

- Small size hollow shaft encoder
- Ideally suited for motor feedback applications
- Extended standard operating temperature from -40°C to 100°C
- Universal output circuit: 5–30 VDC Push-Pull (Totem Pole) or NPN/PNP open collector (HTL), or Line Driver (TTL)
- Quadrature output signals with index (ABZ, /ABZ)



A50

### ENVIRONMENTAL SPECIFICATIONS

Shock:	250 g, 6 ms acc. to CEI EN 60068-2-27
Vibrations:	10 g, 5-2000 Hz acc. to CEI EN 60068-2-6
Protection:	IP65
Operating temperature range:	-40°C +100°C (-40°F +212°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)

### MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Hollow shaft diameter:	Ø 1/4" or 3/8"
Shaft loading (axial, radial):	20 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque (at 20°C):	≤ 0,25 Ncm (typical)
Bearings life:	10 <sup>9</sup> rev. min.
Electrical connections:	6.5 ft/2m cable length
Weight:	~ 100 g (3.5 oz)

### ELECTRICAL SPECIFICATIONS

Resolution (PPR):	360, 1000, 1024, 2048
Counting frequency:	100 kHz max.
Output circuits:	Universal output circuit: Push-Pull (Totem Pole) or NPN/PNP open collector (HTL), or Line Driver (TTL) Quadrature with index (ABZ, /ABZ)
Power supply:	+5VDC to +30VDC
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except inductive circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4

### MATERIALS

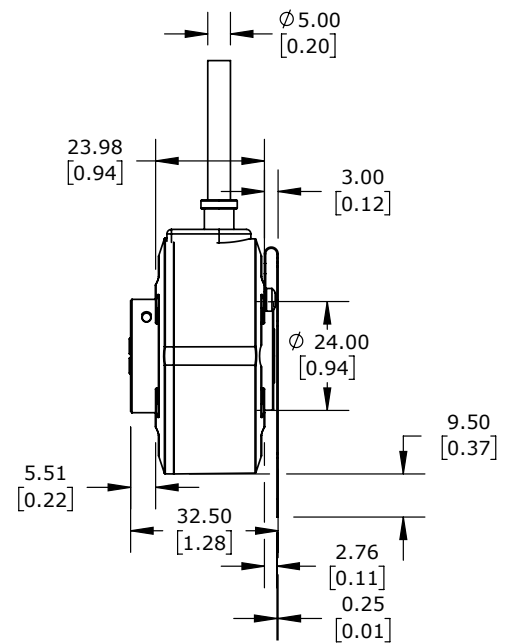
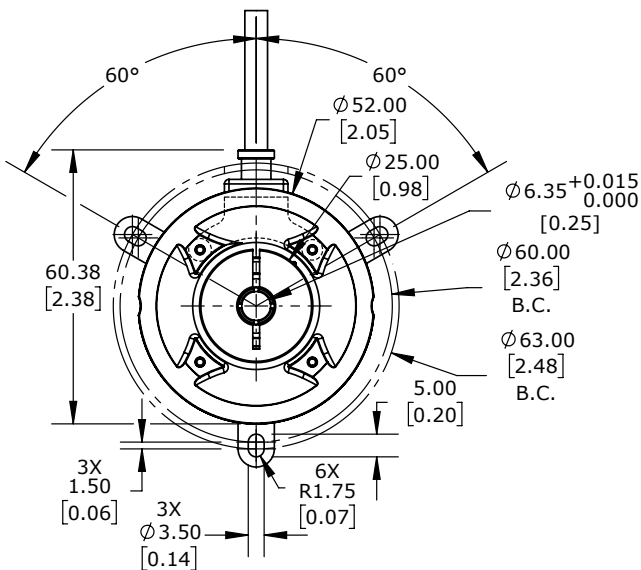
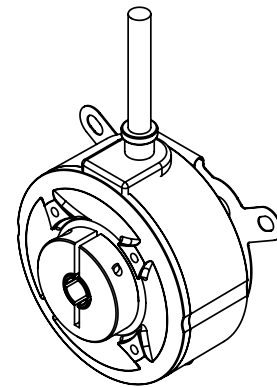
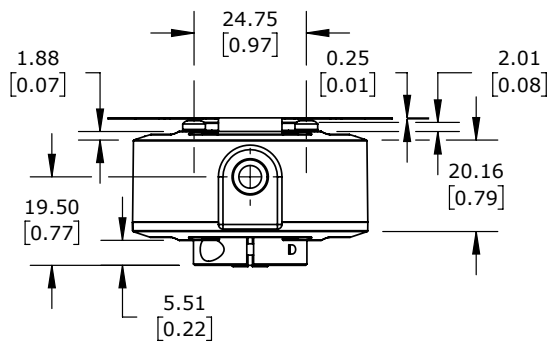
Flange:	zamak 15, UNI EN1774
Housing:	zamak 15, UNI EN1774
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305

