

General Specifications

Model MP1
Pulse Repeater

JUXTA

GS 77J04P01-01E

■ General

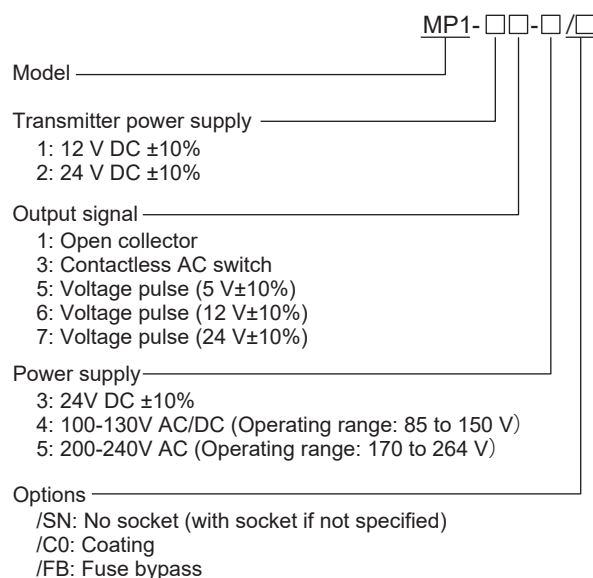
The MP1 is a plug-in type pulse repeater (input frequency = output frequency) receives pulse signals from the field and converts them into various isolated pulse outputs.

- Input signals can be non-voltage contact (open collector), ON/OFF contact, voltage pulse, or current pulse.
- Output signals can be selected from open collector, contactless AC switch, and voltage pulse.
- The transmitter power supply can be specified as 12 V DC or 24 V DC.
- The internal input filter (10 ms) can be turned ON/OFF with the switch on the front panel to receive signals with a lot of chattering.
- You can set the internal load resistance with a switch on the front panel (use for current pulse input).
- Provided with power indicator lamp (RDY).

Application examples

- Counter noise by DC-isolating pulse signals from the field
- Convert pulse signals to a new type (e.g., convert a contactless pulse to a 5 V voltage pulse)

■ Model and Suffix Codes



(Note 1) "/C0" option: Polyurethane coating. The "/C0" option does not guaranteed the coating effect though it is expected that the corrosion resistance for electric circuit is reinforced. And it is not able to submit coating test data.

(Note 2) "/FB" option: The primary power supply fuse is deleted, short circuit and ship it.



■ Input Specifications

Input signal:

- 2-wire: Non-voltage contact (open collector), ON/OFF contacts, voltage pulse or current pulse (transmitter power supply available)
- 3-wire: Voltage pulses (transmitter power supply available)

Input frequency: 0 to 10 kHz

Input filter: Has an approx. 10 ms time constant, which can be turned on or off at the front switch (turned off at factory shipment). When the input filter is turned on, the upper limit of the input frequency range reduces to 100 Hz (requiring a pulse width of at least 3 ms).

Input pulse width: 40 μs minimum for both ON-state and OFF-state durations

Input signal type:

Input signal	Detection level	
Non-voltage contact	ON-state	200 Ω maximum
	OFF-state	100 kΩ minimum
Open collector	ON-state	600 Ω maximum / 1.8 V maximum
	OFF-state	100 kΩ minimum / 3.5 V minimum
Voltage pulse	High level	2 to 50 V DC
	Low level	-1 to +8 V DC
	Pulse amplitude	2 to 50 V DC
Current pulse	High level	(2 V/RL) to (50 V/RL) mA
	Low level	(-1 V/RL) to (+8 V/RL) mA
	Pulse amplitude	(2 V/RL) to (50 V/RL) mA

RL: Internal load resistor (kΩ)

Maximum allowable input voltage: 58 V DC or less

Input resistance: 15 kΩ minimum for non-voltage contact (open collector), ON/OFF contact, and voltage pulse.

Value of the load resistor for current pulse.

■ Ordering Information

- Model and Suffix Codes: e.g. MP1-11-3

Internal load resistor (R_L):

Load resistance setting switch	Resistance values
0	OPEN
1	200 Ω
2	500 Ω
3	143 Ω
4	1 k Ω
5	167 Ω
6	500 Ω
7	143 Ω

Power rating: For a 1 W current pulse input, set a resistance value by using the switch on the front panel (factory default setting is OPEN).

Set to OPEN for voltage pulse, ON/OFF contact, and non-voltage contact pulse.

