

# ENCO-METER EM4

## EXTENDIBLE CABLE MEASUREMENT SYSTEM

- Measuring linear distances up to 4 meters
- Any mounting position possible
- Protection class IP51 according to DIN EN 60529
- Anodised and pressurized options available
- The drum shaft can drive any kind of rotary encoder (encoder, potentiometer, ...)
- Stainless steel extendible cable  $\varnothing 0,61$  AISI316

Image with flexible accessory



Linear measurement system



Extendible cable



45°



Pressurized

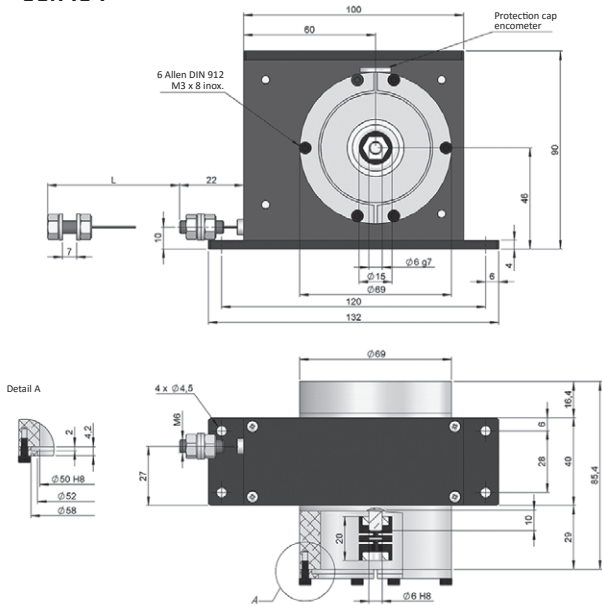


IP 51



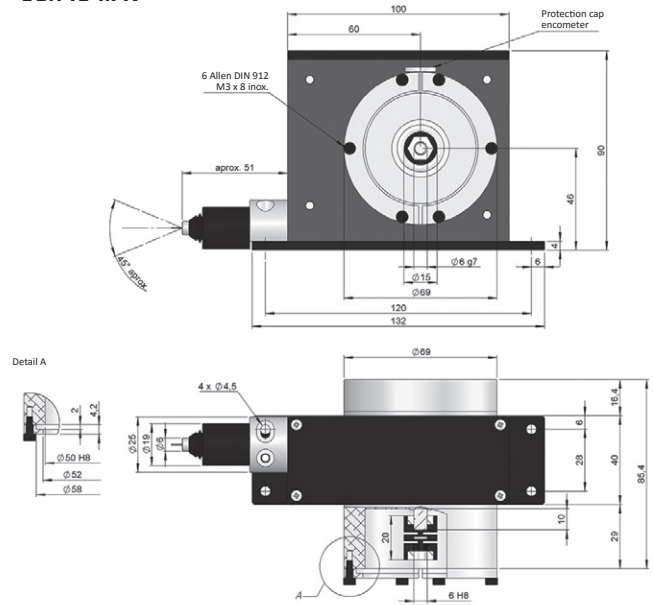
Express Delivery

### 90.1404



Drawing 90.1404 with standard bell synchro and coupling type 1

### 90.1404.FX



Drawing 90.1404.FX with flexible accessory, standard bell synchro and coupling type 1

## REFERENCE

Reference example: 90.1404.SY1

Serie	Fixing system to sensor	Coupling	Special Customer
<b>90.1404 / 90.1404.FX</b>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
<b>90.1404.</b> Standard	<b>SY.</b> Standard bell synchro	<b>1.</b> PFP 1520 06/06	<b>AW.</b> Inverted caps
<b>90.1404.FX.</b> Flexible accessory	<b>CL.</b> Clamping bell	<b>2.</b> PFP 1520 06/635	<b>AV.</b> Double restoring force
		<b>3.</b> PFP 2224 06/10	<b>BF.</b> Anodised
			<b>BD.</b> Pressurized

Request the ENCO-METER already coupled to an electronic output device that could be an Incremental Optical Encoder, Multiturn Absolute Optical Encoder, Potentiometer or Multiturn Absolute Magnetic Encoder.



# ENCO-METER EM4

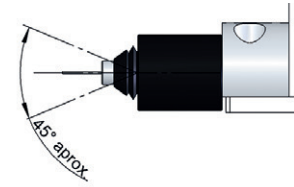
## EXTENDIBLE CABLE MEASUREMENT SYSTEM

### TECHNICAL SPECIFICATIONS

<b>MODEL</b>	<b>EM4</b>
Reference	90.1404 / 90.1404.FX
Travel	200 mm ±0,06 / per turn
Cable*	∅ 0,61 stainless steel AISI316 (structure 19 x 7 + 0)
Measurement range, up to (mm)	4000
Maximum cable extension (mm)	4010
Minimum cable static tension	3 N - Standard 6 N - Special customer AV
Maximum cable static tension	8,9 N - Standard 18 N - Special customer AV
Maximum extension acceleration	35 m/s <sup>2</sup> - Standard 30 m/s <sup>2</sup> - Special customer AV
Maximum recovery acceleration	10 m/s <sup>2</sup> - Standard 20 m/s <sup>2</sup> - Special customer AV
Maximum speed	1 m/s
Protection against dust and splashes according to DIN EN 60529	IP51

