B&R X20SM1446-1

Stepper Motor Module

B&R; X20SM1446-1 is a full-bridge X20 stepper-motor module for one 24 to 48 VDC two-phase bipolar motor at 5 A nominal current. It combines 256-microstep control, four 24 V inputs, encoder evaluation, motor identification and stall detection.

BRAND	B&R;	ORIGIN	Austria
MODEL	B&R; X20SM1446-1	PRODUCT	Stepper Motor Module
FAMILY	X20 System	SOURCE	B&R; version 1.56, 2025-11-27

MANUFACTURER SOURCE RECORD

Data sheet X20SM1446-1
B&R; version 1.56, 2025-11-27

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B&R X20SM1446-1

Product Overview

SYSTEM FUNCTION

B&R; X20SM1446-1 is a full-bridge X20 stepper-motor module for one 24 to 48 VDC two-phase bipolar motor at 5 A nominal current. It combines 256-microstep control, four 24 V inputs, encoder evaluation, motor identification and stall detection.

FUNCTION 1

Controls one two-phase bipolar stepper motor from a full bridge

FUNCTION 2

Generates up to 256 microsteps with separately adjustable current stages

FUNCTION 3

Uses motor identification and stall detection for commissioning feedback

FUNCTION 4

Accepts four limit-switch or ABR encoder inputs at 24 VDC

TECHNICAL NOTE

Install B&R; X20SM1446-1 with X20TB12 and X20BM31 and protect the external motor supply with a maximum 10 A slow-blow line fuse. Record motor coil data, configure boost, nominal and holding current, then prove direction, limits, encoder feedback and stall response at controlled speed.

Technical Data and Acceptance

PARAMETER	VERIFIED VALUE
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
B&R; ID code	0xF3B0

ENGINEERING BOUNDARY

Install B&R; X20SM1446-1 with X20TB12 and X20BM31 and protect the external motor supply with a maximum 10 A slow-blow line fuse. Record motor coil data, configure boost, nominal and holding current, then prove direction, limits, encoder feedback and stall response at controlled speed.

Acceptance Path

1 IDENTITY

B&R; X20SM1446-1 and the controlled axis are recorded.

2 ELECTRICAL

Motor supply, fuse, coil wiring and current settings match the installed motor.

3 FEEDBACK

Inputs, encoder evaluation, motor identification and stall detection respond correctly.

4 MOTION

Direction, travel, positioning and safe stopping pass controlled tests.

Applications and Engineering FAQ

APPLICATION	ENGINEERING CONTEXT
Indexed positioning axis	B&R; X20SM1446-1 drives a single stepper axis with configurable microstep and current profiles.
Machine feed mechanism	Four digital inputs support limit, reference or encoder signals around the commanded motion.
Compact CNC auxiliary axis	Automation Studio and CNC integration coordinate the documented stepper function with machine control.
Energy-aware holding control	Load-dependent current reduction lowers holding current where the configured motor and duty permit it.

Model-Specific FAQ - Part 1

QUESTION	ANSWER
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.
What peak current is available from B&R; X20SM1446-1?	The official data lists 10 A maximum for one second, while continuous nominal motor current is 5 A.
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.
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.

FAQ, Related Products and Source

QUESTION	ANSWER
What fuse is required for B&R; X20SM1446-1?	B&R; requires an external motor-supply line fuse rated no more than 10 A with slow-blow characteristic.
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.
How should stall detection be set on B&R; X20SM1446-1?	Define the threshold from controlled tests with the actual motor, load and motion profile; do not copy it from another axis.
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.

Related Products on Apter Power

MODEL	APTER POWER PAGE
GE 8021-CE-LH	View GE 8021-CE-LH page
GE 8810-HI-TX-01	View GE 8810-HI-TX-01 page
GE 8811-IO-DC	View GE 8811-IO-DC page
GE 8851-LC-MT	View GE 8851-LC-MT page
GE DS200TCEAG1BSF	View GE DS200TCEAG1BSF page
GE IC600BF843	View GE IC600BF843 page
GE IC693ALG391	View GE IC693ALG391 page
GE IC693ALG391G	View GE IC693ALG391G page

MANUFACTURER SOURCE RECORD

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