

# Model 745 Heavy Duty 90mm Encoder



## Features

- European 90/80/40mm Configuration
- Up to 30,000 PPR
- Hohner 3000/4000 Direct Replacement
- IP64 Sealing Available

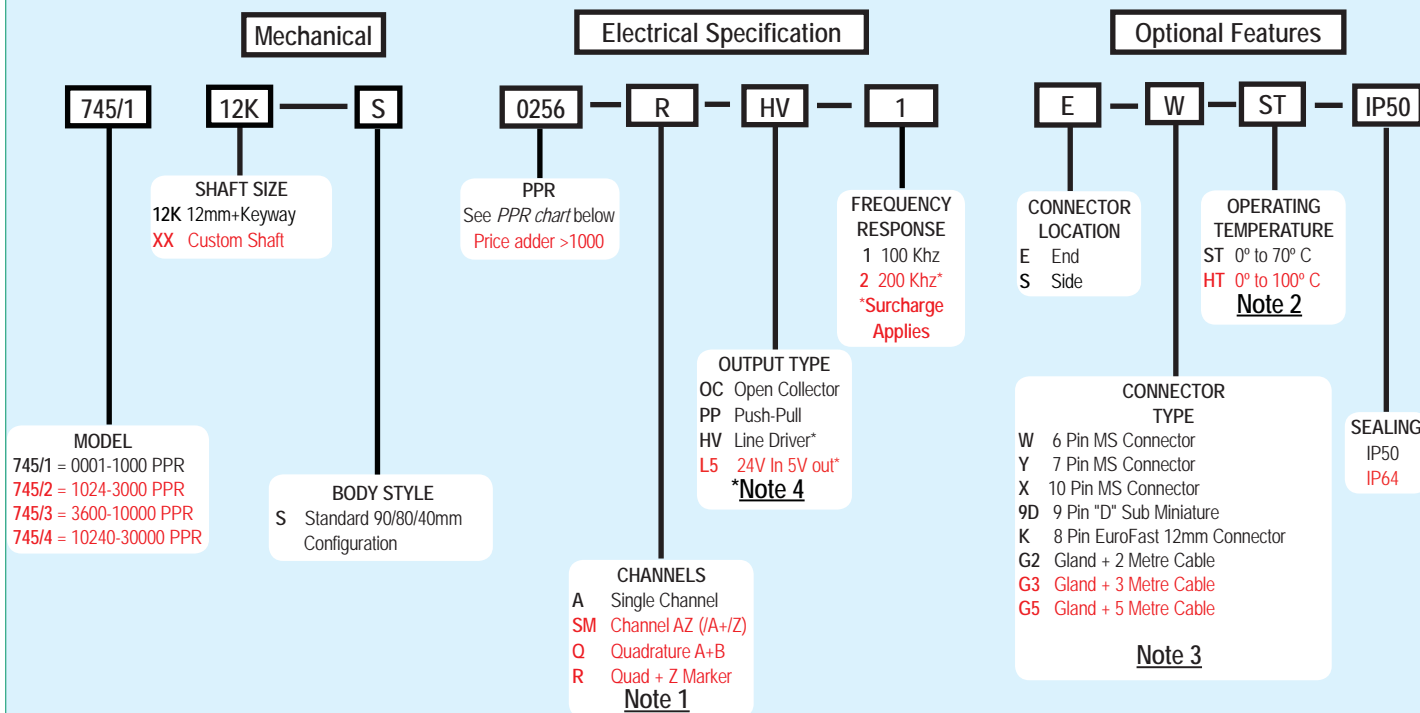
Due to some major technology enhancements, the 745 encoder is now available from 0001 PPR thru to 30000 PPR. This encoder is a direct replacement for the popular 90/80/40 spigot style encoder and may be ordered with a variety of output circuits, shaft sizes, and connector styles. Using the same Opto-Asic technology as most of our encoder range, you have the advantage of high tech signal generation, and a rugged mechanical assembly.

