Incremental Encoder Module Datasheet
8ECM180A Series

Features

- Gap : 2.0mm
- Height : 7.35mm
- Incremental output method
- Digital output (A,B 2-Channel)
- Built in pull-up resistor
- Resolution : 180LPI
- Two Types of Holder : Standard & Screw mount

Description

- 8ECM180A is an optical encoder which is assembly with an infrared LED as a light source and a photo IC as a detector, with a digital output, provides sophisticated motion detection and variation of resolutions, makes closed-loop control very cost effective, can be used in a wide range of applications.

Applications

- Printer
- Facsimile
- Copier
- Disc driver

Table of Contents

Item Number Description

Item Number Details:

Product item No	Item number Description
8ECM180A2ST00001	Pin linear standard 180LPI tray package incremental encoder
8ECM180A2SB00001	Pin linear standard 180LPI tube packaging incremental encoder
8ECM180A3ST00001	Pin linear screw device type 180LPI tray packaging incremental encoder
8ECM180A3SB00001	Pin linear screw device type 180LPI tube packaging incremental encoder
8ECM180A2FT00001	Pin bending standard 180LPI tray package incremental encoder
8ECM180A2FB00001	Pin bending standard 180LPI tube packaging incremental encoder
8ECM180A3FT00001	Pin bending screw device type 180LPI tray packaging incremental encoder
8ECM180A3FB00001	Pin bending screw device type 180LPI tube packaging incremental encoder

Absolute Maximum Ratings (T_a=25℃)

Parameter		Symbol	Rating	Unit
Input	Forward Current *1	I_F	20	mA
	Reverse Voltage	V_R	3	V
Output	Supply Voltage	V_{CC}	7	V
Operating temp. *2		$T_{opr.}$	0 ~ +85	°C
Storage temp. *2		$T_{stg.}$	-40 ~ +85	°C
Soldering temp. *3		$T_{sol.}$	260	°C
ESD level(HBM)		EDS	+/-2	KV

Notes:

*1. Recommended Operating Forward Current：10mA

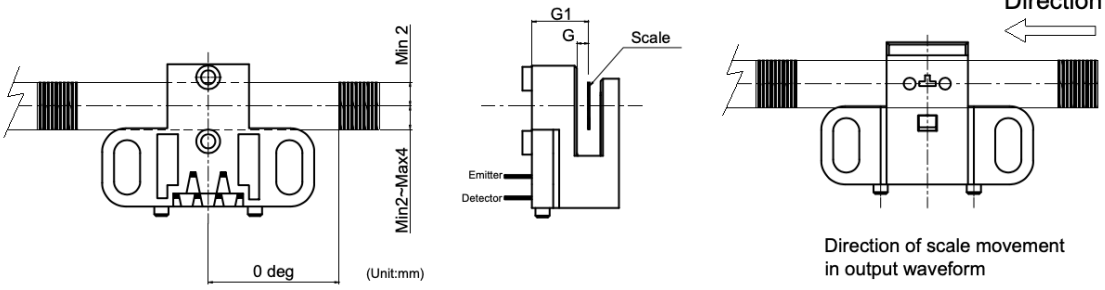
*2. No icebound or dew

*3. For max 5 sec. at the position of 1mm from the resin edge

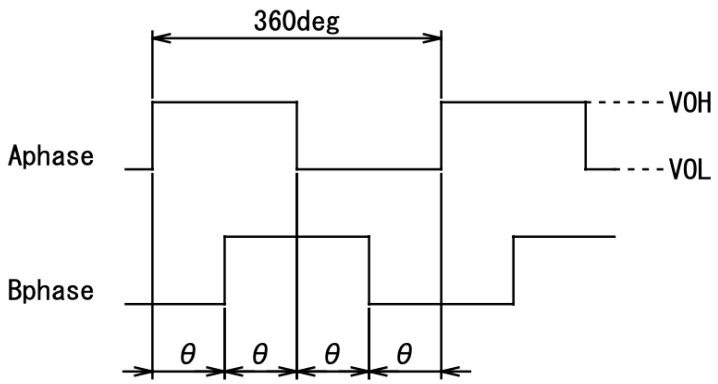
Electro-Optical Characteristics (T_a=25℃)

