

Last update: 05-2023

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Ref: TI\_Product\_A1\_A2L\_A3\_EN\_Rev03

Application Engineering Europe

## ELECTRONIC EXPANSION VALVES - EXM/L SERIES

### General information

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.

Note: Conditional release for use in OEM manufactured self-contained display cabinets/unit mainly with refrigerant R290 (serial production).

### Features

- Hermetic design
- Continuous, linear modulation of mass flow
- Bi-flow with same capacity in normal and reverse flow direction
- High MOPD: 40 bar in normal flow direction
- Unipolar stepper motor
- Removable coils in two versions: 12 VDC / 24 VDC
- Fine resolution: 500 pulses (half steps) or 250 full steps
- Protection class of molded coil is IP65 (acc. EN 60529) excluding the cable end terminals (JST).
- Reliability: 225 million pulses at 40 bar differential pressure



EXM/L with Coil

### Selection Table

Valve series	Description	Type	Part No.	Capacity (kW)							Connection
				R134a	R410A	R407C	R32	R452B	R454B	R290	
EXM	Valve less coil	EXM-B0A	800399M	1.2	1.8	1.6	2.7	2.1	2.1	1.6	1/4" ODM
		EXM-B0B	800400M	3.7	5.5	5.0	8.3	6.4	6.4	4.9	
		EXM-B0D	800401M	7.7	11.7	10.5	17.4	13.5	13.5	10.3	
		EXM-B0E	800402M	9.1	13.8	12.4	20.6	15.9	15.9	12.1	
	Coil 12VDC	EXM-125	800403M	-	-	-	-	-	-	-	-
Coil 24VDC	EXM-24U	800415M	-	-	-	-	-	-	-	-	
EXL	Valve less coil	EXL-B1F	800405M	11.3	17.2	15.4	25.5	19.6	19.7	15.0	1/4" ODF 8 mm ODM
		EXL-B1G	800406M	15.2	23.3	20.7	34.5	26.7	26.8	20.3	
	Coil 12VDC	EXL-125	800407M	-	-	-	-	-	-	-	-
	Coil 24VDC	EXL-24U	800416M	-	-	-	-	-	-	-	-

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

Refrigerant	Evaporating temperature	Condensing temperature	Subcooling
R410A, R134a, R32, R290	+4 °C	+38 °C	1 K
R407C	+4 °C dew point	+38 °C bubble / +43 °C dew point	1 K
R452B, R454B	+4 °C	+38 °C bubble / +39.5 °C dew point	1 K

NOTE 1: Unlike Thermo™ Expansion Valves, there is no additional reserve capacity.

NOTE 2: When selecting also observe the information in the operating instructions. For other operating conditions use the quick selection in this document or "Select" tool ([www.climate.emerson.com/en-gb](http://www.climate.emerson.com/en-gb)). For assistance with selection, please contact your local Emerson Sales offices.

