

V4-ABFW-EPN16

Actuated Wafer type butterfly valves

PRODUCT DATA



GENERAL

The V4 Actuated Wafer Type Butterfly Valves are suitable for heating and cooling applications. They can also be employed for industrial applications, general services and water treatment.

The V4 series is equipped with standard On/Off or modulating (4~20mA, 1~5V, or 0(2)~10V select by DIP-switch) control quarter-turn electric actuator.

FEATURES

- Cast Iron (V4) Wafer Body
- Centric butterfly valve with elastomer liner
- Wide DN-range (DN 50 ... DN300)
- For On/Off or Modulating Control
- Robust actuators in plastic cover and dry powder coating aluminum alloy base
- Manual override
- Manual power-off device
- Visual mechanical position indicator for accurate visual reference of valve position
- Anti-condensation heater and 2 aux. limit switches on standard model
- Enclosure IP67

SPECIFICATIONS

Valve

Sizes	DN50 – DN300(Wafer Type)
Nominal pressure	PN16
Tightness	Bubble tight
Temperature range	-10 ~ 120°C Maximum
Body	Cast iron
Stem	SS416
Disc	Epoxy coated Ductile Iron
Seat	EPDM

Actuator

Motor Voltage	220VAC, 50 / 60 Hz
Current, Running time	See table (1)
Travel Angle	90° ± 5°
Input (Modulating)	4~20mA, 1~5V, or 0(2)~10V select by DIP-switch
Enclosure	IP67 Watertight
Ambient Temperature	-10 °C to +65 °C
Duty cycle	30% duty cycle
Indicator	Continuous Position Indicator
Manual Override	Lever
Manual power-off	Switch it to "Manual" to operating the manual override.
Mechanical Stops	External Adjustable Limit stops
Space heater	220V Anti-condensation
Material	Aluminum Alloy and ABS anti-collision plastic
External Coating	Dry powder
Motor insulation class	B class
Stall Protection	Built-in thermal protection Cut off at 115 ± 5 °C

Table (1) Control Type and Valve Size Data

The below table is based on differential pressure of 10 bar.

Valve Size	On/Off Model No.	Actuator Type	Modulating Model No.	Actuator Type	Max Torque (Nm)	Op Time sec/90° at 60Hz	Power (Watts)	Manual Override	Kvs (m ³ /h)
DN50	V4-ABFW-EPN16-050-03	CM035	V4-ABFW-EPN16-050-04	CMP035	35	12	10	Lever	73.97
DN65	V4-ABFW-EPN16-065-03	CM035	V4-ABFW-EPN16-065-04	CMP035	35	12	10	Lever	147.69
DN80	V4-ABFW-EPN16-080-03	CM035	V4-ABFW-EPN16-080-04	CMP035	35	12	10	Lever	239.26
DN100	V4-ABFW-EPN16-100-03	CM050	V4-ABFW-EPN16-100-04	CMP050	50	20	10	Lever	458.88
DN125	V4-ABFW-EPN16-125-03	CM100	V4-ABFW-EPN16-125-04	CMP100	100	10	50	Lever	644.87
DN150	V4-ABFW-EPN16-150-03	CM200	V4-ABFW-EPN16-150-04	CMP200	200	22	60	Lever	1363.44
DN200	V4-ABFW-EPN16-200-03	CM200	V4-ABFW-EPN16-200-04	CMP200	200	22	60	Lever	2275.82
DN250	V4-ABFW-EPN16-250-03	CM300	V4-ABFW-EPN16-250-04	CMP300	300	11	180	Lever	3458.83
DN300	V4-ABFW-EPN16-300-03	CM400	V4-ABFW-EPN16-300-04	CMP400	400	18	180	Lever	6326.07

Figure (1) Product Identification System

The labeling system for Honeywell butterfly valves is as follows:

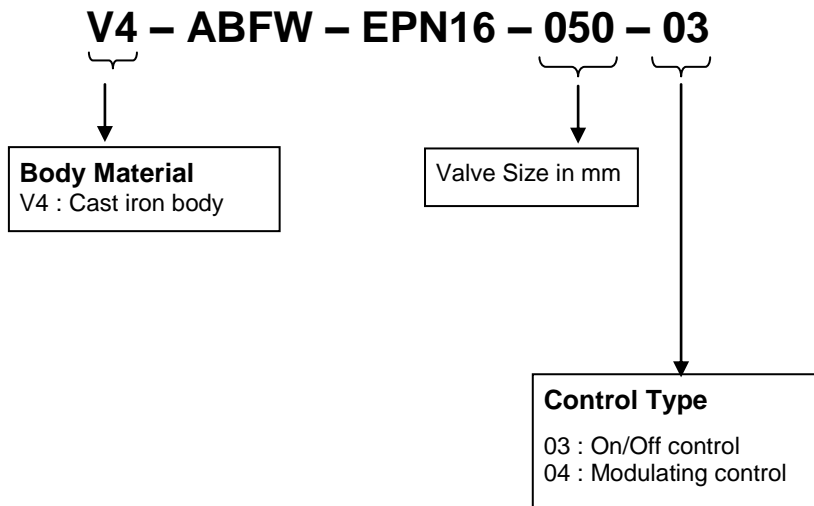
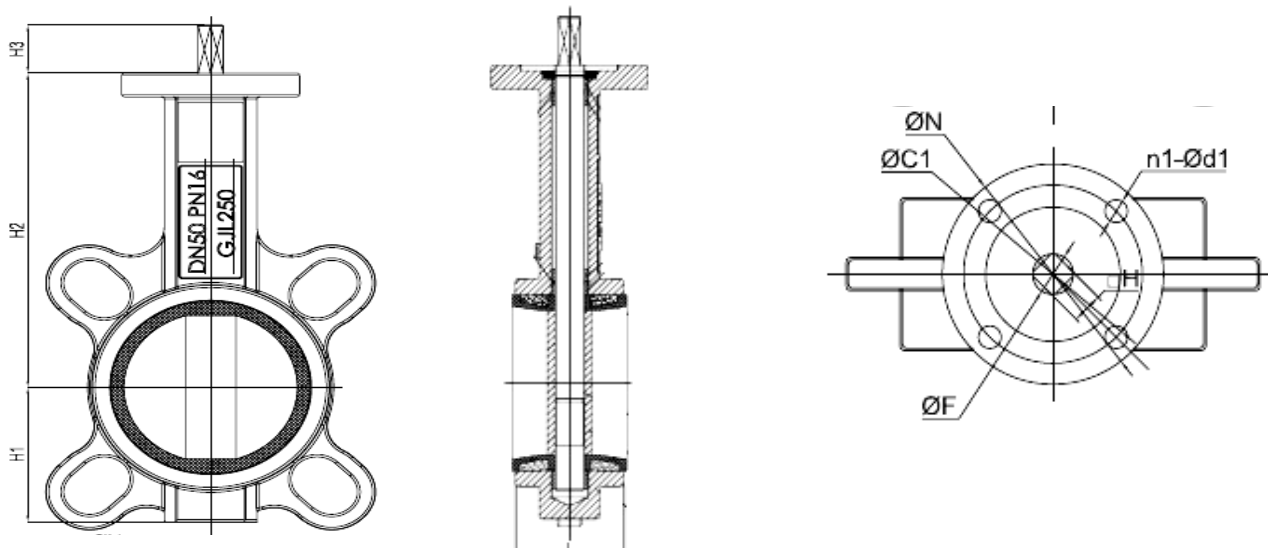


Table (2) Valve Dimensions and Weight

Size	H1	H2	H3	L	øF	HxH	Weight (Kg)	Top Plate Date			
								ISO5211	øC1	øN	n1-ød1
DN50	57	143	29	43	12.1	9x9	1.8	F05	50	65	4 – Ø8
DN65	68	155	29	46	12.1	9x9	2.2	F05	50	65	4 – Ø8
DN80	82	160	29	46	12.1	9x9	2.5	F05	50	65	4 – Ø8
DN100	100	181	29	52	14.1	11x11	3.8	F07	70	90	4 – Ø10
DN125	112	194	29	56	18.1	14x14	5.5	F07	70	90	4 – Ø10
DN150	126	202	29	56	18.1	14x14	6.9	F07	70	90	4 – Ø10
DN200	162	240	35	60	22.1	17x17	11	F10	102	125	4 - Ø12
DN250	193	272	35	68	28.2	22x22	17.7	F10	102	125	4 - Ø12
DN300	236.5	318	35	78	28.2	22x22	25.6	F10	102	125	4 - Ø12

