HC-1 Series

EXPOCED LINEAR ENCODER

The open linear encoder accurately captures position information during high -velocity movements. All electronic components, including subdivision circuits, are integrated into the reading head. Optical reference marks on the reflective tapes are meticulously synchronized with the incremental tracks. The implementation of advanced technology ensures stINEARerformance, making it ideal for high -speed applications with e xcellent mounting tolerance.

Technical parameters

	H1RE	H1RF
Measurement Mode	Incremental: Read the 200um grid pitch wire glass grating signal	
Coefficient of thermal expansion·	Steelstrip: α therm: ≈ 10.0 ± 0.2 ppm/K. Glass rule: α therm: ≈ 8.0 ± 0.2 ppm/K.	
Resolution	1 µm	0.5 µm
Output signal	⊔⊓ TTL	⊔⊓ TTL
Signal period	4 µm	2 µm
Maximum frequency	10MHz	
Maximum speed	240 m/min	180 m/min
Electronic subdivision error	<200nm	
The reference point marks pulse I_0	An optical reference point every 50 mm	
limit	There is no	
Maximum cable length	15m	15 m
Supply voltage	5V ±5%, <150 mA (no-load)	5V ±5%, <150 mA (no-load)
Reading head cable	Optional 1 or 3 meter cable including plug	
Reading head protection level·	IP 40	
precision	±15 µm/m	
Vibration resistance	100 m/s² (55 … 2000 Hz) IEC 60068-2-6	
Impact resistance	500 m/s² (11 ms) IEC 60068-2-27	
Operating temperature	-5°C … 70°C	
Storage temperature	-20°C ... 70°C	
we i ght	0.17 kg + 0.025 kg/m	
Relative humidity	<95 (noncondensing)	

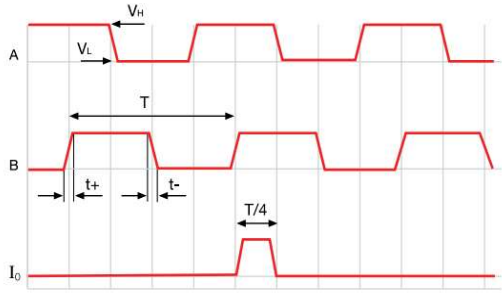
FEATURES

- Quality economy
- Great installation tolerances
- Veolocity up to 4m/s
- pollution-resistance

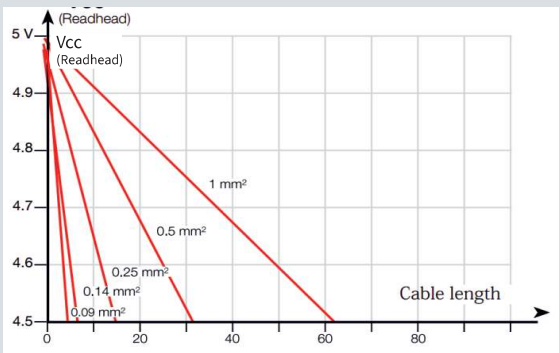
Output signal |

The differential square wave signal adheres to the EIARS-422 standard communication protocol. Additionally, the receiving system is furnished with a 120-ohm voltage regulator resistance, while the transmission cable employs twisted-pair configuration and full shielding, thereby enhancing the signal's resilience against surrounding electromagnetic field interference

Signal name	A, /A, B, /B, I_0, / I_0
Signal level	$V_H \geqslant 2.5V$ $I_H = 20$ mA $V_L \leqslant 0.5V$ $I_L = 20$ mA Using 1 meter cable
Reference poi(lt) 90°	Synchronize with A and B signals
Switching time	t+/t-< 30 ns Use 1 meter cable
Supply voltage and current	5 V ± 5%, 150 mA
Signal period	20, 4, 2, 0.4, 0.2 µm
Maximum cable length	50 m
Load impedance	Zo= 120 Ω



Correlation between voltage drop and cable



$L_{max} = (V_{CC} - 4.75) * 500 / (Z_{CABLE/Km} * I_{MAX})$

Give an example

Vcc = 5V, IMAX = 0.1 Amp

Z (1 mm²)	=	16.6 Ω/Km	(L_{max}= 75 m)
Z (0.5 mm²)	=	32 Ω/Km	(L_{max}= 39 m)
Z (0.25 mm²)	=	66 Ω/Km	(L_{max}=19 m)
Z (0.14 mm²)	=	132 Ω/Km	(L_{max}= 9 m)
Z (0.09 mm²)	=	232 Ω/Km	(L_{max}= 5 m)

