



# HEIDENHAIN



Product Information

**ROC 413**

**ROQ 425**

Absolute Rotary Encoders  
with PROFINET Interface

January 2009

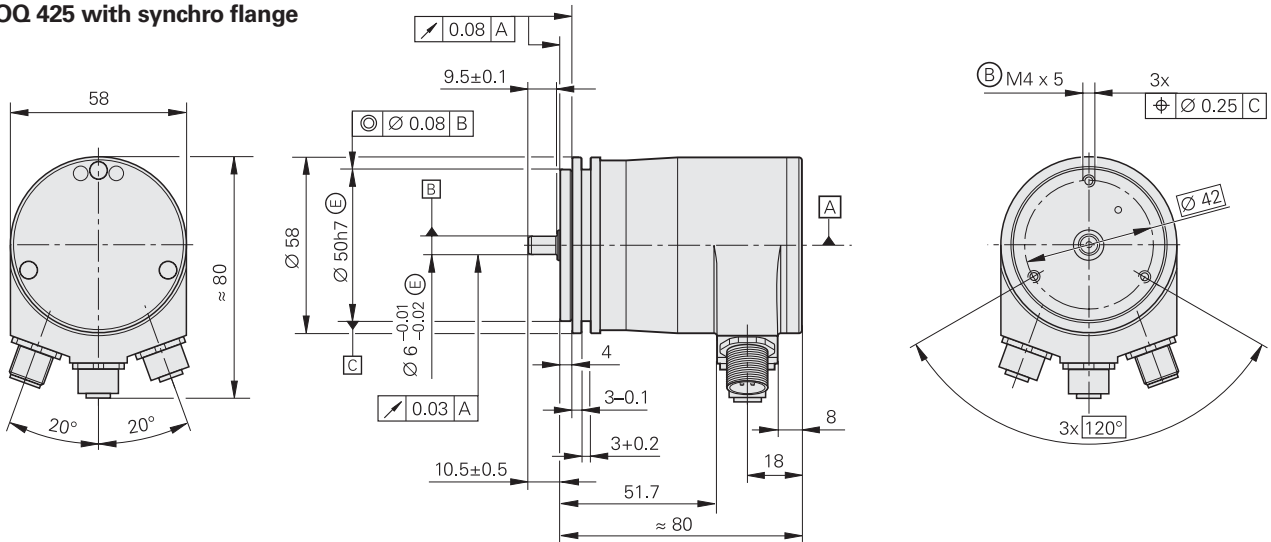
# ROC/ROQ 400 PROFINET Series

Rotary encoders for separate shaft coupling

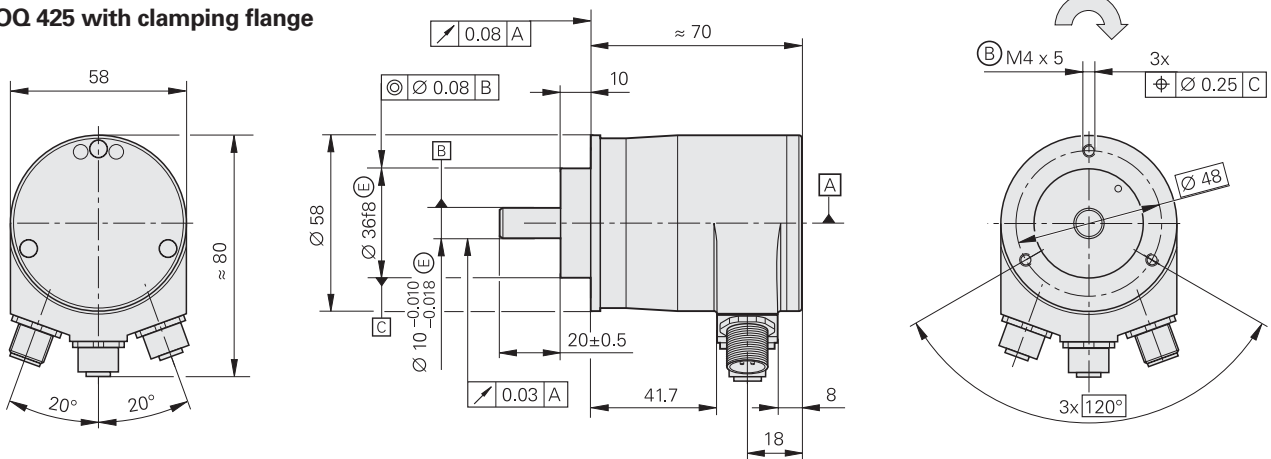
- With synchro or clamping flange
- Absolute position value over PROFINET Class 4