**Table (3) Hydraulic Characteristics**

The below table shows the Kv – values at different opening angles:

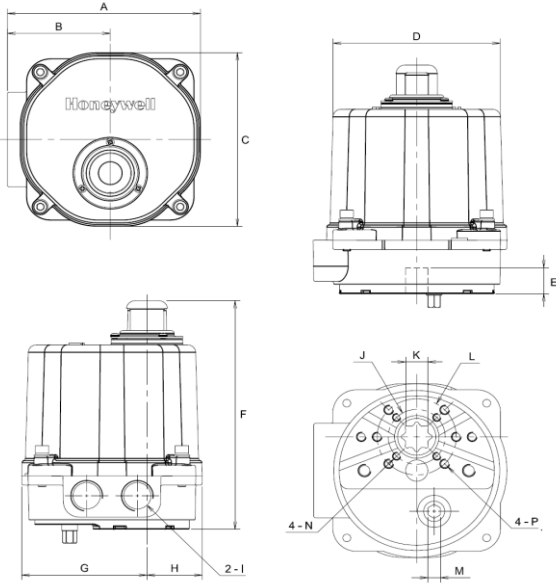
Nominal Size	Kv – value at Disk Opening Angle								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
DN50	0.19	3.14	8.22	21.75	35.57	54.19	68.77	72.03	73.97
DN65	2.68	9.66	16.62	38.70	60.54	83.11	103.88	135.94	147.69
DN80	3.89	6.48	16.76	54.14	82.41	121.96	196.53	226.64	239.26
DN100	4.21	15.62	32.28	95.49	170.41	264.85	373.26	440.29	458.88
DN125	4.99	17.39	42.11	112.28	192.31	271.57	413.94	554.19	644.87
DN150	8.22	37.65	81.40	232.93	356.74	582.86	859.11	1261.79	1363.44
DN200	14.19	53.08	149.42	442.67	675.29	1046.88	1554.71	2150.60	2275.82
DN250	25.28	137.50	294.24	746.88	1150.59	1680.44	2283.21	3418.67	3458.83
DN300	36.43	95.12	359.80	1008.18	1378.58	2263.69	3426.93	5176.68	6326.07

**Table (4a) Actuator Dimensions
(CM035)**

Model No.	A	B	C	D	E	F	G	H	I	J	K max	L	M	N	P
CM035	122	65	114	ø106	17	150	79	35	1/2" PS	ø36	14	ø50	8	M5*0.8	M6*1.0

With modulating card, F = 183

Flange Type
F03/F05

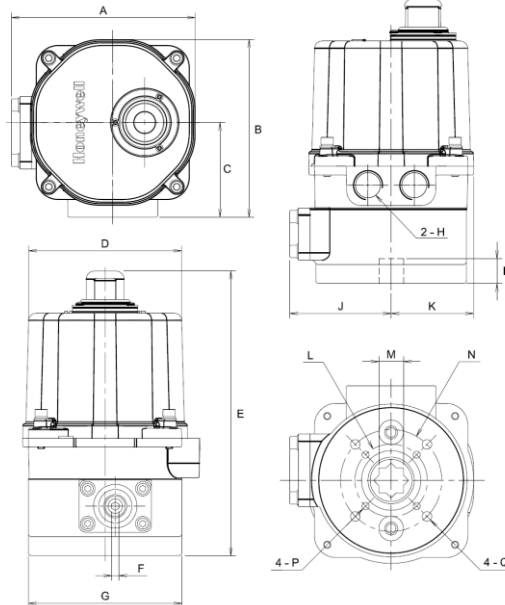


**Table (4b) Actuator Dimensions
(CM050)**

Model No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P
CM050	127	122	65	ø106	196	5	ø102	1/2" PS	20	70	57	ø50	17	ø70	M6*1.0