ITEM		Symbol	Conditions	Min.	Typ.	Max.	Unit
LED Input	Forward voltage	V_F	I_F=10mA	—	1.7	—	V
	Peak wavelength	λ_P	I_F=10mA	830	853	860	nm
Operating supply voltage range				2.8	5	5.5	V
IC Output A-B Phase Output	Phase difference *4*5*7	θ	V_{CC}=2.8 to 5.5V, I_F=10mA	70	90	110	deg
	Duty ratio *4*6	D_T		40	50	60	%
	High level output voltage *4*5	V_{OH}		Vcc x 0.8	—	—	V
	Low level output voltage *4*5	V_{OL}		—	—	0.4	V
Response frequency		f_O		—	—	60	KHz
Rise Time		t_r	C_L=25pF	0.03	—	3	μs
Fall Time		t_f	C_L=1000pF	0.03	—	3	μs

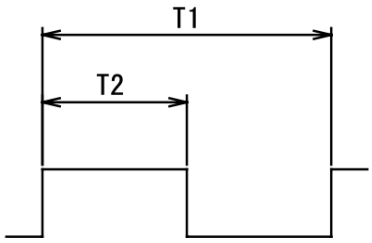
Notes: *4. Direction of scale movement



*5. Output waveform of*3



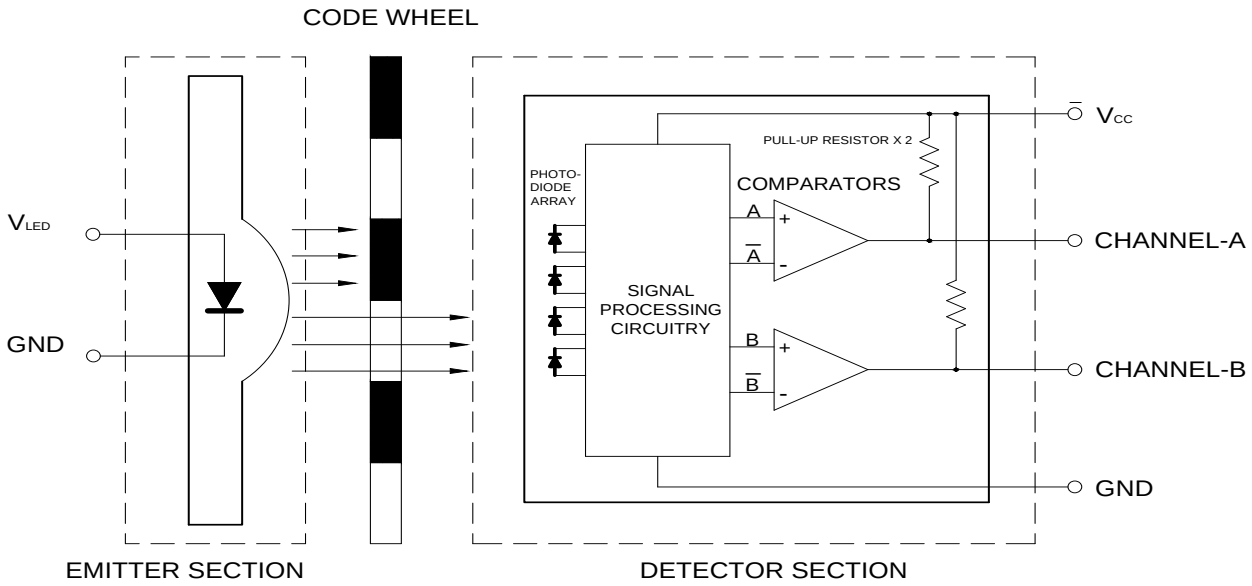
*6. Duty Ratio (Dt)



Dt = T2/T1 x 100(%)

