

# Model 58TP - Programmable Incremental Thru-Bore Encoder



Ø58mm

## FEATURES

- Programmable with USB Module or Factory Configured when Ordered
- Programmable Resolution from 1 to 65,536 PPR
- Programmable Output Type and Wave Form
- 58 mm Thru-Bore or Hollow Bore Encoder
- Standard and Metric Thru-Bore Sizes up to 5/8" and 15 mm
- Several Flexible Mounting Options
- Sealing Options up to IP67

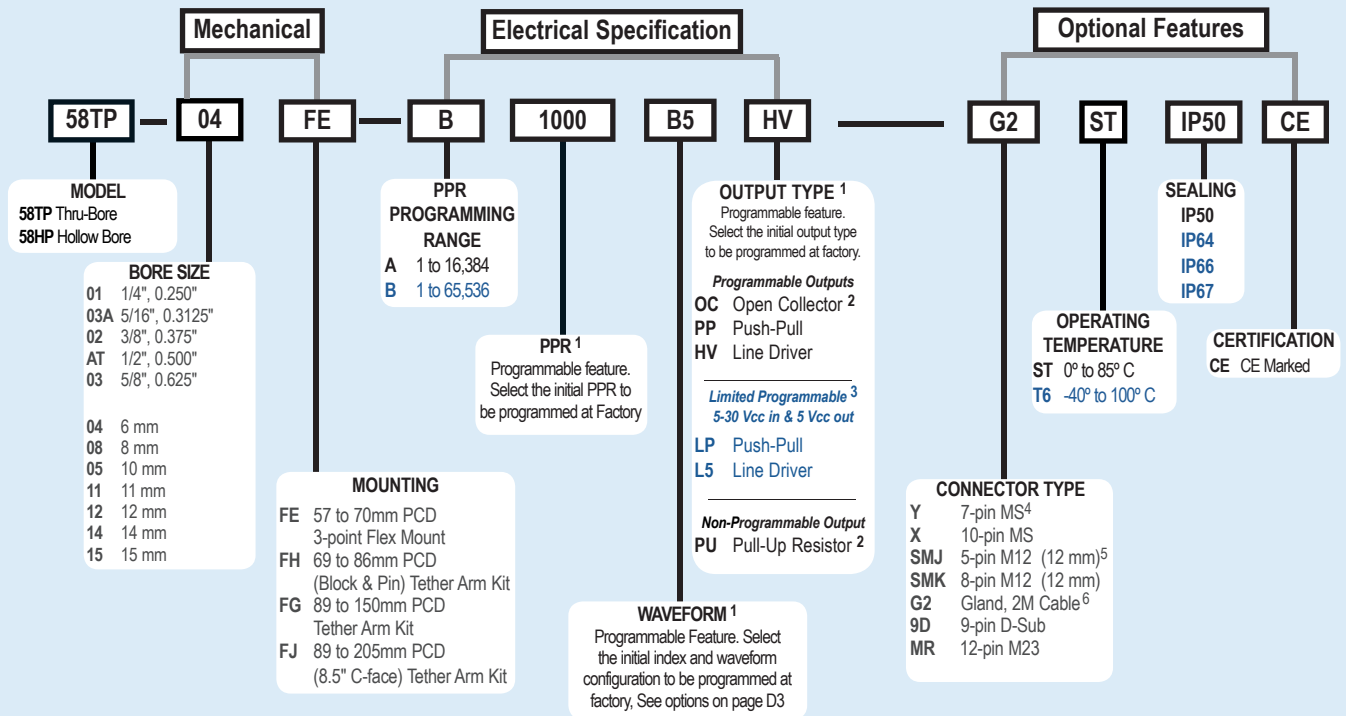
The Model 58TP Programmable 58 mm thru-bore encoder is specifically designed for the challenges of an industrial environment. Its advanced set of electronics allow the encoder to be programmed to meet your exact application needs. Using BEPC's optional programming module, users may select the output type, 32 different waveforms, and any resolution from 1 to 65,536 PPR – that's 262,144 counts using 4x quadrature counting. These programming features allow a single encoder to be configured for multiple applications, enabling one encoder to replace many different part numbers – and that provides cost savings on inventory and downtime replacement. The 58TP can also be configured and shipped with specs pre-programmed, with no on-site programming needed.

## Common Applications

Motor Control, Conveyors, Elevator Controls, Machine Control, Food Processing, Process Control, Robotics, Material Handling, Textile Machines and all types of Motion Control Feedback

## Model 58TP Ordering Guide

Blue type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details.



