ICS Triplex TC-205-02-4M5

01 Separate the three circuit paths

Three branches perform different jobs; a single connector count cannot describe the complete output circuit.

OUTPUT SIGNALS

Double-width chassis hood: two 96-way type C connectors → internal FTA: one 96-way type R connector.

FIELD-POWER RETURN

5-way BLZF 3.5 connector → T8290 field-power return path.

FIELD-POWER FEED

6-way AMP plug → the selected T8290 or T8297 field-power feed arrangement.

Channel function	40 output channels
Assembly length	4.5 m
Insulation option	-02: low smoke, zero halogen
Flame-retardant class	IEC 60332-3 Category A

Contacts and channels are different counts

The 96-way connector provides contacts for the specified cable implementation; it does not turn the assembly into a 96-channel interface. Preserve the output-channel assignment and all auxiliary circuits from the approved wiring plan.

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02 Coordinate voltage and load

This -02 variant	60 V maximum; 2 A maximum per channel
Family-wide examples	Do not transfer a 120 V module application to -02
Higher-voltage -03 option	A separate cable rating and insulation selection
System release	Module, FTA, cable, field supply and load must all agree

A broad family description is not a variant approval

TC-205 literature describes several output types. The separate rating table resolves the -02 boundary. Even when the connectors fit, a 120 V circuit exceeds this cable option’s 60 V rating. Select the complete circuit against the actual cable suffix.

Cable reach and output performance

The manufacturer recommends a maximum I/O cable length of 15 m, but identifies voltage drop, signal offset, crosstalk and noise as factors when length increases. The 4.5 m assembly still needs a circuit-level review; being shorter than the recommendation does not establish performance for every load.

Voltage-drop calculation boundary

For a load current I and the complete feed-and-return resistance R, the cable contribution is I × R. Establish resistance from the actual installed circuit or applicable conductor information. No exact resistance or permissible load voltage can be inferred from the catalogue length alone.

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03 Preserve measurement and earth functions

Field 0 V	Reference used for output-voltage measurement
T8290 reference common	Field supply and FTA returns coordinated through TB1 pins 1 and 2
Connector hoods	Separate sheathed braids to safety earth
Multicore cable screen	Remote drain terminated to screen earth

Output measurement depends on the reference

The chassis connection must retain its relationship to field 0 V. A load can respond while a disturbed reference makes the module’s voltage indication misleading. Compare the actual output voltage and its intended common before treating the disagreement as an output-module defect.

FTA group isolation needs deliberate commoning

The FTA power groups are isolated from one another. Their intended field 0 V relationship is established through the field-power arrangement. A replacement must reproduce that arrangement, rather than relying on an assumed common inside the termination assembly.

Earthing functions do not substitute for one another

Hood bonding, screen termination and measurement return have separate purposes. An earth connection that passes a mechanical inspection is not evidence that the signal return is correct. Review endpoints and continuity against the installed circuit design.

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04 Match the installed topology

Companion Slot arrangement	Adjacent active and standby module positions
Chassis end	Double-width hood serving the paired positions
FTA end	Single-width hood with a type R connector
Branch covering	Nylon Rilgain sheathing with protected ends
Application environment	Internal cabinet FTA connection

Adjacent placement is part of the architecture

Companion Slot cabling provides the adjacent module arrangement. A remotely assigned spare module is a different SmartSlot architecture and cannot be inferred from the presence of two chassis connectors. Check slot placement and the retained system configuration together.

Keep the connection mechanically neutral

Route and support the assembly so the installed reach does not pull on the connector hoods or auxiliary plugs. The manufacturer instructs installers not to pull cables by their connectors. Protect the branch sheathing and its ends during routing and subsequent access.

Material choice does not change the installation boundary

Low-smoke, zero-halogen insulation addresses cable material behavior. It does not by itself establish outdoor suitability, impact protection, ingress protection or a complete hazardous-location installation. Apply the approved enclosure and system instructions.

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05 Interpret output-circuit symptoms

Several channels disagree	Trace shared feed, field 0 V and distribution connections before replacing the output module
One output differs	Compare channel assignment, FTA terminal and the actual load circuit
Voltage indication is implausible	Check measurement reference against actual field 0 V
Noise changes with cabinet work	Inspect screen termination, hood bonding and routing
Correct plug; wrong behavior	Verify module type, cable option and retained channel mapping

Follow the circuit, not only the connector

Use a controlled end-to-end test to distinguish the commanded output, module indication, FTA condition and actual field response. A result at one point does not prove the complete path. Resolve discrepancies under the approved maintenance procedure before restoring the process.

Technical basis

Rockwell Automation Trusted I/O Companion Slot Cables, ICSTT-RM311R-EN-P, Issue 21; Trusted 8000 Series Product Information, ICSTT-PC002G-EN-P. TC-205 construction and connection information applies to this internal FTA cable. The -02 electrical limit is 60 V and 2 A maximum per channel; broader TC-205 family descriptions do not authorize a 120 V application for this variant.

Related control-system product references

Emerson KJ2005X1-BK1 12P4688X052 SE3007

Honeywell 10302/2/1

Honeywell TC-IAH161

Separate products; no substitution or compatibility is implied.