# B&R X20cDC2190

## 01 Function and selected configuration

### Product function

B&R X20cDC2190 reads position and derived speed from magnetostrictive measuring rods through start/stop interfaces, rather than through analog voltage inputs.

### Selected configuration

Two transducer rods can share four magnets in arrangements such as two plus two or three plus one; one rod can also carry four magnets. The module supplies 24 V DC to the sensors and supports start/stop, EP and DPI/IP communication.

### Functional path

| | | | |
|---|---|---|---|
| Rod magnets | RS422 start/stop | Position and speed | X20 controller |

| | |
|---|---|
| Rod connections | 2 |
| Measured paths | 4 maximum |
| Interface level | RS422 differential |

Position resolution is 0.01 mm over a +/-5.2 m measurement range. Speed resolution is 0.1 mm/s over +/-3.2 m/s, using position values spaced 100 ms apart. RS422 differential signaling carries the start and stop information.

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## 02 Technical operating envelope

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|---|---|
| Rod connections | 2 |
| Measured paths | 4 maximum |
| Interface level | RS422 differential |
| Protocols | Start/Stop, EP Start/Stop, DPI/IP |
| Position resolution | 0.01 mm |
| Position range | +/-5.2 m |

| | |
|---|---|
| Speed resolution | 0.1 mm/s |
| Speed range | +/-3.2 m/s |
| Sensor supply | 24 V DC; 150 mA maximum |
| Initialization pulse | 1.6 microseconds |
| Internal I/O power | 1.1 W |
| Coated-module operating humidity | Up to 100%, condensing |

The technical values apply to this model in the specified installation and configuration.

### Signal interpretation

Position resolution is 0.01 mm over a +/-5.2 m measurement range. Speed resolution is 0.1 mm/s over +/-3.2 m/s, using position values spaced 100 ms apart. RS422 differential signaling carries the start and stop information.

### Interface boundary

Rod parameters can be uploaded with EP or DPI/IP, but rod length and ultrasonic speed are not automatically applied to the measurement configuration. Parameter transfer freezes existing position and speed values, so the application must manage validity during this interval.

### Are uploaded rod length and sound velocity applied automatically by X20cDC2190?

No. These values can be read, but the application decides whether to transfer rod length and ultrasonic speed into the corresponding measurement settings.

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## 03 System integration and applications

### Multiple-position rods

Acquire up to four magnet positions through two rod connections.

### Position and speed feedback

Read displacement and derived velocity from the same ultrasonic sensor signals.

### Rod parameter communication

Use EP or DPI/IP to read supported transducer information during setup or replacement.

### Coated I/O installations

Use the coated module where its humidity rating is needed, within the IP20 installation boundary.

### System and supply context

The position measurement module is applied in the Rod magnets / RS422 start/stop / Position and speed / X20 controller arrangement. Select associated equipment for the actual channel or installation.

### Application boundary

The technical values apply to this model in the specified installation and configuration. The examples below address the stated product function.

### Is X20cDC2190 an analog input for a 0 to 10 V position signal?

No. It communicates through RS422-level start/stop interfaces for ultrasonic linear position sensors, including EP and DPI/IP protocols.

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## 04 Engineering selection decisions

### How can four magnets be distributed on X20cDC2190?

The two rod connections support four magnets in total. Arrangements include two per rod, three on one and one on the other, or four on one rod.

### How does X20cDC2190 calculate speed?

It calculates speed from two position values 100 ms apart, providing 0.1 mm/s resolution over a +/-3.2 m/s range.

### What supply monitoring can X20cDC2190 perform?

Encoder overvoltage and undervoltage limits are configurable at +/-10%, +/-15%, +/-20% or +/-25%. The sensor supply is 24 V DC with 150 mA maximum current.

### When does X20cDC2190 provide sensor-supply short-circuit protection?

The sensor supply is short-circuit-proof from hardware revision D0. Confirm the actual revision rather than assuming this protection on an earlier unit.

| | |
|---|---|
| Restore differential signal pairs | Reconnect start and stop pairs according to the pinout and preserve the shield connection at the bus module. |
| Choose the rod protocol | Match Start/Stop, EP or DPI/IP to the connected transducer. |

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## 05 Configuration boundary and references

### Lifecycle and support

The current manufacturing and factory-support phase of X20cDC2190 is unconfirmed.

### Replacement assessment

Preserve rod connections 2, measured paths 4 maximum, interface level RS422 differential. Check rod connections and measured paths against the installed configuration.

### 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 X20(c)DC2190 Data sheet V2.40.

### Related product navigation

- B&R X20AO2622
- B&R X20AI2437

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

Product enquiries