## Common Applications

Motion Control Feedback, Conveyors, Elevator Controls, Machine Control, Food Processing, Process Control, Robotics, Material Handling, Textile Machines

## Model 745 Ordering Guide

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



## Model 745 PPR Options

|                     |                     |                     |                     |                     |                     |                     |                     |                     |
|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 0001*               | 0002*               | 0004*               | 0005*               | 0006*               | 0007*               | 0008*               | 0010*               | 0011*               |
| 0012*               | 0014*               | 0020                | 0021*               | 0024*               | 0025*               | 0028*               | 0030*               | 0032*               |
| 0033*               | 0034*               | 0035*               | 0038*               | 0040*               | 0042*               | 0045*               | 0050*               | 0060                |
| 0064*               | 0100                | 0120                | 0125                | 0128*               | 0144*               | 0150*               | 0160*               | 0200                |
| 0240*               | 0250                | 0254*               | 0256*               | 0300                | 0333*               | 0360                | 0400                | 0500                |
| 0512                | 0600                | 0625*               | 0635                | 0665*               | 0720                | 0768*               | 0800                | 0889                |
| 0900*               | 1000                | 1024                | 1200 <sup>a</sup>   | 1201 <sup>a*</sup>  | 1203 <sup>a*</sup>  | 1204 <sup>a*</sup>  | 1250 <sup>a</sup>   | 1270 <sup>a</sup>   |
| 1440                | 1500                | 1800                | 2000                | 2048                | 2400 <sup>a</sup>   | 2500                | 2540 <sup>a</sup>   | 2880 <sup>a</sup>   |
| 3000 <sup>a</sup>   | 3600 <sup>a</sup>   | 4000 <sup>a</sup>   | 4096 <sup>a</sup>   | 5000 <sup>a</sup>   | 6000 <sup>a</sup>   | 7200 <sup>a</sup>   | 7500 <sup>a</sup>   | 9000 <sup>a</sup>   |
| 10,000 <sup>a</sup> | 10,240 <sup>a</sup> | 12,500 <sup>a</sup> | 14,400 <sup>a</sup> | 15,000 <sup>a</sup> | 18,000 <sup>a</sup> | 20,000 <sup>a</sup> | 20,480 <sup>a</sup> | 25,000 <sup>a</sup> |
| 30,000 <sup>a</sup> |                     |                     |                     |                     |                     |                     |                     |                     |

\* Contact Customer Service for High Temperature Option.

<sup>a</sup> High Temperature Option (H) limited to 85° C maximum for these PPR options.

New PPR values are periodically added to those listed. Contact Customer Service to determine all currently available PPR values. Special disk resolutions are available upon request.

A one-time NRE fee may apply.

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

## NOTES:

- 1 Contact Customer Service for index gating options.
- 2 24 VCC max for high temperature option.
- 3 For Non-Standard Cable Lengths Contact the sales office.
- 4 Marker not available with 6-pin or 7-pin MS connector & HV output.

