3 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51SEF-3 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51SEF-3 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51SEF-3 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	
Gn 51SEF-3 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51SEF-3 Reset *Selects between an ANSI decaying reset characteristic or a definite time reset*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51SEF-3 VTS Action *Selects whether 51SEF-3 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	

3.4.5.4. 51SEF-4

Description	Range	Default	Setting
Gn 51SEF-4 Element *Selects whether the 51SEF-4 IDMTL derived Earth Fault element is enabled*	Disabled, Enabled	Disabled	
Gn 51SEF-4 Dir. Control *Selects whether 51SEF-4 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	

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Description	Range	Default	Setting
Gn 51SEF-4 Setting *Pickup level*	0.005, 0.006 ... 0.995, 1	0.2xIn	
Gn 51SEF-4 Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	
Gn 51SEF-4 Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 51SEF-4 Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 51SEF-4 Min Operate Time *Minimum operate time of element.*	0, 0.01 ... 19.99, 20	0s	
Gn 51SEF-4 Follower DTL *Additional definite time added after characteristic time*	0, 0.01 ... 19.99, 20	0s	
Gn 51SEF-4 Reset *Selects between an ANSI decaying reset characteristic or a definite time reset*	(ANSI) Decaying, 0 ... 59, 60	0s	
Gn 51SEF-4 VTS Action *Selects whether 51SEF-4 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	

3.4.5.5. 50SEF-1

Description	Range	Default	Setting
Gn 50SEF-1 Element *Selects whether the DTL measured Earth fault element is enabled*	Disabled, Enabled	Disabled	
Gn 50SEF-1 Dir. Control *Selects whether 50SEF-1 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 50SEF-1 Setting *Pickup level*	0.005, 0.006 ... 4.995, 5	0.2xIn	
Gn 50SEF-1 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 50SEF-1 VTS Action *Selects whether 50SEF-1 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	

3.4.5.6. 50SEF-2

Description	Range	Default	Setting
Gn 50SEF-2 Element *Selects whether the DTL measured Earth fault element is enabled*	Disabled, Enabled	Disabled	
Gn 50SEF-2 Dir. Control *Selects whether 50SEF-2 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 50SEF-2 Setting *Pickup level*	0.005, 0.006 ... 4.995, 5	0.2xIn	
Gn 50SEF-2 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 50SEF-2 VTS Action *Selects whether 50SEF-2 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	

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3.4.5.7. 50SEF-3

Description	Range	Default	Setting
Gn 50SEF-3 Element *Selects whether the DTL measured Earth fault element is enabled*	Disabled, Enabled	Disabled	
Gn 50SEF-3 Dir. Control *Selects whether 50SEF-3 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 50SEF-3 Setting *Pickup level*	0.005, 0.006 ... 4.995, 5	0.2xIn	
Gn 50SEF-3 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 50SEF-3 VTS Action *Selects whether 50SEF-3 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	

3.4.5.8. 50SEF-4

Description	Range	Default	Setting
Gn 50SEF-4 Element *Selects whether the DTL measured Earth fault element is enabled*	Disabled, Enabled	Disabled	
Gn 50SEF-4 Dir. Control *Selects whether 50SEF-4 element is non-directional, forward or reverse*	Non-Dir, Forward, Reverse	Non-Dir	
Gn 50SEF-4 Setting *Pickup level*	0.005, 0.006 ... 4.995, 5	0.2xIn	
Gn 50SEF-4 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 50SEF-4 VTS Action *Selects whether 50SEF-4 element is blocked or made non-directional when VTS operates*	Off, Inhibit, Non-Dir	Off	

3.4.6. Restricted E/F

Description	Range	Default	Setting
Gn 64H Element *High impedance restricted earth fault current element*	Disabled, Enabled	Disabled	
Gn 64H Setting *Pickup level*	0.005, 0.006 ... 0.945, 0.95	0.2xIn	
Gn 64H Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	

3.4.7. NPS Overcurrent

3.4.7.1. 46IT

Description	Range	Default	Setting
Gn 46IT Element *Selects whether the 46IT IDMTL/DTL negative phase sequence current element is enabled*	Disabled, Enabled	Disabled	
Gn 46IT Setting *Pickup level*	0.05, 0.06 ... 2.49, 2.5	0.25xIn	
Gn 46IT Char *Selects characteristic curve to be IEC or ANSI IDMTL or DTL*	DTL, IEC-NI, IEC-VI, IEC-EI, IEC-LTI, ANSI-MI, ANSI-VI, ANSI-EI	IEC-NI	

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Description	Range	Default	Setting
Gn 46IT Time Mult (IEC/ANSI) *Time multiplier (applicable to IEC and ANSI curves but not DTL selection)*	0.025, 0.05 ... 1.575, 1.6	1	
Gn 46IT Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 46IT Reset *Selects between an ANSI decaying reset characteristic or a definite time reset*	(ANSI) Decaying, 0 ... 59, 60	0s	

3.4.7.2. 46DT

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

3.4.8. Under Current

Description	Range	Default	Setting
Gn 37 U/I Guard Setting	0.05, 0.1 ... 4.95, 5	0.1xIn	

3.4.8.1. 37-1

Description	Range	Default	Setting
Gn 37-1 Element *Phase under current element 37-1*	Disabled, Enabled	Disabled	
Gn 37-1 Setting *Pickup level*	0.05, 0.1 ... 4.95, 5	0.25xIn	
Gn 37-1 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 37-1 U/I Guarded *Selects whether to use the 37-1 guard element*	No, Yes	Yes	
Gn 37-1 Start Option *Selects whether 31-1 element operates for any phase picked up or only when all phases are picked up*	All, Any	All	

3.4.8.2. 37-2

Description	Range	Default	Setting
Gn 37-2 Element *Phase under current element 37-2*	Disabled, Enabled	Disabled	
Gn 37-2 Setting *Pickup level*	0.05, 0.1 ... 4.95, 5	0.25xIn	
Gn 37-2 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	
Gn 37-2 U/I Guarded *Selects whether to use the 37-2 guard element*	No, Yes	Yes	
Gn 37-2 Start Option *Selects whether 31-2 element operates for any phase picked up or only when all phases are picked up*	All, Any	All	

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3.4.8.3. 37G-1

Description	Range	Default	Setting
Gn 37G-1 Element *E/F under current element 37G-1*	Disabled, Enabled	Disabled	
Gn 37G-1 Setting *Pickup level*	0.005, 0.006 ... 4.995, 5	0.2xIn	
Gn 37G-1 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	

3.4.8.4. 37G-2

Description	Range	Default	Setting
Gn 37G-2 Element *E/F under current element 37G-2*	Disabled, Enabled	Disabled	
Gn 37G-2 Setting *Pickup level*	0.005, 0.006 ... 4.995, 5	0.2xIn	
Gn 37G-2 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	

3.4.8.5. 37SEF-1

Description	Range	Default	Setting
Gn 37SEF-1 Element *SEF under current element 37SEF-1*	Disabled, Enabled	Disabled	
Gn 37SEF-1 Setting *Pickup level*	0.005, 0.006 ... 4.995, 5	0.2xIn	
Gn 37SEF-1 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	

3.4.8.6. 37SEF-2

Description	Range	Default	Setting
Gn 37SEF-2 Element *SEF under current element 37SEF-2*	Disabled, Enabled	Disabled	
Gn 37SEF-2 Setting *Pickup level*	0.005, 0.006 ... 4.995, 5	0.2xIn	
Gn 37SEF-2 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0s	

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3.4.9. Thermal

Description	Range	Default	Setting
Gn 49 Thermal Overload *Selects whether the thermal overload protection element is enabled*	Disabled, Enabled	Disabled	
Gn 49 Overload Setting *Pickup level*	0.1, 0.11 ... 2.99, 3	1.05xIn	
Gn 49 Time Constant *Thermal time constant*	1, 1.5 ... 999.5, 1000	10m	
Gn 49 Capacity Alarm *Selects whether thermal capacity alarm enabled*	Disabled, 50 ... 99, 100	Disabled	
49 Reset Therm State *Control that allows thermal state to be manually reset*			

3.5. Voltage Protection

3.5.1. Phase U/O Voltage

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

3.5.2. 27/59-1

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

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3.5.3. 27/59-2

Description	Range	Default	Setting
Gn 27/59-2 Element *Selects whether the Under/Over voltage element stage 2 is enabled*	Disabled, Enabled	Disabled	
Gn 27/59-2 Operation *Selects between Undervoltage and Overvoltage pickup for this element*	Under, Over	Over	
Gn 27/59-2 Setting *Under or over voltage pickup level*	5, 5.5 ... 199.5, 200	80V	
Gn 27/59-2 Hysteresis *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*	0, 0.1 ... 79.9, 80	3%	
Gn 27/59-2 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0.1s	
Gn 27/59-2 U/V Guarded *Selects whether U/V Guard element can block the operation of this element*	No, Yes	No	
Gn 27/59-2 VTS Inhibit *Selects whether element is blocked or not when VTS operates*	No, Yes	No	
Gn 27/59-2 O/P Phases *Selects whether element operates for any phase picked up or only when all phases are picked up*	Any, All	Any	

