Model 776 Slim
Large Thru-Bore Encoder

BRITISH ENCODER PRODUCTS COMPANY

Features
- Slim Profile - Only 34.54mm In Depth
- Thru-Bore Design For Easy Mounting
- Incorporates Opto-ASIC Technology
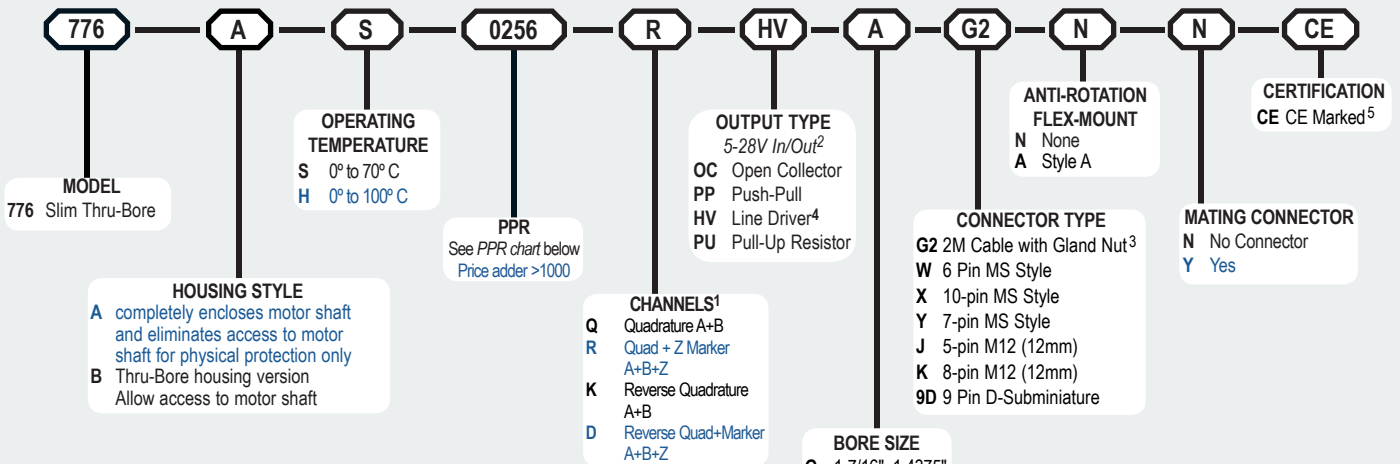- Resolutions to 4096
- Bore Options to 1.875"

The Thru-Bore Series Model 776 encoder is designed to fit directly on either a motor or other shaft where position, direction, or velocity information is needed. The advanced Opto-ASIC based electronics provide the superior noise immunity necessary in many industrial applications. The Model 776 conveniently features a clamp type mount for fast and easy mounting over a large range of shaft sizes. An optional anti-rotation flex mount maintains housing stability.
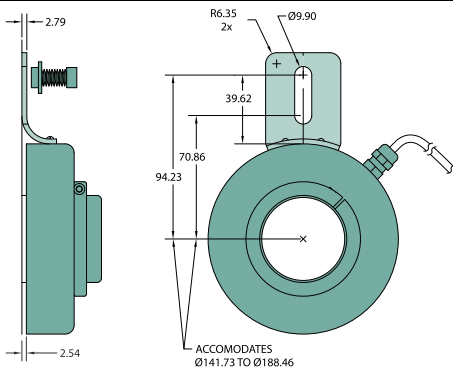
Common Applications
Motor Feedback, Velocity & Position Control, Food Processing, Robotics, Material Handling

Ø109.22 mm

Model 776 Ordering Guide

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

| 776 | A | S | 0256 | R | HV | A | G2 | N | N | CE |

MODEL
776 Slim Thru-Bore

HOUSING STYLE
A completely encloses motor shaft and eliminates access to motor shaft for physical protection only
B Thru-Bore housing version Allow access to motor shaft

OPERATING TEMPERATURE
S 0º to 70º C
H 0º to 100º C

PPR
See PPR chart below
Price adder >1000

CHANNELS[1]
Q Quadrature A+B
R Quad + Z Marker A+B+Z
K Reverse Quadrature A+B
D Reverse Quad+Marker A+B+Z

OUTPUT TYPE
5-28V In/Out[2]
OC Open Collector
PP Push-Pull
HV Line Driver[4]
PU Pull-Up Resistor

