Smart encoders & actuators

User's guide

C50MI
C50MA

Incremental and absolute rotary encoder

- Small size hollow shaft encoder with magnetic scanning
- Several mounting options with fixing plates
- Incremental: TTL/RS-422 output, resolution up to 65,536 PPR
- Absolute: SSI & BiSS C-mode interfaces, resolution up to 35 bits, singleturn and multiturn versions
- Feedback on motors and automation applications

Suitable for the following models:

- C50MI-L1-...
- C50MA-BG1-...
- C50MA-SC1-...

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Typographic and iconographic conventions

In this guide, to make it easier to understand and read the text the following typographic and iconographic conventions are used:

- parameters and objects both of Lika device and interface are coloured in **GREEN**;
- alarms are coloured in **RED**;
- states are coloured in **FUCSIA**.

When scrolling through the text some icons can be found on the side of the page: they are expressly designed to highlight the parts of the text which are of great interest and significance for the user. Sometimes they are used to warn against dangers or potential sources of danger arising from the use of the device. You are advised to follow strictly the instructions given in this guide in order to guarantee the safety of the user and ensure the performance of the device. In this guide the following symbols are used:

	This icon, followed by the word **WARNING**, is meant to highlight the parts of the text where information of great significance for the user can be found: user must pay the greatest attention to them! Instructions must be followed strictly in order to guarantee the safety of the user and a correct use of the device. Failure to heed a warning or comply with instructions could lead to personal injury and/or damage to the unit or other equipment.
	This icon, followed by the word **NOTE**, is meant to highlight the parts of the text where important notes needful for a correct and reliable use of the device can be found. User must pay attention to them! Failure to comply with instructions could cause the equipment to be set wrongly: hence a faulty and improper working of the device could be the consequence.
	This icon is meant to highlight the parts of the text where suggestions useful for making it easier to set the device and optimize performance and reliability can be found. Sometimes this symbol is followed by the word **EXAMPLE** when instructions for setting parameters are accompanied by examples to clarify the explanation.

Preliminary information

This guide is designed to provide the most complete and exhaustive information the operator needs to correctly and safely install and operate the **C50MI incremental rotary encoder** and the **C50MA absolute rotary encoder**.
C50Mx encoder can be equipped with incremental interface (C50MI model: Line Driver RS-422 signal level) and with absolute interface (C50MA model: SSI and BiSS C-mode interfaces).
The incremental resolution is up to 16 bits (65,536 PPR).
The absolute versions can be singleturn and multiturn, see the order code. For example: C50MA-SC1-17-... is a 17 bit singleturn encoder; C50MA-SC1-17**M**-... is a 17 + 16 bit multiturn encoder. The absolute resolution is up to 19 bit singleturn (524,288 cpr) and 16 bit multiturn (65,536 turns).
C50MI and C50MA encoders are ideally suited for **advanced position feedback** on motors, as well as on many and varied industrial automation applications, even when the installation can be space critical.

To make it easier to read and understand the text, this guide can be divided into some sections.
In the first section some general information concerning the safety, the mechanical installation and the electrical connection as well as tips for setting up and running properly and efficiently the unit are provided.
In the second section, entitled **Incremental signals**, both general and specific information is given on the incremental signals, see on page 21.
In the third section, entitled **SSI interface**, both general and specific information is given on the SSI interface, see on page 23.
In the fourth section, entitled **BiSS C-mode interface**, both general and specific information is given on the BiSS C-mode interface, see on page 27.

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 assumes no liability for the customer's failure to comply with these requirements.

1.2 Electrical safety

- Turn off the power supply before connecting the device;
- connect according to the explanation in the "4 - Electrical connections" section on page 17;
- the wires of unused output signals must be cut at different lengths and insulated singularly;
- (absolute version): connect the Zero setting input to 0Vdc if not used; to set the zero, connect Zero setting to +Vdc for 100 µs at least, then disconnect +Vdc; normally Zero setting voltage must be at 0Vdc; we suggest performing the zero setting when the encoder is in stop;
- in compliance with the 2014/30/EU norm on electromagnetic compatibility, following precautions must be taken:

  - before handling and installing, 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;
  - to guarantee a correct working of the device, avoid using strong magnets on or near by the unit;
  - 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. We suggest providing the ground connection as close as possible to the encoder.

1.3 Mechanical safety

- Install the device following strictly the information in the "3 - Mounting instructions" section on page 11;
- mechanical installation has to be carried out with stationary mechanical parts;
- do not disassemble the encoder;
- do not tool the encoder or its shaft;
- delicate electronic equipment: handle with care; do not subject the device and the shaft to knocks or shocks;
- protect the unit against acid solutions or chemicals that may damage it;
- respect the environmental characteristics declared by manufacturer;
- the encoder can be mounted directly on a shaft whose diameter has to respect the technical characteristics specified in the purchase order and clamped by means of the collar and the fixing plate and, if required, an anti-rotation pin.

2 - Identification

Device can be identified through the **order code** and the **serial number** printed on the label applied to its body. Information is listed in the delivery document too. Please always quote the order code and the serial number when reaching Lika Electronic. For any information on the technical characteristics of the product refer to the technical catalogue.

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 must be carried out by qualified personnel only, with power supply disconnected and mechanical parts compulsorily in stop.

