

# Smart Valve Positioner 300 Series HART + Travel Transmission

## Model AVP307

### OVERVIEW

Model AVP307, which is a normal current-pneumatic smart valve positioner equipped with a microprocessor, is available for the DC 4 to 20 mA instrumentation now in use and compatible with HART communication and travel transmission output.

This normal current-pneumatic positioner provides significantly greater usability than previous models, and covers a wide range of valve specifications with a single model. Furthermore, by using this product to enhance the controllability of the control valve and monitor the operation of the control valve, maximum cost-effectiveness will be ensured.

### FEATURES

#### 1. Easy adjustment (Adjustments can be easily made using only one screwdriver.)

##### • Auto setup

This product recognizes the specifications of the mounted actuator, and automatically makes the appropriate settings and optimal adjustments.

##### • Easy zero/span adjustment

No mutual interference occurs in the zero/span adjustment process. The zero point and span point remain unchanged even if other settings are changed.

#### 2. A single model covers a wide range of specifications.

With previous models, various specifications were covered by replacing parts. With this model, various specifications can be covered by changing the setting data.

Example: Configurable specifications

- Input range (split-range)
- Flow characteristic (linear, EQ%, Quick opening, user-defined custom value)
- Travel transmission signaling system (analog)

#### 3. Valve diagnostic

Following parameters can be monitored by HART communicator or Control Valve Maintenance Support System "PLUG-IN Valstaff".

- Stick Slip
- Total Stroke
- Travel Histogram
- Cycle Count
- Shut-Off Count
- Max. Travel Speed



#### 4. Forced valve shut-off feature

The user can set any input signal value as the low threshold that triggers valve shut-off.

#### 5. Easy maintenance

The electrical circuit section and air circuit section are completely separate, making the maintenance of the air circuit section at the work site easy. An Auto/Manual switch is standard equipment, so it is also easy to check the operation of the valve. (However, it is not available for the double-acting actuator.)

#### 6. Travel transmission

The model AVP307 transmits a 4–20 mA signal proportional to the valve travel. The valve travel can be monitored from the control room. (In this case, 4-core cable is required for power supply circuit)

#### 7. This product can be mounted in both single-acting and double-acting types of actuators.

To mount this product in a double-acting actuator, add a reversing relay to the output air pressure connector.

The wiring method differs depending on whether this device is used as a normal current-pneumatic positioner or as a positioner with a travel transmission function. When using this device as a normal current-pneumatic positioner, it is necessary only to connect the positioner to the host controller with an input signal cable (4–20 mA DC) as with previous models. Figures 1 and 2 show the wiring diagrams.

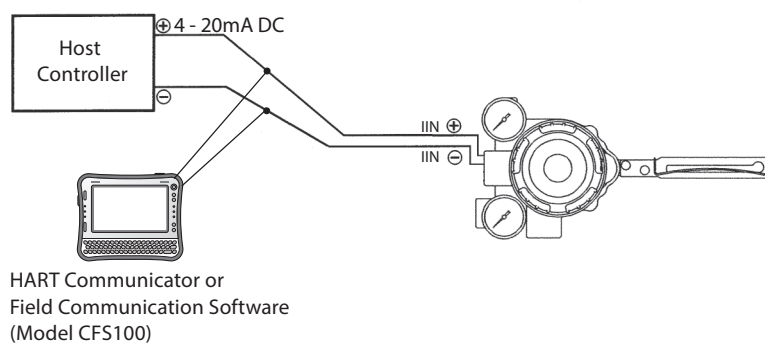


Figure 1. Current-pneumatic positioner

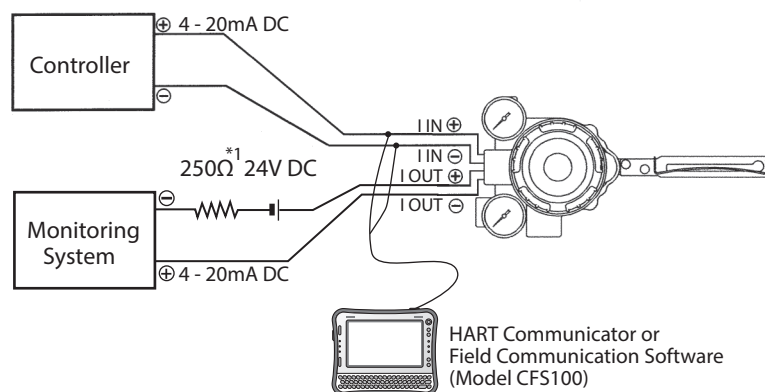


Figure 2. Positioner with travel transmission function

<sup>\*1</sup>. For load resistance, refer to Figure 3.

Load Resistance  $\Omega = 43 \times \text{Voltage V} - 475$

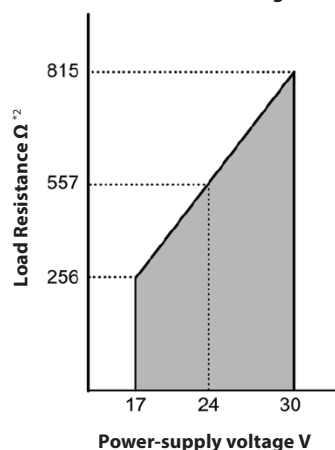


Figure 3. Supply voltage for travel transmission vs. load resistance characteristic

Note) Supply voltage shall be limited to 30 V DC

<sup>\*2</sup>. Load resistance = Resistance for Monitoring system + 250  $\Omega$ <sup>\*1</sup> + Resistance of supply voltage<sup>\*1</sup>

Table 1. Actuator stroke and accuracy

Actuator	Stroke (mm)	Accuracy [% F.S.]
PSA1, 2	14.3, 20, 25	1.0
PSA3, 4	20, 38	1.0
HA1	6, 8, 10	3.0
	14.3, 25	1.0
HA2	10	3.0
	14.3, 25, 38	1.0
HA3	14.3	3.0
	25, 38, 50	1.0
HA4	14.3	3.0
	25, 38, 50, 75	1.0
VA5	25, 37.5, 50, 75, 100	1.0
VA6	14.3	3.0
PSA6, 7	25, 37.5, 50, 75, 100	1.0
HK1	10	3.0
PSK1	19	1.0

**LIST OF FEATURES**

Item	Function
Desired input signal range	Any split-range value can be specified.
Forced fully open/closed	The control valve can be fully closed or opened securely when the desired percentage of input signal is reached.
Desired flow characteristics	The relationship between input signal and valve travel that is appropriate for the process can be defined by using a 16-point line graph.
Travel transmission	Valve motion can be reliably monitored by transmitting the valve travel.

