

## OPTICAL LINER ENCODER

# HA400

Introducing the HA-400 Optical Closed-Type Linear Encoder, designed for precision measurements with a measurement length (ML) of up to 1240 mm. This encoder, part of the HA400 series, seamlessly integrates with BiSS-C, SSI, Fanuc, and Panasonic protocols, providing highly reliable position feedback.

Boasting a maximum accuracy of  $\pm 3\mu\text{m}$  and an exceptional resolution of up to 5nm, the HA-400 is tailored for state-of-the-art machinery. Its robust features include IP64 sealing, ensuring protection in challenging environments, and a maximum speed of 3m/s.



## GENERAL SPECIFICATIONS

<b>Measurement length (ML), mm</b> 70, 120, 170, 220, 270, 320, 370, 420, 470, 520, 570, 620, 670, 720, 770, 820, 870, 920, 970, 1020, 1140, 1240 ( $\geq 620\text{mm}$ fixing part is required)		<b>Accuracy grade</b> $\pm 3\mu\text{m/m}; \pm 5\mu\text{m/m}$	
<b>Current consumption</b> max 340 mA (R= 120 $\Omega$ )		<b>Pitch period</b> 20 $\mu\text{m}$	
<b>Protocol</b> SSI, BiSS, FANUC, Panasonic			
<b>Resolutions</b> 5nm, 10nm, 100nm			
<b>Thrust</b> $\leq 2.5\text{N}$	Maximum speed:	3m/s	<b>Mass</b> 0.55 kg + 2.9 kg/m
	Humidity	20...80%	<b>Operating temperature</b> 0...+50 $^{\circ}\text{C}$
<b>Power Supply</b> +5V $\pm 5\%$	Standard / maximum cable length	2.0 / 20.0	<b>Storage temperature</b> - 20... + 70 $^{\circ}\text{C}$
	Sealing (IEC 529)	Ip53	<b>Vibrate (40 to 2000 Hz)</b> $\leq 100\text{ m/s}^2$
	- With compressed air-	Ip64	<b>Shock (11 ms)</b> $\leq 150\text{ m/s}^2$
	Electronic protection	Short circuit prevention	

## OUTPUT SPECIFICATIONS

Version	SSI	BISS-C
Protocol	SSI	BISS -C unidirectional
Interface	EIA RS 485	EIA RS 485
Clock	0.1-1.2 MHz	0.1-4 MHz
Position	Position bit	26 + 2 + 6bit
Tc	10-20 $\mu\text{s}$	12-20 $\mu\text{s}$
Output signal		

<b>STP:</b>	Cross section area: 0.25mm	For extension: the following conditions are needed	Grounded; 5V supply for reading head
	Minimum radius: 35 mm PVC low friction coefficient oil resistant outer protective layer, suitable for continuous and repeated dragging	Analog + Serial output:	STP, PUR Cross sectional area supply: 0.35mm Minimum radius 45mm

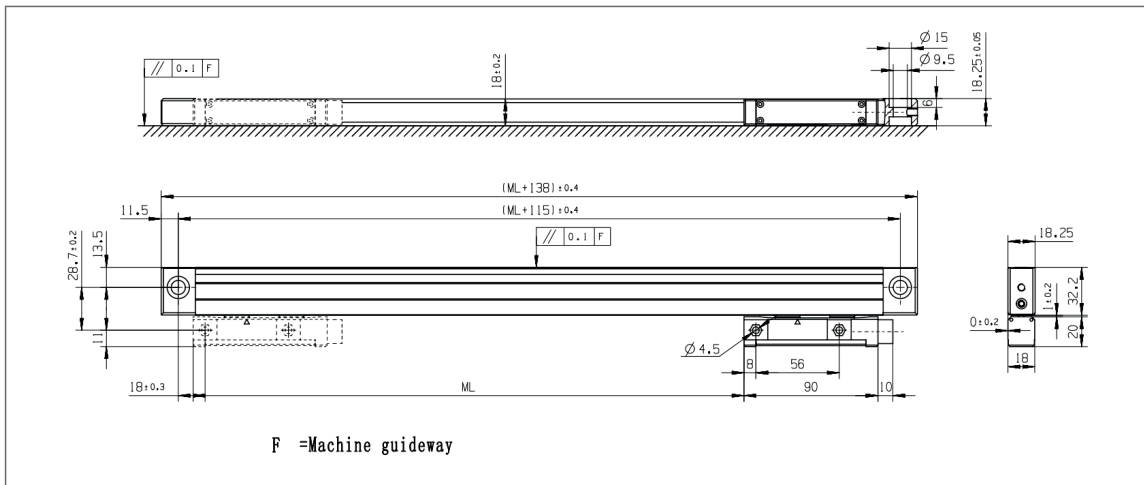
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### Lectotype

	X1	X2	X3	X4
<b>HA</b>	Protocol (X1): 483-SSI 493F-FANUC 493P-Panasonic 493B-BISS-C.....	ML: (X2): 070-70 mm .... 1240 - 1240 mm	Resolution (X3): 5-5nm 10-10nm 100-100nm	3 - ±3µm 5 - ±5µm
*For resolution: SSI, 100nm; Fanuc, 10nm; Panasonic, 10nm; Biss-c, 5nm/50nm.				
FI: 1) HA483-1240-100-5				



### 9 pin Needle D-usb connector

PIN	1	6	8	4	9	5
SIGNAL	+5V	0V	CLOCK	/CLOCK	DATA	/DATA
COLOR	RED	BLACK	GREEN	WHITE	YELLOW	BLUE



### 15 pin Needle D-usb connector

PIN	1	9	2	10	3	11	4	12	14	7	15	8	13
SIGNAL	+5V	+5V SENSOR	0V	0V SENSOR	A	/A	B	/B	CLOCK	/CLOCK	DATA	/DATA	SHIELD
COLOR	RED	LIGHT GREEN	BLACK	BROWN	PURPLE	GREY	ORANGE	PINK	GREEN	WHITE	YELLOW	BLUE	/