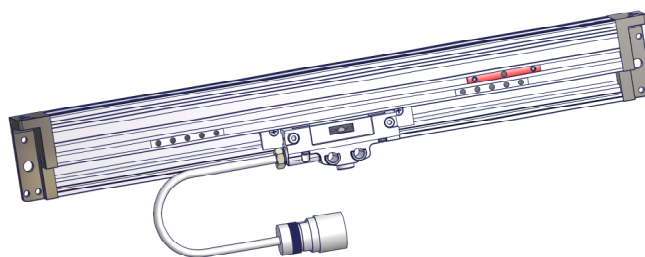


Code <b>ST02</b>	Project <b>A01-C</b>	Release <b>C</b>	Title <b>TECHNICAL DATASHEET</b>
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## OPTICAL SCALE PBS-HR T

### GENERAL FEATURES

- Incremental optical scale with stainless steel grating (grating pitch 20 µm), for applications on synchronized Press brakes.
- Reader head guided by self-aligned translation carriage.
- Resolutions up to 0.5 µm, accuracy ± 2.5 µm.
- Linear thermal expansion coefficient  $\lambda = 10.6 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$  suitable to the application.
- Predefined orientation of direction of grating linear expansion.
- Reference indexes at coded distance or at constant step (10 mm) or selectable by Magneto Set device. The swinging cable output and the selectable zero references make the scale symmetric and applicable, in the same version, both to the right column and to the left column of the Press brake.
- Protected against inversion of power supply polarity and short circuit on output ports.



### MECHANICAL AND ELECTRICAL FEATURES

MECHANICAL	Code PBS-HR		T5	T1	T05
	<ul style="list-style-type: none"> <li>• Rugged and heavy PROFILE: anodized aluminium, dimensions 57x40 mm.</li> <li>• Elastic COUPLING to compensate misalignments and self-correction of mechanic hysteresis. Backlash error &lt;0.2 µm. Error on the point of maximum travel &lt; 1.5 µm.</li> <li>• Double level LIP SEALS (internal and external) along the sliding side of the reader head.</li> <li>• READER HEAD, consisting of tie rod and reading block, with fully protected place for electronic boards.</li> <li>• CARRIAGE guided by ball bearings with gothic arc profile sliding on tempered and straightened tracks, to guarantee accuracy and lack of wear.</li> <li>• READING BLOCK sliding through ball bearings.</li> <li>• Die-cast TIE ROD.</li> <li>• Stainless steel GRATINGS placed in the aluminium profile.</li> <li>• Elastomeric GASKETS which allow to reproduce the full protection in mechanical joints (in case of disassembly).</li> <li>• Swinging CABLE output.</li> <li>• Full possibility to disassemble and reassemble it.</li> <li>• Possibility of direct service.</li> </ul>	<b>Measuring support</b> stainless steel			
	Grating pitch 	20 µm			
	Linear thermal expansion	<b>P</b> = constant step 10 mm <b>C</b> = coded distance <b>E</b> = selectable			
	<b>Reference index (I<sub>0</sub>)</b>				
	<b>Resolution</b>	5 µm	1 µm	0.5 µm	
	<b>Accuracy</b>	± 2.5 µm/m			
	<b>Measuring length ML in mm</b>	170, 220, 270, 320, 370 420, 470, 520, 570, 620,.....			
	<b>Max. traversing speed in m/min</b>	60	40	25	
	<b>Max. acceleration</b>	30 m/s <sup>2</sup>			
	<b>Required moving force</b>	≤ 4 N			
	<b>Vibration resistance (EN 60068-2-6)</b>	100 m/s <sup>2</sup> [10 ÷ 2000 Hz]			
	<b>Shock resistance (EN 60068-2-27)</b>	150 m/s <sup>2</sup> [11 ms]			
	<b>Protection class (EN 60529)</b>	IP 54 standard – IP 64 pressurized			
	<b>Operating temperature</b>	0 °C ÷ 50 °C			
	<b>Storage temperature</b>	-20 °C ÷ 70 °C			
	<b>Relative humidity</b>	20% ÷ 80% (not condensed)			
	<b>Block sliding</b>	by ball bearings 			
	<b>Power supply</b>	5V ± 5%			
	<b>Current consumption</b>	130 mA <sub>MAX</sub> (with R = 120 Ω)			
	<b>A and B output signals</b>	LINE DRIVER  PUSH-PULL			
	<b>Maximum cable length</b>	40 m			
	<b>Electrical connection</b>	see the rel. table			
	<b>Electrical protections</b>	inversion of power supply polarity and short circuit on output port			
	<b>Weight</b>	720 g + 2300 g/m			