3.1 Encumbrance sizes

(values are expressed in mm)

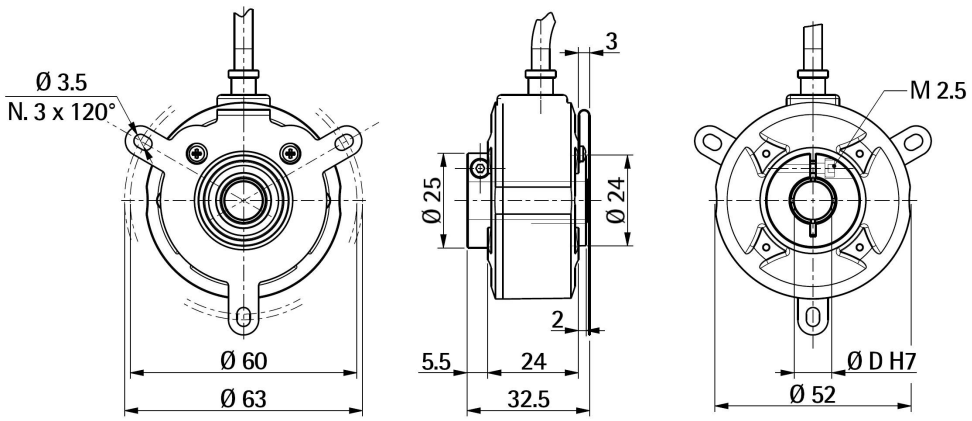


Figure 1 - C50MI / C50MA with standard fixing plate (KIT MOL2428)

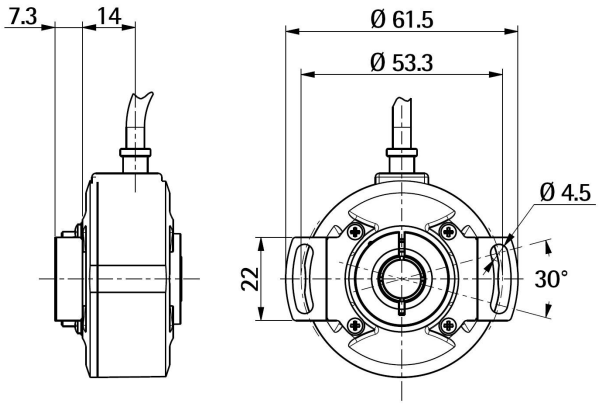


Figure 2 - C50MI / C50MA with version B fixing plate (KIT MOL2546)

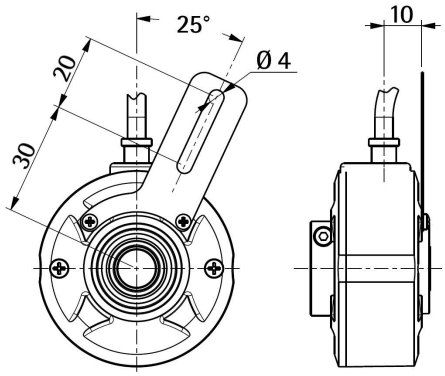
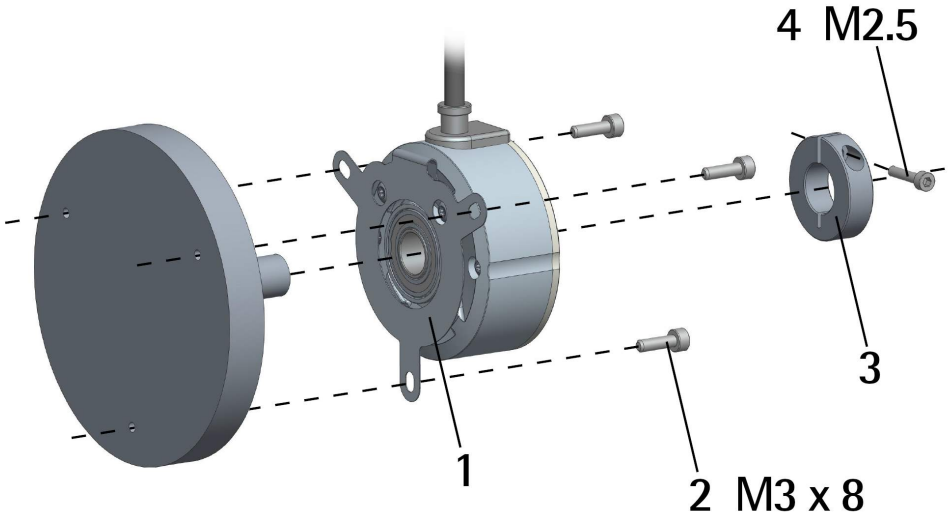
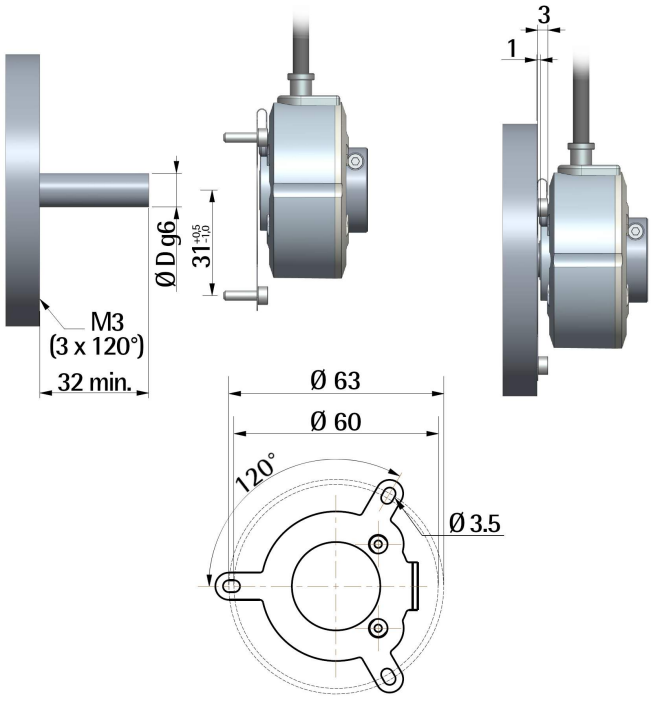


Figure 3 - C50MI / C50MA with version D fixing plate (KIT MOL2433)

