#### 1. GENERAL DATA AND INFORMATION:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Panel No. |  |  | Designation |  |
| Serial No. |  | Rated Voltage | 125 VDC |
| Make |  | Aux. Voltage | 110 – 250 VAC/DC |
| DWG. & SH. No. |  | Frequency | 50 – 60 Hz |
| CT Ratio | 4000/1A |  |  |

#### 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. |  |
| 9 | Watchdog contact (F11& F12): |  |

#### 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 Current**  **Without Fault (mA)** | **DC Current**  **During Fault (mA)** | **Calculated WATT (W)** |
| 125vdc |  |  |  |

**(Relays /energized):** approx. 11 W Technical Data page: 17- 132

#### 4. INPUTS AND OUTPUTS TESTS:

**INPUT OPTO-ISOLATORS CHECKS (With Relay Energized):**

Test Procedure:

Go to Commissioning Test,

Test mode (test mode),

then go to system data (Opto I/P Status)

to check the status of the binary inputs.

|  |  |  |  |
| --- | --- | --- | --- |
| **OPTO INPUT NO.** | **TEST METHOD**  **(Energize only one at a time with 125V DC Station Battery voltage)** | **RESULT**  **Display 0 to 1** | **REMARKS** |
| OPTO 1 | ENERGIZE TB NO. D2-D1 |  | SPARE |
| OPTO 2 | ENERGIZE TB NO. D4-D3 |  | SPARE |
| OPTO 3 | ENERGIZE TB NO. D6- D5 |  | SPARE |
| OPTO 4 | ENERGIZE TB NO. D8-D7 |  | SPARE |
| OPTO 5 | ENERGIZE TB NO. D10-D9 |  | SPARE |
| OPTO 6 | ENERGIZE TB NO. D12-D11 |  | SPARE |
| OPTO 7 | ENERGIZE TB NO. D14-D13 |  | SPARE |
| OPTO 8 | ENERGIZE TB NO. D16-D15 |  | SPARE |
| OPTO 9 | ENERGIZE TB NO. B2-B1 |  | SPARE |
| OPTO 10 | ENERGIZE TB NO. B4-B3 |  | SPARE |
| OPTO 11 | ENERGIZE TB NO. B6-B5 |  | SPARE |
| OPTO 12 | ENERGIZE TB NO. B8-B7 |  | SPARE |

**OUTPUT RELAYS CHECKS (With Relay Energized):**

Test Procedure:

Go to Commissioning Test,

Test mode (Contacts blocked),

Test Pattern mode

and select each relay to be tested

and Apply Contact Test,

after test; apply remove test to de-energize the relay

|  |  |  |  |
| --- | --- | --- | --- |
| **OUTPUT RELAY No.** | **TEST METHOD**  **(Energize only one relay at a time by**  **‘Contact Test in ‘Apply Test Mode’)** | **RESULT**  **Contact Checked**  **≤ 0.2Ω** | **REMARKS** |
| RL1 | CONTACT OPERATED E1-E2 (N/O) |  | **87BB TRIP** |
| RL2 | CONTACT OPERATED E3-E4 (N/O) |  | **87BB TRIP TO FR** |
| RL3 | CONTACT OPERATED E5-E6 (N/O) |  | SPARE |
| RL4 | CONTACT OPERATED E9-E8,E7 (C/O) |  | SPARE |
| RL5 | CONTACT OPERATED E12-E11, E10  (C/O) |  | SPARE |
| RL6 | CONTACT OPERATED E 15-E14, E13 (C/O) |  | SPARE |
| RL7 | CONTACT OPERATED E18-E17, E16 (C/O) |  | SPARE |
| RL8 | CONTACT OPERATED B9-B10 (N/O) |  | SPARE |
| RL9 | CONTACT OPERATED B11-B12 (N/O) |  | SPARE |
| RL10 | CONTACT OPERATED B15-B14, B13 (C/O) |  | SPARE |
| RL11 | CONTACT OPERATED B18-B17, B16 (C/O) |  | SPARE |

**INDICATION LED TEST**

**LED Checks:**

Go to hardware test to view the physical position of the LED.

|  |  |  |
| --- | --- | --- |
| **OPTO Input Number** | **Result Display On or Off** | **Function** |
| LED 1 |  | **87BB TRIP** |
| LED 2 |  | **R-PHASE TRIP** |
| LED 3 |  | **Y-PHASE TRIP** |
| LED 4 |  | **B-PHASE TRIP** |
| LED 5 |  | SPARE |
| LED 6 |  | SPARE |
| LED 7 |  | SPARE |
| LED 8 |  | SPARE |

#### 5. SERIES & SHUNT RESISTOR MEASUREMENTS:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PHASE** | **SERIES RESISTOR** | | **SHUNT RESISTOR** | |
| SETTING (Ω) | MEASURED (Ω) | SETTING (Ω) | MEASURED (Ω) |
| R – N |  |  |  |  |
| Y – N |  |  |  |  |
| B – N |  |  |  |  |

**6. PICK UP & DROP OFF TEST FOR HIGH IMPEDANCE DIFFERENTIAL**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CURRENT SETTING** | **R – PHASE** | | | **Y - PHASE** | | | **B -PHASE** | | |
| Pickup mA | Drop-off mA | Pickup V | Pickup mA | Drop-off mA | Pickup V | Pickup mA | Drop-off mA | Pickup V |
|  |  |  |  |  |  |  |  |  |  |

**6. OPERATING TIME TEST FOR HIGN IMPEDANCE DIFFERENTIAL**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **TIME SETTING** | **APPLIED**  **VOLTAGE** | **R – PHASE** | **Y - PHASE** | **B -PHASE** |
| Pickup (msec) | Pickup (msec) | Pickup (msec) |
|  |  |  |  |  |

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