



Actuator Group

Cylinders



# **ACCU M Series**

## **Position Feedback Actuators**

*We're everywhere you need us to be!*



### ACCU M Series Position Feedback Actuators

## General Information

### General Technical Data:

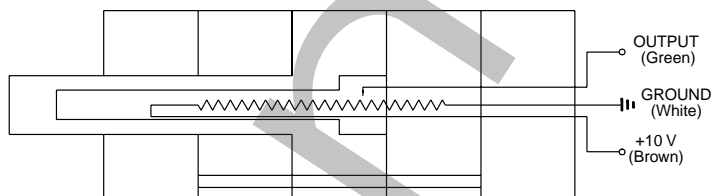
The **Accu M Series** is an economical pneumatic linear actuator that contains an internal Linear Resistive Transducer (LRT). It is ideal for applications where traditional magnetic position sensing is not acceptable. Additionally, the **Accu M Series** is conducive where variations in cylinder stroke and speed are required or where an application calls for continuous position monitoring.

## Electrical Specifications

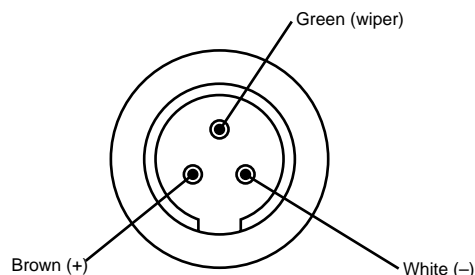
Electrical Resistance	1000 ohms per inch of stroke
Resolution	Infinite (limited by interfacing electronics)
Temperature Range	0° F to 160° F
Life Rating	500 million inches of travel on transducer
Linearity	±1% of stroke (or better)
Interface	6" cable with M8x1 Quick Connect
Signal Input	Typically 10 VDC
Maximum Speed	50 in/sec
Maximum Standard Stroke	18 inches (longer strokes available upon request)
Maximum Current	1 microamp required from the transducer

Note: Control Module Units sold separately can have scalable output of 4-20 mA or 0-10 VDC and input of 120 VAC or 12-24 VDC.

