

Electrical Control Valves EX4-8

EMERSON **EX4-8** are stepper motor driven valves for precise control of refrigerant mass flow in air conditioning, refrigeration, heat pumps, close control and industrial process cooling applications.

The Electrical Control Valves can be used as thermo-expansion duty, liquid injection duty, hot gas bypass, evaporator pressure regulator, crankcase pressure regulator, head pressure regulator or liquid level control.

Features

- Multifunction as expansion valves, hot gas bypass, suction gas throttling, head pressure, liquid level actuator etc.
- Fully hermetic design
- Stepper motor driven
- Short opening and closing time
- Very fast full stroke time
- High resolution and excellent repeatability
- Bi-flow versions with positive shut-off in both flow directions
- Positive shut-off function to eliminate the use of an additional solenoid valve
- Linear flow capacity
- Extremely wide capacity range (5...100%)
- Continuous modulation of mass flow, no stress (liquid hammering) in the refrigeration circuit
- Direct coupling of motor and valve for high reliability (no gear mechanism)
- Ceramic slide and port for accurate flow and minimal wear
- Balanced force design
- Corrosion resistant stainless steel body and connections
- Patented design



Selection table

Type	Part No.	Flow pattern	Nominal capacity range [kW]	Inlet connection	Outlet connection	Electrical connector
EX4-I21	800615	Uni-flow	5...100%	3/8" ODF	5/8" ODF	M12 plug
EX4-M21	800616			10 mm ODF	16 mm ODF	
EX5-U21	800618			5/8" (16 mm) ODF	7/8" (22 mm) ODF	
EX6-I21	800620			7/8" ODF	1-1/8" ODF	
EX6-M21	800621			22 mm ODF	28 mm ODF	
EX7-I21	800624			1-1/8" ODF	1-3/8" ODF	
EX7-M21	800625			28 mm ODF	35 mm ODF	
EX8-M21	800629			42 mm ODF	42 mm ODF	
EX8-U21	800630			1-3/8" (35 mm) ODF	1-3/8" (35 mm) ODF	
EX8-I21	800631			1-5/8" ODF	1-5/8" ODF	
EX4-U31	800617	Bi-flow (Heat pump)		5/8" (16 mm) ODF	5/8" (16 mm) ODF	
EX5-U31	800619			7/8" (22 mm) ODF	7/8" (22 mm) ODF	
EX6-I31	800622			1-1/8" ODF	1-1/8" ODF	
EX6-M31	800623			28 mm ODF	28 mm ODF	
EX7-U31	800626			1-3/8" (35 mm) ODF	1-3/8" (35 mm) ODF	

Note: The valves are delivered without cable/connector assembly (order separately).

⚠ Warning: R1234ze classified as A2L. Use of product only for non-explosive environment, non ATEX zone.

Cable and connector assembly

Type	Part No.	Temperature Range	Length	Connector type to valve	Connector type to driver board or controller	Illustration
EXV-M15	804663	-50...+80°C	1.5 m	M12	Loose wires	
EXV-M30	804664		3.0 m			
EXV-M60	804665		6.0 m			

Electrical Control Valves EX4-8

Nominal capacities...

... as expansion valves and liquid injection valves [kW] (5% ... 100%)

Valve type	R448A	R449A	R450A	R513A	R1234ze
EX4	16.5	16.1	11.3	11.5	10.0
EX5	50	49	34	35	30
EX6	120	117	82	84	73
EX7	329	321	225	230	199
EX8	877	857	600	614	532

Note 1: EX Bi-flow versions have identical capacity in both flow directions.

...as hot gas bypass regulator [kW]

Valve type	Kv [m ³ /h]	R448A	R449A	R450A	R513A	R1234ze
EX4	0.21	5.7	5.6	3.0	3.3	2.6
EX5	0.68	18.6	18.3	9.7	10.8	8.3
EX6	1.57	43.2	42.5	22.6	25.2	19.3
EX7	5.58	153.5	151.2	80.2	89.4	68.7
EX8	16.95	466.3	459.2	243.7	271.7	208.7

... as suction pressure regulator (evaporator or crankcase), [kW]

Valve type	Kv [m ³ /h]	R448A	R449A	R450A	R513A	R1234ze
EX6	1.57	3.9	3.8	2.8	3.0	2.5
EX7	5.58	13.8	13.6	9.9	10.6	9.0
EX8	16.95	42.0	41.4	30.1	32.2	27.4

... as condensing pressure regulator and liquid duty, [kW]

Valve type	Kv [m ³ /h]	R448A	R449A	R450A	R513A	R1234ze
EX4	0.21	5.4	5.2	5.3	5.1	5.1
EX5	0.68	17.4	17.0	17.2	16.5	16.6
EX6	1.57	40.4	39.6	40.1	38.3	38.7
EX7	5.58	143	140	142	136	137
EX8	16.95	430	422	428	408	413

... for hot gas flow such as heat reclaim application, [kW]

Valve type	Kv [m ³ /h]	R448A	R449A	R450A	R513A	R1234ze
EX6	1.57	9.9	11.8	11.6	8.5	8.8
EX7	5.58	35.4	41.8	41.2	30.1	31.2
EX8	16.95	106.7	126.9	125.2	91.4	94.9

The nominal capacity is based on the following conditions:

Refrigerant	Evaporating temperature [°C]	Condensing temperature [°C]	Subcooling	Pressure Drop (For suction duty)	Pressure drop (For liquid duty)	Pressure drop (For hot gas flow duty)	Isentropic efficiency (For hot gas flow duty)
R513A, R1234ze	+4°C dew point	+38°C bubble/ +38°C dew point	1K	0.15 bar	0.35 bar	0.5 bar	80%
R450A		+38°C bubble/ +38.6°C dew point					
R448A, R449A		+38°C bubble/ +42.6°C dew point					

For selection of other operating condition, please use quick selection tables in the next pages or Controls Navigator selection program.