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Reflective tape

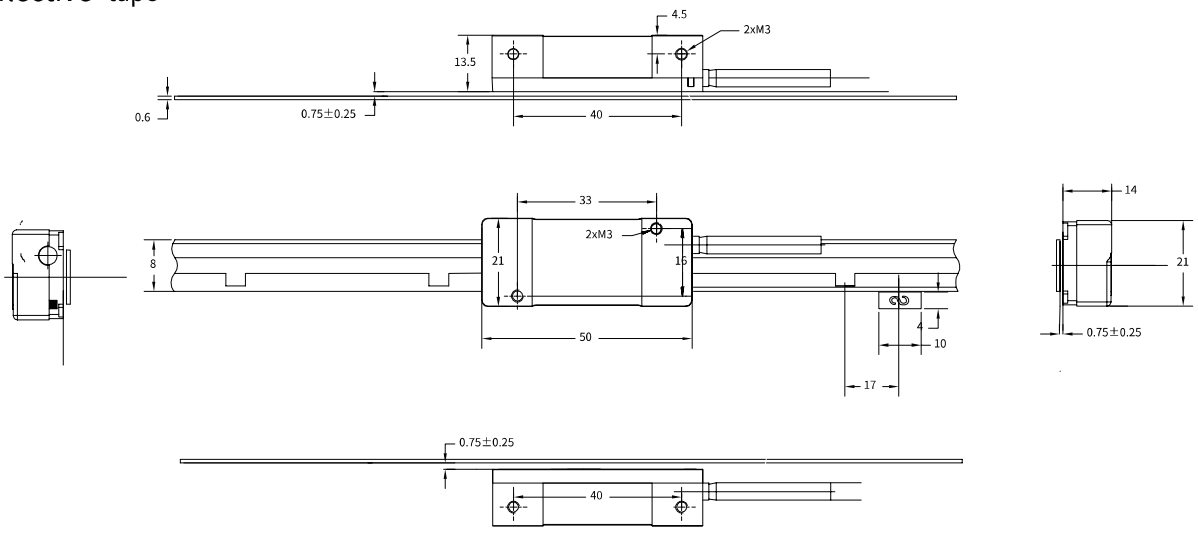
The reflective tape utili zed in this model is constructed from a stainless steel strip boasting a width of 8mm, ensuring e xceptional corrosion resistance. Employing reflective optical signal acquisition, this tape features an adhesive backing on its rear surface. Characterized by a compact cross-sectional area, it offers space-saving benefits and facilitates seamless installation directly onto the measuring surface of machinery, thereby enhancing ease of installation.

Features

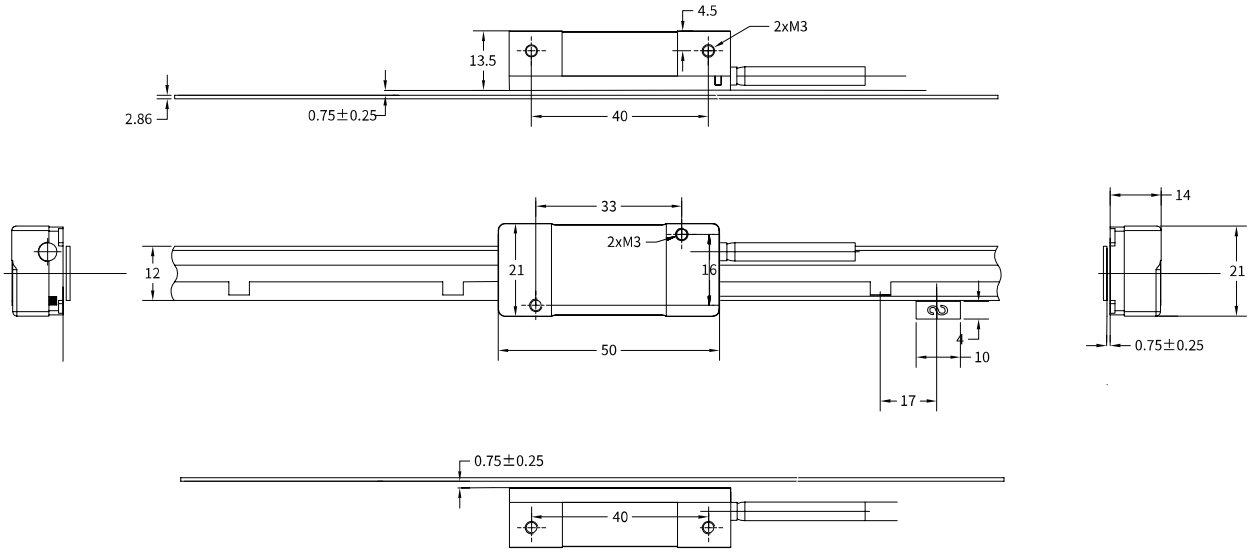
- The measuring length extends up to 2 meters with reference marks positioned at 50 mm intervals
- The compact cross-sectional area conserves installation space