### ACCESSORIES

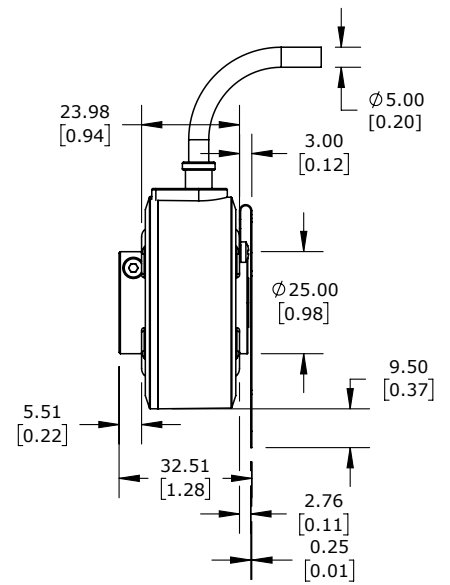
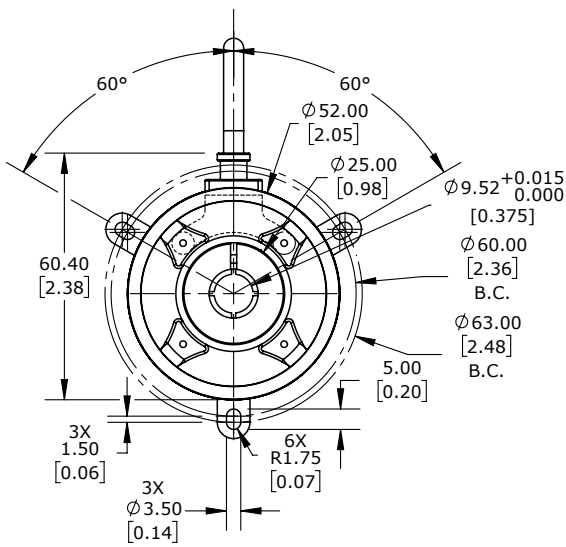
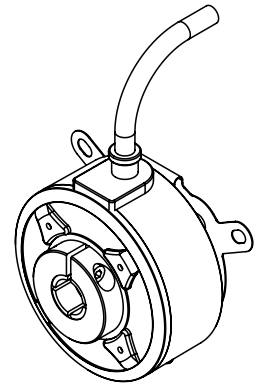
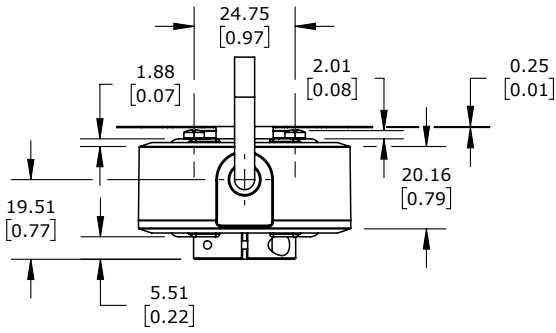
KIT C50:	replacement mounting plate and screws
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AVAILABLE MODELS	MODEL-SPECIFIC DRAWINGS
<a href="#">A50H-0360-HZCP6-RL2</a>	<a href="#">PDF</a>
<a href="#">A50H-1000-HZCP6-RL2</a>	<a href="#">PDF</a>
<a href="#">A50H-1024-HZCP6-RL2</a>	<a href="#">PDF</a>
<a href="#">A50H-2048-HZCP6-RL2</a>	<a href="#">PDF</a>
<a href="#">A50H-0360-HZCP9-RL2</a>	<a href="#">PDF</a>
<a href="#">A50H-1000-HZCP9-RL2</a>	<a href="#">PDF</a>
<a href="#">A50H-1024-HZCP9-RL2</a>	<a href="#">PDF</a>
<a href="#">A50H-2048-HZCP9-RL2</a>	<a href="#">PDF</a>