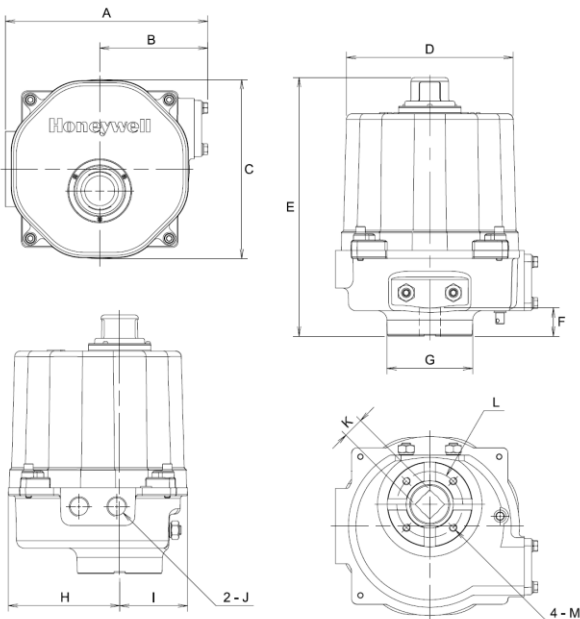
With modulating card, E = 229

Q	Flange Type
M8*1.25	F05/F07



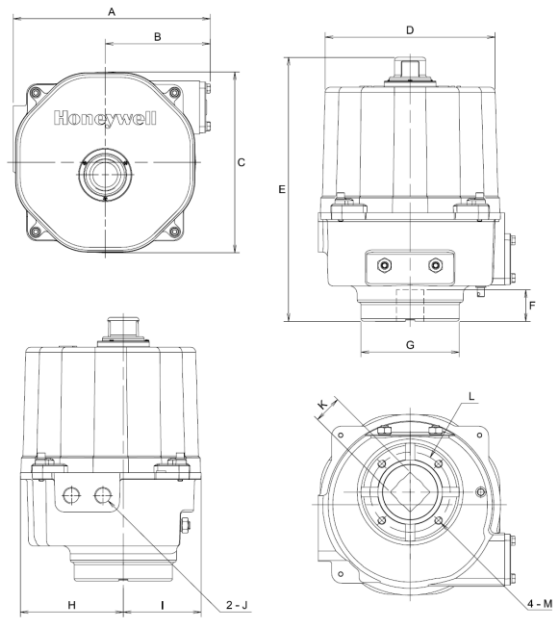
**Table (4c) Actuator Dimensions
(CM100 to CM200)**

Model No.	A	B	C	D	E	F	G	H	I	J	K max	L	M	Flange Type
CM100 CM200	215	115	ø190	177	275	30	ø90	118	72	1/2" PS	22	ø70	M8*1.25	F07



**Table (4d) Actuator Dimensions
(CM300 to CM400)**

Model No.	A	B	C	D	E	F	G	H	I	J	K max	L	M	Flange Type
CM300 CM400	251	134	ø230	217	336	40	ø125	131	99	1/2" PS	36	ø102	M10*1.5	F10



INSTALLATION

WARNING!

Remove power before the cover is dismantled!
The actuator must be handled with the utmost care when the cover is removed and the power connected!

ELECTRIC WIRING

Note:

Electric wiring must be carried out by qualified personnel only!

Wiring diagram is also shown on the label of top cover.

MOUNTING ON VALVE

1. Before mounting actuator, verify that the torque requirement is less than the output torque of the actuator. (The suggested safety factor is 30% of the max. torque of valve.)
For example :
 If the maximum torque of 5" valve is 80Nm
 $\rightarrow 80 \times 1.3(\text{safety factor}) = 104\text{Nm}$
 $104\text{Nm} < 200\text{Nm (CM200)} \rightarrow \text{OK!}$
 $104\text{Nm} > 100\text{Nm (CM100)} \rightarrow \text{NO!}$
2. Check if the output shaft fits to the stem of valve before inserting into actuator. Please use mounting plate or adaptor to connect if it does not match.
3. Insert output shaft adaptor into actuator. Make sure it fits satisfactory.
4. Determine that actuator position, open or closed, matches with position of equipment prior to mounting. Use manual override to change position if necessary.
5. Remove valve's manual device and mount on the proper connection.

