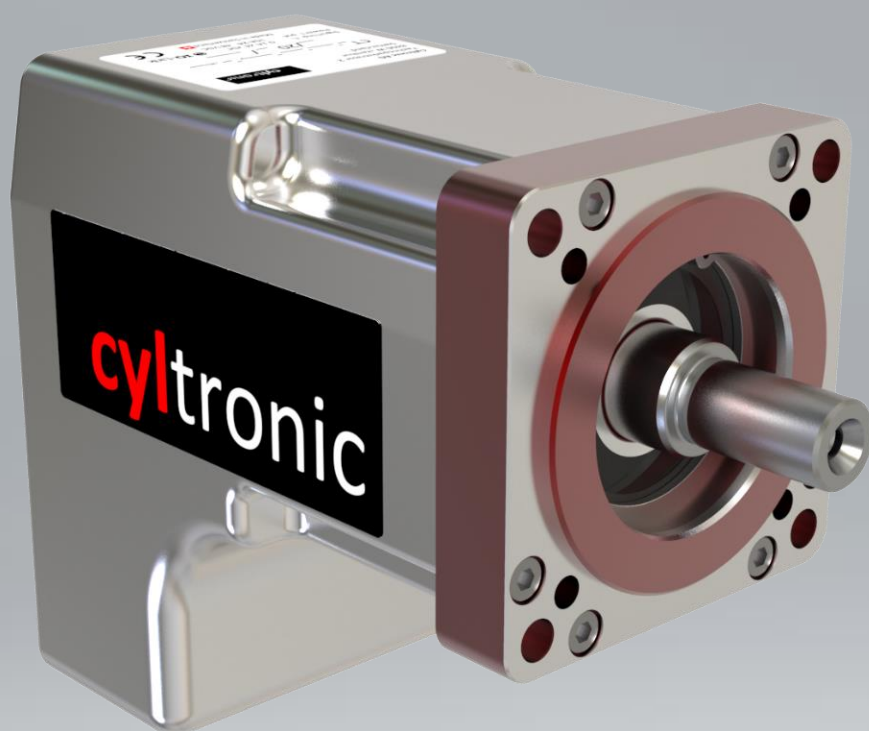


cyltronic



IO-Link

Servo Actuator

Servo motor CTR

Manual EN



Experts in IO-Link Servo Actuators

1 General information

Original manual (acc. MRL 1.7.4.1 a)

1.1 Document version

20250325 Manual CTR EN (replaces previous versions)

1.2 Manufacturer information

Cyltronic AG

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Thank you for your interest in our product. We recommend reading the entire operating instructions before commissioning.

Installation and commissioning may only be carried out by qualified personnel with appropriate qualifications in accordance with these operating instructions.

1.3 Device assignment

These instructions apply to the following devices:

Cyltronic servo motor:

- CTR-060-xxx-0000-S-MUL

1.4 Scope of delivery

The scope of delivery includes only the servo motor, all accessories must be purchased separately.

1.5 Further Documents

Description	Filename	Source:
IO-Link Interface Description	Vx.xx.xx-yyyymmdd-IO-Link_Interface_Description_EN	www.cyltronic.ch/produkte/downloads/
Datasheet CTR-060	yyyymmdd_Datasheet_CTR-060_EN	www.cyltronic.ch/produkte/downloads/
Accessories catalog	yyyymmdd_Cyltronic_Zubehoer-Katalog_(DE).pdf	www.cyltronic.ch/produkte/downloads/
IODD (IO-Link Device Descriptions)	Cyltronic-CTR-0x0-Kxx- yyyymmdd -IODD1.1.xml	https://ioddfinder.io-link.com/productvariants/search?vendorName='Cyltronic AG'

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3 Safety information

3.1.1 Local safety regulations

Before using this product, make sure that it complies with all local safety regulations. Take all necessary safety precautions to ensure proper operating function during and after the period of use. You may also add additional external protective features or structures to the product as needed. Restrict access to hazardous areas appropriately.

3.1.2 Accident risk

Do not remove any parts from the product or attempt to open it, for example by loosening screws or other components.

3.1.3 Modification

No modifications may be made to the product. Modifications may cause the product to malfunction and void any warranty claims.

