FLOWSERVE

HART COMMUNICATION PROTOCOL

Easy integration

Limitorque MX and QX Series B (MXb and QXb) electric actuators are compatible with the HART network communications protocol. They are certified for use by the HART Communication Foundation (HCF). Integration is fast and easy.

The HART Protocol is the global standard for sending and receiving digital information across standard, twisted-pair instrumentation cables connecting smart field devices and control and monitoring systems. This information can be accessible from a technician's hand-held device or laptop connected to a plant's process control, asset management, safety or other system using any control platform.

The HART network employs a bi-directional communication protocol, operating at 1,200 bps that provides data access between intelligent devices such as Limitorque MXb and QXb electric actuators and a distributed control system (DCS) or other monitoring systems. In addition to a digital system, the network simultaneously provides a 4-20 mA analog signal that is proportional to the field unit's primary measured value.

Versatile functionality

The following commands and feedback information can be transmitted and received by an MXb/QXb HART unit:
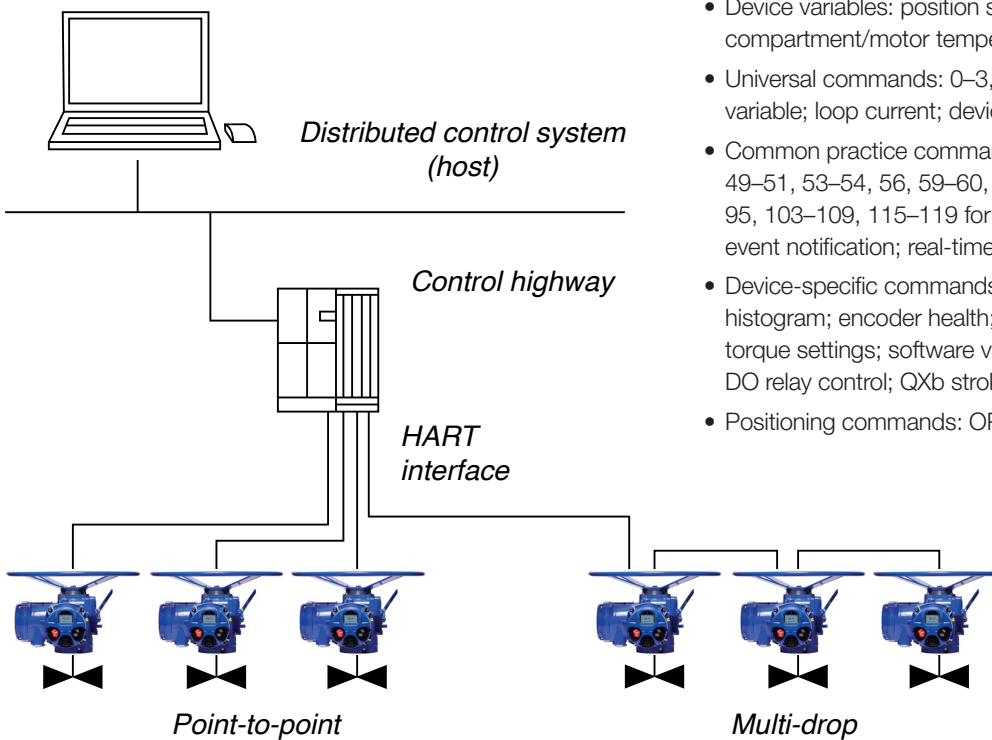
- OPEN, CLOSE and STOP commands
- ESD (emergency shutdown) commands
- Partial stroke test commands
- Go-to-position commands
- Unit output torque (0 to 100% rating)
- Actuator status, alarm and diagnostic messages
- Burst messages
- Travel histogram
- Event notifications
- LimiGardTM signal monitoring

MXb multi-turn actuator

QXb quarter-turn actuator
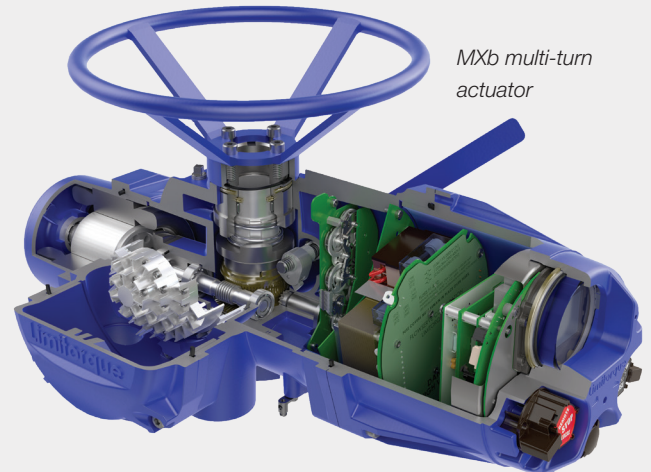
The MXb/QXb HART field unit interface board is installed in the actuator controls compartment, permitting the actuator to be controlled by a DCS or other network host over the HART network.

Technical data

The MXb/QXb HART field unit uses the HART protocol to communicate over the HART network with other HART-enabled devices. The HART protocol is a master/slave communication service for process control devices. HART digital signaling is an extension of conventional analog signaling, allowing the network signal to ride on the 4-20 mADC process signal. It uses 1,200 bps binary phase-continuous frequency-shift keying (FSK), where a high-frequency current is superimposed on a low-frequency (typically, 4-20 mADC) analog current.

Distributed control system (host)

Control highway

HART interface

Point-to-point   *Multi-drop*

HART protocol — Network topologies

- Complies with HART Communication Protocol Specification (Document HCF Spec-13) for Revision 7.4
- Point-to-point or multi-drop network topology
- Distances up to 1,800 m (5,906 ft) per network (up to 15 devices)
- EDDL (IEC 61804-2, EDDL) with methods for all supported common practice and device-specific commands
- ValveSight™ DTM for all FDT/DTM-compliant asset management systems
- Device variables: position setpoint; valve position; torque; compartment/motor temperature
- Universal commands: 0–3, 6–9, 11–22, 38, 48 to read primary variable; loop current; device status, etc.
- Common practice commands: 33, 35–37, 40–42, 45–46, 49–51, 53–54, 56, 59–60, 63, 65–68, 71, 76, 78–79, 89–93, 95, 103–109, 115–119 for calibration; self-test; burst mode; event notification; real-time clock; trending, etc.
- Device-specific commands: partial stroke test; travel histogram; encoder health; LimiGard; motor controller health; torque settings; software version; network ESD configuration, DO relay control; QXb stroke time; operational data, etc.
- Positioning commands: OPEN, CLOSE, STOP; % POSITION

To learn more about Limitorque MXb and QXb electric actuators, see brochure AIBR000087.