CAUTION:

Do not remove any necessary parts for the proper operation of the valve.

6. Check again that the valve and actuator are in the same position.
7. Install the actuator to valve directly or with mounting kits, then tighten all screws and nuts.

1. Remove actuator cover.

CAUTION:

Be sure power is off at the main power box.

2. Wire actuator using the wiring diagram inside cover.
3. Supply power to actuator.

CAUTION:

Use remarkable mark warning "there are live circuits that could cause electrical shock or death".

4. Make sure if it is needed to calibrate the fully-open or fully-closed position of the actuator.
5. If the actuator is modulating type, refer to P7 to set the functions.

CAUTION:

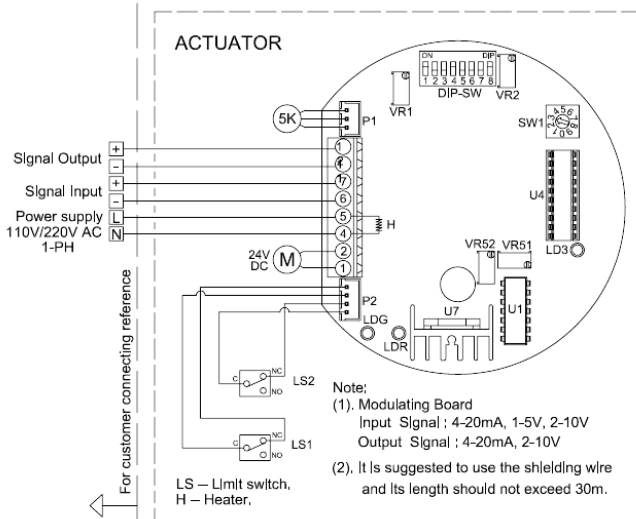
Turn power off before changing any setting.

6. Replace cover and secure cover screws.

WIRING DIAGRAM FOR MODULATING

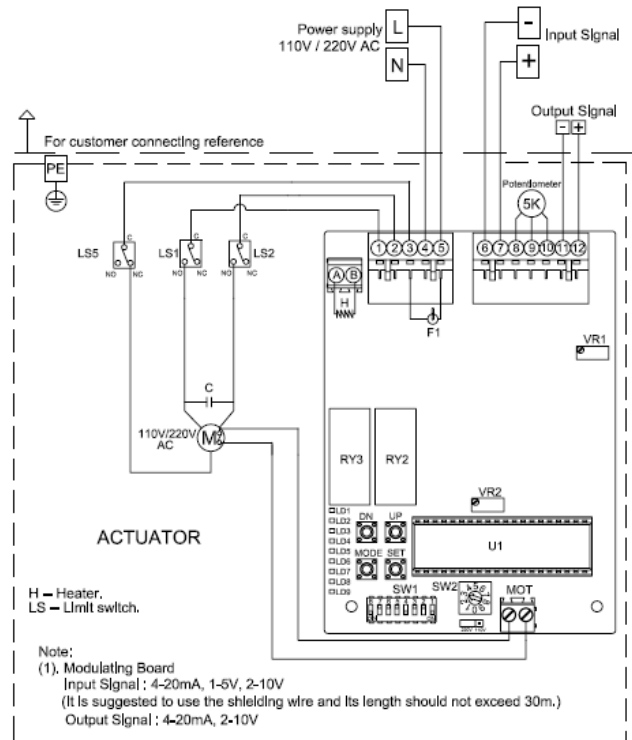
[CM035 & CM050 110V/220V AC 1-Phase]

Modulating Controller



[CM100 ~ CM400 110V,220V AC 1-Phase]