**EXM/L - Quick selection** (included 1.5 bar pressure drop for liquid line components and distributor)

**A1**

Condensing temperature (°C)	R134a		Capacity (kW)								R134a		Valve Type
	Evaporating temperature (°C)												
	15	10	5	0	-5	-10	-15	-20	-25	-30			
65	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.0	EXM-B0A		
	3.7	3.7	3.7	3.6	3.6	3.5	3.4	3.4	3.3	3.2	EXM-B0B		
	7.7	7.7	7.7	7.6	7.5	7.4	7.3	7.1	6.9	6.7	EXM-B0D		
	9.1	9.1	9.1	9.0	8.9	8.8	8.6	8.4	8.1	7.9	EXM-B0E		
	11.3	11.3	11.3	11.2	11.1	10.9	10.6	10.4	10.1	9.8	EXL-B1F		
	15.3	15.3	15.3	15.2	15.0	14.7	14.4	14.1	13.7	13.3	EXL-B1G		
60	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	EXM-B0A		
	3.6	3.7	3.7	3.7	3.6	3.6	3.5	3.5	3.4	3.3	EXM-B0B		
	7.7	7.8	7.8	7.8	7.7	7.6	7.5	7.3	7.2	7.0	EXM-B0D		
	9.1	9.2	9.2	9.2	9.1	9.0	8.8	8.6	8.4	8.2	EXM-B0E		
	11.2	11.4	11.4	11.4	11.3	11.1	10.9	10.7	10.5	10.2	EXL-B1F		
	15.2	15.4	15.4	15.4	15.2	15.1	14.8	14.5	14.2	13.8	EXL-B1G		
55	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	EXM-B0A		
	3.6	3.6	3.7	3.7	3.7	3.6	3.6	3.5	3.5	3.4	EXM-B0B		
	7.5	7.6	7.7	7.7	7.7	7.7	7.6	7.5	7.3	7.1	EXM-B0D		
	8.9	9.0	9.1	9.1	9.1	9.1	8.9	8.8	8.6	8.4	EXM-B0E		
	11.0	11.2	11.3	11.3	11.3	11.2	11.1	10.9	10.7	10.5	EXL-B1F		
	14.9	15.1	15.3	15.4	15.3	15.2	15.0	14.8	14.5	14.2	EXL-B1G		
50	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	EXM-B0A		
	3.4	3.5	3.6	3.6	3.6	3.6	3.6	3.6	3.5	3.4	EXM-B0B		
	7.2	7.4	7.5	7.6	7.7	7.6	7.6	7.5	7.4	7.2	EXM-B0D		
	8.5	8.7	8.9	9.0	9.0	9.0	9.0	8.8	8.7	8.5	EXM-B0E		
	10.5	10.9	11.1	11.2	11.2	11.2	11.1	11.0	10.8	10.6	EXL-B1F		
	14.2	14.7	15.0	15.1	15.2	15.1	15.0	14.9	14.6	14.4	EXL-B1G		
45	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.1	1.1	EXM-B0A		
	3.2	3.3	3.4	3.5	3.5	3.6	3.6	3.5	3.5	3.4	EXM-B0B		
	6.7	7.0	7.3	7.4	7.5	7.5	7.5	7.4	7.4	7.2	EXM-B0D		
	7.9	8.3	8.6	8.7	8.8	8.9	8.8	8.8	8.7	8.6	EXM-B0E		
	9.9	10.3	10.6	10.9	11.0	11.0	11.0	10.9	10.8	10.6	EXL-B1F		
	13.3	14.0	14.4	14.7	14.8	14.9	14.9	14.7	14.6	14.4	EXL-B1G		
40	0.9	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	EXM-B0A		
	2.9	3.1	3.2	3.4	3.4	3.5	3.5	3.5	3.4	3.4	EXM-B0B		
	6.1	6.5	6.8	7.1	7.2	7.3	7.3	7.3	7.2	7.2	EXM-B0D		
	7.2	7.7	8.1	8.3	8.5	8.6	8.6	8.6	8.6	8.5	EXM-B0E		
	8.9	9.6	10.0	10.4	10.6	10.7	10.7	10.7	10.6	10.5	EXL-B1F		
	12.1	12.9	13.6	14.0	14.3	14.4	14.5	14.5	14.4	14.2	EXL-B1G		
35	0.8	0.9	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	EXM-B0A		
	2.5	2.8	3.0	3.1	3.2	3.3	3.3	3.4	3.3	3.3	EXM-B0B		
	5.2	5.8	6.3	6.6	6.8	7.0	7.0	7.1	7.1	7.0	EXM-B0D		
	6.2	6.9	7.4	7.8	8.1	8.2	8.3	8.3	8.3	8.3	EXM-B0E		
	7.7	8.6	9.2	9.7	10.0	10.2	10.3	10.4	10.3	10.3	EXL-B1F		
	10.4	11.6	12.5	13.1	13.5	13.8	14.0	14.0	14.0	13.9	EXL-B1G		
30	0.6	0.8	0.9	0.9	1.0	1.0	1.0	1.0	1.1	1.0	EXM-B0A		
	1.9	2.3	2.6	2.8	3.0	3.1	3.2	3.2	3.2	3.2	EXM-B0B		
	4.0	4.9	5.6	6.0	6.3	6.5	6.7	6.7	6.8	6.8	EXM-B0D		
	4.7	5.8	6.6	7.1	7.5	7.7	7.9	8.0	8.0	8.0	EXM-B0E		
	5.9	7.2	8.1	8.8	9.3	9.6	9.8	9.9	9.9	9.9	EXL-B1F		
	8.0	9.8	11.0	11.9	12.5	13.0	13.2	13.4	13.4	13.4	EXL-B1G		

