



## Features

- ★ Standard DIN size.
- ★ Two color display Green and Red, high visibility.
- ★ Main LED height 20mm.
- ★ A wide range of 10mHz to 50kHz can be continuously measured without switching range using the cyclic operation method.

## Ordering code

AC - 911 -    -    -   

Code	Output 1
0	None
1	Comparative output (Relay)
2	Comparative output (Photo coupler)
A	BCD (TTL) * 1
B	BCD (Open collector) * 1

Code	Output 2
0	None
5	RS-232C output
6	RS-485 output
7	RS-232C output + analog output
8	RS-485 output + analog output
A	BCD (TTL)
B	BCD (Open collector)

Code	Power supply
1	100 to 240Vac ±10% (50/60Hz)
2	12 to 48Vdc ±10%

\* 1...Possible to choose in case output code 2 sets '5 - 8'

## Specifications

### ◆ Input specifications

<b>Input frequency range</b>	10mHz to 50kHz
<b>Input Signal</b>	Single end input (NPN open collector, logic, zero cross, 2 wire type sensor) Differential input (line driver)
<b>Input level, Sensitivity</b>	1) Logic signal (NPN open collector, logic, 2 wire type sensor) H level : More than 3.9V, L level : Less than 1V 2) Zero cross signal AC signal passing 0V with more than ±60mV 3) Line driver signal more than ±1V (differential voltage)
<b>Input resistance</b>	1) NPN open collector : Pull up to +12V with approx.15kΩ, pull down at GND with approx.10kΩ 2) Logic : Pull down at GND with approx.10kΩ 3) Zero cross : Pull down at GND with approx.10kΩ 4) 2 wire type sensor : Pull down at GND with approx.900Ω 5) Line driver : Input resistance 330Ω
<b>Input allowable voltage</b>	1) NPN open collector : Logic ±50 2) Zero Cross : ±70 3) 2 wire type sensor : ±30 4) Line driver : ±25 (differential voltage)
<b>Input pulse range</b>	More than 9μs (with L and H level)
<b>Edge-triggered</b>	Falling edge

### ◆ Measurement type and calculation part specifications

<b>Measurement system</b>	Cycle arithmetic system
<b>Measurement mode</b>	Frequency meter
<b>Scaling</b>	Display automatic conversion
<b>Arithmetic operation rate</b>	Setup the display value with regard to the input number of frequency
<b>Frequency ratio (pulse average)</b>	1 to 999
<b>Moving average</b>	1 to 8
<b>Zero detection</b>	Cut less than setup number of frequency
<b>Chatter suppress function</b>	Upper limit of input number of frequency : 480Hz Eliminating pulse range less than 1ms as chattering with HI and LO level.
<b>Memorized setup value</b>	Million times writing with non volatile memory (EEPROM)

### ◆ External power supply specifications

<b>Power supply for sensor</b>	12Vdc ±10% (100mA), 5Vdc ±10% (150mA)
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### ◆ Display part specifications

<b>Display element</b>	Red / Green lighting 7 segment LED (character height approx. 20mm)
<b>Display number of digit</b>	6 digit (measurement value and parameter)
<b>Display lamp</b>	HH/HI/GO/LO/LL (judgment result), PI (triggered)
<b>Display range</b>	0.00001 to 999999
<b>Range switching</b>	auto range, fixed range
<b>Zero display</b>	leading zero suppress
<b>Decimal point position</b>	□□□□□□□□. to □.□□□□□□
<b>Over display</b>	OL display
<b>Display update</b>	0.1 to 19.9 seconds
<b>Display accuracy</b>	±(20ppm+1digit) at 23 °C

◆ Power supply specifications

<b>AC power supply specification</b>	100 to 240Vac ±10% (50Hz/60Hz) 100V: Less than 17VA 200V: Less than 21VA 240V: Less than 23VA
<b>DC power supply specification</b>	12 to 48Vdc ±10% Less than 11W