**FUNCTIONAL SPECIFICATIONS**

Item		Specification
Applicable actuator		Pneumatic single and double acting, linear and rotary motion actuator
Input signal		4–20 mA DC (Configurable to any required range for split range.) Min. current for normal operation: 3.85mA *1
Communication system		HART6 communication only
Output signal		4–20 mA DC (Travel transmission)
Input resistance		370 Ω typically / 20 mA DC (Waterproof and Flameproof, models) 400 Ω typically / 20 mA DC (Intrinsically safe model)
Lightning protection		Peak value of voltage surge: 12 kV Peak value of current surge: 1000 A
Flow characteristics		Linear, Equal percentage, Quick opening Custom user characteristics (16 points)
Manual operation		Auto/Manual external switch (Not available for double acting actuator)
Supply air pressure		140 to 700 kPa
Air consumption	For single acting actuator	4 L/min (N) or less: with steady supply air pressure of 140 kPa {1.4 kgf/cm <sup>2</sup> } and output of 50 % 5 L/min (N) or less: with steady supply air pressure of 280 kPa {2.8 kgf/cm <sup>2</sup> } and output of 50 % 6 L/min (N) or less: with steady supply air pressure of 500 kPa {5.0 kgf/cm <sup>2</sup> } and output of 50 %
	For double acting actuator	10 L/min (N) or less: steady supply air pressure of 400 kPa {4.0 kgf/cm <sup>2</sup> }, with a reversing relay
Output balanced pressure		55±5 % for double acting actuator only (without a load, and when output air pressure is balanced)
Maximum air deliver flowrate	For single acting actuator	110 L/min (N) maximum at 140 kPa {1.4 kgf/cm <sup>2</sup> }
	For double acting actuator	250 L/min (N) maximum at 400 kPa {4.0 kgf/cm <sup>2</sup> } with a reversing relay
Air connections		Rc1/4 or 1/4NPT internal thread
Electrical connections		G1/2, 1/2NPT or M20×1.5 internal thread
Ambient temperature limits		General models : -40 to +80 °C TIIS Flameproof : -20 to +55 °C ATEX/KCs/IECEX/CCC Flameproof : -40 to +75 °C CCC/ATEX Intrinsically safe : -40 to +60 °C
Ambient humidity limits		10 to 90 %RH
Vibration characteristics		20 m/s <sup>2</sup> , 5 to 400 Hz (vibration within the positioner main unit)
Finish		Baked acrylic
Color		Dark blue
Material		Cast aluminum
Weight		2.5 kg. (3.2 kg with a pressure regulator with filter model KZ03) (3.0 kg with a pressure regulator with filter model RA1B) (If combined with a reversing relay for a double-acting actuator, add 0.3 kg to the weight.)
Performance	Accuracy	±1.0 % F.S.(±2.5 % with user-defined flow characteristics) ±3.0 % F.S. if the feedback lever angle is outside the ±4° to ±20° range (refer to Table 1 of 2nd page) ±1.5 % F.S. in case of 4 mA ≤ input signal span < 8 mA (see Table 1.)
	Travel transmission accuracy *2	±1 %F.S. (±2.5 % with user-defined flow characteristics)
	Stroke coverage	14.3 to 100 mm Stroke (Feedback Lever Angle ±4° to ±20°)
Enclosure classification		JIS C0920 watertight, NEMA type 4X, IP66

Item	Specification	
Structure	TIIS Flameproof	Ex d IIC T6 Gb
	KCs Flameproof	Ex d IIC T6 Flameproof cable gland and Stopping plug must be KCs Ex d IIC approved.
	ATEX Flameproof	II 2 G Ex db IIC T6 Gb $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +75^{\circ}\text{C}$ IEC IP66 Flameproof cable gland and Stopping plug must be ATEX Ex db IIC approved. <i>Note: IP66 waterproof and dust-proof performance can be assured by installing an appropriate cable gland.</i>
	ATEX Intrinsically safe	II 1 G Ex ia IIC T4 Ga; $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +60^{\circ}\text{C}$ II 1 D Ex ia IIIC T <sub>200</sub> 135°C Da; $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}$ IEC IP66 The barriers should be ATEX certified types and comply with the following condition as follows: Input circuit (terminals $\pm\text{IIN}$ ) $U_i=30\text{ V}$ , $I_i=100\text{ mA}$ (resistively limited), $P_i=1\text{ W}$ , $C_i=5\text{ nF}$ , $L_i=0.22\text{ mH}$ Travel transmission circuit (terminals $\pm\text{IOUT}$ ) $U_i=30\text{ V}$ , $I_i=100\text{ mA}$ (resistively limited), $P_i=1\text{ W}$ , $C_i=22\text{ nF}$ , $L_i=0.22\text{ mH}$
	CCC Flameproof	Ex db IIC T6 Gb Flameproof cable gland must be CCC Ex d IIC approved.
	CCC Intrinsically safe	Ex ia IIC T4 Ga; $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +60^{\circ}\text{C}$ Ex ia IIIC T <sub>200</sub> 135°C Da; $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}$ The barriers should be CCC certified types and comply with the following condition as follows: Input circuit (terminals $\pm\text{IIN}$ ) $U_i=30\text{ V}$ , $I_i=100\text{ mA}$ , $P_i=1\text{ W}$ , $C_i=5\text{ nF}$ , $L_i=0.22\text{ mH}$ Output circuit (terminals $\pm\text{IOUT}$ ) $U_i=30\text{ V}$ , $I_i=100\text{ mA}$ , $P_i=1\text{ W}$ , $C_i=22\text{ nF}$ , $L_i=0.22\text{ mH}$
	Combination of CCC Flameproof and Intrinsically safe	When used as CCC Flameproof, it complies CCC Flameproof approval as above. When used as CCC Intrinsically safe, it complies CCC Intrinsically safe approval as above.
	IECEx Flameproof	Ex db IIC T6 Gb IEC IP66 Flameproof cable gland and Stopping plug must be IECEx Ex db IIC approved. <i>Note: IP66 waterproof and dust-proof performance can be assured by installing an appropriate cable gland.</i>
Applicable Standard	CE Marking (EN61326-1: 2013 (EMC), EN IEC 63000:2018 (RoHS)) Korea Radio Act (KC Mark)	
Configuration tools	Field Communication Software (Model CFS100 Software Version 3.3 or later) Control Valve Maintenance Support System PLUG-IN Valstaff (Software Version R43 or later)	

