

"ESA Control" Ltd



DIGITAL LENGTH COUNTERS

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Features

The LMD6-1 digital length counter is designed to measure the linear length of fabrics, pipes and other materials, which in their movement rotate a control roller, from which by certain sensor electric impulses are sent to the input of the counter. For each pulse, the counter adds the value of the coefficient "C" to the total measured length. The coefficient "C" is set by the operator in advance when setting the counter. The location of the decimal point of the display can be set so that the length is displayed in meters (m), decimeters (dm), centimeters (cm) or millimeters (mm). In the counter it is possible to set a limit length "L" when reaching which the output relay of the counter turns off. The device is designed for installation in a dashboard (panel montage).



Type parameters		
Type	Supply voltage	Consumption
LMD6-1 / 220V	220VAC $\pm 10\%$	16mA (4W)
LMD6-1 / 12-24V	11 \pm 31 VDC 11 \pm 27 VAC	85mA (2W)

Technical parameters

LED display, 6 digits, green / red
Range of measurement, L
Supply voltage, Us
Output - Relay
Maximum input frequency, Fmax
Operating temperature range, Tamb
Degree of protection
Joining
Sizes

h=10mm (height)
0,001...999999 m
220VAC / 12+24V ac/dc
4A / 220VAC, (NO+NC)
1 kHz (10 kHz option)
-20°...+50° C
IP40
Terminal
95x49x113 mm

Energy-independent memory for programmable parameters.

Input counting - it is meant to operate with sensor type NPN (fig.1) or switch K1 (fig.2).

It is provided direct voltage 11+23 Vdc (40mA) for sensor's supply.

Input for outer nullity "Reset" - switch K3 (fig.1, fig.2).

Input for outer starting "Start" - switch K2 (fig.1, fig.2).

Programmable parameters

Limit length, L
Value of coefficient, C
Position of the decimal point, dP
Maximum time between two impulses (0.0=infinity), t (sec)
Active input frontier (high / low), In
Operating regime (increment / decrement)
Breakup in the supply voltage Us :

- after an interruption, the counting continues from the current data
- after a break, the counting automatically starts from the beginning
- after an interruption, a stop mode of the current data is established
- after an interruption, the counter is reset

Automatic starting, at first switching on of the supply

Initial stated of output relay when starting (Status), St

When L is reached: is reset / the output is turned off, counting continues

0.001 \div 999999
0.001 \div 99.999
0.000 \div 0000.
0.0 \div 999.9
Hi / Lo
Inc / dEc

Cont
Full
Ucc
Goto
noAuto / Auto
□ / □
End G / End C

Schemes of connection

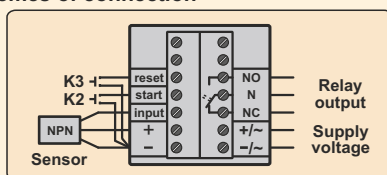


fig.1

Connecting NPN type sensor

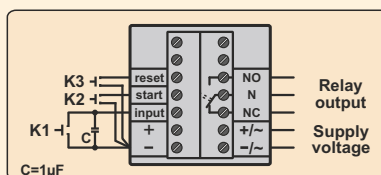


fig.2

Connecting a mechanical key "K1"

Features

The LMD6-2R reversible digital length counter operate together with an encoder or with a sensor with two phase-shifted outputs type "NPN". It is designed to measure the linear length of fabrics, pipes and other materials, which in their movement rotate a control roller, from which by certain sensor electric impulses are sent to the input of the counter. Depending on the direction of rotation of the control roller, the counter sums or subtracts from the total reading length the value of the coefficient "C". The coefficient "C" is set by the operator in advance when setting the counter. The location of the decimal point of the display can be set so that the length is displayed in meters (m), decimeters (dm), centimeters (cm) or millimeters (mm). In the counter it is possible to set a limit length "L" when reaching which the output relay of the counter turns off. The device is designed for installation in a dashboard (panel montage).



Type parameters		
Type	Supply voltage	Consumption
LMD6-2R / 220V	220VAC $\pm 10\%$	16mA (4W)
LMD6-2R / 12-24V	11 + 31 VDC 11 + 27 VAC	85mA (2W)

Technical parameters

LED display, 6 digits, green / red
Range of measurement, L
Supply voltage, U_s
Output - Relay
Maximum input frequency, F_{max}
Operating temperature range, T_{amb}
Degree of protection
Joining
Sizes

$h=10\text{mm}$ (height)
0,001...999999 m
220VAC / 12+24V ac/dc
4A / 220VAC, (NO+NC)
10 kHz
 $-20^{\circ}\dots+50^{\circ}\text{C}$
IP40
Terminal
95x49x113 mm

Energy-independent memory for programmable parameters.

