# General Specifications

## MQ2 Pulse/Analog Converter (Free Range Type)

This µP built-in type converter inputs pulse train signal and converts it into voltage or current signal proportional to its frequency.

 Power supply to supply 12V or 24V to pulse generator is internally builtin.

• As input pulse, this converter can receive either current pulse, voltage pulse, dry voltage contact or open collector contact.

collector contact.

Change of input/output ranges, setting of input pulse width or low input cut point, adjustment of zero/span, monitoring of input/output can be done by Handy Terminal even in the field.

• If it receives chattering signals, filter can be set internally.
[However, this can be done when input when input frequency range is up to 100Hz (pulse width more than 3ms)]

Model

Input Signal

1: Transmitter power supply
(12V DC ±10%)

2: Transmitter power supply
(24V DC ±10%)

Output Type

A: 0~20mA DC 1: 0~10V DC
(Span over 2m4) (Span over 0.5V)

(Span over 2mA)
B: 0~5mA DC
(Span over 1mA)

(Span over 0.5V)
2: 0~100mV DC
(Span over 10mV)

0:(Custom Order)
Voltage Signal
Refer Table 1

Power Supply -

3 : 24V DC ±10% 4 : 85~132V AC/85~150V DC

5 : 170~264V AC

(Note) Please contact us for use by integrating analog output

ORDERING INFORMATION

Model Code: (Example) MQ2-21-3

Input Range: (Example) 50~1000Hz

Output Range: (Example) 1~5V DC

Low Input Cut Point: (Example) 30Hz

Input & Output

Input Frequency:  $F_0 \sim F_{1.0.}$  [Hz]

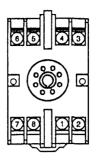
(OHz  $\leq F_0 < F_{1.0.} \leq 10 \text{kHz}$ )

(O.1Hz  $\leq F_{1.0.0} \leq 10 \text{kHz}$ )

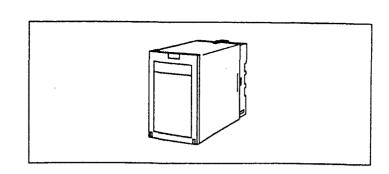
Accuracy is limited when  $F_0$  elevation is more than 50% of  $F_{1.0.0}$ Accuracy is  $\frac{F_{1.0.0} - F_{1.0.0}/2}{F_{1.0.0} - F_0} \times 0.1(\%)$   $F_0$ : 0% input frequency  $F_{1.0.0}$ : 100% input frequency

l Input Resista								
Input Resistance:								
[When current pulse input]								
2000 E000 110 (combination and be selected by								
2000, 5000, 1k0 (combination can be selected by								
internal switch)								
[When voltag	[When voltage pulse input] More than 10k2 Low Input Cut Point:							
Low Input Cut	Doint .	1010 0	non roka					
Low Input Cut Point: Setting range: 0.01Hz≦Fcut <f<sub>100</f<sub>								
Setting rang	ge : U.OlHz≦	Fcut <f< td=""><td></td></f<>						
Input below	low input cu	it point (F	cut) corresponds					
to output OH	7		1,					
11 TOW HIPUI	cut point i	s not spec	ified, shipment					
will be made	setting it	at 0.01Hz						
I <u>nput Sig</u> nal	Level:							
	Dry	Voltage	Current pulse					
} }			Current burse					
	voltage	pulse						
Low level	contact R	-1~+8V	-1/RL∼+8/RLmA					
(VL)	below 2000		,					
	contact R	12~ (19AV	+2/RL~+24/RLmA					
		TZ/~TZ4V	+2/KL~~+24/KLIIA					
(V <sub>H</sub> )	over 10kΩ							
	RL : Ir	iternal Loa	d Resistance (ka)					
$V_H - V_I \ge 2V$	(conversion	into volt	age)					
Input Dulac II	lidth · Dular	width ar	age) as duty to be					
mial ruise w	riulii • FULSE	MINTELL SO	as unity to be					
within 50±30	% when 100%	input						
Transmitter F	ower Supply	: 12V DC±1	O% or 24V DC±10%					
(with currer	it control ci	rouit at A	$0\sim 60$ m $\Delta$ $\lambda$					
Innut Eilter	- 10ma filts	. TCuit at 4	0~60mA) dry voltage con-					
Imput Fifter	: TOMS TILLE	st (for ase	dry vortage con-					
tact) Filte	er requiremen	it can be s	elected by switch					
Output Signal	: DC voltag	e or curre	nt signal					
Output Settin	na Papaa : Ro	for Table	1					
Output Settii	ig hange . Ne	Tel lable	l for both zero/span)					
output Adjust	Range :IIU%	oi span (	for both zero/span/					
St	andard Perfo	rmance						
Accuracy Rati	na : +0 1% c	of span						
			xsist for both					
input and ou	itput, take t	ne value w	hichever greater					
Response Spee	e <b>d :</b> Input pu	ılse 1 cycl	e x 2+50ms					
	(10→90%	() 63% res	ponse					
Insulation Re	eistance :	0) 00/0 200						
	[500V DC) bet	ween input	$\sim$ output $\sim$					
power supply	√ground							
power supply~ground								
Withstand Voltage:								
	tage:	inputacout	nut a					
1500V AC/mir	tage: ute between	input~out	put~					
1500V AC/min	tage: nute between v~ground	-	put~					
1500V AC/min	tage: nute between v~ground	-	put~					
1500V AC/min power supply Temperature F	tage: nute between v~ground Range: 0~50	oc						
1500V AC/mir power supply Temperature F Humidity Rang	tage: nute between y~ground Range: 0~50 se: 5~90% F	OC RH (no cond						
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## TERMINAL ARRANGEMENT