3.2 Installation with standard fixing plate (KIT MOL2428)

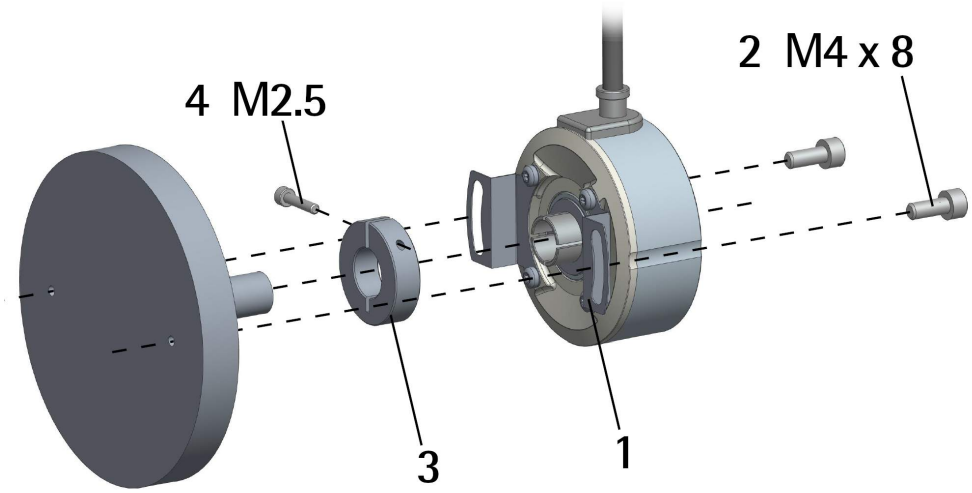
- Mount the encoder on the motor shaft; do not force the encoder shaft;
- fasten the fixing plate **1** to the rear of the motor using 3 M3 x 8 cylindrical head screws **2**; keep the encoder at a safety distance from the motor (about 1 mm) to prevent the fixing plate **1** from warping; the fixing plate **1** must allow the encoder to move radially in order to absorb the misalignment between the motor shaft and the encoder shaft;
- fix the collar **3** to the encoder shaft (we suggest applying some threadlocker to the M2.5 screw **4**);
- the fixing plate **1** is supplied already fixed to the encoder.

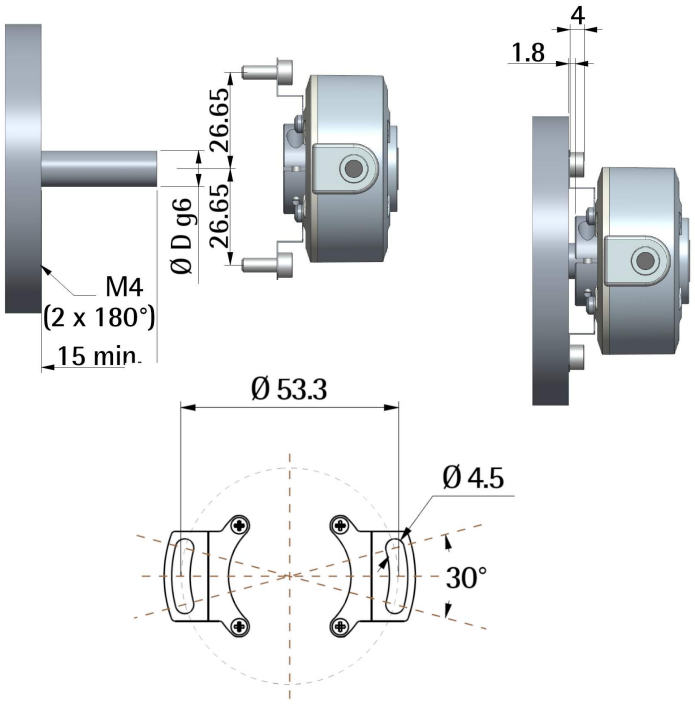




3.3 Installation with B type fixing plate (KIT MOL2546)

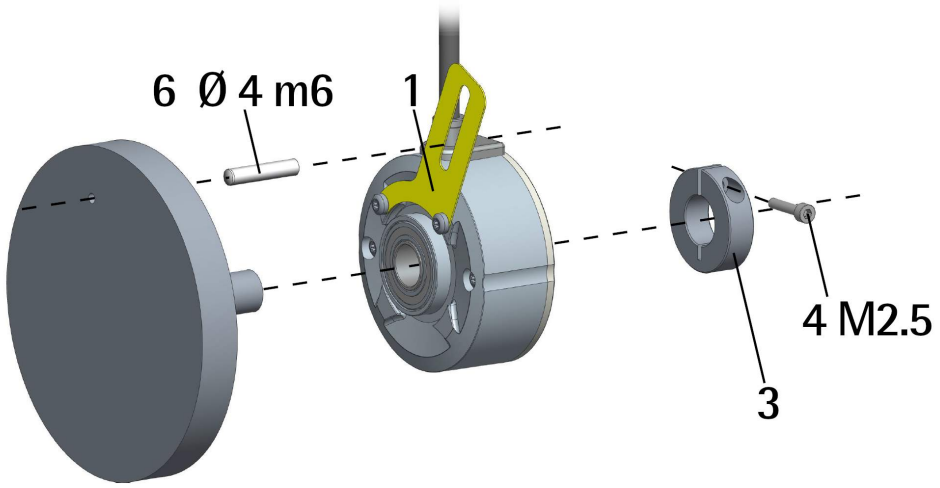
- Mount the encoder on the motor shaft; do not force the encoder shaft;
- fasten the fixing plate **1** to the rear of the motor using 2 M4 x 8 cylindrical head screws **2**; keep the encoder at a safety distance from the motor (about 1.8 mm) to prevent the fixing plate **1** from warping; the fixing plate **1** must allow the encoder to move radially in order to absorb the misalignment between the motor shaft and the encoder shaft;
- fix the collar **3** to the encoder shaft (we suggest applying some threadlocker to the M2.5 screw **4**);
- the fixing plate **1** can be supplied already fixed to the encoder (see the order code).