Inputs counting "A" and "B" - they are meant to operate with encoder type NPN (fig.1, fig.2).

It is provided direct voltage 11+23 Vdc (40mA) for encoder's supply.

Input for outer nullity "Reset" - switch K3 (fig.1, fig.2).

Input for outer starting "Start" - switch K2 (fig.1, fig.2).

Programmable parameters

Limit length, L

0.001 + 999999

Value of coefficient, C

0.001 + 99.999

Position of the decimal point, dP

0.000 + 0000.

Maximum time between two impulses (0.0=infinity), t (sec)

0.0 + 999.9

Active input frontier (high / low), In

Hi / Lo

Breakup in the supply voltage U_s :

- after an interruption, the counting continues from the current data
- after a break, the counting automatically starts from the beginning
- after an interruption, a stop mode of the current data is established
- after an interruption, the counter is reset

Cont

Full

Ucc

Goto

Automatic starting, at first switching on of the supply

noAuto / Auto

Initial stated of output relay when starting (Status), St

\square / \square

When L is reached: is reset / the output is turned off, counting continues

End G / End C

Schemes of connection

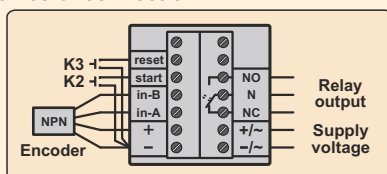


fig.1

Connecting NPN type encoder
with two dephased outputs

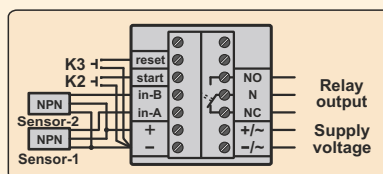


fig.2

Connecting two NPN
type sensors

Features

The LMD6-4 digital length counter is designed to measure the linear length of fabrics, pipes and other materials, which in their movement rotate a control roller, from which by certain sensor electric impulses are sent to the input of the counter. For each pulse, the counter adds the value of the coefficient "C" to the total measured length. The coefficient "C" is set by the operator in advance when setting the counter. The location of the decimal point of the display can be set so that the length is displayed in meters (m), decimeters (dm), centimeters (cm) or millimeters (mm). In the counter there is a possibility to set two limit lengths "L1" and "L2". When "L1" is reached, the output Relay-1 is switched off, and when "L2" is reached, the output Relay-2 is switched off. The device is designed for installation in a dashboard (panel montage).



Type parameters		
Type	Supply voltage	Consumption
LMD6-4 / 220V	220VAC $\pm 10\%$	16mA (4W)
LMD6-4 / 12-24V	11 \pm 31 VDC 11 \pm 27 VAC	125mA (3W)

Technical parameters

LED display, 6 digits, green / red

Range of measurement, L

Supply voltage, U_s

Output: Relay-1 (L1), Relay-2 (L2)

Maximum input frequency, F_{max}

Operating temperature range, T_{amb}

Degree of protection

Joining

Sizes

Energy-independent memory for programmable parameters.

Input counting - it is meant to operate with sensor type NPN (fig.1) or switch K1 (fig.2).

It is provided direct voltage 11 \pm 23 Vdc (40mA) for sensor's supply.

Input for outer nullity "Reset" - switch K3 (fig.1, fig.2).

Input for outer starting "Start" - switch K2 (fig.1, fig.2).

$h=10\text{mm}$ (height)

0,001...999999 m

220VAC / 12 \pm 24V ac/dc

4A/220VAC, 2x(NO+NC)

1 kHz (10 kHz option)

-20 $^{\circ}$...+50 $^{\circ}$ C

IP40

Terminal

95x49x113 mm

Programmable parameters

Limit length, L1

Limit length, L2

Value of coefficient, C

Position of the decimal point, dP

Maximum time between two impulses (0.0=infinity), t (sec)

Active input frontier (high / low), In

Operating regime (increment / decrement)

Breakup in the supply voltage U_s :

- after an interruption, the counting continues from the current data
- after a break, the counting automatically starts from the beginning
- after an interruption, a stop mode of the current data is established
- after an interruption, the counter is reset

Automatic starting, at first switching on of the supply

Initial stated of output relay when starting (Status), St

When L2 is reached: is reset / the output is turned off, counting continues

0.001 \pm 999999

0.001 \pm 999999

0.001 \pm 99.999

0.000 \pm 0000.