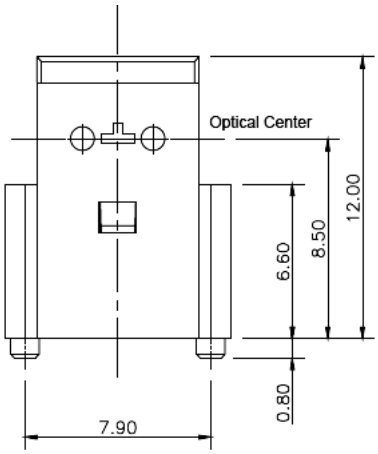
*7. No reverse in phase difference

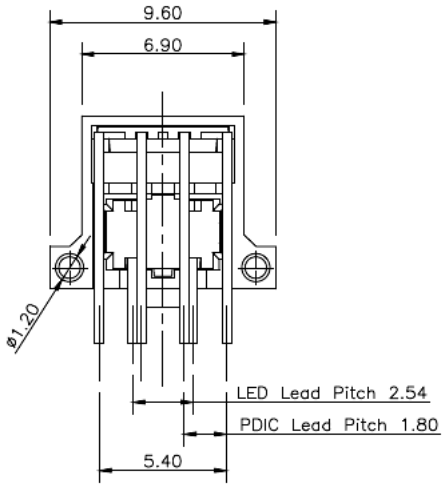
Block Diagram

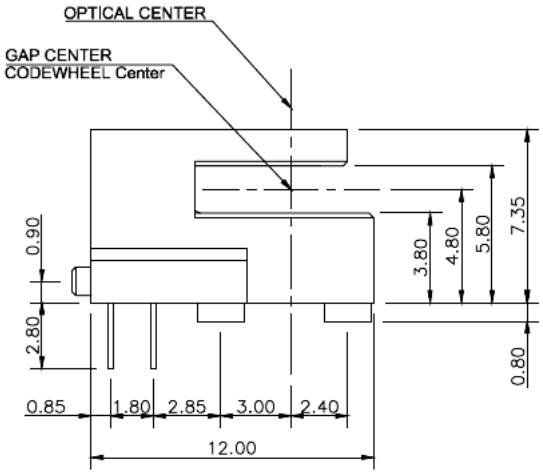


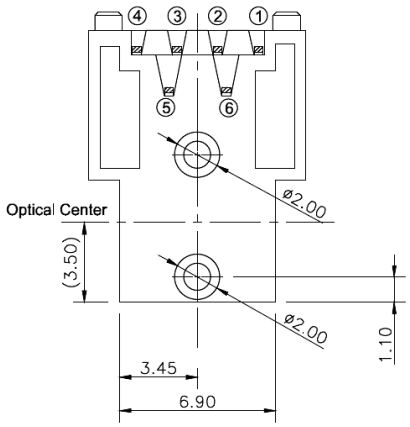
Mechanical Dimension

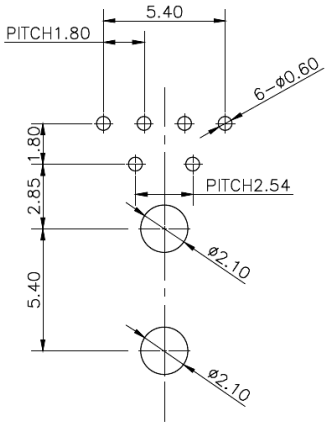
Standard type











MOUNTING FOOTPRINT

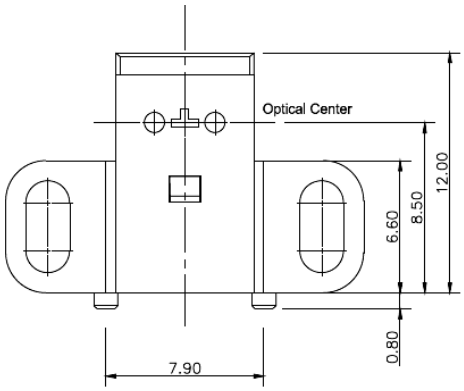
1) PIN CONFIGURATION

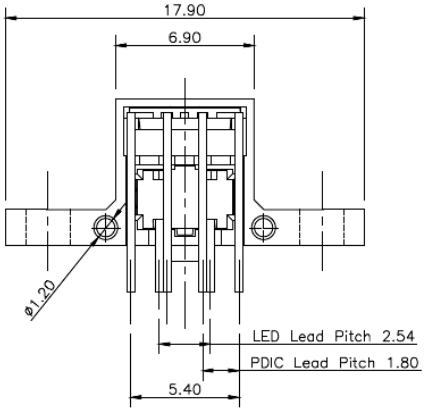
PIN NO.	CONFIGURATION	REMARK
1	CHANNEL-A	OUTPUT-A
2	GND	PDIC GND
3	V_{CC}	PDIC V_{CC}
4	CHANNEL-B	OUTPUT-B
5	V_{LED}	IRED ANODE
6	GND	IRED CATHODE

