



MX/QX Basic

Rev 15Nov11

Prerequisite:

It is assumed that students taking this course are mechanically inclined and have a working knowledge of the mechanical aspects of valves and actuation.

Outline:

Upon completion of this course, students should be able to perform the following basic actions:

- a. Identify the differences between an MX, MX(a) and QX actuators.
- b. Disassemble, identify parts, reassemble and mechanically troubleshoot the MX, MX(a) and QX actuators.
- c. Enter the Setup Menu and change the operating parameters of the actuator
- d. Set position limits both electrically and manually
- e. Be able to set the actuator for all (2-wire, 3-wire and 4-wire) modes
- f. Be able to configure the status and alarm contacts
- g. Be able to configure the 2-speed timer
- h. Be able to configure the User Inputs
- i. Be able to configure and calibrate the analog output (APT and ATT) option
- j. Be able to configure and calibrate the Modutronic option
- k. Be able to read and interpret wiring diagrams and schematics
- l. Be able to determine the current firmware loaded
- m. Be able to flash firmware.

Hardware requirements:

- a. Portable flash drive – 2GB min. This flash drive will be used to transfer and store utility software, electronic documents and other presentations pertaining to the course.
- b. Laptop PC with Windows XP or 7 operating system.
 - i. User must have administrative rights in order to load utility software. The utility software will be provided during the course.
 - ii. User must have basic computer skills
 1. Transfer, download and save files
 2. Configure communications ports via the Control Panel and Device Manager



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Hardware requirements: (cont.)

- c. Computer should have a functioning serial port, if not then a functioning USB port and a USB-to-serial converter
 - iii. Recommend the Sealevel 2105 USB to RS-232 DB9 Serial Interface Adapter
<http://www.sealevel.com/store/2105r-usb-to-1-port-rs-232-db9-serial-interface-adapter.html>
- d. IR computer communications link
 - iv. Recommend Actisys IR Computer Link ACT-IR220LN19
<http://www.actisys.com/ac200-220.html>

Other:

Students should be able to use the following test equipment

- a. Digital multimeter
AND
 - b. Loop calibrator (example Altek Model 334 or equivalent)
- OR
- c. Loop Process meter (example Fluke 789 ProcessMeter or equivalent)

Pre Class Study:

The students learning experience will be enhanced with a prior review of the following documents:

Current firmware and instructions

<http://www.flowserve.com/Support/Software-Downloads#Limiterorque>

MX/QX Protection, Control and Monitoring Features

<http://www.flowserve.com/files/Files/Literature/ProductLiterature/FlowControl/Limiterorque/LMENTB2300-02.pdf>

How to verify the firmware version on an MX/QX actuator

<http://www.flowserve.com/Services-and-Solutions/Aftermarket-Parts-and-Services/Actuator-Maintenance%2C-Repair-%26-Inspection/Limiterorque-Blue-Ribbon-Service#FAOS>

MX Quick mounting instructions

<http://www.flowserve.com/files/Files/Literature/ProductLiterature/FlowControl/Limiterorque/LMAIM1312-00.pdf>

MX(a) User instructions

<http://www.flowserve.com/files/Files/Literature/ProductLiterature/FlowControl/Limiterorque/LMENIM2306-02.pdf>



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Pre Class Study: (cont.)

Maintenance and Spare parts manual

<http://www.flowserve.com/files/Files/Literature/ProductLiterature/FlowControl/Limitorque/LMENIM2314-00.pdf>

MX User instructions

<http://www.flowserve.com/files/Files/Literature/ProductLiterature/FlowControl/Limitorque/LMENIM1306-02.pdf>

MX(a) quick set-up guide

<http://www.flowserve.com/files/Files/Literature/ProductLiterature/FlowControl/Limitorque/LMENIM2310-00.pdf>

QX User instructions manual

<http://www.flowserve.com/files/Files/Literature/ProductLiterature/FlowControl/Limitorque/LMENIM3306-03.pdf>

QX Quick mount and start up guide

<http://www.flowserve.com/files/Files/Literature/ProductLiterature/FlowControl/Limitorque/LMENIM3313-001.pdf>

Protection, Control and Monitoring features

<http://www.flowserve.com/files/Files/Literature/ProductLiterature/FlowControl/Limitorque/LMENIB2300-02.pdf>

Other documents sent separately

MX(a) wire routing combinations – Rev2 (pdf)

Port Management using the USB to Serial converter (pdf)