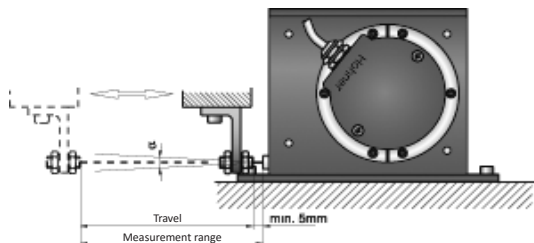
(\*) Other types of cables are possible on special order.

### FLEXIBLE ACCESSORY (FX)



ENCO-METERS with flexible accessory FX (90.1404.FX, 90.1808.FX, 90.1810.FX) allow a misalignment of the extendable cable up to 45°.

### INSTALLATION



ENCO-METER units are secured to a flat machine surface by means of three or four M4 screws. The cable must be correctly aligned and under no circumstances must it exceed the measurement range.

Special customer AW for inverted caps.

EM 90.1404:  $\alpha < 2^\circ$  | EM 90.1404.FX:  $\alpha < 45^\circ$

### OUTPUT DEVICES

We can supply the ENCO-METER already coupled to an electronic output device that could be an Incremental Optical Encoder, Multiturn Absolute Optical Encoder, Potentiometer or Multiturn Absolute Magnetic Encoder:

#### + ABSOLUTE OR INCREMENTAL ENCODER

If it is required to obtain a determined resolution "r" (mm per pulse) in the case of using an absolute or incremental encoder, the number of encoder pulses (n) will be:

$$n = \frac{D}{r} \quad (D \text{ is ENCO-METER travel in mm})$$

#### + POTENTIOMETER

Using a potentiometer, an output "r" ratio (in  $\Omega$  per mm) is obtained in accordance with:

$$r = \frac{R}{D \cdot n} \quad (R \text{ is the rated resistance and } n \text{ is the maximum number of turns})$$

As standard, we have potentiometers of  $R = 10K\Omega$  and  $n = 10$  turns. It must be taken into consideration that the mechanical travel of the potentiometer may limit the ENCO-METER measurement range.

**i** Electronic output devices that are delivered coupled to an ENCO-METER have an orientation of 45°.

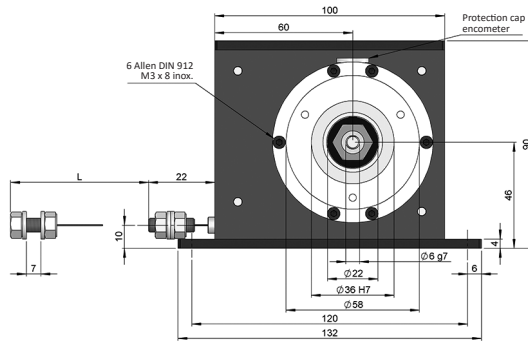
**i** If devices are not supplied assembled, we recommend mounting the sensor on the ENCO-METER without the seal.

# ENCO-METER EM4

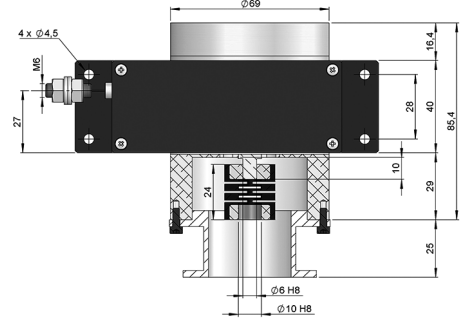
## EXTENDIBLE CABLE MEASUREMENT SYSTEM

### FIXING SENSOR SYSTEM DIMENSIONS

Fixing system to  
sensor type CL  
Clamping bell

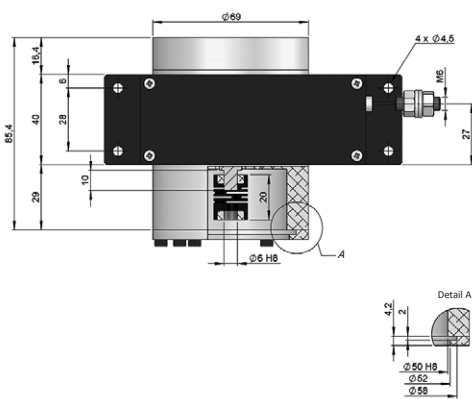
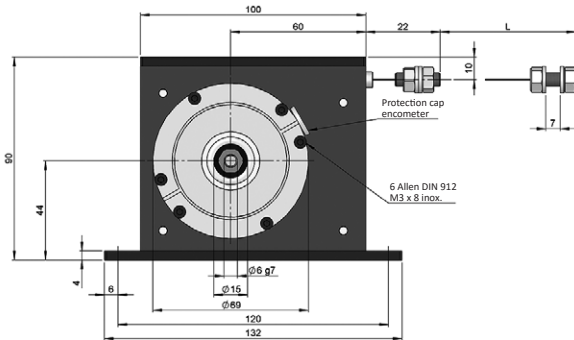