Electrical Control Valves EX4-8

EX4-8: Quick selection (included 1.5 bar pressure drop for liquid line components and distributor)

Condensing temperature [°C]	R448A/R449A													Valve type
	Capacity [kW]													
	Evaporating temperature [°C]													
	10	5	0	-5	-10	-15	-20	-25	-30	-40	-50	-60	-70	
60 bubble/ 63.4 dew point	15.2	15.2	15.2	15.1	15.0	14.8	14.5	14.2	13.9	13.1	12.3	11.4	10.4	EX4
	46	46	46	46	45	45	44	43	42	40	37	35	32	EX5
	110	111	111	110	109	107	106	103	101	96	89	83	76	EX6
	304	305	305	303	300	296	291	285	278	263	246	228	209	EX7
	810	813	812	807	799	788	775	759	741	701	656	607	557	EX8
50 bubble/ 54 dew point	15.7	15.9	16.1	16.1	16.1	16.0	15.9	15.6	15.4	14.8	14.1	13.2	12.4	EX4
	47	48	49	49	49	49	48	47	47	45	43	40	38	EX5
	114	116	117	117	117	116	115	114	112	108	102	96	90	EX6
	313	318	321	322	322	320	317	313	308	296	281	265	248	EX7
	835	849	857	860	859	854	846	835	821	788	750	707	661	EX8
40 bubble/ 44.5 dew point	15.0	15.5	15.9	16.1	16.2	16.3	16.3	16.2	16.0	15.6	15.0	14.3	13.5	EX4
	45	47	48	49	49	49	49	49	49	47	45	43	41	EX5
	109	113	115	117	118	118	118	118	116	113	109	104	98	EX6
	299	310	317	322	325	326	325	323	320	311	299	285	270	EX7
	798	826	846	859	866	869	867	862	854	830	798	761	721	EX8
30 bubble/ 34.9 dew point	13.1	14.0	14.7	15.2	15.5	15.8	15.9	15.9	15.9	15.6	15.2	14.6	14.0	EX4
	40	42	45	46	47	48	48	48	48	47	46	44	42	EX5
	95	102	107	111	113	115	116	116	115	114	110	106	102	EX6
	262	280	294	304	311	315	318	318	318	312	304	292	280	EX7
	699	748	784	810	829	841	847	849	847	833	810	780	746	EX8
20 bubble/ 25.3 dew point	9.6	11.3	12.5	13.3	14.0	14.5	14.8	15.0	15.1	15.1	14.8	14.4	13.9	EX4
	29	34	38	40	42	44	45	45	46	46	45	44	42	EX5
	70	82	91	97	102	105	107	109	110	109	108	105	101	EX6
	192	225	249	267	280	289	296	300	302	301	296	287	277	EX7
	513	601	665	712	746	771	788	799	804	803	789	767	739	EX8
10 bubble/ 15.5 dew point			8.6	10.3	11.4	12.3	12.9	13.3	13.6	13.9	13.8	13.6	13.2	EX4
			26	31	35	37	39	40	41	42	42	41	40	EX5
			63	75	83	89	94	97	99	101	101	99	96	EX6
			172	205	229	246	258	267	272	278	277	272	264	EX7
			460	548	610	655	688	711	726	740	738	724	704	EX8
0 bubble/ 5.7 dew point					7.2	8.9	10.0	10.8	11.4	12.1	12.3	12.3	12.0	EX4
					22	27	30	33	35	37	37	37	36	EX5
					52	65	73	79	83	88	90	89	88	EX6
					143	177	201	217	229	242	247	246	241	EX7
					382	473	535	578	609	645	657	655	642	EX8
-10 bubble/ -4.2 dew point							5.1	7.0	8.2	9.6	10.2	10.4	10.4	EX4
							15	21	25	29	31	32	31	EX5
							37	51	59	70	74	76	75	EX6
							101	140	164	191	204	208	208	EX7
							270	372	436	510	544	556	554	EX8
-20 bubble/ -14.1 dew point										5.7	7.2	7.9	8.1	EX4
										17	22	24	25	EX5
										41	52	57	59	EX6
										113	144	157	162	EX7
										302	384	420	432	EX8

Electrical Control Valves EX4-8

EX4-8: Quick selection (included 1.5 bar pressure drop for liquid line components and distributor)