BORE SIZE
G 1-7/16", 1.4375"
C 1-1/2", 1.500"
D 1-5/8", 1.625"
F 1-3/4", 1.750"
E 1-7/8", 1.875"
L 35 mm
I 38 mm
J 40 mm
M 42 mm
N 43 mm

CONNECTOR TYPE
G2 2M Cable with Gland Nut[3]
W 6 Pin MS Style
X 10-pin MS Style
Y 7-pin MS Style
J 5-pin M12 (12mm)
K 8-pin M12 (12mm)
9D 9 Pin D-Subminiature

ANTI-ROTATION FLEX-MOUNT
N None
A Style A

MATING CONNECTOR
N No Connector
Y Yes

CERTIFICATION
CE CE Marked[5]

Model 776 Shown with Anti-Rotation flex-Mount

2.79
R6.35 2x
Ø9.90
39.62
70.86
94.23
2.54
ACCOMODATES Ø141.73 TO Ø188.46

Model 776 PPR Options

0060	0100	0120	0240	0250	0256
0500	0512	1000	1024	2048	2500
4096					

Contact Customer Service for other disk resolutions; not all disk resolutions available with all output types

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

NOTES:
1 Contact Customer Service for index/Marker gating options.
2 5 to 24 VCC max for high temperature option.
3 For non-standard cable lengths, Please contact the sales office.
4 Not available with 5-pin M12 or 6-pin MS connector. Available with 7-pin MS connector only without Index Z.
5 For 4096ppr - Please be aware that CE is not available if choosing High Temp option and over 2 Metre Cable Length.

Rev: B

Model 776 Specifications

Electrical

Input Voltage............4.75 to 28 VCC max for temperatures up to 70° C
4.75 to 24 VCC for temperatures between 70° C to 100° C

Input Current............100 mA max with no output load

Input Ripple.............100 mV peak-to-peak at 0 to100 kHz

Output Format..........Incremental- Two square waves in quadrature with channel A leading B for clockwise shaft rotation, as viewed from the mounting face. See *Waveform Diagrams* below.

Output Types...........Open Collector- 100 mA max per channel
Pull-Up- 100 mA max per channel
Push-Pull- 20 mA max per channel
Line Driver- 20 mA max per channel (Meets RS 422 at 5 VDC supply)

Index........................Once per revolution.
0513 to 4096 PPR: Gated to output A
0001 to 0512 PPR: Ungated
See *Waveform Diagrams* below.

Max Frequency.........200 kHz

Noise Immunity........Tested to BS EN61000-4-2; IEC801-3; BS EN61000-4-4; DDENV 50141; DDENV 50204; BS EN55022 (with European compliance option); BS EN61000-6-2; BS EN50081-2

Quadrature..............67.5° electrical or better is typical, 54°
Edge Separation   electrical minimum at temperatures > 99° C

Rise Time.................Less than 1 microsecond

Mechanical

Max Shaft Speed......3500 RPM. Higher shaft speeds may be achievable, contact Customer Service.

Bore Size.................1.500", 1.625", 1.750", 1.875", 35 mm, 38 mm, 40 mm, 42 mm, 43 mm

User Shaft Tolerances
Radial Runout.......0.15mm
Axial Endplay........±0.70mm with appropriate flex mount

Electrical Conn.........Gland nut with 2M cable (foil and braid shield, 24 AWG conductors), 6-, 7-, or 10-pin MS Style, 5- or 8-pin M12 (12 mm), or 9-pin D-sub- miniature

Housing.....................All metal construction

Mounting...................Thru-bore with single-screw clamp mount

Weight.......................450 grams with gland nut or D-sub connector option / 680 grams with MS connector option
Note: All weights typical

Environmental

Operating Temp........0° to 70° C for standard models
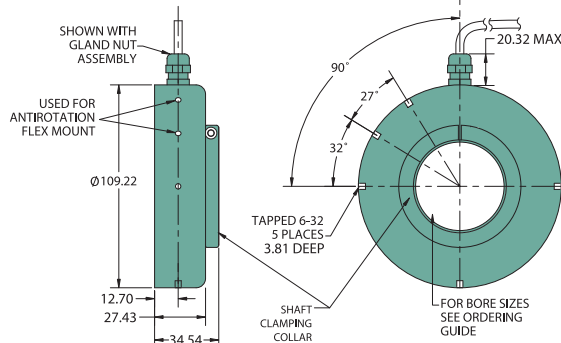0° to 100° C for high temperature option

