

# iC-PX Series EncoderBlue<sup>®</sup> reflective

## Description

The iC-PX series are advanced optical, reflective, lensless encoder iCs featuring integrated HD Phased Array photosensors and a blue LED. They provide high signal quality with relaxed alignment tolerances. 2-Channel digital AB outputs with on-chip interpolation. Typical applications are incremental encoders for motor control. Blue-enhanced photosensors are adapted to the short wavelength of the embedded blue LED, and provide low-jitter outputs due to improved signal contrast. The unique assembly technology of the blue LED emitter and sensors results in low optical crosstalk.

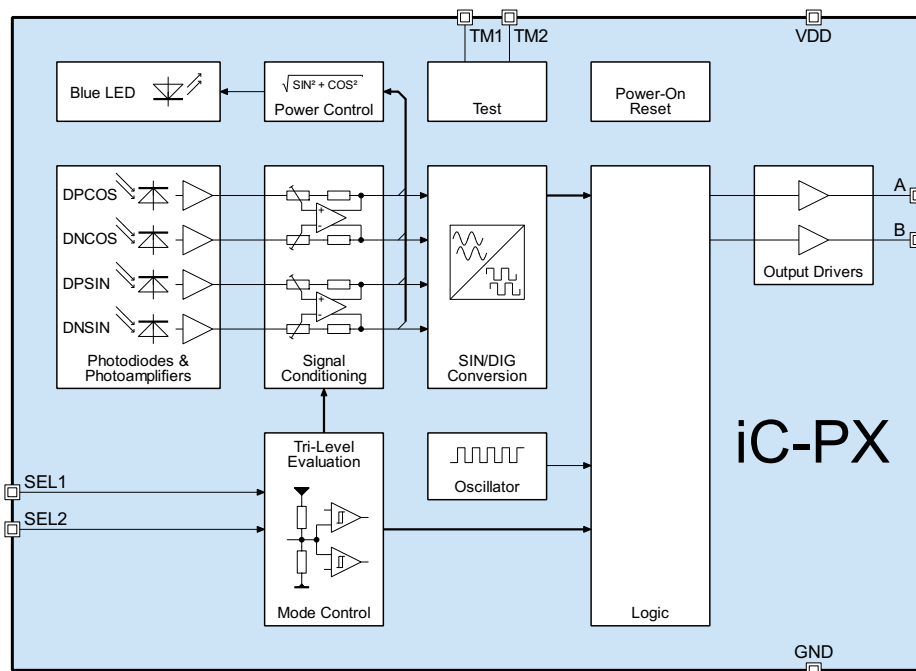
## Applications

- Incremental encoders
- Miniature motors and actuators
- X - Y - Z gantry tables and linear stages
- Factory automation robots
- Consumer robots

## Features

- Lensless reflective opto-encoder iCs, compact, high-resolution, incremental
- Suitable reflective code discs of  $\varnothing$  26 mm and  $\varnothing$  32 mm
- Monolithic HD Phased Array with excellent signal matching
- Integrated blue LED, EncoderBlue<sup>®</sup>
- LED power control with 20 mA driver
- Low-noise signal amplifiers with high EMI tolerance
- Pin-selectable modes of operation: Digital AB x1, x2, x4, x8, x16 interpolated
- Short-circuit-proof, current-limited,  $\pm$  4 mA push-pull outputs
- Operating temperature range of -40°C to +105°C
- Low power consumption from single 4.5V to 5.5V supply
- Compact and lensless optoDFN mold package
- Evaluation kits on request

## Block Diagram



# iC-PX Series

## Reflective Opto Encoders

### Key Specifications

#### General

Supply Voltage	VDD: 4.5V ... 5.5V
Supply Current	typ. 13 mA
ESD Susceptibility	CDM, HBM (JEDEC)
Operational Temperature	-40°C to +105°C
Package (RoHS compliant)	8-pin optoDFN (3.0 mm x 3.0 mm, thickness 0.9 mm)

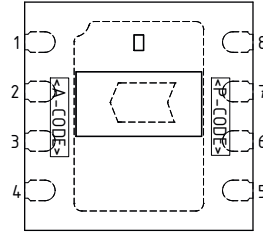
#### Outputs

Max. Output Frequency	1.85 MHz min.
Saturation Voltage hi / lo	0.4 V max. at $\pm 4$ mA
AB Duty Cycle Variation	Mode DX1: $\pm 5\%$ Mode DX2, DX4, DX8, DX16: $\pm 10\%$

#### Operation Modes

SEL 1	SEL 2	Mode	Description
low	high	DX1	digital A/B (x1 interpolation)
high	low	DX2	digital A/B (x2 interpolation)
high	high	DX4	digital A/B (x4 interpolation)
low	open	DX8	digital A/B (x8 interpolation)
high	open	DX16	digital A/B (x16 interpolation)

### Pin Configuration oDFN8-3x3



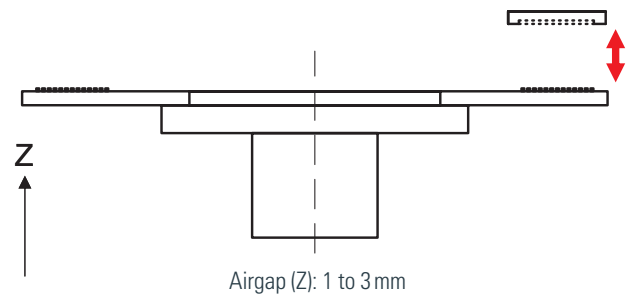
### Pin Functions

No.	Name	Function
1	TM1	Test Mode Input 1
2	TM2	Test Mode Input 2
3	SEL1	Mode Selection Input 1
4	SEL2	Mode Selection Input 2
5	B	Incr. Output B
6	A	Incr. Output A
7	VDD	Supply Voltage 4.5V ... 5.5V
8	GND	Ground

### Device Overview

Encoder	iC-PX2604		iC-PX3212		
Disc Size	$\varnothing 26$ mm	$\varnothing 30$ mm	$\varnothing 32$ mm	$\varnothing 36$ mm	$\varnothing 43$ mm
Opt. Radius	10.475 mm	13.35 mm	13.67 mm	16.69 mm	19.22 mm
Native CPR	360	500	512	625	720
CPR x 2	720	1000	1024	1250	1440
CPR x 4	1440	2000	2048	2500	2880
CPR x 8	2880	4000	4096	5000	5760
CPR x 16	5760	8000	8192	10000	11520

### Assembly Tolerances Z



### Assembly Tolerances X, Y, $\varphi$