**A50 P6 Series**  
**(1/4" hollow shaft)**



**A50 P9 Series**  
**(3/8" hollow shaft)**



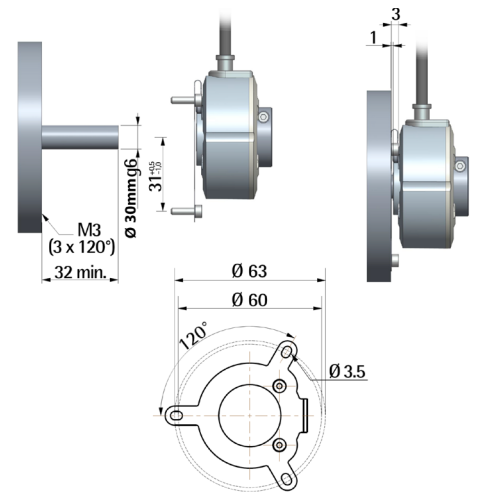
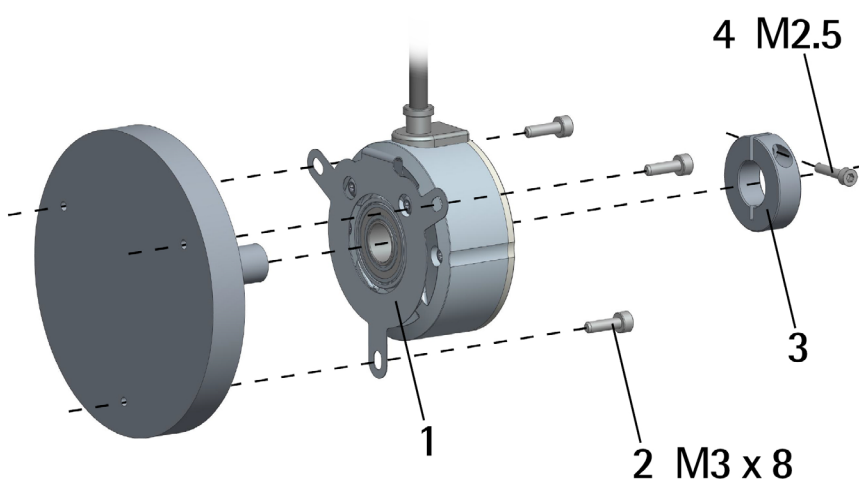
EN	Mounting Instructions
	<ul style="list-style-type: none"> <li>Mount the encoder on the motor shaft; do not force the encoder shaft;</li> <li>Fasten the fixing plate (1) to the rear of the motor using M3 x 8 cylindrical head screws (2); keep the encoder at a safety distance from the motor (about 1 mm) to prevent the fixing plate (1) from warping; the fixing plate (1) must allow the encoder to move radially in order to absorb the misalignment between motor shaft and encoder shaft;</li> <li>Fix the collar (3) to the encoder shaft (we suggest applying threadlocker to M2.5 screw 4);</li> <li>Fixing plates (1) are supplied already fixed to the encoder.</li> </ul>