Condensing temperature [°C]	R450A Capacity [kW]													Valve type
	Evaporating temperature [°C]													
	50	40	30	20	15	10	5	0	-5	-10	-15	-20	-30	
80	10	10	11	10	10	10	10	9	9	9	8	8	7	EX4
	30	31	32	32	31	30	30	29	28	27	25	24	22	EX5
	71	76	77	76	75	73	71	69	67	64	61	58	52	EX6
	195	208	211	209	205	201	196	190	183	176	168	160	143	EX7
	520	554	564	556	548	536	522	506	488	469	448	426	380	EX8
70	9	10	11	11	11	11	11	11	10	10	10	9	9	EX4
	27	31	33	34	34	33	33	32	32	31	30	29	27	EX5
	64	74	79	81	81	80	79	78	76	74	71	69	64	EX6
	177	204	218	222	222	220	217	213	208	203	197	190	175	EX7
	471	545	581	593	592	587	579	569	556	541	524	506	467	EX8
60	6	9	10	11	11	11	11	11	11	11	11	10	10	EX4
	18	27	31	33	34	34	34	34	33	33	32	31	30	EX5
	43	64	75	80	81	82	82	81	80	79	77	75	71	EX6
	119	177	205	220	223	224	224	223	220	216	212	207	195	EX7
	317	471	548	586	594	598	598	594	587	577	565	551	519	EX8
50		5	9	10	10	11	11	11	11	11	11	11	10	EX4
		17	26	30	32	32	33	33	33	33	33	32	31	EX5
		40	62	73	76	78	79	80	80	79	78	77	74	EX6
		109	170	200	208	214	218	219	219	218	216	212	203	EX7
		291	455	533	556	571	581	585	585	581	575	566	543	EX8
40			5	8	9	9	10	10	10	10	10	10	10	EX4
			14	24	27	29	30	31	31	32	32	31	31	EX5
			34	58	64	69	72	74	75	76	76	75	73	EX6
			93	158	176	188	197	203	206	208	208	207	202	EX7
			248	423	469	502	526	541	550	555	555	552	539	EX8
30				3	6	7	8	9	9	9	9	10	10	EX4
				10	17	21	24	26	27	28	29	29	29	EX5
				24	41	51	58	62	65	68	69	70	69	EX6
				67	114	141	159	171	180	186	190	191	191	EX7
				178	303	375	423	457	480	496	505	510	509	EX8
20							4	6	7	7	8	8	8	EX4
							13	18	20	22	24	25	26	EX5
							31	42	49	54	57	59	61	EX6
							85	116	135	148	157	163	169	EX7
							228	309	361	396	419	435	451	EX8
10									2	4	5	6	7	EX4
									5	12	16	18	20	EX5
									12	29	38	43	49	EX6
									33	80	103	118	134	EX7
									88	214	276	315	358	EX8

Electrical Control Valves EX4-8

EX4-8: Quick selection (included 1.5 bar pressure drop for liquid line components and distributor)

Condensing temperature [°C]	R513A													Valve type
	Capacity [kW]													
	Evaporating temperature [°C]													
	50	40	30	20	15	10	5	0	-5	-10	-15	-20	-30	
80	9	9	9	9	9	9	8	8	8	7	7	6	5	EX4
	27	28	29	28	27	26	25	24	23	22	20	19	16	EX5
	64	68	69	67	65	63	60	58	55	52	48	45	38	EX6
	177	187	189	183	179	173	166	159	151	142	133	124	104	EX7
	473	500	503	489	476	461	444	424	403	380	356	330	278	EX8
70	9	10	10	11	11	10	10	10	10	9	9	8	8	EX4
	26	30	32	32	32	31	31	30	29	28	27	26	23	EX5
	62	72	76	77	76	75	74	72	70	67	65	62	56	EX6
	171	197	209	211	210	207	203	198	192	185	178	170	153	EX7
	455	525	557	564	560	553	542	528	512	494	474	453	408	EX8
60	6	9	10	11	11	11	11	11	11	11	10	10	9	EX4
	18	27	31	33	33	34	33	33	33	32	31	30	28	EX5
	43	64	75	79	80	81	80	79	78	76	74	72	67	EX6
	119	177	205	218	221	222	221	218	215	210	205	198	184	EX7
	318	472	547	582	589	591	588	582	572	560	546	529	492	EX8
50		6	9	10	11	11	11	11	11	11	11	11	10	EX4
		17	27	31	32	33	34	34	34	33	33	32	31	EX5
		41	64	74	77	79	81	81	81	80	79	77	73	EX6
		113	175	205	213	218	221	222	222	220	217	212	202	EX7
		302	468	546	568	583	590	593	591	586	578	567	539	EX8
40			5	8	9	10	10	11	11	11	11	11	10	EX4
			15	25	28	30	31	32	32	33	33	32	31	EX5
			37	61	67	72	75	77	78	78	78	78	75	EX6
			101	167	185	197	206	211	214	216	215	214	207	EX7
			268	445	492	526	548	563	572	575	574	570	553	EX8
30				4	6	8	9	9	10	10	10	10	10	EX4
				12	19	23	26	28	29	30	30	31	30	EX5
				29	46	55	62	67	70	72	73	74	73	EX6
				80	125	152	171	183	192	198	201	202	201	EX7
				212	334	406	455	488	512	527	536	539	536	EX8
20						2	5	7	8	8	9	9	9	EX4
						6	15	20	23	25	26	27	28	EX5
						15	37	48	55	59	63	65	67	EX6
						42	102	131	150	163	172	178	183	EX7
						113	271	350	401	435	459	475	488	EX8
10										3	5	6	7	EX4
										10	15	19	21	EX5
										24	37	45	50	EX6
										66	102	123	137	EX7
										176	273	329	366	EX8