3.1.4 Qualified personnel

Installation, commissioning, as well as maintenance and disassembly may only be performed by qualified personnel. The personnel must be familiar with the installation of mechatronic drives.

3.2 Intended use

The product is an incomplete machine in the sense of the Machinery Directive (Directive 2006/42/EC) and is intended for installation in a complete machine. This must not be put into operation until it has been established that the machine into which this partly completed machine is to be incorporated complies with the provisions of Directive 2006/42/EC.

The servo motor is to be used for movements of payloads or as a drive with the use of separate linear drives, gears and/or guides.

This product can be used in applications of various fields; therefore, the responsibility of the specific application passes to the user. The application or performance limits as well as the environmental or boundary conditions are described in chapter 6 "Technical data " and in the corresponding datasheet.

The risks associated with improper use lie solely with the user. No liability is accepted for damage resulting from improper use.

This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.

3.3 Foreseeable misuse

The product must not be used to transport or move people and animals. For example, the product must not be used for lifting suspended loads when direct failure may result in injury to a human being.

3.4 Safety instructions

3.4.1 General hazards

This product is built according to the current state of the art and is safe to operate. However, hazards may arise from the machine if it is not used by trained or at least instructed personnel, or if it is used improperly or for purposes other than those for which it is intended.

3.4.2 Warnings, notes

Warnings, notes and residual risks are identified by symbols in these operating instructions. It is essential to follow the instructions in order to avoid accidents, personal injury and damage to property.

Consider markings on the product.

Before mounting, installation and maintenance units: Switch off the power supply, check that no voltage is present and secure against being switched on again.

DANGER



...indicates a hazardous situation which, if not avoided, could result in death or serious injury.

WARNING



...indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION



...indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTE




...points out useful tips and work recommendations, which, however, have no influence on the safety and health of the personnel.

IMPORTANT






...indicates a possible harmful situation, which can lead to property damage if not avoided.

3.4.3 Residual risks

CAUTION	
	<p>During operation, the product can become hot without affecting its function. The surface temperature can reach temperatures of up to 100 °C.</p> <p>Do not touch the product under any circumstances during operation and in the cooling phase after shutdown.</p> <p>Attach protective measures against contact at temperatures above 60 °C and contact duration of more than 1s.</p> <p>Ensure that no temperature-sensitive parts or objects are in contact with or attached to the product.</p>

3.4.4 Product-specific warnings and notes

CAUTION	
	<p>Depending on the operating conditions (speed, load, etc.), increased surface temperatures may occur on the product in the area of the drive. Touching the product during operation can cause minor burns. Do not touch the product during operation.</p> <p>During maintenance and repair work, make sure that the product has cooled down before starting work.</p>
	<p>Rapid movement of the motor shaft due to external torque, without an electrical power consumer (such as a brake chopper or power supply) connected, can lead to voltage spikes and result in damage to the integrated electronics.</p>

NOTE	
	<p>The noise pattern does not necessarily indicate the service life of the drive. Different noise patterns may occur depending on the production process.</p>

4 Transport, handling, storage

Lift the motor by the housing only. The motor must not be held by the shaft only, as this may result in damage. The shaft must be fixed and kept free of load during transport.

5 Functional description

The CTR servo motor functions as an electromechanical drive for linear and rotative movements. The main components are the synchronous servo motor and the integrated drive electronics. All components are located in the housing.

The speed as well as the torque limitation can be continuously adjusted using rotary knobs directly on the housing or set in real time via the IO-Link interface. Here, speeds, accelerations and other parameters can be changed, which allows positioning tasks such as in complex servo applications. Control via simple digital signals, which for example are used to control a simple pneumatic cylinder, is also possible.