**EXM/L - Quick selection** (included 1.5 bar pressure drop for liquid line components and distributor)

**A1**

Condensing temperature (°C)	R410A	Capacity (kW)									R410A	Valve Type
	Evaporating temperature (°C)											
	15	10	5	0	-5	-10	-15	-20	-25	-30		
65	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	EXM-B0A
	4.0	4.0	4.1	4.1	4.1	4.1	4.1	4.0	4.0	3.9	EXM-B0B	
	8.3	8.5	8.6	8.7	8.7	8.6	8.6	8.5	8.4	8.2	EXM-B0D	
	9.8	10.0	10.1	10.2	10.2	10.2	10.1	10.0	9.9	9.7	EXM-B0E	
	12.2	12.4	12.6	12.7	12.7	12.7	12.6	12.5	12.3	12.1	EXL-B1F	
	16.5	16.8	17.0	17.2	17.2	17.1	17.0	16.9	16.6	16.3	EXL-B1G	
60	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	EXM-B0A	
	4.3	4.4	4.5	4.5	4.5	4.6	4.5	4.5	4.5	4.4	EXM-B0B	
	9.0	9.3	9.4	9.5	9.6	9.6	9.6	9.5	9.4	9.3	EXM-B0D	
	10.7	10.9	11.1	11.3	11.3	11.3	11.3	11.2	11.1	11.0	EXM-B0E	
	13.2	13.6	13.8	14.0	14.1	14.1	14.0	14.0	13.8	13.7	EXL-B1F	
	17.9	18.4	18.7	18.9	19.0	19.0	19.0	18.9	18.7	18.5	EXL-B1G	
55	1.4	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	EXM-B0A	
	4.4	4.6	4.7	4.8	4.8	4.8	4.8	4.8	4.8	4.8	EXM-B0B	
	9.3	9.6	9.9	10.0	10.1	10.2	10.2	10.2	10.1	10.0	EXM-B0D	
	11.0	11.4	11.7	11.8	12.0	12.0	12.1	12.0	12.0	11.8	EXM-B0E	
	13.7	14.1	14.5	14.7	14.9	14.9	15.0	14.9	14.8	14.7	EXL-B1F	
	18.5	19.1	19.6	19.9	20.1	20.2	20.2	20.2	20.1	19.9	EXL-B1G	
50	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	EXM-B0A	
	4.4	4.6	4.8	4.9	4.9	5.0	5.0	5.0	5.0	5.0	EXM-B0B	
	9.3	9.7	10.0	10.3	10.4	10.5	10.6	10.6	10.6	10.5	EXM-B0D	
	11.0	11.5	11.9	12.1	12.3	12.4	12.5	12.5	12.5	12.4	EXM-B0E	
	13.7	14.3	14.7	15.1	15.3	15.4	15.5	15.5	15.5	15.4	EXL-B1F	
	18.5	19.3	19.9	20.4	20.7	20.9	21.0	21.0	21.0	20.8	EXL-B1G	
45	1.4	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	EXM-B0A	
	4.3	4.6	4.7	4.9	5.0	5.1	5.1	5.1	5.1	5.1	EXM-B0B	
	9.1	9.6	10.0	10.3	10.5	10.7	10.8	10.8	10.8	10.8	EXM-B0D	
	10.8	11.3	11.8	12.2	12.4	12.6	12.7	12.8	12.8	12.8	EXM-B0E	
	13.4	14.1	14.7	15.1	15.4	15.7	15.8	15.9	15.9	15.8	EXL-B1F	
	18.1	19.0	19.8	20.4	20.9	21.2	21.4	21.5	21.5	21.4	EXL-B1G	
40	1.3	1.4	1.5	1.6	1.6	1.7	1.7	1.7	1.7	1.7	EXM-B0A	
	4.1	4.4	4.6	4.8	4.9	5.0	5.1	5.2	5.2	5.2	EXM-B0B	
	8.6	9.3	9.8	10.1	10.4	10.7	10.8	10.9	10.9	10.9	EXM-B0D	
	10.2	10.9	11.5	12.0	12.3	12.6	12.8	12.9	12.9	12.9	EXM-B0E	
	12.6	13.6	14.3	14.9	15.3	15.6	15.8	16.0	16.0	16.0	EXL-B1F	
	17.1	18.4	19.3	20.1	20.7	21.1	21.4	21.6	21.7	21.7	EXL-B1G	
35	1.2	1.3	1.4	1.5	1.6	1.6	1.7	1.7	1.7	1.7	EXM-B0A	
	3.7	4.1	4.4	4.6	4.8	5.0	5.1	5.1	5.2	5.2	EXM-B0B	
	7.9	8.7	9.3	9.8	10.2	10.5	10.7	10.8	10.9	10.9	EXM-B0D	
	9.3	10.2	11.0	11.6	12.0	12.4	12.6	12.8	12.9	12.9	EXM-B0E	
	11.5	12.7	13.6	14.4	14.9	15.3	15.6	15.8	16.0	16.0	EXL-B1F	
	15.6	17.2	18.4	19.4	20.2	20.7	21.2	21.4	21.6	21.7	EXL-B1G	
30	1.1	1.2	1.3	1.4	1.5	1.6	1.6	1.6	1.7	1.7	EXM-B0A	
	3.2	3.7	4.1	4.4	4.6	4.8	4.9	5.0	5.1	5.1	EXM-B0B	
	6.8	7.8	8.6	9.3	9.7	10.1	10.4	10.6	10.7	10.8	EXM-B0D	
	8.0	9.3	10.2	10.9	11.5	12.0	12.3	12.5	12.7	12.8	EXM-B0E	
	10.0	11.5	12.7	13.6	14.3	14.8	15.2	15.5	15.7	15.8	EXL-B1F	
	13.5	15.6	17.1	18.4	19.3	20.1	20.6	21.0	21.3	21.4	EXL-B1G	