◆ Common specifications

<b>Using temperature and humidity range</b>	0 to 50°C 35 to 85% (non condensing)
<b>Storage temperature and humidity range</b>	Less than -10 to 70°C 60%RH (non condensing)
<b>External dimension</b>	48mm(H)×96mm(W)×97.5mm(D) (option unit not mounting)
<b>Weight</b>	Approx.500g
<b>Dielectric voltage AC power supply type</b>	Power supply - input / comparative output between of all option outputs : 1500Vac per minute Input - comparative output / between of all option outputs : 500Vdc per minute Case - power supply / input / comparative output / between of all option outputs : 1500Vac per minute
<b>Dielectric voltage DC power supply type</b>	Power supply - input / comparative output / between of all option outputs : 500Vdc per minute Input - Comparative output / between of all option outputs : 500Vdc per minute Comparative output - between of all option outputs : 500Vdc per minute Comparative output - between of all option outputs : 500Vdc per minute Dielectric-voltage : Case - power supply/ input / Comparative output / between of all option output : 1500Vac per minute
<b>Insulated resistance</b>	Between of dielectric voltage test terminal 500Vdc more than 100MΩ

◆ Comparative output specifications

<b>Setup method</b>	Internal memory with program mode
<b>Setup score</b>	1 point
<b>Output score</b>	Choosing 3 points with HH/HI/GO/LO LL by judgment operation mode
<b>Judgment operation mode</b>	Choosing from HH/HI/GO, HI/GO/LO and GO/LO/LL.
<b>Output type</b>	30Vdc 2A (Insulated load)
<b>Relay output</b>	250Vdc 2A(Insulated load)
<b>Photocoupler output</b>	30Vdc 20mA(Insulated resistance)
<b>Output logic</b>	Possible to switch positive / negative logic
<b>Output updating cycle</b>	Display synchronization

◆ Option specifications

● Analog output specifications

<b>Output signal</b>	0-1Vdc, 0-10V, 1-5V, 4-20mA
<b>Resolution</b>	16 bit(More than 50,000 with each range)
<b>Load resistance</b>	Voltage output : more than 4.7kΩ Current output: less than 510Ω
<b>Output rate</b>	Setup with display value about the full-scale arbitrarily
<b>Moving average</b>	1 to 8
<b>D/A conversion method</b>	PWM conversion method
<b>Update cycle</b>	Display synchronization
<b>Accuracy</b>	Voltage output : ±(0.1% of FS) @23°C Current output: ±(0.2% of FS) @23°C
<b>Temperature Fluctuation</b>	Less than ±200ppm/°C
<b>Linearity</b>	Within ±0.1%

● BCD output specifications

<b>Output type</b>	Parallel BCD output (open collector or TTL level)
<b>Output signal</b>	6 digit BCD code, OVER, P.C
<b>Control signal</b>	LATCH input, ENABLE input, P.C
<b>Output rating</b>	Open collector : 30Vdc 10mA (Output saturation voltage : less than 1.2V) TTL level : fan out 2
<b>Output cycle</b>	Display synchronization
<b>Output logic</b>	Switchable to positive and negative logic with parameter

● RS-485 specifications

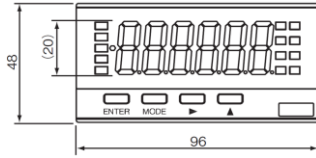
<b>Baud rate</b>	Parallel BCD output (open collector or TTL level)
<b>Start bit</b>	1 bit
<b>Data length</b>	7 bit / 8 bit
<b>Parity</b>	Even number/ Odd number / Nothing
<b>Stop bit</b>	1 bit / 2 bit
<b>Error detection</b>	with / without BCC checksum
<b>Wait time</b>	0 to 99ms
<b>Character code</b>	ASCII code
<b>Number of connections</b>	31
<b>Line length</b>	500m at maximum

● RS-232C specifications

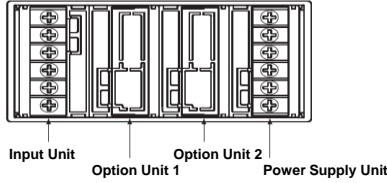
<b>Baud rate</b>	38.4k / 19.2k / 9.6k / 4.8k bps
<b>Start bit</b>	1 bit
<b>Data length</b>	7 bit / 8 bit
<b>Parity</b>	Even number/ Odd number / Nothing
<b>Stop bit</b>	1 bit / 2 bit
<b>Character code</b>	ASCII code