IT	Istruzioni di montaggio
	<ul style="list-style-type: none"> <li>Inserire l'encoder sull'albero motore; evitare sforzi sull'albero encoder;</li> <li>Fissare la molla di fissaggio (1) sul retro del motore per mezzo di viti M3 x 8 a testa cilindrica (2); tenere l'encoder a una corretta distanza dal motore (circa 1 mm) per evitare la deformazione della molla di fissaggio (1); la molla di fissaggio (1) deve consentire all'encoder un gioco radiale sufficiente per assorbire il disallineamento tra albero motore e albero encoder;</li> <li>Fissare il collare (3) dell'albero encoder (si consiglia un ulteriore fissaggio della vite M2.5 4 con frenafilletti);</li> <li>Le molle di fissaggio (1) vengono fornite già assemblate sull'encoder.</li> </ul>

DE	Montagehinweise
	<ul style="list-style-type: none"> <li>Geber auf die Motorwelle montieren; Belastungen der Geberwelle vermeiden;</li> <li>Befestigungsfeder (1) auf der Rückseite des Motors mit Verwendung M3 x 8 Zylinderschrauben (2) befestigen; Geber auf die richtige Distanz zum Motor setzen (etwa 1 mm) so dass die Befestigungsfeder (1) nicht deformiert wird; die Befestigungsfeder (1) nimmt die radiale Toleranzen zwischen Motor- und Geberwelle auf;</li> <li>Klemmflansch (3) festschrauben (Schraube M2.5 4 könnte ggf. zusätzlich mit geeignetem Klebstoff befestigt werden);</li> <li>Befestigungsfedern (1) sind bei Auslieferung bereits am Geber montiert.</li> </ul>

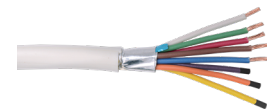
ES	Instrucciones de montaje
	<ul style="list-style-type: none"> <li>Montar el encoder en el eje del motor sin forzar el eje del encoder;</li> <li>Fijar la placa de fijación (1) en la parte posterior del motor mediante los tornillos (2) de cabeza cilíndrica tipo M3 x 8; asegurarse de que el encoder y el motor sean a una distancia de seguridad (aproximadamente 1 mm) para evitar la deformación de la placa (1); la placa de fijación (1) debe permitir el movimiento radial del encoder suficiente para absorber el desalineamiento entre eje motor y eje encoder;</li> <li>Fijar el collar (3) en el eje del encoder (aconsejamos aplicar el fijador de roscas en el tornillo tipo M2.5 4);</li> <li>Las placas de fijación (1) se suministran ya ensambladas.</li> </ul>

FR	Instructions de montage
	<ul style="list-style-type: none"> <li>Monter le codeur sur l'arbre du moteur; ne pas forcer l'arbre codeur ;</li> <li>Fixer la plaquette 1 à la partie postérieure du moteur au moyen des vis type M3 x 8 à tête cylindrique (2); assurer une distance de sûreté entre le codeur et le moteur (env. 1 mm) afin de ne déformer pas la plaquette de fixation 1; la plaquette de fixation 1 doit permettre le mouvement radial du codeur afin d'absorber le mauvais alignement entre l'arbre moteur et l'arbre codeur ;</li> <li>Fixer le collier (3) au niveau de l'arbre codeur (on conseille d'appliquer du frein-filet sur la vis M2.5 4) ;</li> <li>Les plaquettes de fixation (1) sont fournies déjà installées.</li> </ul>