Coupling type 3  
PFP 2224 06/10



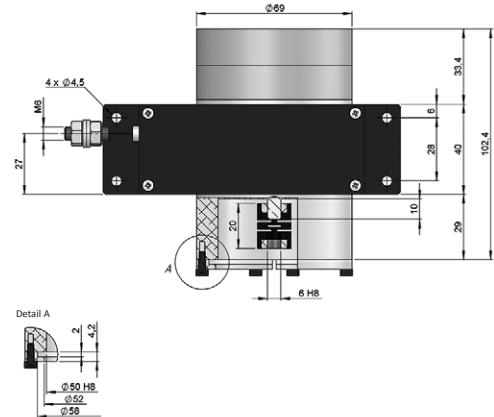
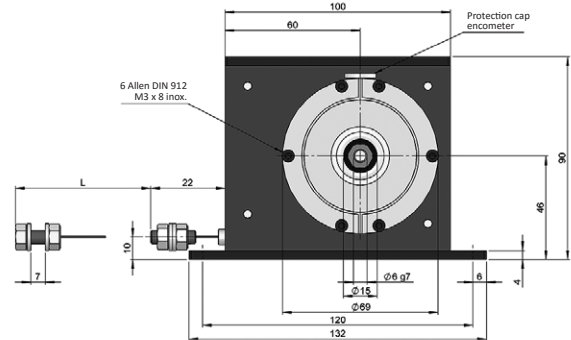
### SPECIAL CUSTOMER OPTIONS

AW - Inverted caps



Drawing 90.1404, Special Customer AW

AV - Double restoring force

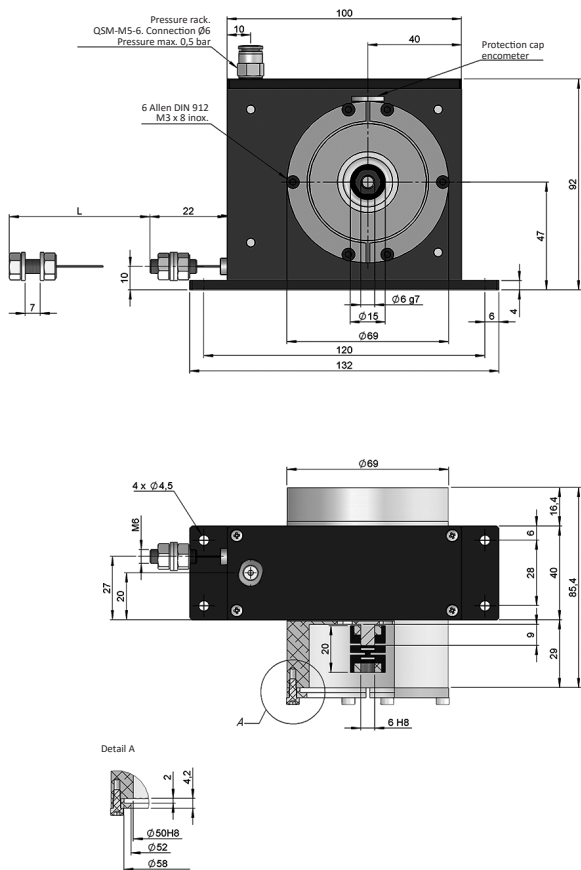


Drawing 90.1404, Special Customer AV

# ENCO-METER EM4

## EXTENDIBLE CABLE MEASUREMENT SYSTEM

### BD - Pressurized option



Drawing 90.1404, Special Customer BD

# ENCO-METER EM8

## EXTENDIBLE CABLE MEASUREMENT SYSTEM

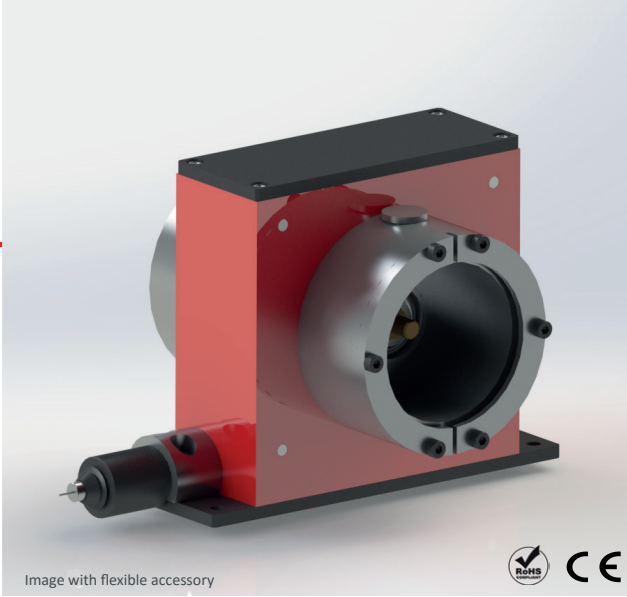


Image with flexible accessory

- Measuring linear distances up to 8 meters
- Any mounting position possible
- Protection class IP51 according to DIN EN 60529
- Anodised and pressurized options available
- The drum shaft can drive any kind of rotary encoder (encoder, potentiometer, ...)
- Stainless steel extendible cable  $\varnothing 0,61$  AISI316