## MLRT Circuit Diagram

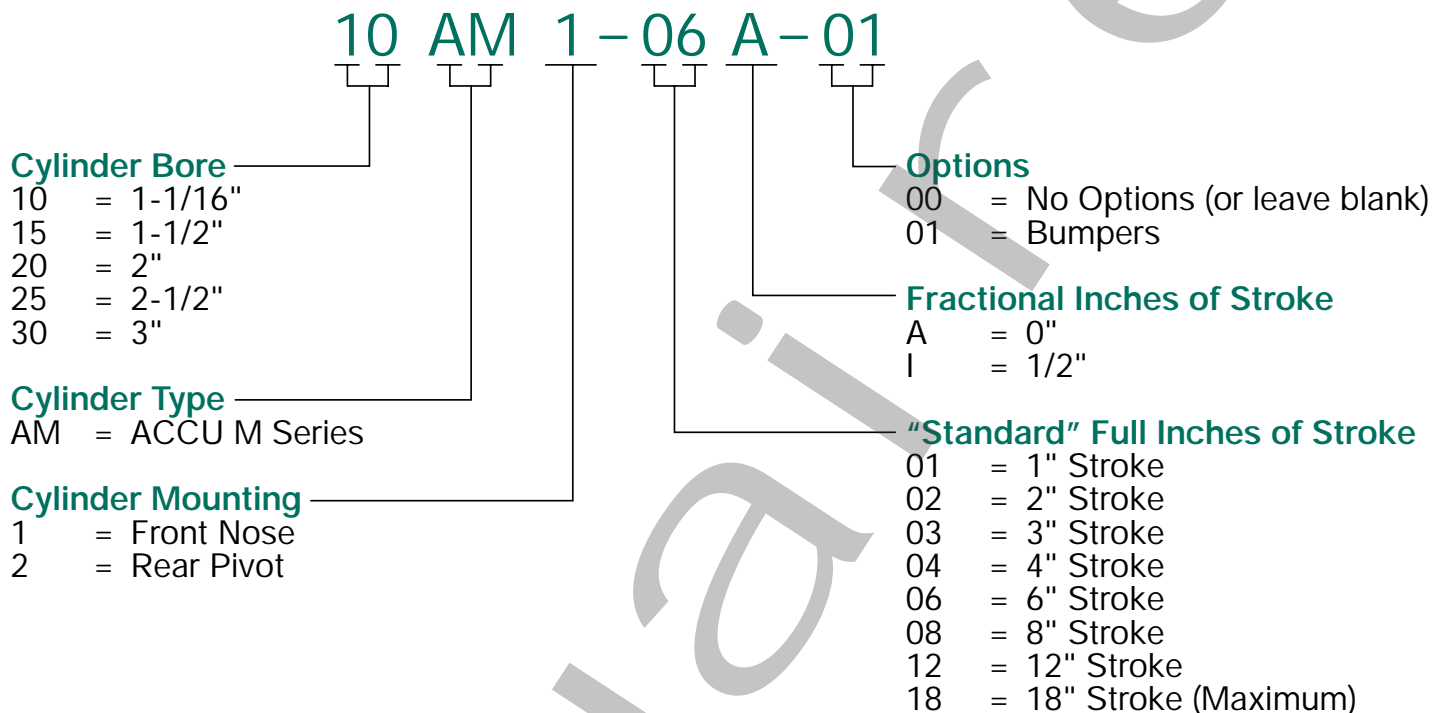


## Connector Pin Assignments





## How To Order



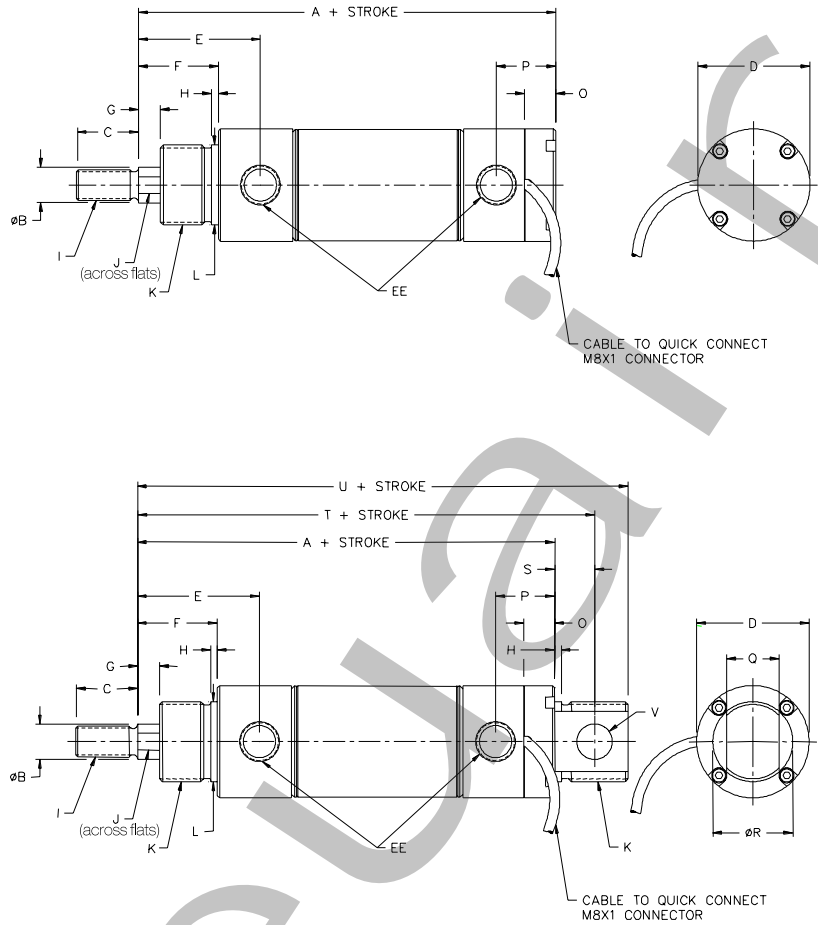
Note: Non-standard stroke lengths will increase lead time.

