Triconex 3604E

Installation, Diagnostic and Acceptance Guide

This 24 VDC output module drives sixteen individually isolated field circuits through a triple-modular-redundant switching architecture.

01 Selected configuration and engineering basis

Output architecture	TMR
Nominal field voltage	24 V DC
Field voltage range	22...45 V DC
Logic power	<10 W
Module indicators	PASS, FAULT, ACTIVE
Field alarm	LOAD/FUSE

Signal and system relationship

01 Safety logic	02 3604E TMR switching	03 Field termination	04 Actuator / process
Configured output command and logical position	Voted output and voltage-loopback diagnostics	Per-point supply, 2.5 A fuse and cable drop	Pickup, holding, release and diagnostic response

Electrical and system interpretation

Field circuit role	Sixteen individually isolated, non-commoned TMR DC output circuits.
Field-power condition	Power is required at every point, including unused non-commoned points, for the documented diagnostic arrangement.
Per-point actuation	2 A maximum continuous point current; 10 A surge for 10 ms. Compare the real actuator inrush as well as its holding current.
Off-state assessment	Maximum 2 mA leakage can matter for a sensitive field device; prove its released state in the installed circuit.
Safety-function timing	OVD pulse is 500 microseconds typical, 2 ms maximum; retain the validated actuator response.
Alarm interpretation	PASS, FAULT and ACTIVE indicate module state; LOAD/FUSE relates to the field circuit. A channel fault does not necessarily mean the voted output has ceased.
Hardware identification	Dark-blue identity code for 3604E; the nearby 3607E is a different 48 V DC output selection.
Point indication	One On/Off status indication per output point.
Diagnostic coverage timing	The stated output-toggle coverage condition is 100 ms plus one scan; evaluate it in the configured safety application.

Supplementary data retain the manufacturer test conditions and the documented Tricon v9-v11 context. Apply the complete 3604E selection; calculated examples do not replace site acceptance criteria.

02 Installation readiness and controlled work

Check / location	Field action	Acceptance implication
Field power	Identify and isolate every applicable field supply, including supplies on unused non-commoned points.	Each non-commoned point has the field-power arrangement required by its termination. Include unused points in the supply review; a missing supply can produce a field alarm.
Fuse coordination	Use the specified fast-acting field-termination fuse and investigate the reason for a blown fuse before restoration.	The termination uses one 2.5 A fast-acting fuse per output. A replacement fuse is accepted only after the connected circuit and the cause of the original operation have been assessed.
Load voltage	Calculate switch and cable drop at the real load current before accepting the circuit supply margin.	The measured actuator voltage must meet its own pickup and holding requirements after the applicable switch and termination-cable drop is included.
Diagnostic pulses	Prove that the actuator remains stable during the configured output diagnostics in the approved test state.	The real load remains stable during the configured OVD test. Keep the pulse-sensitive-load assessment with the safety-function record rather than relying on a nominal DC current alone.
Inductive energy	Check the documented suppression and connected load arrangement before replacing a coil or output termination.	The installed suppression and load polarity agree with the approved field circuit. Do not replace the validated inductive-load arrangement solely because a new coil has the same steady current.
Safety validation	Retain the safety-function proof record and approved maintenance state throughout output-module work.	The permitted maintenance state, logical point assignment and affected safety function are identified. Release follows functional proof, not only a cleared front-panel indication.

Interface, handling and environmental limits

Termination fuse	One 2.5 A fast-acting fuse per output in the field termination.
At backplane, 2 A	Specified maximum on-state drop <3 V DC.
10-foot termination cable, 2 A	Specified maximum on-state drop <5 V DC.
99-foot termination cable, 2 A	Specified maximum on-state drop <11 V DC.
Isolation basis	1500 V DC minimum point isolation, with the documented termination and field arrangement.
Diagnostic setting	Changing OVD affects latent-fault detection and requires the approved safety-application assessment.

03 Commissioning, diagnostics and release

Worked engineering interpretation

Example: 24 V supply, 2 A, backplane limit	24 - 3 = 21 V before additional field-wiring loss.
Example: 24 V supply, 2 A, 10-foot condition	24 - 5 = 19 V using the stated maximum-drop condition.
Example: 24 V supply, 2 A, 99-foot condition	24 - 11 = 13 V using the stated maximum-drop condition.

Illustrative voltage budgets use the specified maximum switch/termination drop at 2 A. Actual field supply, other wiring loss and actuator pickup/holding requirements determine acceptance.

Fault-isolation decisions for the offered unit

Field alarm after restoration	Trace the LOAD/FUSE alarm to the actual output point. Check field power on all non-commoned circuits, the correct fuse and the connected load before interpreting it as a failed voted output.
Actuator has insufficient pickup voltage	Use the actual field voltage and operating current together with the backplane and external-cable voltage-drop condition. Verify the voltage available at the actuator against its pickup requirement.
Diagnostic pulse response	In the authorized test state, establish whether the field device responds to the output-voting diagnostic exercise. Record the diagnostic setting and any application-approved change.
Channel fault with continuing operation	Compare the module diagnostic history and individual channel status with the actual voted output. Retain proof of the affected safety function and the approved maintenance release.

As-left evidence and release conditions

Circuit identity	Record the logical output and its termination point.
Load proof	Record supply, operating current and measured load voltage.
Diagnostic proof	Record channel status and actuator response during permitted testing.
Safety release	Attach the authorized safety-function validation and maintenance release.

Technical basis

Tricon v9-v11 Systems Planning and Installation Guide, 9700077-019, June 2014

Related product references

Triconex 4329G

Triconex 4000103-520

Engineering contact



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