Electrical-connections									
Signals	A	/A	B	/B	Z	/Z	+Vdc *	0Vdc	Shield
ABZ, /ABZ outputs	<ul style="list-style-type: none"> <li>Yellow</li> <li>Giallo</li> <li>Gelb</li> <li>Amarillo</li> <li>Jaune</li> </ul>	<ul style="list-style-type: none"> <li>Blue</li> <li>Blu</li> <li>Blau</li> <li>Azul</li> <li>Bleu</li> </ul>	<ul style="list-style-type: none"> <li>Green</li> <li>Verde</li> <li>Grün</li> <li>Verde</li> <li>Vert</li> </ul>	<ul style="list-style-type: none"> <li>Orange</li> <li>Arancione</li> <li>Orange</li> <li>Anaranjado</li> <li>Orange</li> </ul>	<ul style="list-style-type: none"> <li>White</li> <li>Bianco</li> <li>Weiß</li> <li>Blanco</li> <li>Blanc</li> </ul>	<ul style="list-style-type: none"> <li>Grey</li> <li>Grigio</li> <li>Grau</li> <li>Gris</li> <li>Gris</li> </ul>	<ul style="list-style-type: none"> <li>Red</li> <li>Rosso</li> <li>Rot</li> <li>Rojo</li> <li>Rouge</li> </ul>	<ul style="list-style-type: none"> <li>Black</li> <li>Nero</li> <li>Schwarz</li> <li>Negro</li> <li>Noir</li> </ul>	<ul style="list-style-type: none"> <li>Shield</li> <li>Schermo</li> <li>Schirm</li> <li>Malla</li> <li>Blindage</li> </ul>
<p>* Installation has to be carried out with power supply disconnected.                      L'installazione deve essere eseguita in assenza di tensione.                      Der Anschluss darf nur bei ausgeschalteter Versorgungsspannung erfolgen.                      La instalación sólo debe ser efectuada en ausencia total de tensión.                      Le montage du dispositif doit être effectué en absence totale de tension.</p>									

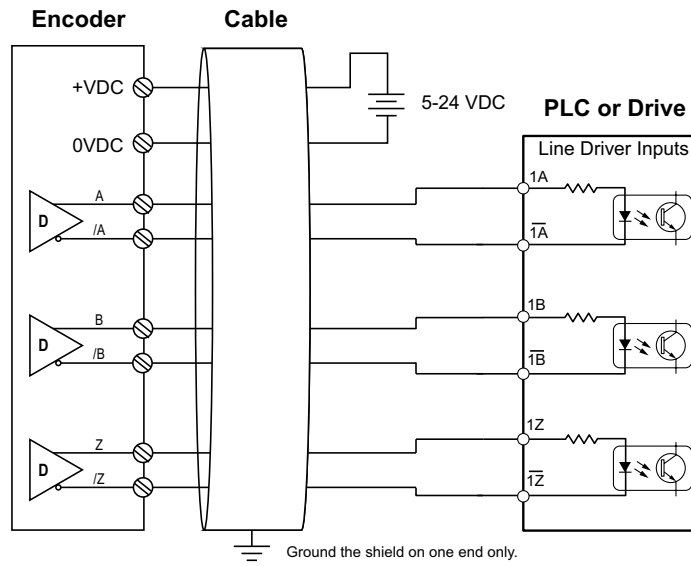
Unused wires must be cut at a different length and insulated separately from connected wires



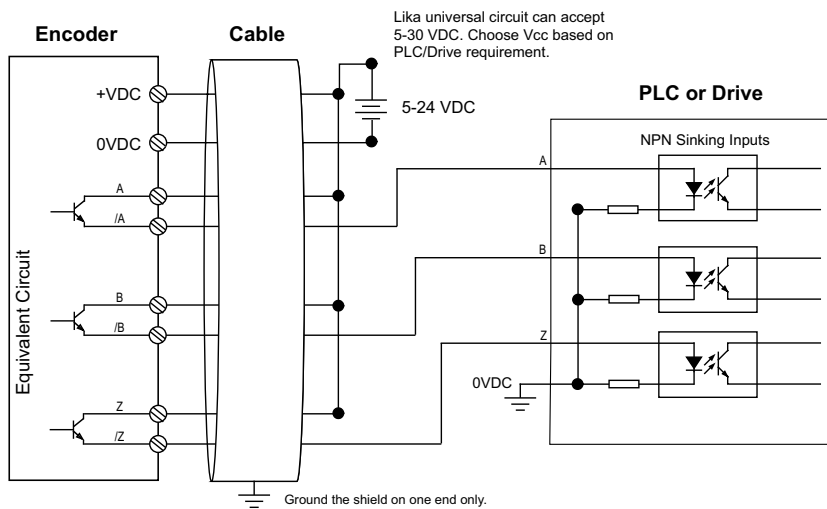
### Ground connection

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. You should provide the ground connection as close as possible to the encoder.