3.5.4. 27/59-3

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

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3.5.5. 27/59-4

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

3.6. Vx U/O Voltage

Description	Range	Default	Setting
Gn Vx 27/59 U/V Guard Setting	1, 1.5 ... 199.5, 200	5V	
Gn Vx 27/59 Element *Selects whether the Under/Over voltage element for Vx is enabled*	Disabled, Enabled	Disabled	
Gn Vx 27/59 Operation *Selects between Undervoltage and Overvoltage pickup for this element*	Under, Over	Over	
Gn Vx 27/59 Setting *Under or over voltage pickup level*	5, 5.5 ... 199.5, 200	80V	
Gn Vx 27/59 Hysteresis *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*	0, 0.1 ... 79.9, 80	3%	
Gn Vx 27/59 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0.1s	
Gn Vx 27/59 U/V Guarded	No, Yes	No	

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3.7. NPS Overvoltage

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

3.7.1. 47-1

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

3.7.2. 47-2

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

3.8. Neutral Overvoltage

Description	Range	Default	Setting
Gn 59N Voltage Source *Selects voltage source between calculated 3V0 (Vn) or measured 3V0 through Vx input*	Vn, Vx	Vn	

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3.8.1. 59NIT

Description	Range	Default	Setting
Gn 59NIT Element *Selects whether the inverse time neutral over voltage element is enabled*	Disabled, Enabled	Disabled	
Gn 59NIT Setting *Pickup level*	1, 1.5 ... 99.5, 100	5V	
Gn 59NIT Char *Selects characteristic curve to be IDMTL or DTL*	DTL, IDMTL	IDMTL	
Gn 59NIT Time Mult (IDMTL) *Time multiplier (applicable to IDMTL curve but not DTL selection)*	0.1, 0.2 ... 139.5, 140	1	
Gn 59NIT Delay (DTL) *Delay (applicable only when DTL is selected for characteristic)*	0, 0.01 ... 19.99, 20	5s	
Gn 59NIT Reset *Selects between an instantaneous reset characteristic or a definite time reset*	(ANSI) Decaying, 0 ... 59, 60	0s	

3.8.2. 59NDT

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

3.9. U/O Frequency

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

3.9.1. 81-1

Description	Range	Default	Setting
Gn 81-1 Element *Selects whether the Under/Over frequency element stage 1 is enabled*	Disabled, Enabled	Disabled	
Gn 81-1 Operation *Selects between Underfrequency and Overfrequency pickup for this element*	Under, Over	Under	
Gn 81-1 Setting *Under or over frequency pickup level*	40, 40.01 ... 69.98, 69.99	49.5Hz	
Gn 81-1 Hysteresis *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*	0, 0.1 ... 79.9, 80	0.1%	
Gn 81-1 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	1s	

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Description	Range	Default	Setting
Gn 81-1 U/V Guarded *Selects whether U/V Guard element can block the operation of this element*	No, Yes	Yes	

3.9.2. 81-2

Description	Range	Default	Setting
Gn 81-2 Element *Selects whether the Under/Over frequency element stage 2 is enabled*	Disabled, Enabled	Disabled	
Gn 81-2 Operation *Selects between Underfrequency and Overfrequency pickup for this element*	Under, Over	Under	
Gn 81-2 Setting *Under or over frequency pickup level*	40, 40.01 ... 69.98, 69.99	49Hz	
Gn 81-2 Hysteresis *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*	0, 0.1 ... 79.9, 80	0.1%	
Gn 81-2 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0.8s	
Gn 81-2 U/V Guarded *Selects whether U/V Guard element can block the operation of this element*	No, Yes	Yes	

3.9.3. 81-3

Description	Range	Default	Setting
Gn 81-3 Element *Selects whether the Under/Over frequency element stage 3 is enabled*	Disabled, Enabled	Disabled	
Gn 81-3 Operation *Selects between Underfrequency and Overfrequency pickup for this element*	Under, Over	Under	
Gn 81-3 Setting *Under or over frequency pickup level*	40, 40.01 ... 69.98, 69.99	48Hz	
Gn 81-3 Hysteresis *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*	0, 0.1 ... 79.9, 80	0.1%	
Gn 81-3 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0.6s	
Gn 81-3 U/V Guarded *Selects whether U/V Guard element can block the operation of this element*	No, Yes	Yes	

3.9.4. 81-4

Description	Range	Default	Setting
Gn 81-4 Element *Selects whether the Under/Over frequency element stage 4 is enabled*	Disabled, Enabled	Disabled	

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Description	Range	Default	Setting
Gn 81-4 Operation *Selects between Underfrequency and Overfrequency pickup for this element*	Under, Over	Under	
Gn 81-4 Setting *Under or over frequency pickup level*	40, 40.01 ... 69.98, 69.99	47.5Hz	
Gn 81-4 Hysteresis *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*	0, 0.1 ... 79.9, 80	0.1%	
Gn 81-4 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0.4s	
Gn 81-4 U/V Guarded *Selects whether U/V Guard element can block the operation of this element*	No, Yes	Yes	

3.9.5. 81-5

Description	Range	Default	Setting
Gn 81-5 Element *Selects whether the Under/Over frequency element stage 5 is enabled*	Disabled, Enabled	Disabled	
Gn 81-5 Operation *Selects between Underfrequency and Overfrequency pickup for this element*	Under, Over	Under	
Gn 81-5 Setting *Under or over frequency pickup level*	40, 40.01 ... 69.98, 69.99	47.5Hz	
Gn 81-5 Hysteresis *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*	0, 0.1 ... 79.9, 80	0.1%	
Gn 81-5 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0.4s	
Gn 81-5 U/V Guarded *Selects whether U/V Guard element can block the operation of this element*	No, Yes	Yes	

3.9.6. 81-6

Description	Range	Default	Setting
Gn 81-6 Element *Selects whether the Under/Over frequency element stage 6 is enabled*	Disabled, Enabled	Disabled	
Gn 81-6 Operation *Selects between Underfrequency and Overfrequency pickup for this element*	Under, Over	Under	
Gn 81-6 Setting *Under or over frequency pickup level*	40, 40.01 ... 69.98, 69.99	47.5Hz	
Gn 81-6 Hysteresis *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*	0, 0.1 ... 79.9, 80	0.1%	
Gn 81-6 Delay *Sets operate delay time*	0, 0.01 ... 14300, 14400	0.4s	

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Description	Range	Default	Setting
Gn 81-6 U/V Guarded *Selects whether U/V Guard element can block the operation of this element*	No, Yes	Yes	

3.10. Supervision

3.10.1. CB Fail

Description	Range	Default	Setting
Gn 50BF Element *Selects whether the Circuit Breaker Fail element is enabled*	Disabled, Enabled	Disabled	
Gn 50BF Setting *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.*	0.05, 0.055 ... 1.995, 2	0.2xIn	
Gn 50BF-I4 Setting	0.005, 0.01 ... 1.995, 2	0.05xIn	
Gn 50BF-1 Delay *Delay before Circuit Breaker Fail stage 1 operates*	20, 25 ... 59995, 60000	60ms	
Gn 50BF-2 Delay *Delay before Circuit Breaker Fail stage 2 operates*	20, 25 ... 59995, 60000	120ms	

3.10.2. VT Supervision

Description	Range	Default	Setting
Gn 60VTS Element *Selects whether the VT supervision element is enabled*	Disabled, Enabled	Disabled	
Gn 60VTS Component *Selects whether NPS or ZPS quantities are used by the VT supervision element*	NPS, ZPS	NPS	
Gn 60VTS V *Level above which there is a possible 1 or 2 phase VT fuse failure*	7, 8 ... 109, 110	7V	
Gn 60VTS I *Level above which a 1 or 2 phase fault condition is assumed so VTS inhibited*	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 *Level below which there is a possible 3 phase VT fuse failure*	1, 2 ... 109, 110	15V	
Gn 60VTS Ipps Load *Level current must be above before 3 phase VTS will be issued*	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 *Level above which 3 phase fault is assumed so VTS inhibited*	0.05, 0.1 ... 19.95, 20	10xIn	
Gn 60VTS Delay *Sets operate delay time*	0.03, 0.04 ... 14300, 14400	10s	

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3.10.3. CT Supervision

Description	Range	Default	Setting
Gn 60CTS Element *Selects whether the CT supervision element is enabled (NPS current in the absence of NPS voltage)*	Disabled, Enabled	Disabled	
Gn 60CTS Inps *Arm if NPS Current (Inps) is above this level*	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 *Inhibit if NPS Voltage (Vnps) is above this level*	7, 8 ... 109, 110	10V	
Gn 60CTS Delay *CTS Operate delay*	0.03, 0.04 ... 14300, 14400	10s	
Gn 60CTS-I Element	Disabled, Enabled	Disabled	
Gn 60CTS-I Setting	0.05, 0.1 ... 1.95, 2	0.05xIn	
Gn 60CTS-I Delay	0.03, 0.04 ... 14300, 14400	10s	