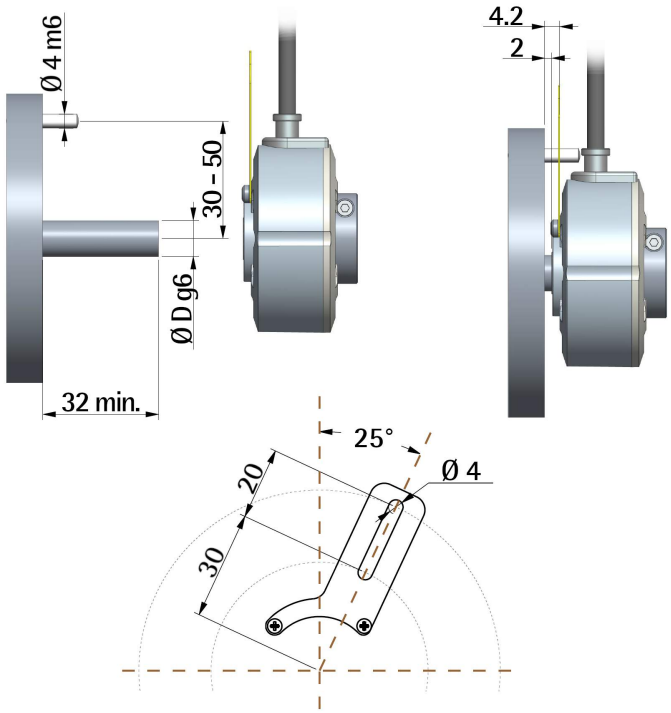




3.4 Installation with D type fixing plate (KIT MOL2433)

- Mount the encoder on the motor shaft; do not force the encoder shaft;
- make sure the anti-rotation pin **6**, that is secured to the rear of the motor, is inserted properly into the plate **1**; safety distance: 2 mm;
- fix the collar **3** to the encoder shaft (we suggest applying some threadlocker to the M2.5 screw **4**);
- the fixing plate **1** can be supplied already fixed to the encoder (see the order code).





NOTE

You are strongly advised not to carry out any mechanical operations (drilling, milling, etc.) on the encoder shaft. This could cause serious damages to the internal parts and an immediate warranty loss. Please contact our technical personnel for the complete availability of "custom made" shafts.

4 - Electrical connections

WARNING
Power supply must be turned off before performing any electrical connection!
If wires of unused signals come in contact, irreparable damage could be caused to the device. Thus they must be cut at different lengths and insulated singularly.

4.1 C50MI - Cable and connector connections

Function	M8 cable	M12 8-pin connector
0Vdc	Black	1
+5Vdc ±5%	Red	2
A	Yellow	3
/A	Blue	4
B	Green	5
/B	Orange	6
0	White	7
/0	Grey	8
Shielding	Shield	Case

4.2 C50MA - Cable and connector connections

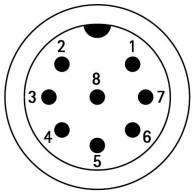
Function	M8 cable	M12 8-pin connector
0Vdc	Black	1
+5Vdc ±5%	Red	2
Clock IN + / MA +	Yellow	3
Clock IN - / MA -	Blue	4
Data OUT + / SLO +	Green	5
Data OUT - / SLO -	Orange	6
Zero setting	White	7
not connected	Grey	8
Shielding	Shield	Case

4.3 M8 cable specifications

Model	LIKA HI-FLEX sensor cable type M8
Cross section	2 x 0.25 mm^2 + 6 x 0.14 mm^2 (24/26 AWG)
Jacket	Polyurethane (PUR, ether base)
Shield	tinned copper braid, coverage ≥ 85%
Outer diameter	5.5 mm ±0.2 mm (0.216" ±0.008")
Min. bending radius	Ø x 5 (static); Ø x 7.5 (dynamic)
Work temperature	-50°C +90°C (-58°F +194°F) (static) -40°C +90°C (-40°F +194°F) (dynamic)
Conductor resistance	≤ 84.7 Ω/km / ≤ 152 Ω/km

4.4 M12 8-pin connector specifications

M12 8 pin
Male frontal side, A coding



4.5 Connection of the shield

For signals transmission always use shielded cables. The cable shielding must be connected properly to ensure earthing.

4.6 Connection to ground

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. We suggest providing the ground connection as close as possible to the encoder.

4.7 Incremental signals

For complete information on the incremental signals please refer to the "5 - Incremental signals" section on page 21.

4.8 SSI interface

For complete information on the SSI interface please refer to the "6 - SSI interface" section on page 23.

4.9 BiSS C-mode interface

For complete information on the BiSS C-mode interface please refer to the "7 - BiSS C-mode interface" section on page 27.

4.10 Absolute resolution

C50MA encoder with absolute interface can have a singleturn resolution of 32,768 cpr (15 bits), 131,072 cpr (17 bits), 262,144 cpr (18 bits), and 524,288 cpr (19 bits).
The angular resolution is:

- 0.01098° (0° 0' 40") for 15-bit model;
- 0.00274° (0° 0' 10") for 17-bit model;
- 0.00137° (0° 0' 5") for 18-bit model;
- 0.00068° (0° 0' 2.5") for 19-bit model.

NOTE

To convert the absolute position value detected by the encoder into an angular position use the following formula:
1 STEP = 360° / 32,768 cpr = 0.01098 °/cpr
angular position = position value * 1 step

EXAMPLE

Position value = 3,000
Angular position = 3,000 * 0.01098 = 32.94° = 32° 56' 24"

4.11 Counting direction

The **standard counting direction** is to be intended with shaft turning as indicated by the arrow in Figure 4. When the shaft rotates in the direction indicated by the arrow, in the absolute measuring system the count is up; in the incremental measuring system the rising edge of A signal leads the rising edge of B signal. The counting direction cannot be changed.