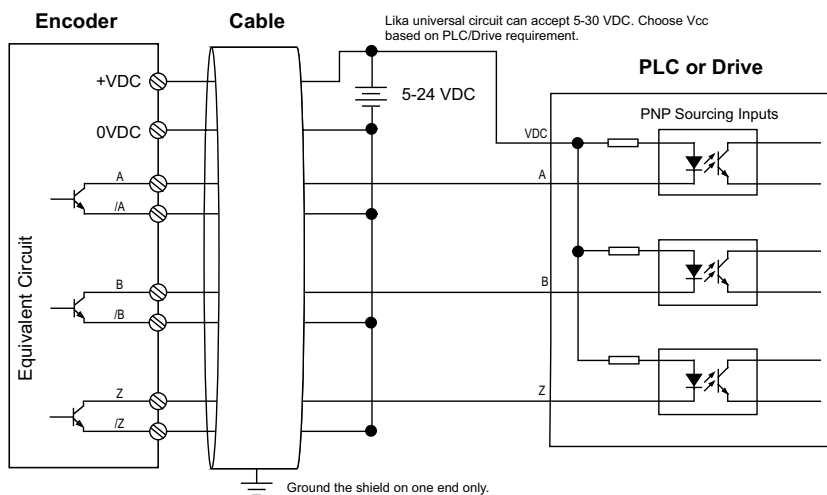
## Universal Output Encoder Wiring Diagrams