Note that the **ACCU M Series** can integrate with many Numatics Motion Control Group slide products. Contact Numatics Motion Control Group for details. (440) 934-3200 [www.numation.com](http://www.numation.com)



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Cylinder Dimensions

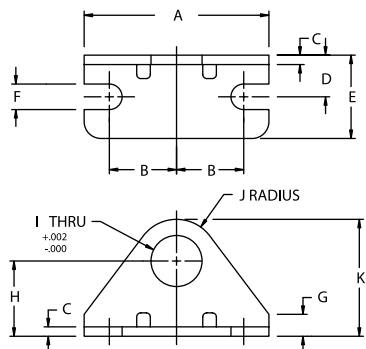


	1-1/16" Bore	1.5" Bore	2" Bore	2.5" Bore	3" Bore
A	4.59	4.88	5.46	6.41	6.78
B	0.38	0.50	0.63	0.75	0.75
C	0.63	0.88	1.00	1.25	1.25
D	1.312	1.58	2.08	2.63	3.16
E	1.75	1.72	1.92	2.25	2.16
F	1.06	1.13	1.188	1.50	1.138
G	0.31	0.31	0.38	0.44	0.44
H	0.09	0.09	0.13	0.13	0.19
I	5/16-24 UNF	7/16-20 UNF	1/2-20 UNF	5/8-18 UNF	5/8-18 UNF
J	0.31	0.44	0.50	0.63	0.63
K	7/8-14 UNF	1 1/8-12 UNF	1 1/4-12 UNF	1 3/8-12 UNF	1 1/2-12 UNF
L	0.875	1.125	1.375	1.500	1.625
O	0.44	0.41	0.50	0.56	0.63
P	0.84	0.83	0.93	1.13	1.47
Q	0.38	0.63	0.75	0.875	0.88
R	0.875	1.125	1.375	1.50	1.825
S	0.47	0.56	0.56	0.75	0.81
T	5.06	5.44	6.02	7.16	7.59
U	5.34	5.91	6.46	7.78	8.22
V	0.31	0.38	0.38	0.50	0.50
EE	1/8 NPTF	1/4 NPTF	1/4 NPTF	3/8 NPTF	3/8 NPTF



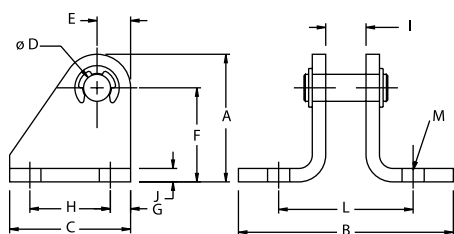
## Accessories

### Nose Mounting Brackets



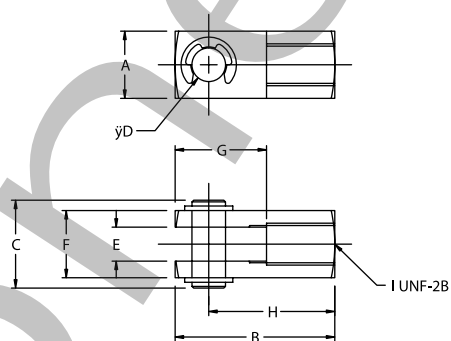
BORE	A	B	C	D	E	F	G	H	I	J	K	PART #
1-1/16	2.13	0.781	0.16	0.66	1.16	0.28	0.32	1.00	0.88	0.75	1.75	M117013
1-1/2	2.75	1.06	0.19	0.81	1.44	0.34	0.38	1.25	1.13	0.91	2.19	M117012
2	3.13	1.13	0.25	1.00	1.63	0.34	0.63	1.50	1.38	1.00	2.50	M117009
2-1/2	3.75	1.44	0.25	1.00	1.63	0.34	0.75	1.75	1.50	1.25	3.00	M117010
3	4.38	1.75	0.25	1.00	1.63	0.34	0.89	1.89	1.63	1.25	3.14	M117011