3.10.4. Broken Conductor

Description	Range	Default	Setting
Gn 46BC U/C Guard Setting	0.05, 0.1 ... 4.95, 5	0.25xIn	
Gn 46BC Element *Selects whether the definite time broken conductor element is enabled*	Disabled, Enabled	Disabled	
Gn 46BC Setting *NPS Current to PPS Current ratio*	20, 21 ... 99, 100	20%	
Gn 46BC Delay *Sets operate delay time*	0.03, 0.04 ... 14300, 14400	20s	
Gn 46BC U/C Guarded	No, Yes	No	

3.10.5. Trip CCT Supervision

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

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3.10.6. Inrush Detector

Description	Range	Default	Setting
Gn 81HBL2 Element *Selects whether the phase inrush detector 81HBL2 is enabled*	Disabled, Enabled	Disabled	
Gn 81HBL2 Bias *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.*	Phase, Cross, Sum	Cross	
Gn 81HBL2 Setting *The magnetising inrush detector operates when the 2nd harmonic current exceeds a set percentage of the fundamental current*	0.1, 0.11 ... 0.49, 0.5	0.2xI	

3.11. Control & Logic

3.11.1. Autoreclose Prot'n

Description	Range	Default	Setting
Gn 79 P/F Inst Trips *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.*	Combination of (51-1, 51-2, 51-3, 51-4, 50-1, 50-2, 50-3, 50-4)	--------	
Gn 79 E/F Inst Trips *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.*	Combination of (51N-1, 51N-2, 51N-3, 51N-4, 50N-1, 50N-2, 50N-3, 50N-4, 51G-1, 51G-2, 51G-3, 51G-4, 50G-1, 50G-2, 50G-3, 50G-4)	----------	
Gn 79 SEF Inst Trips *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.*	Combination of (51SEF-1, 51SEF-2, 51SEF-3, 51SEF-4, 50SEF-1, 50SEF-2, 50SEF-3, 50SEF-4)	--------	
Gn 79 P/F Delayed Trips *Selects which phase fault protection are classed as Delayed elements, any selected elements operating will start an autoreclose sequence.*	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 *Selects which earth fault protection are classed as Delayed elements, any selected elements operating will start an autoreclose sequence.*	Combination of (51N-1, 51N-2, 51N-3, 51N-4, 50N-1, 50N-2, 50N-3, 50N-4, 51G-1, 51G-2, 51G-3, 51G-4, 50G-1, 50G-2, 50G-3, 50G-4)	51N-1, 51N-2, 51N-3, 51N-4, 50N-1, 50N-2, 50N-3, 50N-4, 51G-1, 51G-2, 51G-3, 51G-4, 50G-1, 50G-2, 50G-3, 50G-4	
Gn 79 SEF Delayed Trips *Selects which sensitive earth fault elements are classed as Delayed elements, any selected elements operating will start an autoreclose sequence.*	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	

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Description	Range	Default	Setting
Gn 79 P/F HS Trips *Selects which phase fault elements are classed as High Set elements, any selected elements operating will start an autoreclose sequence.*	Combination of (50-1, 50-2, 50-3, 50-4)	----	
Gn 79 E/F HS Trips *Selects which earth fault elements are classed as High Set elements, any selected elements operating will start an autoreclose sequence.*	Combination of (50N-1, 50N-2, 50N-3, 50N-4, 50G-1, 50G-2, 50G-3, 50G-4)	--------	

3.11.2. Autoreclose Config

Description	Range	Default	Setting
Gn 79 Autoreclose *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.*	Disabled, Enabled	Enabled	
Gn 79 Num Shots *Selects the number of auto-reclose attempts before the Autorecloser locks out*	1, 2, 3, 4	1	
Gn 79 Retry Enable *Selects whether the Retry close functionality is enabled*	Disabled, Enabled	Disabled	
Gn 79 Retry Attempts *Selects the number of retries allowed per shot*	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1	
Gn 79 Retry Interval *Time delay between retries*	0, 1 ... 599, 600	60s	
Gn 79 Reclose Blocked Delay *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.)*	0, 1 ... 599, 600	60s	
Gn 79 Sequence Fail Timer *Time before lockout occurs on an incomplete reclose sequence. (i.e Trip & starter conditions have not been cleared after Sequence Fail Time.)*	0, 1 ... 599, 600	60s	
Gn 79 Sequence Co-ord *Selects whether Sequence co-ordination functionality is used or not.*	Disabled, Enabled	Enabled	
Gn 79 Cold Load Action *Selects whether whist Cold Load is active the relay will perform only Delayed Trips or not.*	Off, Delayed	Off	

3.11.2.1. P/F Shots

Description	Range	Default	Setting
Gn 79 P/F Prot'n Trip 1 *Selects whether the first phase fault trip is Instantaneous (Fast) or Delayed. When set to Delayed all P/F Inst Trips will be Inhibited for this shot.*	Inst, Delayed	Inst	
Gn 79 P/F Deadtime 1 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	
Gn 79 P/F Prot'n Trip 2 *Selects whether the second phase fault trip is Instantaneous (Fast) or Delayed. When set to Delayed all P/F Inst Trips will be Inhibited for this shot.*	Inst, Delayed	Inst	
Gn 79 P/F Deadtime 2 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	

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Description	Range	Default	Setting
Gn 79 P/F Prot'n Trip 3 *Selects whether the third phase fault trip is Instantaneous (Fast) or Delayed. When set to Delayed all P/F Inst Trips will be Inhibited for this shot.*	Inst, Delayed	Delayed	
Gn 79 P/F Deadtime 3 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	
Gn 79 P/F Prot'n Trip 4 *Selects whether the fourth phase fault trip is Instantaneous (Fast) or Delayed. When set to Delayed all P/F Inst Trips will be Inhibited for this shot.*	Inst, Delayed	Delayed	
Gn 79 P/F Deadtime 4 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	
Gn 79 P/F Prot'n Trip 5 *Selects whether the fifth phase fault trip is Instantaneous (Fast) or Delayed. When set to Delayed all P/F Inst Trips will be Inhibited for this shot.*	Inst, Delayed	Delayed	
Gn 79 P/F HS Trips To Lockout *Selects how many High Set trips are allowed before going to Lockout*	1, 2, 3, 4, 5	5	
Gn 79 P/F Delayed Trips To Lockout *Selects how many Delayed trips are allowed before going to Lockout*	1, 2, 3, 4, 5	5	

3.11.2.2. E/F Shots

Description	Range	Default	Setting
Gn 79 E/F Prot'n Trip 1 *Selects whether the first earth fault trip is Instantaneous (Fast) or Delayed. When set to Delayed all E/F Inst Trips will be Inhibited for this shot.*	Inst, Delayed	Inst	
Gn 79 E/F Deadtime 1 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	
Gn 79 E/F Prot'n Trip 2 *Selects whether the second earth fault trip is Instantaneous (Fast) or Delayed. When set to Delayed all E/F Inst Trips will be Inhibited for this shot.*	Inst, Delayed	Inst	
Gn 79 E/F Deadtime 2 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	
Gn 79 E/F Prot'n Trip 3 *Selects whether the third earth fault trip is Instantaneous (Fast) or Delayed. When set to Delayed all E/F Inst Trips will be Inhibited for this shot.*	Inst, Delayed	Delayed	
Gn 79 E/F Deadtime 3 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	
Gn 79 E/F Prot'n Trip 4 *Selects whether the fourth earth fault trip is Instantaneous (Fast) or Delayed. When set to Delayed all E/F Inst Trips will be Inhibited for this shot.*	Inst, Delayed	Delayed	
Gn 79 E/F Deadtime 4 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	
Gn 79 E/F Prot'n Trip 5 *Selects whether the fifth earth fault trip is Instantaneous (Fast) or Delayed. When set to Delayed all E/F Inst Trips will be Inhibited for this shot.*	Inst, Delayed	Delayed	

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Description	Range	Default	Setting
Gn 79 E/F HS Trips To Lockout *Selects how many High Set trips are allowed before going to Lockout*	1, 2, 3, 4, 5	5	
Gn 79 E/F Delayed Trips To Lockout *Selects how many Delayed trips are allowed before going to Lockout*	1, 2, 3, 4, 5	5	

3.11.2.3. SEF Shots

Description	Range	Default	Setting
Gn 79 SEF Prot'n Trip 1 *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.*	Inst, Delayed	Inst	
Gn 79 SEF Deadtime 1 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	
Gn 79 SEF Prot'n Trip 2 *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.*	Inst, Delayed	Inst	
Gn 79 SEF Deadtime 2 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	
Gn 79 SEF Prot'n Trip 3 *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.*	Inst, Delayed	Delayed	
Gn 79 SEF Deadtime 3 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	
Gn 79 SEF Prot'n Trip 4 *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.*	Inst, Delayed	Delayed	
Gn 79 SEF Deadtime 4 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	
Gn 79 SEF Prot'n Trip 5 *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.*	Inst, Delayed	Delayed	
Gn 79 SEF Delayed Trips To Lockout *Selects how many Delayed trips are allowed before going to Lockout*	1, 2, 3, 4, 5	5	

