

Differential Pressure Flowmeter

Model code MV

Steam Flowmeter *STEAMcube* Integral style for larger flow rate

MVC31A - I II III IV - V VI VII VIII IX X - XI
 Price is the sum of the price of all selections made.

Basic model No.	Analog SFN Integral	MVC31A -	Nominal size	Basic price (1000 Yen)						Lead time
				25mm	40mm	50mm	80mm	100mm	150mm	weeks
I	Line size	25mm	3	328						2
		40mm	4	338						
		50mm	5	348						
		80mm	8	398						
		100mm	A	538						
		150mm	C	738						
				Price adder (1000 Yen)						Additional lead time (weeks)
II	Process connection	JIS10K wafer type	V	0	0	0	0	0	0	0
		JIS20K wafer type	W	0	0	0	0	0	0	
		JPI/ANSI class 150 wafer type	S	2	3	3	5	7	10	Note 10
		JPI/ANSI class 300 wafer type	T	3	4	5	8	10	15	
III	Sealing liquid	None (in the case of the integral-type model)	X	0						0
IV	Capillary length	None	X	0						0
V	Output allocation (analog output)	Open collector pulse (totalized flow rate) + analog (instantaneous flow rate)	F	0						0
		Open collector pulse (totalized flow rate) + analog (saturation pressure)	P	0						0
		Open collector pulse (totalized flow rate) + analog (saturation temperature)	T	0						0
VI	Burnout direction	None	X	0						0
		Burnout upper limit	U	0						0
		Burnout lower limit	D	0						0
VII	Flow rate output	Volume	V	0						0
		Standard (pressure)	P	0						0
		Density to be substituted (fixed value) Note 8	C	0						0
VIII	Indicators and display allocation	None	X	0						0
		Main display for totalized flow rate, and sub display for instantaneous flow rate	1	30						0
		Main display for totalized flow rate, and sub display for pressure and temperature	2	30						0
		Main display for instantaneous flow rate, and sub display for totalized flow rate	A	30						0
		Main display for instantaneous flow rate, and sub display for pressure and temperature	B	30						0
IX	Electrical conduit and explosion-proof construction	G1/2, no flameproof construction, one plastic cable gland	1	3						0
		G1/2, no flameproof construction, two plastic cable glands	2	5						0
		G1/2, TIS Flameproof, one pressure-resistant packing-cable gland	J	15						0
		G1/2, TIS Flameproof, two pressure-resistant packing-cable glands	T	25						0
X	Mounting/direction of flow	Horizontal piping from left to right	1	0						0
		Horizontal piping from right to left	2	0						0
		Vertical piping in an upward direction	A	21						0
		Vertical piping in a downward direction	B	21						0
XI	Options	None	XX	0						0
		High-accuracy specification	C1	30						0
		Bolt and nut assembly (carbon steel) * For wafer type only	N1	5	5	5	16	16	16	Note 10
		Bolt and nut assembly (SUS304) * For wafer type only	N2	9	9	9	35	35	35	
		Material of bolts and nuts used on the cover flange - SUS304	H7	10						0
Test report	T1	2						0		

Note 1 Steam pressure and steam temperature The STEAMcube is a flowmeter for the saturated steam. The tables on page 2-8-6 show the saturated steam temperature based on the steam pressure. Please verify the process fluid is saturated steam. If the steam temperature is higher than that at each process pressure in the tables on page 2-8-6, it is a superheated steam. The superheated steam can not be measured by the STEAMcube and the superheated steam may damage the device.

Note 2 Tag No. Specify the tag number when customers require tagging. Alphanumeric characters, "A to Z", "0 to 9", "!", " ", "-", "(SPACE)" are available for the tagging. Maximum 8 characters and the only capital letter is available. "(", ")" and "._" are not available.

Note 3 Setting range Measurable setting range is listed on page 2-8-6.

Note 4 Units Select an appropriate unit according to the setting range. The range should be within 4.5 digits. (19999 (setting unit))

Flow rate	Units				
	day	hour	min	sec	
Massflow rate	kg	kg/d	kg/h	kg/min	kg/sec
	t	t/d	t/h	t/min	---
Volumetric flow rate	m3	m3/d	m3/h	m3/min	m3/sec

Note 5 Pulse scale Set the puls scale.

