B&R X20AI2222

01 Analog Input Module / system role

Product function

B&R X20AI2222 supports a small pair of voltage measurements where adjustable signal conditioning is more useful than adding unused analog channels.

Selected configuration

Two differential inputs are converted with 13-bit resolution including sign. Conversion takes 300 µs for both channels, and the process value uses a signed INT representation. One converter increment corresponds to 2.441 mV and a data-word increment of eight.

Functional path

Two voltage signals	Differential ADC	Filter and signed scaling	X20 controller values

Channels	Two bipolar differential measurements
Data	Signed INT with 2.441 mV increments
Timing	300 µs conversion before filter/network effects

The module is designed for a six-pin X20 terminal block, with a twelve-pin block also permitted when needed. It consumes 0.8 W from the internal I/O supply and 0.01 W from the bus; unused inputs should be bridged at the terminal as recommended for lower dissipation.

X20AI2222

02 Technical operating envelope

Inputs	2 differential voltage channels
Input range	±10 V
ADC resolution	13 bits including sign
Conversion time	300 µs for both inputs
Value format	Signed INT
Converter increment	2.441 mV; data-word step 8

Input impedance	20 MΩ
Digital-filter sample interval	1 ms when enabled
Interchannel sample offset	200 µs when filtering
Internal I/O consumption	0.8 W
Bus consumption	0.01 W
Terminal options	X20TB06 or X20TB12

X20AI2222 is the two-input ±10 V module. The 300 µs conversion time does not include every filter and network-cycle contribution.

Operating interpretation

A data-word step of eight represents one converter increment. Raw-word arithmetic must account for that representation when comparing resolution with voltage.

Configuration boundary

Preserve terminal choice, channel reference wiring, signed scaling and filtered-sampling assumptions when replacing X20AI2222.

What sampling interval is used by the enabled digital filter of X20AI2222?

The channels are sampled at millisecond intervals. This is separate from the 300 µs conversion time for both inputs.

X20AI2222

03 System integration and applications

Two-signal voltage measurement

Acquire a pair of bipolar process signals without a larger analog module.

Compact terminal installations

Use the designed six-pin terminal arrangement or the permitted twelve-pin alternative.

Filtered process tracking

Apply digital filtering where the additional response delay suits the measured variable.

Raw-value verification

Compare signed process words with calibrated voltage inputs using the actual converter increment.

System and supply context

B&R X20AI2222 operates within the following defined system context. Match X20AI2222 and the installed terminal and filtering arrangement.

Application boundary

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

Which terminal blocks can be used with X20AI2222?

The module is designed for X20TB06, while X20TB12 can also be used when required by the installation arrangement.

X20AI2222

04 Engineering selection decisions

What is the smallest converter increment of X20AI2222?

One ADC increment is 2.441 mV and appears as an increment of eight in the signed process-data word.

Are filtered measurements from the two channels of X20AI2222 simultaneous?

No. With filtering enabled, the channel sampling has a 200 µs offset and occurs asynchronously to the network cycle.

How should an unused input on X20AI2222 be handled?

B&R recommends bridging unused inputs at the terminal to reduce power dissipation, following the appropriate terminal wiring arrangement.

What happens if the cycle time for X20AI2222 is shorter than the filter's minimum?

The configurable filter is disabled for cycle times that do not exceed 500 µs. Check the actual cycle before expecting filtered behavior.

Check the minimum filter cycle	Confirm that the cycle time exceeds 500 µs if the digital filter is required. Resolve a disabled filter through configuration rather than replacing a functioning module.
Retain the two-input setup	Save terminal type, used and bridged channels, signed scaling, filter settings and response measurements. These details preserve the intended behavior after future replacement.

X20AI2222

05 Configuration boundary and references

Lifecycle and support

The current manufacturing and factory-support phase of X20AI2222 is unconfirmed. Apter Power availability is assessed separately from manufacturer lifecycle status.

Replacement assessment

Preserve terminal choice, channel reference wiring, signed scaling and filtered-sampling assumptions when replacing X20AI2222.

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

B&R X20AI2222 Data Sheet, V1.30.

Related product navigation

- B&R X20CP1483
- B&R X20CP1686X

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

Product enquiries