3.11.2.4. Extern Shots

Description	Range	Default	Setting
Gn 79 Extern Prot'n Trip 1 *Selects whether the first external trip is Instantaneous or Delayed*	Not Blocked, Blocked	Not Blocked	
Gn 79 Extern Deadtime 1 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	
Gn 79 Extern Prot'n Trip 2 *Selects whether the second external trip is Instantaneous or Delayed*	Not Blocked, Blocked	Not Blocked	

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Description	Range	Default	Setting
Gn 79 Extern Deadtime 2 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	
Gn 79 Extern Prot'n Trip 3 *Selects whether the third external trip is Instantaneous or Delayed*	Not Blocked, Blocked	Not Blocked	
Gn 79 Extern Deadtime 3 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	
Gn 79 Extern Prot'n Trip 4 *Selects whether the fourth external trip is Instantaneous or Delayed*	Not Blocked, Blocked	Not Blocked	
Gn 79 Extern Deadtime 4 *Time period between the fault being cleared and the close pulse being issued*	0, 0.1 ... 14300, 14400	5s	
Gn 79 Extern Prot'n Trip 5 *Selects whether the fifth external trip is Instantaneous or Delayed*	Not Blocked, Blocked	Not Blocked	
Gn 79 Extern Trips To Lockout *Selects how many external trips are allowed before going to Lockout*	1, 2, 3, 4, 5	5	

3.11.3. Manual Close

Description	Range	Default	Setting
Gn Line Check Trip *Selects whether line check trip is enabled, if enabled no AR sequence initiated*	Disabled, Enabled	Enabled	
Gn P/F Line Check Trip *Selects whether a phase fault line check trip is Instantaneous (Fast) or Delayed. When set to Delayed all P/F Inst Trips will be Inhibited for this shot.*	Inst, Delayed	Inst	
Gn E/F Line Check Trip *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.*	Inst, Delayed	Inst	
Gn SEF Line Check Trip *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.*	Inst, Delayed	Inst	
Gn Extern Line Check Trip *Selects whether an external line check trip is Instantaneous (Fast) or Delayed*	Not Blocked, Blocked	Not Blocked	
Gn Close CB Delay *Delay between a Close CB control being received and the Close CB contacts being operated to allow operator walk away.*	0, 0.1 ... 899, 900	10s	
Gn Blocked Close Delay *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".*	0, 1 ... 599, 600	5s	
Gn Open CB Delay *Delay between an Open CB control being received and the Open CB contacts being operated.*	0, 0.1 ... 899, 900	10s	
Gn CB Controls Latched *Selects whether Binary Input triggers of Close CB and Open CB are latched.*	Latch, Reset	Latch	

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3.11.4. Circuit Breaker

Description	Range	Default	Setting
Gn Close CB Pulse *Specifies the duration of the circuit breaker close pulse*	0, 0.1 ... 19.9, 20	2s	
Gn Reclaim Timer *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.*	0, 1 ... 599, 600	2s	
Gn Minimum LO Delay	0, 1 ... 599, 600	2s	
Gn Reset LO By Timer	Disabled, Enabled	Enabled	
Gn Trip Time Alarm *An alarm is issued when the Trip time is exceeded*	0, 0.01 ... 1.99, 2	0.2s	
Gn Trip Time Adjust *Adjustment to take into account any binary input delays for Trip Time Alarm*	0, 0.005 ... 1.995, 2	0.015s	
Gn CB Travel Alarm *Selects the maximum time that the CB should take to either Open or Close before a failure is recorded.*	0.01, 0.02 ... 1.99, 2	1s	
Gn Open CB Pulse *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.*	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	

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3.11.5. QUICK LOGIC

Description	Range	Default	Setting
Quick Logic *Enable or Disable all logic equations*	Disabled, Enabled	Disabled	
E1 Equation *Enable or Disable logic equation E1*	Disabled, Enabled	Disabled	
E1 *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*	(20 Character String)		
E1 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E1 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E1 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	
E1 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E1 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	
E2 Equation *Enable or Disable logic equation E2*	Disabled, Enabled	Disabled538976288	
E2 *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*	(20 Character String)		
E2 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E2 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E2 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	
E2 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E2 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	
E3 Equation *Enable or Disable logic equation E3*	Disabled, Enabled	Disabled538976288	

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Description	Range	Default	Setting
E3 *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*	(20 Character String)		
E3 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E3 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E3 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	
E3 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E3 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	
E4 Equation *Enable or Disable logic equation E4*	Disabled, Enabled	Disabled538976288	
E4 *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*	(20 Character String)		
E4 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E4 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E4 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	
E4 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E4 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	
E5 Equation *Enable or Disable logic equation E5*	Disabled, Enabled	Disabled538976288	
E5 *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*	(20 Character String)		

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Description	Range	Default	Setting
E5 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E5 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E5 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	
E5 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E5 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	
E6 Equation *Enable or Disable logic equation E6*	Disabled, Enabled	Disabled538976288	
E6 *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*	(20 Character String)		
E6 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E6 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E6 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	
E6 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E6 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	
E7 Equation *Enable or Disable logic equation E7*	Disabled, Enabled	Disabled538976288	
E7 *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*	(20 Character String)		
E7 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E7 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E7 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	

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Description	Range	Default	Setting
E7 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E7 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	
E8 Equation *Enable or Disable logic equation E8*	Disabled, Enabled	Disabled538976288	
E8 *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*	(20 Character String)		
E8 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E8 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E8 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	
E8 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E8 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	
E9 Equation *Enable or Disable logic equation E9*	Disabled, Enabled	Disabled538976288	
E9 *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*	(20 Character String)		
E9 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E9 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E9 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	
E9 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E9 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	
E10 Equation *Enable or Disable logic equation E10*	Disabled, Enabled	Disabled538976288	

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Description	Range	Default	Setting
E10 *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*	(20 Character String)		
E10 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E10 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E10 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	
E10 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E10 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	
E11 Equation *Enable or Disable logic equation E11*	Disabled, Enabled	Disabled538976288	
E11 *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*	(20 Character String)		
E11 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E11 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E11 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	
E11 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E11 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	
E12 Equation *Enable or Disable logic equation E12*	Disabled, Enabled	Disabled538976288	
E12 *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*	(20 Character String)		

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Description	Range	Default	Setting
E12 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E12 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E12 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	
E12 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E12 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	
E13 Equation *Enable or Disable logic equation E13*	Disabled, Enabled	Disabled538976288	
E13 *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*	(20 Character String)		
E13 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E13 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E13 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	
E13 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E13 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	
E14 Equation *Enable or Disable logic equation E14*	Disabled, Enabled	Disabled538976288	
E14 *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*	(20 Character String)		
E14 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E14 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E14 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	

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Description	Range	Default	Setting
E14 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E14 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	
E15 Equation *Enable or Disable logic equation E15*	Disabled, Enabled	Disabled538976288	
E15 *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*	(20 Character String)		
E15 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E15 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E15 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	
E15 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E15 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	
E16 Equation *Enable or Disable logic equation E16*	Disabled, Enabled	Disabled538976288	
E16 *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*	(20 Character String)		
E16 Pickup Delay *Time before equation output operates, after equation satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E16 Dropoff Delay *Time before equation output resets, after equation nolonger satisfied*	0, 0.01 ... 14300, 14400	0s538976288	
E16 Counter Target *Select number of times equation must be satisfied before equation output operates*	1, 2 ... 998, 999	1538976288	
E16 Counter Reset Mode *Select type of counter reset mode*	Off, Multi-shot, Single-shot	Off538976288	
E16 Counter Reset Time *Select counter reset time*	0, 0.01 ... 14300, 14400	0s538976288	

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3.12. Input Config

3.12.1. Input Matrix

Description	Range	Default	Setting
Inhibit Cold Load	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 51-1 *Selects which inputs inhibit the 51-1 element*	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 *Selects which inputs inhibit the 51-2 element*	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 *Selects which inputs inhibit the 51-3 element*	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 *Selects which inputs inhibit the 51-4 element*	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 *Selects which inputs inhibit the 50-1 element*	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 *Selects which inputs inhibit the 50-2 element*	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 *Selects which inputs inhibit the 50-3 element*	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 *Selects which inputs inhibit the 50-4 element*	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 51N-1 *Selects which inputs inhibit the 51N-1 element*	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 51N-2 *Selects which inputs inhibit the 51N-2 element*	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 51N-3 *Selects which inputs inhibit the 51N-3 element*	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)	----------	

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Description	Range	Default	Setting
Inhibit 51N-4 *Selects which inputs inhibit the 51N-4 element*	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 50N-1 *Selects which inputs inhibit the 50N-1 element*	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 50N-2 *Selects which inputs inhibit the 50N-2 element*	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 50N-3 *Selects which inputs inhibit the 50N-3 element*	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 50N-4 *Selects which inputs inhibit the 50N-4 element*	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 *Selects which inputs inhibit the 51G-1 element*	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-2 *Selects which inputs inhibit the 51G-2 element*	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 *Selects which inputs inhibit the 51G-3 element*	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 *Selects which inputs inhibit the 51G-4 element*	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 *Selects which inputs inhibit the 50G-1 element*	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 *Selects which inputs inhibit the 50G-2 element*	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 *Selects which inputs inhibit the 50G-3 element*	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 *Selects which inputs inhibit the 50G-4 element*	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)	----------	