Contact input signal rated supply:

Contact voltage: 24 V DC

Contact current: 1 mA

Input contact capacity: 30 V DC/10 mA minimum

Transmitter power supply (at 4 to 30 mA output):
12 V DC $\pm 10\%$ or 24 V DC $\pm 10\%$
(with current limit circuit: limit at 50 mA)

■ Output Specifications

Output signal : Open collector, contactless AC switch or voltage pulse

Output frequency: Same as input frequency.

When the output is a contactless AC switch, output frequency is 1 kHz or less.

Output pulse width: Same as input pulse width.

Maximum allowable load:

Output signal	Maximum allowable load	Output saturation voltage
Open collector	30 V DC/200 mA	0.2 V maximum
Contactless AC switch	100 V AC/200 mA 100 V DC/200 mA	3 V maximum
Voltage pulse	5 V DC/15 mA 12 V DC/15 mA 24 V DC/15 mA	---













Output voltage:

Output signal	High level	Low level
Voltage pulse 5 V	5 V $\pm 10\%$	0.5 V maximum
Voltage pulse 12 V	12 V $\pm 10\%$	
Voltage pulse 24 V	24 V $\pm 10\%$	

Output leakage current

Output signal	Leakage current
Open collector	2 μ A
Contactless AC switch	20 μ A
Voltage pulse	---

Input/output logic:

Input signal		Output signal	
		Open collector Contactless AC switch	Voltage pulse
Open collector	OFF 	OFF 	High 
Non-voltage contact	ON 	ON 	Low 
Voltage pulse	High 	OFF 	High 
Current pulse	Low 	ON 	Low 

■ Standard Performance

Effect of power supply voltage fluctuation:

No malfunctions for allowable fluctuations in each supply voltage.

Effect of ambient temperature change:

No malfunction within the operating temperature range.

■ Power Supply and Isolation

Supply rated voltage range: 24 V DC $\pm 10\%$

100-130 V AC/DC $\approx 50/60$ Hz

200-240 V AC $\sim 50/60$ Hz

Supply input voltage range: 24 V DC $\pm 10\%$

100-130 V AC/DC ($\pm 15\%$) 50/60 Hz

200-240 V AC ($-15, +10\%$) 50/60 Hz

Power consumption:

For voltage pulse output:

2.6 W at 24 V DC; 2.7 W at 110 V DC;

5.2 VA at 100 V AC, 6.7 VA at 200 V AC

For other than voltage pulse output:

1.9 W at 24 V DC; 2.0 W at 110 V DC;

4.0 VA at 100 V AC; 5.1 VA at 200 V AC

Insulation resistance: 100 M Ω minimum at 500 V DC between input, output, power supply and grounding terminals mutually

Withstanding voltage: 2000 V AC for one minute between input, output, power supply and grounding terminals mutually

■ Environmental Conditions

Temperature: 0 to 50°C (0 to 40°C for multiple mounting)

Humidity: 5 to 90% RH (no condensation)

Ambient condition: Avoid installation in such environments as corrosive gas like sulfide hydrogen, dust, sea breeze and direct sunlight.

Magnetic field: 400 A/m or less.

Continuous vibration (at 5 to 9 Hz) Half amplitude of 3 mm or less (at 9 to 150 Hz) 9.8 m/s² or less, 1 oct/min for 90 minutes each in the 3-axis directions.

Impact: 98 m/s² or less, 11 ms, 3-axis 3 times each in 6 directions.

Altitude: 2000 m or less.

Warm-up time: At least 30 minutes after power on.

■ Transport and Storage Conditions

Ambient temperature: -25 to 70°C

Temperature change rate: 20°C per hour or less

Ambient humidity: 5 to 95%RH (no condensation)

■ Mounting and Appearance

Construction: Plug-in type

Material: PC resin (black), UL94 V-0 (case)

Modified PPO resin, glass fiber filled (black), UL94 V-1 (socket)

Mounting method: Wall or DIN rail mounting

More than 5 mm interval is required for side-by-side close mounting.

Connection method: M3.5 screw terminals

External dimensions: 86.5 (H) \times 51 (W) \times 123 (D) mm (including a socket)

Weight: Main unit: 200 g or less

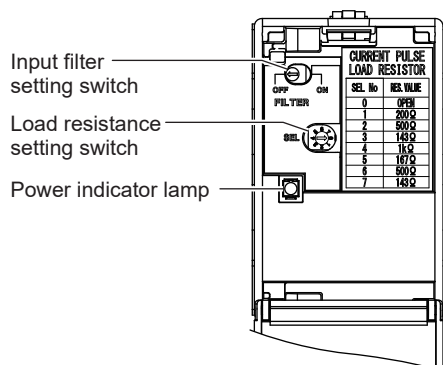
Socket: 60 g or less

■ Accessories

Spacer: 1 piece (used for DIN rail mounting)
 Tag number label: 2 sheets
 Socket (A1653MR): 1 piece (when /SN option is not specified.)