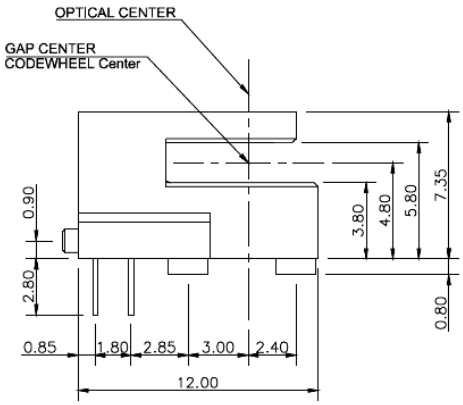
2) General Tolerance : ±0.2mm

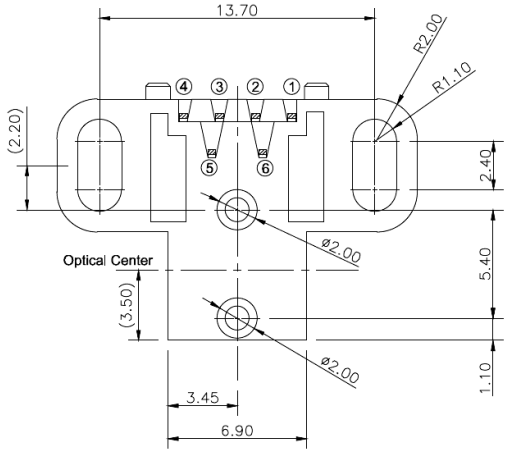
Mechanical Dimension

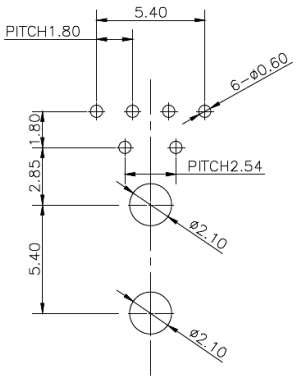
Screw mount type











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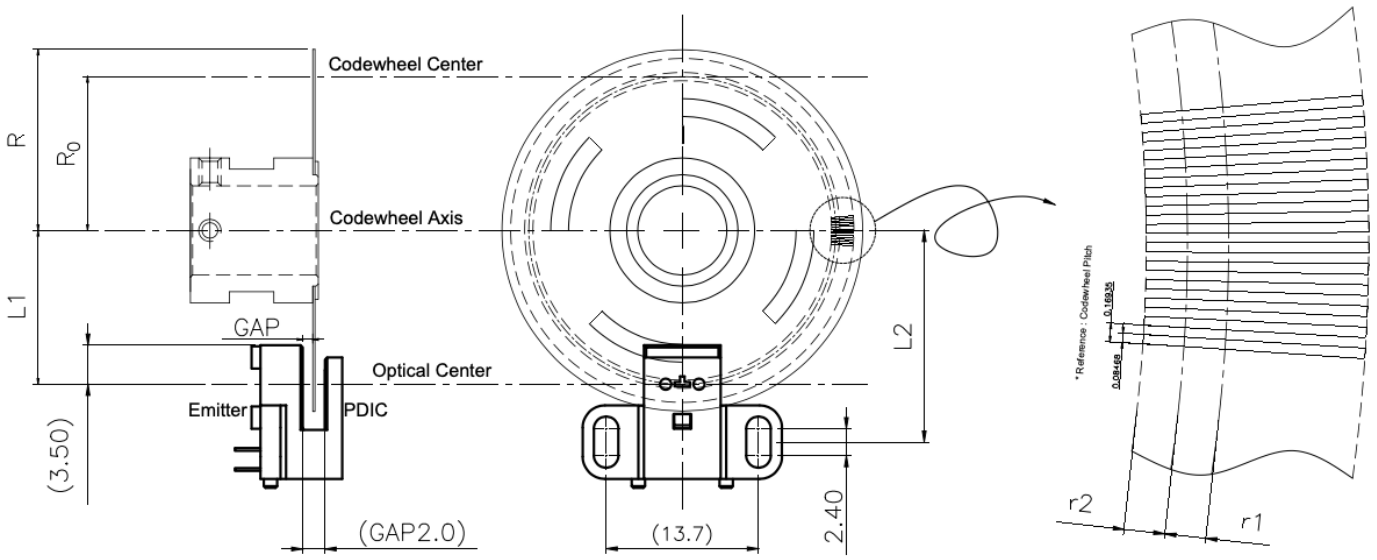
2) General Tolerance : ±0.2mm

Mounting Consideration



Note:

These dimensions include shaft end play and codewheel warp. All dimensions for mounting in the module and codewheel/codestrip should be measured with respect to the two mounting posts shown above.

Code wheel Design reference

- Rotary Disk Center Radius : R_0 (mm)
- Slit Pitch : P(mm) on R_0
- Slit Counts : N (P/R)
- R_0 = P/2π X N
- P=25.4mm/180LPI, $20 \leq R_0 \leq \infty$
- $R_0 \leq R_0$+4mm
- L1 = R_0
- L2 = L1 + 3.5mm

Revision history

Versions	Description	Release Date
1.0	Preliminary	2021/10/19

About Edison Opto

Edison Opto is a leading manufacturer of high power LED and a solution provider experienced in LDMS. LDMS is an integrated program derived from the four essential technologies in LED lighting applications- Thermal Management, Electrical Scheme, Mechanical Refinement, Optical Optimization, to provide customer with various LED components and modules. More Information about the company and our products can be found at www.edison-opto.com

www.edison-opto.com

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