**MODEL 858S - STAINLESS STEEL ENCODER**

**FEATURES**
Standard Size 58 (58 mm diameter) stainless steel package
Up to 30,000 CPR
80 lb max. axial and radial shaft loading
High temperature option (100° C)
IP67 sealing available

The Model 858S European Size 58 Accu-Coder® is a heavy duty, extremely rugged, reliable encoder, in a 316 stainless steel package. Its compact design is well suited for harsh factory and plant floor environments that call for a metric solution. The double-shielded ball bearings are rated at 80 lb maximum axial and radial shaft loading, to ensure a long operating life. Shock rating is 75 g for 11 milliseconds duration. With the optional heavy-duty shaft seal installed, the Model 858S is rated at IP67. Two European standard mounting options are available, the Clamping Flange (20 Type), or the Synchro Flange (26 Type).

**COMMON APPLICATIONS**
Food Processing, Oil, Gas and Chemical Processing, Material Handling, Conveyors, Robotics, Elevator Controls, Textile Machines

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**MODEL 858S ORDERING GUIDE**

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

*858S* | **A** | **B** | **S** | **C** | **R** | **H** | **1** | **1** | **E** | **G** | **CE**
---|---|---|---|---|---|---|---|---|---|---|---
**MOUNTING TYPE** | A | 20 Type clamping | 21 | 20 Type synchro | | | | | | | |
| B | 26 Type synchro | | | | | | | | | |

**OPERATING TEMPERATURE**

| S | 0° to 70° C |
| L | -40° to 70° C |
| H | 0° to 100° C |

**CYCLES PER REVOLUTION**

1-30,000

See CPR Options below

**SHAFT SIZE**

| Q | 07 | 0.250", 1/4" |
| 20 | 0.375", 3/8" |
| 06 | 6 mm |
| 21 | 10 mm |

**OUTPUT TYPE**

| S - 28V In/Out |
| OC | Open Collector |
| PU | Pull-Up Resistor |
| PP | Pull-Pull |
| HV | Line Driver |

**MAXIMUM FREQUENCY**

1 | Standard 100 kHz |
2 | 200 kHz ≤ 3000 CPR |
3 | 500 kHz, > 6000 CPR |
4 | 1 MHz, > 10,000 CPR |

**CONNECTOR LOCATION**

| N | No seal |
| 1 | IP66 |
| 2 | IP64 |
| 3 | IP67 |

**CONNECTOR TYPE**

| G | Gland, 24" Cable |
| J | 5-pin M12 (12 mm) |
| K | 8-pin M12 (12 mm) standard wiring |
| Z | 8-pin M12 (12 mm) optional wiring |

**SEALING**

| N | No seal |

**CERTIFICATION**

| N | None |
| 1 | CE Marked |

**NOTES:**

1. The shaft on 20 Type mountings includes a 15.58 mm flat. The shaft on 26 Type mountings is provided without a flat.
2. Low temperature option not available with resolutions of 5000 CPR or higher.
3. 0° to 85° C for certain resolutions, see CPR Options.
5. 24 VDC max for high temperature option.
7. Standard temperature, 60 to 3000 CPR only. Not available with 2400 CPR, 2540 CPR, or 2880 CPR.
8. CE not available with HV/P5 output type options.
10. For mating connectors, cables, and cordsets see Accessories at encoder.com. For Connector Pin Configuration Diagrams, see Technical Information or see Connector Pin Configuration Diagrams at encoder.com.
11. For non-standard cable lengths, add a forward slash (/) plus cable length expressed in feet. Example: G/6 = 6 feet of cable.
12. M12 connector available on side mount option only.
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MODEL 858S SPECIFICATIONS