**EXM/L - Quick selection** (included 1.5 bar pressure drop for liquid line components and distributor)

**A1**

Condensing temperature (°C)	R407C	Capacity (kW)									R407C	Valve Type
	Evaporating temperature (°C)											
	15	10	5	0	-5	-10	-15	-20	-25	-30		
65	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	EXM-B0A	
	3.4	3.4	3.4	3.4	3.4	3.3	3.3	3.2	3.2	3.1	EXM-B0B	
	7.1	7.1	7.1	7.1	7.0	7.0	6.9	6.7	6.6	6.4	EXM-B0D	
	8.4	8.4	8.4	8.4	8.3	8.2	8.1	7.9	7.8	7.6	EXM-B0E	
	10.4	10.5	10.5	10.4	10.3	10.2	10.1	9.9	9.7	9.4	EXL-B1F	
	14.0	14.1	14.1	14.0	13.9	13.7	13.5	13.3	13.0	12.7	EXL-B1G	
60	1.1	1.1	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	EXM-B0A	
	3.5	3.5	3.6	3.6	3.5	3.5	3.5	3.4	3.4	3.3	EXM-B0B	
	7.3	7.4	7.4	7.4	7.4	7.3	7.2	7.1	7.0	6.8	EXM-B0D	
	8.6	8.7	8.7	8.7	8.7	8.6	8.5	8.4	8.2	8.1	EXM-B0E	
	10.7	10.8	10.9	10.9	10.8	10.7	10.6	10.4	10.2	10.0	EXL-B1F	
	14.4	14.5	14.6	14.6	14.5	14.4	14.2	14.0	13.8	13.5	EXL-B1G	
55	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	EXM-B0A	
	3.5	3.6	3.6	3.6	3.6	3.6	3.6	3.5	3.5	3.4	EXM-B0B	
	7.3	7.4	7.5	7.6	7.6	7.5	7.5	7.4	7.3	7.1	EXM-B0D	
	8.6	8.8	8.9	8.9	8.9	8.9	8.8	8.7	8.6	8.4	EXM-B0E	
	10.7	10.9	11.0	11.1	11.1	11.0	11.0	10.8	10.7	10.5	EXL-B1F	
	14.4	14.7	14.9	14.9	14.9	14.9	14.7	14.6	14.3	14.1	EXL-B1G	
50	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	EXM-B0A	
	3.5	3.6	3.6	3.7	3.7	3.7	3.7	3.6	3.6	3.5	EXM-B0B	
	7.2	7.4	7.5	7.6	7.7	7.6	7.6	7.5	7.5	7.3	EXM-B0D	
	8.5	8.8	8.9	9.0	9.0	9.0	9.0	8.9	8.8	8.7	EXM-B0E	
	10.6	10.9	11.1	11.2	11.2	11.2	11.2	11.1	10.9	10.8	EXL-B1F	
	14.3	14.6	14.9	15.0	15.1	15.1	15.0	14.9	14.7	14.5	EXL-B1G	
45	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	EXM-B0A	
	3.4	3.5	3.6	3.6	3.7	3.7	3.7	3.7	3.6	3.6	EXM-B0B	
	7.0	7.3	7.4	7.6	7.6	7.7	7.7	7.6	7.6	7.5	EXM-B0D	
	8.3	8.6	8.8	8.9	9.0	9.1	9.1	9.0	8.9	8.8	EXM-B0E	
	10.3	10.7	10.9	11.1	11.2	11.3	11.2	11.2	11.1	11.0	EXL-B1F	
	13.8	14.3	14.7	14.9	15.1	15.1	15.1	15.0	14.9	14.7	EXL-B1G	
40	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	EXM-B0A	
	3.2	3.4	3.5	3.6	3.6	3.7	3.7	3.7	3.6	3.6	EXM-B0B	
	6.7	7.0	7.2	7.4	7.5	7.6	7.6	7.6	7.6	7.5	EXM-B0D	
	7.9	8.3	8.6	8.8	8.9	9.0	9.0	9.0	9.0	8.9	EXM-B0E	
	9.8	10.3	10.6	10.9	11.1	11.2	11.2	11.2	11.1	11.0	EXL-B1F	
	13.2	13.8	14.3	14.6	14.9	15.0	15.1	15.0	15.0	14.8	EXL-B1G	
35	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	EXM-B0A	
	3.0	3.2	3.3	3.4	3.5	3.6	3.6	3.6	3.6	3.6	EXM-B0B	
	6.2	6.6	6.9	7.2	7.3	7.4	7.5	7.5	7.5	7.5	EXM-B0D	
	7.3	7.8	8.2	8.5	8.7	8.8	8.9	8.9	8.9	8.8	EXM-B0E	
	9.1	9.7	10.2	10.5	10.8	10.9	11.0	11.0	11.0	11.0	EXL-B1F	
	12.2	13.0	13.7	14.1	14.5	14.7	14.8	14.9	14.8	14.7	EXL-B1G	
30	0.9	0.9	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	EXM-B0A	
	2.6	2.9	3.1	3.3	3.4	3.5	3.5	3.5	3.5	3.5	EXM-B0B	
	5.5	6.1	6.5	6.8	7.0	7.2	7.3	7.4	7.4	7.4	EXM-B0D	
	6.5	7.2	7.7	8.0	8.3	8.5	8.6	8.7	8.7	8.7	EXM-B0E	
	8.1	8.9	9.5	10.0	10.3	10.6	10.7	10.8	10.8	10.8	EXL-B1F	
	10.9	12.0	12.8	13.4	13.9	14.2	14.4	14.5	14.5	14.5	EXL-B1G	