\*1: If the input signal falls below this value, the travel transmission output may become indefinite.

## Conditions of supply air (JIS C1805-1 (2001))

Item	Specification
Particles	Maximum diameter 3 $\mu\text{m}$
Oil mist	Less than 1 ppm at mass
Humidity of the air supply	The dew point should be at least 10°C lower than the temperature of this device.

To meet the above specifications for instrument air, install the air purification devices listed below properly in the specified installation location.

## Examples of air purification devices

Installation	Air purification device	SMC corporation	CKD corporation
Compressor outlet or main line	Line filter	AFF series	AF series
	Mist separator	AM series	
Terminal device	Mist separator	AM150 or AM250 series	M3000S type

## MODEL SELECTION

### Basic model number

AVP307	Analog signal (4 to 20 mA DC) with HART Communication + Travel Transmission	-	(1)	(2)	(3)	(4)	(5)
(1) Main unit model number	(Air pipes, conduit connections)						
	Water-proof	(Rc 1/4, G1/2)	X				
	Water-proof	(1/4 NPT, 1/2 NPT)	P				
	Water-proof	(1/4 NPT, M20×1.5)	Q				
	TIIS Flameproof with cable gland *1	(Rc1/4, G1/2)	E				
	KCs Flameproof	(1/4NPT, 1/2NPT)	H				
	ATEX Flameproof	(1/4 NPT, M20×1.5)	C				
	ATEX Flameproof	(1/4 NPT, 1/2NPT)	Y				
	ATEX Intrinsically safe	(1/4 NPT, M20×1.5)	L				
	ATEX Intrinsically safe	(1/4 NPT, 1/2 NPT)	U				
	ATEX Intrinsically safe	(Rc 1/4, G1/2)	V				
	CCC Flameproof	(1/4 NPT, 1/2 NPT)	B				
	CCC Flameproof	(1/4 NPT, M20×1.5)	N				
	CCC Flameproof and Intrinsically safe	(1/4NPT, 1/2NPT)	R				
	CCC Flameproof and Intrinsically safe	(1/4NPT, M20x1.5)	W				
	IECEX Flameproof	(1/4 NPT, 1/2 NPT)	J				
	IECEX Flameproof	(1/4 NPT, M20×1.5)	G				
(2) Finish	Standard (Baked Acrylic)			S			
	Corrosion proof (Baked polyurethane)			B			
	Silver finish (Baked Acrylic)			D			
(3) Positioner action *2	Direct Action (standard) - Air pressure increases with Control signal increase				D		
	Reverse Action (reverse positioning) Airpressure decreases with Control signal increase				R		
(4) Supply air pressure type	(φ40 pressure gauge scale, Max regulator setting)						
	140 ≤ Ps ≤ 150 kPa	(200 kPa, 400 kPa)				1	
	150 < Ps ≤ 300 kPa	(400 kPa, 400 kPa)				2	
	300 < Ps ≤ 400 kPa	(600 kPa, 400 kPa)				3	
	400 < Ps ≤ 450 kPa	(600 kPa, 700 kPa)				4	
	450 < Ps ≤ 700 kPa	(1000 kPa, 700 kPa)				5	
(5) Pressure units	kPa						A
	(kgf/cm <sup>2</sup> ) *3						(B)
	MPa						C
	bar						D
	(psi) *3						(E)

\*1. Two flameproof cable glands are included.

\*2. When the input signal (power) is shut off, select direct action to make the output air pressure of this device zero, and reverse action to make the output at the maximum air pressure (supply air pressure). Positioner action differs from actuator and control valve action, so be careful in selecting the positioner's action.  
If double acting actuator are using, not available code "R".

\*3. Items in parentheses are for overseas use. As such, they cannot be used in Japan.

## Individual specifications

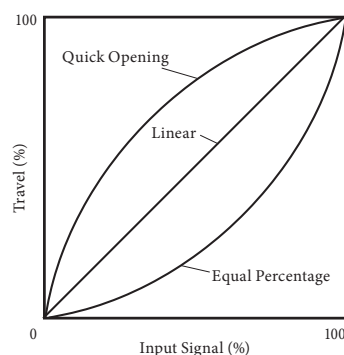
Following shows default and optional settings of each configurable parameter of AVP.

Unless otherwise specified, the Smart Valve Positioner will be shipped in the following configuration.

Input range	4 to 20 mA (default) <i>Note) The minimal span = 4 mA DC</i>
Output characteristic *1	Liner (default) EQ, QO or custom setting by user. (factory default setting is data of ADVB / ADVDM characteristics into linear)
Valve action *2	Direct (Push down to close)(default) Reverse (Push down to open) can be ordered or set by use
Output signal for travel transmission	4 to 20 mA

\*1. Refer to the following when selecting the input/output characteristics.

\*2. Positioner action differs from actuator and control valve action, so be careful in selecting the positioner's action.