■ Front Panel

The figure below shows the converter of which the front panel cover is open.

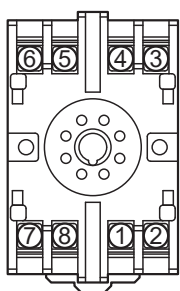


Input filter setting switch: Sets ON/OFF of the input filter.

Load resistance setting switch: Sets the resistance value for current pulse input.

Power indicator lamp: Turns on at power on.

■ Terminal Assignments



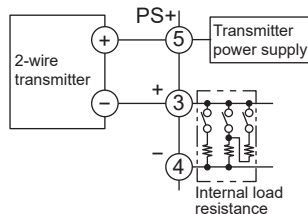
1	Output	(+)
2	Output	(-)
3	Input	(+)
4	Input	(-)
5	Input	(PS+)
6	GND	
7	Supply	(L+)
8	Supply	(N-)

Note: This instrument may output a pulse when the power is turned on/off.
 Depending on the connected devices, this pulse output is counted as "one pulse."

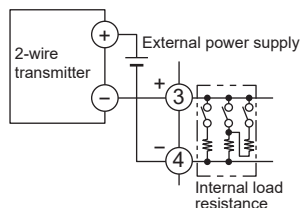
■ Block Diagrams

Input connection example

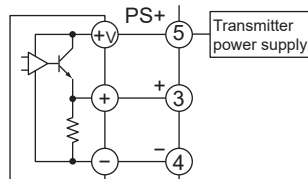
When receiving a current pulse (using the transmitter power supply)



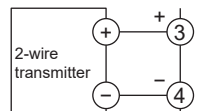
When receiving a current pulse (using an external power supply)



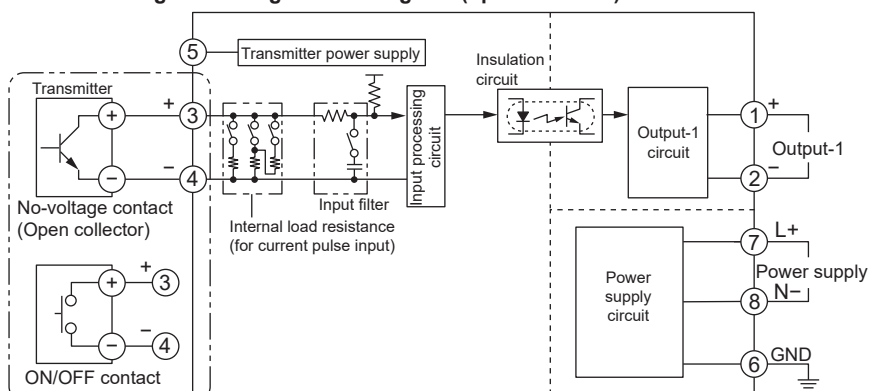
When receiving a voltage pulse (using the transmitter power supply)



When receiving a voltage pulse (not using the transmitter power supply)

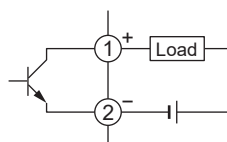


When receiving non-voltage contact signals (open collector) or ON/OFF contact

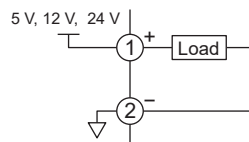


Output connection example

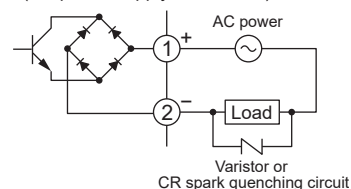
Open collector



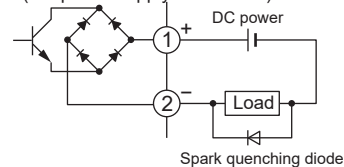
Voltage pulse



Contactless AC switch (AC power supply connection)



Contactless AC switch (DC power supply connection)





- When mounting the units close together, leave a space of at least 5 mm between them.
- Use the supplied spacer to keep a space of 5 mm for DIN rail mounting.

Normal Allowable Deviation= $\pm (\text{Value of JIS B 0401-2016 tolerance grade IT18}) / 2$