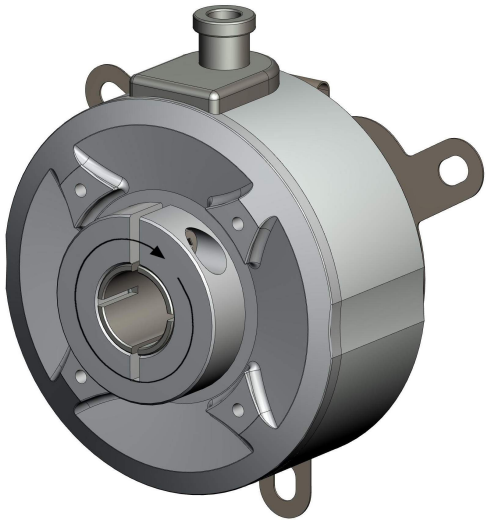


Figure 4 - Counting direction

4.12 Zero setting input

(C50MA-BG1-... and C50MA-SC1-... only)

The output position information at a decided point in the shaft rotation can be set to 0. The Zero setting input allows the operator to activate the zero value through an input signal sent by a PLC or other controller. This can be very useful -for instance- for setting the zero position of both the encoder and the machine. If not used, connect the Zero setting input to 0Vdc. To activate the zero setting function, connect the Zero setting input to +Vdc for 100 µs at least, then disconnect +Vdc; normally voltage must be at 0Vdc. We suggest setting the zero when the shaft is in stop.

5 - Incremental signals

5.1 AB signals

C50MI-L1... encoder provides incremental signals AB0 /AB0. The resolution of the incremental signals AB /AB can be within a range of 1 to 65,536 PPR.
The output circuit is the Line Driver / Line Driver (RS-422)/TTL level type. It is operated at 5Vdc ±5% and the signal amplitude is in compliance with EIA RS-422 standard. It provides AB0 /AB0 signals.

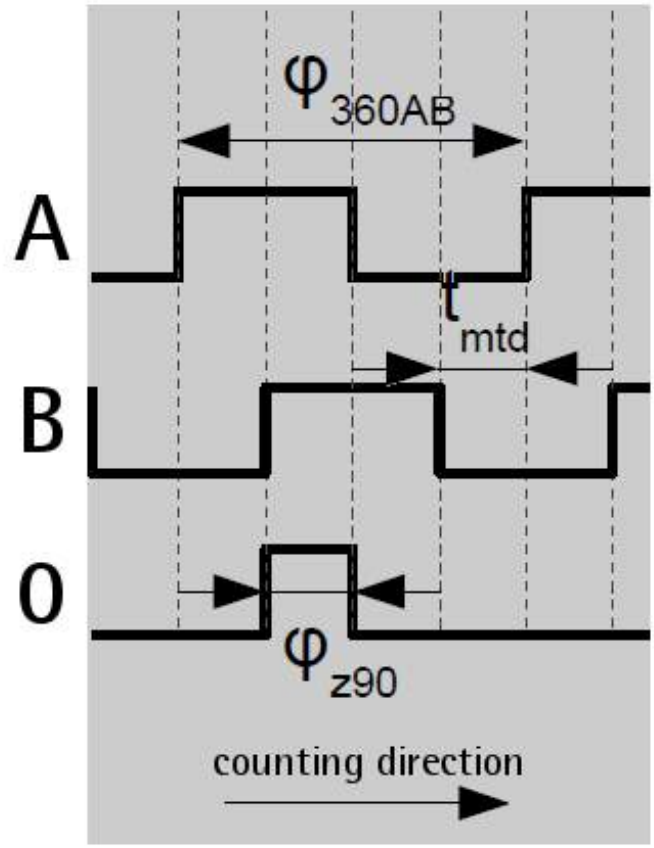


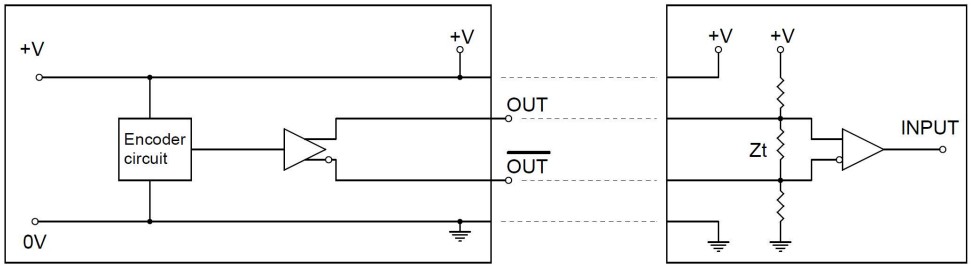
Figure 5 - Output signals

Figure 5 shows AB0 signals. The length of A / B signal cycles is defined by φ360AB as a range between two rising edges of an A or B signal.
The length of 0 pulse (φZ90) is 90 electrical degrees. The position of the Index pulse in relation to A/B signals is shown in Figure 5.
The minimum edge distance t_{mtd} of AB0 is 80 ns and the output frequency is up to 3 MHz.
The conversion electronics inside the encoder translates the magnetic fields into Line Driver level AB electrical signals.
The frequency of the output signals is proportional to the measuring speed while the number of output pulses is proportional to the mechanical displacement of the shaft.

5.2 Reference (0) signal

The Reference signal (0, /0) provides a single datum position in the revolution of the shaft for use at power-up or following a loss of power. The signal is synchronized with A and B channels and has a duration of one measuring step (90 electrical degrees), see Figure 5. The amplitude is according to the power supply voltage level (Line Driver +5Vdc ±5% is in compliance with EIA RS-422 standard).