### Pivot Mounting Brackets



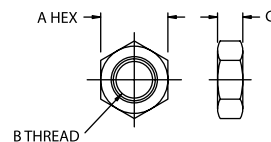
BORE	A	B	C	D	E	F	G	H	I	J	L	PART #
1-1/16	1.19	2.00	1.13	0.25	0.31	0.88	0.19	0.75	0.38	0.13	1.25	M129003
1-1/2	1.75	2.88	1.50	0.38	0.38	1.38	0.25	1.00	0.63	0.25	2.00	M129005
2	1.75	3.00	1.50	0.38	0.38	1.38	0.25	1.00	0.63	0.25	2.13	M229005
2-1/2	2.25	3.88	1.75	0.50	0.50	1.75	0.25	1.25	0.88	0.25	2.63	M229006
3	2.25	3.88	1.75	0.50	0.50	1.75	0.25	1.25	0.88	0.25	2.63	M229006

### Rod Clevises



BORE	A	B	C	D	E	F	G	H	I	PART #
1-1/16	0.50	1.19	0.68	0.25	0.25	0.50	0.68	0.94	5/16-24	M127004
1-1/2	0.75	1.69	1.03	0.38	0.38	0.75	0.94	1.31	7/16-20	M127005
2	0.75	1.69	1.03	0.38	0.38	0.75	0.94	1.31	1/2-20	M127006
2-1/2	1.00	2.75	1.38	0.38	0.50	1.00	1.50	2.25	5/8-18	M127007
3	1.00	2.75	1.38	0.38	0.50	1.00	1.50	2.25	5/8-18	M127007

### Mounting Nuts



PART #	A	B	C
M18-004	0.50	5/16-24	0.19
M190003	0.687	7/16-20	0.25
M190004	0.750	1/2-20	0.31
M190005	0.938	5/8-18	0.38
M190007	1.312	7/8-14	0.48
M190015	1.688	1 1/8-12	0.61
M190009	1.875	1 1/4-12	0.72
M190012	2.06	1 3/8-12	0.78
M190013	2.25	1 1/2-12	0.84



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## TDRO-40 Panel Meter 4 Digit 0.56" in a 1/8 DIN Case

An economical smart programmable meter with optional relay with isolated 4 to 20 mA and 0-10 VDC retransmission or control loop output capability for measurement and control applications.

### Specifications

<b>Input Specs:</b>	IR03 Input Module
<b>A/D Converter:</b>	14 bit single slope
<b>Accuracy:</b>	±(0.05% of reading + 2 counts)
<b>Temp. Coeff.:</b>	100 ppm/°C (Typical)
<b>Warm Up Time:</b>	2 minutes
<b>Conversion Rate:</b>	10 conversions per second (Typical)
<b>Display:</b>	4 digit 0.56" Red LED display (Range – 1999 to 9999 counts)
<b>Polarity:</b>	Assumed positive. Displays – negative
<b>Decimal Selection:</b>	Front panel button selectable, X•X•X•X•
<b>Positive Overrange:</b>	Top segments of digital display flash
<b>Negative Overrange:</b>	Bottom segments of digital display flash
<b>Relay Output:</b>	Two 5 Amp Form A relays and two 10 Amp (optional) Form C, or 5 Amp Form A relays
<b>Analog Output:</b>	Isolated 16 bit user scalable mA or V
AIC (mA out) (opt)	4-20 mA @ 0 to 500 Ω max loop resistance
AIV (volts out) (opt)	0-10 DC @ 500 Ω or higher resistance
<b>Power Supply:</b>	AC/DC Auto sensing wide range supply
1-PS1 (std)	85-265 VAC/95-370 VDC @ 2.5W max 3.5W
2-PS2 (opt)	15-48 VAC/10-72 VDC @ 2.5W max 3.5W
<b>Operating Temp.:</b>	0 to 60°C
<b>Storage Temp.:</b>	-20 to 70°C
<b>Relative Humidity:</b>	95% (non-condensing)
<b>Case Dimensions:</b>	1/8 DIN, Bezel: 96x48mm (3.78"x1.89") Depth behind bezel: 117mm (4.61") Plus 11.8mm (0.47") for Right-angled connectors, or plus 20 mm (0.79") for straight-thru connector.
<b>Weight:</b>	6.5 oz., 8.5 oz. when packed

### Software Features

- Three-button programming from the front panel (UP, DOWN and PROGRAM buttons).
- Three front panel selectable ranges.
- Front panel selectable four-level brightness control of digital display, and setpoint LEDs.
- Up to four programmable setpoints.
- Relay activation can be selected to occur above (HI) or below (LO) each setpoint.
- Hysteresis setting for all four setpoints. Delay on make and delay on break for SP1 and SP2.
- Peak and Valley. View and Reset.

