MODEL 58TP - PROGRAMMABLE INCREMENTAL THRU-BORE ENCODER

Ø58 mm

FEATURES

Programmable resolution from 1 to 65,536 CPR
Programmable output type and waveform
Programmable with USB module or factory configured when ordered
58 mm thru-bore or blind hollow bore
Standard and metric bore sizes up to 5/8" and 15 mm
Flexible mounting options
Sealing to IP67

The Model 58TP programmable 58 mm Accu-CoderPro® 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 EPC's optional programming module, users may select the output type, 32 different waveforms, and any resolution from 1 to 65,536 CPR – 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, providing cost savings on inventory and down-time replacement. The Model 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 feedback.

MODEL 58TP ORDERING GUIDE

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

Mechanical | **Electrical** | **Optional Features** - *Leave blank for standard options*

58TP	–	02	SE	–	B	1000	B5	OC	–	S	–	MK	–			
														-20° to 85° C Std	IP50 Std	None Std

MODEL
58TP Thru-bore
58HP Blind hollow bore

BORE SIZE
01 1/4", 0.250"
03 5/16", 0.3125"
02 3/8", 0.375"
05 1/2", 0.500"
11 5/8", 0.625"
04 6 mm
14 8 mm
10 10 mm
09 11 mm
12 12 mm
13 14 mm
15 15 mm

MOUNTING
SE 2.25" to 2.75" B.C. 3-Point Flex Mount
SH 2.72" to 3.42" B.C. Block & Pin Flex Mount
SG 3.50" to 5.90" B.C. (4.5" C-Face) Flex Mount
SJ 3.50" to 8.10" B.C. (8.5" C-Face) Flex Mount

CPR PROGRAMMING RANGE
A 1 to 16,384
B 1 to 65,536

CPR[1]
Programmable feature. Select the initial CPR to be programmed at the factory.

WAVEFORM[1]
Programmable feature. Select the initial index and waveform configuration to be programmed at factory.

OUTPUT TYPE
Programmable feature. Select the initial output type to be programmed at factory.

Programmable outputs
OC Open Collector[2]
PP Push-Pull
HV Line Driver

Limited programmable[3]
5-30 VDC in & 5 VDC out
H5 Line Driver
P5 Push-Pull

Non-programmable output
PU Pull-Up Resistor[2]

CONNECTOR TYPE[6]
MY 7-pin MS[2]
MX 10-pin MS
MJ 5-pin M12 (12 mm)[5]
MK 8-pin M12 (12 mm)
F00 Gland, 24" cable[6]
M00 Gland, 2 m cable[6]
9D 9-pin D-sub
MR 12-pin M23
MZ 8-pin M12 (12 mm) optional wiring

OPERATING TEMPERATURE
-20° to 85° C (Std)
T6 -40° to 100° C

SEALING
IP50 (Std)
S1 IP64
S3 IP66
S4 IP67

CERTIFICATION
None (Std)
CE CE Marked[7]

NOTES:

1 Programmable feature using Field Programming Software, USB Programming Module, and Interface Cable. For more information, see EPC Field Programming Software User Guide at encoder.com.

2 Open Collector (OC) and Pull-Up Resistor (PU) outputs not recommended for CPR > 8192 and/or frequencies > 150 KHz.

3 If ordered with initial output type of either H5 or P5, 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 H5).

5 5-pin M12 Connectors only available with Pull-Up, Open Collector, and Push-Pull output types.

6 For non-standard English cable lengths enter 'F' plus cable length expressed in feet. Example: F06 = 6 feet of cable. For non-standard metric cable lengths enter 'M' plus cable length expressed in meters. Example: M06 = 6 meters of cable. Frequency above 300 kHz standard cable lengths only.

7 Please refer to Technical Bulletin TB-100: When to Choose the CE Mark at encoder.com.

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MODEL 58TP - PROGRAMMABLE INCREMENTAL THRU-BORE ENCODER

MODEL 58TP SPECIFICATIONS

Electrical

Input Voltage ..... 4.75 to 30 VDC 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 following page for options.

Output Types

- Line Driver* (HV) ..... 20 mA max per channel, max freq 1.0 MHz, 5 VDC max at 100° C or 24 VDC max at 85° C.
- Line Driver* (H5) ..... 5-30 VDC in/5 VDC 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 VDC max at 100° C or 24 VDC max at 85° C.
- Push-Pull (P5) ..... 5-30 VDC in/5 VDC out, 20 mA max per channel, max frequency 2.7 MHz, 5 VDC 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 VDC.