**EXM/L - Quick selection** (included 1.5 bar pressure drop for liquid line components and distributor)



Condensing temperature (°C)	R32	Capacity (kW)									R32	Valve Type
	Evaporating temperature (°C)											
	15	10	5	0	-5	-10	-15	-20	-25	-30		
65	2.5	2.6	2.7	2.7	2.7	2.8	2.8	2.8	2.8	2.8	EXM-B0A	
	7.7	8.0	8.1	8.3	8.4	8.4	8.5	8.5	8.5	8.5	EXM-B0B	
	16.3	16.8	17.1	17.4	17.6	17.8	17.9	17.9	17.9	17.9	EXM-B0D	
	19.3	19.8	20.2	20.6	20.8	21.0	21.1	21.2	21.1	21.1	EXM-B0E	
	23.9	24.6	25.1	25.5	25.8	26.1	26.2	26.3	26.2	26.2	EXL-B1F	
	32.4	33.3	34.0	34.5	35.0	35.3	35.4	35.5	35.5	35.4	EXL-B1G	
60	2.6	2.7	2.7	2.8	2.8	2.9	2.9	2.9	2.9	2.9	EXM-B0A	
	7.9	8.2	8.4	8.6	8.7	8.8	8.9	8.9	8.9	8.9	EXM-B0B	
	16.7	17.3	17.7	18.1	18.3	18.6	18.7	18.8	18.8	18.8	EXM-B0D	
	19.7	20.4	20.9	21.3	21.7	21.9	22.1	22.2	22.2	22.2	EXM-B0E	
	24.5	25.3	26.0	26.5	26.9	27.2	27.4	27.5	27.6	27.5	EXL-B1F	
	33.1	34.2	35.1	35.8	36.4	36.8	37.1	37.2	37.3	37.2	EXL-B1G	
55	2.6	2.7	2.8	2.8	2.9	2.9	3.0	3.0	3.0	3.0	EXM-B0A	
	7.9	8.2	8.5	8.7	8.8	9.0	9.1	9.1	9.2	9.2	EXM-B0B	
	16.7	17.3	17.9	18.3	18.7	18.9	19.1	19.2	19.3	19.3	EXM-B0D	
	19.7	20.5	21.1	21.6	22.0	22.3	22.6	22.7	22.8	22.8	EXM-B0E	
	24.4	25.4	26.2	26.8	27.3	27.7	28.0	28.2	28.3	28.3	EXL-B1F	
	33.1	34.4	35.4	36.3	37.0	37.5	37.9	38.1	38.3	38.3	EXL-B1G	
50	2.5	2.6	2.7	2.8	2.9	2.9	3.0	3.0	3.0	3.0	EXM-B0A	
	7.7	8.1	8.4	8.6	8.8	9.0	9.1	9.2	9.3	9.3	EXM-B0B	
	16.3	17.1	17.7	18.2	18.7	19.0	19.2	19.4	19.5	19.6	EXM-B0D	
	19.2	20.1	20.9	21.5	22.0	22.4	22.7	22.9	23.1	23.1	EXM-B0E	
	23.8	25.0	25.9	26.7	27.3	27.8	28.2	28.4	28.6	28.7	EXL-B1F	
	32.3	33.8	35.1	36.2	37.0	37.6	38.1	38.5	38.7	38.8	EXL-B1G	
45	2.4	2.6	2.7	2.8	2.9	2.9	3.0	3.0	3.0	3.0	EXM-B0A	
	7.4	7.8	8.2	8.5	8.7	8.9	9.1	9.2	9.2	9.3	EXM-B0B	
	15.5	16.5	17.3	17.9	18.4	18.8	19.1	19.3	19.5	19.6	EXM-B0D	
	18.3	19.5	20.4	21.1	21.7	22.2	22.6	22.8	23.0	23.1	EXM-B0E	
	22.8	24.1	25.3	26.2	27.0	27.5	28.0	28.3	28.6	28.7	EXL-B1F	
	30.8	32.7	34.2	35.5	36.5	37.3	37.9	38.3	38.7	38.8	EXL-B1G	
40	2.2	2.4	2.6	2.7	2.8	2.9	2.9	3.0	3.0	3.0	EXM-B0A	
	6.9	7.4	7.8	8.2	8.5	8.7	8.9	9.0	9.1	9.2	EXM-B0B	
	14.5	15.6	16.5	17.3	17.9	18.4	18.8	19.1	19.3	19.4	EXM-B0D	
	17.1	18.4	19.5	20.4	21.1	21.7	22.2	22.5	22.8	22.9	EXM-B0E	
	21.2	22.9	24.2	25.3	26.2	26.9	27.5	27.9	28.2	28.4	EXL-B1F	
	28.7	30.9	32.8	34.3	35.5	36.4	37.2	37.8	38.2	38.5	EXL-B1G	
35	2.0	2.2	2.4	2.5	2.7	2.8	2.8	2.9	2.9	3.0	EXM-B0A	
	6.2	6.8	7.4	7.8	8.1	8.4	8.6	8.8	8.9	9.0	EXM-B0B	
	13.0	14.4	15.5	16.4	17.2	17.8	18.2	18.6	18.9	19.0	EXM-B0D	
	15.4	17.0	18.3	19.4	20.3	21.0	21.5	21.9	22.3	22.5	EXM-B0E	
	19.1	21.1	22.7	24.1	25.2	26.0	26.7	27.2	27.6	27.9	EXL-B1F	
	25.8	28.6	30.8	32.6	34.0	35.2	36.1	36.8	37.4	37.8	EXL-B1G	
30	1.7	2.0	2.2	2.4	2.5	2.6	2.7	2.8	2.8	2.9	EXM-B0A	
	5.2	6.1	6.7	7.3	7.7	8.0	8.3	8.5	8.7	8.8	EXM-B0B	
	11.1	12.8	14.2	15.3	16.2	16.9	17.5	17.9	18.3	18.5	EXM-B0D	
	13.1	15.2	16.8	18.1	19.1	20.0	20.7	21.2	21.6	21.9	EXM-B0E	
	16.2	18.8	20.9	22.5	23.8	24.8	25.6	26.3	26.8	27.1	EXL-B1F	
	21.9	25.5	28.2	30.4	32.1	33.6	34.7	35.6	36.2	36.7	EXL-B1G	