Maximum pulse frequency Fmax [Hz]	Pulse width (ms)
50 < Fmax ≤ 200 Hz	1 ms
5 < Fmax ≤ 50 Hz	10 ms
Fmax ≤ 5 Hz	100 ms

Note 6 damping Specify the damping. The setting damping should be 0, 2, 4, 8, 16, 32 sec

Note 7 Low flow cutoff Specify the low flow cutoff function if necessary. Please note the low flow cutoff value should be larger than the lower limit values listed on page 2-8-6.

Note 8 Input density If "Density to be substituted (fixed value)" is selected in the flow rate output code, input a density when ordering.

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Table of the measurable range (massflow rate)

Static pressure (MPa_G)	Saturated vapor temperature (deg.C)	(kg/h)																							
		25mm				40mm				50mm				80mm				100mm				150mm			
		Upper limit	Upper limit	Lower limit	Lower limit	Upper limit	Upper limit	Lower limit	Lower limit	Upper limit	Upper limit	Lower limit	Lower limit	Upper limit	Upper limit	Lower limit	Lower limit	Upper limit	Upper limit	Lower limit	Lower limit				
0.0	100	108	103	21	13	265	252	50	33	428	407	81	53	830	790	158	103	1406	1339	268	176	3245	3091	618	405
0.1	120	211	201	40	19	515	491	98	45	832	793	159	74	1614	1537	307	143	2734	2604	521	242	6310	6009	1202	560
0.2	134	312	297	37	22	761	725	91	55	1230	1171	146	89	2385	2271	284	173	4040	3847	481	293	9322	8878	1110	676
0.3	144	412	392	49	26	1005	957	120	63	1624	1547	193	102	3149	2999	375	198	5333	5079	635	335	12307	11721	1465	775
0.4	152	477	454	45	29	1164	1109	111	70	1880	1791	179	113	3646	3473	347	220	6176	5882	588	372	14250	13572	1357	860
0.5	159	534	509	51	31	1303	1241	124	76	2105	2005	201	123	4083	3888	389	239	6914	6585	659	406	15955	15195	1520	937
0.6	165	585	558	56	34	1429	1361	136	82	2309	2199	220	133	4477	4264	426	258	7582	7221	722	437	17496	16663	1666	1009
0.7	170	633	603	60	36	1545	1471	147	87	2496	2377	238	142	4840	4609	461	275	8196	7806	781	466	18913	18013	1801	1076
0.8	175	676	644	64	38	1651	1573	157	92	2667	2540	254	150	5172	4926	493	291	8760	8343	834	492	20214	19251	1925	1138
0.9	180	717	683	68	40	1751	1667	167	97	2828	2694	269	157	5485	5224	522	306	9289	8847	885	518	21435	20414	2041	1196
1.0	184	756	720	72	42	1845	1757	176	102	2981	2839	284	165	5780	5505	550	320	9789	9323	932	542	22588	21512	2151	1252
1.1	188	793	755	75	43	1935	1843	184	106	3125	2977	298	172	6061	5772	577	334	10264	9776	978	565	23685	22557	2256	1306
1.2	192	828	788	79	45	2020	1924	192	110	3264	3108	311	179	6329	6027	603	347	10719	10208	1021	588	24733	23555	2356	1357
1.3	195	861	820	82	47	2102	2002	200	114	3396	3235	323	185	6586	6273	627	359	11155	10623	1062	609	25739	24513	2451	1407
1.4	198	894	851	85	48	2182	2078	208	118	3524	3356	336	191	6834	6508	651	372	11574	11023	1102	630	26706	25435	2543	1455
1.5	201	925	881	88	50	2258	2150	215	122	3647	3474	347	198	7073	6736	674	383	11978	11408	1141	650	27640	26324	2632	1501
1.6	204	955	910	91	51	2332	2220	222	126	3767	3587	359	203	7304	6956	696	395	12370	11781	1178	669	28543	27184	2718	1546
1.7	207	984	938	94	53	2403	2289	229	129	3882	3697	370	209	7528	7169	717	406	12749	12142	1214	688	29418	28018	2802	1590
1.8	210	1013	965	96	54	2473	2355	235	133	3994	3804	380	215	7745	7376	738	417	13118	12493	1249	707	30269	28827	2883	1632
1.9	212	1041	991	99	56	2540	2419	242	136	4103	3908	391	220	7957	7578	758	428	13476	12834	1283	725	31095	29615	2961	1674
2.0	215	1068	1017	102	57	2606	2482	248	140	4210	4009	401	226	8163	7774	777	438	13825	13167	1317	742	31901	30382	3038	1714

