Schmitz Engineering Liaison

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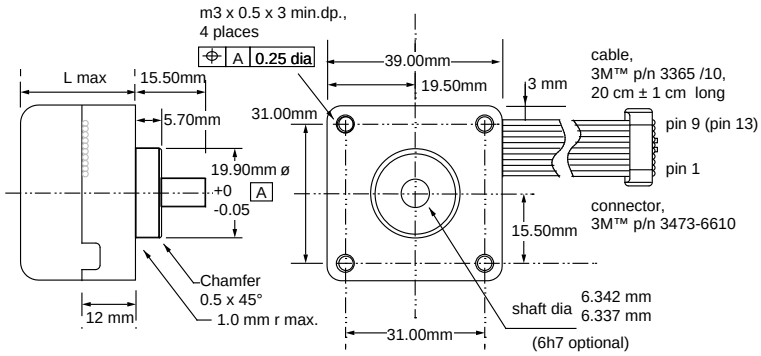
350 series, housed encoders

Description:

The 350 series encoder is a small, rugged device, with a package form factor identical to that of a 39 mm stepper motor. The light source is a single light emitting diode, the sensor a monolithic silicon array. Up to 2,500 counts per revolution (10,000 measuring steps) are available for the incremental models and up to 10 bits for the absolute units.

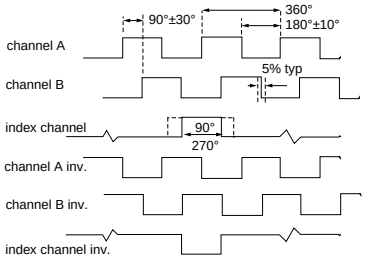
Options

- custom linecounts and index configurations
- through shaft
- custom shaft configurations
- custom cable configurations
- extended temperature range (-30 °C to +100°C)
- integral brushless DC motor version (320-xxxx)
- shaft seal



shaft diameter:	6.342 / 6.337 mm
shaft options:	6 mm
shaft loading:	10 N axial , 20 N radial (2 lbs and 4 lbs resp.)
shaft runout:	0.0125 mm T.I.R.
starting torque:	0.1 Ncm @20°C max
shaft rotation:	continuous,reversible
slew speed:	160 rev/sec ²
bearings:	ABEC 5
shaft material:	416 stainless
housing material:	diecast aluminum
cover:	1.5 mm wall, Ryton 4
bearing life:	manufacturer's specs
moment of inertia:	1.7 gcm ²
weight:	approx. 0.120 kg
temperature:	operating: -20°C to+85°C
shock:	50 G's @ 11 ms
vibration:	5-2,000 Hz @ 20 G's
humidity:	98% without condensation
protection:	IP 64 (w/o shaft extension)

350, incremental



waveforms shown for cw rotation

electrical data:

power supply:	+ 5Vdc ± 10% @ 50 mA max (no load)
output format:	incremental
cycles/revolution:	100, 200, 256, 360, 500, 600, 1000 and 1024 std.
freqency response:	150 kHz min. @ 85 °C
linedriver output:	26LS31,EIA std. RS 422 and DIN 66259 compatible
TTL output:	74LS04
open collector output:	LM 339, 6 mA max. sink
overall length:	L_{max} = 26 mm

pinout linedrivers:

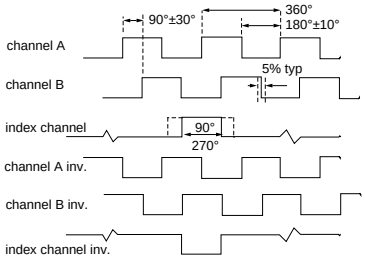
1	+ 5Vdc
2	+ 5Vdc
3	channel A inv.
4	channel A
5	channel B inv.
6	channel B
7	index channel
8	ground
9	index channel inv.
10	ground

pinout TTL:

channel A	
+ 5 Vdc	
ground	
ground	
ground	
+ 5 Vdc	
channel B	
n/c	
index channel	

ordering information:
350-(linecount)-(1)-(2)-(3)
(1): linedriver=L,TTL=T,open collector=O
(2): through-shaft with slot=X
(3): high temperature version=H

