H3B-D90 series

Model description:

H3B: Absolute angular encoders with SSI protocol for FAGOR and others.

H3BS: Absolute angular encoders with SSI protocol for SIEMENS® (Solution Line).

H3BF: Absolute angular encoders with FANUC® (α and αi) protocol.

H3BM: Absolute angular encoders with MITSUBISHI® CNC protocol.

H3BP: Absolute angular encoders with PANASONIC® (Matsushita) protocol.

H3BD: Absolute angular encoders with FeeDat® protocol for FAGOR and others.

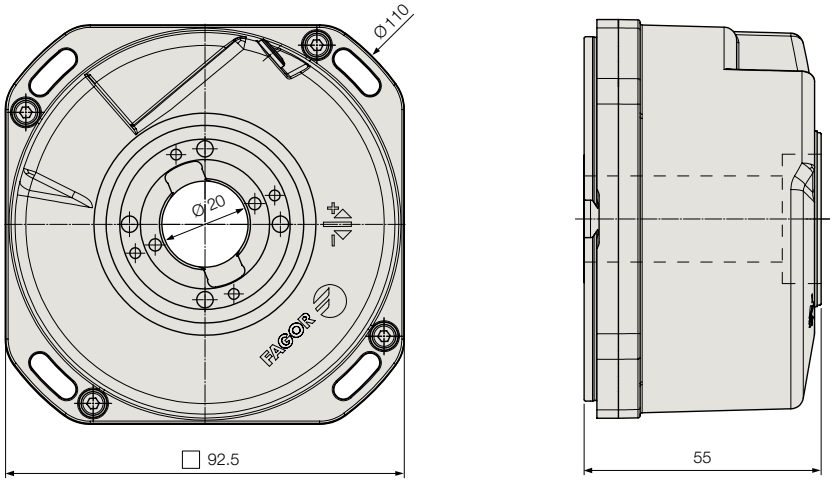
H3BD + EC-PA-DQ1-M: Absolute angular encoders with DRIVE-CLiQ® protocol, for SIEMENS® (Solution Line and Sinumerik One).

H3BD-FS + EC-PA-DQS-M: Absolute angular encoders with DRIVE-CLiQ® protocol, for SIEMENS® (Solution Line and Sinumerik One) with Functional Safety

H3BBC: Absolute angular encoders with BiSS® C protocol.

Characteristics

	H3B	H3BS	H3BF
Measurement	By means of graduated glass disk		
Accuracy	±2.5 arc-seconds ±5 arc-seconds		±2 arc-seconds ±4 arc-seconds
Output signals	∿ 1 Vpp		–
Maximum resolution / Maximum number of positions per turn	23 bits (8 388 608 positions) 1 Vpp: 16 384 pulses/turn		αi: 28 bits (268 435 456 positions) α: 27 bits (134 217 728 positions)
Maximum frequency	400 kHz for 1 Vpp signal		–
Maximum electrical speed	< 1500 min^{-1}		< 3000 min^{-1}
Natural frequency	> 1500 Hz		
Supply	3.8 to 14 V DC; < 250 mA (at 5V without load)		
Maximum cable length	75 m (1)	100 m	50 m
Maximum mechanical speed	3000 min^{-1}		
Inertia	Rotor (hollow shaft) $82 \cdot 10^{-6}$ kgm^2 Stator (housing/flange) $480 \cdot 10^{-6}$ kgm^2		
Starting torque (at 20 °C)	< 0.08 Nm		
Vibration	200 m/s^2 (55...2000 Hz) IEC 60068-2-6		
Shock	200 m/s^2 (6 ms) IEC 60068-2-27		
Operating temperature	0 °C...60 °C		
Storage temperature (in its packaging)	-20 °C...60 °C		
Weight	0,75 kg		
Protection	IP 64 DIN 40050 (standard) > IP 64 (DIN 40050) using pressurized air at 0.8 ±0.2 bar in angular encoders (3)		
Connection	With built-in connector		



Dimensions in mm

Additional information can be found in the technical documentation and installation manual available on the website ***www.fagorautomation.com***

Order identification

Example of Angular Encoder: H3BF-28-D90-2

H3	B	F	28	D90	2	
Type of shaft: • **H3: Hollow shaft**	***Letter identifying the absolute encoder***	***Type of communications protocol:*** • Blank space: SSI protocol (FAGOR) • D: FeeDat® protocol (FAGOR) (1) • S: SSI SIEMENS® (SL) protocol • **F: FANUC® (α and αi) protocol** • M: MITSUBISHI® CNC protocol • P: PANASONIC® (Matsushita) protocol • BC: BiSS® C protocol	***Absolute positions per turn:*** • 23 bits (8 388 608 positions) • 26 bits (67 108 864 positions) (2) • 27 bits (134 217 728 positions) (3) • **28 bits (268 435 456 positions) (4)**	***Outside diameter:*** • **D90: 90 mm**	***Accuracy:*** • Blank space: ± 4 arc-seconds (± 5 arc-seconds for SSI models) • **2: ± 2 arc-seconds (± 2.5 arc-seconds for SSI models)**	***Safety:*** • **Blank space: No** • FS: Functional Safety (5)

(1) Plus EC-PA-DQ1-M with DRIVE-CLiQ® protocol for SIEMENS® (Solution Line and Sinumerik One).
(2) Only for purely digital models, not available for SSI models.
(3) Only for compatibility with legacy products.
(4) Not available for SSI or BiSS® C models.
(5) Only for H3BD-FS + EC-PA-DQS-M with DRIVE-CLiQ® protocol for SIEMENS® (Solution Line and Sinumerik One) with Functional Safety.

Notes: Not all protocol, positions per turn and accuracy combinations are possible. Please consult with Fagor Automation for a list models.

H3BM / H3BP	H3BD	H3BD + EC-PA-DQ1-M	H3BD-FS + EC-PA-DQS-M	H3BBC
By means of graduated glass disk				
± 2 arc-seconds ± 4 arc-seconds				
–				(2)
28 bits (268 435 456 positions)				26 bits (67 108 864 positions)
–				
< 3000 min^{-1}			< 1500 min^{-1}	< 3000 min^{-1}
> 1500 Hz				
3.8 to 14 V DC; < 250 mA (at 5V without load)			5±10 % V DC; <300 mA	3.8 to 14 V DC; < 250 mA (at 5V without load)
30 m	100 m	Up to 100 m (4)		50 m
3000 min^{-1}			1500 min^{-1}	3000 min^{-1}
Rotor (hollow shaft) 82 · 10^{-6} kgm^2 Stator (housing/flange) 480 · 10^{-6} kgm^2				
< 0,08 Nm				
200 m/s^2 (55...2000 Hz) IEC 60068-2-6				
200 m/s^2 (6 ms) IEC 60068-2-27				
0 °C...60 °C				
-20 °C...60 °C				
0,75 kg				
IP 64 DIN 40050 (standard) > IP 64 (DIN 40050) using pressurized air at 0.8 ±0.2 bar in angular encoders (3)				
With built-in connector				

(1) Contact Fagor Automation for maximum cable length.
(2) Consult Fagor Automation for analog output signals.
(3) For more information consult the AI-1000 Filter Unit catalog.
(4) Depending on CNC model. Consult SIEMENS® documentation.