Electrical Control Valves EX4-8

EX4-8: Quick selection (included 1.5 bar pressure drop for liquid line components and distributor)

Condensing temperature [°C]	R1234ze													Valve type
	Capacity [kW]													
	Evaporating temperature [°C]													
	50	40	30	20	15	10	5	0	-5	-10	-15	-20	-30	
80	9	10	10	9	9	9	9	8	8	8	7	7	6	EX4
	27	29	29	29	28	27	27	26	25	24	22	21	19	EX5
	65	69	70	69	68	66	64	62	59	57	54	51	45	EX6
	180	191	193	189	186	181	176	170	163	156	148	140	123	EX7
	479	509	515	505	495	483	469	452	434	415	395	374	329	EX8
70	8	9	10	10	10	10	10	9	9	9	9	8	8	EX4
	24	28	30	30	30	30	29	29	28	27	26	25	23	EX5
	58	67	71	73	72	71	70	69	67	65	63	60	55	EX6
	158	184	196	200	199	197	193	189	184	179	173	166	152	EX7
	422	491	523	532	530	524	516	505	492	477	460	442	404	EX8
60	5	8	9	10	10	10	10	10	10	9	9	9	8	EX4
	15	23	28	30	30	30	30	30	29	29	28	27	26	EX5
	35	56	66	71	72	72	72	71	70	69	67	66	61	EX6
	97	155	182	195	198	199	198	196	193	190	185	180	169	EX7
	258	413	485	519	527	529	528	523	516	506	494	481	450	EX8
50		4	7	9	9	9	10	10	10	9	9	9	9	EX4
		13	22	26	28	28	29	29	29	29	28	28	27	EX5
		30	53	63	66	68	69	70	70	69	68	67	64	EX6
		83	146	174	182	187	190	192	191	190	187	184	176	EX7
		222	390	465	486	500	508	511	510	506	500	491	468	EX8
40			3	7	7	8	8	9	9	9	9	9	9	EX4
			9	20	23	24	26	26	27	27	27	27	26	EX5
			22	48	54	59	62	64	65	65	65	65	63	EX6
			62	132	149	161	169	175	178	179	179	178	173	EX7
			164	353	399	430	452	466	475	479	479	475	462	EX8
30				0	4	6	7	7	8	8	8	8	8	EX4
				1	13	17	20	22	23	24	24	25	25	EX5
				3	31	41	48	52	55	57	58	59	59	EX6
				9	84	113	131	143	152	157	161	162	162	EX7
				23	225	301	349	382	405	420	429	433	432	EX8
20							2	4	5	6	6	7	7	EX4
							7	13	16	18	20	20	21	EX5
							17	31	39	44	47	49	51	EX6
							48	86	106	120	129	135	140	EX7
							127	228	283	319	343	359	374	EX8
10										2	4	4	5	EX4
										6	11	13	16	EX5
										14	26	32	38	EX6
										39	71	87	105	EX7
										104	188	233	280	EX8

⚠ Warning: R1234ze classified as A2L. Use of product only for non-explosive environment, non ATEX zone.

Electrical Control Valves EX4-8

Quick selection: Suction line throttling (evaporator capacity control or crankcase pressure regulator)

Condensing temperature [°C]	Capacity [kW]												Valve type
	R448A						R449A						
	Evaporating temperature [°C]						Evaporating temperature [°C]						
	-20	-10	-5	0	5	10	-20	-10	-5	0	5	10	
30 bubble/ 34.9 dew point	26.5	33.7	37.7	41.9	46.4	51.2	26.1	33.3	37.2	41.4	45.8	50.6	EX8
	8.7	11.1	12.4	13.8	15.3	16.9	8.6	11.0	12.3	13.6	15.1	16.6	EX7
	2.5	3.1	3.5	3.9	4.3	4.7	2.4	3.1	3.4	3.8	4.2	4.7	EX6
40 bubble/ 44.5 dew point	23.7	30.3	33.9	37.8	41.9	46.3	23.3	29.8	33.4	37.2	41.3	45.6	EX8
	7.8	10.0	11.2	12.4	13.8	15.2	7.7	9.8	11.0	12.3	13.6	15.0	EX7
	2.2	2.8	3.1	3.5	3.9	4.3	2.2	2.8	3.1	3.5	3.8	4.2	EX6
50 bubble/ 54 dew point	20.7	26.6	29.9	33.4	37.1	41.1	20.3	26.2	29.4	32.8	36.5	40.4	EX8
	6.8	8.8	9.8	11.0	12.2	13.5	6.7	8.6	9.7	10.8	12.0	13.3	EX7
	1.9	2.5	2.8	3.1	3.4	3.8	1.9	2.4	2.7	3.0	3.4	3.7	EX6
60 bubble/ 63.4 dew point	17.4	22.6	25.5	28.6	31.9	35.4	17.1	22.2	25.0	28.1	31.3	34.7	EX8
	5.7	7.5	8.4	9.4	10.5	11.6	5.6	7.3	8.2	9.2	10.3	11.4	EX7
	1.6	2.1	2.4	2.6	3.0	3.3	1.6	2.1	2.3	2.6	2.9	3.2	EX6

Note: above capacities are at 0.15 bar pressure drop. For other desired pressure drop, use the correction table below.