**Figure 4. Input-output characterization**

### Selection of input characterization

The flow characteristic of a control valve is set by selecting the valve plug characteristic, and the input-output characteristics of the positioner must be specified as linear. However, if the valve plug flow characteristic, which depends on the control valve's shape and structure, does not meet requirements, you can correct the overall flow characteristic of the control valve by specifying "equal percentage" or "quick opening" for the input-output characteristics of the positioner, as shown in Table 2.

**Table 2. Control valve flow characteristics correction by the positioner**

Characteristic of valve plug	Input-output characterization of positioner	Overall flow characteristic of control valve
Linear	Quick opening	Quick opening
Linear	EQ%	EQ%
EQ%	Quick opening	Linear

*Note: If the valve plug characteristic is "quick opening," the overall flow characteristic of the control valve cannot be linear even if "equal percentage" is set for the positioner's input-output characteristics. (This is because when the valve plug characteristic is "quick opening," the control valve works as an ON/OFF valve and it is difficult to correct its characteristics by changing the setting of the positioner.)*

Accessory Selection		-	(6)	(7)	(8)	(9)	-	(10)
(6) Regulator with filter	Without regulator		X					
	With model RA1B regulator (attached to main unit) *1		A					
	With model RA1B regulator (with mounting plate for separate installation)		B					
	With model KZ03 regulator (attached to main unit) *1		1					
	With model KZ03 regulator (with mounting plate for separate installation)		2					
(7) Mounting bracket material (mounting plate/bolts)	No mounting plate			X				
	SUS304 / SUS304			D				
(8)(9) Mounting bracket for attachment to actuator *9	No mounting plate				XX			
	Single-acting actuators	PSA1, PSA2, PSK1			YS			
		New model PSA3, 4 (produced after 2000), VA1 to 3 (produced after May. '83)			YQ			
		PSA3, PSA4 for existing valves produced on/before 1999			YY			
		PSA6, VA4 to 6 (produced after May. '83)			YL			
		PSA7			Y8			
		HA1			YA			
		HA2, HA3, HL2, HL3			YT			
		HA4, HL4			YN			
		HK1, VM1 *2			YK			
		VM12 for model VSP *3			YB			
		VR1			YV			
		VR2, VR3			YR			
		VR3H			Y6			
		RSA1			YF			
		RSA2			YU			
		GOM 83S, GOM 84S, GOM 103S			YG			
		GOM 124S			YM			
		VA1 to 3 (produced before Apr. '83, former model Motion Connector), 800-1, 2, 3 *4			YW			
		(VA4,5(produced before Apr. '83, former model Motion Connector), 800-4, 5) *4			YJ			
		Actuators of other manufacturers			See Table 3			
	Double-acting actuators	VP5, 6 *5			Y1			
		VP7 *5			Y7			
		SLOP560, 1000, 1000X *5 (stroke : 100 mm max)			Y2			
		SLOP1500, 1500X *5 (stroke : 100 mm max)			Y3			
		DAP560, 1000, 1000X *5 (stroke : 100 mm max)			Y4			
		DAP1500, 1500X *5 (stroke : 100 mm max)			Y5			
		DAP560 (VFR : 8 to 12B)			LA			
		DAP560 (VFR : 14B, 16B)			LB			
		DAP560 (VDC, VDN, VST : 16B)			LC			
		DAP1000,1000X (VDC, VDN, VST : 16B)			LD			
		DAP1500,1500X (VDC, VDN, VST : 16B)			LE			
		GOM64LM,84LM (springless, vertical, double acting) *6			GA			
		GOM64LM,84LM (springless, vertical, double acting) *7			GB			
		GOM124LM (springless, vertical, double acting) *6			GC			
		GOM124LM (springless, vertical, double acting) *7			GD			
		Actuators of other manufacturers			See Table 4			
(10) Option	None							X
	Explosion-proof universal elbow (SUS304 G1/2) 1 piece							A
	Explosion-proof universal elbow (SUS304 G1/2) 2 pieces							C
	Mounting screw Unify (5/16-18UNC) (Electrical conduit connection only supports 1/2NPT)							T
	Double-acting reversing relay *8							W

- \*1. Select the code "1" only when the direction of drain of the pressure regulator with filter on the control valve is downward(ground).  
 \*2. In case "VM" type actuator is required following conditions, 1. select model "VCT" for the body, 2. the existing positioner should be HEP or VPE, 3. yoke should be model HK. If another spec. is required, contact your sales representative.  
 \*3. Additional support bracket is required.  
 \*4. Consult with sales representative in case of no mounting hole on the side of valve yoke.  
 \*5. In case of double acting actuator, a reversing relay unit required.  
 \*6. In case of valve body is not butterfly valve of Azbil Corporation.  
 \*7. In case of valve body is butterfly valve of Azbil Corporation.  
 \*8. If reverse action is selected for positioner action, this option cannot be selected.  
 \*9. Accuracy differs depending on the actuator stroke (see table 1).



**Table 3. Mounting bracket for single acting actuator**

(8)(9) Mounting bracket for pneumatic actuator	Code
Motoyama Mfg. 2800 series 240, 280, 330, Nihon Koso A100 series 270, 320 *	TA
Motoyama Mfg. 2800 series 400, 500S, 500L, Nihon Koso A100 series 400, 500 *	TB
Motoyama Mfg. 2800 series 650S, 650L*	TC
Motoyama Mfg. 2800 series 240, 280, 330 (with side manual handle)	TD
Motoyama Mfg. 2800 series 400, 500S, 500L (with side manual handle)	TE
Motoyama Mfg. 2800 series 650S, 650L (with side manual handle)	TF
Motoyama Mfg. 3800 series (multi-spring type) N24, N28, N33S	TJ
Motoyama Mfg. 2922 series (Gyrol-I) G.R.I 280H, 330H, 400HS, 400H, 500H	TL
Motoyama Mfg. 3993 series (Gyrol-II) 2911-1M series 280, 330, 400	TG
Nihon Koso 5100L series 240, 280 *	TP
Nihon KOSO 5100L Series 330,400,5200LA Series 400 *	TQ
Nihon Koso 5200L series 218, 270, 350 *	TR
NIHON KOSO 5200LA Series 450 *	TV
Masoneilan 37, 38 series #9, #11 *	MA
Masoneilan 37, 38 series #13 *	MB
Masoneilan 37, 38 Series #13 (w/Side handle)	ME
Masoneilan 37, 38 series #15, #18 *	MC
Masoneilan 37, 38 series #15, #18 (with side manual handle)	MF
Masoneilan type 35002 series Camflex II #41/2, #6, (Valve size 1 inch - 4 inches)	MG
Masoneilan type 35002 Camflex II #7 (Valve size 6 inches - 12 inches)	MH
Masoneilan 37,38 Series #11 *	MJ
Masoneilan 82,83 Series #13 (w/Side handle w/o Side handle)	MK
Masoneilan 82,83 Series #15 *	ML
Masoneilan 82,83 Series #18 *	MM
Fisher 657, 667 series size 40	FB
Fisher 657, 667 series size 45, 50	FC

