

# Explosion Proof Pulse-to-Pneumatic Converter

## MODEL: J-APN20

### Introduction

The Explosion Proof Pulse-to-Pneumatic Converter accepts an up/down pulse signal and drives a 4-phase pulse motor which is able to use either a 0.2 to 1.0 kgf/cm<sup>2</sup> pneumatic signal and 4 to 20 mA DC feedback signal to actuate a flapper nozzle mechanism. In case power fails, the pneumatic signal is maintained mechanically (warm gear) at the value that obtained just before power failure. Air supply is alive in this case, and maintains pneumatic control of the damper.

### Specification

#### Input Section

##### Up/down pulse signal:

Pulse width;

Output continuously switches: on signal is channeled into up/down pulse signal. Output speed depends on the response speed switching signal and its configured frequency.

Pulse train;

Output is variable (FS 0 to 100%) with 1000 pulses input.

##### Up/down signal:

Contact input; Contact rating

Dry contact----- 30VDC, 20 mA or more

Open collector--- Vce30 or more, Ic 20mA or more

Pulse train; Maximum response frequency of 150 pulse/sec.

Minimum response pulse width of 2.5mS

Pulse width; Minimum response pulse width of 8mS

Output current minimum response time of 15mS (at maximum response speed)

##### Response speed switching signal

(Effective only with pulse width input):

Contact input; Contact rating

Dry contact----- 30VDC, 20 mA or more

Open collector--- Vce30V, Ic 20 mA or more

High speed at signal on---- 7 to 20 sec./FS variable

Low speed at signal off----- 20 to 50 sec./FS variable



#### Output section

**Air pressure signal:** 0.2 to 1.0 kgf/cm<sup>2</sup> (adjustable in units of psi, bar, and kPa)

**Feedback signal:** 4 to 20mA DC or 20 to 4 mA DC

Power supply; Switchable between external power supply and internal power supply, 24VDC $\pm$ 15%

Load; 480 ohm Max. at 24VDC (4 to 20mA DC output)

**Limit contact signal:** Detection by microswitch (NO or NC)

Set value;

High limit--- 100 to 108% FS adjustable.  
(Standard: 102 $\pm$ 1% FS)

Low limit---- -8 to 0% FS adjustable.  
(Standard: -2 $\pm$ 1% FS.)

Contact rating; 120V DC, 0.1 A, resistive load  
125V DC, 0.1 A, resistive load

##### Supply air pressure monitor:

Switchable between NO and NC.

(Standard: Monitor is closed when air supply is lost.)

Setting range; 1.1 to 1.2 kgf/cm<sup>2</sup> (set to 1.1 kgf/cm<sup>2</sup> at factory)

Contact rating; 120VAC, 0.1 A, resistive load  
125VDC, 0.1 A, resistive load

##### Power monitor :

At the time of lost air supply; Open or Close

Contact rating; 120VAC, 0.1 A, resistive load  
125VDC, 0.1 A, resistive load

## Performance

### Accuracy:

- Pulse train;
- Pulse/air pressure----  $\pm 2.0\%$  FS
- Air pressure signal/feedback signal----  $\pm 0.5\%$  FS
- Pulse width;
- Air pressure signal/feedback signal----  $\pm 0.5\%$  FS

### Additional accuracy:

- Effects of ambient temperature change;
- Air pressure signal---  
 $\pm 0.5\%$  FS/ $25 \pm 25^\circ\text{C}$
- Feedback signal---  
 $\pm 0.6\%$  FS/ $25 \pm 25^\circ\text{C}$  (for air pressure signal)
- Effects of supply air pressure change---  
 $\pm 1.0\%$  FS/ $\pm 0.2$  kgf/cm<sup>2</sup>
- Effects of power fluctuation (250 ohm load)---  
 $\pm 0.3\%$  FS/ $\pm 15\%$  of rated voltage

