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| 1. GENERAL DATA AND INFORMATION:  |  |  |  |  |  | | --- | --- | --- | --- | --- | | Panel No. | **RB.UF** |  | Designation | U04.5001(81UF1) | | Serial No. | **1VHR91083810** | Rated Voltage | 125 VDC | | Make |  | Aux. Voltage | 48 – 250 VAC/DC | | DWG. & SH. No. | CD-268541 | Frequency | 50 – 60 Hz | | VT Ratio | 132000/115V |  |  |  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 |  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 Current  Without Fault (mA) | DC Current  During Fault (mA) | Calculated WATT (W) | | 125 VDC |  |  |  |   **(Relays /energized):** < 12.0 W (**nominal**)/< 18.0 W (**max**) Technical Data page: 725 4. 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 ( X130 (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** | | **X110** | | | | | BI 1 | ENERGIZE TB NO. X110 : 1 – 2 |  | SPARE | | BI 2 | ENERGIZE TB NO. X110 : 3 – 4 |  | SPARE | | BI 3 | ENERGIZE TB NO. X110 : 5 – 6C |  | **BUS-A OUT** | | 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 | | **X130** | | | | | BI 1 | ENERGIZE TB NO. X130 : 1 – 2 |  | SPARE | | BI 2 | ENERGIZE TB NO. X130 : 3 – 4 |  | SPARE | | BI 3 | ENERGIZE TB NO. X130 : 5 – 6 |  | SPARE | | BI 4 | ENERGIZE TB NO. X130 : 7 – 8 |  | 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) |  | **UF OPTD (STG-1)** | | PO2 | CONTACT OPERATED X100 : 8 – 9 (N/O) |  | **UF OPTD (STG-2)** | | SO1 | CONTACT OPERATED X100 : 10 – 11 /10 - 12 (C/O) |  | SPARE | | SO2 | CONTACT OPERATED X100 : 13 – 14 (N/O) |  | SPARE | | PO3 | CONTACT OPERATED X100 : 16 – 17 (N/O) |  | **UF OPTD (STG-3)** | | PO4 | CONTACT OPERATED X100 : 21 – 22 (N/O) |  | **UF OPTD (STG-4)** | | 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 |  | **UF OPTD (STG-1)** | | LED 2 |  | **UF OPTD (STG-2)** | | LED 3 |  | **UF OPTD (STG-3)** | | LED 4 |  | **UF OPTD (STG-4)** | | LED 5 |  | **BUS-A OUT** | | LED 6 |  | SPARE | | LED 7 |  | SPARE | | LED 8 |  | SPARE |  5. MEASUREMENTS ACCURACY CHECKS:  |  |  |  | | --- | --- | --- | | Applied Frequency | Measured Frequency | %Error | | 59.50 |  | 0.0% | | 59.30 |  | 0.0% | | 59.00 |  | 0.0% | | 58.50 |  | 0.0% | | 58.30 |  | 0.0% |     **6. UNDERFREQUENCY PROTECTION (81) PICK UP & DROP OFF :**   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Frequency Set (Hz) | Actual Frequency –Hz | | | | | | | | | Stage-1 | | Stage-2 | | Stage-3 | | Stage-4 | | | P/U | D/O | P/U | D/O | P/U | D/O | P/U | D/O | |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |   **7. UNDERFREQUENCY PROTECTION (81) TIMING :**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Set Time (sec) | Actual Time –sec | | | | | Stage-1 | Stage-2 | Stage-3 | Stage-4 | |  |  |  |  |  | |  |  |  |  |  |   **TECHNICAL DATA :** as per technical manual page : 339   |  |  |  | | --- | --- | --- | | Characteristic | | Value | | Operation Accuracy | f>/f< | ±10 mHz | | Start Time | f>/f< | < 80 ms | | Reset Time | | < 150 ms | | Operation Time Accuracy | | ±1.0% of the set value or ±30 ms |      |  |  |  | | --- | --- | --- | | 1 | Communication with PC |  | | 2 | Event Record Check |  | | 3 | Disturbance Record Check |  |   **FINAL SETTING**   |  |  |  | | --- | --- | --- | | **STAGE NO.** | **FREQUENCY SETTING** | **TIME DELAY SETTING** | | STAGE -1 |  |  | | STAGE -2 |  |  | | STAGE -3 |  |  | | STAGE -4 |  |  |   **6. UNDERFREQUENCY PROTECTION (81) PICK UP & DROP OFF :**   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Frequency Set (Hz) | Actual Frequency –Hz | | | | | | | | | Stage-1 | | Stage-2 | | Stage-3 | | Stage-4 | | | P/U | D/O | P/U | D/O | P/U | D/O | P/U | D/O | |  |  |  |  |  |  |  |  |  |   **7. UNDERFREQUENCY PROTECTION (81) TIMING :**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Set Time (sec) | Actual Time –sec | | | | | Stage-1 | Stage-2 | Stage-3 | Stage-4 | |  |  |  |  |  | |