5.1 Device Overview

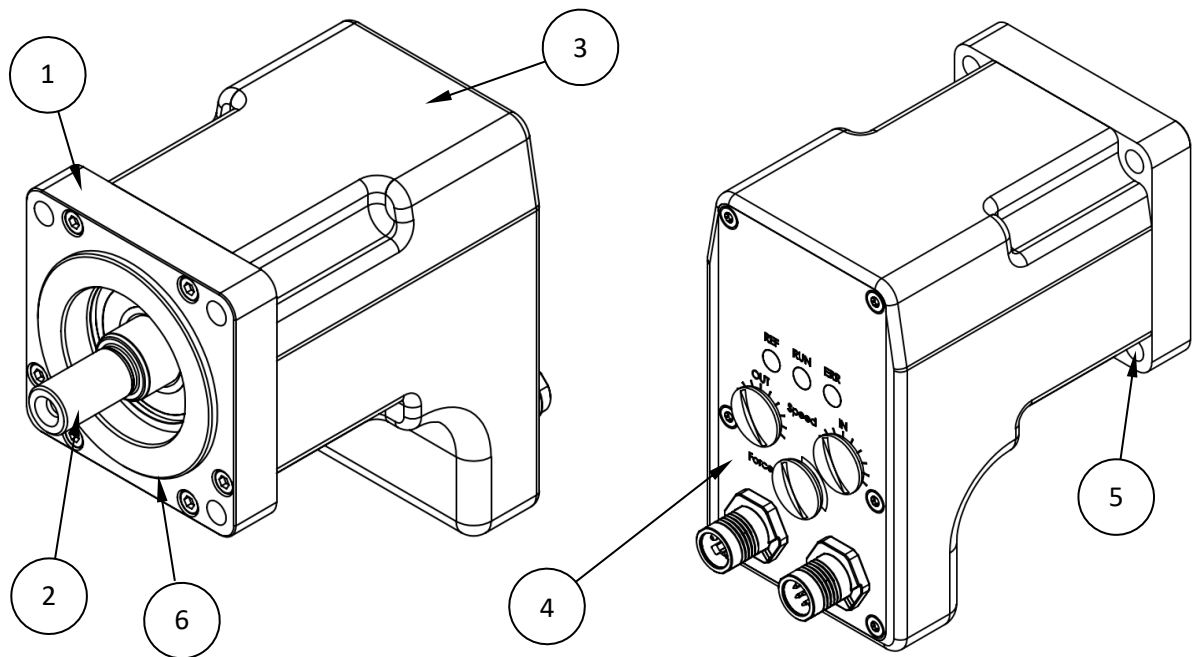


FIGURE 1: DEVICE OVERVIEW

No.	Description
1	Front cover
2	Motor shaft
3	Housing
4	Control panel, connections, display
5	Holes for mounting and attaching accessories
6	Locating flange

5.2 Control panel, connections, display

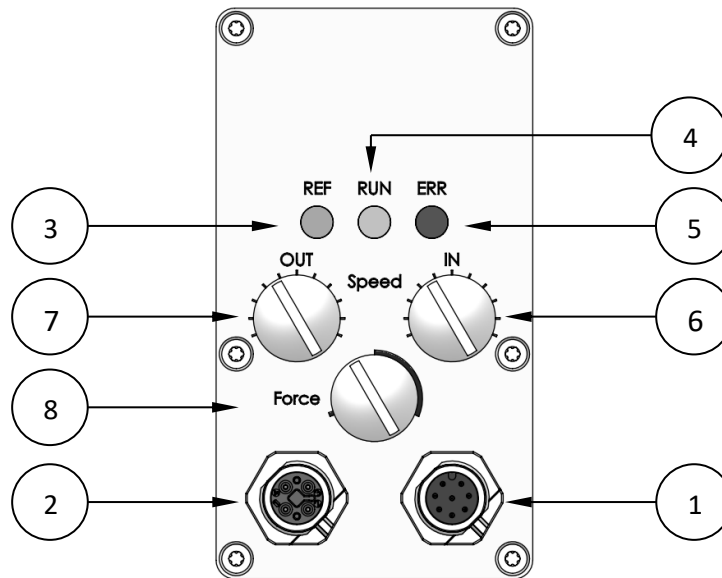


FIGURE 2: CONTROL PANEL

No.	Designation	Property
1	Connection for signal (M12 8-pin)	A-coded
2	Connection for power (M12 4-pin)	T-coded
3	LED display REF (orange)	Lights: Reference run required
4	LED display RUN (green)	Lights: Ready for operation / In operation Flashes: Signal supply ok, power supply missing
5	LED indicator ERR (red)	Lights: Error / not ready for operation Flashes: Error code see chapter 0
6	Rotary knob for setting the positive speed in counterclockwise operation (under the screw plug)	+ clockwise - counterclockwise
7	Rotary knob for setting the negativ speed in clockwise operation (under the screw plug)	+ clockwise - counterclockwise
8	Rotary knob for setting the force (under the screw plug)	+ clockwise - Counterclockwise