**Line Driver Wiring**




**Sinking Input Wiring**



**Sourcing Input Wiring**

Safety	EN	IT	Avvertenze
<ul style="list-style-type: none"> <li>Always adhere to the professional safety and accident prevention regulations applicable to your country during device installation and operation;</li> <li>Installation has to be carried out by qualified personnel only, with power supply disconnected and stationary mechanical parts;</li> <li>The encoder 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;</li> <li>High current, voltage and moving mechanical parts can cause serious or fatal injury;</li> <li>Warning! Do not use in explosive or flammable areas;</li> <li>The encoder must comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the equipment;</li> <li>Lika Electronic assumes no liability for the customer's failure to comply with these requirements.</li> </ul>			<ul style="list-style-type: none"> <li>Durante l'installazione e l'utilizzo del dispositivo osservare le norme di prevenzione e sicurezza sul lavoro previste nel proprio paese;</li> <li>l'installazione deve essere eseguita da personale qualificato, in assenza di tensione e parti meccaniche in movimento;</li> <li>Utilizzare il dispositivo esclusivamente per la funzione per cui è stato costruito: ogni altro utilizzo potrebbe risultare pericoloso per l'utilizzatore;</li> <li>Alte correnti, tensioni e parti meccaniche in movimento possono causare lesioni serie o fatali;</li> <li>Non utilizzare in ambienti esplosivi o infiammabili;</li> <li>Il mancato rispetto delle norme di sicurezza o delle avvertenze specificate in questo manuale è considerato una violazione delle norme di sicurezza standard previste dal costruttore o richieste dall'uso per cui lo strumento è destinato;</li> <li>Lika Electronic non si assume alcuna responsabilità per eventuali danni o lesioni derivanti dall'inosservanza delle norme di sicurezza da parte dell'utilizzatore.</li> </ul>
<p style="text-align: center;"><b>Electrical Safety</b></p> <ul style="list-style-type: none"> <li>Turn OFF the power supply before connecting the device;</li> <li>Connect according to the explanation in the "Electrical connections" section;</li> <li>Wires of output signals which are not used must be cut at different lengths and insulated singularly;</li> <li>In compliance with 2014/30/EU norm on electromagnetic compatibility, the following precautions must be taken: <ul style="list-style-type: none"> <li>» Before handling and installing the equipment, discharge electrical charge from your body and tools which may come in touch with the device;</li> <li>» Power supply must be stabilized without noise; install EMC filters on device power supply if needed;</li> <li>» Always use shielded cables (twisted pair cables whenever possible);</li> <li>» Avoid cables runs longer than necessary;</li> <li>» Avoid running the signal cable near high voltage power cables;</li> <li>» Mount the device as far as possible from any capacitive or inductive noise source; shield the device from noise source if needed;</li> <li>» To guarantee a correct working of the device, avoid using strong magnets on or near by the unit;</li> <li>» Minimize noise by connecting the shield or the connector housing and 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.</li> </ul> </li> </ul>			<p style="text-align: center;"><b>Avvertenze elettriche</b></p> <ul style="list-style-type: none"> <li>Effettuare le connessioni elettriche esclusivamente in assenza di tensione;</li> <li>Rispettare le connessioni riportate nella sezione "Electrical connections";</li> <li>I fili dei segnali d'uscita non utilizzati devono essere isolati singolarmente;</li> <li>In conformità alla normativa 2014/30/UE sulla compatibilità elettromagnetica rispettare le seguenti precauzioni: <ul style="list-style-type: none"> <li>» Prima di maneggiare e installare il dispositivo, eliminare la presenza di carica elettrostatica dal proprio corpo e dagli utensili che verranno in contatto con il dispositivo;</li> <li>» Alimentare il dispositivo con tensione stabilizzata e priva di disturbi, se necessario, installare appositi filtri EMC all'ingresso dell'alimentazione;</li> <li>» Utilizzare sempre cavi schermati e possibilmente "twistati";</li> <li>» Non usare cavi più lunghi del necessario;</li> <li>» Evitare di far passare il cavo dei segnali del dispositivo vicino a cavi di potenza;</li> <li>» Installare il dispositivo il più lontano possibile da eventuali fonti di interferenza o schermarlo in maniera efficace;</li> <li>» Per garantire un funzionamento corretto del dispositivo, evitare l'utilizzo di apparecchiature con forte carica magnetica in prossimità dell'unità;</li> <li>» Collegare la calza del cavo o la custodia del connettore e il corpo del dispositivo a un buon punto di terra; assicurarsi che il punto di terra sia privo di disturbi. Il collegamento a terra può essere effettuato sul lato dispositivo e/o sul lato utilizzatore; è compito dell'utilizzatore valutare la soluzione migliore da adottare per minimizzare i disturbi.</li> </ul> </li> </ul>
<p style="text-align: center;"><b>Mechanical Safety</b></p> <ul style="list-style-type: none"> <li>Install the device following strictly the information in the "Mounting instructions" section;</li> <li>Mechanical installation has to be carried out with stationary mechanical parts;</li> <li>Do not disassemble the device; do not tool the device or its shaft;</li> <li>Delicate electronic equipment: handle with care; do not subject the device and the shaft to knocks or shocks;</li> <li>Respect the environmental characteristics of the product.</li> </ul>			<p style="text-align: center;"><b>Avvertenze meccaniche</b></p> <ul style="list-style-type: none"> <li>Montare il dispositivo rispettando rigorosamente le istruzioni riportate nella sezione "Istruzioni di montaggio";</li> <li>Effettuare il montaggio meccanico esclusivamente in assenza di parti meccaniche in movimento;</li> <li>Non disassemblare il dispositivo; non eseguire lavorazioni meccaniche sul dispositivo;</li> <li>Dispositivo elettronico delicato: maneggiare con cura; evitare urti o forti sollecitazioni sia all'albero che al corpo del dispositivo;</li> <li>Utilizzare il dispositivo in accordo con le caratteristiche ambientali dello stesso.</li> </ul>



This device is to be supplied by a Class 2 Circuit or Low-Voltage Limited Energy or Energy Source not exceeding 30 Vdc. Refer to the order code for supply voltage rate.

Ce dispositif doit être alimenté par un circuit de Classe 2 ou à très basse tension ou bien en appliquant une tension maxi de 30Vcc. Voir le code de commande pour la tension d'alimentation.



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