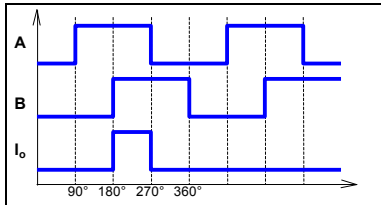
  

LINE DRIVER	PUSH-PULL	WIRE COLOUR
A	B	Green
$\bar{A}$	NC	Orange
B	A	White
$\bar{B}$	NC	Light blue
I <sub>0</sub>	I <sub>0</sub>	Brown
$\bar{I}_0$	NC	Yellow
SCH	SCH	Shield
VS = 5V	VS = 5V	Red
VS0 = 0V	VS0 = 0V	Blue

Do not exceed the minimum cable bending radius of 40 mm.  
The cable is suitable for continuous movements.

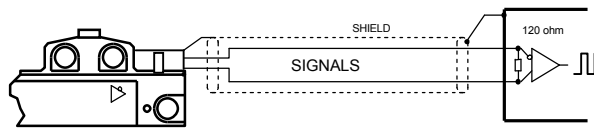
Code <b>ST02</b>	Project <b>A01-C</b>	Release <b>C</b>	Title <b>TECHNICAL DATASHEET</b>
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**OUTPUT SIGNALS**



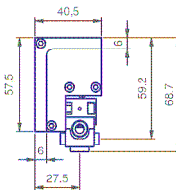
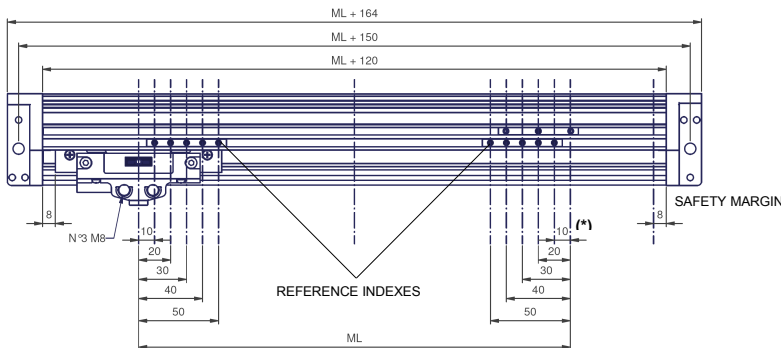
Signal amplitude	LINE DRIVER ( $V_{OH} \geq 2.5 V$ $V_{OL} \leq 0.5V$ ) TTL
Load per channel	$R = 120 \Omega$ $I_L = \pm 20 mA_{MAX}$
A and B phase displacement	$90^\circ \pm 5^\circ$ electrical

**CABLE**

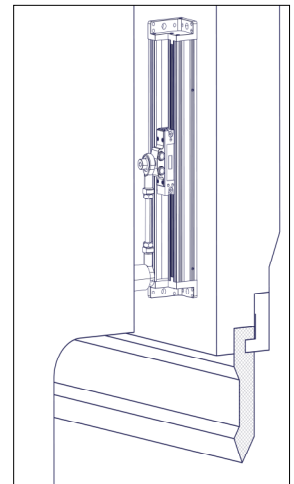


In case of cable extension, the electrical connection between the body of the connectors must be ensured.

**DIMENSIONS**



ML = MEASURING LENGTH  
 DIMENSIONS IN mm



RECOMMENDED JOINT ORIENTATION

**ORDERING CODE**

MODEL	SCALE TYPE, RESOLUTION, INDEX (OPTIONS)	MEASURING LENGTH	POWER SUPPLY, OUTPUT SIGNAL	CABLE LENGTH, CABLE TYPE	CONNECTOR, WIRING	SPECIAL, PRESSURIZED
<b>PBS-HR</b>	<b>T 1 E</b>	<b>00270</b>	<b>05V L</b>	<b>M01 / S</b>	<b>CV</b>	<b>SP10</b>

**T** = 5µm  
**5** = 5µm  
**1** = 1µm  
**05** = 0.5µm  
**C** = indexes at coded distance  
**P** = indexes at constant step  
**E** = selectable indexes at constant step  
 Length in mm  
**00270** = 270mm  
**05V** = 5V  
**L** = LINE DRIVER  
**Q** = PUSH-PULL  
**Mnn** = length in m  
**M03** = 3m  
**M04** = 4m  
**M40** = 40m  
**S** = standard cable (for continuous movements)  
**Cnn** = progressive  
**No code** = standard  
**SPnn** = special nn

Example **OPTICAL SCALE PBS-HR T1E 00270 05VL M01/S CV**