### Dielectric strength:

- Between terminal and case ground;
- 40VAC for one minute (500VAC for a minute without surge absorber)

### Insulation resistance:

- 100 Mohm or more between 500VDC and case ground (500VAC for one minute without surge absorber)

### Electric wiring (recommended):

- Cable length; 1 km Max.
- Recommended wire;
- Up/down signal  
Pulse train input--- KPEV-S
- Pulse width input--- CVV-S
- Other signal  
CVV-S

### Power supply:

24VDC  $\pm 15\%$  (power consumption: 370 mA)

### Supply air pressure: $1.4 \pm 0.2$ kgf/cm<sup>2</sup>

### Air consumption (balanced): 6 NI/min.

### Air supply volume: 20 NI/min.

### Air load volume: 3 m + 20 cc or more pipe with 4-mm inner diameter

### Ambient temperature: -10 to +60°C

### Ambient humidity: 10 to + 90%RH

### Construction: Explosion proof d2G4 (JIS C0903) NEMA3, IEC IP55

(JIS F8001 Class3 Splash water proof )

### Mounting: 2B pipe or wall mounted

### Connection:

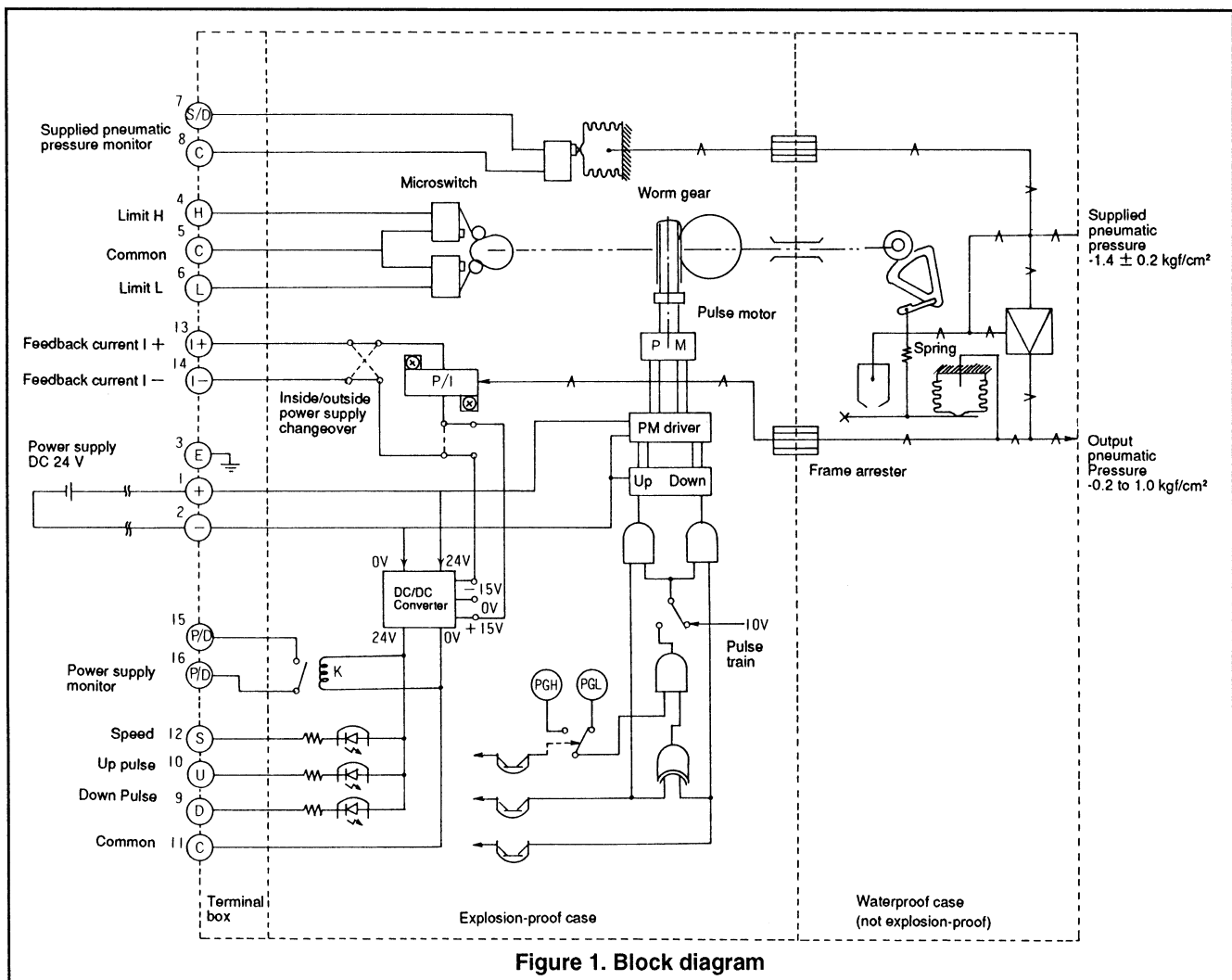
- Air connection; Rc1/4 internal thread
- Electrical connection; G3/4 internal thread
- Electrical wiring; M4 screw