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Description	Range	Default	Setting
Inhibit 51SEF-1 *Selects which inputs inhibit the 51SEF-1 element*	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 *Selects which inputs inhibit the 51SEF-2 element*	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 *Selects which inputs inhibit the 51SEF-3 element*	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-4 *Selects which inputs inhibit the 51SEF-4 element*	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 *Selects which inputs inhibit the 50SEF-1 element*	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 *Selects which inputs inhibit the 50SEF-2 element*	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 *Selects which inputs inhibit the 50SEF-3 element*	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 *Selects which inputs inhibit the 50SEF-4 element*	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 *Selects which inputs inhibit the 64H element*	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 *Selects which inputs inhibit the 46IT element*	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 *Selects which inputs inhibit the 46DT element*	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 *Selects which inputs inhibit the 37-1 element*	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 *Selects which inputs inhibit the 37-2 element*	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)	----------	

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Description	Range	Default	Setting
Inhibit 37G-1	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 37G-2	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 37SEF-1	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 37SEF-2	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 49 *Selects which inputs inhibit the 49 thermal element*	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 *Selects which inputs resets the 49 thermal model element*	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 *Selects which inputs inhibit the 27/59-1 element*	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 *Selects which inputs inhibit the 27/59-2 element*	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 *Selects which inputs inhibit the 27/59-3 element*	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 *Selects which inputs inhibit the 27/59-4 element*	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 *Selects which inputs inhibit the Vx 27/59 element*	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 *Selects which inputs inhibit the 47-1 element*	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 *Selects which inputs inhibit the 47-2 element*	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)	----------	

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Description	Range	Default	Setting
Inhibit 59NIT *Selects which inputs inhibit the 59N IDMTL/DTL element*	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 59NDT *Selects which inputs inhibit the 59N INST/DTL element*	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 *Selects which inputs inhibit the 81-1 element*	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 *Selects which inputs inhibit the 81-2 element*	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 *Selects which inputs inhibit the 81-3 element*	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 *Selects which inputs inhibit the 81-4 element*	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 81-5 *Selects which inputs inhibit the 81-5 element*	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 81-6 *Selects which inputs inhibit the 81-6 element*	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 *Selects which inputs inhibit the CT Supervision element*	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	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 *Selects which inputs inhibit the 46 Broken Conductor element*	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 *Selects which inputs are monitoring trip circuits*	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 *As Above*	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)	----------	

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Description	Range	Default	Setting
74TCS-3 *As Above*	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)	----------	
Trig Trip Contacts *Selects which inputs will trigger the Trip contacts*	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 *Selects which inputs inhibit the 50BF element*	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 CB Faulty *Selects which input bypasses the 50BF timer due to a fault CB*	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 Mech Trip *Selects which input allows a mechanical trip to start the 50BF element*	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 *Selects which inputs can also start the 50BF element*	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 *Selects which inputs inhibit the VT Supervision element*	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 *Selects MCB inputs to VT Supervision element*	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 *Selects which inputs reset the VT Supervision element*	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 *Selects which inputs Reset the CB Total Trip count*	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 *Selects which inputs Reset the CB Delta Trip count*	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 *Selects which inputs Reset the AR Block count*	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 *Selects which inputs Reset the Frequent Ops count*	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)	----------	

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Description	Range	Default	Setting
Reset I^2t CB Wear *Selects which inputs Reset the I^2t CB Wear element*	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^2t CB Wear *Selects which inputs will cause an external trigger of the I^2t CB Wear element*	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 Trip Time *Selects which inputs will reset the CB trip time alarm*	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 *Selects which inputs will activate the General Alarm 1 text*	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 *Selects which inputs will activate the General Alarm 2 text*	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 *Selects which inputs will activate the General Alarm 3 text*	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 *Selects which inputs will activate the General Alarm 4 text*	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 *Selects which inputs will activate the General Alarm 5 text*	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 *Selects which inputs will activate the General Alarm 6 text*	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 *Selects which inputs will activate the General Alarm 7 text*	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 8 *Selects which inputs will activate the General Alarm 8 text*	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 *Selects which inputs will activate the General Alarm 9 text*	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 *Selects which inputs will activate the General Alarm 10 text*	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)	----------	

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Description	Range	Default	Setting
General Alarm 11 *Selects which inputs will activate the General Alarm 11 text*	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 *Selects which inputs will activate the General Alarm 12 text*	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 *Selects which inputs are connected to the circuit breaker open contacts*	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)	BI6	
CB Closed *Selects which inputs are connected to the circuit breaker closed contacts*	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)	BI7	
Reset Demand *Selects which inputs will rest the Demand elements.*	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 *Selects which inputs will issue a close to the circuit breaker.*	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)	BI8	
Block Close CB *Selects which inputs will block the manual closing of the circuit breaker.*	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)	BI9	
Open CB *Selects which inputs will issue an open to the circuit breaker.*	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)	BI8	
79 Out *Selects which inputs will switch the Auto-recloser out of service*	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 *Selects which inputs will switch the Auto-recloser in service*	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 *Selects which inputs will trigger a trip & reclose*	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 *Selects which inputs will trigger a trip & lockout*	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 *Selects which input will start the external an Auto-relose sequence*	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)	----------	

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Description	Range	Default	Setting
79 Ext Pickup *Selects which input should be connected to the pickup of the external elements required to start an Auto-reclose sequence*	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 *Selects which inputs will block the Auto-recloser*	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 *Selects which inputs will force the Auto-recloser into the Lockout state*	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 *Selects which inputs will start the Line Check functionality of the Auto-recloser*	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 *Selects which inputs will force the Auto-recloser into the Lockout state*	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 Out *Selects which inputs will switch out Hot Line Working*	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 *Selects which inputs will switch in Hot Line Working*	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 *Selects which inputs will switch out the instantaneous protection elements*	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 *Selects which inputs will switch in the instantaneous protection elements*	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 *Selects which inputs will switch out the E/F protection elements.*	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 *Selects which inputs will switch in the E/F protection elements.*	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 *Selects which inputs will switch out the SEF protection elements*	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 *Selects which inputs will switch in the SEF protection elements*	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)	----------	

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Description	Range	Default	Setting
Trigger Wave Rec *Selects which inputs can trigger a waveform record*	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 *Selects which inputs can trigger a fault record*	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 1 *Switches active setting group to group 1*	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 Energy Meters	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 *Switches active setting group to group 2*	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 *Switches active setting group to group 3*	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 *Switches active setting group to group 4*	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 *Switches active setting group to group 5*	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 *Switches active setting group to group 6*	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 *Switches active setting group to group 7*	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 *Switches active setting group to group 8*	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 *Selects which inputs will put the relay into Out Of Service Mode*	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 *Selects which inputs will put the relay into Local Mode*	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)	----------	

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Description	Range	Default	Setting
Remote Mode *Selects which inputs will put the relay into Remote Mode*	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 *Selects which inputs will put the relay into Local Or Remote Mode*	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. *Selects which input is used to synchronise the real time clock*	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 *Selects which inputs will reset the latched LEDs and binary outputs*	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)	----------	

3.12.2. Function Key Matrix

Description	Range	Default	Setting
Open CB *Selects which function key will Open the circuit breaker*	Combination of (1, 2, 3, 4, 5, 6)	------	
Close CB *Selects which function key will Close the circuit breaker*	Combination of (1, 2, 3, 4, 5, 6)	------	
79 In/Out *Selects which function key will toggle Autoreclose In & Out*	Combination of (1, 2, 3, 4, 5, 6)	------	
79 Trip & Reclose *Selects which function key will cause the CB to trip & reclose*	Combination of (1, 2, 3, 4, 5, 6)	------	
79 Trip & Lockout *Selects which function key will cause the CB to trip & lockout*	Combination of (1, 2, 3, 4, 5, 6)	------	
Hot Line Work In/Out *Selects which function key will toggle Hot Line Working In & Out*	Combination of (1, 2, 3, 4, 5, 6)	------	
E/F In/Out *Selects which function key will toggle E/F protection In & Out*	Combination of (1, 2, 3, 4, 5, 6)	------	
SEF In/Out *Selects which function key will toggle SEF protection In & Out*	Combination of (1, 2, 3, 4, 5, 6)	------	
Inst Prot'n In/Out *Selects which function key will toggle Instantaneous protection elements In & Out*	Combination of (1, 2, 3, 4, 5, 6)	------	
Out Of Service Mode	Combination of (1, 2, 3, 4, 5, 6)	------	
Local Mode	Combination of (1, 2, 3, 4, 5, 6)	------	
Remote Mode	Combination of (1, 2, 3, 4, 5, 6)	------	
Local Or Remote Mode *Selects which inputs will put the relay into Local Or Remote Mode*	Combination of (1, 2, 3, 4, 5, 6)	------	

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3.12.3. 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	0s	
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	0s	
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	0s	
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	0s	
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	
BI 11 Pickup Delay *Delay on pickup of DC Binary Input 11*	0, 0.005 ... 14300, 14400	0.02s	
BI 11 Dropoff Delay *Delay on dropoff of DC Binary Input 11*	0, 0.005 ... 14300, 14400	0s	
BI 12 Pickup Delay *Delay on pickup of DC Binary Input 12*	0, 0.005 ... 14300, 14400	0.02s	