## TDBRO-40 – 101 Segment Bargraph with 4 Digit 0.32" LED in 9/64 DIN Case

Smart Tricolor digital bargraph with four fully programmable setpoints and optional relay with isolated 4 to 20 mA and 0-10 VDC retransmission or control loop output for monitoring measurement and control applications.

### Specifications

<b>Input Specs:</b>	IR03 Input Module
<b>A/D Converter:</b>	14 bit single slope
<b>Accuracy:</b>	±(0.05% of reading + 2 counts)
<b>Temp. Coeff.:</b>	100 ppm/°C (Typical)
<b>Warm Up Time:</b>	2 minutes
<b>Conversion Rate:</b>	10 conversions per second (Typical)
<b>Digital Display:</b>	4 digit 0.31" LED red (Range – 1999 to 9999 counts)
<b>Bargraph Display:</b>	101 segment 4" tri-color vertical
<b>Polarity:</b>	Assumed positive. Displays – negative
<b>Decimal Selection:</b>	Front panel button selectable, X•X•X•X•
<b>Positive Overrange:</b>	Bargraph and Top segments of digital display flash
<b>Negative Overrange:</b>	First segment of Bargraph and Bottom segments of digital display flash
<b>Relay Output:</b>	Two 5 Amp Form A relays and two 10 Amp (optional) Form C relays
<b>Analog Output:</b>	Isolated 16 bit user scalable mA or V
AIC (mA out)(opt)	4-20 mA @ 0 to 500 Ω max loop resistance
AIV (volts out)(opt)	0-10 DC @ 500 Ω or higher resistance
<b>Power Supply:</b>	AC/DC Auto sensing wide range supply
1-PS1 (std)	85-265 VAC/95-370 VDC @ 2.5W max 4.2W
2-PS2 (opt)	15-48 VAC/10-72 VDC @ 2.5W max 4.2W
<b>Operating Temp.:</b>	0 to 60°C
<b>Storage Temp.:</b>	-20 to 70°C
<b>Relative Humidity:</b>	95% (non-condensing)
<b>Case Dimensions:</b>	9/64 DIN, Bezel: 36Wx144Hmm Depth behind bezel: 148mm (5.83") Plus 18mm (0.7") connectors.
<b>Weight:</b>	9.5 oz., 12 oz. when packed

### Software Features

- Digital display and the 101 segment bargraph can be independently scaled.
- Bargraph center zero function.
- Four programmable setpoints. (optional)
- Adjustable delay-on-make and delay-on-break time for setpoints 1 and 2.
- Relay activation can be selected to occur above (HI) or below (LO) each setpoint.
- Digital display blanking.
- Decimal point setting.
- Four-level brightness control of bargraph, digital display, and setpoint LEDs.

Comprehensive Digital Display Manuals are available at [www.numaticsactuator.com](http://www.numaticsactuator.com)



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## Digital Display – How To Order

**TDRO 40 - 1 - C R2**

### Type

TDRO = 4 Digit Panel Meter  
TDBRO = 4 Digit Segment  
Bargraph

### Display Digits

40 = 4 Digits

### Power Input

1 = 120 VAC (Standard)  
2 = 24 VDC (Optional)

### Relay Outputs

#### TDRO-40

R0 = None  
R1 = Single 5 A (Form A)  
R2 = Dual 5 A (Form A)  
R4 = Four 5 A (Form A)

#### TDBRO-40

R0 = None  
R11 = Single 10 A (Form C)  
R12 = Dual 10 A (Form C)  
R13 = Dual 10 A and Single 5 A  
R14 = Dual 10 A and Dual 5 A

### Output

O = No Output (Standard)  
C = 4-20 mA  
V = 0-12 VDC