

GYDC-05 Controller

Parallel

AC

GPM

Noise
Cancel

CE

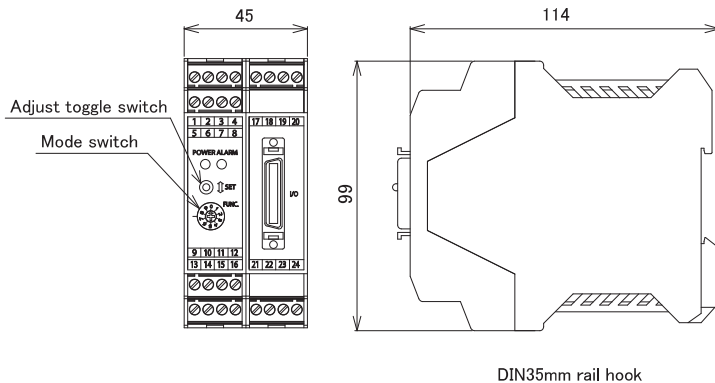
**High accuracy digital output
(Parallel, SSI, A/B pulse)**



GYDC-05 controller enables digital output of 1 μ m resolution and also analogue output of the position or the velocity (option). With option, SSI output and the incremental output (A/B pulse) are available. And putting 2 pcs magnets on one probe and detecting each magnet position or relative distance between 2 magnets are possible. It has toggle switches on front face for zero/gain adjustment, mounting with DIN rail. With the captive software (GPM), zero and gain adjustment is possible at user side.

Dimensions

Controller



with output connector (sumitomo 3M : 10136-3000E)
option : 3m cable with the output connector is available.
(CN-DC-05-3)

[Auto calibration function]

◆In combination with the probe (GYMR6, GYSE-R, GYKMR, GYRHP-MR6) having auto calibration function, a difference in the output when you change the probe is adjusted automatically.

Wiring

Pin number	Function	Pin number	Function	Pin number	Function
1		9	OUT1(+)	17	DATA(+)
2		10	OUT1(-)	18	DATA(-)
3		11	OUT2(+)	19	CLK(+)
4		12	OUT2(-)	20	CLK(-)
5		13	Power(+)	21	A pluse(+)
6		14	Power(-)	22	A pluse(-)
7		15	Alarm(+)	23	B pluse(+)
8		16	Alarm(-)	24	B pluse(-)

Connection for probe,
Please refer to each manual

Parallel output connection

Number	Function	Number	Function	Number	Function	Number	Function
35	EXT	36	EXT2	17	D16	18	D17
33	FULL	34	INC	15	D14	16	D15
31	HOLD	32	ZERO	13	D12	14	D13
29	COM	30	COM	11	D10	12	D11
27	RDY	28	LE	9	D8	10	D9
25	STB	26	ERR	7	D6	8	D7
23	D22	24	D23	5	D4	6	D5
21	D20	22	D21	3	D2	4	D3
19	D18	20	D19	1	D0	2	D1

NPN or PNP input signal can be selected by wiring

*When using parallel output, and incremental output, and SSI output, supplying 24VDC at PIN 36 (EXT2) and 0V at PIN 29 (COM) is necessary. (consumption 150mA)

Specifications

Position (digital) (24bit)	Parallel, Binary code(*1), Negative logic(*2) (option: SSI or A/B incremental output)
Resolution (digital)	Std. 0.01mm (Min. 0.001mm) (*3) 0.1mm(*4)
Position (OUT1) (analogue)	0~10V (Max.5mA, Min.2k Ω) or 4~20mA (load: Max.500 Ω)
Resolution (analogue)	16bit (1/65536) (*3) $\leq 0.01\%$ FS(*4)
Velocity (OUT2)	Option ± 10 V or 4~20mA
Alarm(*5)	Open collector 0.1A 30VDC
Power supply	+24VDC ± 2 V (≤ 160 mA)
Sampling freq. (*6)	Std. 1kHz (Total rod length : 1300mm)
Temp. drift	$\leq \pm 10$ ppmFS/ $^{\circ}$ C
Operating temp.	0 $^{\circ}$ C~+65 $^{\circ}$ C
Storage temp.	-20 $^{\circ}$ C~+75 $^{\circ}$ C

*The above mentioned accuracy applies to sensors with an effective stroke of 300mm or more.

*The specification of stroke less than 300mm is equal that of stroke 300mm.

(*1)can be changed to Gary code at user side

(*2)Tr On = output "0"

(*3)associated probe : GYMR6, GYSE-R, GYcRS, GYMR5, GYFRS, GYKMR, GYRHP-MR6, EX-GYdT-RS

(*4)associated probe : GYMS, GYGS, GYPM, GYPE2K, GYPMR, GYcRP, GYHTR, GYHR, EX-GYdS-RP, IGY4

(*5)cable disconnection and magnet drop

(*6)Sampling frequency is Max. 3.75kHz. It depends on the total rod length (model⑩), and the consumption current increases.