IMPORTANT



An excessively long duty cycle with operation above the continuous range can lead to overheating. The unit has an internal temperature monitor which initiates a stop as soon as the temperature limit value is exceeded. However, damage due to overheating cannot be completely prevented.

5.2.1 Set speed / torque

The knobs for speed and torque adjustment are exposed with a flathead screwdriver, by removing the screw plugs:

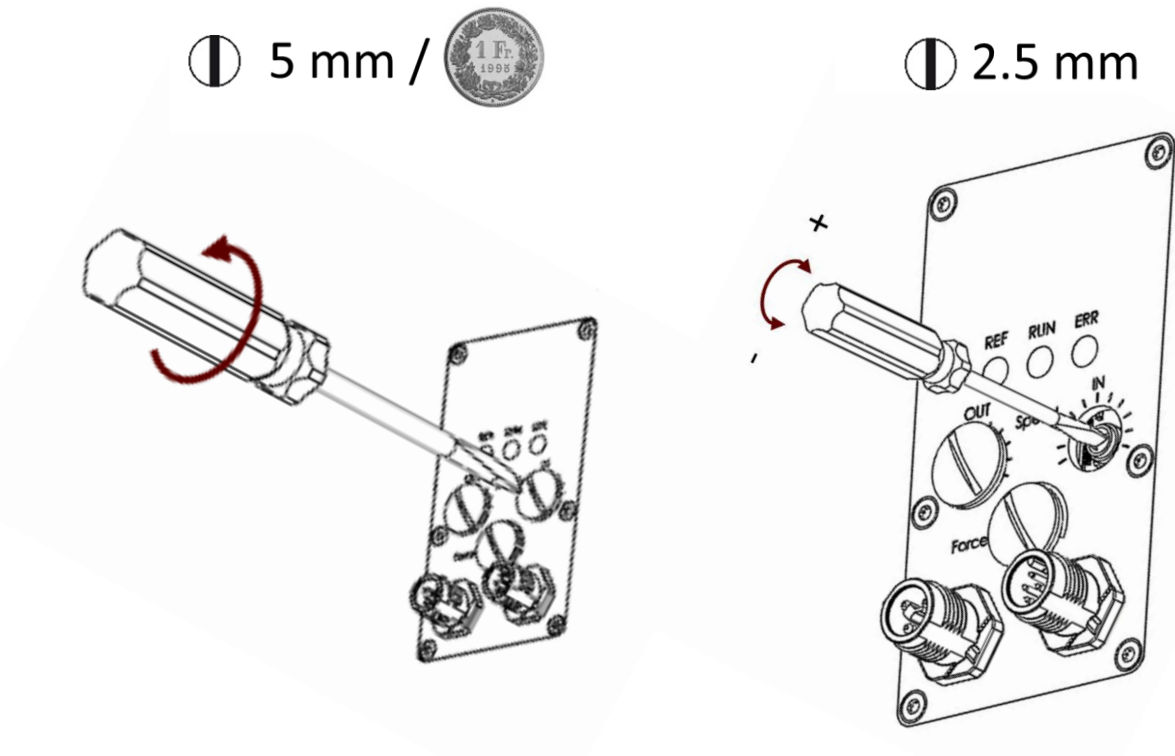


FIGURE 3: SET SPEED / TORQUE

The retraction and extension speed as well as the torque limitation are set via the rotary knobs (higher clockwise, lower counterclockwise).

IMPORTANT	
	Turn the knobs for force and speed carefully (approx. 0.5-1 Ncm). Do not turn beyond the end positions, as this may cause damage to the product.
IMPORTANT	
	The screw plugs may only be removed when the ambient humidity is below 90%. To avoid damage to the seal, tighten the screw plugs carefully when closing (approx. 2-5 Ncm).