Linear measurement system



Extendible cable



45°



Pressurized

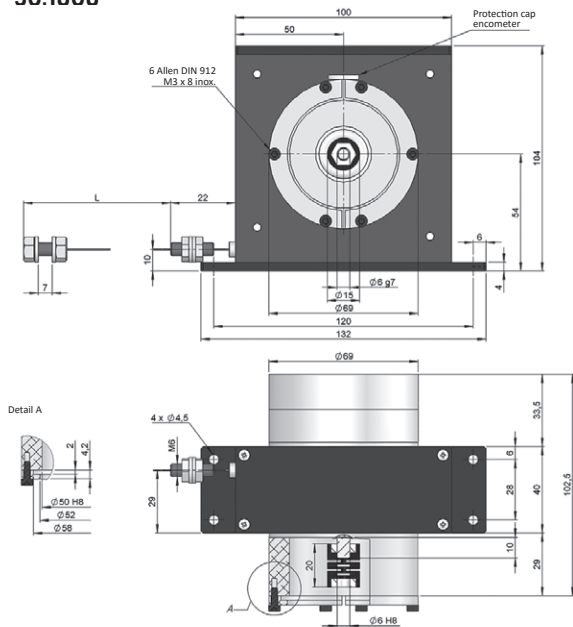


IP 51



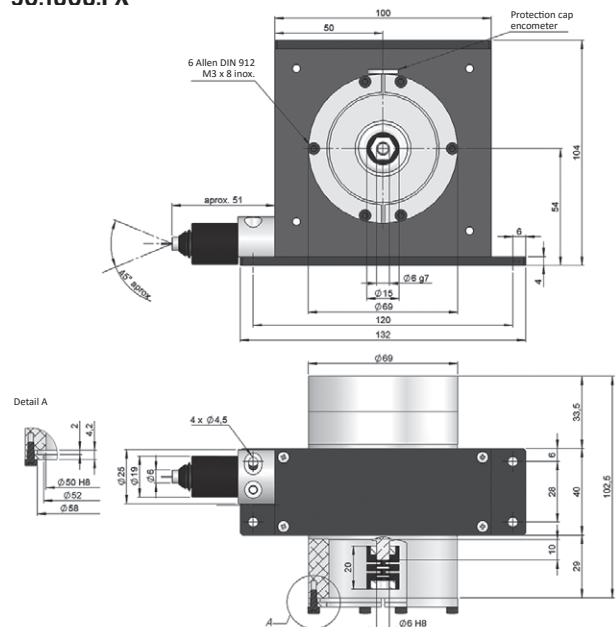
Express Delivery

### 90.1808



Drawing 90.1808 with standard bell synchro and coupling type 1

### 90.1808.FX



Drawing 90.1808.FX with flexible accessory, standard bell synchro and coupling type 1

## REFERENCE

Reference example: 90.1808.SY1

Serie	Fixing system to sensor	Coupling	Special Customer
<b>90.1808 / 90.1808.FX</b>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
<b>90.1808.</b> Standard	<b>SY.</b> Standard bell synchro	<b>1.</b> PFP 1520 06/06	<b>AW.</b> Inverted caps
<b>90.1808.FX.</b> Flexible accessory	<b>CL.</b> Clamping bell	<b>2.</b> PFP 1520 06/635 <b>3.</b> PFP 2224 06/10	<b>BF.</b> Anodised <b>BD.</b> Pressurized

Request the ENCO-METER already coupled to an electronic output device that could be an Incremental Optical Encoder, Multiturn Absolute Optical Encoder, Potentiometer or Multiturn Absolute Magnetic Encoder.



# ENCO-METER EM8

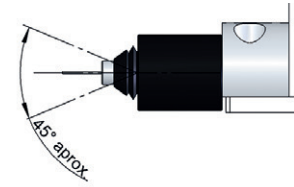
## EXTENDIBLE CABLE MEASUREMENT SYSTEM

### TECHNICAL SPECIFICATIONS

MODEL	EM8
Reference	90.1808 / 90.1808.FX
Travel	250 mm ±0,06 / per turn
Cable*	Ø 0,61 stainless steel AISI316 (structure 19 x 7 + 0)
Measurement range, up to (mm)	8000
Maximum cable extension (mm)	8010
Minimum cable static tension	6 N - Standard
Maximum cable static tension	13 N - Standard
Maximum extension acceleration	30 m/s <sup>2</sup> - Standard
Maximum recovery acceleration	12 m/s <sup>2</sup> - Standard
Maximum speed	0,75 m/s
Protection against dust and splashes according to DIN EN 60529	IP51

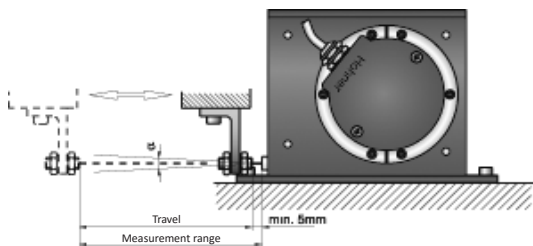
(\*) Other types of cables are possible on special order.