For specification assistance call  
Customer Service at  
**+44 (0)1978 262100**

### NOTES:

- 1 Programmable feature using Field Programming Software, USB Programming Module, and Interface Cable (See page D4).
- 2 Open Collector (OC) and Pull-Up Resistor (PU) outputs not recommended for PPR > 8192 and/or frequencies > 150 KHz.
- 3 If ordered with initial output type of either L5 or LP, encoder cannot be programmed to OC, PP, or HV output types.
- 4 7-pin MS Connector does not provide Index Pulse Z when selected output is Line Driver (HV or L5).
- 5 5-pin M12 Connectors only available with Pull-Up, Open Collector, and Push-Pull output types.
- 6 For non-standard metric cable lengths enter 'G' plus cable length expressed in meters. Example: G6 = 6 meters of cable. Frequency above 300 kHz standard cable length only.

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## Model 58TP Specifications

### Electrical

Input Voltage.....4.75 to 30 Vcc max. See Output Types for limitations

Input Current.....100 mA max with no output load (65 mA typical)

Output Format.....Incremental, Programmable. See Waveforms on page 3 for options.

Output Types.....**Line Driver\* (HV)** – 20 mA max per channel, max freq 1.0 MHz, 5 Vcc max at 100° C or 24 VDC max at 85° C.  
**Line Driver\* (L5)** – 5-30 Vcc in/5 Vcc out, 20 mA max per channel, max freq 2.7 MHz, 5 VDC max at 100° C.  
**Push-Pull (PP)** – 20 mA max per channel, max frequency 1.0 MHz, 5 Vcc max at 100° C or 24 Vcc max at 85° C.  
**Push-Pull (LP)** – 5-30 Vcc in/5 Vcc out, 20 mA max per channel, max frequency 2.7 MHz, 5 Vcc max at 100° C.  
**Open Collector (OC)** – 100 mA max per channel, 200 KHz max freq recommended  
**Pull-Up (PU)** – 2.2K ohm internal resistors, 100 mA max per channel, 150 KHz max freq recommended, max temp 85° C at > 24 Vcc  
 \*Meets RS 422 at 5 Vcc supply

Index.....Once per revolution, programmable. BEPC standard is 180° gated to output A (waveform B5). See Waveform Diagrams for additional options.

Index Teach.....Index location adjustable via programming interface.

Max Frequency.....2.7 MHz subject to RPM restrictions for high resolution (PPR):  
 5000 RPM max for PPR 16385 to 32768 and 2500 RPM max for PPR 32769 to 65536  
 NOTE: Use 5 Vcc Line Driver (L5 or HV output type) to obtain high frequencies.

Electrical Protection.....Overvoltage, reverse voltage, and output short circuit protected. NOTE: Sustained over or reverse voltage may result in permanent damage.

CE/EMC.....Immunity tested per EN 61000-6-2:2005  
 Emission tested per EN 61000-6-4:2007 + A1: 2011

Rise Time.....Less than 1 microsecond

Accuracy.....Better than 0.013° or 47 arc-sec from true position

Diagnostic.....LED located on encoder housing and error report available via programming Interface.

### Mechanical

Max Shaft Speed.....6000 RPM. Higher shaft speeds may be achievable, contact Customer Service.

Shaft Material.....303 Stainless Steel

Shaft Rotation.....Bi-directional

Bore Tolerance.....-0.0000/+0.0254 mm

User Shaft Tolerances

Radial Runout.....0.012 max

Axial Endplay.....±0.762 max

Starting Torque.....IP50 sealing: 2.118 X 10<sup>-2</sup> Nm typical

IP64 sealing: 2.824 X 10<sup>-2</sup> Nm typical

IP66 or IP67 sealing: 4.943 X 10<sup>-2</sup> Nm typical

Housing.....Black non-corrosive finish

Weight.....283 grams typical

### Environmental

Operating Temp.....-20° to 85° C for standard models

-40° to 100° C for extended temp option

NOTE: For IP66 or IP67 sealing derate max temperature of 100° C

by 4° C for every 1000 RPM above 2000 RPM.

Humidity.....95% RH non-condensing

Vibration.....10 to 2000 Hz A 20g (International

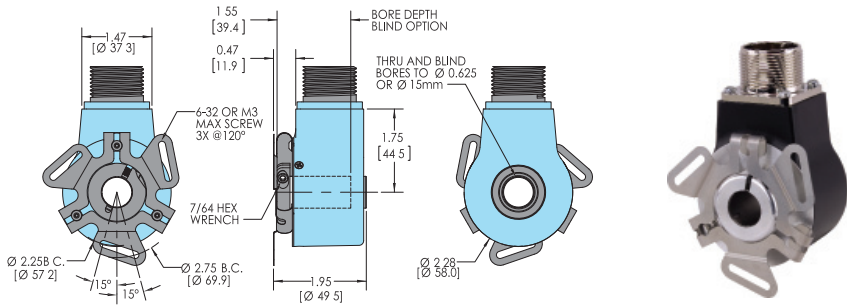
Standard IEC 60068-2-6)