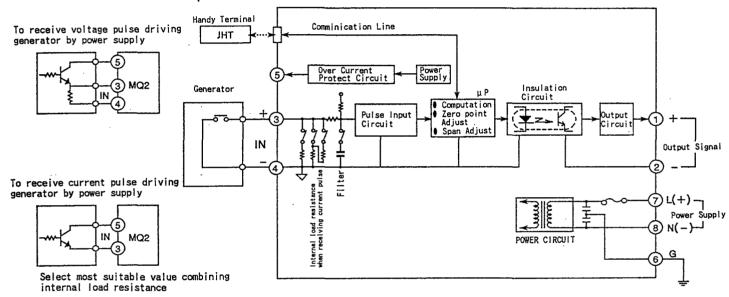


_1_	OUTPUT	(+)
2	OUTPUT	()
3	INPUT	(+)
4	INPUT	()
5	INPUT	(PS+)
6	GND	(G)
7	SUPPLY	(L+)
8	SUPPLY	(N—)



#### BLOCK DIAGRAM

To receive dry voltage contact (or open colector) or voltage pulse



#### EXTERNAL DIMENSION

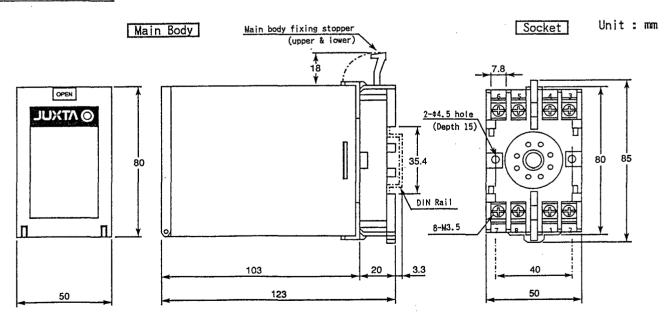


TABLE 1 : OUTPUT SETTING RANGE

Output	Output	Conditions	Output	Permissible	Accuracy
Туре	Setting	- 211-01 - 1 - 11-01	Resis-	Load Resistance	Limit
.,,,,,	Range		tance	2000 1100 1000	
	Nange		Lanco		Span 2V or less
	0~10V DC	V≦5V		2kΩ or more	opan 24 of Tess
1	Span 0.5V	1100 - 51		ZKI OI MOI C	$\pm 0.1 \times \frac{2V}{Span_{V}}$ (%)
_	or more		$1\Omega$ or		Span V (W)
			less		Span 4V or less
		V>5V		$(V_{100}-5) \times \frac{8}{5} + 2k\Omega$	
				or	$\pm 0.1 \times \frac{4V}{Span V}$ (%)
				more	Span v
		_			Span 20mV or less
		V <sub>100</sub> ≦50mV			20mV
	0~100mV DC		100Ω or	250kΩ or more	$\pm 0.1 \times \frac{20\text{mV}}{\text{Span mV}} (\%)$
2	Span 10mV		less		9 4014
	or more	V >=0			Span 40V or less
		V <sub>100</sub> >50m	1		±0.1 x 40mV (%)
					Span mV (%)
		when output			0.1%
		range is	1Ω or	10kΩ or more	*In case zero eleva-
0	-10~+10V DC	out of	less		tion satisfies the
	Span 10mV	-100mV~+100mV			conditions below:
	or more	when output			
		range is	100Ω or	250kΩ or more	$-100\% \le \frac{0\% \text{ output voltage (V)}}{\text{output span (V)}} \times 100\% \le 200\%$
		within	less		
<u> </u>	000 4 .00	-100mV~+100mV			Coop Oml ou loss
Α	0~20mA DC	•			Span 8mA or less
^	Span 2mA or more				±0.1x 8mA (%)
	Of 11101 C		500kΩ	15/I, or more	Span mA 🗥
<u> </u>	0∼5mA DC		or more	, -100	Span 2mA or less
В	Span 1mA				0_1
	or more				$\pm 0.1 \times \frac{2mA}{Span mA}$ (%)
					opan na,

 $V_{\text{ioo}}$ : Voltage (V) of output 100%  $I_{\text{ioo}}$ : Current (A) of output 100%