0.0 \pm 999.9

Hi / Lo

Inc / dEc

Cont

Full

Ucc

Goto

noAuto / Auto

\square / \square

End G / End C

Schemes of connection

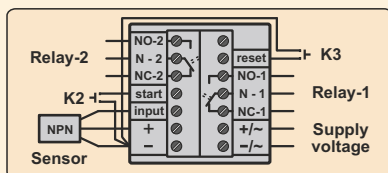


fig.1

Connecting NPN type sensor

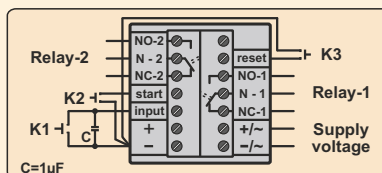


fig.2

Connecting a mechanical key "K1"

Features

The LMD6-5 digital length counter is designed to measure the linear length of fabrics, pipes and other materials, which in their movement rotate a control roller, from which by certain sensor electric impulses are sent to the input of the counter. For each pulse, the counter adds the value of the coefficient "C" to the total measured length. The coefficient "C" is set by the operator in advance when setting the counter. The location of the decimal point of the display can be set so that the length is displayed in meters (m), decimeters (dm), centimeters (cm) or millimeters (mm). In the counter it is possible to set a limit length "L" when reaching which the output relay of the counter turns off. The counter has a cell from the memory "Total", where the reported lengths of all received pulses are accumulated for an unlimited period of time. The accumulated length can be visualized by pressing the "Total" button. The device is designed for installation in a dashboard (panel montage).



Type parameters		
Type	Supply voltage	Consumption
LMD6-5 / 220V	220VAC $\pm 10\%$	16mA (4W)
LMD6-5 / 12-24V	11 \pm 31 VDC 11 \pm 27 VAC	85mA (2W)

Technical parameters

LED display, 6 digits, green / red
Range of measurement, L
Supply voltage, U_s
Output - Relay
Maximum input frequency, F_{max}
Operating temperature range, T_{amb}
Degree of protection
Joining
Sizes

$h=10\text{mm}$ (height)
0,001...999999 m
220VAC / 12+24V ac/dc
4A / 220VAC, (NO+NC)
1 kHz (10 kHz option)
 $-20^\circ \dots +50^\circ \text{C}$
IP40
Terminal
95x49x113 mm

Energy-independent memory for programmable parameters.

Input counting - it is meant to operate with sensor type NPN (fig.1) or switch K1 (fig.2).

It is provided direct voltage 11+23 Vdc (40mA) for sensor's supply.

Input for outer nullity of the memory "Total" - switch K3 (fig.1, fig.2).

Input for outer starting "Start" - switch K2 (fig.1, fig.2).

Programmable parameters

Limit length, L
Value of coefficient, C
Position of the decimal point, dP
Maximum time between two impulses (0.0=infinity), t (sec)
Active input frontier (high / low), In
Operating regime (increment / decrement)
Breakup in the supply voltage U_s :

- after an interruption, the counting continues from the current data
- after a break, the counting automatically starts from the beginning
- after an interruption, a stop mode of the current data is established
- after an interruption, the counter is reset

Automatic starting, at first switching on of the supply

Initial stated of output relay when starting (Status), St

0.001 \div 999999
0.001 \div 99.999
0.000 \div 0000.
0.0 \div 999.9
Hi / Lo
Inc / dEc

Cont
Full
Ucc
Goto
noAuto / Auto
 \square / \square

Schemes of connection

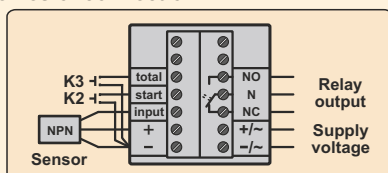


fig.1

Connecting NPN type sensor

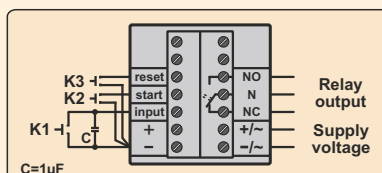


fig.2

Connecting a mechanical key "K1"