### FLEXIBLE ACCESSORY (FX)



ENCO-METERS with flexible accessory FX (90.1404.FX, 90.1808.FX, 90.1810.FX) allow a misalignment of the extendable cable up to 45°.

### INSTALLATION



ENCO-METER units are secured to a flat machine surface by means of three or four M4 screws. The cable must be correctly aligned and under no circumstances must it exceed the measurement range.

Special customer AW for inverted caps.

EM 90.1808:  $\alpha < 2^\circ$  | EM 90.1808.FX:  $\alpha < 45^\circ$

### OUTPUT DEVICES

We can supply the ENCO-METER already coupled to an electronic output device that could be an Incremental Optical Encoder, Multiturn Absolute Optical Encoder, Potentiometer or Multiturn Absolute Magnetic Encoder:

#### + ABSOLUTE OR INCREMENTAL ENCODER

If it is required to obtain a determined resolution "r" (mm per pulse) in the case of using an absolute or incremental encoder, the number of encoder pulses (n) will be:

$$n = \frac{D}{r} \quad (D \text{ is ENCO-METER travel in mm})$$

#### + POTENTIOMETER

Using a potentiometer, an output "r" ratio (in  $\Omega$  per mm) is obtained in accordance with:

$$r = \frac{R}{D \cdot n} \quad (R \text{ is the rated resistance and } n \text{ is the maximum number of turns})$$

As standard, we have potentiometers of  $R = 10K\Omega$  and  $n = 10$  turns. It must be taken into consideration that the mechanical travel of the potentiometer may limit the ENCO-METER measurement range.

**i** Electronic output devices that are delivered coupled to an ENCO-METER have an orientation of 45°.

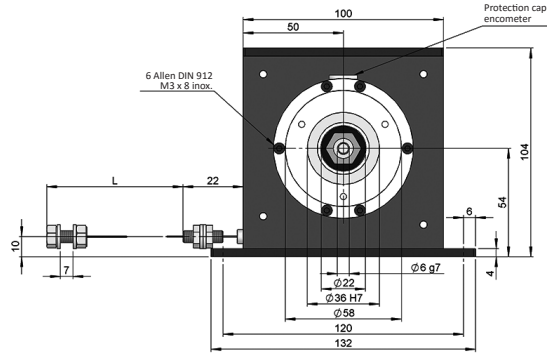
**i** If devices are not supplied assembled, we recommend mounting the sensor on the ENCO-METER without the seal.

# ENCO-METER EM8

## EXTENDIBLE CABLE MEASUREMENT SYSTEM

### FIXING SENSOR SYSTEM DIMENSIONS

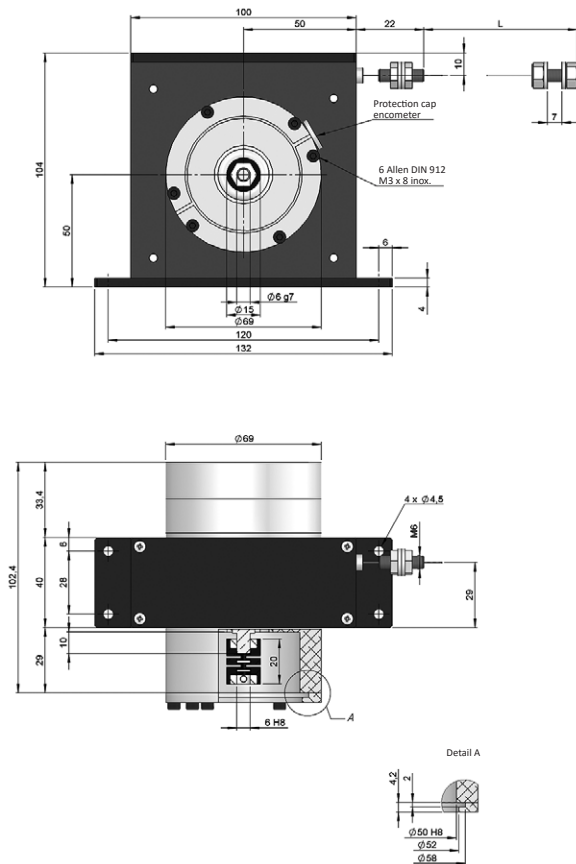
Fixing system to  
sensor type CL  
Clamping bell