Pressure drop [bar]	0.1	0.15	0.2	0.3
Correction factor	0.82	1	1.15	1.41

Condensing temperature [°C]	Capacity [kW]												Valve type
	R450A						R513A						
	Evaporating temperature [°C]						Evaporating temperature [°C]						
	-20	-10	-5	0	5	10	-20	-10	-5	0	5	10	
30	16.9	22.9	26.1	29.6	33.3	37.2	18.9	25.0	28.4	32.0	35.8	39.9	EX8
	5.6	7.5	8.6	9.7	11.0	12.2	6.2	8.2	9.3	10.5	11.8	13.1	EX7
	1.6	2.1	2.4	2.7	3.1	3.4	1.8	2.3	2.6	3.0	3.3	3.7	EX6
40	15.2	20.6	23.6	26.8	30.2	33.8	16.8	22.3	25.4	28.7	32.2	36.0	EX8
	5.0	6.8	7.8	8.8	9.9	11.1	5.5	7.3	8.4	9.4	10.6	11.8	EX7
	1.4	1.9	2.2	2.5	2.8	3.1	1.6	2.1	2.4	2.7	3.0	3.3	EX6
50	13.4	18.3	21.0	23.9	27.0	30.4	14.5	19.5	22.2	25.2	28.4	31.9	EX8
	4.4	6.0	6.9	7.9	8.9	10.0	4.8	6.4	7.3	8.3	9.4	10.5	EX7
	1.2	1.7	1.9	2.2	2.5	2.8	1.3	1.8	2.1	2.3	2.6	3.0	EX6
60	11.5	15.9	18.3	21.0	23.8	26.8	12.1	16.5	18.9	21.5	24.4	27.5	EX8
	3.8	5.2	6.0	6.9	7.8	8.8	4.0	5.4	6.2	7.1	8.0	9.0	EX7
	1.1	1.5	1.7	1.9	2.2	2.5	1.1	1.5	1.8	2.0	2.3	2.5	EX6

Note: above capacities are at 0.15 bar pressure drop. For other desired pressure drop, use the correction table below.

Pressure drop [bar]	0.1	0.15	0.2	0.3
Correction factor	0.82	1	1.15	1.41

Electrical Control Valves EX4-8

Quick selection: Suction line throttling (evaporator capacity control or crankcase pressure regulator)

Condensing temperature [°C]	R1234ze Capacity [kW]						Valve type
	Evaporating temperature [°C]						
	-20	-10	-5	0	5	10	
30	14.9	20.5	23.6	26.8	30.3	34.0	EX8
	4.9	6.8	7.8	8.8	10.0	11.2	EX7
	1.4	1.9	2.2	2.5	2.8	3.1	EX6
40	13.4	18.5	21.3	24.3	27.5	30.9	EX8
	4.4	6.1	7.0	8.0	9.1	10.2	EX7
	1.2	1.7	2.0	2.3	2.5	2.9	EX6
50	11.8	16.4	19.0	21.7	24.6	27.8	EX8
	3.9	5.4	6.2	7.1	8.1	9.1	EX7
	1.1	1.5	1.8	2.0	2.3	2.6	EX6
60	10.1	14.3	16.5	19.0	21.7	24.5	EX8
	3.3	4.7	5.4	6.3	7.1	8.1	EX7
	0.9	1.3	1.5	1.8	2.0	2.3	EX6

Note: above capacities are at 0.15 bar pressure drop. For other desired pressure drop, use the correction table below.

⚠ Warning: R1234ze classified as A2L. Use of product only for non-explosive environment, non ATEX zone.

Pressure drop [bar]	0.1	0.15	0.2	0.3
Correction factor	0.82	1	1.15	1.41

Quick selection: Hot gas bypass

Condensing temperature [°C]	R1234ze Capacity [kW]					Valve type
	R448A	R449A	R450A	R513A	R1234ze	
60 °C	7.9	7.7	4.4	4.7	3.8	EX4
	25.5	25.0	14.3	15.3	12.2	EX5
	59.3	58.2	33.2	35.5	28.4	EX6
	210.7	207.0	117.8	126.3	101.1	EX7
	640.0	628.8	358.0	383.7	307.1	EX8
50 °C	6.9	6.8	3.7	4.1	3.2	EX4
	22.4	22.1	12.1	13.3	10.4	EX5
	52.2	51.3	28.2	30.9	24.1	EX6
	185.4	182.4	100.2	109.7	85.8	EX7
	563.2	553.9	304.4	333.2	260.7	EX8
40 °C	5.9	5.8	3.1	3.5	2.7	EX4
	19.2	18.9	10.1	11.2	8.6	EX5
	44.7	44.0	23.5	26.1	20.1	EX6
	158.8	156.4	83.5	92.7	71.4	EX7
	482.4	474.9	253.6	281.7	217.0	EX8
30 °C	5.0	4.9	2.5	2.9	2.2	EX4
	16.1	15.8	8.2	9.3	7.1	EX5
	37.4	36.9	19.2	21.6	16.4	EX6
	132.9	131.0	68.1	76.7	58.4	EX7
	403.7	398.0	207.0	232.9	177.3	EX8

⚠ Warning: R1234ze classified as A2L. Use of product only for non-explosive environment, non ATEX zone.