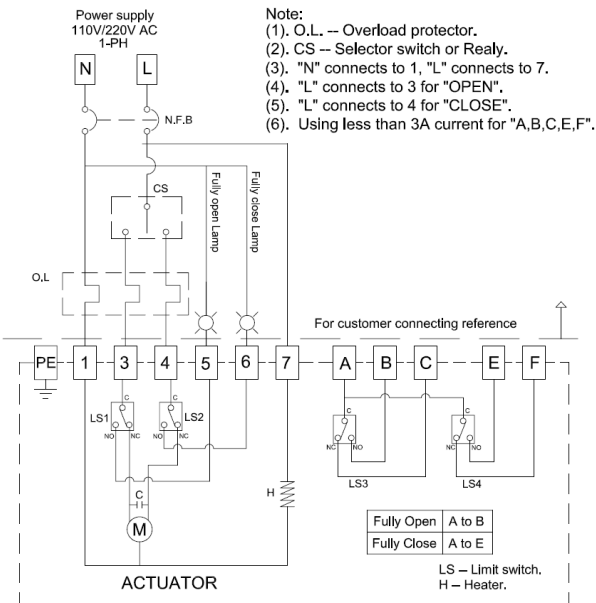
Modulating Controller, 30% duty cycle



WIRING DIAGRAM FOR ON/OFF

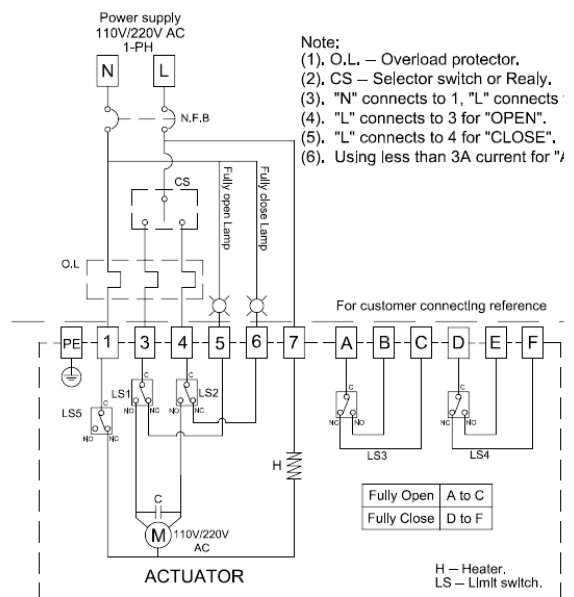
[CM035 & CM050 110V/220V AC 1-Phase]

On-Off Controller, 30% duty cycle



[CM100 ~ CM400 110V, 220V AC 1-Phase]

On-Off Controller



FUNCTION SETTING

Note:

Turn the power off before changing the following setting.

S1~S8: Function setting by DIP switches

S1, S2: DIP switches for input signal select

“4~20mA” set 1-ON / 2-OFF.

“1~5V” set 1-OFF / 2-OFF.

“2~10V” set 1-OFF / 2-ON.

S3, S4, S5: DIP switches for feedback signal select

“2~10V” set 3-ON / 4-OFF / 5-ON.

“4~20mA” set 3-OFF / 4-ON / 5-OFF.

S6: DIP switch for direct/reverse action

Valve is fully-open when the input signal is 4mA, 2V or 1V and valve is fully-closed when the input signal is 20mA, 10V or 5V, set 6-ON. Valve is fully-closed when the input signal is 4mA, 2V or 1V and valve is fully-open when the input signal is 20mA, 10V or 5V, set 6-OFF.

S7, S8: DIP switches for valve position when input signal fails

“valve fully-closed” set 7-OFF / 8-ON.

“valve fully-open” set 7-ON / 8-OFF.

“valve stops” set 7-ON / 8-ON.

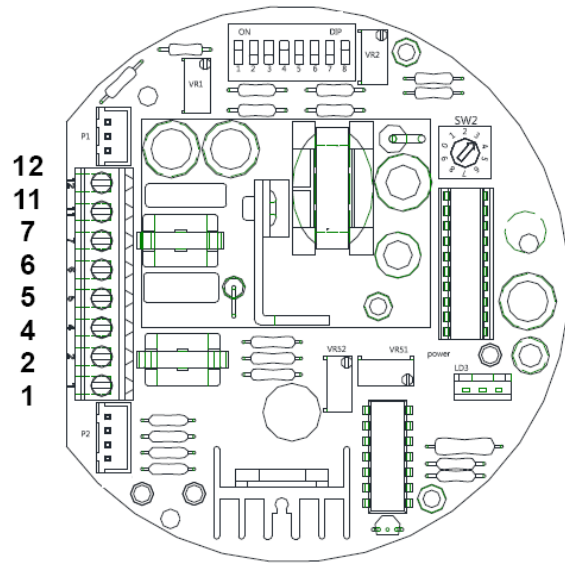
SW1~0 (10 steps): Sensitivity adjustable switch

When switch to “1”, the 0~90 degree can be divided up to around 50 times movement.