6 Technical data

6.1 Design/Characteristics

For drive design, proceed according to the following steps. The required characteristic curves may vary depending on the component size and configuration, and can be found in the corresponding data sheet.

If you require assistance with the design of our products, our Application Engineering team is at your service. Feel free to utilize the contact information provided in section 1.2 Manufacturer information.

6.1.1 Torque M as a function of the speed

The torque-speed characteristic curve for the respective device can be found in the data sheet. The following example graphic is intended to explain the essential limits:

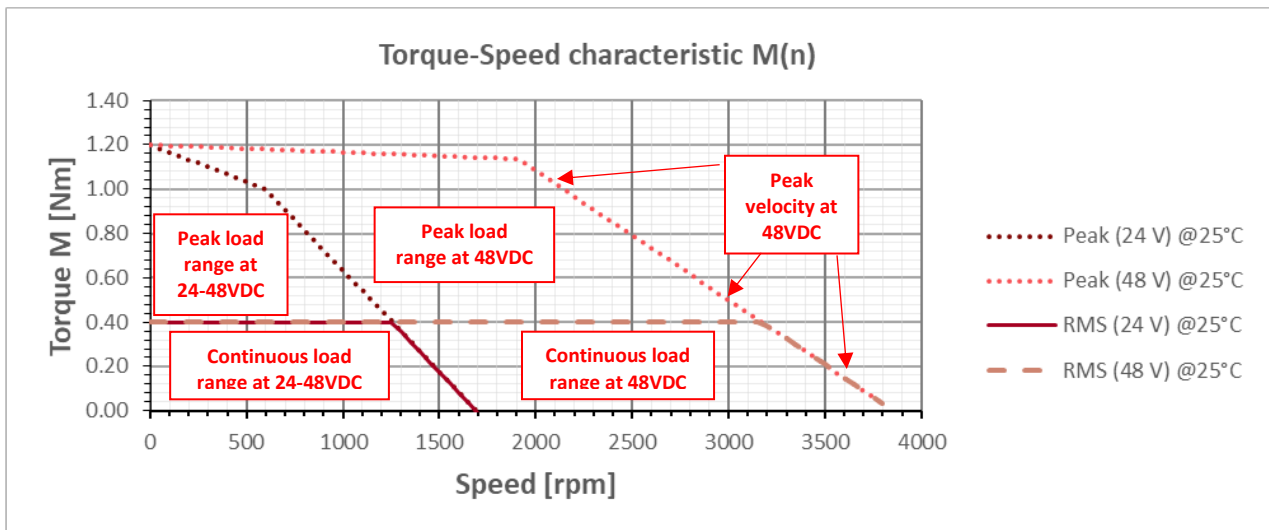


FIGURE 4: TYPICAL TORQUE / SPEED CHARACTERISTIC OF AN CTR SERVO MOTOR

The torque-speed curves provide information about the continuous load (corresponds to a duty cycle of 100%) and the maximum available torque / feed rate (peak), which can be used for short-term operation. If an operating point is above the RMS line, continuous operation is not possible. The load or operating time must be reduced accordingly, otherwise overheating of the actuator must be expected. The internal temperature monitoring withdraws the operational readiness from the motor and puts the drive into an error state (ERR LED flashing pattern see: Chapter 0).

If continuous operation is desired (100% duty cycle), all individual operating points must be below the peak line and the averaged effective load (F_{RMS}) must be below the RMS line. Unless otherwise stated, the respective characteristics apply to an ambient temperature of 20° C.


The calculations can be carried out manually or handled by our application engineering using our tools.

HINWEIS



If there is a constant high load, the control may have to be deactivated to allow a cooling phase (deactivate the control according to tables 7.2.1.2 or 7.2.2.2).

6.1.2 Generator / brake operation

IMPORTANT	
	Overvoltage can occur in the device and in the power supply unit during generator/brake operation. To avoid damage to other devices in the same voltage circuit due to overvoltage, the use of a braking resistor with integrated voltage monitoring (brake chopper) is recommended.

A brake chopper is connected to the DC link. When a set limit voltage is reached, it transfers the excess power to a braking resistor and thus effectively limits the voltage in the DC link. Suitable braking resistors (braking choppers) are available on request.

