1/8 DIN Digital Tachometer

AC-911

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

Input frequency range	10mHz to 50kHz
Input Signal	Single end input (NPN open collector, logic, zero cross, 2 wire type sensor) Differential input (line driver)
Input level, Sensitivity	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)
Input resistance	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
Input allowable voltage	1) NPN open collector : Logic ±50 2) Zero Cross : ±70 3) 2 wire type sensor : ±30 4) Line driver : ±25（differential voltage)
Input pulse range	More than 9μs （with L and H level)
Edge-triggered	Falling edge

◆Measurement type and calculation part specifications

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

◆External power supply specifications

Power supply for sensor	12Vdc ±10%（100mA), 5Vdc ±10%(150mA)

◆Display part specifications

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

◆Power supply specifications

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

◆Common specifications

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

◆Comparative output specifications

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

◆Option specifications

●Analog output specifications

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

●BCD output specifications

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

●RS-485 specifications

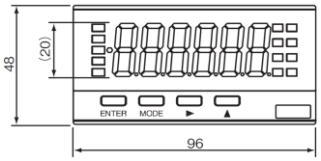
Baud rate	Parallel BDC output (open collector or TTL level)
Start bit	1 bit
Data length	7 bit / 8 bit
Parity	Even number/ Odd number / Nothing
Stop bit	1 bit / 2 bit
Error detection	with / without BCC checksum
Wait time	0 to 99ms
Character code	ASCII code
Number of connections	31
Line length	500m at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

●RS-232C specifications

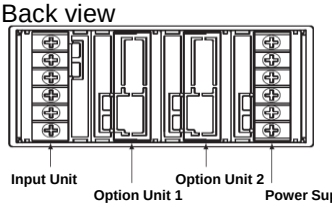
Baud rate	38.4k / 19.2k / 9.6k / 4.8k bps
Start bit	1 bit
Data length	7 bit / 8 bit
Parity	Even number/ Odd number / Nothing
Stop bit	1 bit / 2 bit
Character code	ASCII code

Dimensions

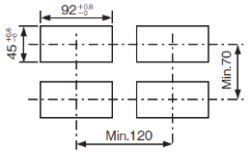
◆Front view



◆Back view

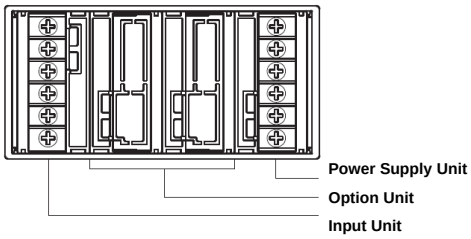


◆Panel cut



(Unit : mm)

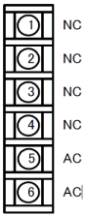
Terminal connections



◆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



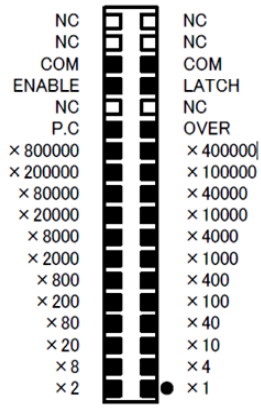
No.	Terminal name	Remarks
1	NC	No connection
2	NC	
3	NC	
4	NC	
5	AC	100 to 240Vac ±10% (50 / 60Hz)
6	AC	

◆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	

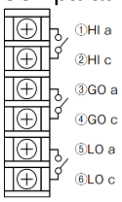
Be careful connection polarity at choice DC power.

◆BCD output (TTL, open collector)



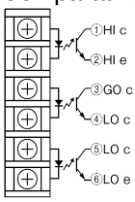
Remarks	Terminal name	No.		Terminal name	Remarks
No connection	NC	36	35	NC	No connection
	NC	34	33	NC	
Common	COM	32	31	COM	Common
BCD enable control	ENABLE	30	29	LATCH	Data latch signal input
No connection	NC	28	27	NC	No connection
BCD Priinting command output	P.C	26	25	OVER	Overflow output
BCD data output	X 800000	24	23	X 400000	BCD data output
	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	

◆Comparative output (Relay)



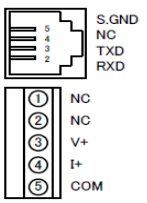
No.	Terminal name	Remarks
1	HI a	HI output, a contact output terminal
2	HI c	HI output, COM terminal
3	GO a	GO output, a contact output terminal
4	GO c	GO output, COM terminal
5	LO a	LO output, a contact output terminal
6	LO c	LO output, COM terminal

◆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



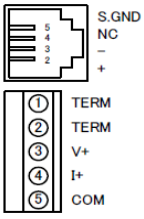
RS-485 (Moduler connector : RJ-11)

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)



RS-232C (Moduler connector : RJ-11)

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 simutaneously, please connect only one side. In case only output RS-232V, analog output terminal all becomer 'NC', unable to use NC terminal as relay terminal