(8)(9) Mounting bracket for pneumatic actuator	Code
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AK09S,12S,15S	KA
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AG06S, AGN06S	KG
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AG09S, AGN09S	KH
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AG13S, AGN13S	KJ
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AW13S	KV
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AW17S	KW
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AW20S	KT
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AW28S	KD
KITZ B Series BS-2,BSW-2	B2
KITZ B Series BS-3,BSW-3	B3
KITZ B Series BS-4,BSW-4	B4
KITZ B Series BS-5,BSW-5	B5
KITZ B Series BS-6,BSW-6	B6
Emerson(EL-O-MATIC) E25,40,65,100,200,350	RA
Emerson(EL-O-MATIC) E600,950,1600,P2500,P4000	RB
Hisaka Mfg. TS-1	H1
Hisaka Mfg. TS-2	H2
Hisaka Mfg. TS-3	H3
Hisaka Mfg. TS-4,Old type TS-5(Mounting screw M8)	H4
Hisaka Mfg. New TS-5(Mounting screw M10),TS-6	H6
TOMOE Valve Z Series Z-06S,08S,11S,13S	EA
TOMOE Valve T-matic 3Q-1,2,3,4	E3
Nakakita Seisakusho Co. dia. 420, 430, 460, 480	JB

\* Select in the case of without manual handle or with manual handle mounted on top of the actuators.

**Table 4. Mounting bracket for double acting actuator**

(8)(9) Mounting bracket for pneumatic actuator	Code
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AK09, AK12, AK15 *	KA
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AG06, AGN06 *	KG
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AG09, AGN09 *	KH
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AG13, AGN13 *	KJ
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AW13 *	KV
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AW17 *	KW
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AW17-HG (w/manual gear handle) *	KB
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AW20 *	KT
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AW20-HG (w/manual gear handle) *	KC
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AW28 *	KD
Emerson Valves & Controls Japan (Formerly Kitamura Valve) AW28-HG (w/manual gear handle) *	KE
KITZ B series B-2 *	B2
KITZ B series B-3 *	B3
KITZ B series B-4 *	B4
KITZ B series B-5 *	B5
KITZ B series B-6 *	B6
Emerson (EL-O-MATIC) E25, 40, 65, 100, 200, 350 *	RA
Emerson(EL-O-MATIC) E600,950,1600,P2500,P4000 *	RB
TOMOE Valve Z Series Z-06,08,11,13 *	EA

(8)(9) Mounting bracket for pneumatic actuator	Code
TOMOE Valve T-matic 3I-1,2,3,4 *	E3
T.V. Valve AT4-80 *	V1
T.V. Valve AT4-100 *	V2
T.V. Valve AT4-120 *	V3
T.V. Valve AT4-150 *	V4
T.V. Valve AT4-180 *	V5
Nihon KOSO AT550,AT600,AT650,AT700 *	TW

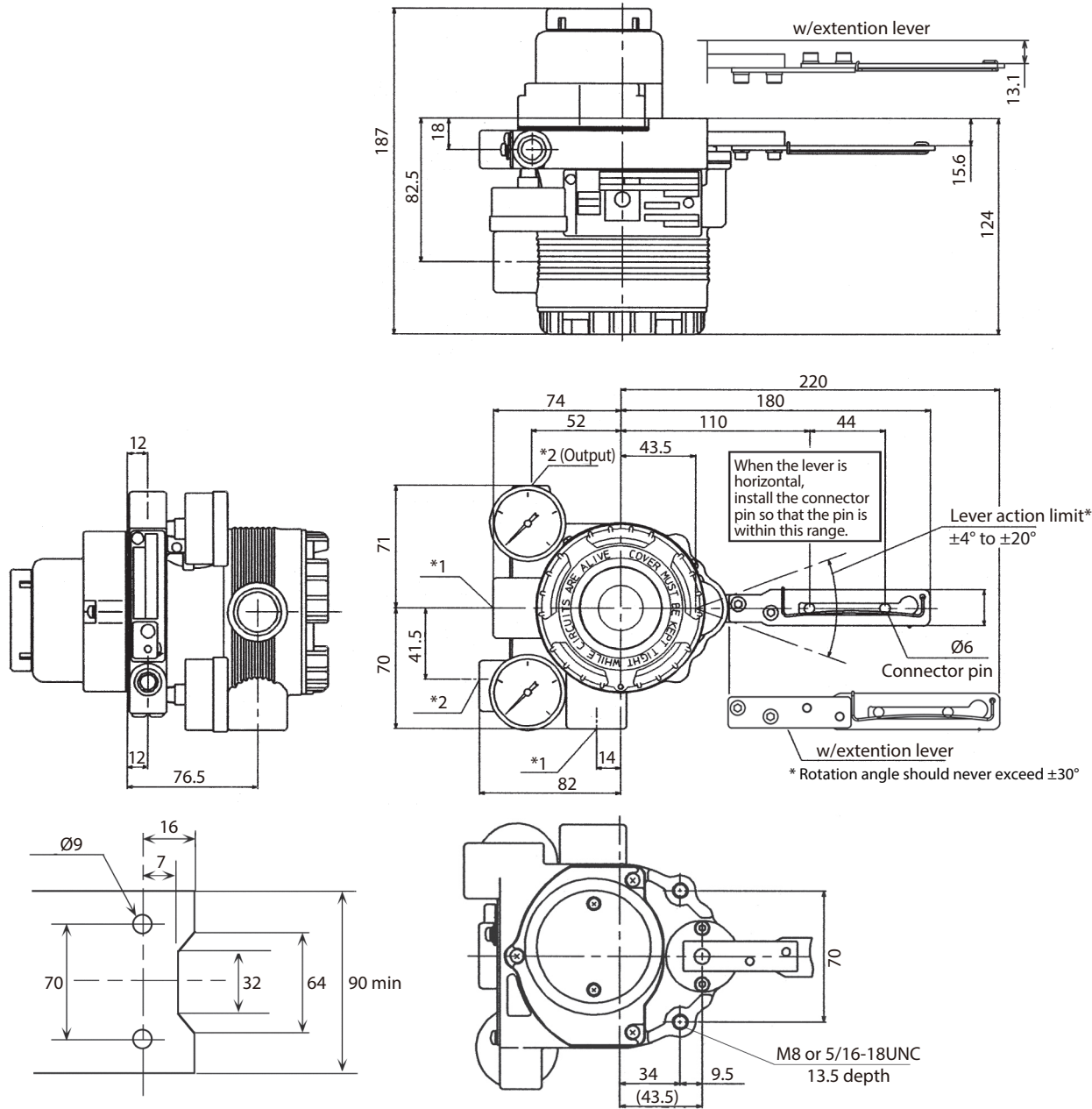
\* In case of double acting actuator, a reversing relay unit required.