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Description	Range	Default	Setting
BI 12 Dropoff Delay *Delay on dropoff of DC Binary Input 12*	0, 0.005 ... 14300, 14400	0s	
BI 13 Pickup Delay *Delay on pickup of DC Binary Input 13*	0, 0.005 ... 14300, 14400	0.02s	
BI 13 Dropoff Delay *Delay on dropoff of DC Binary Input 13*	0, 0.005 ... 14300, 14400	0s	
Enabled In Local *Selects which inputs are enabled when the relay is in Operating Mode 'Local' or 'Local Or Remote'*	Combination of (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13)	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13	
Enabled In Remote *Selects which inputs are enabled when the relay is in Operating Mode 'Remote' or 'Local Or Remote'*	Combination of (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13)	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13	

3.12.4. Function Key Config

Description	Range	Default	Setting
Function Key 1 Text *User definable text that will be used in the HMI function key confirmation screen when Function key 1 is pressed.*	(20 Character String)	Function Key 1	
Function Key 2 Text *User definable text that will be used in the HMI function key confirmation screen when Function key 2 is pressed.*	(20 Character String)	Function Key 2	
Function Key 3 Text *User definable text that will be used in the HMI function key confirmation screen when Function key 3 is pressed.*	(20 Character String)	Function Key 3	
Function Key 4 Text *User definable text that will be used in the HMI function key confirmation screen when Function key 4 is pressed.*	(20 Character String)	Function Key 4	
Function Key 5 Text *User definable text that will be used in the HMI function key confirmation screen when Function key 5 is pressed.*	(20 Character String)	Function Key 5	
Function Key 6 Text *User definable text that will be used in the HMI function key confirmation screen when Function key 6 is pressed.*	(20 Character String)	Function Key 6	
Enabled In Remote *Selects which inputs are enabled when the relay is in Operating Mode 'Remote' or 'Local Or Remote'*	Combination of (1, 2, 3, 4, 5, 6)	------ 1668183366	

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3.12.5. General Alarms

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

3.13. Output Config

3.13.1. Output Matrix

Description	Range	Default	Setting
Protection Healthy *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*	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 *51-1 IDMTL/DTL Overcurrent operated*	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 *51-2 IDMTL/DTL Overcurrent operated*	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)	---------- ----------	

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Description	Range	Default	Setting
51-3 *51-3 IDMTL/DTL Overcurrent operated*	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 *51-4 IDMTL/DTL Overcurrent operated*	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 *50-1 INST/DTL Overcurrent operated*	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 *50-2 INST/DTL Overcurrent operated*	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)	---------- ----------	
50-3 *50-3 INST/DTL Overcurrent operated*	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 *50-4 INST/DTL Overcurrent operated*	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)	---------- ----------	
51N-1 *51N-1 IDMTL/DTL derived Earth Fault operated*	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	
51N-2 *51N-2 IDMTL/DTL derived Earth Fault operated*	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	
51N-3 *51N-3 IDMTL/DTL derived Earth Fault operated*	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	

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Description	Range	Default	Setting
51N-4 *51N-4 IDMTL/DTL derived Earth Fault operated*	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	
50N-1 *50N-1 INST/DTL derived Earth Fault operated*	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	
50N-2 *50N-2 INST/DTL derived Earth Fault operated*	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	
50N-3 *50N-3 INST/DTL derived Earth Fault operated*	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	
50N-4 *50N-4 INST/DTL derived Earth Fault operated*	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-1 *51G-1 IDMTL/DTL measured Earth Fault operated*	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 *51G-2 IDMTL/DTL measured Earth Fault operated*	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 *51G-3 IDMTL/DTL measured Earth Fault operated*	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 *51G-4 IDMTL/DTL measured Earth Fault operated*	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	

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Description	Range	Default	Setting
50G-1 *50G-1 INST/DTL measured Earth Fault operated*	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-2 *50G-2 INST/DTL measured Earth Fault operated*	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-3 *50G-3 INST/DTL measured Earth Fault operated*	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-4 *50G-4 INST/DTL measured Earth Fault operated*	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	
51SEF-1 *51SEF-1 IDMTL/DTL Sensitive Earth Fault operated*	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	
51SEF-2 *51SEF-2 IDMTL/DTL Sensitive Earth Fault operated*	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	
51SEF-3 *51SEF-3 IDMTL/DTL Sensitive Earth Fault operated*	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	
51SEF-4 *51SEF-4 IDMTL/DTL Sensitive Earth Fault operated*	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 *50SEF-1 INST/DTL Sensitive Earth Fault operated*	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	

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Description	Range	Default	Setting
50SEF-2 *50SEF-2 INST/DTL Sensitive Earth Fault operated*	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 *50SEF-3 INST/DTL Sensitive Earth Fault operated*	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 *50SEF-4 INST/DTL Sensitive Earth Fault operated*	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 *64H Restricted Earth Fault element operated*	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 *Cold Load settings are active*	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)	---------- ----------	
46IT *IDMTL/DTL NPS Overcurrent operated*	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 *INST/DTL NPS Overcurrent operated*	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 PhA *PhA Under Current operated*	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 PhB *PhB Under Current operated*	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)	---------- ----------	

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Description	Range	Default	Setting
37 PhC *PhC Under Current operated*	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 *37-1 Under Current operated*	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 *37-2 Under Current operated*	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)	---------- ----------	
37G-1 *37G-1 Under Current operated*	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)	---------- ----------	
37G-2 *37G-2 Under Current operated*	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)	---------- ----------	
37SEF-1 *37SEF-1 Under Current operated*	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)	---------- ----------	
37SEF-2 *37SEF-2 Under Current operated*	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 *Thermal capacity trip operated*	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 *Thermal capacity alarm operated*	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)	---------- ----------	

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Description	Range	Default	Setting
27/59-1 *Under/Overvoltage stage 1 operated*	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)	---------- ----------	
27/59-2 *Under/Overvoltage stage 2 operated*	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 *Under/Overvoltage stage 3 operated*	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 *Under/Overvoltage stage 4 operated*	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 *Under/Overvoltage Vx stage operated*	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 *INST/DTL NPS Overvoltage stage 1 operated*	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 *INST/DTL NPS Overvoltage stage 2 operated*	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 *Neutral Overvoltage IDMTL/DTL operated*	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)	---------- ----------	
59NDT *Neutral Overvoltage INST/DTL operated*	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)	---------- ----------	

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Description	Range	Default	Setting
81-1 *Under/Over frequency stage 1 operated*	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 *Under/Over frequency stage 2 operated*	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 *Under/Over frequency stage 3 operated*	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 *Under/Over frequency stage 4 operated*	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)	---------- ----------	
81-5 *Under/Over frequency stage 5 operated*	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)	---------- ----------	
81-6 *Under/Over frequency stage 6 operated*	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 *CT Supervision element operated*	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	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 *46 Broken Conductor element operated*	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)	---------- ----------	

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Description	Range	Default	Setting
74TCS-1 *Trip Circuit 1 fail operated*	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 *Trip Circuit 2 fail operated*	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 *Trip Circuit 3 fail operated*	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)	---------- ----------	
81HBL2	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 *General Pickup operated*	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 *Circuit Breaker Fail stage 1 operated*	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 *Circuit Breaker Fail stage 2 operated*	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 PhA *Circuit Breaker Fail Phase A*	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 PhB *Circuit Breaker Fail Phase B*	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)	---------- ----------	

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Description	Range	Default	Setting
50BF PhC *Circuit Breaker Fail Phase C*	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 EF *Circuit Breaker Fail Earth Fault*	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 *VT Supervision element operated*	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 Total Trip Count *Total CB trip count exceeded*	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 *Delta CB trip count exceeded*	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 *Count To AR Block CB trip count exceeded*	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 *CB Frequent Operations count exceeded*	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^2t CB Wear *I^2t CB Wear limit exceeded*	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)	---------- ----------	
Trip Time Alarm *Trip Time Alarm operated*	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)	---------- ----------	

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Description	Range	Default	Setting
CB Open *Indicates that the circuit breaker is in the open position.*	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)	BO6	
CB Closed *Indicates that the circuit breaker is in the closed position.*	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)	BO7	
Close CB Blocked *Indicates that the Close CB control is blocked by its interlocking logic.*	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)	BO9	
CB Alarm *Indicates the CB is either in an illegal state or is stuck neither open or closed.*	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)	BO9	
Open CB *Open pulse due to Manual Open being issued.*	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)	BO8	
Phase A *A phase A element operated*	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 *A phase B element operated*	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 *A phase C element operated*	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 *The Phase fault is in the forward direction. Note this output is presented EVEN when relay elements are set to be non-directional.*	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)	---------- ----------	