### Finish: Baked acrylic(Finish color: Light beige)

### Weight: About 17 kg (including air set)

### With two pressure-proof packing cable adapters:

Packing hole diameter  $\phi$  /14 mm and  $\phi$  15 mm

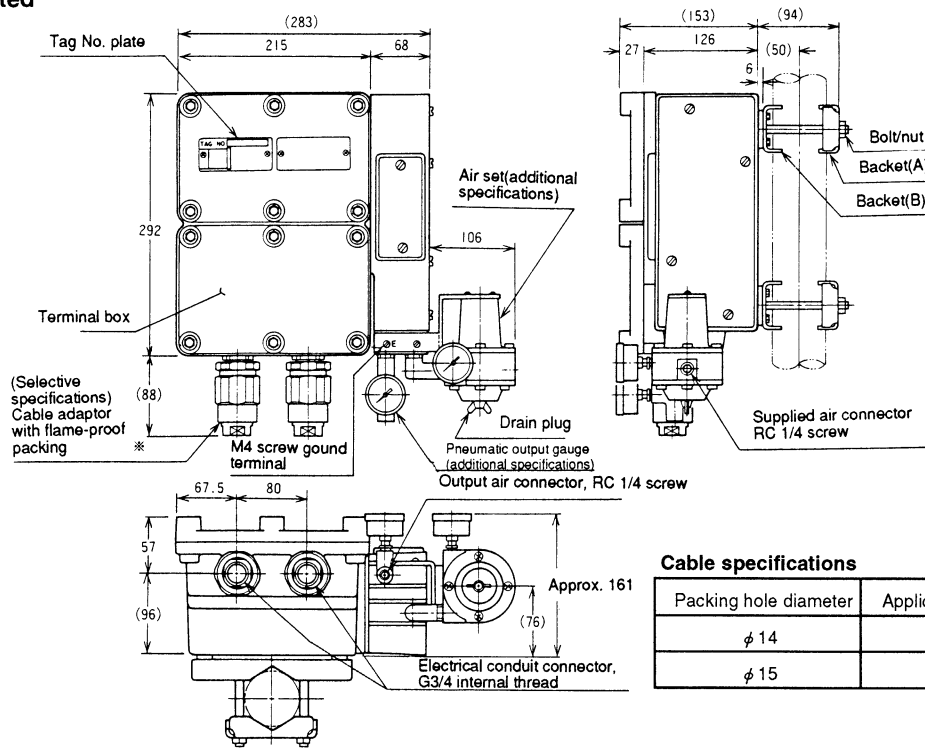


## Model Number Table

Basic Model No.	Detailed specifications												Additional specifications	Item						
	Power supply	Input signal	Output air pressure signal	Feedback signal	External connection	Housing finish	Mounting	Cable adaptor flame-proof packing	Power-down monitor	Supply air pressure down monitor	Case type	P/I unit power supply			Limit contact signal					
J-APN20															Explosion-proof pulse/air pressure converter					
	- B														24V DC Isolated					
		I													Pulse width					
			J												Pulse train					
				1											0.2 to 1.0 kgf/cm <sup>2</sup>					
					2										0 to 15 psi					
						3									0.2 to 1.0 bar					
							4								20 to 100 kPa					
								1							4 to 20 mA DC					
									2						20 to 4mA DC(reverse characteristic)					
										R					Air Rc1/4, elec. G3/4 internal thread					
