# User's manual

# SFP





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## 1 - Safety summary

## 1.1 Safety

- Always adhere to the professional safety and accident prevention regulations applicable to your country during device installation and operation;
- installation and maintenance operations have to be carried out by qualified personnel only, with power supply disconnected and stationary mechanical parts;
- device must be used only for the purpose appropriate to its design: use for purposes other than those for which it has been designed could

result in serious personal and/or the environment damage;

- high current, voltage and moving mechanical parts can cause serious or fatal injury;
- warning ! Do not use in explosive or flammable areas;
- failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the equipment;
- Lika Electronic s.r.l. assumes no liability for the customer's failure to comply with these requirements.

## 1.2 Electrical safety

- Turn OFF power supply before connecting the device;
- connect according to explanation in section "4 Electrical connections";
- wires that are not used must be cut at different lengths and insulated singularly;
- in compliance with 2004/108/EC norm on electromagnetic compatibility, following precautions must be taken:



- before handling and installing the equipment, discharge electrical charge from your body and tools which may come in touch with the device;
- power supply must be stabilized without noise; install EMC filters on device power supply if needed;
- always use shielded cables (twisted pair cables whenever possible);
- avoid cables runs longer than necessary;
- avoid running the signal cable near high voltage power cables;
- mount the device as far as possible from any capacitive or inductive noise source; shield the device from noise source if needed;
- minimize noise by connecting the shield and/or the connector housing and/or the frame to ground. Make sure that ground is not affected by noise. The connection point to ground can be situated both on the device side and on user's side. The best solution to minimize the interference must be carried out by the user.

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## 1.3 Mechanical safety

- Install the device following strictly the information in the section "3 - Mounting instructions";
- mechanical installation has to be carried out with stationary mechanical parts;
- do not disassemble the device;
- do not tool the device;
- delicate electronic equipment: handle with care; do not subject the device to knocks or shocks;
- respect the environmental characteristics declared by manufacturer;
- we suggest installing the unit providing protection means against waste, especially swarf as turnings, chips, or filings; should this not be possible, please make sure that adequate cleaning measures are in place in order to prevent the wire from jamming;
- to avoid failures, never exceed the maximum measuring length and prevent the wire from tangling up;
- never release the wire freely, always help the wire wind properly: risk of personal injury and/or equipment damage;
- always keep the wire aligned not to damage the equipment;
- the stroke per turn of the draw-wire unit is 100 mm (3.94").

## 2 – Identification

Device can be identified through data (order code and serial number) available in the label applied to its body. Information is listed in the delivery document. For any information on the technical characteristics of the product, <u>refer to the</u> <u>technical catalogue</u>.



**Warning**: encoders having order code ending with "/Sxxx" may have mechanical and electrical characteristics different from standard and be supplied with additional documentation for special connections (Technical Info).

## 3 - Mounting instructions

## WARNING

Installation and maintenance operations have to be carried out by qualified personnel only, with power supply disconnected and mechanical parts absolutely in stop. Do not tool the unit.

## 3.1 Overall dimensions



## 3.2 Installation



- Fasten the device onto the fixed support using **two M3 screws 1**;
- remove the transport safety wire that pins the end of the measuring wire;
- the end of the wire must be fixed to the moving unit using the provided **M6 nuts 2**.

## WARNING

We suggest installing the unit providing protection means against waste, especially swarf as turnings, chips, or filings; should this not be possible, please make sure that adequate cleaning measures are in place in order to prevent the wire from jamming.

To avoid irreparable failures, never exceed the maximum measuring length and prevent the wire from tangling up.

Never release the wire freely, always help the wire wind properly: risk of personal injury and/or equipment damage.



Always keep the wire aligned not to damage the equipment (maximum deviation: 3°).



### 3.3 Useful information

To know the **max. measuring length (max. stroke)** of the unit and the **output** type please refer to the order code. The mechanical stroke per revolution is 100 mm for all models; while the maximum number of revolutions is between 3 for SFP-300-... model and 20 for SFP-2000-... model.



# EXAMPLE

SFP-**500-5**-L2 Max. measuring length: 500 mm Output: 5 K $\Omega$  resistance potentiometer

SFP-1500-AV2-L1

Max. measuring length: 1500 mm Output: 0-10V voltage analogue output

## 4 - Electrical connections

## WARNING

Electrical connection has to be carried out by qualified personnel only, with power supply disconnected and mechanical parts compulsorily in stop.

### 4.1 Potentiometer connections

Function	Colour	
A (slider)	Green	
C +	Red	
C -	Black	
Shielding	Shield	



### 4.2 Analogue connections

Function		Colour
AI1	AV2	Colour
+10Vdc +30Vdc	+15Vdc +30Vdc	Red
n. c.	0Vdc	Black
lout	Vout	Green
Shielding		Shield

### n. c. = not connected

### 4.3 I3 cable specifications

Туре:	LIKA HI-FLEX 13 cable
Wires:	3 x 0.22 mm <sup>2</sup> (24 AWG)
Shield:	tinned copper braid
External diameter:	4.0 mm <u>+</u> 0.15 mm
Impedance:	< 87 Ω/Km
Min. bending radius:	40 mm

## 4.4 GND connections

Minimize noise by connecting the shield and the frame to ground. Make sure that ground is not

affected by noise. Make sure that ground is not affected by noise. The connection point to ground can be situated both on the device side and on user's side. The best solution to minimize the interference must be carried out by the user.

## 4.5 Output value

The analogue output values increase when pulling out the cable. For potentiometer values see the section "4.1 Potentiometer connections" on page 8.



## 5 - Output signals

### 5.1 Potentiometer signals

Signals	Condition	Value
between A e C -	wire fully wound on	$0\Omega^{1}$
between A e C +	the drum (0 mm)	max. value <sup>2</sup>

<sup>1</sup> Approx. 0.03 % of max. value

<sup>2</sup> For SFP-1500-5-L2, max. value = 5 K $\Omega$ 

## 5.2 Analogue signals

Current output (Al1): 4-20mA 0 position = 4 mA, max. position = 20 mA Recommended circuit Encoder Controller



Voltage output (AV2): 0-10V 0 position = 0 V, max. position = 10 V Recommended circuit Encoder Controller



## 6 - Maintenance

The measuring system does not need any particular maintenance; anyway it has to be handled with the utmost care as any delicate electronic equipment. From time to time we recommend the following operations:

• the unit and the wire have to be regularly cleaned using a soft and clean cloth to remove dust, chips, moisture etc.; do not use oil to clean the wire.

## 7 - Order code



SFP	-1000	-10	-L2
SFP	-2000	-Al1	-L1
Series			Wire length [m]
Max measuring length [mm]		Output circuit	

<u>Refer to the technical catalogue</u> for the available combinations

Document release	Description
1.0	1 <sup>st</sup> issue
1.1	General review
1.2	Analogue versions
1.3	Installation info update





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