## ROC 413/ROQ 425 with synchro flange



## ROC 413/ROQ 425 with clamping flange



Dimensions in mm



Tolerancing ISO 8015  
ISO 2768 - m H  
< 6 mm: ±0.2 mm

Cable radial, also usable axially

▣ = Bearing

⊕ = Threaded mounting hole

↻ Direction of shaft rotation for output signals as per the interface description

	<b>Absolute</b>			
	<b>Singletum</b>		<b>Multitum</b>	
	<b>ROC 413</b>		<b>ROQ 425</b>	
<b>Absolute position values</b>	<b>PROFINET</b>			
Positions per rev	8 192 (13 bits) <sup>2)</sup>			
Revolutions	–		4 096 <sup>2)</sup>	
Code	Pure binary			
Elec. permissible speed Deviations <sup>1)</sup>	≤ 5 000/12 000 min <sup>-1</sup> ± 1 LSB/± 100 LSB		≤ 5 000/10 000 min <sup>-1</sup> ± 1 LSB/± 100 LSB	
<b>System accuracy</b>	± 60"			
<b>Power supply</b> <b>Current consumption</b> without load	10 to 30 V ≤ 150 mA at 24 V			
<b>Electrical connection</b>	Three M12 flange sockets, radial			
<b>Mounting flange*</b>	Synchro flange	Clamping flange	Synchro flange	Clamping flange
<b>Shaft</b>	Solid shaft D = 6 mm	Solid shaft D = 10 mm	Solid shaft D = 6 mm	Solid shaft D = 10 mm
<b>Mech. permissible speed n</b>	≤ 12 000 min <sup>-1</sup>			
<b>Starting torque</b>	≤ 0.01 Nm (at 20 °C)			
<b>Moment of inertia</b> of rotor	≤ 2.7 · 10 <sup>-6</sup> kgm <sup>2</sup>	≤ 2.3 · 10 <sup>-6</sup> kgm <sup>2</sup>	≤ 2.7 · 10 <sup>-6</sup> kgm <sup>2</sup>	≤ 2.3 · 10 <sup>-6</sup> kgm <sup>2</sup>
<b>Shaft load</b> <sup>4)</sup>	Axial 10 N/radial 20 N at shaft end			
<b>Vibration</b> 55 to 2 000 Hz <b>Shock</b> 6 ms	≤ 100 m/s <sup>2</sup> (EN 60 068-2-6) ≤ 1 000 m/s <sup>2</sup> (EN 60 068-2-27)			
<b>Max. operating temperature</b> <sup>5)</sup>	70 °C			
<b>Min. operating temperature</b>	–40 °C			
<b>Protection</b> EN 60529	IP 67 at housing; IP 64 at shaft end <sup>3)</sup>			
<b>Weight</b>	Approx. 0.35 kg			

\* Please select when ordering

<sup>1)</sup> Velocity-dependent deviations between the absolute value and incremental signal

<sup>2)</sup> These functions are programmable

<sup>3)</sup> IP 66 upon request

<sup>4)</sup> See also *Mechanical Design and Installation* in the *Rotary Encoders* catalog

<sup>5)</sup> For the correlation between the operating temperature and the shaft speed or supply voltage, see *General Mechanical Information* in the *Rotary encoders* catalog.

# Electrical Connection

## Connection

PROFINET and the power supply are connected via the M12 connecting elements. The necessary mating connectors are:

### PORT 1 and 2:

M12 coupling (male), 4-pin, D-coded

### Power supply:

M12 connector, 4-pin, A-coded



## Pin layout

<b>PORT 1 and 2</b> <b>4-pin connector (female)</b> M12 D-coded					
Absolute position values					
	1	2	3	4	Housing
PORT 1/2	Tx+	Rx+	Tx-	Rx-	Shield

<b>Power supply</b> <b>4-pin coupling (male)</b> M12 A-coded				
	1	3	2	4
	Up	0V	Vacant	Vacant

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**For more information**

Brochure: *Rotary Encoders*