Electrical

- **Input Voltage**: 4.75 to 28 VDC max for temperatures up to 70° C. 4.75 to 24 VDC for temperatures between 70° C to 100° C. 100 mA max with no output load.
- **Input Ripple**: 100 mA 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 Waveform Diagrams.
- **Output Types**: Open Collector – 100 mA max per channel. Pull-Up – Open Collector with 2.2K ohm internal resistor, 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**: Occurs once per revolution. The index for units >3000 CPR is 90° gated to Outputs A and B. See Waveform Diagrams.
- **Max Frequency**: Up to 1 MHz.
- **Electrical Protection**: Reverse voltage and output short circuit protected. NOTE: Sustained reverse voltage may result in permanent damage.
- **Noise Immunity**: Tested to BS EN61000-4-2; IEC801-3; BS EN61000-4-4; DDENV 50141; BS EN50081-2; BS EN61000-4-2; BS EN61000-4-4; BS EN50204; BS EN55022 (with European compliance option); BS EN61000-6-2; BS EN61000-6-2; BS EN50081-2; BS EN50204; BS EN55022
- **Symmetry**: 1 to 6000 CPR: 180° (±18°) electrical at 100 kHz output. 6001 to 30,000 CPR: 180° (±36°) electrical.
- **Quad Phasing**: 1 to 6000 CPR: 90° (±22.5°) electrical at 100 kHz output. 6001 to 30,000 CPR: 90° (±36°) electrical.
- **Min Edge Sep**: 1 to 6000 CPR: 67.5° electrical at 100 kHz output. 6001 to 20,480 CPR: 54° electrical. >20,480 CPR: 50° electrical.
- **Rise Time**: Less than 1 microsecond.
- **Accuracy**: Instrument and Quadrature Error: For 200 to 1999 CPR, 0.017° mechanical (1.0 arc minutes) from one cycle to any other cycle. For 2000 to 3000 CPR, 0.01° mechanical (0.6 arc minutes) from one cycle to any other cycle. Interpolation error (units > 3000 CPR only) within 0.005° mechanical. (Total Optical Encoder Error = Instrument + Quadrature + Interpolation)

Mechanical

- **Max Shaft Speed**: 8000 RPM. Higher shaft speeds may be achievable; contact Customer Service.
- **Radial Shaft Load**: 80 lb max. Rated load of 20 to 40 lb for bearing life of 1.5 x 10⁹ revolutions.
- **Axial Shaft Load**: 80 lb max. Rated load of 20 to 40 lb for bearing life 1.5 x 10⁹ revolutions.
- **Starting Torque**: 1.0 oz-in typical with IP64 seal or no seal. 3.0 oz-in typical with IP66 shaft seal. 7.0 oz-in typical with IP67 shaft seal.
- **Moment of Inertia**: 5.2 x 10⁻⁶ oz-in-sec².
- **Housing**: Type 316 Stainless Steel.
- **Bearings**: Precision ABEC ball bearings.
- **Weight**: 1.5 lb typical.

Environmental

- **Storage Temp**: -25° to 85° C.
- **Humidity**: 95% RH non-condensing.
- **Vibration**: 20 g @ 50 to 500 Hz.
- **Shock**: 75 g @ 11 ms duration.
- **Sealing**: IP50 standard; IP64, IP66, IP67 optional.

MODEL 858S CLAMPING FLANGE 20 TYPE (A)

MODEL 858S SYNCHRO FLANGE 26 TYPE (B)

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

Line Driver and Push-Pull

Open Collector and Pull-Up

CLOCKWISE ROTATION AS VIEWED FROM THE MOUNTING FACE

NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES. Waveform shown with optional complementary signals A, B, Z for HV and HS outputs only.

WIRING TABLE

For EPC-supplied mating cables, refer to wiring table provided with cable. Trim back and insulate unused wires.

<table>
<thead>
<tr>
<th>Function</th>
<th>Gland Cable† Wire Color</th>
<th>5-pin M12**</th>
<th>8-pin M12** Standard Wiring</th>
<th>8-pin M12** Optional Wiring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Com</td>
<td>Black</td>
<td>3</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>+VDC</td>
<td>Red</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>White</td>
<td>4</td>
<td>1</td>
<td>3</td>
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<tr>
<td>A'</td>
<td>Brown</td>
<td>--</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>Blue</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>B'</td>
<td>Violet</td>
<td>--</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Z</td>
<td>Orange</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Z'</td>
<td>Yellow</td>
<td>--</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Shield</td>
<td>Bare*</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Case</td>
<td>Green</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

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