ABB AO820-3BSE008546R1

01 Analog Output Module / system role

Product function

ABB AO820-3BSE008546R1 allows separate actuator loops to use different analog output formats while keeping their channel circuits galvanically isolated.

Selected configuration

Each channel can produce −20 to +20 mA, 0–20 mA or 4–20 mA, or use −10 to +10 V, 0–10 V or 2–10 V voltage operation. Current and voltage outputs use separate terminals even though the selection is configured in software.

Functional path

Controller command	ModuleBus transfer	Isolated D/A channels	Current or voltage actuator

Channels	Four individually isolated outputs
Modes	Bipolar current or voltage per channel
Diagnostics	Readback, field-power supervision and OSP

The converter resolution is 12 bits including sign. Current output supports a load up to 550 ohms; voltage output requires at least 5 kilohms. An update cycle no greater than 1.5 ms and a rise time below 0.7 ms describe module behavior rather than a complete control-loop response.

AO820-3BSE008546R1

02 Technical operating envelope

Output channels	4, individually isolated
Current ranges	−20…+20 mA; 0–20 mA; 4–20 mA
Voltage ranges	−10…+10 V; 0–10 V; 2–10 V
Resolution	12 bits including sign
Current output load	≤550 Ω
Voltage output load	≥5 kΩ
Update cycle	≤1.5 ms

Rise time	<0.7 ms
Voltage output error	0.1% maximum
Current output error	0.1% typical at 250 Ω; 0.15% maximum
Temperature drift	90 ppm/°C maximum
Channel insulation	50 V rated; 500 V AC dielectric test
Power dissipation	6 W typical
MTU keying	BC

AO820 electrical ratings apply to article 3BSE008546R1. Load, ambient temperature and termination-unit conditions must be observed.

Operating interpretation

The 500 V AC dielectric-test value is not a continuous operating voltage. The rated insulation voltage is 50 V.

Configuration boundary

Preserve the MTU, terminal selection, receiver load, output scaling and OSP state when replacing an AO820 channel.

What happens to AO820-3BSE008546R1 outputs when OSP is active?

Output Set as Predetermined drives the affected output behavior to the configured predetermined state on error detection; the safe value must be engineered for the process.

AO820-3BSE008546R1

03 System integration and applications

Mixed analog actuation

Use independently configured channels for voltage and current receivers in one S800 station.

Bipolar setpoint transmission

Provide signed voltage or current commands where the receiving actuator requires bidirectional scaling.

Isolated process loops

Maintain separate channel circuits within the specified isolation boundary.

Supervised output states

Combine field-power and loop diagnostics with a configured predetermined error response.

System and supply context

ABB AO820-3BSE008546R1 operates within the following defined system context. Match AO820, article 3BSE008546R1, MTU keying and channel modes.

Application boundary

The applications below describe its technical role. Select associated hardware and configuration for the actual installation.

Why is a 1 kilohm voltage-input load unsuitable for AO820-3BSE008546R1?

The voltage output requires a load of at least 5 kilohms. A lower resistance exceeds the specified voltage-output loading condition.

AO820-3BSE008546R1

04 Engineering selection decisions

Can AO820-3BSE008546R1 mix current and voltage outputs across its four channels?

Yes. Each channel has its own current/voltage configuration, but the field wiring must use the corresponding current or voltage terminals.

Will AO820-3BSE008546R1 detect an open current loop at a zero-current command?

Open-circuit supervision applies when current exceeds 1 mA. A zero-current command does not meet that detection condition.

Does AO820-3BSE008546R1 support HART communication?

No. The AO820 channel functions are analog current and voltage output without HART communication.

How does AO820-3BSE008546R1 report loss of process voltage?

Process-voltage supervision produces an error indication that can be read through the ModuleBus. Check field power as well as the output command when diagnosing a failed loop.

Assess loop-open detection	For a current channel, perform an approved open-loop test with a command above 1 mA. Restore the connection and verify normal diagnostics before returning the loop to automatic control.
Record the four-channel results	Retain command scaling, signal mode, terminal assignment, load, measured output and OSP behavior for each channel. Resolve a channel error before releasing the associated actuator.

AO820-3BSE008546R1

05 Configuration boundary and references

Lifecycle and support

The current manufacturing and factory-support phase of AO820-3BSE008546R1 is unconfirmed. Apter Power availability is assessed separately from manufacturer lifecycle status.

Replacement assessment

Preserve the MTU, terminal selection, receiver load, output scaling and OSP state when replacing an AO820 channel.

Document roles

Use the original manufacturer excerpt for its preserved technical tables and drawings. This product brief explains selection and system context. The separate installation guide covers preparation, connection, tests and handover; use it together with the applicable manufacturer instructions.

Technical basis

ABB AO820 Compact Product Suite data sheet.

Related product navigation

- ABB PM864AK01-3BSE018161R1
- ABB AO801 3BSE020514R1

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

Product enquiries