Coupling type 3  
PFP 2224 06/10

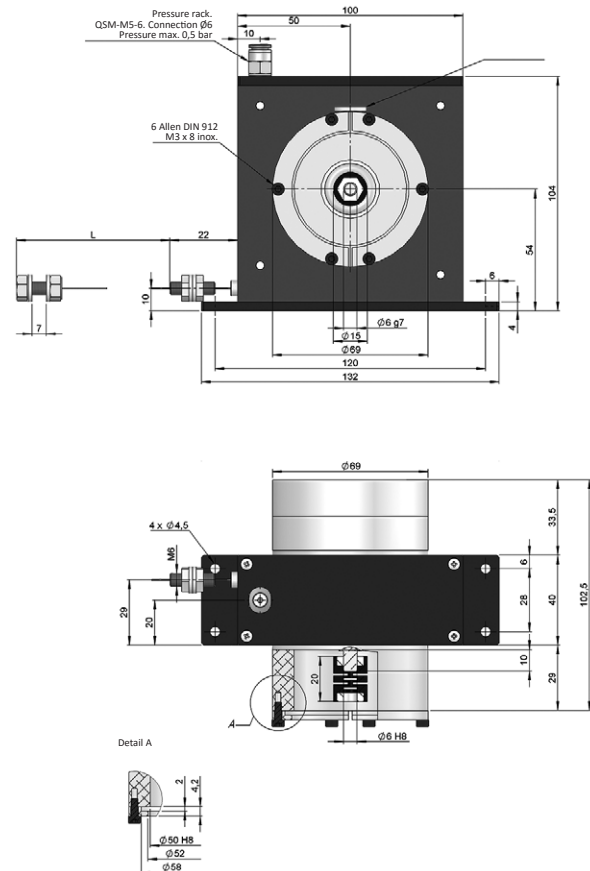
### SPECIAL CUSTOMER OPTIONS

AW - Inverted caps



Drawing 90.1808, Special Customer AW

BD - Pressurized option

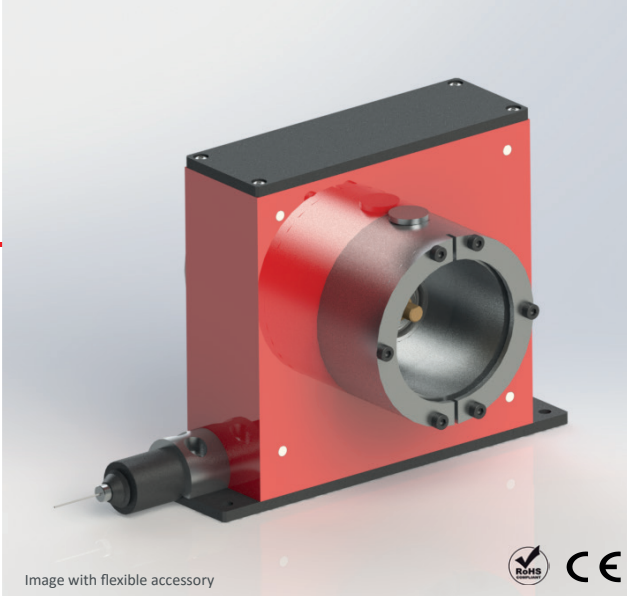


Drawing 90.1808, Special Customer BD

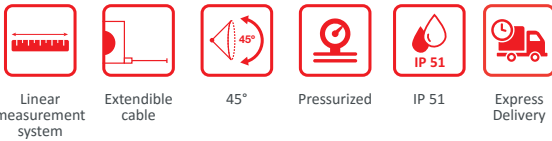


# ENCO-METER EM10

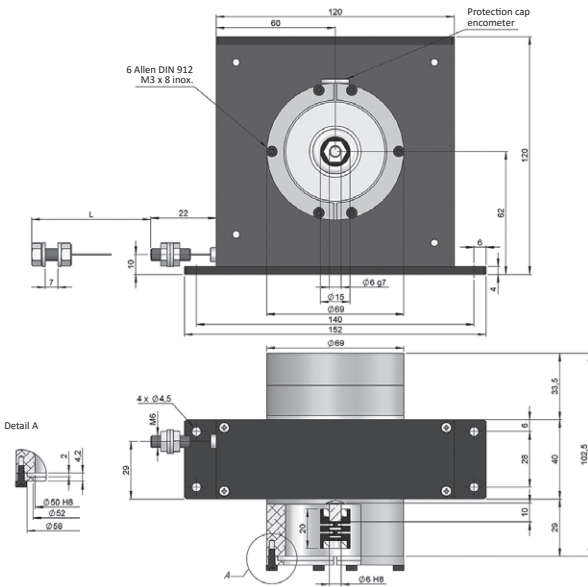
## EXTENDIBLE CABLE MEASUREMENT SYSTEM



- Measuring linear distances up to 10 meters
- Any mounting position possible
- Protection class IP51 according to DIN EN 60529
- Anodised and pressurized options available
- The drum shaft can drive any kind of rotary encoder (encoder, potentiometer, ...)
- Stainless steel extendible cable  $\varnothing$  0,61 AISI316