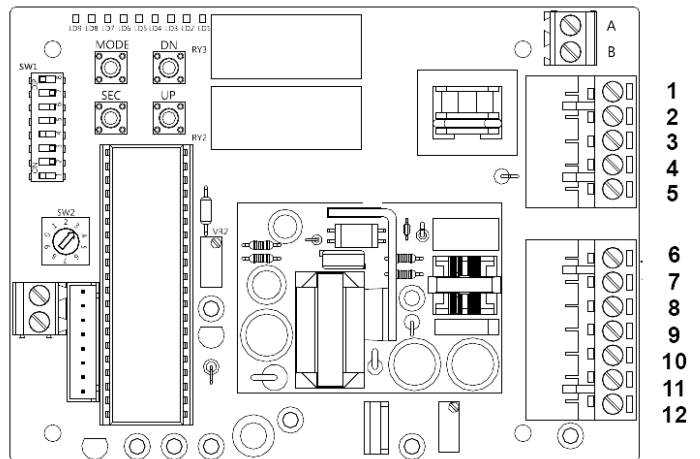
When switch to “0”, the 0~90 degree can be divided up to around 10 times movement.

The sensitivity decreases 5 times movement by sectors from SW1 to SW2, SW2 to SW3, SW3 to SW4 and so on.

Modulating Control Board for CM035~CM050



Modulating Control Board for CM100~CM400



TROUBLE SHOOTING

Conditions	Possibilities	Solution
Motor dose not operate	1. Check wiring.	1. Check by meter.
	2. Supply power to #3、#4 simultaneously (Parallel Connection).	2. Check the wiring.
	3. Is the power supply short circuited?	3. Check wiring.
	4. Any blisters on the capacitor?	4. Replace to a new part.
	5. Valve's rubber is getting hardened or the valve's torque is excessive. (It takes longer time to reach fully-closed position).	5. Use manual override for test or change to a new valve.
	6. Any foreign objects in flow stream?	6. Check for obstructions.
	7. Broken motor stem or bearing.	7. Replace to a new parts.
	8. The limit switch for fully-closed dose not trip.	8. Operate the actuator manually to fully-closed position and confirm if the limit switch trips.
Unable to fully open/close	1. Loose/Misalign cam?	1. Adjust/Tighten using spanner.
	2. Bent valve stem?	2. Replace valve stem.
	3. Mechanical stop adjustment incorrect?	3. Check position of stops.
	4. The actuator does not mount with the valve tightly during installation process.	4. Contact technical department to solve the problem.
	5. The torque of valve is larger than the torque of actuator.	5. The torque of valve is larger than the torque of actuator.
	6. The installing angle of actuator and valve is not correct.	6. Check the angle of the valve and actuator.
Valve stops operating when motor is running.	1. Gear worn out?	1. Replace gear.
	2. Sleeve adapter worn out or broken?	2. Replace sleeve adapter.
	3. Broken valve stem or actuator shaft?	3. Replace valve stem or actuator shaft.
Abnormal control for operating two or more actuators simultaneously.	Controlling circuit connects in tandem or parallel.	Check current values and install a relay respectively.
Motor overheats	1. Under or over rated voltage.	1. Check the supply circuit.
	2. Wrong power supply.	2. Check the power supply.
	3. Overload.	3. This situation often happens after operating for a long time. It is suggested to replace to a new valve.
	4. Actuator operates too frequently (Starting frequency is too high).	4. Change system bandwidth or replace to a higher duty cycle actuator.
	5. Is motor stem bearing or blinding?	5. Replace the blinding parts.
	6. Mechanical stops are reached by the gear train at fully-open or fully-closed position.	6. Reset the mechanical stops and limit switches
Occasional on/off actuator failure.	Simultaneous input power on/off.	Check if the selectable switch is normal.
Vibration when valve is closed.	Motor brake spring fatigued or Teflon worn?	Replace spring or Teflon.

Honeywell

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