Storage Temp...........-25° to 100° C

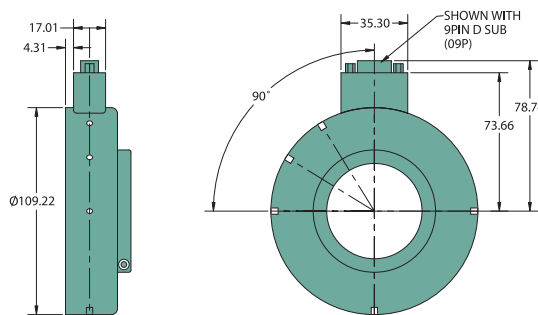Humidity....................98% RH non-condensing

Vibration...................10 g @ 58 to 500 Hz

Shock........................50 g @ 11 ms duration

Sealing......................IP50

Model 776 With Gland Nut Cable (G2)

SHOWN WITH GLAND NUT ASSEMBLY
USED FOR ANTIROTATION FLEX MOUNT
Ø109.22
12.70
27.43
34.54
20.32 MAX
90°
27°
32°
TAPPED 6-32 5 PLACES 3.81 DEEP
SHAFT CLAMPING COLLAR
FOR BORE SIZES SEE ORDERING GUIDE

Model 776 With 9-Pin D-Sub Connector (9D)

17.01
4.31
Ø109.22
35.30
SHOWN WITH 9PIN D SUB (09P)
90°
78.74
73.66

Model 776 Extended Housing (W, X, Y, J, K)

HOLES USED FOR ANTIROTATION FLEX MOUNT
35.56
34.54
38.10
FOR ADDITIONAL CONNECTOR STYLES SEE ORDERING GUIDE
35.56
SEE TABLE FOR CONNECTOR HEIGHTS
Ø109.22
90°
27°
32°
TAPPED 6-32 5 PLACES 3.81 DEEP
EXTERNAL CLAMPING COLLAR
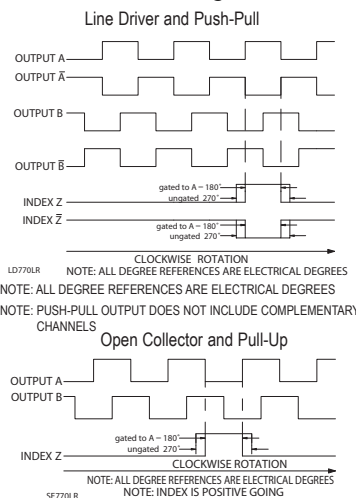FOR BORE SIZES SEE ORDER GUIDE
76.20
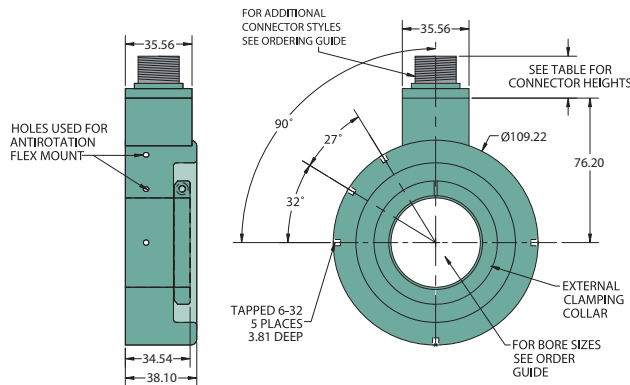
CONNECTOR TYPE	HEIGHT
6- or 7-PIN MS	17.00
10-PIN MS	22.86
5- or 8-PIN M12	12.70

All dimensions are in mm with a tolerance of ±0.254 unless otherwise specified.

Waveform Diagrams

Line Driver and Push-Pull

OUTPUT A
OUTPUT Ā
OUTPUT B
OUTPUT B̄
INDEX Z
INDEX Z̄
gated to A – 180° ungated 270°
gated to A – 180° ungated 270°
CLOCKWISE ROTATION
LD770LR
NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES
NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES
NOTE: PUSH-PULL OUTPUT DOES NOT INCLUDE COMPLEMENTARY CHANNELS

Open Collector and Pull-Up

OUTPUT A
OUTPUT B
INDEX Z
gated to A – 180° ungated 270°
CLOCKWISE ROTATION
SE770LR
NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES
NOTE: INDEX IS POSITIVE GOING

Wiring Table

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

*CE: Cable shield (bare wire) is connected to internal case.
†Standard cable is 24 AWG conductors with foil and braid shield.
**CE: Shield is connected to connector case unless otherwise specified.

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