Features

The LMD6-6R reversible digital length counter operate together with an encoder or with a sensor with two phase-shifted outputs type "NPN". It is designed to measure the linear length of fabrics, pipes and other materials, which in their movement rotate a control roller, from which by certain sensor electric impulses are sent to the input of the counter. Depending on the direction of rotation of the control roller, the counter sums or subtracts from the total reading length the value of the coefficient "C". The coefficient "C" is set by the operator in advance when setting the counter. The location of the decimal point of the display can be set so that the length is displayed in meters (m), decimeters (dm), centimeters (cm) or millimeters (mm). In the counter there is a possibility to set two limit lengths "L1" and "L2". When "L1" is reached, the output Relay-1 is switched off, and when "L2" is reached, the output Relay-2 is switched off. The device is designed for installation in a dashboard (panel montage).



Type parameters		
Type	Supply voltage	Consumption
LMD6-6R / 220V	220VAC $\pm 10\%$	16mA (4W)
LMD6-6R / 12-24V	11 \pm 31 VDC 11 \pm 27 VAC	125mA (3W)

Technical parameters

LED display, 6 digits, green / red

Range of measurement, L

Supply voltage, Us

Output: Relay-1 (L1), Relay-2 (L2)

Maximum input frequency, Fmax

Operating temperature range, Tamb

Degree of protection

Joining

Sizes

Energy-independent memory for programmable parameters.

Inputs counting "A" and "B" - they are meant to operate with encoder type NPN (fig.1, fig.2).

It is provided direct voltage 11 \pm 23 Vdc (40mA) for encoder's supply.

Input for outer nullity "Reset" - switch K3 (fig.1, fig.2).

Input for outer starting "Start" - switch K2 (fig.1, fig.2).

h=10mm (height)

0,001...999999 m

220VAC / 12 \pm 24V ac/dc

4A/220VAC, 2x(NO+NC)

10 kHz

-20 $^{\circ}$...+50 $^{\circ}$ C

IP40

Terminal

95x49x113 mm

Programmable parameters

Limit length, L1

Limit length, L2

Value of coefficient, C

Position of the decimal point, dP

Maximum time between two impulses (0.0=infinity), t (sec)

Active input frontier (high / low), In

Breakup in the supply voltage Us :

- after an interruption, the counting continues from the current data
- after a break, the counting automatically starts from the beginning
- after an interruption, a stop mode of the current data is established
- after an interruption, the counter is reset

Automatic starting, at first switching on of the supply

Initial stated of output relay when starting (Status), St

When L2 is reached: is reset / the output is turned off, counting continues

0.001 \pm 999999

0.001 \pm 999999

0.001 \pm 99.999

0.000 \pm 0000.

0.0 \pm 999.9

Hi / Lo

Cont

Full

Ucc

Goto

noAuto / Auto

\square / \square

End G / End C

Schemes of connection

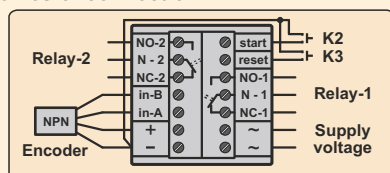


fig.1

Connecting NPN type encoder
with two dephased outputs

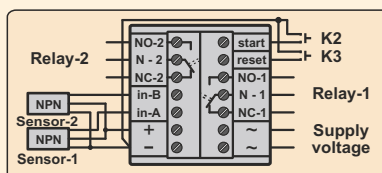


fig.2

Connecting two NPN
type sensors

Features

The LMD6-8R reversible digital controller is used to measure and visualize linear lengths. Shows both positive and negative lengths, which are indicated in millimeters. The controller has two counting inputs A and B, and is designed to operate in a system consisting of an optoelectronic sensor type OVM1-18.24.F (with two phase-shifted outputs) and a measuring ruler with a raster of 0.5mm (Fig. 1). The length measuring controller has three operating modes (I, II and III), which determine the discreteness when reading the length: 1mm, 0.5mm and 0.25mm. Switching from one mode to another is done by pressing and holding the "Reset" button for six seconds. The device is designed for installation in a dashboard (panel montage). There is a variant LMD6-8RC indicating the length in centimeters (on request). Analog output 0...4V (on request).



