



HEIDENHAIN



Product Information

ECN 1023 S

EQN 1035 S

Absolute Rotary Encoders
with DRIVE-CLiQ interface

Specifications	ECN 1023S – singleturn	EQN 1035S – multiturn
Interface	DRIVE-CLiQ	
Ordering designation	DQ01	
Firmware	01.32.26.53	
SINAMICS/SIMOTION ¹⁾	≥ V4.4 HF4	
SINUMERIK without safety ¹⁾	≥ V4.4 SP1 HF3	
Positions per revolution	8388608 (23 bits)	
Revolutions	–	4096 (12 bits)
Code	Pure binary	
Calculation time TIME_MAX_ACTVAL ²⁾	≤ 8 μs	
System accuracy	±60"	
Electrical connection	Cable 1 m, with M12 coupling	
Cable length	≤ 40 m	
Supply voltage	10 V to 28.8 V DC	
Power consumption (max.)	10 V: ≤ 850 mW 28.8 V: ≤ 900 mW	10 V: ≤ 950 mW 28.8 V: ≤ 1000 mW
Current consumption (typical)	24 V: 32 mA	24 V: 35 mA
Shaft	Blind hollow shaft Ø 6 mm	
Speed ³⁾	≤ 12000 rpm	
Starting torque (typical)	0.001 Nm (at 20 °C)	0.002 Nm (at 20 °C)
Moment of inertia of rotor	≈ 0.5 · 10 ⁻⁶ kgm ²	
Permissible axial motion of measured shaft	±0.5 mm	
Vibration 55 Hz to 2000 Hz Shock 6 ms	≤ 100 m/s ² (EN 60068-2-6) ≤ 1000 m/s ² (EN 60068-2-27)	
Max. operating temperature	95 °C	
Min. operating temp.	Fixed cable: -30 °C Moving cable: -10 °C	
Protection EN 60529	IP64	
Mass	≈ 0.1 kg	
ID number	1211019-xx	1211020-xx

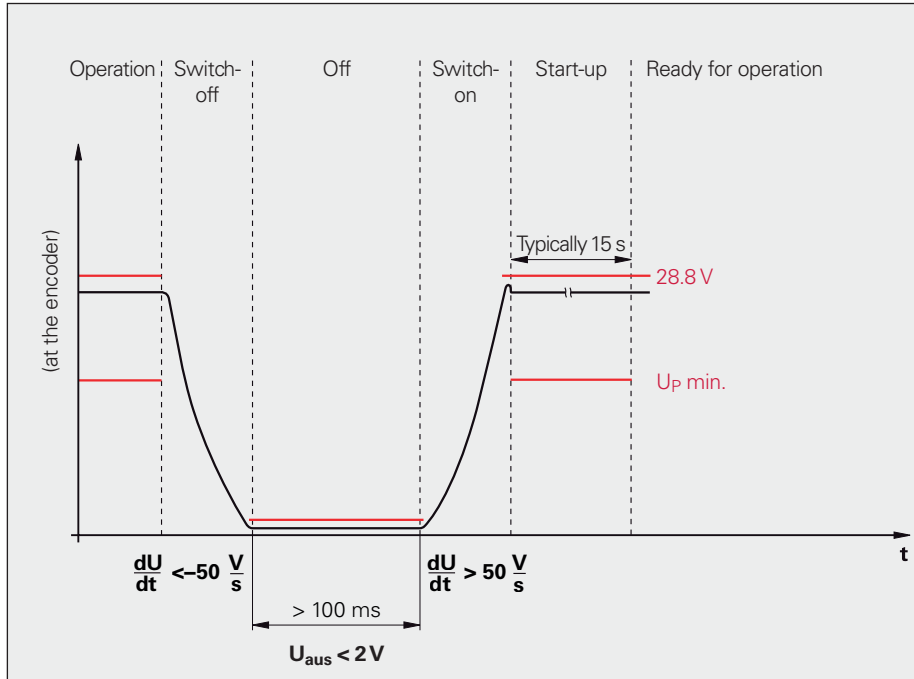
¹⁾ Information from Siemens as per the document "Certified encoders with DRIVE-CLiQ Dependencies on SIMOTION / SINUMERIK and SINAMICS Hardware and Software versions" (version: 12/2018)

²⁾ The calculation time TIME_MAX_ACTVAL specifies the time after which a data transfer from the encoder to the control can start within the current-regulator clock time.

³⁾ At ≥ 2 position requests per revolution

Electrical requirements

Switch-on and switch-off conditions



Integrated temperature evaluation

This rotary encoder features an internal temperature sensor integrated into the encoder electronics. The digitalized temperature value of the internal temperature sensor can be transferred purely serially via the DRIVE-QLiQ interface. The temperature determined by the internal temperature sensor is higher by a device- and application-specific


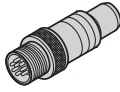


amount than the temperature that manifests itself at measuring point M as defined in the dimension drawing. Compliance with the operating temperature at measuring point M is required for adherence to the encoder's intended and proper use. The internal temperature sensor has an accuracy of $\pm 7 \text{ K}$.

Online diagnostics and firmware version




For the evaluation of the functionality of the encoder, valuation numbers can be cyclically read from the encoder. The valuation numbers provide the current state of the encoder and ascertain the encoder's "function reserves." These function reserves are also transferred over the DRIVE-CLiQ interface and can be displayed in the higher-level control. Further information is available from HEIDENHAIN upon request.

The firmware version can be read out over the DRIVE-CLiQ parameter "Act_FW_Version" (index 0). The final two digits of the displayed value are decisive.

Electrical connection: pin layout

8-pin M12 coupling						
						
	Power supply		Serial data transfer			
			Transmit data		Receive data	
	1	5	7	6	3	4
	U _P	0V	TXP	TXN	RXP	RXN

Cable shield connected to housing; U_P = Power supply voltage

PUR connecting cables for M12 connecting element $2(2 \times 0.17 \text{ mm}^2) + (2 \times 0.24 \text{ mm}^2)$; A _P = 0.24 mm ²			
With 8-pin M12 connector (female) and 8-pin M12 coupling (male)		Ø 6.8 mm	822504-xx
With 8-pin M12 connector (female) and RJ45 (IP67) Siemens connector; cable length: 1 m		Ø 6.8 mm	1094652-01
With 8-pin M12 connector (female) and RJ45 Siemens connector (IP20)		Ø 6.8 mm	1093042-xx

A_P: Cross section of power supply lines

DRIVE-CLiQ is a registered trademark of Siemens AG.

HEIDENHAIN

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This Product Information document supersedes all previous editions, which thereby become invalid. The basis for ordering from HEIDENHAIN is always the Product Information document valid when the contract is made.



Further information:

To ensure proper and intended use, comply with the specifications in the following documents:

- Brochure: *Rotary Encoders* 349529-xx
- Brochure: *Interfaces of HEIDENHAIN Encoders* 1078628-xx
- Mounting instructions: *ECN 1023 S, EQN 1035 S* 1256667-xx
- Brochure: *Cables and Connectors* 1206103-xx