Shock.....80g @ 6 ms Duration (International

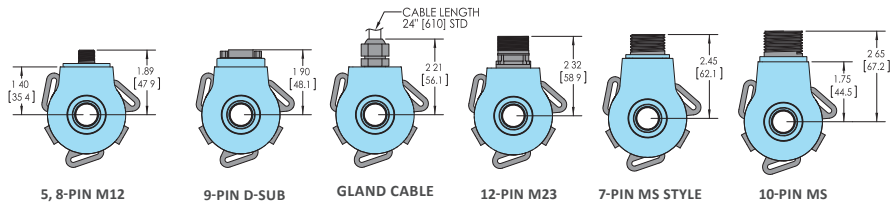
Standard IEC 60068-2-27)

Sealing.....IP50 standard; IP64, IP66 or IP67 optional

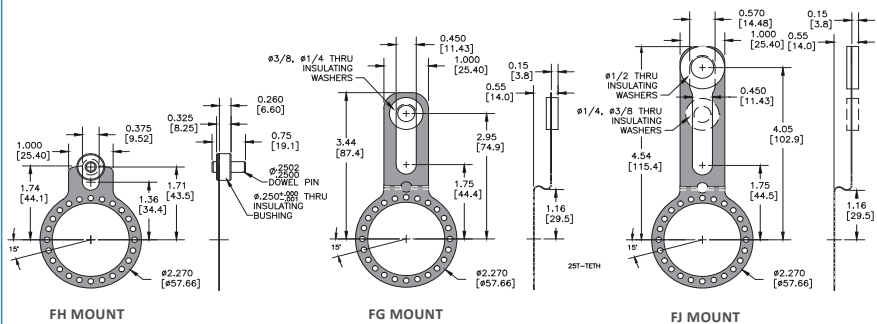
## Model 58TP / 58HP 3 Point Flex Mount (FE)



## Model 58TP / 58HP Connector Options



## Model 58TP / 58HP Mounting Options



All dimensions are in Imperial & Metric with a tolerance of 0.005" (±0.127mm) or 0.01" (±0.254) unless otherwise specified  
 Metric dimensions are in brackets (mm)

### ENCODER WIRING TABLE

(For BEPC-supplied mating cables, wiring table is provided with cable.)

Function	Gland Cable† Wire Color	5-pin M12**	8-pin M12**	10-pin MS	7-pin MS HV,L5	7-pin MS PU,PP,OC,LP	9-pin D-sub	12-pin M23
0 Volts	Black	3	7	F	F	F	9	10
+VCC	Red	1	2	D	D	D	1	12
A	White	4	1	A	A	A	2	5
A'	Brown	--	3	H	C	--	3	6
B	Blue	2	4	B	B	B	4	8
B'	Violet	--	5	I	E	--	5	1
Z	Orange	5	6	C	--	C	6	3
Z'	Yellow	--	8	J	--	--	7	4
Case	Green	--	--	G	G	G	8	9
Shield	Bare*	--	--	--	--	--	--	--
+VCC Sense	--	--	--	--	--	--	--	2
0 Volts Sense	--	--	--	--	--	--	--	11

\*CE: Cable shield (bare wire) is connected to internal case.

†Standard cable is 24 AWG conductors with foil and braid shield.

\*\*CE: Use cable cordset with shield connected to M12 connector coupling nut.

Programmable Incremental Thru-Bore Encoders

# Model 58TP - Programmable Incremental Thru-Bore Encoder

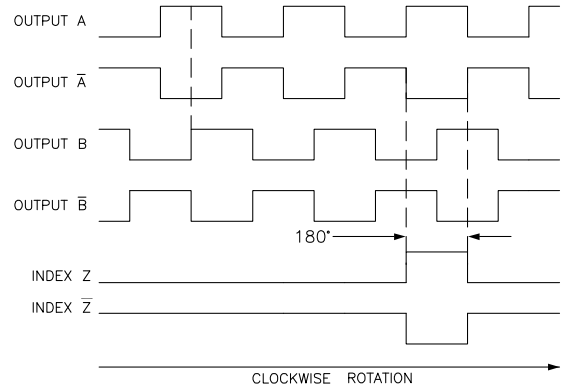


Programmable Incremental Thru-Bore Encoders



An BEPC Thru-Bore Encoder in a common application, mounted on a motor with an FJ Flex Mount