DIMENSIONS

For single acting actuator without pressure regulator

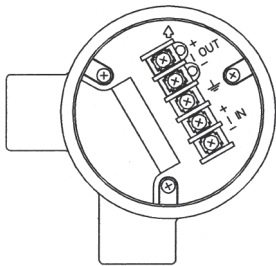
[Unit: mm]



Mounting plate reference dimension

Electrical connection *1	Air piping connection *2
G1/2	Rc1/4
1/2NPT	1/4NPT
M20×1.5	1/4NPT

Terminal connections  
Terminal screw size M4

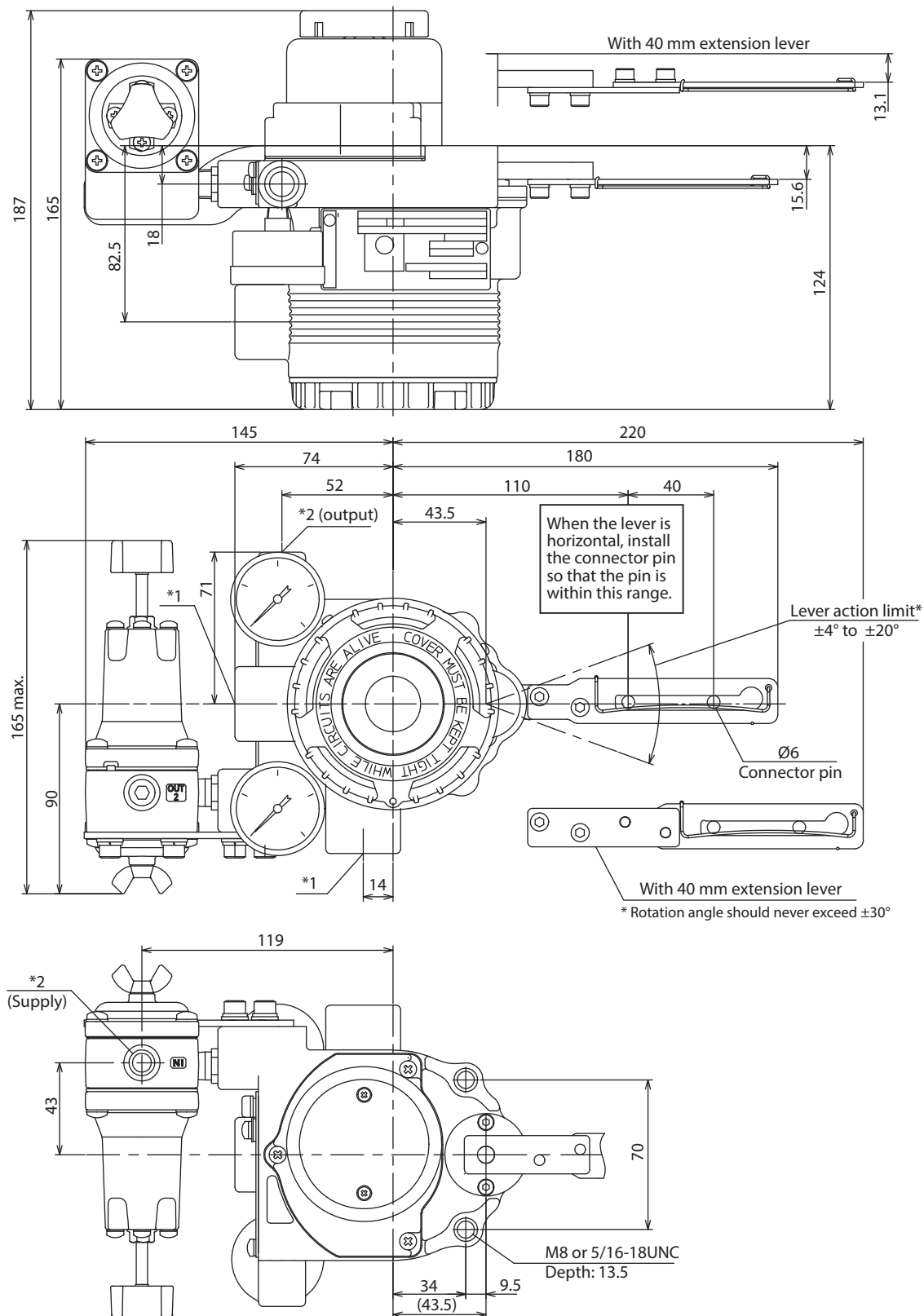


Extension lever	Actuator model	Code
No	PSA1, 2, PSK1	YS
	HA1	YA
	HA2, 3	YT
	HK1	YK
Yes	PSA3, 4 VA1 to 3	YQ
	PSA6	YL
	PSA7	Y8
	HA4	YN
	VA4 to 6	YL
	VR1	YV
	VR2, 3	YR
	GOM83S, 84S, 103S	YG
	GOM124S	YM