5.3 Recommended Line Driver incremental input circuit



6 - SSI interface

Order code:
C50MA-BG1-... SSI, MSB Left Aligned protocol, binary code

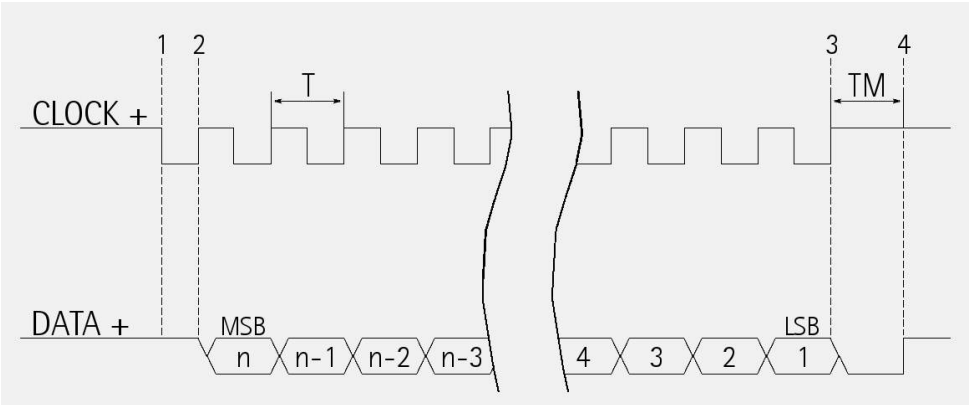
6.1 SSI (Synchronous Serial Interface) – General Information

SSI (the acronym for **Synchronous Serial Interface**) is a synchronous point-to-point serial interface engineered for unidirectional data transmission between one Master and one Slave. Developed in the first eighties, it is based on the RS-422 serial standard. Its most peculiar feature is that data transmission is achieved by synchronizing both the Master and the Slave devices to a common clock signal generated by the controller; in this way the output information is clocked out at each controller's request. Furthermore only two pairs of twisted wires are used for data and clock signals, thus a six-wire cable is required.
The main advantages in comparison with parallel or asynchronous data transmissions are:

- less conductors are required for transmission;
- less electronic components;
- possibility of insulting the circuits galvanically by means of optocouplers;
- high data transmission frequency;
- hardware interface independent from the resolution of the absolute encoder.

Furthermore the differential transmission increases the noise immunity and decreases the noise emissions. It allows multiplexing from several encoders, thus process controls are more reliable with simplified line design and easier data management.

Data transmission is carried out as follows.
At the first falling edge of the clock signal (**1**, the logic level changes from high to low) the absolute position value is stored while at the following rising edge (**2**) the transmission of data information begins starting from the MSB.



At each change of the clock signal and at each subsequent rising edge (**2**) one bit is clocked out at a time, up to LSB, so completing the data word transmission. The cycle ends at the last rising edge of the clock signal (**3**). This means that up to n + 1 rising edges of the clock signals are required for each data word transmission (where n is the bit resolution); for instance, a 13-bit encoder needs 14 clock edges. If the number of clocks is greater than the number of bits of the data word, then the system will send a zero (low logic level signal) at each additional clock, zeros will either lead (LSB ALIGNED protocol) or follow (MSB ALIGNED protocol) or lead and/or follow (TREE FORMAT protocol) the data word. After the period Tm monoflop time, having a typical duration of 16 µsec, calculated from the end of the clock signal transmission, the encoder is then ready for the next transmission and therefore the data signal is switched high.
The clock signal has a typical logic level of 5V, the same as the output signal which has customarily a logic level of 5V in compliance with RS-422 standard.
The output code can be either Binary or Gray (see the order code).

6.2 MSB Left Aligned protocol

"MSB Left Aligned" protocol allows to left align the bits, beginning from MSB (most significant bit) to LSB (least significant bit); LSB is then sent at the last clock cycle. If the number of clock signals is higher than the data bits, then unused bits are forced to logic level low (0) and follow the data word. This protocol can be used in sensors having any resolution.
The word has a variable length according to resolution, as shown in the following table.

Order code	Encoder resolution	Length of the word	Max. number of information
C50MA-BG1-17-...	17 bits	17 bits	131,072 info/rev.
C50MA-BG1-18-...	18 bits	18 bits	262,144 info/rev.
C50MA-BG1-19-...	19 bits	19 bits	524,288 info/rev.
C50MA-BG1-15M-...	15 + 16 bits	31 bits	2,147,483,648 info
C50MA-BG1-17M-...	17 + 16 bits	33 bits	8,589,934,592 info
C50MA-BG1-18M-...	18 + 16 bits	34 bits	17,179,869,184 info
C50MA-BG1-19M-...	19 + 16 bits	35 bits	34,359,738,368 info

The output code of the encoder is BINARY.

The transmitted position value has the following structure:

	Bit structure		
C50MA-BG1-17-...	**16**	**...**	**0**
C50MA-BG1-18-...	**17**	**...**	**0**
C50MA-BG1-19-...	**18**	**...**	**0**
C50MA-BG1-15M-...	**30**	**...**	**0**
C50MA-BG1-17M-...	**32**	**...**	**0**
C50MA-BG1-18M-...	**33**	**...**	**0**
C50MA-BG1-19M-...	**34**	**...**	**0**
value	MSB	...	LSB

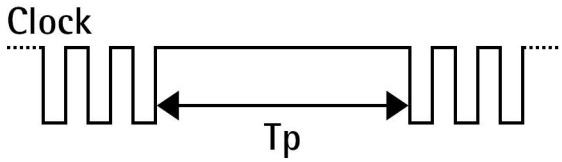
6.3 Recommended transmission rates

The SSI interface has a frequency of data transmission ranging between 100 kHz and 2 MHz.
The CLOCK IN and the DATA OUT signals comply with the "EIA standard RS-422".

