ICS Triplex T8431CX

01 / Record the physical input chain

1 Identify the current source

Record the transmitter, supply, field termination, module slot and channel. Trace the return conductor and external barriers so the complete current loop is represented.

2 Capture the installed variant

Retain the T8431CX label, hardware and firmware revisions and any partner module arrangement. Confirm the authorized maintenance state before disturbing the input path.

Field record	Source, supply, FTA and return
Module record	CX marking, revision and slot
Partner record	Companion Slot or SmartSlot configuration

Loop burden

A 250 Ω termination resistor drops 5 V at 20 mA. Include transmitter operating voltage, cable resistance and other series elements when assessing supply compliance.

02 / Check compliance and common references

1 Calculate available transmitter voltage

Reserve the termination drop and cable losses before comparing the remaining voltage with transmitter operating needs. A correct supply reading at the cabinet does not prove adequate voltage at the transmitter.

2 Inspect the termination arrangement

Confirm the approved shunt and field return. Consider paired-module loading and any additional series devices. Keep galvanic-isolation requirements separate from the module’s internal TMR architecture.

Shunt calculation	250 Ω × 20 mA = 5 V
Source allowance	Transmitter headroom plus loop losses
Reference check	No assumed channel-to-channel isolation

Live zero is not no current

An analog count of zero corresponds to 4 mA in the standard conversion. Do not interpret it as an open loop or zero physical current.

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03 / Verify conversion at three points

1 Inject controlled loop currents

In the approved test state, compare 4, 12 and 20 mA with the raw analog count and final engineering value. Allow the complete measurement path to settle before recording results.

2 Check the quality variables

Read state, line fault and discrepancy at the same time as the analog data. Do not treat a fault sentinel as an ordinary process value or use a plausible number to override an invalid state.

Low point	4 mA → 1 V → 0 counts
Midpoint	12 mA → 3 V → 2048 counts
High point	20 mA → 5 V → 4096 counts

Hysteresis history

The same input near a threshold may produce different states depending on whether it is rising or falling. Preserve both thresholds when comparing test results.

04 / Exercise thresholds and fault interpretation

1 Test increasing and decreasing inputs

Approach each approved threshold from both directions and compare the expected hysteresis behavior. Verify state changes and any configured event logging independently of analog scaling.

2 Observe approved diagnostic cases

Use only the site-authorized circuit test to check line-fault handling. Compare the alarm response with the configured application and verify recovery after restoring the physical circuit.

Threshold record	Separate rising and falling values
Fault evidence	Analog, state, line fault and discrepancy
Event review	1 ms resolution is not ±1 ms accuracy

Diagnostic mapping

The final discrepancy word contains channels 33–40, not sixteen additional field channels. Mask and label its bits according to the actual channel map.

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05 / Release the verified input path

1 Complete the changeover review

Where a replacement is fitted, follow the approved active/standby procedure and confirm Healthy, Active, Standby and Educated indications. Review any unexpected LED behavior against its configuration.

2 Retain the acceptance results

Record test currents, raw counts, engineering values, threshold transitions and diagnostic recovery. Remove test sources and temporary application forces, then confirm the live transmitter and process indication agree.

Final state	Valid measurements and intended channel mapping
Configuration	Approved thresholds and diagnostic response
Service record	Measured acceptance evidence retained

Other automation product references

Foxboro FBM232 P0926GW

Honeywell 10302/2/1

Honeywell FC-PSU-UNI2450U V1.0

Separate references; no replacement or compatibility is implied.