**EXM/L - Quick selection** (included 1.5 bar pressure drop for liquid line components and distributor)



Condensing temperature (°C)	R452B R454B	Capacity (kW)									Valve Type	
		Evaporating temperature (°C)										
		15	10	5	0	-5	-10	-15	-20	-25		-30
65		1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	EXM-B0A
		5.6	5.7	5.8	5.8	5.8	5.9	5.8	5.8	5.8	5.7	EXM-B0B
		11.7	12.0	12.1	12.3	12.3	12.3	12.3	12.3	12.2	12.0	EXM-B0D
		13.9	14.1	14.3	14.5	14.6	14.6	14.5	14.5	14.4	14.2	EXM-B0E
		17.2	17.5	17.8	18.0	18.1	18.1	18.1	18.0	17.8	17.6	EXL-B1F
		23.3	23.7	24.1	24.3	24.4	24.5	24.4	24.3	24.1	23.8	EXL-B1G
60		1.9	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	EXM-B0A
		5.8	6.0	6.1	6.2	6.2	6.3	6.3	6.3	6.2	6.2	EXM-B0B
		12.3	12.6	12.9	13.0	13.2	13.2	13.2	13.2	13.1	13.0	EXM-B0D
		14.5	14.9	15.2	15.4	15.5	15.6	15.6	15.6	15.5	15.4	EXM-B0E
		18.0	18.5	18.9	19.1	19.3	19.4	19.4	19.3	19.2	19.1	EXL-B1F
		24.4	25.0	25.5	25.9	26.1	26.2	26.2	26.2	26.0	25.8	EXL-B1G
55		1.9	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	EXM-B0A
		5.9	6.1	6.3	6.4	6.5	6.5	6.5	6.5	6.5	6.5	EXM-B0B
		12.5	12.9	13.2	13.4	13.6	13.7	13.8	13.8	13.8	13.7	EXM-B0D
		14.7	15.2	15.6	15.9	16.1	16.2	16.3	16.3	16.2	16.2	EXM-B0E
		18.3	18.9	19.3	19.7	20.0	20.1	20.2	20.2	20.2	20.0	EXL-B1F
		24.7	25.5	26.2	26.7	27.0	27.2	27.3	27.3	27.3	27.1	EXL-B1G
50		1.9	2.0	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	EXM-B0A
		5.8	6.1	6.3	6.4	6.5	6.6	6.7	6.7	6.7	6.7	EXM-B0B
		12.3	12.8	13.2	13.6	13.8	14.0	14.1	14.1	14.1	14.1	EXM-B0D
		14.6	15.2	15.6	16.0	16.3	16.5	16.6	16.7	16.7	16.6	EXM-B0E
		18.1	18.8	19.4	19.9	20.2	20.5	20.6	20.7	20.7	20.6	EXL-B1F
		24.5	25.5	26.3	26.9	27.4	27.7	27.9	28.0	28.0	27.9	EXL-B1G
45		1.8	1.9	2.0	2.1	2.1	2.2	2.2	2.2	2.2	2.2	EXM-B0A
		5.7	5.9	6.2	6.4	6.5	6.6	6.7	6.7	6.8	6.8	EXM-B0B
		11.9	12.5	13.1	13.5	13.8	14.0	14.1	14.2	14.3	14.3	EXM-B0D
		14.1	14.8	15.4	15.9	16.2	16.5	16.7	16.8	16.9	16.8	EXM-B0E
		17.5	18.4	19.1	19.7	20.2	20.5	20.7	20.9	20.9	20.9	EXL-B1F
		23.6	24.9	25.9	26.7	27.3	27.7	28.0	28.2	28.3	28.3	EXL-B1G
40		1.7	1.9	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.2	EXM-B0A
		5.3	5.7	6.0	6.2	6.4	6.6	6.7	6.7	6.8	6.8	EXM-B0B
		11.2	12.0	12.6	13.1	13.5	13.8	14.0	14.2	14.3	14.3	EXM-B0D
		13.3	14.2	14.9	15.5	16.0	16.3	16.6	16.7	16.8	16.9	EXM-B0E
		16.5	17.6	18.5	19.2	19.8	20.2	20.6	20.8	20.9	20.9	EXL-B1F
		22.3	23.8	25.1	26.0	26.8	27.4	27.8	28.1	28.3	28.3	EXL-B1G
35		1.6	1.7	1.9	2.0	2.0	2.1	2.1	2.2	2.2	2.2	EXM-B0A
		4.9	5.3	5.7	6.0	6.2	6.4	6.5	6.6	6.7	6.7	EXM-B0B
		10.2	11.2	12.0	12.6	13.1	13.5	13.8	14.0	14.1	14.2	EXM-B0D
		12.1	13.3	14.2	14.9	15.5	15.9	16.2	16.5	16.6	16.7	EXM-B0E
		15.0	16.5	17.6	18.5	19.2	19.7	20.2	20.5	20.7	20.8	EXL-B1F
		20.3	22.3	23.8	25.0	26.0	26.7	27.3	27.7	27.9	28.1	EXL-B1G
30		1.4	1.6	1.7	1.8	1.9	2.0	2.1	2.1	2.1	2.2	EXM-B0A
		4.2	4.8	5.3	5.6	5.9	6.1	6.3	6.4	6.5	6.6	EXM-B0B
		8.9	10.2	11.1	11.9	12.5	13.0	13.3	13.6	13.8	13.9	EXM-B0D
		10.5	12.0	13.1	14.0	14.8	15.3	15.7	16.1	16.3	16.4	EXM-B0E
		13.0	14.9	16.3	17.4	18.3	19.0	19.5	19.9	20.2	20.4	EXL-B1F
		17.6	20.1	22.1	23.6	24.8	25.7	26.4	27.0	27.3	27.6	EXL-B1G



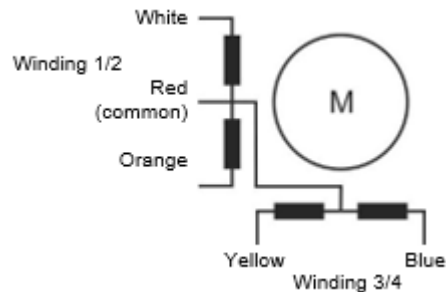
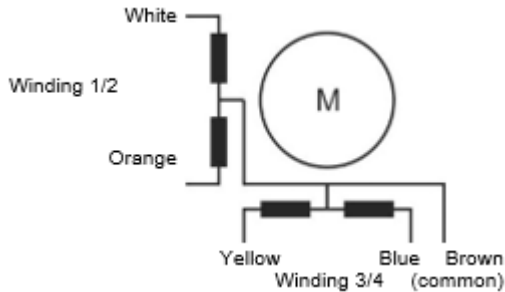
**EXM/L - Quick selection** (included 1.5 bar pressure drop for liquid line components and distributor)