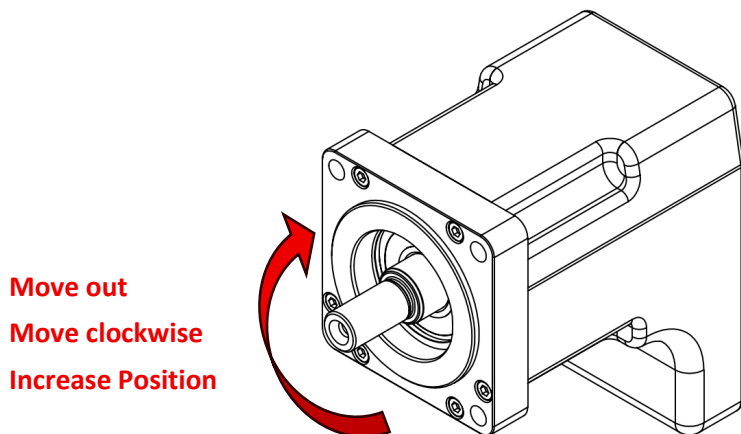
7 Operating modes

The servo drive can be controlled via IO-Link as well as digital signals, similar to the linear devices (CTC-xxx, CTL-xxx). When controlling it via digital signals, a distinction is made between two modes: Mode 1 for monostable control and Mode 2 for bistable control. The factory default is **Mode 1**. For information on switching operating modes, see Section 7.4.

In this context, "extend/retract" means "move to the upper/lower end position." The end positions are either parameterized via IO-Link or defined by mechanical end stops via a teach-in run.

Regardless of the control type and the specified operating modes, the rotary drive can be used for an infinite range of motion, as well as a finite range of motion. Several sections of this manual point out the different handling of these two operating modes.

The following convention applies to the direction of rotation for all modes:



7.1 Operation with IO-Link

Connection and control via the IO-Link interface are described in detail in the IO-Link interface description:

Beschreibung	Dateiname	Quelle:
IO-Link Interface Description	Vx.xx.xx-yyyymmdd-IO-Link_Interface_Description_EN	www.cyltronic.ch/produkte/downloads/

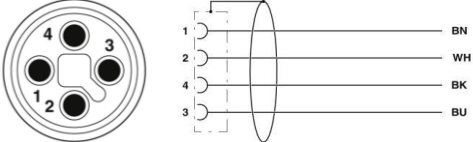

Operation with an activated IO-Link interface can also be combined with the following modes.

7.2 Mode 1: Monostable (& Omnistable)

7.2.1 Omnistable

In omni-stable mode, a movement can be interrupted at any position. If neither a signal for retraction nor extension is detected, the motor stops and remains in control in the position reached. For a force-free state, the control can be interrupted (with DI Powerless).

7.2.1.1 Signal assignment Mode: Omnistable

Power	Signal
Plug M12x1, 4-pole T-coded according to EN 61076-2-11	Plug M12x1, 8-pin A-coded according to EN 61076-2-101 (Shielded cables are recommended)
	

Pin assignment Digital I/O

Pin	Color	Function	Pin	Color	Function
1	BN	Power voltage 24V-48V \pm 15% (max. 10A) At 48V the use of a brake chopper is recommended.	1	WH	DO Ready / IO-Link CQ
2	WH	Functional earth (FE)	2	BN	Logic voltage 24V \pm 15% (max. 500mA)
3	BU	GND 0V	3	GN	DO is extended (right/high end position)
4	BK	reserved, do not connect	4	YE	DO is retracted (left/low end position)
			5	GY	DI Retract (run left/reduce position)
			6	PK	DI Extend (run right/increase position)
			7	BU	GND 0V
			8	RD	DI Teach / Reset / Powerless