Dimensions | mounting tolerances

Reflective tape



Reflective Glass



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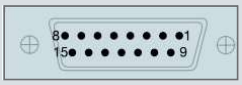
Electrical Connections - Selection Guidelines

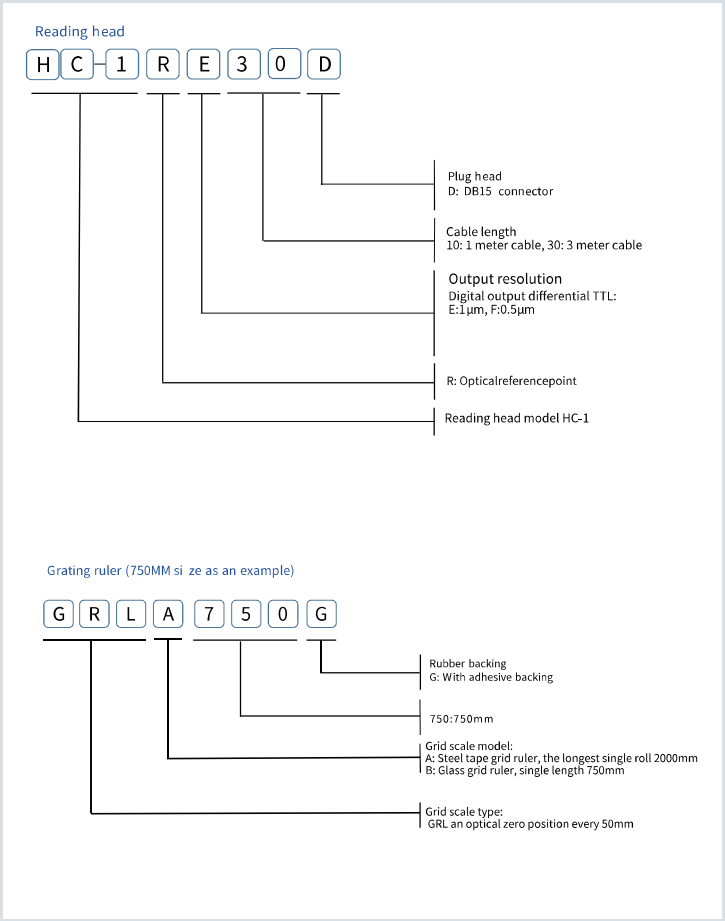
Pin Definition•Guide

Pin	Signal	Color
stitch	signal	colour
14	A	Red
6	/A	blue
13	B	yellow
5	/B	green
12	Z	purple.
4	/Z	Gray
10	LMTR	orange
11	LMTL	black
7	+5 V	brown
8	+5 V	
2	0 V	white
9	0 V	
Metal case	earth	Screen net

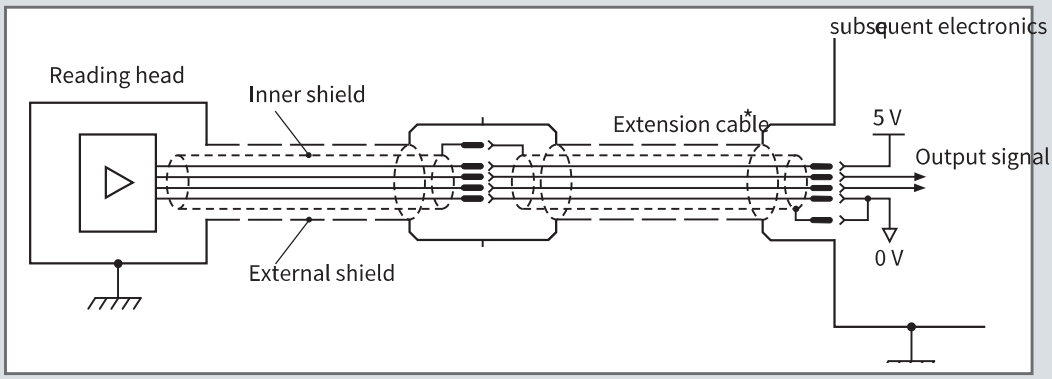
Length: 1 or 3 - meters
Cable inclusion
SUB D 15 connector

•Pin insertion•





Grounding and Shielding Protocol



Important: Ensure proper grounding and shielding protocol. Connect the external shield to the ground wire of the device (field grounding). The inner shield should exclusively connect to the 0V pin of the receiving electronic device . Note the insulation between the inner and outer shields. Connecting the inner and outer shields may result in a short circuit between the 0V wire and the ground wire, leading to electronic interference issues.