**For single acting actuator with pressure regulator**

With pressure regulator model RA1B

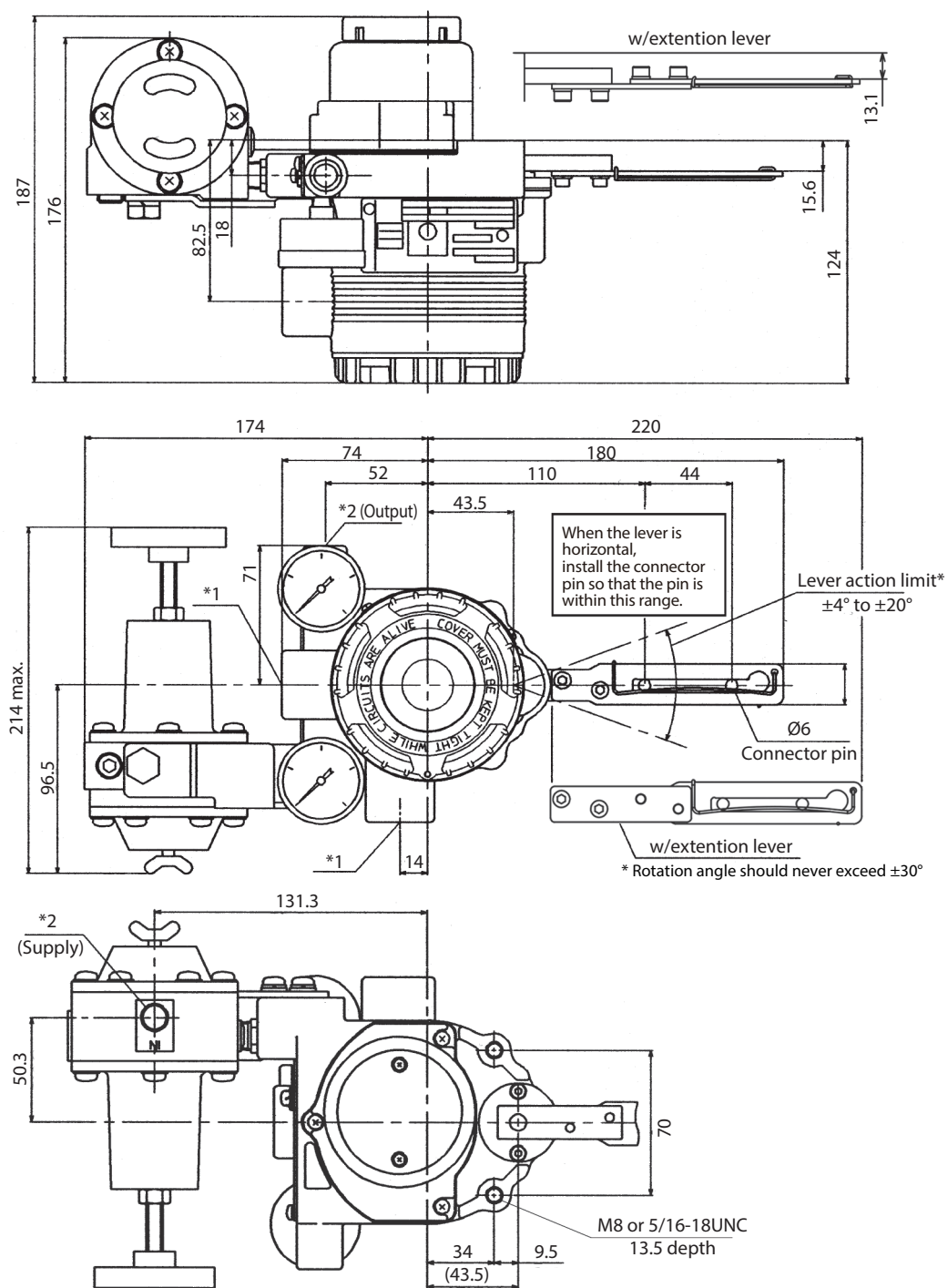
[Unit: mm]



Electrical connection *1	Air piping connection *2
G1/2	Rc1/4
1/2NPT	1/4NPT
M20×1.5	1/4NPT

