B&R X20SM1446-1

01 Function and selected configuration

Product function

B&R X20SM1446-1 combines local motion generation with motor-current control, homing and encoder feedback for a single positioning axis.

Selected configuration

The full bridge drives a two-phase bipolar motor. Acceleration, running and holding current can be configured independently, allowing the electrical demand to follow the motion state instead of applying the maximum current continuously.

Functional path

Motion command	Local trajectory	Full bridge	Motor / encoder

Motor channel	One two-phase bipolar full bridge
Power stage	24–48 V DC ±25%; 5 A nominal
Positioning	Up to 256 microsteps per full step

Four 24 V inputs support reference switches, travel limits or an asymmetrical ABR encoder. Encoder evaluation and internally calculated position provide different feedback paths; configure the intended function before assigning the terminals.

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02 Technical operating envelope

Motor channels	1 two-phase bipolar stepper motor
Motor supply	24 to 48 VDC ±25%
Nominal motor current	5 A
Peak motor current	10 A for 1 s
Microstep resolution	Up to 256 microsteps per step
Digital inputs	4 sink inputs at 24 VDC

Encoder function	1 ABR incremental encoder
Encoder input frequency	50 kHz maximum
Line fuse	10 A maximum, slow-blow
Input current limiting	12.5 A maximum
Electrical isolation	Channel isolated from bus
Protection rating	IP20

Nominal motor current, peak duration and supply limits apply together. Feedback selection does not increase the permitted motor current.

Signal interpretation

The 10 A peak rating is limited to one second. Match winding current, motion duty and supply capacity rather than treating it as a continuous rating.

Interface boundary

The 24 V input circuitry is not a 5 V encoder interface. The channel is isolated from the bus but not from its I/O supply.

Can B&R X20SM1446-1 evaluate an encoder?

Yes. Its four 24 V inputs can be configured for one asymmetrical ABR incremental encoder up to 50 kHz.

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03 System integration and applications

Indexed feeding

Local target-position and acceleration settings support repeated feed movements.

Reference search

Limit-switch and stop-controlled homing options establish the machine origin.

Encoder feedback

ABR evaluation checks the movement of a compatible 24 V encoder.

Holding duty

Separate holding-current settings reduce unnecessary motor heating during dwell.

System and supply context

The module occupies an X20 motor-control position; the motor, terminal block and bus module form the surrounding installation.

Application boundary

Suitable motion functions include indexed travel, homing and load-supervised positioning within the configured motor limits.

What peak current is available from B&R X20SM1446-1?

The peak rating is 10 A maximum for one second, while continuous nominal motor current is 5 A.

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04 Engineering selection decisions

Which motor can B&R X20SM1446-1 control?

It controls one two-phase bipolar stepper motor supplied at 24 to 48 VDC ±25% with 5 A nominal current.

How fine is the step resolution of B&R X20SM1446-1?

The module supports up to 256 microsteps per full step, with current automatically matched to the configured values.

What does motor identification do on B&R X20SM1446-1?

It evaluates coil characteristics and returns feedback that can reveal wiring errors or an incorrect motor type.

What proves successful B&R X20SM1446-1 commissioning?

Verify direction, current stages, microstep motion, four inputs, encoder feedback, limits, stall response and safe stopping on the installed mechanism.

Movement boundary	Test travel limits at controlled speed before normal production.
Stall threshold	Establish the threshold with the actual motor, load and acceleration.

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05 Configuration boundary and references

Lifecycle and support

The current production and factory-support status of X20SM1446-1 is unconfirmed.

Replacement assessment

Retain the motor wiring, current stages, homing selection and encoder assignment when replacing the module.

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; it does not replace manufacturer instructions.

Technical basis

B&R X20SM1446-1 Data sheet V1.56.

Related product navigation

- B&R 3CP360.60-1
- B&R X20AT2222

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

Product enquiries