Condensing temperature (°C)	R290	Capacity (kW)									R290	Valve Type
	Evaporating temperature (°C)											
	15	10	5	0	-5	-10	-15	-20	-25	-30		
65	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	EXM-B0A	
	4.7	4.7	4.7	4.7	4.6	4.6	4.5	4.4	4.3	4.2	EXM-B0B	
	9.8	9.9	9.9	9.9	9.8	9.6	9.5	9.3	9.0	8.8	EXM-B0D	
	11.6	11.7	11.7	11.6	11.5	11.4	11.2	10.9	10.7	10.4	EXM-B0E	
	14.4	14.5	14.5	14.4	14.3	14.1	13.9	13.6	13.3	12.9	EXL-B1F	
	19.5	19.6	19.6	19.5	19.4	19.1	18.8	18.4	17.9	17.4	EXL-B1G	
60	1.5	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	EXM-B0A	
	4.7	4.8	4.8	4.8	4.8	4.7	4.7	4.6	4.5	4.4	EXM-B0B	
	9.9	10.0	10.1	10.1	10.1	10.0	9.9	9.7	9.5	9.3	EXM-B0D	
	11.7	11.9	11.9	12.0	11.9	11.8	11.6	11.5	11.2	11.0	EXM-B0E	
	14.5	14.7	14.8	14.8	14.8	14.6	14.4	14.2	13.9	13.6	EXL-B1F	
	19.7	19.9	20.1	20.1	20.0	19.8	19.5	19.2	18.9	18.4	EXL-B1G	
55	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	EXM-B0A	
	4.6	4.8	4.8	4.9	4.9	4.8	4.8	4.7	4.7	4.6	EXM-B0B	
	9.8	10.0	10.2	10.2	10.2	10.2	10.1	10.0	9.8	9.7	EXM-B0D	
	11.6	11.8	12.0	12.1	12.1	12.0	11.9	11.8	11.6	11.4	EXM-B0E	
	14.4	14.7	14.9	15.0	15.0	15.0	14.8	14.6	14.4	14.2	EXL-B1F	
	19.4	19.9	20.1	20.3	20.3	20.2	20.1	19.8	19.5	19.2	EXL-B1G	
50	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5	EXM-B0A	
	4.5	4.7	4.8	4.8	4.9	4.9	4.9	4.8	4.8	4.7	EXM-B0B	
	9.5	9.8	10.1	10.2	10.3	10.3	10.2	10.2	10.0	9.9	EXM-B0D	
	11.2	11.6	11.9	12.0	12.1	12.1	12.1	12.0	11.9	11.7	EXM-B0E	
	13.9	14.4	14.7	14.9	15.0	15.1	15.0	14.9	14.7	14.5	EXL-B1F	
	18.8	19.5	19.9	20.2	20.4	20.4	20.3	20.2	19.9	19.6	EXL-B1G	
45	1.4	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	EXM-B0A	
	4.3	4.5	4.6	4.7	4.8	4.8	4.9	4.8	4.8	4.8	EXM-B0B	
	9.0	9.5	9.8	10.0	10.2	10.2	10.2	10.2	10.1	10.0	EXM-B0D	
	10.6	11.2	11.6	11.8	12.0	12.1	12.1	12.1	12.0	11.8	EXM-B0E	
	13.2	13.9	14.3	14.7	14.9	15.0	15.0	15.0	14.9	14.7	EXL-B1F	
	17.9	18.7	19.4	19.8	20.1	20.3	20.3	20.2	20.1	19.9	EXL-B1G	
40	1.3	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.6	EXM-B0A	
	3.9	4.2	4.4	4.6	4.7	4.8	4.8	4.8	4.8	4.8	EXM-B0B	
	8.3	8.9	9.3	9.7	9.9	10.0	10.1	10.1	10.1	10.0	EXM-B0D	
	9.8	10.5	11.0	11.4	11.7	11.9	12.0	12.0	11.9	11.9	EXM-B0E	
	12.2	13.0	13.7	14.2	14.5	14.7	14.8	14.9	14.8	14.7	EXL-B1F	
	16.4	17.6	18.5	19.2	19.6	19.9	20.1	20.1	20.0	19.9	EXL-B1G	
35	1.1	1.3	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	EXM-B0A	
	3.5	3.8	4.1	4.3	4.5	4.6	4.7	4.7	4.7	4.7	EXM-B0B	
	7.3	8.1	8.7	9.2	9.5	9.7	9.9	10.0	10.0	9.9	EXM-B0D	
	8.6	9.6	10.3	10.8	11.2	11.5	11.7	11.8	11.8	11.7	EXM-B0E	
	10.7	11.9	12.8	13.4	13.9	14.3	14.5	14.6	14.6	14.6	EXL-B1F	
	14.5	16.1	17.3	18.2	18.8	19.3	19.6	19.7	19.8	19.7	EXL-B1G	
30	0.9	1.1	1.2	1.3	1.4	1.4	1.5	1.5	1.5	1.5	EXM-B0A	
	2.8	3.3	3.7	4.0	4.2	4.4	4.5	4.6	4.6	4.6	EXM-B0B	
	5.9	7.1	7.9	8.5	8.9	9.3	9.5	9.6	9.7	9.7	EXM-B0D	
	7.0	8.3	9.3	10.0	10.6	11.0	11.2	11.4	11.5	11.5	EXM-B0E	
	8.7	10.4	11.6	12.5	13.1	13.6	13.9	14.1	14.2	14.3	EXL-B1F	
	11.7	14.0	15.6	16.9	17.7	18.4	18.8	19.1	19.3	19.3	EXL-B1G	

### Wiring

**EXM-125/EXL-125** (12 VDC, 5 wires coil)

**EXM-24U/EXL-24U** (24 VDC, 5 wires coil)



Winding Number	Wire Color	Recommended half step pulsing/switching mode								Remark
		1	2	3	4	5	6	7	8	
1/2	White	ON	ON	OFF	OFF	OFF	OFF	OFF	ON	1) The pulse sequence 1 to 8 will be repeated for further pulses in order to open the valve. 2) The pulse sequence 8 to 1 will be repeated for further pulses in order to close the valve.
	Orange	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	
3/4	Yellow	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	
	Blue	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	
Commons	12 V: Brown 24 V: Red	ON	ON	ON	ON	ON	ON	ON	ON	

Valve movement mode (pulsing/switching sequence)  
 Valve open: 1 → 2 → 3 → 4 → 5 → 6 → 7 → 8  
 Valve close: 8 → 7 → 6 → 5 → 4 → 3 → 2 → 1

### Consideration for operating unipolar stepper motor in half step mode without holding current

When the pulsing reaches the desired position, the valve gets stabilized by holding the final pulse for at least duration of one pulse up to 0.5 second. Before re-move to a new position, the same previous final pulse must be powered for at least duration of one pulse up to 0.5 seconds.