## With pressure regulator model KZ03

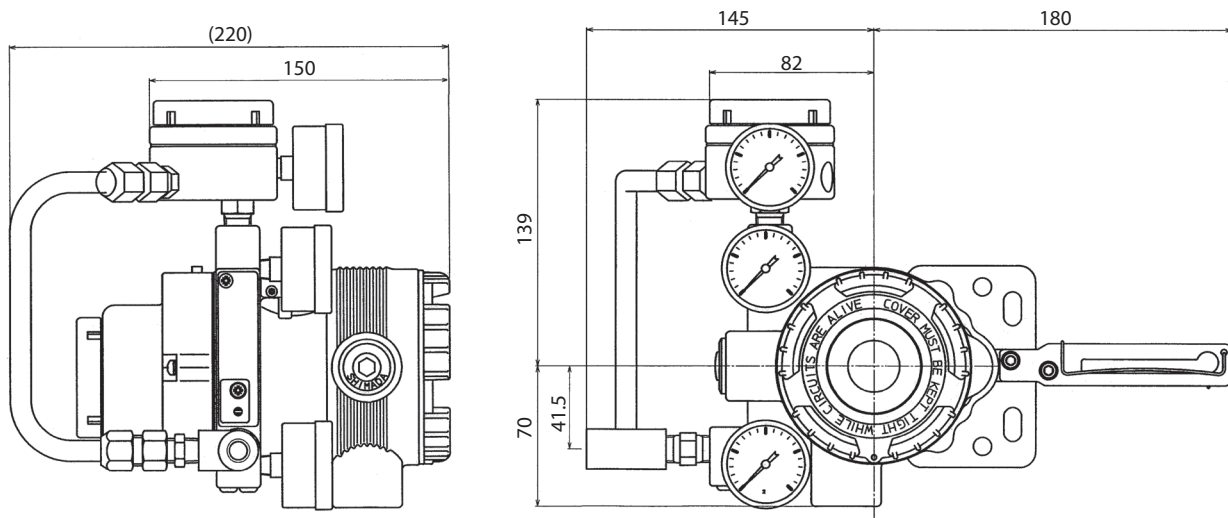
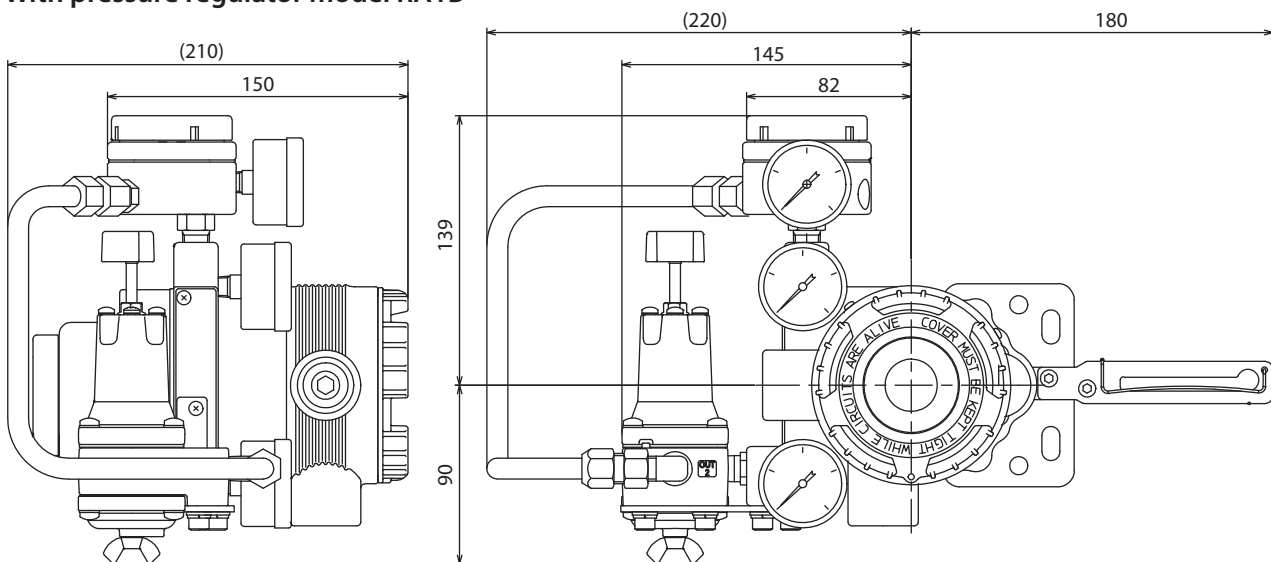
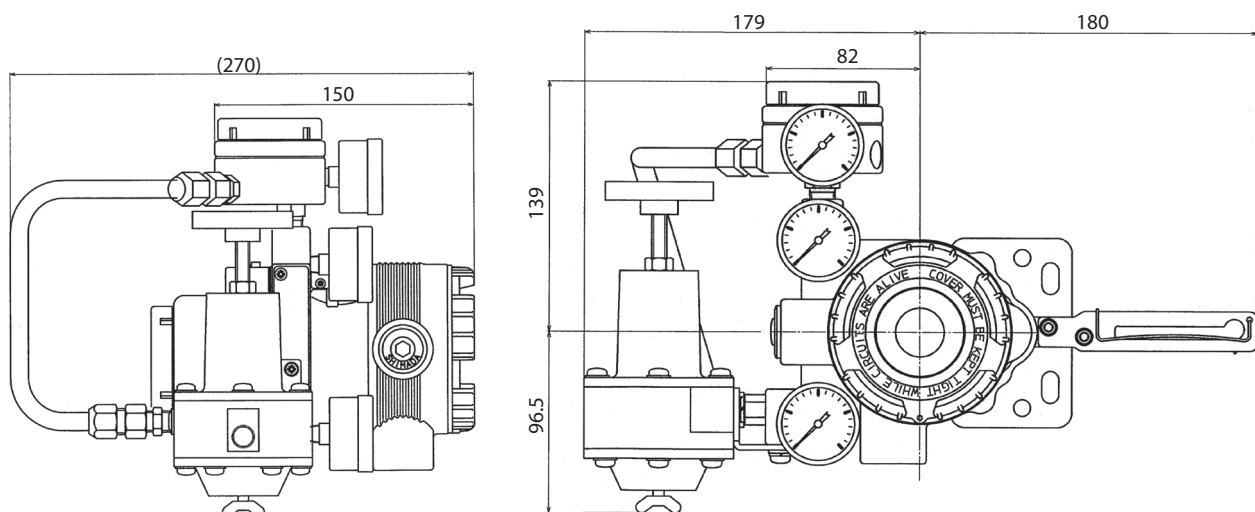
[Unit: mm]



Electrical connection *1	Air piping connection *2
G1/2	Rc1/4
1/2NPT	1/4NPT
M20×1.5	1/4NPT

**For double acting actuator with reversing-relay**

[Unit: mm]

**Without pressure regulator****With pressure regulator model RA1B****With pressure regulator model KZ03**









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## Azbil Corporation

Advanced Automation Company

1-12-2 Kawana, Fujisawa  
Kanagawa 251-8522 Japan  
URL: <https://www.azbil.com/>

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