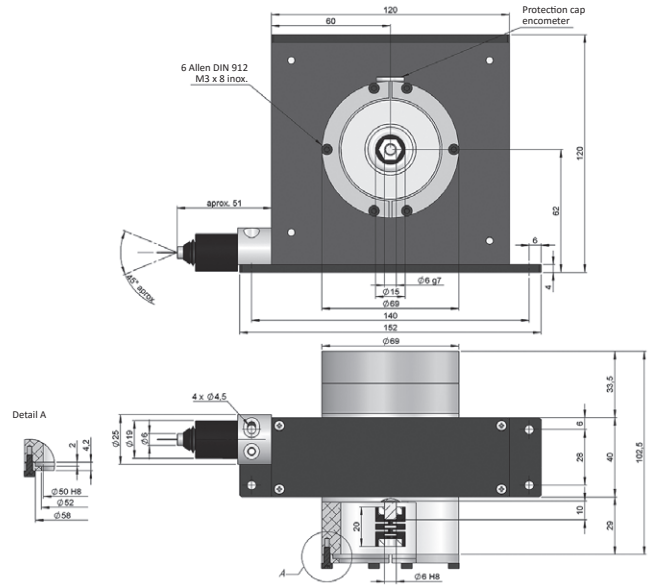


### 90.1810



Drawing 90.1810 with standard bell synchro and coupling type 1

### 90.1810.FX



Drawing 90.1810.FX with flexible accessory, standard bell synchro and coupling type 1

## REFERENCE

Reference example: 90.1810.SY1

Serie	Fixing system to sensor	Coupling	Special Customer
<b>90.1810 / 90.1810.FX</b>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
<b>90.1810.</b> Standard	<b>SY.</b> Standard bell synchro	<b>1.</b> PFP 1520 06/06	<b>AW.</b> Inverted caps
<b>90.1810.FX.</b> Flexible accessory	<b>CL.</b> Clamping bell	<b>2.</b> PFP 1520 06/635 <b>3.</b> PFP 2224 06/10	<b>BF.</b> Anodised <b>BD.</b> Pressurized

Request the ENCO-METER already coupled to an electronic output device that could be an Incremental Optical Encoder, Multiturn Absolute Optical Encoder, Potentiometer or Multiturn Absolute Magnetic Encoder.





# ENCO-METER EM10

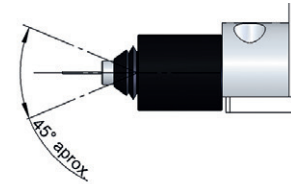
## EXTENDIBLE CABLE MEASUREMENT SYSTEM

### TECHNICAL SPECIFICATIONS

MODEL	EM10
Reference	90.1810 / 90.1810.FX
Travel	300 mm ±0,06 / per turn
Cable*	Ø 0,61 stainless steel AISI316 (structure 19 x 7 + 0)
Measurement range, up to (mm)	10000
Maximum cable extension (mm)	10010
Minimum cable static tension	6 N - Standard
Maximum cable static tension	13 N - Standard
Maximum extension acceleration	25 m/s <sup>2</sup> - Standard
Maximum recovery acceleration	12 m/s <sup>2</sup> - Standard
Maximum speed	0,75 m/s
Protection against dust and splashes according to DIN EN 60529	IP51

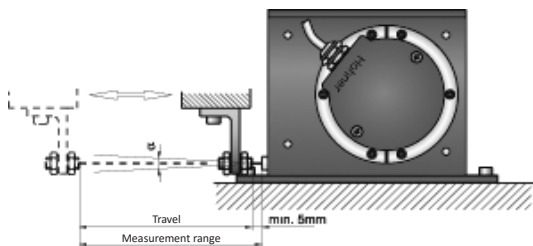
(\*) Other types of cables are possible on special order.

### FLEXIBLE ACCESSORY (FX)



ENCO-METERS with flexible accessory FX (90.1404.FX, 90.1808.FX, 90.1810.FX) allow a misalignment of the extendable cable up to 45°.

### INSTALLATION



ENCO-METER units are secured to a flat machine surface by means of three or four M4 screws. The cable must be correctly aligned and under no circumstances must it exceed the measurement range.

Special customer AW for inverted caps.

EM 90.1810:  $\alpha < 2^\circ$  | EM 90.1810.FX:  $\alpha < 45^\circ$

### OUTPUT DEVICES

We can supply the ENCO-METER already coupled to an electronic output device that could be an Incremental Optical Encoder, Multiturn Absolute Optical Encoder, Potentiometer or Multiturn Absolute Magnetic Encoder:

#### + ABSOLUTE OR INCREMENTAL ENCODER

If it is required to obtain a determined resolution "r" (mm per pulse) in the case of using an absolute or incremental encoder, the number of encoder pulses (n) will be:

$$n = \frac{D}{r} \quad (D \text{ is ENCO-METER travel in mm})$$

#### + POTENTIOMETER

Using a potentiometer, an output "r" ratio (in  $\Omega$  per mm) is obtained in accordance with:

$$r = \frac{R}{D \cdot n} \quad (R \text{ is the rated resistance and } n \text{ is the maximum number of turns})$$

As standard, we have potentiometers of  $R = 10k\Omega$  and  $n = 10$  turns. It must be taken into consideration that the mechanical travel of the potentiometer may limit the ENCO-METER measurement range.