*Meets RS 422 at 5 VDC supply

Index ..... Once per revolution, programmable. EPC 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 (CPR):
5000 RPM max for CPR 16385 to 32768 and 2500 RPM max for CPR 32769 to 65536

NOTE: Use 5 VDC Line Driver (H5 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 0.015° or 54 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"/+0.001"

User Shaft Tolerances

- Radial Runout ..... 0.005" max
- Axial Endplay ..... ±0.030 max

Starting Torque ..... IP50 sealing: 3.0 oz-in typical
IP64 sealing: 4.0 oz-in typical
IP66 or IP67 sealing: 7.0 oz-in typical

Moment of Inertia ..... 5.5 x 10^{-4} oz-in-sec^2

Housing ..... Black noncorrosive finish

Weight ..... 10 oz.

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

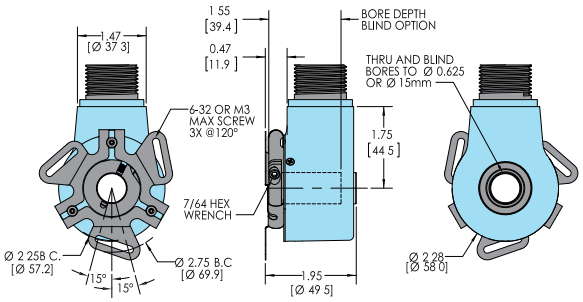
Vibration ..... 10 to 2000 Hz A 20g (International Standard IEC 60068-2-6)

Shock ..... 80g @ 6 ms Duration (International Standard IEC 60068-2-27)

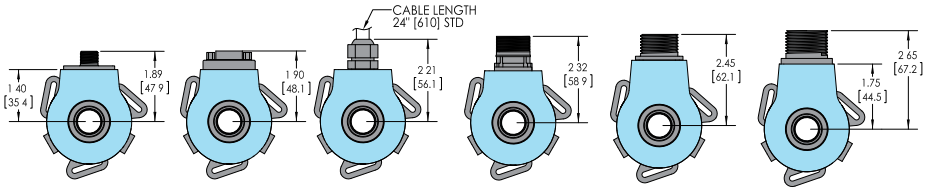
Sealing ..... IP50 standard; IP64, IP66 or IP67 optional

All dimensions are in inches with a tolerance of ±0.005" or ±0.01" unless otherwise specified. Metric dimensions are given in brackets [mm].

MODEL 58TP/HP 3-POINT FLEX MOUNT

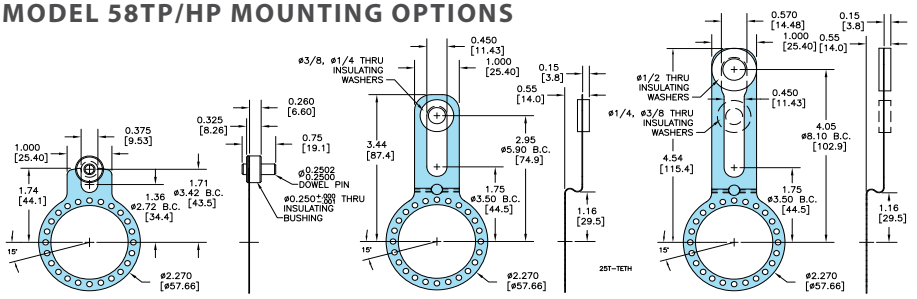


MODEL 58TP/HP CONNECTOR OPTIONS



5-Pin, 8-Pin M12 | *9-Pin D-sub* | *Gland cable* | *12-Pin M23* | *7-Pin MS* | *10-Pin MS*

MODEL 58TP/HP MOUNTING OPTIONS



SH Mount | *SG Mount* | *SJ Mount*

WIRING TABLE

For EPC-supplied mating cables, refer to wiring table provided with cable. Trim back and insulate unused wires. Note: Color chart is for Gland Cables only.

Function	5-pin M12*	8-pin M12*	10-pin MS	7-pin MS HV, H5	7-pin MS PU, PP, OC, P5	9-pin D-sub	12-pin M23	8-pin M12 optional wiring*	Gland Cable** Wire Color
Com	3	7	F	F	F	9	10	1	Black
+VDC	1	2	D	D	D	1	12	2	Red
A	4	1	A	A	A	2	5	3	White
A'	--	3	H	C	--	3	6	4	Brown
B	2	4	B	B	B	4	8	5	Blue
B'	--	5	I	E	--	5	1	6	Violet
Z	5	6	C	--	C	6	3	7	Orange
Z'	--	8	J	--	--	7	4	8	Yellow
Case	--	--	G	G	G	8	9	--	Green
Shield	--	--	--	--	--	--	--	--	Bare***
+VDC Sense	--	--	--	--	--	--	2	--	--
Com Sense	--	--	--	--	--	--	11	--	--

*CE Option: Use cable cord set with shield connected to M12 connector coupling nut.
**Standard cable is 24 AWG conductors with foil and braid shield.
*** CE Option: Cable shield (bare wire) is connected to internal case.