Electrical Control Valves EX4-8

Quick selection: Heat reclaim /hot gas flow

Condensing temperature [°C]	Pressure drop [bar]	Capacity [kW]							Valve type
		R448A/R449A		Evaporating temperature [°C]			R448A/R449A		
		-40	-30	-20	-10	0	5	10	
30 bubble/ 34.9 dew point	0.1	4.0	4.2	4.4	4.7	4.9	5.0	5.1	EX6
		14.0	15.0	16.0	17.0	17.0	18.0	18.0	EX7
		43.0	45.0	48.0	50.0	53.0	54.0	55.0	EX8
	0.5	8.7	9.2	9.8	10.3	10.8	11.0	11.2	EX6
		31.0	33.0	35.0	37.0	38.0	39.0	40.0	EX7
		94.0	100.0	105.0	111.0	116.0	119.0	121.0	EX8
	1.0	12.0	12.8	13.5	14.2	14.9	15.2	15.6	EX6
		43.0	45.0	48.0	51.0	53.0	54.0	55.0	EX7
		130.0	138.0	146.0	154.0	161.0	165.0	168.0	EX8
40 bubble/ 44.5 dew point	0.1	4.0	4.3	4.5	4.8	5.1	5.2	5.3	EX6
		14.0	15.0	16.0	17.0	18.0	18.0	19.0	EX7
		43.0	46.0	49.0	52.0	55.0	56.0	57.0	EX8
	0.5	8.8	9.4	10.0	10.6	11.1	11.4	11.7	EX6
		31.0	33.0	36.0	38.0	40.0	41.0	41.0	EX7
		95.0	102.0	108.0	114.0	120.0	123.0	126.0	EX8
	1.0	12.2	13.1	13.9	14.7	15.5	15.9	16.2	EX6
		43.0	46.0	49.0	52.0	55.0	56.0	58.0	EX7
		132.0	141.0	150.0	159.0	167.0	171.0	175.0	EX8
50 bubble/ 54 dew point	0.1	3.9	4.2	4.5	4.8	5.1	5.2	5.3	EX6
		14.0	15.0	16.0	17.0	18.0	19.0	19.0	EX7
		42.0	45.0	48.0	52.0	55.0	56.0	58.0	EX8
	0.5	8.6	9.3	9.9	10.6	11.2	11.5	11.8	EX6
		30.0	33.0	35.0	38.0	40.0	41.0	42.0	EX7
		93.0	100.0	107.0	114.0	121.0	124.0	127.0	EX8
	1.0	12.0	12.9	13.8	14.7	15.6	16.0	16.4	EX6
		43.0	46.0	49.0	52.0	55.0	57.0	58.0	EX7
		129.0	139.0	149.0	159.0	169.0	173.0	178.0	EX8
60 bubble/ 63.4 dew point	0.1	3.6	3.9	4.2	4.6	4.9	5.0	5.2	EX6
		13.0	14.0	15.0	16.0	17.0	18.0	18.0	EX7
		39.0	42.0	46.0	49.0	53.0	54.0	56.0	EX8
	0.5	7.9	8.7	9.4	10.1	10.8	11.2	11.5	EX6
		28.0	31.0	33.0	36.0	38.0	40.0	41.0	EX7
		86.0	94.0	102.0	109.0	117.0	121.0	124.0	EX8
	1.0	11.1	12.1	13.2	14.2	15.1	15.6	16.1	EX6
		39.0	43.0	47.0	50.0	54.0	55.0	57.0	EX7
		120.0	131.0	142.0	153.0	163.0	168.0	173.0	EX8

Electrical Control Valves EX4-8

Quick selection: Heat reclaim /hot gas flow

Condensing temperature [°C]	Pressure drop [bar]	Capacity [kW]							Valve type
		R450A/R513A		Evaporating temperature [°C]			R450A/R513A		
		-40	-30	-20	-10	0	5	10	
30	0.1	2.8	3.0	3.2	3.4	3.5	3.6	3.7	EX6
		10.0	10.6	11.3	11.9	12.6	12.9	13.2	EX7
		30.2	32.3	34.3	36.2	38.1	39.0	40.0	EX8
	0.5	6.1	6.5	6.9	7.2	7.6	7.8	8.0	EX6
		21.5	23.0	24.4	25.8	27.1	27.8	28.4	EX7
		65.4	69.8	74.1	78.3	82.3	84.3	86.3	EX8
	1.0	8.2	8.7	9.3	9.8	10.3	10.5	10.8	EX6
		29.1	31.0	32.9	34.8	36.6	37.5	38.3	EX7
		88.4	94.3	100.0	105.7	111.2	113.9	116.5	EX8
40	0.1	2.9	3.1	3.3	3.5	3.7	3.8	3.9	EX6
		10.2	11.0	11.7	12.5	13.2	13.6	13.9	EX7
		31.0	33.4	35.7	37.9	40.2	41.2	42.3	EX8
	0.5	6.3	6.7	7.2	7.6	8.1	8.3	8.5	EX6
		22.2	23.9	25.6	27.2	28.8	29.5	30.3	EX7
		67.6	72.6	77.7	82.6	87.4	89.7	92.0	EX8
	1.0	8.6	9.2	9.8	10.4	11.0	11.3	11.6	EX6
		30.4	32.7	34.9	37.1	39.2	40.3	41.3	EX7
		92.3	99.2	106.0	112.7	119.2	122.4	125.5	EX8
50	0.1	2.9	3.1	3.4	3.6	3.8	3.9	4.1	EX6
		10.2	11.1	11.9	12.8	13.6	14.0	14.4	EX7
		30.9	33.6	36.2	38.8	41.4	42.6	43.9	EX8
	0.5	6.3	6.8	7.3	7.9	8.4	8.6	8.9	EX6
		22.3	24.2	26.1	28.0	29.8	30.7	31.6	EX7
		67.6	73.5	79.3	85.0	90.5	93.2	95.9	EX8
	1.0	8.6	9.4	10.1	10.8	11.5	11.9	12.2	EX6
		30.6	33.3	35.9	38.4	40.9	42.2	43.4	EX7
		93.0	101.0	109.0	116.8	124.4	128.1	131.7	EX8
60	0.1	2.7	3.0	3.3	3.6	3.9	4.0	4.1	EX6
		9.7	10.8	11.8	12.7	13.7	14.2	14.7	EX7
		29.6	32.7	35.7	38.7	41.6	43.1	44.5	EX8
	0.5	6.0	6.6	7.3	7.9	8.5	8.8	9.0	EX6
		21.4	23.6	25.8	28.0	30.1	31.1	32.1	EX7
		65.0	71.7	78.4	84.9	91.4	94.5	97.6	EX8
	1.0	8.3	9.2	10.0	10.9	11.7	12.1	12.5	EX6
		29.6	32.6	35.6	38.6	41.5	42.9	44.3	EX7
		89.9	99.1	108.3	117.3	126.1	130.4	134.7	EX8