# Model 745 Heavy Duty 90mm Encoder



**BRITISH  
ENCODER**  
PRODUCTS COMPANY



## Model 745 Specifications

### Electrical

|                     |  |
|---------------------|--|
| Input Voltage.....  | 4.75 to 24 VCC max for temperatures up to 70° C  |
| Input Current.....  | 100 mA max with no output load   |
| Input Ripple.....   | 100 mV peak-to-peak at 0 to 100 kHz  |
| Output Format.....  | Incremental- Two square waves in quadrature with channel A leading B for clockwise shaft rotation, as viewed from the encoder mounting face. See <i>Waveform Diagrams</i> below.   |
| Output Types.....   | Open Collector- 50 mA max per channel<br>Push-Pull- 20 mA max per channel<br>Line Driver- 20 mA max per channel (Meets RS 422 at 5 VCC supply)   |
| Index.....          | Occurs once per revolution. The index for units >3000 PPR is 90° gated to Outputs A and B. See <i>Waveform Diagrams</i> below.   |
| Freq Response.....  | Up to 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   |
| Symmetry.....       | 1 to 6000 PPR: 180° (±18°) electrical at 100 kHz output<br>6001 to 20,480 PPR: 180° (±36°) electrical  |
| Quad Phasing.....   | 1 to 6000 PPR: 90° (±22.5°) electrical at 100 kHz output<br>6001 to 20,480 PPR: 90° (±36°) electrical  |
| Min Edge Sep.....   | 1 to 6000 PPR: 67.5° electrical at 100 kHz output<br>6001 to 20,480 PPR: 54° electrical<br>>20,480 PPR: 50° electrical   |
| Rise Time.....      | Less than 1 microsecond  |
| Accuracy.....       | Instrument and Quadrature Error: For 200 to 1999 PPR, 0.017° mechanical (1.0 arc minutes) from one cycle to any other cycle. For 2000 to 3000 PPR, 0.01° mechanical (0.6 arc minutes) from one cycle to any other cycle. Interpolation error (units > 3000 PPR only) within 0.005° mechanical. (Total Optical Encoder Error = Instrument + Quadrature + Interpolation) |