Type parameters		
Type	Supply voltage	Consumption
LMD6-8R / 220V	220VAC $\pm 10\%$	16mA (4W)
LMD6-8R / 12-24V	11 \pm 31 VDC 11 \pm 27 VAC	85mA (2W)

Technical parameters

LED display, 6 digits, green / red
 Range of measurement to mode "I"
 Range of measurement to mode "II"
 Range of measurement to mode "III"
 Maximum input frequency, F_{max}
 Operating temperature range, T_{amb}
 Degree of protection
 Joining
 Sizes

External reset input "Reset" - switch K3 (fig.2).

Inputs "A" and "B" - they are meant to operate with encoder type NPN (fig.2).

It is provided direct voltage 11 \pm 23 Vdc (40mA) for encoder's supply.

h=10 mm (height)
 -99999...999999 mm
 -9999,5...99999,5 mm
 -999,75...9999,75 mm
 10 kHz
 -20...+50° C
 IP40
 Terminal
 95x49x113 mm

illustration

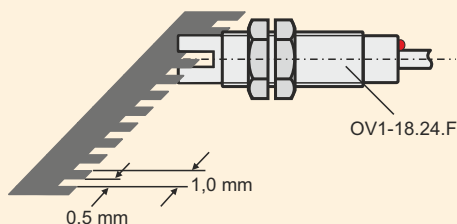


fig.1

Scheme of connection

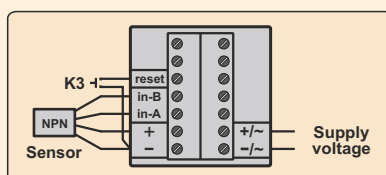
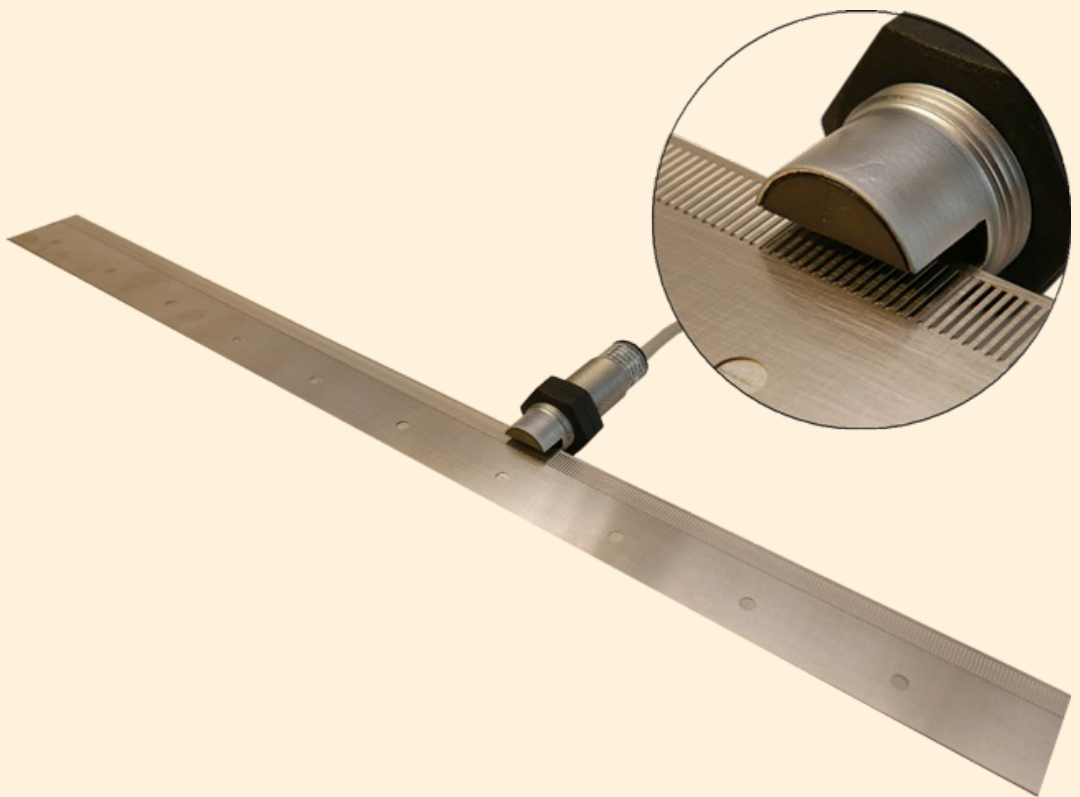