360, incremental, linedriver 5V to 30V



waveforms shown for cw rotation

electrical data:

power supply:	V_{in} =+ 4.75 Vdc to 30 Vdc @ 50 mA max (no load)
output format:	incremental
cycles/revolution:	100, 200, 256, 360, 500, 600, 1000 and 1024 std.
freqency response:	150 kHz min. @ 85 °C
output:	EIA std. RS 422 and DIN 66259 (part 3) compatible
output @ Vin=4.75V:	$V_{lo} \leq$ 0.5 V@20 mA sink $V_{hi} \geq$ 2.5V@20 mA source
output @ Vin=30 V:	$V_{lo} \leq$ 0.5 V@20 mA sink $V_{hi} \geq$ 27 V@20 mA source
overall length:	L_{max} = 26 mm

pinout complementary:

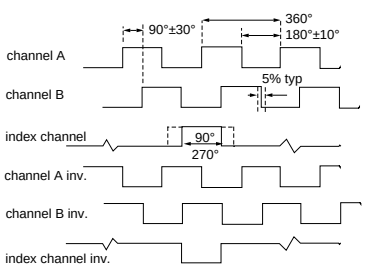
1	$+ V_{in}$
2	channel A
3	channel A inv.
4	channel B
5	channel B inv.
6	index channel
7	index channel inv.
8	ground
9	n/c
10	n/c

single:

channel A	
$+ V_{in}$	
ground	
ground	
ground	
ground	
+ 5 Vdc	
channel B	
n/c	
index channel	

ordering information:
360-(linecount)-(1)-(2)-(3)
(1): single-ended=S, complementary=C
(2): through-shaft with slot=X
(3): high temperature version=H

370, incremental, high count



waveforms shown for cw rotation

electrical data:

power supply:	+ 5Vdc ± 10% @ 50 mA max (no load)
output format:	incremental
cycles/revolution:	1200,2000,2048 and 2500 c/r standard
freqency response:	300 kHz min. @ 85 °C
linedriver output:	26LS31,EIA std. RS 422 and DIN 66259 compatible
TTL output:	74LS04
open collector output:	LM 339, 6 mA max. sink
overall length:	L_{max} = 36 mm

pinout linedrivers:

1	+ 5Vdc
2	+ 5Vdc
3	channel A inv.
4	channel A
5	channel B inv.
6	channel B
7	index channel
8	ground
9	index channel inv.
10	ground

ordering information:
370-(linecount)-(1)-(2)
(1): through-shaft with slot=X
(2): high temperature version=H

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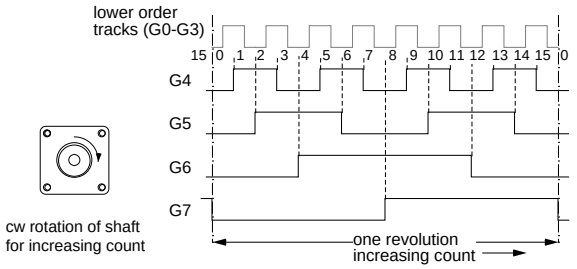
350-08GC, absolute, 8 bit Gray code



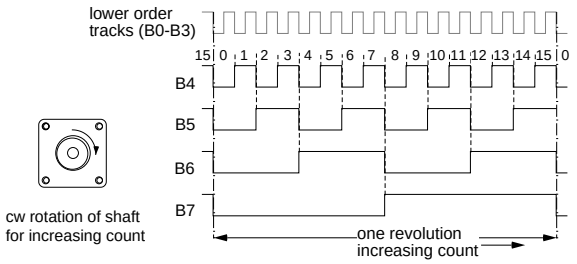
electrical data:
power supply: + 5Vdc ± 10% @ 50 mA max (no load)
+ 24 Vdc ± 10 % @ 70 mA max (option)
output format: 8 bit parallel, Gray code
freqency response: 100 kHz min. wordrate
output: LM 339, with pullup resistor, 6 mA max. sink

overall length: L_{max} = 26 mm

pinout :
1 G4
2 G6
3 G0 (lsb)
4 G3
5 ground
6 G2
7 + 5Vdc
8 G5
9 G7 (msb)
10 G1

ordering information:
CP-350-08GC-(1)-(2)-(3)-(4)
(1): 85 = 85°C, 100 = 100°C
(2): R= with pull-ups, blank if no pullups
(3): 5 = 5 Vdc. 24 = 24 Vdc power supply
(4): through-shaft with slot=X