The clock frequency (baud rate) depends on the length of the cable and must comply with the technical information reported in the following table:

Cable length	Baud rate
< 50 m	< 400 kHz
< 100 m	< 300 kHz
< 200 m	< 200 kHz
< 400 m	< 100 kHz

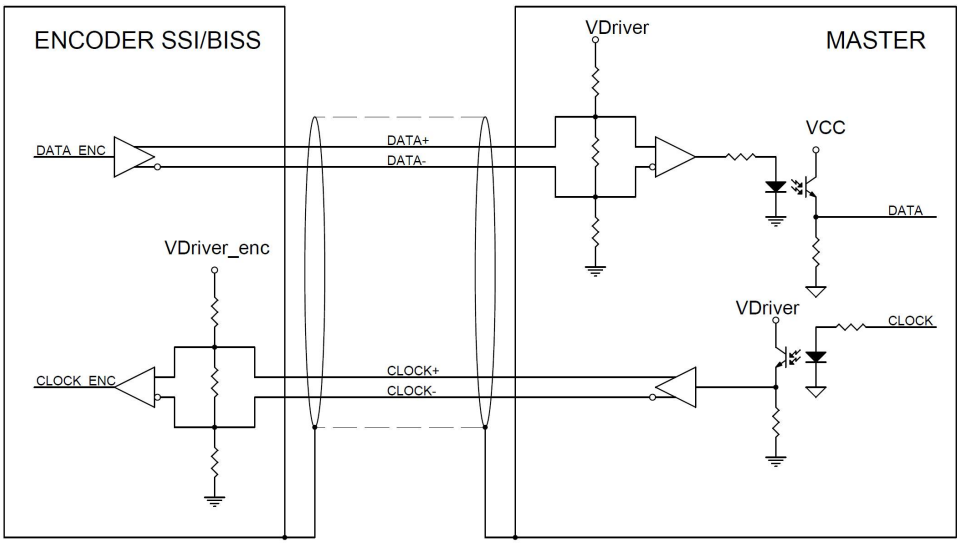
The time interval between two Clock sequence transmissions must be at least 20 µs (Tp = pause time > 20 µs).



6.4 Helpful information

- The position information increases when the shaft rotates as indicated by the arrow in Figure 4.
- At installation always execute a zero setting operation of the absolute position in the subsequent electronics.

6.5 Recommended SSI input circuit



7 - BiSS C-mode interface

Order code:
C50MA-SC1-... BiSS C-mode

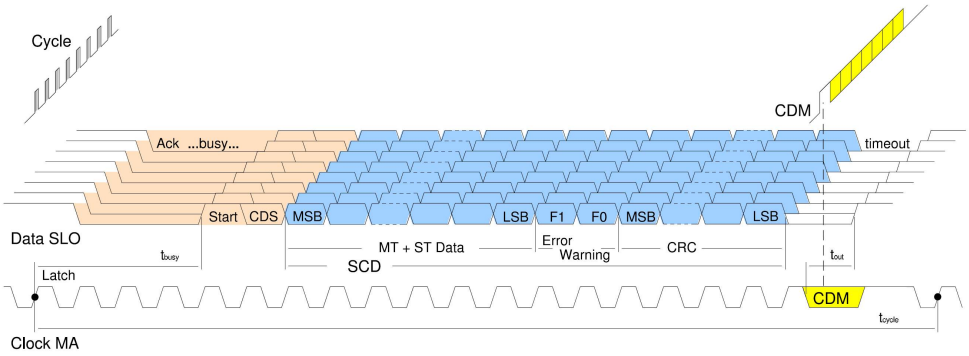
Lika encoders are always Slave devices and comply with the "BiSS C-mode interface" and the "Standard encoder profile".
Refer to the official BiSS website for all information not listed in this manual (www.biss-interface.com).
The device is designed to work in a point-to-point configuration and must be installed in a "single Master, single Slave" network.
CLOCK IN (MA) and DATA OUT (SLO) signal levels are according to the "EIA standard RS-422".

WARNING
Never install the encoder in a "single Master, multi Slave" network.

7.1 Communication

The BiSS C-mode protocol uses one data transmission protocol:

- **Single Cycle Data (SCD):** it is the main data transmission protocol. It is used to send process data from the Slave to the Master. For any information refer to the "7.2 Single Cycle Data SCD" section on page 28.



7.2 Single Cycle Data SCD

7.2.1 SCD structure

SCD data has a variable length according to the resolution of the encoder. It is nbitres+7 long where "nbitres" is the resolution of the encoder expressed in bits. It consists of the following elements: position value (**Position**), 1 error bit nE (**Error**), 1 warning bit nW (**Warning**) and a 6-bit CRC Cyclic Redundancy Check (**CRC**).

bit	nbitres+7 ... 8	7	6	5 ... 0
function	Position	Error	Warning	CRC

Position
It is the process data transmitted from the Slave to the Master. It has a variable length, it is as long as the resolution of the encoder expressed in bits.
It provides information about the current position of the encoder.
The transmission starts with msb (most significant bit) and ends with lsb (least significant bit).

bit	Nbitres+7	...	...	8
value	msb	...	...	lsb

"Nbitres" is the resolution of the encoder expressed in bits. It is comprised between 17 bits and 35 bits as shown in the following table.

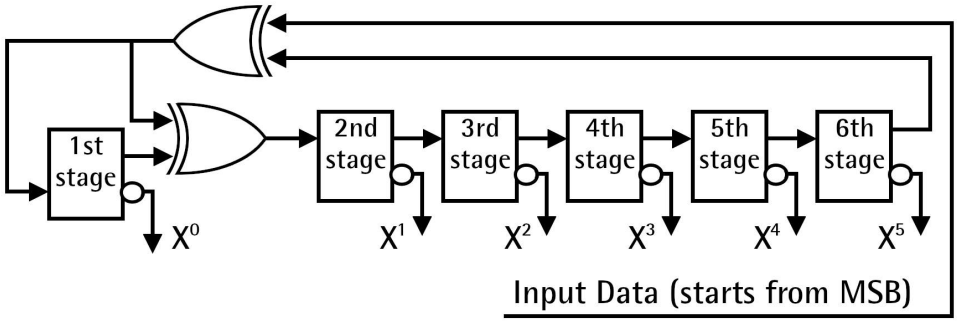
Order code	Encoder resolution
C50MA-SC1-17-...	17 bits (131,072 cpr)
C50MA-SC1-18-...	18 bits (262,144 cpr)
C50MA-SC1-19-...	19 bits (524,288 cpr)
C50MA-SC1-15M-...	15 + 16 bits (32,768 cpr x 65,536 rev.)
C50MA-SC1-17M-...	17 + 16 bits (131,072 cpr x 65,536 rev.)
C50MA-SC1-18M-...	18 + 16 bits (262,144 cpr x 65,536 rev.)
C50MA-SC1-19M-...	19 + 16 bits (524,288 cpr x 65,536 rev.)