**NOTE:**

Zero pulse (base point) shall be the point of full close position of valve. Do not exceed total of 500 pulses (half steps). In case of more than 500 pulses applied by driver/controller or false movement due to the improper wiring, stop the operation and apply more than 700 pulses in close direction in order to close fully the valve and reset the counter to zero pulse (base point).

### EXM/EXL air flow characteristics

Type	Air flow at 10 bar differential pressure, 500 half step
EXM-B0B	17.1 l/min
EXM-B0D	35.5 l/min
EXM-B0E	42.2 l/min
EXL-B1F	52.3 l/min
EXL-B1G	70.3 l/min





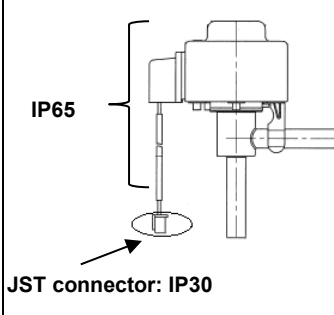
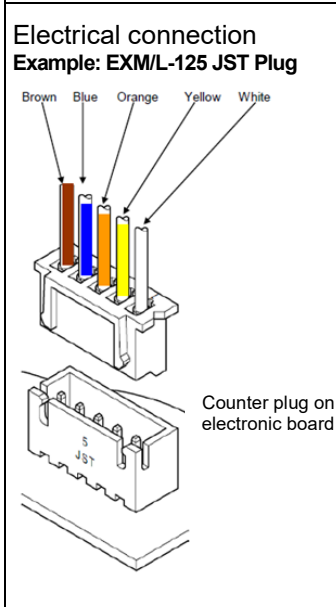
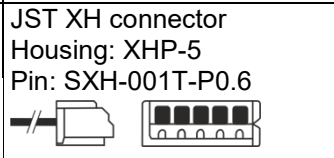
### Technical Data

Max. allowable Pressure PS	45 bar
MOPD (maximum operating pressure differential)	40 bar in normal flow 33 bar in reverse flow
Temperatures Storage/ Ambient/ Transport Medium	-30...+70 °C -30...+60 °C
Air seat leakage at 10 bar differential pressure	Typically, 150 cm <sup>3</sup> /min.
Connections, A and B	EXM: 1/4" ODM EXL: 1/4" ODF / 8 mm ODM
Bi-flow direction Normal Reverse	Connection A to B Connection B to A
Valve installation Normal use self-contained display cabinet/unit	Coil upside or vertical within ±90° Coil upside or vertical within ±60° (in cold/ wet compartment)
VDE Test 2017 acc.	EN/IEC-60335-2-89 EN/IEC-60335-2-40

Released Refrigerants <b>Fluid group II</b>	R134a, R410A, R407C	<b>A1</b>
<b>Fluid group I</b>	R32, R452B, R454B	<b>A2L</b>
<b>Fluid group I</b>	R290	<b>A3</b>
NOTE: Fluid Group acc. to PED 2014/68/EU.		
Max. relative humidity	95 %	
External leakage	≤ 3 g / year	
Package and delivery	10 pieces	
Weight	Valve Coil	EXM: 65 g, EXL: 76 g EXM: 124 g, EXL: 156 g
Markings	<b>CE</b> not required,	

### Electrical Data

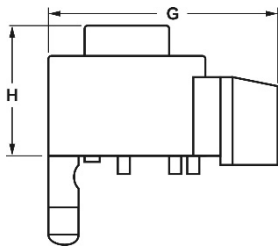
Stepper motor type	Uni-polar, constant voltage
Electrical connection	EXM/L-125: 5 wires EXM/L-24U: 5 wires
Supply voltage	EXM/L-125: 12 V ± 10 % EXM/L-24U: 24 V ± 10 %
Phase current, operating	EXM/L-125: 260 mA EXM/L-24U: 130 mA
Winding resistance per phase	EXM/L-125: 46 Ω EXM/L-24U: 185 Ω
Insulation resistance	Min. 100 MΩ at 500 VDC
Cable length	1 m
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

Protection class	 <p>IP65</p> <p>JST connector: IP30</p>
Electrical connection Example: EXM/L-125 JST Plug	 <p>Brown Blue Orange Yellow White</p> <p>Counter plug on electronic board</p>
JST XH connector Housing: XHP-5 Pin: SXH-001T-P0.6	

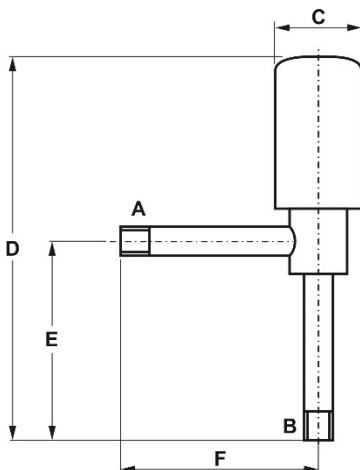
### Endurance

- Continuous 40 bar differential pressure across the valve (In normal flow direction from A to B)
- Cycling between fully close and fully open while 40 bar differential pressure across the valve has been maintained during cycling
- Each cycle consist of:
  - o From 0 % to 100 % fully open position equal to 500 pulses
  - o From 100 % to 0 % fully close position equal to 500 pulses
- 225.000 cycles or equal to 225 million pulses

### Dimension



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



Valve type	A / B Connections		C (mm)	D (mm)	E (mm)	F (mm)
	Ø 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

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