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Description	Range	Default	Setting
Reverse P/F *The Phase fault is in the reverse direction. Note this output is presented EVEN when relay elements are set to be non-directional.*	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 *The fault is in the forward direction. Note this output is presented EVEN when relay elements are set to be non-directional.*	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 *The fault is in the reverse direction. Note this output is presented EVEN when relay elements are set to be non-directional.*	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 SEF *The fault is in the forward direction. Note this output is presented EVEN when relay elements are set to be non-directional.*	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 *The fault is in the reverse direction. Note this output is presented EVEN when relay elements are set to be non-directional.*	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)	---------- ----------	
Manual Close CB *Close pulse due to Manual close being issued*	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)	BO8	
79 AR Close CB *Close pulse due to auto-reclose sequence*	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 *Indicates the Trip & Reclose sequence being performed*	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 *Indicates the Trip & Lockout sequence being performed*	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)	---------- ----------	

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Description	Range	Default	Setting
79 Lockout *Indicates the auto-recloser is in the Lockout state*	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 *Indicates the auto-recloser is out of service*	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 *Indicates the auto-recloser is in service*	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 Progress *Indicates an auto-reclose sequence is in progress*	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 *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.)*	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 *Indicates the CB was not closed at the end of the Close Pulse*	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)	BO11	
79 Close Onto Fault *Indicates an element starter or trip operated during the Close Pulse*	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 *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)*	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 *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)*	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)	BO10	

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Description	Range	Default	Setting
Hot Line Working *Indicates that Hot LineWorking functionality has been selected*	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)	---------- ----------	
Inst Prot'n Out *Indicates that the protection elements selected to be Instantaneous elements are switched out*	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 *Indicates that the instantaneous protection elements are switched out.*	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 *Indicates that the SEF protection elements are switched out*	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 *The waveform recorder has stored new information Note: this is a pulsed output*	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 *The fault recorder has stored new information Note: this is a pulsed output*	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)	---------- ----------	
Active Exp Pulse	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)	---------- ----------	
Active Imp Pulse	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)	---------- ----------	
Reactive Exp Pulse	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)	---------- ----------	

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Description	Range	Default	Setting
Reactive Imp Pulse	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 *Indicates the relay is in Out Of Service Mode*	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 *Indicates the relay is in Local Mode*	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)	---------- ----------	
Remote Mode *Indicates the relay is in Remote Mode*	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)	---------- ----------	
User Output 1 *User Output 1 operated*	Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, L1, L2, L3, L4, L5, L6, L7, L8, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16)	---------- ----------	
User Output 2 *User Output 2 operated*	Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, L1, L2, L3, L4, L5, L6, L7, L8, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16)	---------- ----------	
User Output 3 *User Output 3 operated*	Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, L1, L2, L3, L4, L5, L6, L7, L8, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16)	---------- ----------	
User Output 4 *User Output 4 operated*	Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, L1, L2, L3, L4, L5, L6, L7, L8, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16)	---------- ----------	
User Output 5 *User Output 5 operated*	Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, L1, L2, L3, L4, L5, L6, L7, L8, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16)	---------- ----------	
User Output 6 *User Output 6 operated*	Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, L1, L2, L3, L4, L5, L6, L7, L8, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16)	---------- ----------	
User Output 7 *User Output 7 operated*	Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, L1, L2, L3, L4, L5, L6, L7, L8, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16)	---------- ----------	
User Output 8 *User Output 8 operated*	Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, L1, L2, L3, L4, L5, L6, L7, L8, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16)	---------- ----------	

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Description	Range	Default	Setting
User Output 9 *User Output 9 operated*	Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, L1, L2, L3, L4, L5, L6, L7, L8, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16)	----------	
User Output 10 *User Output 10 operated*	Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, L1, L2, L3, L4, L5, L6, L7, L8, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16)	----------	
En100 Life *Raised when the En100 is communicating correctly with the Protection CPU*	Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, L1, L2, L3, L4, L5, L6, L7, L8, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16)	----------	
En100 Error *Raised when the En100 has detected an Error*	Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, L1, L2, L3, L4, L5, L6, L7, L8, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16)	----------	
IEC61850 Configured *Raised when the En100 and Protection CPU are configured for IEC 61850.*	Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, L1, L2, L3, L4, L5, L6, L7, L8, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16)	----------	
BI 1 Operated *DC Binary Input 1 has operated*	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 *DC Binary Input 2 has operated*	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 *DC Binary Input 3 has operated*	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 *DC Binary Input 4 has operated*	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 *DC Binary Input 5 has operated*	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 *DC Binary Input 6 has operated*	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)	----------	

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Description	Range	Default	Setting
BI 7 Operated *DC Binary Input 7 has operated*	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 *DC Binary Input 8 has operated*	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 *DC Binary Input 9 has operated*	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 *DC Binary Input 10 has operated*	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 *DC Binary Input 11 has operated*	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 *DC Binary Input 12 has operated*	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 *DC Binary Input 13 has operated*	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)	---------- ----------	
E1 *Quick Logic equation 1 operated*	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 *Quick Logic equation 2 operated*	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)	---------- ----------	

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Description	Range	Default	Setting
E3 *Quick Logic equation 3 operated*	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 *Quick Logic equation 4 operated*	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 *Quick Logic equation 5 operated*	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 *Quick Logic equation 6 operated*	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 *Quick Logic equation 7 operated*	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)	---------- ----------	
E8 *Quick Logic equation 8 operated*	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 *Quick Logic equation 9 operated*	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 *Quick Logic equation 10 operated*	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 *Quick Logic equation 11 operated*	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)	---------- ----------	

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Description	Range	Default	Setting
E12 *Quick Logic equation 12 operated*	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 *Quick Logic equation 13 operated*	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)	---------- ----------	
E14 *Quick Logic equation 14 operated*	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 *Quick Logic equation 15 operated*	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 *Quick Logic equation 16 operated*	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)	---------- ----------	

3.13.2. Binary Output Config

Description	Range	Default	Setting
Trip Contacts *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)*	Combination of (BO1, BO2, BO3, BO4, BO5, BO6, BO7, BO8, BO9, BO10, BO11, BO12, BO13, BO14)	----------	
Hand Reset Outputs *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.*	Combination of (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14)	----------	
Min Operate Time 1 *Minimum operate time of output relay if set to self reset, if also set to be pulsed then this is the pulse width*	0, 0.01 ... 59, 60	0.1s	
Min Operate Time 2 *Minimum operate time of output relay 2 if set to self reset, if also set to be pulsed then this is the pulse width*	0, 0.01 ... 59, 60	0.1s	
Min Operate Time 3 *Minimum operate time of output relay 3 if set to self reset, if also set to be pulsed then this is the pulse width*	0, 0.01 ... 59, 60	0.1s	
Min Operate Time 4 *Minimum operate time of output relay 4 if set to self reset, if also set to be pulsed then this is the pulse width*	0, 0.01 ... 59, 60	0.1s	
Min Operate Time 5 *Minimum operate time of output relay 5 if set to self reset, if also set to be pulsed then this is the pulse width*	0, 0.01 ... 59, 60	0.1s	

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Description	Range	Default	Setting
Min Operate Time 6 *Minimum operate time of output relay 6 if set to self reset, if also set to be pulsed then this is the pulse width*	0, 0.01 ... 59, 60	0s	
Min Operate Time 7 *Minimum operate time of output relay 7 if set to self reset, if also set to be pulsed then this is the pulse width*	0, 0.01 ... 59, 60	0s	
Min Operate Time 8 *Minimum operate time of output relay 8 if set to self reset, if also set to be pulsed then this is the pulse width*	0, 0.01 ... 59, 60	0s	
Min Operate Time 9 *Minimum operate time of output relay 9 if set to self reset, if also set to be pulsed then this is the pulse width*	0, 0.01 ... 59, 60	0s	
Min Operate Time 10 *Minimum operate time of output relay 10 if set to self reset, if also set to be pulsed then this is the pulse width*	0, 0.01 ... 59, 60	0.1s	
Min Operate Time 11 *Minimum operate time of output relay 11 if set to self reset, if also set to be pulsed then this is the pulse width*	0, 0.01 ... 59, 60	0.1s	
Min Operate Time 12 *Minimum operate time of output relay 12 if set to self reset, if also set to be pulsed then this is the pulse width*	0, 0.01 ... 59, 60	0.1s	
Min Operate Time 13 *Minimum operate time of output relay 13 if set to self reset, if also set to be pulsed then this is the pulse width*	0, 0.01 ... 59, 60	0.1s	
Min Operate Time 14 *Minimum operate time of output relay 14 if set to self reset, if also set to be pulsed then this is the pulse width*	0, 0.01 ... 59, 60	0.1s	
Pickup Outputs *Selects which outputs can operate because a pickup condition exists*	Combination of (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14)	----------	
Pulsed Outputs *Selects which outputs are pulsed. The pulse width is set by the Min Operate Time setting for each output*	Combination of (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14)	----------	

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3.13.3. LED Config

Description	Range	Default	Setting
Self Reset LEDs *LEDs selected, as Self Reset will automatically reset when the driving signal is removed. By default all LEDs are Hand Reset and must be manually reset either locally via the front fascia or remotely via communications.*	Combination of (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14)	9, 10, 11, 12, 13, 14	
PU Self Reset LEDs *LEDs selected, as Self Reset will automatically reset when the driving signal is removed. By default all PU LEDs are Self Reset.*	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	
Green LEDs *Selects which LEDs will be green when driven*	Combination of (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14)	----------	
Red LEDs *Selects which LEDs will be red when driven*	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	
PU Green LEDs *Selects which LEDs will be green when driven by a pickup*	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	
PU Red LEDs *Selects which LEDs will be red when driven by a pickup*	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	

