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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. GENERAL DATA AND INFORMATION:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Panel No. |  |  | Designation |  |
| Serial No. |  | Rated Voltage | 125 VDC |
| Make |  | Aux. Voltage | 48 – 250 VAC/DC |
| DWG. & SH. No. |  | Frequency | 50 – 60 Hz |
| CT Ratio | 1200/1A |  |  |

2. MECHANICAL CHECKS AND VISUAL INSPECTION:

|  |  |  |
| --- | --- | --- |
| ITEM | DESCRIPTION | CHECKED |
| 1 | Inspect for physical damage / defects. |  |
| 2 | Verify Connections as per approved drawings. |  |
| 3 | Check tightness of all connections. |  |
| 5 | Check apparatus lists. |  |
| 6 | Check ferrules |  |
| 7 | Test Switch checked for correct function. |  |
| 8 | Check case earthing. |  |

3. ELECTRICAL TESTS: With relay energized condition

|  |  |  |
| --- | --- | --- |
| ITEM | DESCRIPTION | CHECKED |
| 1 | Measured auxiliary supply. |  |
| 2 | Clock set at local time. |  |
| 3 | Time maintained when auxiliary supply removed. |  |
| 5 | Relay healthy (green) LED working. |  |
| 6 | Trip (red) LED working. |  |

3.1 OPERATING DC SUPPLY CURRENT:

|  |  |  |  |
| --- | --- | --- | --- |
| DC Volt (V) | DC CurrentWithout Fault (mA) | DC CurrentDuring Fault (mA) | Calculated WATT (W) |
| 125 VDC |  |  |  |

**(Relays /energized):** < 12.0 W (**nominal**)/< 18.0 W (**max**) Technical Data page: 8094. INPUTS AND OUTPUTS TESTS:**INPUT OPTO-ISOLATORS CHECKS (With Relay Energized):** Test Procedure: Go to CONFIGURATION - MONITORING, I/O STATUS, then go to BINARY INPUTS VALUES ( X120 (AIM) – X110 (BIO) )to check the values after giving pulse on each BI.

|  |  |  |  |
| --- | --- | --- | --- |
| **OPTO INPUT NO.** | **TEST METHOD****(Energize only one at a time with** **125V DC Station Battery voltage)** | **RESULT****Display FALSE to TURE** | **REMARKS** |
| **X120** |
| BI 1 | ENERGIZE TB NO. X120 : 1 – 2C |  | SPARE |
| BI 2 | ENERGIZE TB NO. X120 : 3 – 2C |  | SPARE |
| BI 3 | ENERGIZE TB NO. X120 : 4 – 2C |  | SPARE |
| BI 4 | ENERGIZE TB NO. X120 : 5 – 6 |  | SPARE |
| **X110** |
| BI 1 | ENERGIZE TB NO. X110 : 1 – 2 |  | **CBF INITIATION** |
| BI 2 | ENERGIZE TB NO. X110 : 3 – 4 |  | SPARE |
| BI 3 | ENERGIZE TB NO. X110 : 5 – 6C |  | SPARE |
| BI 4 | ENERGIZE TB NO. X110 : 7 – 6C |  | SPARE |
| BI 5 | ENERGIZE TB NO. X110 : 8 – 9C |  | SPARE |
| BI 6 | ENERGIZE TB NO. X110 : 10 – 9C |  | SPARE |
| BI 7 | ENERGIZE TB NO. X110 : 11 – 12C |  | SPARE |
| BI 8 | ENERGIZE TB NO. X110 : 13 – 12C |  | SPARE |

**OUTPUT RELAYS CHECKS (With Relay Energized):**Test Procedure: Go to IED CONFIGURATION, TESTS, IED TEST, TEST MODE : ON, then go to BINARY OUTPUTS-CHANGE THE POSITION OF EACH BO FROM FULSE TO TURE FROM HMI,then check contact resistance.

|  |  |  |  |
| --- | --- | --- | --- |
| **OUTPUT RELAY No.** | **TEST METHOD****(Energize only one relay at a time by****Test ON in ‘IED TEST’)** | **RESULT****Contact Checked****≤ 0.2Ω** | **REMARKS** |
| **X100** |
| PO1 | CONTACT OPERATED X100 : 6 – 7 (N/O) |  | **CBF OPTD(86CBF)** |
| PO2 | CONTACT OPERATED X100 : 8 – 9 (N/O) |  | **CBF OPTD(86CBF)** |
| SO1 | CONTACT OPERATED X100 : 10 – 11 /10 - 12 (C/O) |  | SPARE |
| SO2 | CONTACT OPERATED X100 : 13 – 14 (N/O) |  | **CBF OPTD(FR)** |
| PO3 | CONTACT OPERATED X100 : 16 – 17 (N/O) |  | SPARE |
| PO4 | CONTACT OPERATED X100 : 21 – 22 (N/O) |  | SPARE |
| IRF | CONTACT OPERATED X100 : 3 – 4 (N/O) |  | WATCHDOG |
| **X110** |
| SO1 | CONTACT OPERATED X110 : 14 – 16 /14 - 15 (C/O) |  | SPARE |
| SO2 | CONTACT OPERATED X110 : 17 – 19 /17 - 18 (C/O) |  | SPARE |
| SO3 | CONTACT OPERATED X110 : 20 – 22 /20 - 21 (C/O) |  | SPARE |
| SO4 | CONTACT OPERATED X110 : 23 – 24 (N/O) |  | SPARE |

**INDICATION LED TEST****LED Checks:**Go to MONITORING,PROGRAMMABLE LEDS to view the physical position of the LED.

|  |  |  |
| --- | --- | --- |
| **OPTO Input Number** | **Result Display On or Off** | **Function** |
| LED 1 |  | CBF INITIATION |
| LED 2 |  | CBF OPTD |
| LED 3 |  | DIST. TRIGGERED |
| LED 4 |  | SPARE |
| LED 5 |  | SPARE |
| LED 6 |  | SPARE |
| LED 7 |  | SPARE |
| LED 8 |  | SPARE |

5. MEASUREMENTS ACCURACY CHECKS:

|  |  |  |
| --- | --- | --- |
| Applied Value | Expected Value ( A ) | Displayed value ( A ) |
| R | Y | B  |
| 0.1 In | 120 |  |  |  |
| 0.5 In | 600 |  |  |  |
| 1 In | 1200 |  |  |  |
| 1.5 In | 1800 |  |  |  |

**6. BREAKER FAILURE PROTECTION (50+62BF) PICK UP & DROP OFF**

|  |  |  |  |
| --- | --- | --- | --- |
| Phase | Current ( A ) | Stage 1 | Stage 2 |
| Set | Pickup | Drop-off | Set | OPTD (ms) | Set | OPTD (ms) |
| R | 5% In |  |  | 50 ms |  | 100 ms |  |
| Y |  |  |  |  |
| B |  |  |  |  |
| R | 15% In |  |  | 100 ms |  | 200 ms |  |
| Y |  |  |  |  |
| B |  |  |  |  |
| R | 20% In |  |  | 200ms |  | 400 ms |  |
| Y |  |  |  |  |
| B |  |  |  |  |

**Operation accuracy:**±1.5% of the set value or ±0.002 x In Technical Data page : 499**Operate time accuracy:** ±1.0% of the set value or ±20 ms Technical Data page : 499 refer to manual page : 26/132

|  |  |  |
| --- | --- | --- |
| 1 | Communication with PC |  |
| 2 | Event Record Check |  |
| 3 | Disturbance Record Check |  |

 |