

# Alco Controls

## Electronic Expansion Valves EXM/L Series

### Technical Bulletin

EXM/EXL Unipolar stepper motor driven Electronic Expansion Valves are for precise control of refrigerant mass flow in heat pumps, heating units, air conditioning and close control applications.

**The valve is not released for refrigeration applications such as cold room and refrigeration display cabinet.**

#### Features

- Unipolar stepper motor
- Bi-flow
- High MOPD: 40 bar in normal flow direction
- Removable coils in two versions: 12VDC/24VDC
- Continuous modulation of mass flow
- Linear flow
- Resolution: 500 pulses (half steps) or 250 full steps
- Reliability: 225 millions pulses at continuous 40 bar differential pressure
- Hermetic design
- Bulk packing in boxes of 10 identical pieces



**EXM/EXL**

#### Selection table

Valve series	Type	Description	PCN	Nominal capacity, kW			Connections Size / Style
				R 410A	R 407C	R 134a	
EXM	EXM-B0A	Valve less coil	800 399M	1.8	1.6	1.2	1/4" ODM
	EXM-B0B	Valve less coil	800 400M	5.5	5.0	3.7	
	EXM-B0D	Valve less coil	800 401M	11.6	10.5	7.7	
	EXM-B0E	Valve less coil	800 402M	13.7	12.4	9.1	
	EXM-125	Coil, 12VDC, 5 wires	800 403M	-	-	-	
	EXM-246	Coil 24VDC, 6 wires	800 404M	-	-	-	-
EXL	EXL-B1F	Valve less coil	800 405M	17.0	15.4	11.3	1/4" ODF
	EXL-B1G	Valve less coil	800 406M	23.0	20.7	15.2	8 mm ODM
	EXL-125	Coil, 12VDC, 5 wires	800 407M	-	-	-	-
	EXL-246	Coil 24VDC, 6 wires	800 408M	-	-	-	-

The nominal capacity (Qn) is based on the following conditions:

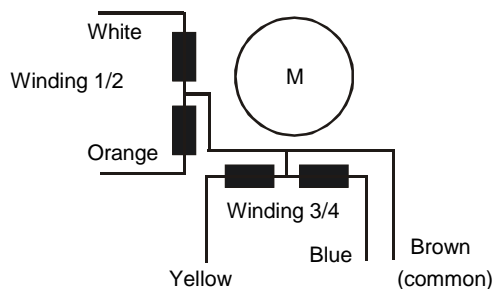
Refrigerant	Evaporating temperature	Condensing temperature	Subcooling
R 410A, R22, R 134a,	+4°C	+38°C	1K
R 407C	+4°C dew point	+38°C bubble / +43°C dew point	1K

Note 1: Unlike Thermo®-Expansion Valves, there is no additional reserve capacity.

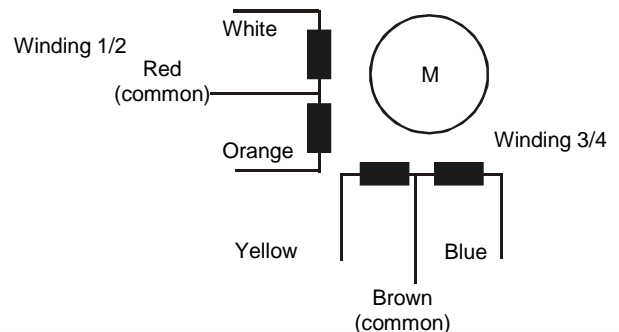
Note 2: Capacities are identical for normal and reverse flow direction.

Note 3: Emerson SELECT program is available for selection of valves for other operating conditions.

#### Wiring: EXM-125/EXL-125 (12 VDC, 5 wires coil)



#### Wiring: EXM-246/EXL-246 (24 VDC, 5 wires coil)



## Electronic Expansion Valves EXM/L Series

### Technical data

Compatibility (not released for use with inflammable refrigerants)	Specified refrigerants, mineral and POE lubricants
MOPD (maximum operating pressure differential)	40 bar in normal flow 33 bar in reverse flow
Max. working pressure	PS: 45 bar
External leakage	≤ 3 gram / year
Temperature range: Liquid refrigerant Ambient	TS: -30 to +70°C -30 to +60°C
Relative humidity	95%

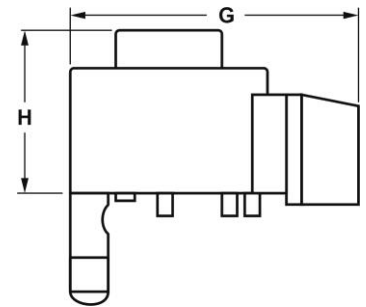
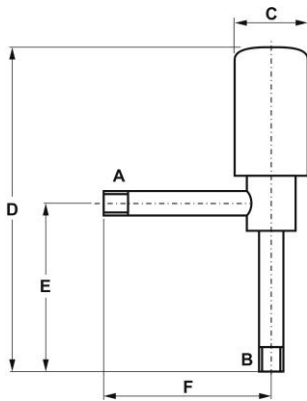
Air seat leakage at 10 bar differential pressure	Typically 150 cm <sup>3</sup> /min.
Bi-flow direction	Normal: Connection A to B Reverse: Connection B to A
Valve installation	Coil upside or to vertical within ± 90°
Package and delivery	10 pieces
CE marking	Not required
Connections, A and B	EXM: 1/4" ODM EXL: 1/4" ODF and 8 mm ODM
Weight	Valve EXM: 65 g, EXL: 76 g Coil EXM: 124 g, EXL: 156 g

### Electrical data

Stepper motor type	Uni-polar, constant voltage
Electrical connection	12 VDC coil : 5 wires 24 VDC coil: 6 wires
Supply voltage	12 VDC coil: 12V ± 10% 24 VDC coil: 24V ± 10%
Phase current, operating	12 VDC coil: 260 mA 24 VDC coil: 130 mA
Winding resistance per phase	12 VDC coil: 46 Ohm/phase 24 VDC coil: 185 Ohm/phase
Insulation resistance	Min. 100 MΩ at 500VDC
Cable length	Fixed, 1 meter

Step mode	Half step = one pulse
Total number of pulses	500 half step (250 full step)
Pulsing rate	30 to 90 pulses (half step) per sec.
Full travel time	16.6 seconds at 30 pulse/sec. 5.5 seconds at 90 pulse/sec.
Reference position	Mechanical stop at fully close position at 520 pulses
Valve starts to open at:	32 pulses ± 20 pulses
Insulation class	E

### Dimensions



Valve type	A / B connections		C mm	D mm	E mm	F mm
	Diameter	Length, mm				
EXM-...	1/4 " ODM	8	17.3	78	36	36.3
EXL-...	1/4 " ODF / 8 mm ODM	8	21.8	90	42	42

Coil	G mm	H mm
EXM-...	52.5	32
EXL-...	59	34

15.11.2012 - Electronic Expansion Valves EXM/L Series

Emerson Climate Technologies GmbH shall not be liable for errors in the stated capacities, dimensions, etc., as well as typographic errors. Products, specifications, designs and technical data contained in this document are subject to modification by us without prior notice. Illustrations are not binding.

The Emerson Climate Technologies logo is a trademark and service mark of Emerson Electric Co. Emerson Climate Technologies Inc. is a subsidiary of Emerson Electric Co.

EMERSON. CONSIDER IT SOLVED.