DS200TCDA – Digital IO Board

The Digital IO Board (TCDA), located in the digital I/O cores <Q11>, <Q51> and <Q21> if present. TCDA processes digital contact input signals from the DTBA and DTBB terminal boards and contact output (relay/solenoid) signals from the two TCRA boards. The signals are transmitted over the IONET to the TCQC board in <R1>, <R2> if <Q21> is installed and the CTBA terminal board in <R5>.

TCDA Connectors

JP – Distributes power from the TCPS board in the <R1>, <R2> and <R5> cores to the <Q11>, <Q21> and <Q51> cores respectively.

JQ – Connects to the JQR socket on the DTBA board. Carries the contact input signals from the DTBA board to the TCDA board.

JR – Connects to the JRR socket on the DTBB board. Carries the contact input signals from the DTBB board to the TCDA board.

JO1 – Writes the contact output (relay/solenoid) signals to the TCRA board in location four. Not used in <Q11>, since the relays in location 4 are controlled directly by TCQE in <R1>.

JO2 – Writes the contact output (relay/solenoid) signals to the TCRA board in location five.

JX1 – Shielded twisted pair for the IONET signals. The TCDA board in the <Q11> core writes the signals to the JX2 connection on the TCEA board in location five of the <P1> core. The TCDA board in the <Q51> core writes the signals to the JX connection on the CTBA terminal board in the <R5> core.

JX2 – Used for the same function as JX1. Either JX1 or JX2 can be used.

The hardware document in Appendix B and the signal flow diagrams in Appendix D contain more information.

TCDA Configuration

Hardware. There are eight hardware jumpers on the TCDA board. J1 and J8 are for factory test. J2 and J3 are for IONET termination resistors. J4, J5, and J6 are used to set up the IONET ID for the board. J7 is the stall timer enable. Refer to Appendix A and the hardware jumper screen on the operator interface for information on the hardware jumper settings for this board.

Software. I/O configuration constants for the contact input inversions are entered in the I/O Configuration Editor located on the HMI as described below.

TCDA Contact Input Circuits

The TCDA board carries contact inputs from the DTBA and DTBB terminal boards via the JR and JQ connectors. The circuitry in the TCDA board conditions the signals, time tags any change of state, and carries the signals to the IONET via the JX1 (JX2) connector. The contact signal inversions are done through software using I/O configuration constants.

TCDA Contact Output (Relay/Solenoid) Circuits

The contact output signals are carried to the TCRA boards via the JO1 and JO2 connectors.

DS200TCEB – Protective Termination Expander Board

The Protective Termination Expander Board (TCEB), located in the <P1> core, scales the PT and CT signals used by the TCCB board in the <R5> core. These signals are used for the generator and bus voltages and the line current and are landed on the PTBA terminal board. Signals for emergency overspeed and flame detect come from the PTBA terminal board and are passed through the TCEB board to the TCEA boards for processing. The 335 V dc needed for the flame detector devices passes across this board from the TCEA boards, is conditioned, sent to the PTBA terminal board and out to the sensors. The alarm horn for the Mark V LM is also located on the TCEB board.

TCEB Connectors

JKX/Y/Z – Carries the emergency overspeed magnetic pick up signals and flame detection signals to the TCEA boards in locations <X>, <Y>, and <Z> respectively.

JMP – Carries the PT and CT signals to the TCCB board in the <R5> core.

JU – Carries the magnetic pick up and flame detect signals from the PTBA terminal board.

JV – Carries the PT and CT signals from the PTBA terminal board.

JVA – Carries the 335 V dc to the PTBA terminal board for the UV flame detector devices.

JWX/Y/Z – Carries the 335 V dc from the TCEA board and conditions the signal prior to the TCEB board writing the 335 V dc to the PTBA terminal board via the JVA connector.

JPU – Typically not used.

JPV – Typically not used.

JPW – Typically not used.

The hardware document in Appendix B and the signal flow diagrams in Appendix D contain more information.

TCEB Configuration

Hardware. There are no hardware jumpers on the TCEB board. The alarm horn jumper is located on the PTBA terminal board.

Software. There is no software configuration for the TCEB board.

TCEB PT and CT Circuit

The PT and CT signals are read via t JV connector from the PTBA terminal board. These signals are stepped down and written to the TCCB board in the <R5> core via the JMP connector where they are used for imbedded functions. Any configuration associated with these signals is done in the <R5> core.

TCEB Flame Detection Circuit

The flame detection signals are read via the JU connector from the PTBA board and passed through and written to the TCEA boards via JKX/Y/Z connectors. Some conditioning is done on the 335 V dc signals passed through the TCEB board prior to being written to the PTBA terminal board. The signals are read on the JWX, JWY, and JWZ connectors, and written to the PTBA board via the JVA connector.