■ Controller

GYDC-05 ☐ - ☐ ☐ - ☐ ☐ ☐ ☐ - **Z** ☐ - ☐ ☐ / **N-24S** - ☐

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

① Digital output

- 1: Standard, parallel output
 2100: with A/B incremental (pulse freq.: 1MHz)
 2200: with A/B incremental (pulse freq.: 500kHz)
 (standard for resolution D7 or D8)
 2300: with A/B incremental (pulse freq.: 250kHz)
 (standard for resolution D2~D5)
 2400: with A/B incremental (pulse freq.: 125kHz)
 2600: with A/B incremental (pulse freq.: 31kHz)
 2700: with A/B incremental (pulse freq.: 15kHz)
 005A: with asynchronous SSI output (26bit)
 005S: with synchronous SSI output (26bit)

• In case of A/B incremental, Max. magnet speed is limited with the selected resolution and pulse freq. For standard setting, the speed is as below.

Resolution(mm)	Pulse freq.	Max. magnet speed
0.1	250kHz	(*)15m/sec
0.05	250kHz	(*)15m/sec
0.01	250kHz	8m/sec
0.005	250kHz	4m/sec
0.002	500kHz	3.2m/sec
0.001	500kHz	1.6m/sec

*For the noise cancellation function

• Both SSI output and incremental output (A/B pulse) are available for one unit.
 In that case, Model code would be 「225A」, for example.

② Resolution

Symbol	Resolution	Symbol	Resolution
D2	0.1mm	D5	0.005mm
D3	0.05mm	D7	0.002mm
D4	0.01mm	D8	0.001mm

「D4」is std.: GYSE-R, GYcRS, GYMR5, GYMR6,
 GYKMR, GYRHP-MR6, GYFRS, EX-GYdT-RS
 「D2」only : GYGS, GYMS, GYPM, GYPMR, GYcRP,
 GYHR, GYHTR, EX-GYdS-RP, IGY4, GYPE2K

③ Direction of output

- D: output data increase toward probe tip
 R: output data decrease toward probe tip

④ Probe

MR6 : GYMR6	GS : GYGS
SR : GYSE-R	PM : GYPM
RS : GYcRS	P2 : GYPE2K
RP : GYcRP	PR : GYPMR
R5 : GYMR5	KMR : GYKMR
FS : GYFRS	PMR6 : GYRHP-MR6
HTR : GYHTR	ETS : EX-GYdT-RS
HR24 : GYHR	ESP : EX-GYdS-RP
MS : GYMS	I4 : GY4

⑤ Effective stroke (mm)

⑥ Head dead zone

☐ : Same length as probe dead zone.

⑦ Associated magnet or float

<magnet>	<float>
MG0 : No.Φ	F28S : Φ 28 SS316L
M0SM : No.Φ SPM	F30S : Φ 30 SS316L
M0LM : No.Φ LPM	F40S : Φ 40 SS316(B)
M2P : No.2P	F42S : Φ 43 SS316L
M2PN : No.2PN	F50S : Φ 50 SS316L
M3 : No.3	F54S : Φ 54 SS304
M11 : No.11	F25N : RF-A10 plastic
M11N : No.11N	F28N : RF-A6 plastic
T142 : No.T14-M2	
T144 : No.T14-M4	
T162 : No.T16-M2	
T163 : No.T16-M3	
BA : No.2KYN-17-LG	

- Same as the selected magnet or float of probe.
- Please consult our factory in case of requesting special magnet or float.
- This model code means only specifying associated magnet or float.
- Ordering magnet or float individually.

⑧ Position output (OUT1)

AD: 0~10V (When magnet moves toward tip, output increase)
 AR: 10~0V (When magnet moves toward tip, output decrease)
 BD: 4~20mA (When magnet moves toward tip, output increase)
 BR: 20~4mA (When magnet moves toward tip, output decrease)
 CD ☐ ☐ : bipolar output (-☐V~+☐V)
 (for example CD10: -10V~+10V)
 CR ☐ ☐ : bipolar output (+☐V~-☐V)
 (for example CR05: +5V~-5V)
 V Z/F: option (specified voltage)
 (for example V1/5: 1~5V, V9.5/0.5: 9.5~0.5V)
 I Z/F: option (specified current)
 (for example I5.2/20: 5.2~20mA, I18/5: 18~5mA)
 【Z=output at zero position, F=output at full position】

⑨ Option : Analogue output (OUT2)

- N: without option (Std.)
- Position output: select from ⑧
- Velocity output (Note1)
 VA[] : ±10V
 WB[] : 4~20mA
 [] : Max velocity (1.00~999mm/sec)
 (ex.9R99: Max velocity=9.99mm/sec)
 (Note1)
 VA: When magnet stops, output is 0V.
 When moving toward probe tip, +10V.
 WB: When magnet stops, output is 4mA.
 When moving in any direction, 20mA.

⑩ Option

- 2ME: 2 magnets, each magnet position (analog output) (*)
- 2MR: 2 magnets, relative distance between the two (*)
 (OUT1 only, analog output)
- X2 : 2kHz sampling (total rod length : Max. 700mm)
- X3 : 3kHz sampling (total rod length : Max. 500mm)
- X4 : 3.75kHz sampling (total rod length : Max. 400mm)
- P : PNP (Parallel output)
- HS : resin coating against humidity

(*) 2 magnets option

- Min. proximity distance between magnets is 75mm.
 (Min. proximity distance between magnets varies depending on the magnet type.)
- When using other magnets, please consult our factory.