Emerson IC694MDL645

01 DC Discrete Input Module / system role

Product function and operating context

The selected common polarity establishes how connected switches or sensors drive the input circuits; individual channels are not separate isolated groups.

On an RX3i Universal Backplane, field use of the module’s 24 V connection requires the appropriate external isolated source at TB1. Powering the CPU and logic backplane does not by itself establish that source. The selected field-power arrangement also changes the applicable isolation boundary.

Integration checkpoints

- Identify the common reference
- Verify field excitation
- Test sensor leakage
- Restore the common-group record

Polarity arrangement	one common group for the selected sensor logic
Power boundary	distinguish logic supply from field excitation
Signal acceptance	compare leakage and pulse duration with input behavior

The input state must be evaluated against both sensor leakage and module switching thresholds. Status LEDs help locate a channel, but program timing still includes input response and the controller scan. Short events need a suitable input technology rather than an assumption that all discrete signals will be captured.

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02 Technical operating envelope

Inputs	16 in one common group
Logic	Positive or negative
Input voltage	24 V DC nominal; 0–30 V DC
ON voltage	11.5–30 V DC
OFF voltage	0–5 V DC

Typical input current	7 mA at 24 V DC
Typical response	7 ms ON; 7 ms OFF
Backplane current	80 mA at 5 V, all inputs ON
Input current limits	3.2 mA minimum ON; 1.1 mA maximum OFF

Values retain their individual conditions and interface boundaries. Technical values apply to IC694MDL645 with the stated operating conditions. Check supplied revision and the configured installation.

How does using the auxiliary 24 V field output affect IC694MDL645 isolation?

The applicable continuous isolation rating is reduced for that arrangement. Evaluate the complete circuit’s isolation requirement instead of applying the higher field-to-backplane figure unconditionally.

Is IC694MDL645 suitable for capturing every brief contact pulse?

Its typical input response and the CPU scan both contribute to detection. Use a suitable fast input or counter when the required pulse is shorter than the reliable acquisition interval.

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03 System integration and applications

DC switch acquisition

Connect compatible contacts or sensors using the common polarity selected for the group.

Existing RX3i discrete circuits

Retain input-address allocation and field supply when replacing an installed standard DC input module.

Negative-logic field wiring

Use the compatible common arrangement rather than assuming every sensor sources a positive voltage.

Sequential machine status

The input suits state acquisition when its response and controller scan meet the sequence timing.

System and supply context

The IC694MDL645 belongs to the PACSystems RX3i arrangement with its specified field interfaces.

Application boundary

Applications must satisfy the module or transducer boundary and the actual controller, receiver or target conditions.

Why can a two-wire sensor prevent an IC694MDL645 input from turning off?

Residual sensor current or voltage can exceed the module’s OFF-state limits. Evaluate the complete sensor circuit rather than checking nominal operating voltage alone.

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04 Engineering selection decisions

Can IC694MDL645 mix unrelated sourcing and sinking circuits within its one common group?

The common connection establishes the group reference. Each connected circuit must be compatible with that reference; do not treat the sixteen points as separately isolated polarity groups.

What should be checked when IC694MDL645 logic is powered but field sensors have no excitation?

Inspect the field source and, on an RX3i Universal Backplane, the external isolated supply connection at TB1. Logic power and the required field supply are separate paths.

Why should IC694MDL645 be tested at both ON and OFF thresholds?

An input that turns on at nominal voltage may remain on under leakage or fail near a reduced supply. Testing both conditions checks the interface margin.

How can an IC694MDL645 channel LED disagree with a control action?

The LED reflects the electrical input, while the program may add scan delay, interlocks or inversion. Trace the raw bit and logic path before changing the field wiring.

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05 Configuration boundary and references

Lifecycle and support

The current production and manufacturer-support stage of IC694MDL645 is unconfirmed. Replacement planning must preserve the supported system and the supplied hardware execution.

Replacement assessment

Record whether the installed field circuit uses positive or negative logic. Label the shared common and each input before removing terminals.

Document roles

The separate technical reference organizes manufacturer specifications by function and interface. This product brief explains selection and system context. The independent installation guide covers preparation, connection, tests and handover. All three are authored by Apter Power using the applicable manufacturer data.

Technical basis

Emerson PACSystems RX3i System Manual, GFK-2314AG.

Related product navigation

- General Electric IC695CPU310
- General Electric IC693MDL742

These are related references, not confirmed substitutes or an automatically approved assembly.

Product enquiries