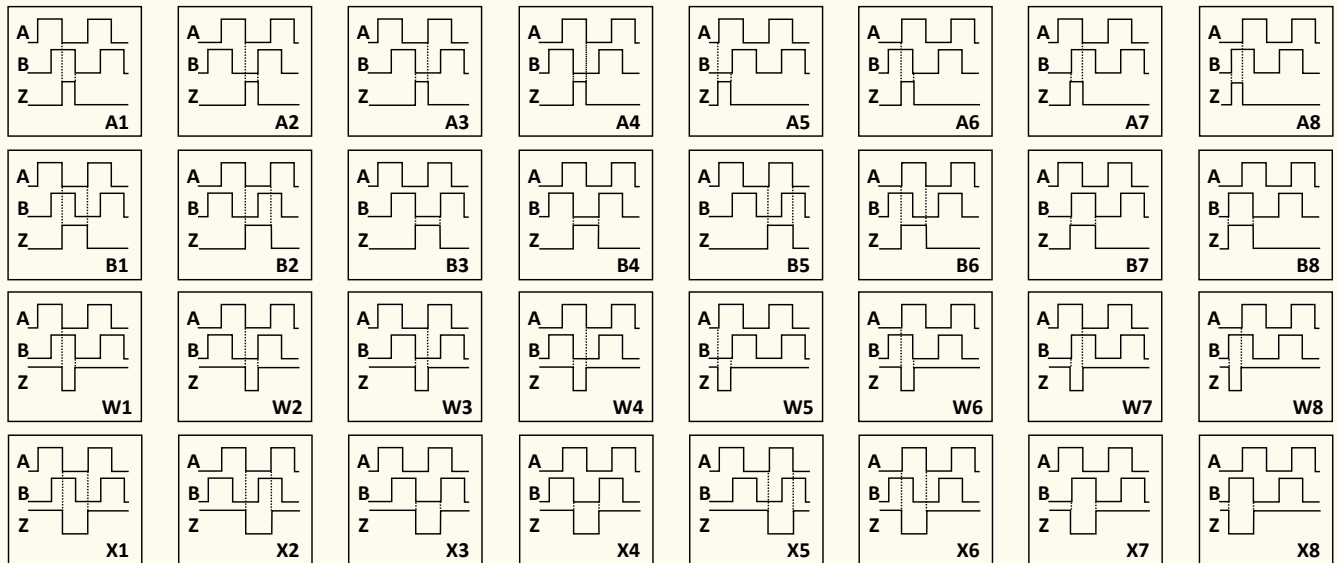
## BEPC Standard Waveform (B5)



NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES.  
NOTE: COMPLEMENTARY SIGNALS (A, B & Z) APPLY TO LINE DRIVER (HV & L5) OUTPUTS ONLY.

## WAVEFORMS

Choose any of these waveforms using the Field Programming Software, USB programming module, and interface cable (see previous page)



Odd numbers - A leads B  
Even numbers - B leads A

A and B - High Going Index  
W and X - Low Going Index

A and W - 90 Degree Index  
B and X - 180 Degree Index

# Field Programming Software USB Stick and Cables.



## FIELD PROGRAMMING SOFTWARE

Available on USB drive or by download.

System requirements:

Windows 7 or higher operating systems

USB 2.0 port required for USB Programming Module (see below)

With the easy to use, point-and-click interface, programming is quick and straight-forward. The number of possible configurations makes this Size 58 programmable thru-bore or hollow bore encoder incredibly versatile. Anywhere a Size 58 thru-bore or hollow bore encoder goes, the Model 58TP can get the job done.

✓ **PPR – any resolution from 1 to 65,536**

That's 262,144 counts using 4x quadrature counting

✓ **Waveform – choose from 32 options**

See previous page for waveform choices

✓ **Output type – 6 different output types**

All output types are 5V to 30V in/out except L5 Line Driver and LP Push-Pull output types, which are 5-30Vcc in and 5Vcc out.



Programmable  
Incremental Thru-Bore Encoders

## USB PROGRAMMING KIT

Kit includes software, USB Programming Module, and 2-meter Interface Cable with specified connector.

See Accessories for individual Interface Cables.

CONNECTOR TYPE	ITEM #
7-pin MS	PR1-001-07
10-pin MS	PR1-001-10
5-pin M12	PR1-001-J
8-pin M12	PR1-001-K
9-pin D-Sub	PR1-001-09
Gland Cable	PR1-001-G
12-pin M23	PR1-001-R



USB Programming  
Module



Interface Cable



Model 58TP with SE Flex Mount  
assembled with programming  
accessories

For specification assistance call Customer Service at +44  
(0)1978 262100



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