7.2.1.2 Truth Table Mode: Omnistable

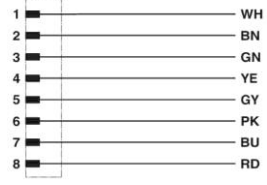
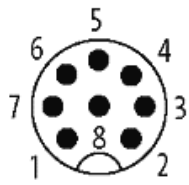
Command	DI Extend	DI Retract	DI Teach	Comment
Motor brakes and stops in regulation	0	0	0	Position control stays active
Retract (counterclockwise)	0	1	0	Movement to parameterized left/low end position
Extend (clockwise)	1	0	0	Movement to parameterized right/high end position
Teach run: Start with retract (counterclockwise)	0	1	1	The drive moves slowly to both end stops, starting with retraction, and teaches the new stroke.
Teach run: Start with extend (clockwise)	1	0	1	The drive moves slowly to both end stops, starting with the extension, and teaches the new stroke.
Undefined	1	1	0	A movement can be executed, this condition must be avoided!
Undefined	1	1	1	A movement can be executed, this condition must be avoided!
Reset / powerless	0	0	1	- Control is deactivated, actuator goes into a powerless state, but remains ready for operation - Acknowledge errors

7.2.2 Monostable, normally retracted

Corresponds to a control and behaviour as in the operation of a pneumatic cylinder with a monostable pneumatic valve. When the DI extend signal is activated, the drive moves to the upper end position. When the signal is deactivated, the drive moves back to the lower end position.

7.2.2.1 Signal assignment Mode: monostable, normally retracted

Signal connector assignment	Pin	Color	Function
Plug M12x1, 8-pin A-coded according to EN 61076-2-101 (shielded cables are recommended)	1	WH	DO Ready / IO-Link CQ
	2	BN	Logic voltage 24V ± 15% (max. 500mA)
	3	GN	DO is extended (right/high end position)
	4	YE	DO is retracted (left/low end position)
	5	GY	Logic voltage 24V (max. 500mA)
	6	PK	DI Extend (run right/increase position)
	7	BU	GND 0V
	8	RD	DI Teach / Reset



7.2.2.2 Truth table mode: monostable, normally retracted

Command	DI Extend	DI Teach	Comment
Extend (clockwise)	1	0	Movement to parameterized right/high end position
Retract (counterclockwise)	0	0	Movement to parameterized left/low end position
Teach run: Start with retract (counterclockwise)	0	1	The drive moves slowly to both end stops, starting with retraction, and teaches the new stroke.
undefined	1	1	Undefined state, this state must be avoided!

7.2.3 Monostable, normally extended

Corresponds to control and behaviour as in the operation of a pneumatic cylinder with a monostable pneumatic valve. When the DI retract signal is activated, the drive moves to the lower end position. When the signal is removed, the drive moves back to the higher end position.

7.2.3.1 Signal assignment Mode: monostable, normally extended

Signal connector assignment	Pin	Color	Function
Plug M12x1, 8-pin A-coded according to EN 61076-2-101 (Shielded cables are recommended)	1	WH	DO Ready / IO-Link CQ
	2	BN	Logic voltage 24V ± 15% (max. 500mA)
	3	GN	DO is extended (right/high end position)
	4	YE	DO is retracted (left/low end position)
	5	GY	DI Retract (run left/reduce position)
	6	PK	Logic voltage 24V (max. 500mA)
	7	BU	GND 0V
	8	RD	DI Teach / Reset



7.2.3.2 Truth table mode: monostable, normally extended

Command	DI Retract	DI Teach	Comment
Extend (clockwise)	0	0	Movement to parameterized right/high end position
Retract (counterclockwise)	1	0	Movement to parameterized left/low end position
Teach run: Start with extend (clockwise)	0	1	The drive moves slowly to both end stops, starting with the extension, and teaches the new stroke.
undefined	1	1	Undefined state, this state must be avoided!

7.3 Mode 2: Bistable

Corresponds to control and behaviour as in the operation of a pneumatic cylinder with a bistable pneumatic valve. If a run command is initiated, the drive runs the entire (taught-in) stroke, even if the signal drops. The drive remains in control in the corresponding end position until the counter signal is received. For a torque-free state, the control can be interrupted (with DI Powerless).

