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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Panel No. | **RD.BF3 – D11** |  | Designation | U10.5001 (50+62BF-2A) |
| Serial No. | **32210406/07/12** | Rated Voltage | 125 VDC |
| Make |  | Aux. Voltage | 110 – 250 VAC/DC |
| DWG. & SH. No. | CD-268491/11 | Frequency | 50 – 60 Hz |
| CT Ratio | 1200/1A |  |  |

2. MECHANICAL CHECKS AND VISUAL INSPECTION:

|  |  |  |
| --- | --- | --- |
| ITEM | DESCRIPTION | CHECKED |
| 1 | Inspect for physical damage / defects. | OK |
| 2 | Verify Connections as per approved drawings. | OK |
| 3 | Check tightness of all connections. | OK |
| 5 | Check apparatus lists. | OK |
| 6 | Check ferrules | OK |
| 7 | Test Switch checked for correct function. | OK |
| 8 | Check case earthing. | OK |
| 9 | Watchdog contact (F11& F12): | OK |

3. ELECTRICAL TESTS: With relay energized condition

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

3.1 OPERATING DC SUPPLY CURRENT:

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

**(Relays /energized):** approx. 11 W Technical Data page: 17- 1324. 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 |  | **CBF INITIATION** |
| 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) |  | **CBF OPTD(86CBF)** |
| RL2 | CONTACT OPERATED E3-E4 (N/O) |  | **CBF OPTD(86CBF)** |
| RL3 | CONTACT OPERATED E5-E6 (N/O) |  | **CBF OPTD(FR)** |
| 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 |  | CBF INITIATION |
| LED 2 |  | CBF OPTD |
| LED 3 |  | SPARE |
| 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  |
| 0.1In |  |  |  |  |
| 0.5In |  |  |  |  |
| 1 In |  |  |  |  |
| 1.5In |  |  |  |  |

 **Limits:** Current: 0.05 … 3 In Accuracy: ± 1.0% of reading**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 |  | 80ms |  |
| Y |  |  |  |  |
| B |  |  |  |  |
| R | 8% In |  |  | 100 ms |  | 150ms |  |
| Y |  |  |  |  |
| B |  |  |  |  |
| R | 10% |  |  | 200ms |  | 250ms |  |
| Y |  |  |  |  |
| B |  |  |  |  |

**Limits:**I > Pick-up: Setting ±5% or 20 mAI > Drop-off: 100%of setting ±5% or 20 mATimers: ± 2% or 50 ms whichever is greaterrefer to manual page : 26/132

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

 |