Wiring S/HMS and PLC UPS Invertor Status to the Rotation PLC

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Ran cabling and did wiring to get the invertor status from the SHMS PLC UPS, HMS I/O rack UPS, and HMS/Rotation PLCs’ UPS. The SHMS and I/O rack UPS are in the Hall in their respective huts. The other UPS is on the 2nd floor of the counting house. The two cables premade for the Hall UPS needed to be extended and the connectors had to be rewired. The wiring for the UPS on the 2nd floor of the counting house had to be redone.

1. S/HMS Huts
   1. Cut off DB25 connector
   2. Put jumper between pin 7 (ground) to pin 13 (emitter for “invertor off” transistor)
   3. Connected red wire to pin 14 (12 VDC source)
   4. Connected black wire to pin 11 (collector for “invertor off” transistor)
   5. Ran cable under floor to nearest penetration
   6. Extend cables to reach their destination
   7. HMS cable goes directly to Rotation rack
   8. SHMS cable goes to SHMS Drive Box then to Rotation rack through newly terminated cable
2. SHMS Drive Box
   1. Terminate spare cable (25 wire) and connect to TS-VFD-01
   2. Install DIN mount relay, Finder Type 95.63 next to TS-VFD-1
   3. Install Finder relay 40.31.9.012.0000 (12 VDC)
   4. Connect red wire (14) to A2 on relay
   5. Connect black wire (11) to A1 on relay
   6. Connect common (term 11) to TS-VFD-01 7 (green/black)
   7. Connect NO (term 14) to TS-VFD-01 6 (red/black)
3. Rotation Rack
   1. Chicanery to use Hall 24 VDC to monitor 2nd floor UPS
      1. Dig through birds nest of extra wires to find pair 11 for cable 2:1:3 (Rotation PLC slot 3)
      2. Connect white wire of pair to TS-PLC-03 16-2 (24 VDC)
   2. At TS-3
      1. Remove 2:1:2/13 and cap (leave switch connected to TS-3)
      2. Remove 2:1:2/11 and cap (leave switch connected to TS-3)
   3. HMS I/O Rack UPS
      1. Install DIN mount relay, Finder Type 95.63
      2. Install Finder relay 40.31.9.012.0000 (12 VDC) near circuit breakers
      3. Connect red wire (14) to A2 on relay
      4. Connect black wire (11) to A1 on relay
      5. Connect common (term 11) to TS-PLC-02 11-2 (red)
      6. Remove 2:1:2/11 and cap
      7. Connect NO (term 14) to TS-PLC-02 11-1 (black)
   4. SHMS UPS
      1. Terminate spare cable (25 wire) and connect to TS-14
      2. Connect TS-14 6 (red) to TS-PLC-02 13-2
      3. Remove 2:1:2/13 and cap
      4. Connect TS-14 7 (black) to TS-PLC-02 13-1
4. 2nd Floor Room 200B
   1. Redo wiring at UPS terminal strip, ground ref not needed
   2. Connect UPS term 11 to black terminal block, connect black wire from cable
   3. UPS term 27 is connected to red terminal block, connect red wire from cable
   4. Connect black wire to white wire from pair 11 (2:1:3), 24 VDC from Hall
   5. Remove 2:1:3/13 from PLC term 27 and cap
   6. Connect red wire to PLC term 27

New cable termination (exiting wires not shown):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TS14 | Cable to SHMS |  | TS-VFD-1 | Cable to HMS Rotation |
| 1 |  |  | 1 |  |
| 2 |  |  | 2 |  |
| 3 |  |  | 3 |  |
| 4 |  |  | 4 |  |
| 5 |  |  | 5 |  |
| 6 | R/BL |  | 6 | R/BL |
| 7 | G/BL |  | 7 | G/BL |
| 8 | B/BL |  | 8 | B/BL |
| 9 | O/BL |  | 9 | O/BL |
| 10 | W/BL |  | 10 | W/BL |
| 11 |  |  | 11 |  |
| 12 |  |  | 12 |  |
| 13 | R/W |  | 13 | R/W |
| 14 | G/W |  | 14 | G/W |
| 15 |  |  | 15 |  |
| 16 |  |  | 16 |  |
| 17 |  |  | 17 |  |
| 18 |  |  | 18 |  |
| 19 | R/G |  | 19 | R/G |
| 20 | B/R |  | 20 | B/R |
| 21 | W/R |  | 21 | W/R |
| 22 | O/G |  | 22 | O/G |
| 23 | BL/R |  | 23 | BL/R |
| 24 | O/R |  | 24 | O/R |
| 25 | R/W/BL |  | 25 | R/W/BL |
| 26 | G/W/BL |  | 26 | G/W/BL |
| 27 | W/R/BL |  | 27 | W/R/BL |
| 28 | BL/R/W |  | 28 | BL/R/W |
| 29 | R |  | 29 | R |
| 30 | G |  | 30 | G |
| 31 | B |  | 31 | B |
| 32 | O |  | 32 | O |
| 33 | BL |  | 33 | BL |
| 34 | W |  | 34 | W |
| 35 | B/W |  | 35 | B/W |
| 36 | BL/W |  | 36 | BL/W |
| 37 |  |  | 37 |  |
| 38 |  |  | 38 |  |
| 39 |  |  | 39 |  |
| 40 |  |  | 40 |  |
| 41 |  |  | 41 |  |
| 42 |  |  | 42 |  |
|  |  |  | 43 |  |
|  |  |  | 44 |  |
|  |  |  | 45 |  |
|  |  |  | 46 |  |
|  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
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| SHMS UPS |  |  |  |  |  |  |  |  |  |  |  |  |
| DB 25 | Pin |  | Cable | Relay | Contacts | Cable | TS-VFD-1 |  | TS-14 | Cable | TS-PLC-02 |  |
| Inverter On | 11 |  | Black | A1 | NO | Black | 6 | R/BL | 6 | Red | 13-1 | Chan 13 |
| 12 VDC | 14 |  | Red | A2 | C | Red | 7 | G/BL | 7 | Black | 13-2 | 24 VDC |
| GND | 7 | to 13 |  |  | NC |  |  |  |  |  |  |  |
| Emitter | 13 | to 7 |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| HMS UPS |  |  |  |  |  |  |  |  |
| DB 25 | Pin |  | Cable | Relay | Contacts | Cable | TS-PLC-02 |  |
| Inverter On | 11 |  | Black | A1 | NO | Black | 11-1 | Chan 11 |
| 12 VDC | 14 |  | Red | A2 | C | Red | 11-2 | 24 VDC |
| GND | 7 | to 13 |  |  | NC |  |  |  |
| Emitter | 13 | to 7 |  |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 2nd Floor UPS |  |  |  |  |  |
| Terminal | Cable | Rotation PLC Slot 3 Ch 13 | Cable for Slot 3 | HMS Rotation Rack |  |
| 11 | Black |  | Pair 11 white | TS-PLC-02-16-2 | 24 VDC |
| 27 | Red | 27 |  |  |  |