350-08NB,absolute, 8 bit binary



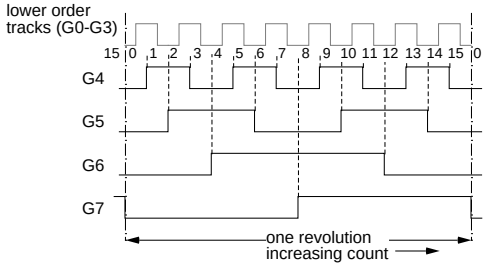
electrical data:
power supply: + 5Vdc ± 10% @ 50 mA max (no load)
output format: 8 bit parallel, binary
freqency response: 100 kHz min. wordrate
output: standard TTL/CMOS

overall length: L_{max} = 36 mm

pinout:
1 B4
2 B6
3 B0 (lsb)
4 B3
5 ground
6 B2
7 + 5Vdc
8 B5
9 B7 (msb)
10 B1

ordering information:
350-08NB-(1)
(1): 85 = 85°C, 100 = 100°C

350-8GC180, absolute, 1°/ position



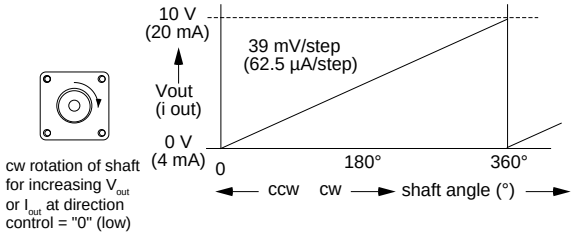
electrical data:
power supply: + 5Vdc ± 10% @ 50 mA max (no load)
+ 24 Vdc ± 10% @ 70 mA max (option)
output format: 8 bit parallel, Gray code, 1°/position,repeated twice per revolution.
freqency response: 100 kHz min. wordrate
output: LM 339, with pullup resistor, 6 mA max. sink

overall length: L_{max} = 26 mm

pinout :
1 G4
2 G6
3 G0 (lsb)
4 G3
5 ground
6 G2
7 + 5Vdc
8 G5
9 G7 (msb)
10 G1

ordering information:
350-08GC180-(1)-(2)-(3)-(4)
(1): 85 = 85°C, 100 = 100°C
(2): R= with pull-ups, blank if no pullups
(3): 5 = 5 Vdc, 24 = 24 Vdc power supply
(4): through-shaft with slot=X

350-8AN, absolute, analog



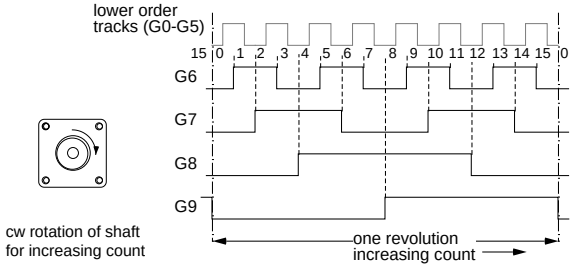
electrical data:
power supply V_{in}: 12.6 Vdc to 16.6 Vdc @ 100 mA max
voltage output V_{out}: 0 - 10 V standard,
current output I_{out}: 4 - 20 mA(optional)
resolution: 8 bits (256 steps)
stability: ± 0.2 %
direction control input: TTL/CMOS (5 V)

overall length: L_{max} = 36 mm

pinout:
1 n/c
2 + V_{in}
3 n/c
4 n/c
5 direction control
6 power ground
7 I_{out}
8 n/c
9 V_{out}
10 I_{out} return

ordering information:
350-08AN-(1)-(2)
(1): 85 = 85°C, 100 = 100°C
(2) : blank=V_{out} only, I= V_{out} and I_{out}

350-10GC, absolute,10 bit Gray code



electrical data:
power supply: + 5Vdc ± 10% @ 100 mA max (no load)
output format: 10 bit parallel, Gray code,
freqency response: 50 kHz min. wordrate
output: standard TTL/CMOS

overall length: L_{max} = 36 mm

pinout :
1 G1
2 G8
3 G6
4 G7
5 ground
6 G5
7 + 5Vdc
8 G0 (lsb)
9 G9 (msb)
10 G3
11 G4
12 G2
13 n/c
14 G9 inverted

ordering information:
350-10GC-(85 = 85°C, 100 = 100°C)