Note 11

Table of the measurable range (volumetric flow rate)

Static pressure (MPa_G)	Saturated vapor temperature (deg.C)	(m ³ /h)																							
		25mm				40mm				50mm				80mm				100mm				150mm			
		Upper limit	Upper limit	Lower limit	Lower limit	Upper limit	Upper limit	Lower limit	Lower limit	Upper limit	Upper limit	Lower limit	Lower limit	Upper limit	Upper limit	Lower limit	Lower limit	Upper limit	Upper limit	Lower limit	Lower limit				
0.0	100	181	173	35	22	443	422	84	55	716	682	136	89	1389	1322	264	173	2353	2241	448	294	5430	5172	1034	678
0.1	120	186	177	35	16	454	432	86	40	733	698	140	65	1422	1355	271	126	2409	2295	459	213	5560	5295	1059	493
0.2	134	189	180	22	14	460	438	55	33	744	708	89	54	1442	1374	172	104	2443	2327	291	177	5637	5369	671	409
0.3	144	190	181	23	12	464	442	55	29	750	714	89	47	1453	1384	173	91	2462	2344	293	155	5680	5410	676	358
0.4	152	179	170	17	11	436	416	42	26	705	672	67	42	1367	1302	130	82	2316	2205	221	140	5343	5089	509	322
0.5	159	169	161	16	10	412	392	39	24	665	633	63	39	1289	1228	123	76	2183	2079	208	128	5038	4798	480	296
0.6	165	160	152	15	9	390	371	37	22	630	600	60	36	1221	1163	116	70	2068	1969	197	119	4771	4544	454	275
0.7	170	152	145	14	9	371	353	35	21	599	570	57	34	1161	1106	111	66	1967	1873	187	112	4538	4322	432	258
0.8	175	145	138	14	8	354	337	34	20	572	545	55	32	1110	1057	106	62	1880	1791	179	106	4338	4132	413	244
0.9	180	139	133	13	8	340	324	32	19	549	523	52	31	1065	1014	101	59	1803	1717	172	101	4161	3963	396	232
1.0	184	134	128	13	7	327	311	31	18	528	503	50	29	1024	975	98	57	1735	1652	165	96	4003	3812	381	222
1.1	188	129	123	12	7	315	300	30	17	509	485	49	28	988	941	94	54	1673	1593	159	92	3860	3677	368	213
1.2	192	125	119	12	7	305	290	29	17	492	469	47	27	955	909	91	52	1617	1540	154	89	3732	3554	355	205
1.3	195	121	115	12	7	295	281	28	16	477	454	45	26	925	881	88	50	1567	1492	149	85	3615	3443	344	198
1.4	198	117	112	11	6	287	273	27	16	463	441	44	25	898	855	86	49	1521	1448	145	83	3509	3342	334	191
1.5	201	114	109	11	6	279	265	27	15	450	429	43	24	873	831	83	47	1478	1408	141	80	3411	3249	325	185
1.6	204	111	106	11	6	271	258	26	15	438	417	42	24	850	809	81	46	1439	1371	137	78	3321	3163	316	180
1.7	207	108	103	10	6	264	252	25	14	427	407	41	23	828	789	79	45	1403	1336	134	76	3237	3083	308	175
1.8	210	106	101	10	6	258	246	25	14	417	397	40	22	809	770	77	44	1369	1304	130	74	3160	3009	301	170
1.9	212	103	98	10	6	252	240	24	14	407	388	39	22	790	752	75	42	1338	1274	127	72	3088	2941	294	166
2.0	215	101	96	10	5	247	235	23	13	399	380	38	21	773	736	74	41	1309	1246	125	70	3020	2876	288	162

Note 9 Ambient temperature

For the integral style, refer to the following table of ambient temperature and steam pressure.

Ambient temp. (deg.C)/Steam pressure (MPa)
190 °C/1.15 MPa
200 °C/1.45 MPa
215 °C/2.00 MPa

Note 10 Leadtime for bolts and nuts

For the JIS20K connection of the size from 80mm to 150mm and ANSI150 and ANSI300 connection type, the additional two week lead time is required.

Note 11 Limitation of the masflow rate unit

For 150mm size, the setting range of mas flow unit of kg/h can not be selected if the steam pressure is larger than 0.8MPa. This limitation comes from the capability of the CommPad communicator (4.5 digit indication). Please set as t/h.