3.13.4. Pickup Config

Description	Range	Default	Setting
Gn P/F Pickups *When any of the selected pickups operate General Pickup is driven.*	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 *As Above*	Combination of (51N-1, 51N-2, 51N-3, 51N-4, 50N-1, 50N-2, 50N-3, 50N-4, 51G-1, 51G-2, 51G-3, 51G-4, 50G-1, 50G-2, 50G-3, 50G-4)	51N-1, 51N-2, 51N-3, 51N-4, 50N-1, 50N-2, 50N-3, 50N-4, 51G-1, 51G-2, 51G-3, 51G-4, 50G-1, 50G-2, 50G-3, 50G-4	
Gn SEF/REF Pickups *As Above*	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 *As Above*	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 *As Above*	Combination of (81-1, 81-2, 81-3, 81-4, 81-5, 81-6)	81-1, 81-2, 81-3, 81-4, 81-5, 81-6	
Gn Misc Pickups *As Above*	Combination of (46IT, 46DT, 37-1, 37-2, 37G-1, 37G-2, 37SEF-1, 37SEF-2)	46IT, 46DT, 37-1, 37-2, 37G-1, 37G-2, 37SEF-1, 37SEF-2	

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3.14. CB Maintenance

3.14.1. CB Counters

Description	Range	Default	Setting
Gn CB Total Trip Count *Selects whether the CB Total Trip Count counter is enabled*	Disabled, Enabled	Disabled	
Gn CB Total Trip Count Target *Selects the number of CB trips allowed before CB Total Trip Count counter output operates*	0, 1 ... 9999, 10000	100	
Gn CB Total Trip Count Reset *Resets CB Total Trip Count counter*			
Gn CB Delta Trip Count *Selects whether the CB Delta Trip Count counter is enabled*	Disabled, Enabled	Disabled	
Gn CB Delta Trip Count Target *Selects the number of CB trips allowed before CB Delta Trip Count counter output operates*	0, 1 ... 9999, 10000	100	
Gn CB Delta Trip Count Reset *Resets CB Delta Trip Count counter*			
Gn CB Count To AR Block *Selects whether the CB Count To AR Block counter is enabled*	Disabled, Enabled	Disabled	
Gn CB Count To AR Block Target *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*	0, 1 ... 9999, 10000	100	
Gn CB Count To AR Block Reset *Resets CB Count To AR Block counter*			
Gn CB Freq Ops Count *Selects whether the CB Frequent Operations Counter is enabled*	Disabled, Enabled	Disabled	
Gn CB Freq Ops Count Target *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*	0, 1 ... 9999, 10000	10	
Gn CB Freq Ops Count Reset *Resets CB Frequent Operations Counter*			

3.14.2. I^2T CB Wear

Description	Range	Default	Setting
Gn I^2t Counter *Selects whether the I^2t CB Wear monitor is enabled*	Disabled, Enabled	Disabled	
Gn Alarm Limit *Sets limit before alarm is issued*	10, 11 ... 99000, 100000	10MA^2s	
Gn Separation Time *Sets the time for CB mechanism to start moving, time before contacts start to separate*	0, 0.001 ... 0.199, 0.2	0.02s	
Gn Clearance Time *Time for CB to clear fault*	0, 0.001 ... 0.199, 0.2	0.04s	
Reset I^2t Count *Reset the CB wear count*			

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3.15. Data Storage

3.15.1. Demand Data/Log

Description	Range	Default	Setting
Data Log Period *Selects period between stored samples*	5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60	5min	
Clear Data Log *Clear the Data Log*			
Gn Demand Window *The time window over which the Min, Max and Mean values are calculated.*	1, 2 ... 23, 24	24hrs	
Gn Demand Window Type *Method used to calculate Demand values.*	Fixed, Peak, Rolling	Fixed	
Gn Demand Reset *Reset all Demand values*			

3.15.2. Waveform Storage

Description	Range	Default	Setting
Gn P/F Trig Storage *Select which elements trigger a waveform record*	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 *As Above*	Combination of (51N-1, 51N-2, 51N-3, 51N-4, 50N-1, 50N-2, 50N-3, 50N-4, 51G-1, 51G-2, 51G-3, 51G-4, 50G-1, 50G-2, 50G-3, 50G-4)	51N-1, 51N-2, 51N-3, 51N-4, 50N-1, 50N-2, 50N-3, 50N-4, 51G-1, 51G-2, 51G-3, 51G-4, 50G-1, 50G-2, 50G-3, 50G-4	
Gn SEF/REF Trig Storage *As Above*	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 *As Above*	Combination of (46IT, 46DT, 37-1, 37-2, 49 Trip, 49 Alarm, 37G-1, 37G-2, 37SEF-1, 37SEF-2)	----------	
Gn Voltage Trig Storage *As Above*	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 *As Above*	Combination of (81-1, 81-2, 81-3, 81-4, 81-5, 81-6)	------	
Pre-trigger Storage *Select Percentage of waveform record stored before the fault is triggered*	10, 20, 30, 40, 50, 60, 70, 80, 90	20%	
Record Duration *Select waveform record duration*	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 *Trigger waveform storage*			
Clear Waveforms *Clear all stored waveform records*			

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3.15.3. Fault Storage

Description	Range	Default	Setting
Gn Max Fault Rec Time *Maximum time Fault record information will be stored and classed as same fault*	0, 1 ... 59900, 60000	2000ms	
Clear Faults *Clear all stored fault records*			

3.15.4. Event Storage

Description	Range	Default	Setting
Clear Events *Clear all stored event records*			

3.15.5. Energy Storage

Description	Range	Default	Setting
Gn Active Exp Energy Unit	1kWh, 10kWh, 100kWh, 1MWh, 10MWh, 100MWh	10kWh	
Gn Active Imp Energy Unit	1kWh, 10kWh, 100kWh, 1MWh, 10MWh, 100MWh	10kWh	
Gn Reactive Exp Energy Unit	1kVArh, 10kVArh, 100kVArh, 1MVArh, 10MVArh, 100MVArh	10kVArh	
Gn Reactive Imp Energy Unit	1kVArh, 10kVArh, 100kVArh, 1MVArh, 10MVArh, 100MVArh	10kVArh	
Data Log *Selects whether the Data Logger is enabled*			

3.15.6. Communications

Description	Range	Default	Setting
Station Address *IEC 60870-5-103 Station Address*	0, 1 ... 65533, 65534	1	
COM1-RS485 Protocol *Selects protocol to use for COM1-RS485*	OFF, IEC60870-5-103, MODBUS-RTU, DNP3	IEC60870-5-103	
COM1-RS485 Baud Rate *Sets the communications baud rate for COM1-RS485*	75, 110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400	19200	
COM1-RS485 Parity *Selects whether parity information is used*	NONE, ODD, EVEN	EVEN	
COM1-RS485 Mode	Local, Remote, Local Or Remote	Remote	
COM2-USB Protocol *Selects protocol to use for COM2-USB*			
COM2-USB Mode			
COM3 Protocol *Selects protocol to use for COM3*	OFF, IEC60870-5-103, MODBUS-RTU, DNP3	IEC60870-5-103	
COM3 Baud Rate *Sets the communications baud rate for COM3*	75, 110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200	19200	

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Description	Range	Default	Setting
COM3 Parity *Selects whether parity information is used*	NONE, ODD, EVEN	EVEN	
COM3 Line Idle *Selects the communications line idle sense*	LIGHT OFF, LIGHT ON	LIGHT OFF	
COM3 Data Echo *Enables echoing of data from RX port to TX port when operating relays in a Fibre Optic ring configuration*	OFF, ON	OFF	
COM3 Mode	Local, Remote, Local Or Remote	Remote	
COM4 Protocol *Selects protocol to use for COM4*	OFF, IEC60870-5-103, MODBUS-RTU, DNP3	OFF	
COM4 Baud Rate *Sets the communications baud rate for COM4*	75, 110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400	19200	
COM4 Parity *Selects whether parity information is used*	NONE, ODD, EVEN	EVEN	
COM4 Line Idle *Selects the communications line idle sense*	LIGHT OFF, LIGHT ON	LIGHT OFF	
COM4 Data Echo *Enables echoing of data from RX port to TX port when operating relays in a Fibre Optic ring configuration*	OFF, ON	OFF	
COM4 Mode	Local, Remote, Local Or Remote	Remote	
LAN Protocol *Selects protocol to use for LAN port*	OFF, IEC60870-5-103	IEC60870-5-103	
DNP3 Unsolicited Events *Allows unsolicited event support in the relay. When Enabled, unsolicited event transmission can be controlled by the Master. When Disabled, Master requests are ignored.*	Disabled, Enabled	Disabled	
DNP3 Destination Address *The address of the master to which unsolicited events will be sent.*	0, 1 ... 65533, 65534	0	

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