Electrical Control Valves EX4-8

Quick selection: Heat reclaim /hot gas flow

Condensing temperature [°C]	Pressure drop [bar]	Capacity [kW]							Valve type		
		R1234ze		Evaporating temperature [°C]						R1234ze	
		-40	-30	-20	-10	0	5	10			
30	0.1	2.5	2.7	2.9	3.0	3.2	3.3	3.4	EX6		
		9.0	9.6	10.2	10.8	11.4	11.6	11.9	EX7		
		27.4	29.2	31.0	32.7	34.5	35.4	36.2	EX8		
	0.5	5.4	5.8	6.2	6.5	6.9	7.0	7.2	EX6		
		19.3	20.7	21.9	23.1	24.4	25.0	25.6	EX7		
		58.7	62.7	66.5	70.3	74.1	75.9	77.8	EX8		
	1.0	7.3	7.8	8.2	8.7	9.2	9.4	9.6	EX6		
		25.9	27.7	29.3	31.0	32.6	33.5	34.3	EX7		
		78.7	84.0	89.1	94.1	99.2	101.7	104.1	EX8		
40	0.1	2.6	2.8	3.0	3.2	3.4	3.5	3.6	EX6		
		9.2	9.9	10.6	11.3	12.0	12.3	12.6	EX7		
		28.0	30.2	32.2	34.3	36.3	37.4	38.4	EX8		
	0.5	5.6	6.1	6.5	6.9	7.3	7.5	7.7	EX6		
		20.0	21.5	23.0	24.5	25.9	26.6	27.4	EX7		
		60.7	65.4	69.8	74.3	78.7	80.9	83.1	EX8		
	1.0	7.6	8.2	8.8	9.3	9.9	10.2	10.4	EX6		
		27.1	29.2	31.2	33.2	35.2	36.1	37.1	EX7		
		82.4	88.7	94.7	100.8	106.8	109.8	112.7	EX8		
50	0.1	2.6	2.8	3.0	3.3	3.5	3.6	3.7	EX6		
		9.2	10.0	10.8	11.6	12.3	12.7	13.1	EX7		
		27.9	30.3	32.7	35.1	37.5	38.7	39.8	EX8		
	0.5	5.6	6.1	6.6	7.1	7.6	7.8	8.0	EX6		
		20.0	21.8	23.5	25.2	26.9	27.7	28.6	EX7		
		60.8	66.2	71.3	76.5	81.7	84.3	86.8	EX8		
	1.0	7.7	8.4	9.0	9.7	10.4	10.7	11.0	EX6		
		27.4	29.8	32.1	34.5	36.8	37.9	39.1	EX7		
		83.2	90.5	97.6	104.7	111.7	115.3	118.7	EX8		
60	0.1	2.5	2.7	3.0	3.2	3.5	3.6	3.7	EX6		
		8.8	9.7	10.6	11.5	12.4	12.9	13.3	EX7		
		26.6	29.5	32.2	35.0	37.7	39.1	40.5	EX8		
	0.5	5.4	6.0	6.5	7.1	7.6	7.9	8.2	EX6		
		19.2	21.3	23.2	25.2	27.2	28.2	29.1	EX7		
		58.4	64.6	70.6	76.6	82.6	85.6	88.5	EX8		
	1.0	7.4	8.2	9.0	9.8	10.5	10.9	11.3	EX6		
		26.5	29.3	32.0	34.7	37.4	38.7	40.1	EX7		
		80.4	88.9	97.1	105.3	113.6	117.7	121.7	EX8		

⚠ Warning: R1234ze classified as A2L. Use of product only for non-explosive environment, non ATEX zone.