# Dimensions

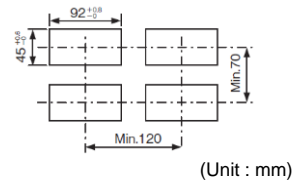
## ◆ Front view



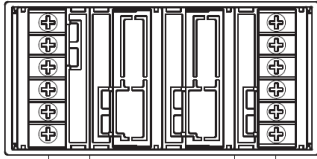
## ◆ Back view



## ◆ Panel cut



# Terminal connections



Power Supply Unit  
Option Unit  
Input Unit

## ◆ Input

No.	Terminal name	Remarks
1	+12V	Sensor power(+12V)
2	SIG	General purpose INPUT
3	GND	INPUT GND
4	+5V	Sensor power(+5V)
5	LINE+	Line driver(+)
6	LINE-	Line driver(-)

## ◆ AC Power supply

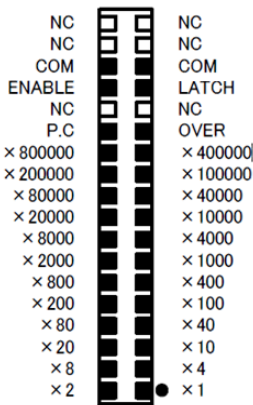
No.	Terminal name	Remarks
1	NC	No connection
2	NC	
3	NC	
4	NC	
5	AC	100 to 240Vac ±10% (50 / 60Hz)
6	AC	

## ◆ DC Power supply

No.	Terminal name	Remarks
1	DC+	12 to 24Vdc ±10%
2	DC-	
3	NC	No connection
4	NC	
5	NC	
6	NC	

Be careful connection polarity at choice DC power.

## ◆ BCD output (TTL, open collector)



Remarks	Terminal name	No.	Terminal name	Remarks
No connection	NC	36	35	NC
No connection	NC	34	33	NC
Common	COM	32	31	COM
BCD enable control	ENABLE	30	29	LATCH
No connection	NC	28	27	NC
BCD Printing command output	P.C	26	25	OVER
BCD data output	X 800000	24	23	X 400000
	X 200000	22	21	X 100000
	X 80000	20	19	X 40000
	X 20000	18	17	X 10000
	X 8000	16	15	X 4000
	X 2000	14	13	X 1000
	X 800	12	11	X 400
	X 200	10	9	X 100
	X 80	8	7	X 40
	X 20	6	5	X 10
X 8	4	3	X 4	
X 2	2	1	X 1	
BCD data output				BCD data output

## ◆ Comparative output (Relay)

No.	Terminal name	Remarks
1	HI a	HI output, a contact output terminal
2	HI c	HI output, COM terminal
3	GO a	GO output, a contact output terminal
4	GO c	GO output, COM terminal
5	LO a	LO output, a contact output terminal
6	LO c	LO output, COM terminal

## ◆ Comparative output (Photocoupler)

No.	Terminal name	Remarks
1	HI c	HI output, collector terminal
2	HI e	HI output, emitter terminal
3	GO c	GO output, collector terminal
4	GO e	GO output, emitter terminal
5	LO c	LO output, collector terminal
6	LO e	LO output, emitter terminal

## ◆ RS-485 + Analog output

No.	Terminal name	Remarks
5	S.GND	Signal ground
4	NC	No connection
3	-	Data input and output
2	+	

RS-485 (terminal platform)			Analog output (terminal platform)		
No.	Terminal name	Remarks	No.	Terminal name	Remarks
1	TERM	Setup both and resistance	1	NC	No connection
2	TERM	Setup both and resistance	2	NC	
3	NC	No connection	3	A.OUT(V+)	Voltage output +
4	NC		4	A.OUT(I+)	Current output +
5	NC		5	A.OUT(COM-)	Voltage and Current output -

In case of setting terminal resistance 'valid', short the terminal platform between 1 to 2. Internal terminal resistance sets '200Ω', unable to use NC terminal as intermediate terminal.

## ◆ RS-232 + Analog output (RS-232C output)

No.	Terminal name	Remarks
1	S.GND	Signal ground
2	NC	No connection
3	RXD	Input data acquisition
4	TXD	Output transmit data

Analog output (terminal platform)		
No.	Terminal name	Remarks
1	NC	No connection
2	NC	
3	A.OUT(V+)	Voltage output +
4	A.OUT(I+)	Current output +
5	A.OUT(COM-)	Voltage and Current output -

Unable to use voltage and current output simultaneously, please connect only one side. In case only output RS-232V, analog output terminal all become 'NC', unable to use NC terminal as relay terminal.