ABB RMIO-11C

01 Hardware, software and installed identity

Hardware evidence	Board marking, coating and kit label
Software evidence	Application program, loading compatibility and parameter backup
System evidence	Drive type, option modules and terminal destination
Acceptance evidence	Restored configuration plus controlled functional results

Separate the three identities

RMIO-11C identifies the coated control board. The associated spare-part kit 3AUA0000035408 supplies hardware without application software. The drive type code and the application-loading package are separate identities that determine whether the board can reproduce the installed function.

Read the voltage class correctly

The 230–500 V description is the drive voltage class. RMIO control power is 24 V DC; the mains-class number must never be treated as a voltage to apply to the analog, digital or control-supply terminals.

Retain program-dependent behavior

A wiring diagram can show factory-macro start, direction and feedback assignments while the working machine uses another program or parameter mapping. Record actual assignments and test their function, including the expected response to a missing reference or interlock.

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02 Analog circuits: burden, common mode and error

Inputs	One differential voltage; two differential current
Permitted common mode	±15 V DC between channels
CM rejection	>60 dB at 50 Hz
Current-output loading	Two 0/4–20 mA outputs, load below 700 Ω
Output inaccuracy	±1% FSR at 25 °C; ±200 ppm/°C maximum temperature coefficient

Evaluate source loading

The current-input resistance is 100 Ω, giving a calculated 2 V drop at 20 mA. A source must have enough compliance for that input plus wiring and other series loads. The voltage input has impedance above 200 kΩ; assess the source resistance when a high-impedance reference is used.

Group isolation does not isolate every channel

The analog inputs are isolated as one group. Their allowable common-mode relationship is still limited, and the common-mode rejection rating is frequency-dependent. Check reference potentials at the installed wiring rather than assuming differential input labels remove all grounding concerns.

Build a loop uncertainty budget

The analog-input inaccuracy is ±0.5% of full-scale range at 25 °C, with a maximum temperature coefficient of ±100 ppm/°C. This is not a total loop error statement. Include source accuracy, temperature and wiring effects, and compare more than one signal point.

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03 Digital states, commons and interlock behavior

Input arrangement	Six programmable inputs plus DIIL start interlock
Field voltage	24 V DC, −15% to +20%
Input current	10 mA for DI1–DI5; 5 mA for DI6
Thermistor interpretation	Below 1.5 kΩ normal; above 4 kΩ or open high temperature, with the specified circuit
Interlock scope	Verify the configured function; do not infer a safety function from its name

The undefined threshold region matters

Digital low is specified below 8 V DC and high above 12 V DC. Between those boundaries, the published thresholds do not establish a guaranteed state. Investigate loaded field voltage, reference/common continuity and supply tolerances instead of treating any nonzero voltage as a valid command.

Preserve the selected isolation grouping

Jumper J1 can keep all digital inputs on a common ground or separate DI1–DI4 from DI5/DI6/DIIL. In the separated arrangement, the stated isolation is 50 V. Restore the approved jumper setting and external references; an accidental bridge changes the intended circuit boundary.

Distinguish fast filtering from machine response

The digital-input filter time constant is 1 ms. Program execution, signal assignment and drive behavior add their own response. Test the configured command and interlock path end to end; do not equate this filter value with an emergency-stop or total machine stopping time.

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04 Supply budgets and relay load selection

Reference supply	±10 V; 10 mA maximum; 1–10 kΩ potentiometer
Auxiliary supply	24 V ±10%, short-circuit protected; shared load
Relay isolation test	4 kV AC for one minute
Optical communication	DDCS requires the appropriate optional RDCO adapter

Separate input consumption from auxiliary output

The board control input is 24 V DC ±10%, with typical 250 mA consumption without options and maximum 1,200 mA with options. The auxiliary output has a separate shared 250 mA allowance. Do not subtract one figure from another without following the actual supply and option topology.

Compare relay limits at the real voltage

The three programmable relays have 2 A rms maximum continuous current. Switching capacity is 8 A at 24 V DC or 250 V AC, but 0.4 A at 120 V DC. Minimum current is 5 mA rms at 24 V DC. Select the circuit using the relevant voltage and duty, not the largest printed number.

Powered control is not a ready power stage

External control power can preserve communication or support faster control start. It does not discharge or isolate the drive power circuit, and it does not prove that the inverter is available. Keep power-stage status, control communications and the maintenance isolation state distinct.

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05 Fault separation and acceptance decisions

Value correct locally, wrong in field	Review source compliance, references and cable path
Communication alive, drive unavailable	Review control supply separately from power-stage status
Terminal voltage valid, command ineffective	Review application selection and interlock assignment
Board identity correct, application missing	Verify software package and restore the approved configuration

Start with the changed boundary

If the fault appeared after board replacement, compare the application image, parameters, option positions and connector destinations with the retained configuration. Do not erase useful diagnostic evidence by repeatedly changing both hardware and software at the same time.

Choose tests that distinguish causes

A local calibrator separates the analog acquisition path from the field transmitter. A loaded digital voltage measurement separates command quality from program mapping. A controlled output-state test separates relay assignment from external contact wiring; all tests must respect the machine maintenance state.

Technical basis

ABB ACS800-31/U31 Hardware Manual, 3AFE68599954 Rev C, standard RMIO control interfaces; ABB RMIO-11C spare-part kit 3AUA0000035408 identity and software supply boundary. Calculated burden examples are engineering checks, not additional product ratings.

Related ABB product references

ABB NDNA-02 NDNA-02-KIT

ABB NDCU-11CK 64053868B

ABB GINT-6611C 68577349

Separate references; no substitution or compatibility is implied.