Technical data EX4-8 valves

MOPD (maximum operating pressure differential)	EX4-6: 40 bar EX7: 35 bar EX8: 30 bar
Max. allowable working pressure PS	EX4-7: 60 bar EX8: 56 bar (UL-Approval: 45 bar)
Evaporating temperature	-100...+55°C
Ambient temperature	-40...+55°C
Storage temperature	-40...+70°C
Medium inlet temperature	
Bi-flow version:	TS: -40...+80°C
Uni-flow version:	TS: -50*...+100°C
Medium outlet temperature:	-100*...+100°C *) UL-Approval based on ≥ - 40°C
Vibration for non-connected and fastened valve	4g (0...1000 Hz, 1 octave /min.)

Protection accordance to IEC 529, DIN 40050	IP67 with EMERSON supplied cable connector assembly
Connections/Material	ODF stainless steel fittings
Humidity	5...95% r.H.
Shock	20g at 11 ms 80g at 1 ms
Seat leakage	Positive shut-off better than solenoid valves
Net weight (kg)	0.5 kg (EX4), 0.52 kg (EX5), 0.60 kg (EX6), 1.1 kg (EX7), 1.5 kg (EX8)
Marking	CE (only EX7 & EX8), ERL , c , RU , us
Package/delivery (individual)	without electrical connector

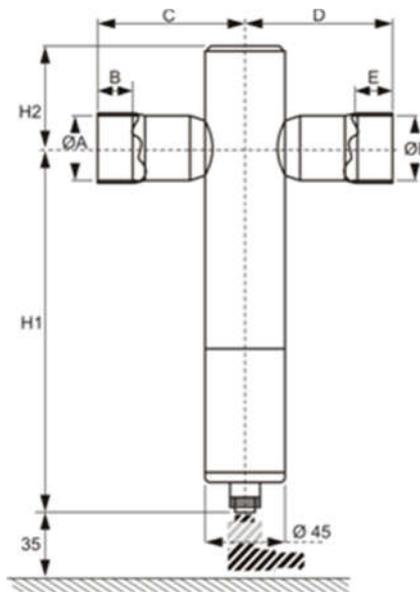
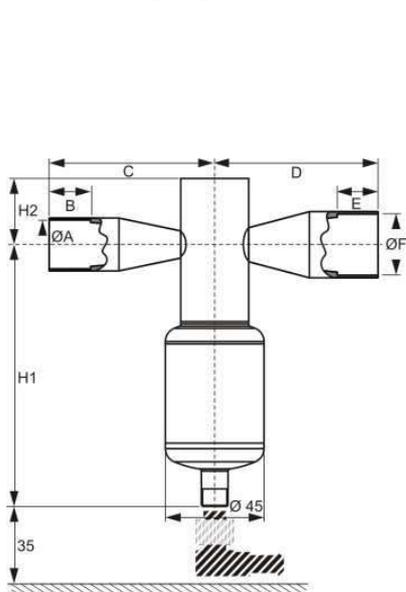
Electrical Control Valves EX4-8

Electrical data EX4-8 valves

Stepper motor type	Bi-polar, phase current by chopper control (constant current)
Electrical connection	4 pin terminal via plug
Nominal supply voltage to the valve U:	24 VDC
Driver supply voltage range	18...36 VDC
Phase current, operating	EX4-6: 500 mA EX7: 750 mA EX8: 800 mA ±10%
Holding current	EX4-6: 100 mA EX7: 250 mA EX8: 500 mA
Nominal input power per phase	EX4/EX5/EX6: 3.5 W EX7/EX8: 5 W

Step mode	2 phase full step, half step or microstep
Step angle	1.8° per step ± 8%
Stepping rate	500 Hz
Total number of steps	EX4-6: 750 full steps EX7: 1600 full steps EX8: 2600 full steps
Winding resistance per phase	EX4-6: 13 Ohm ±10% EX7: 8 Ohm ±10% EX8: 6 Ohm ±10%
Full travel time	EX4-6: 1.5 seconds EX7: 3.2 seconds EX8: 5.2 seconds
Reference position	Mechanical stop at fully closed position

Dimensions [mm]



Type	Flow pattern	Part No.	Ø A x Ø F(ODF)	B	C	D	E	H1	H2
EX4-I21	Uni-flow	800615	3/8" x 5/8"	8	45	55	11	113	25
EX4-M21		800616	10 x 16 mm	8	45	55	11	113	25
EX5-U21		800618	5/8" x 7/8" (16 x 22 mm)	11	55	65	16	113	25
EX6-I21		800620	7/8" x 1-1/8"	16	65	75	19	113	25
EX6-M21		800621	22 x 28 mm	16	65	75	19	113	25
EX7-I21		800624	1-1/8" x 1-3/8"	20	78	83	20	158	42
EX7-M21		800625	28 x 35 mm	20	78	83	20	158	42
EX8-M21		800629	42 x 42 mm	20	80	80	20	200	56
EX8-U21		800630	1-3/8" (35 mm) x 1-3/8" (35 mm)	20	80	80	20	200	56
EX8-I21		800631	1-5/8" x 1-5/8"	20	80	80	20	200	56
EX4-U31	Bi-flow	800617	5/8" x 5/8" (16 x 16 mm)	11	55	55	11	113	25
EX5-U31		800619	7/8" x 7/8" (22 x 22 mm)	16	65	65	16	113	25
EX6-I31		800622	1-1/8" x 1-1/8"	19	75	75	19	113	25
EX6-M31		800623	28 x 28 mm	19	75	75	19	113	25
EX7-U31		800626	1-1/8"(35 mm) x 1-1/8" (35 mm)	23	83	83	23	158	42