Standard Description and Options

M2CP Series Features

Standard Features

- Control Compartment, hinged, O-ring sealed, with 316 Stainless Steel screws and hinges
- 2 Train (2 position) Geared limit switch
  - Close Position, LSC - (3) N.O. & (3) N.C. contacts
  - Open Position, LSO - (3) N.O. & (3) N.C. contacts
  - 10 amps @ 125/230 VAC, 3 amps @ 28 VDC inductive
- Open & close Torque Switch
  - (1) N.O. contact each direction of travel
  - 10 amps @ 125/230 VAC, 3 amps @ 28 VDC
- Jumper selectable Features:
  - Torque or Position Seating
  - 10 amps @ 125/230 VAC, 3 amps @ 28 VDC inductive
- TBM (Terminal Board) Module
  - 48 point Control Terminal Board with transient voltage snubber circuit

    (2) Secondary Transformer Fuses
    Power-On LED Indicating Light (internal)
- Power Terminal Strip, isolated from Control Power TBM

Options

Integral Design (Open/Close control)

- (3) Pushbuttons, (2) LED Lights, 3-Position Selector Switch
- Reversing Contactor, Mechanical & Electrical Interlocked, 25 Amp Rated
  - Reversing Contactor rated for maximum 600 starts per hour
  - Reversing Contactor equipped with Isolation Power Terminal & (2) Primary Fuses
- 75 VA Epoxy Encapsulated and Impregnated Control Transformer
- Options for Local Controls
  - Up to (3) Pushbuttons
  - Up to (4) LED Indicating Lights
  - (3) Position Selector Switch
- Options for Intermediate Limit Switch Contacts - (2) N.O. & (2) N.C. (rated as above)

Digital Futronic Modules - for Analog input/ output position or process control

- Integrated Solid-State microcontroller with one electronics module for valve modulating and positioning control. Auto tunes for maximum accuracy without user adjustments for dead band, delay, etc. Automatic calibration of input to valve travel limits. Controls four motor control starter types.
- Converts 4-20mA analog input to digital for processing and from digital to 4-20mA analog output position feedback.
- NOTE: Digital Futronic actuators cannot be operated directly from a process variable (pressure, temperature, flow, level, etc.). The actuator must be controlled by a DCS, PLC or other set-point process controller.

Futronic II (position control) +/- 1.0% at 15 seconds stroke time or greater

- Single-phase motors maximum 100 starts per hour
- Three-phase motors maximum 600 starts per hour

Futronic III (process/modulation control) +/- 0.25% at 15 seconds stroke time or greater

- Single-phase input power, full wave voltage regulation to control DC motor, SCR H-bridge solid-State DC motor starter. Class "H" motor insulation. Maximum 1200 starts per hour.

Futronic IV (process/modulation control) +/- 0.50% at 15 seconds stroke time or greater

- Triac Solid-State (SSR) AC motor starter, 3-phase power. Maximum 1200 starts per hour.
- Overload relays (motor current sensors)

Futronic VII (process/modulation control) +/- 0.25% @15 seconds stroke time or greater.

- MOSFET Solid-State pure DC motor starter (powered by 24VDC or 48VDC input power). Maximum 1200 starts per hour.

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The High Flow Plate is a aluminum plate which can be mounted directly to solenoid interface on actuators which are designed according VDI/VDE 3845 (NAMUR). The plate is supplied with fasteners and seals.

The customer side of the plate is equipped with one larger 1/2" NPT or BSP air connection (A-port) for piped solenoid control.

Features common to Digital Futronic actuators:

- Integral control type including reversing contactor, control power transformer, thermostatically controlled space heater, (3) O-S-C pushbuttons, 2 LED O-C lights and 3-position L-O-R selector switch. Includes position feed-back potentiometer (internal use only) and intermediate position limit switches LSA/LSB – (2) N.O. and (2) N.C.
- Control board LEDs for normal/fault, setup mode, loss of input signal and solid-state starter trigger.
- Isolated analog input: 4-20mA with 12-bit (0.25%) resolution, 210 Ohms input resistance. Operates from 10V to 32V loop supply. Up to 750 Ohms loop resistance at 24V.
- Isolated analog output: 4-20mA with 16-bit (0.0015%) resolution (calibration range of 0-24mA). Drives loop resistance up to 750 Ohms. True current source with internal 24VDC power supply, no loop power required. Internal auto-resetting fuse for 24VDC power supply.
- Isolation dielectric strength: 2500 VAC for 1 minute (input to output and I/O to ground).
- Loss of input signal: "Fail last position" or "Fail to any preset position" between 0% and 100%.
- Easy setup and calibration without any screwdriver inputs or resistance measurements. Perform calibration using DIP switches and two miniature pushbuttons. No potentiometer adjustments, no pot rewiring for reverse signal operation (20mA = close/ 4mA = open).
- Non-linearity: <0.05% of calibrated analog input and output over full range of 0-100%.
- Operating temperature range: -40C to +85C (-40F to +185F); humidity: 10% - 95% non-condensing.

Futronic VIII – (Not Digital Futronic)

- Precision process control using remotely packaged variable frequency drive, +/- 0.125% at minimum of 15 seconds operating time – Consult factory
- 3-phase or 1-phase input power used to power a 3-phase motor

Other Options:

- M2CP offers a mutitude of options such as:
  - Local and/or Remote Position Indication, via Potentiometer or 4-20 mA Transmitter
  - Motor Overload Relays - current sensors
  - Monitor Relay
  - Phase Sentry (Mis-Phased or Lost Phase Shutdown)
  - Auxiliary Reversing Starter Contacts
  - Circuit Breakers, Integral, Close Coupled and Remote Mounted
  - PBM (Pushbutton Modules), Close Coupled and Remote Mounted
  - Digital Network Controls - Modbus RTU, DeviceNet, Ethernet, Foundation Fieldbus, Profibus DP, HART

See M2CP Options sheet E1K-1043 for full list.

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