											1				Standard finish					
												2			Corrosion - resistant finish					
													3		Corrosion - proof finish					
														4	Silver finish					
														5	Corrosion - resistant (silver) finish					
															T	2B pipe mounted				
															S	Wall mounted				
																X	None			
																	2	Two cable adaptors		
																	X	Non		
																	H	Normally closed		
																	K	Normally open		
																	X	Without		
																	D	With		
																	E	Explosion-proof case		
																		1	Built-in indicating meter	
																			2	External supply
																			H	Normally close
																			K	Normally open
																			- X	No additional specifications
																			- 3	Pneumatic output gauge
																			- 7	Air set

(Unit:mm)

### 1) 2B pipe mounted



### 2) Wall mounted

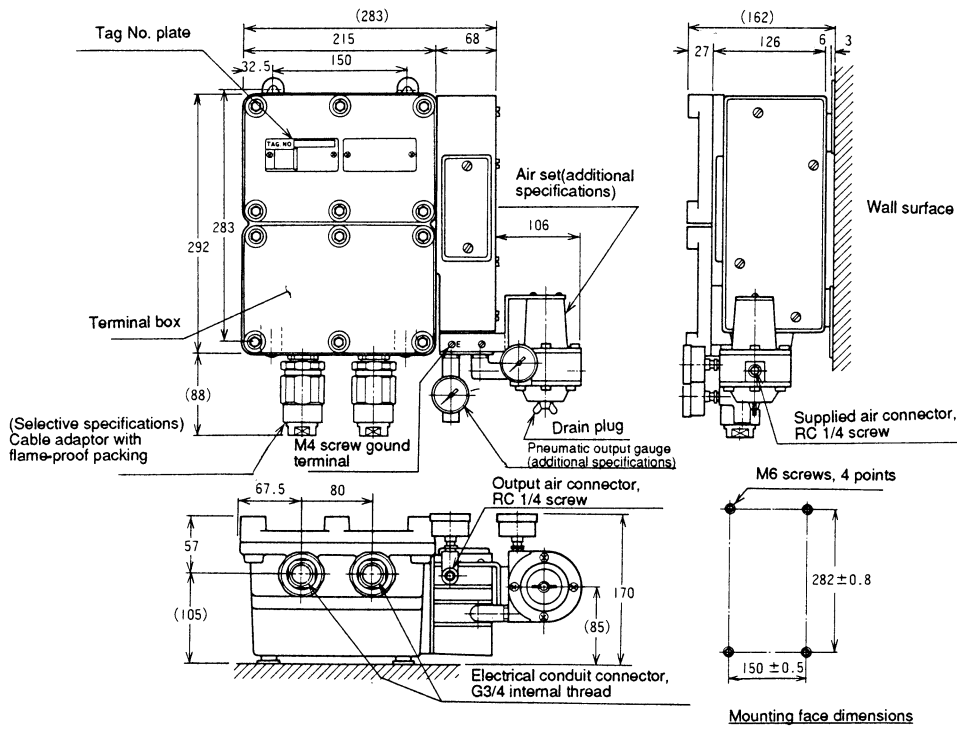


Figure 2. External dimension

Specifications are subject to change without notice.

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