**i** Electronic output devices that are delivered coupled to an ENCO-METER have an orientation of 45°.

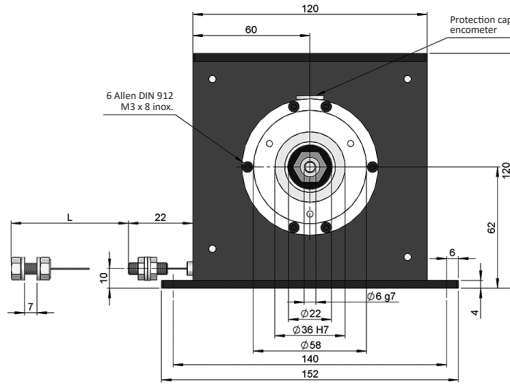
**i** If devices are not supplied assembled, we recommend mounting the sensor on the ENCO-METER without the seal.

# ENCO-METER EM10

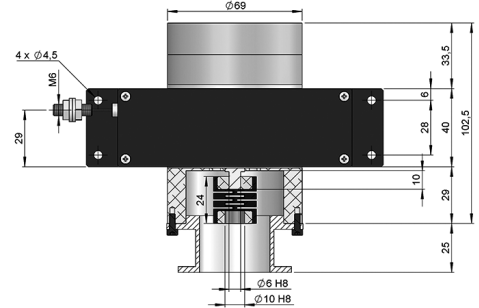
## EXTENDIBLE CABLE MEASUREMENT SYSTEM

### FIXING SENSOR SYSTEM DIMENSIONS

Fixing system to  
sensor type CL  
Clamping bell

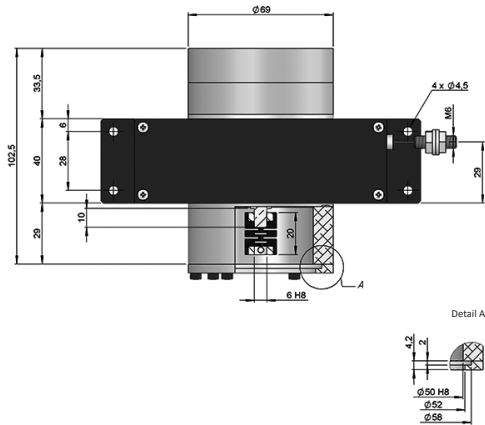
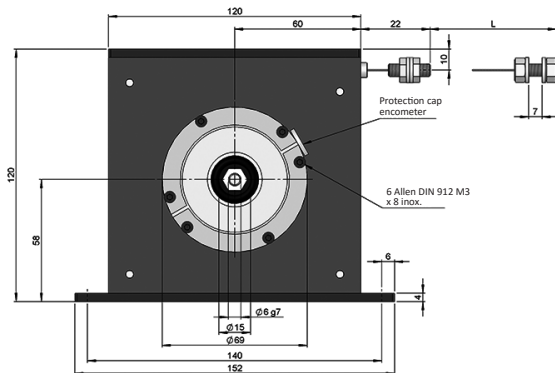


Coupling type 3  
PFP 2224 06/10



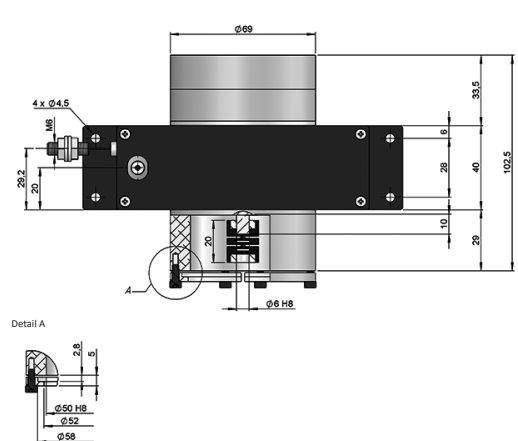
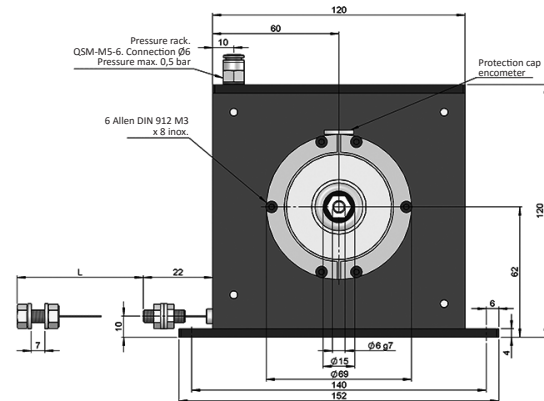
### SPECIAL CUSTOMER OPTIONS

AW - Inverted caps



Drawing 90.1810, Special Customer AW

BD - Pressurized option



Drawing 90.1810, Special Customer BD