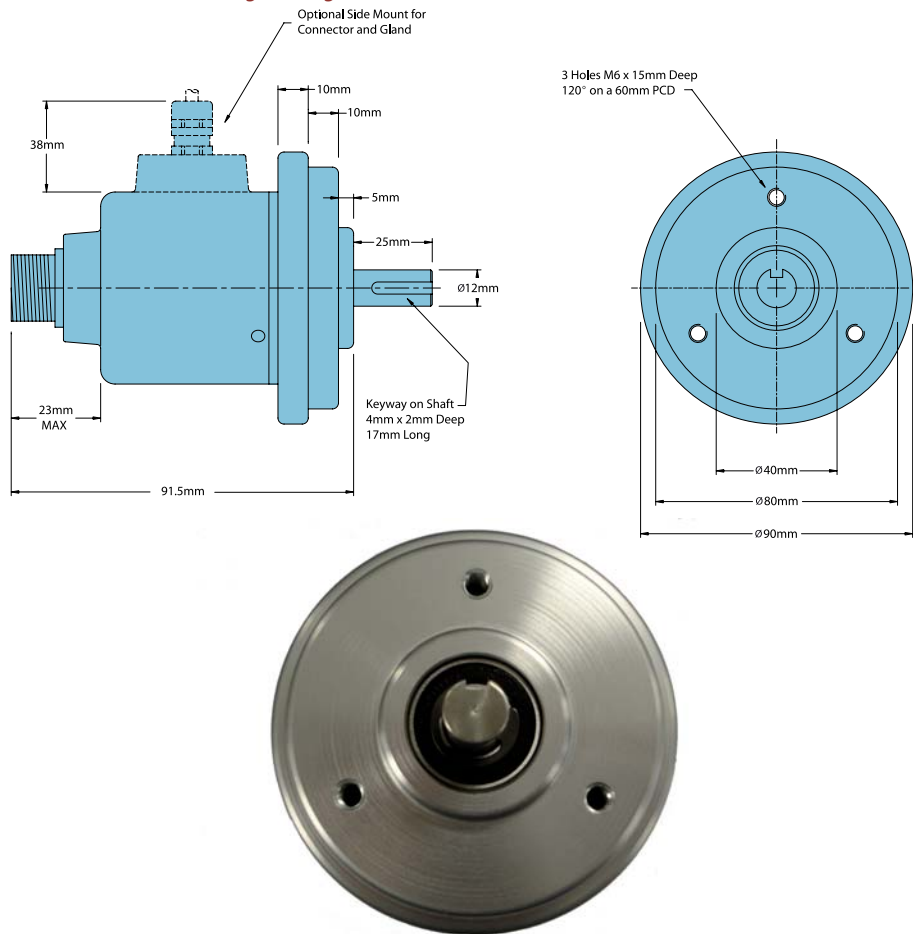
### Mechanical

|                        |   |
|------------------------|---|
| Max Shaft Speed.....   | 6000 RPM. Higher shaft speeds may be achievable, contact Customer Service.  |
| Shaft Size.....        | See order code  |
| Shaft Material.....    | 303 stainless steel   |
| Shaft Rotation.....    | Bi-directional  |
| Radial Shaft Load..... | 120N Operating  |
| Axial Shaft Load.....  | 120N Operating  |
| Starting Torque.....   | 7.0615 x 10 <sup>-3</sup> Nm typical with no seal<br>2.118 x 10 <sup>-2</sup> Nm typical with IP64 shaft seal                             |
| Max Acceleration.....  | 1 x 10 <sup>5</sup> rad/sec <sup>2</sup>  |
| Electrical Conn.....   | 6-, 7-, or 10-pin MS Style, 8-pin M12 (12 mm), 9-pin D-subminiature, or gland with 2M of cable (foil and braid shield, 24 AWG conductors) |
| Housing.....           | Black non-corrosive finish  |
| Bearings.....          | Precision ABEC ball bearings  |
| Mounting.....          | 90/80/40mm, 3 x M6 @ 60mm PCD   |
| Weight.....            | 800 gms typical   |

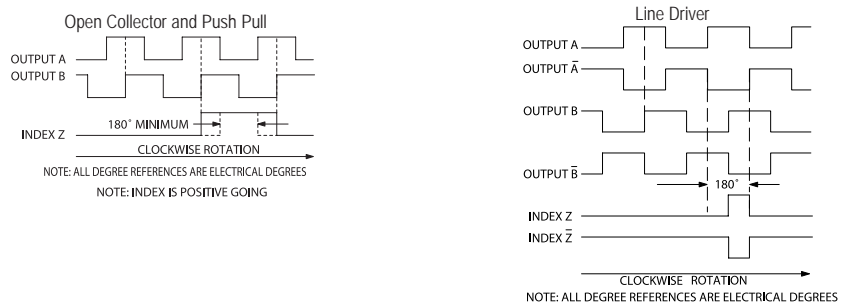
### Environmental

|                     |   |
|---------------------|---|
| Operating Temp..... | 0° to 70° C for standard models<br>0° to 100° C for high temperature option (0° to 85° C for certain resolutions, see PPR Options.) |
| Storage Temp.....   | -25° to +85° C  |
| Humidity.....       | 95% RH non-condensing   |
| Vibration.....      | 10 g @ 58 to 500 Hz   |
| Shock.....          | 50 g @ 11 ms duration   |
| Sealing.....        | IP50 standard, IP64 optional  |

## Model 745 Heavy Duty 90mm



### Waveform Diagrams



### Wiring Table

| Function | Gland Cable Wire Color | 8-pin M12 <sup>2</sup> | 10-pin MS | 7-pin MS HV,L5 | 7-pin MS PP,OC | 6-pin MS PP,OC | 9-pin D-sub |
|----------|------------------------|------------------------|-----------|----------------|----------------|----------------|-------------|
| Com      | Black                  | 7                      | F         | F              | F              | F              | 9           |
| +VDC     | White                  | 2                      | D         | D              | D              | D              | 1           |
| A        | Brown                  | 1                      | A         | A              | A              | A              | 2           |
| A'       | Yellow                 | 3                      | H         | C              | ---            | ---            | 3           |
| B        | Red                    | 4                      | B         | B              | B              | B              | 4           |
| B'       | Green                  | 5                      | I         | E              | ---            | ---            | 5           |
| Z        | Orange                 | 6                      | C         | ---            | C              | C              | 6           |
| Z'       | Blue                   | 8                      | J         | ---            | ---            | ---            | 7           |
| Case     | ---                    | ---                    | G         | G              | G              | ---            | 8           |
| Shield   | Screen                 | ---                    | ---       | ---            | ---            | ---            | ---         |

**CAUTION - Always check wiring colour code against Encoder Label due to changes in specification since September 2006**