Error
(1 bit)
It is intended to communicate the normal or fault status of the Slave.
When nE = "0" (low active), an error is active in the system. For a comprehensive list of the available error messages and their meaning please refer to the "8 – Warnings and errors" section on page 31.
nE = "1": no active error
= "0": error status: an error is active in the system.

Warning
(1 bit)
It is intended to communicate the normal or fault status of the Slave.
When nW = "0" (low active), a warning is active in the system. For a comprehensive list of the available warning messages and their meaning please refer to the "8 – Warnings and errors" section on page 31.
nW = "1": no active warning
= "0": warning status: a warning is active in the system.

CRC
Correct transmission control (inverted output). Cyclic Redundancy Check is an error checking which is the result of a "Redundancy Check" calculation performed on the message contents. This is intended to check whether transmission has been performed properly. It is 6-bit long.
Polynomial: X^6+X^1+1 (binary: 1000011)

Logic circuit

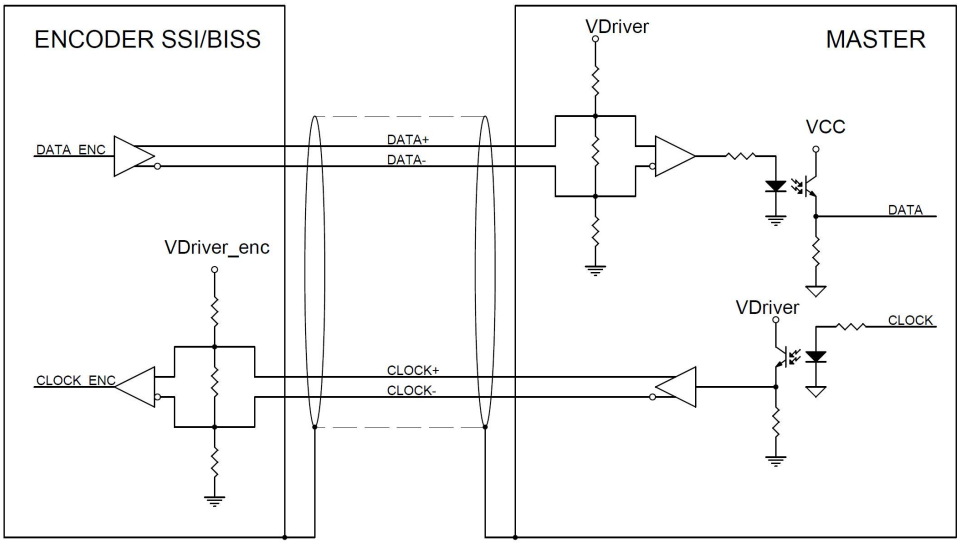


7.3 Application notes

Data transmission:

Parameter	Value
Clock Frequency	min 200 kHz, max 5 MHz
BiSS time-out	Self-adaptable to the clock, 0.3 µs min., 8 µs max.

7.4 Recommended BiSS input circuit



8 – Warnings and errors

(C50MA-SC1-... only)

This section provides a comprehensive list of all warnings and errors, and then explains how to retrieve them. They are available in the BiSS interface only.
Warnings are signalled through the warning bit nW (**Warning**), refer to the "Warning" section on page 29. Errors are signalled through the error bit nE (**Error**), refer to the "Error" section on page 28.

8.1 Warnings

Here follows the list of the available warnings.

Signal warning	The signals are not proper or their amplitude is too high or too low. It may be due to one of the following reasons: the encoder is not mounted properly (see the "3 - Mounting instructions" section on page 11); the magnetic ring is not working properly; the magnetic surface of the ring is damaged somewhere; the reading sensor is not working properly; this may cause invalid data to be transmitted.
Frequency warning	The shaft is rotating too fast. Slow down the speed of the shaft within the tolerance limits.

8.2 Errors

Here follows the list of the available errors.

Startup error	• An EEprom communication error or a CRC error occurred. Switch the power off and then on again. If the error is still active, please contact Lika's After-Sales Service. • The signals are not proper or their amplitude is too high or too low. It may be due to one of the following reasons: the encoder is not mounted properly (see the "3 - Mounting instructions" section on page 11); the magnetic ring is not working properly; the magnetic surface of the ring is damaged somewhere; the reading sensor is not working properly; this may cause invalid data to be transmitted.
Command execution in progress	A command is still under execution. Please wait for the command to be executed before sending further commands.

Consistency error	The magnetic ring is not read correctly. It may be due to one of the following reasons: the encoder is not mounted properly (see the "3 - Mounting instructions" section on page 11); the magnetic ring is not working properly; the magnetic surface of the ring is damaged somewhere; the reading sensor is not working properly; this may cause invalid data to be transmitted.

Communication error	Communication error. It may be due to the EEprom, it may be damaged; or it may be due to the I2C. Switch the power off and then on again. If the error is still active, please contact Lika's After-Sales Service.

Invalid checksum	An invalid checksum occurred in the internal RAM. Switch the power off and then on again. Try the command again. If the error is still active, please contact Lika's After-Sales Service.

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Document release	Release date	Description	HW	SW	Interface
1.0	24.02.2022	First issue	0	-	-

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.

Dispose separately

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