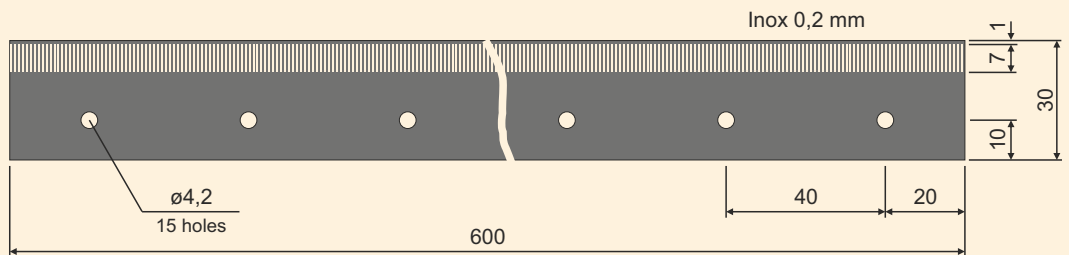
fig.2

Connecting NPN type sensor
 with two dephased outputs

Animation



Measuring ruler L600-R0.5 (mm)



Features

The reversible digital length counter LMD8-2R is designed to operate with an encoder (photoelectric raster converter) or with a sensor with two phase-shifted outputs type "NPN". It serves for measuring the length of fabrics and other materials in their classification. There are two displays on the front panel - 8-digit to measure the total length of the material and 6-digit to measure the length of the defective material. The counter has two independent memories - "Summational" and "Total". The "Summational" memory stores the accumulated lengths of the measured material for a short period of time (day, week, month). The "total" memory serves to store the accumulated lengths for a longer period of time (year, for annual reporting). The coefficient "C" is set programmatically, which serves to convert the electrical pulses received at the input of the counter into real length. The coefficient "C" determines the discreteness (step) when measuring the length of the material.



Technical parameters

LED display-1, 8-digits, red
 LED display-2, 6-digits, green
 Supply voltage, U_s
 Power consumption, P_c
 Measuring range, display-1
 Measuring range, display-2
 Maximum frequency of the inputs A and B
 Operating temperature range, T_{amb}
 Degree of protection
 Joining - power
 Joining - encoder
 Sizes

$h=14$ mm (height)
 $h=10$ mm (height)
 $220VAC \pm 10\%$, 50Hz
 12W (55mA)
 0 ... 999999,99 m
 0 ... 9999,99 m
 3000 Hz
 $-20^{\circ} \dots +50^{\circ} C$
 Ip41
 Conn. - MC-AC-J (male)
 Conn. - Canon 9 (female)
 190x120x60mm

Programmable parameter

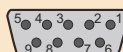
Conversion coefficient, C (cm)

$0.001 \div 99.999$

Encoder connector designation

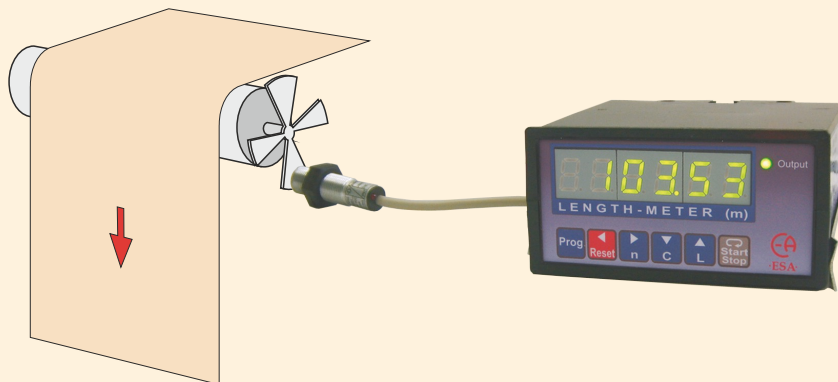
pin 2 — input A
 pin 3 — input B
 pin 4 — +12V
 pin 5 — Gnd (-)

Canon "DB9PF"
 (female)



Kinematics

The kinematic scheme of installation of a sensor for one-way measurement of fabric length.



The kinematic scheme of installation of two sensors for two-way measurement of fabric length. When using inductive sensors, they must be shielded with a metal housing.