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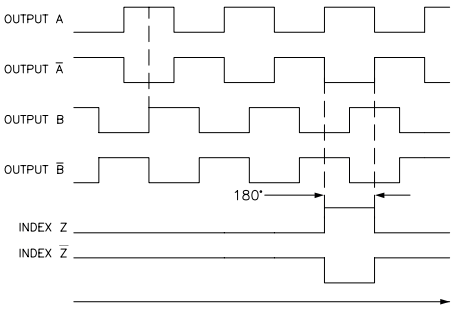
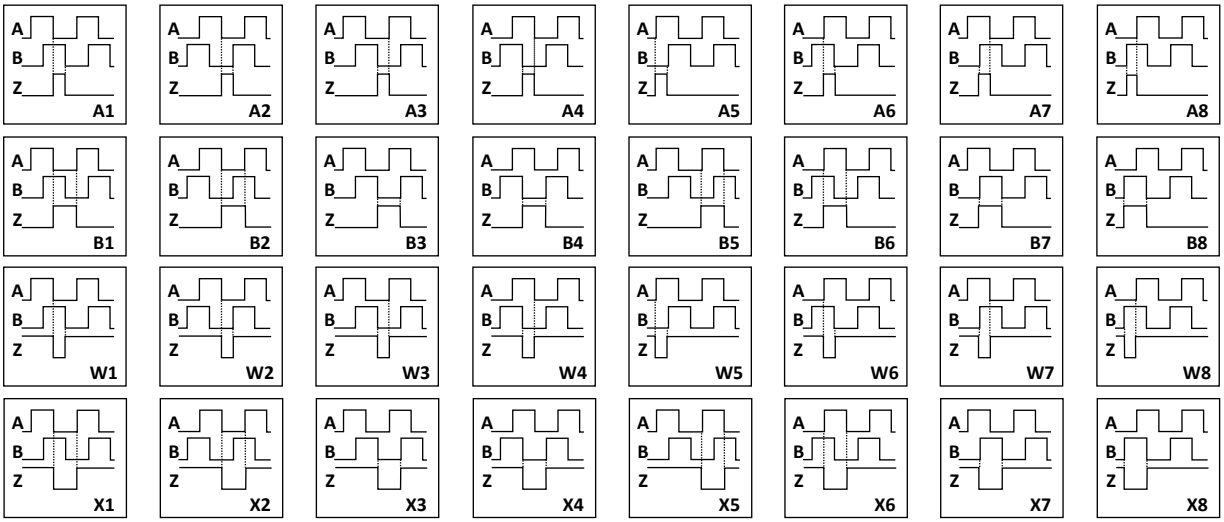
WAVEFORMS

EPC standard waveform (B5). Additional waveforms available. See diagram. Choose any waveform using the Field Programming Software, USB programming module, and interface cable. See USB Programming Kit below.



CLOCKWISE ROTATION AS VIEWED FROM THE MOUNTING FACE
NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES. Complementary signals $\overline{A}$, $\overline{B}$, $\overline{Z}$ apply to Line Driver (HV, H5) outputs only.



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

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

USB PROGRAMMING KIT

Field Programming Software is available on USB drive or by download at encoder.com. System requirements:

- Windows 7 or higher operating system
- USB 2.0 port for USB Programming Module

Easily program:

- **CPR** – Any resolution from 1 to 65,536 (262,144 counts using 4x quadrature counting).
- **Waveform** – Choose from 32 options. See diagram above.
- **Output type** – Choose from 6 output types. All output types are 5V to 30V in/out except H5 Line Driver and P5 Push-Pull, which are 5-30VDC in and 5VDC out. See Ordering Guide.

Kit includes Field Programming Software, USB Programming Module, and 2 meter Interface Cable with specified connector. See Accessories for individual interface cables at encoder.com.

Connector Type	Stock #
7-pin MS	PR1-001-07
10-pin MS	PR1-001-10
5-pin M12	PR1-001-J
8-pin M12 standard wiring	PR1-001-K
9-pin D-sub	PR1-001-09
Gland Cable	PR1-001-G
12-pin M23	PR1-001-R
8-pin M12 optional wiring	PR1-001-Z

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MODEL 58TP - PROGRAMMABLE INCREMENTAL THRU-BORE ENCODER

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.

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)

✓ CPR – 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 H5 Line Driver and P5 Push-Pull output types, which are 5-30VDC in and 5VDC out

USB PROGRAMMING KIT

Kit includes Field Programming Software, USB Programming Module, and 2-meter Interface Cable with specified connector. See Accessories for individual Interface Cables.

Model 58TP with SE Flex Mount assembled with programming accessories

Interface Cable
USB Programming Module (black)
USB drive for Field Programming Software (blue)

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

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