7.3.1.1 Signal assignment Mode: Bistable

Power	Signal
Plug M12x1, 4-pole T-coded according to EN 61076-2-11	Plug M12x1, 8-pin A-coded according to EN 61076-2-101 (Shielded cables are recommended)

Pin assignment Digital I/O

Pin	Color	Function	Pin	Color	Function
1	BN	Power voltage 24V-48V \pm 15% (max. 10A) At 48V the use of a brake chopper is recommended.	1	WH	DO Ready / IO-Link CQ
2	WH	Functional earth (FE)	2	BN	Logic voltage 24V \pm 15% (max. 500mA)
3	BU	GND 0V	3	GN	DO is extended (right/high end position)
4	BK	reserved, do not connect	4	YE	DO is retracted (left/low end position)
			5	GY	DI Retract (run left/reduce position)
			6	PK	DI Extend (run right/increase position)
			7	BU	GND 0V
			8	RD	DI Teach / Reset / Powerless

7.3.1.2 Truth Table Mode: Bistable

Command	DI Extend	DI Retract	DI Teach	Comment
Extend (clockwise)	1	0	0	Movement to parameterized right/high end position
Set	0	0	0	Exit command remains active
Retract (counterclockwise)	0	1	0	Movement to parameterized left/low end position
Set	0	0	0	Retract command remains active
Stops	1	1	0	
Set	0	0	0	Stand command remains active
Reset / powerless	0	0	1	- Control is deactivated, actuator goes into a powerless state, but remains ready for operation - Acknowledge errors
Teach run: Start with extend (clockwise)	1	0	1	Drive moves slowly to both end stops starting with extension and teaches the new stroke.
Teach run: Start with retract (counterclockwise)	0	1	1	Drive moves slowly to both end stops starting with Retract and teaches the new stroke.
Stops	1	1	1	Not allowed (programming mode can be reached accidentally)

7.4 Switching the operating modes

Perform the following steps to switch to another operating mode.

1. Disconnect the power and logic voltage supply
2. Connect the logic power supply and immediately activate the signals "DI Retract", "DI Extend" as well as "DI Teach".
3. The signals under point 2. must remain active for 3 seconds. As soon as the device is in programming mode, the LED display "REF" flashes with 2 Hz, deactivate the 3 signals.
4. To switch to another mode, switch the "DI Teach" signal on and off once:
 - a. Blinking pattern for **mode 1 (mono-/omni-stable)**: LED "RUN" blinks **once**, then 1 s pause, ...
 - b. Flashing pattern for **mode 2 (bistable)**: LED "RUN" flashes **twice**, then 1 s pause, ...
5. To confirm and exit the programming mode, disconnect the logic power supply


NOTE



Switching the operating modes is only possible when no power voltage is applied.


8 Installation, assembly

The CTR servo motors have mounting holes and threads on the drive flange. Corresponding standard gearboxes can be ordered together with the motor. Suitable attachments can be found in the accessories catalog as described in section 1.5. The dimensions are described in the respective datasheets.

IMPORTANT	
	<p>The servo motor must be mounted without tension or distortion. Any forces, both radial and axial, on the drive shaft will reduce the service life of the device and should be avoided.</p> <p>Heavy attachments on the drive shaft must be removed for transport.</p>


8.1 Tightening torques of screws


The tightening torques for the fastening screws can be found in the datasheet.


WARNING	
	<p>Failure to comply with the specifications may result in a failure of the bolted joint, which, depending on the situation, may result in serious injuries</p>

8.2 Connecting signal and power supply


Connect the cables according to the operating mode (see chapter 7).

DANGER	
	<p>The connection of the electrical lines may only be carried out by qualified personnel.</p>

IMPORTANT	
	<p>To avoid interference with other components in the 24V mains / 48V mains, the power voltage supply of the drive must be connected to a separate power supply unit or to a mains filter. Several drives can be operated together on the same power supply unit.</p>

IMPORTANT	
	<p>The signal power supply must not exceed 24V DC. A range of 24-48V DC is permissible for the power voltage supply, but in this case the signal voltage supply must be provided by a separate 24V power supply unit.</p>

8.3 Commissioning

IMPORTANT	
	To prevent damage to the microprocessor, the "DI Retract", "DI Extend" and "DI Teach" signals must not be switched until the logic power supply is connected.

1. The Force and speed are to be set to the smallest position via the rotary knobs (Attention: Do not turn the rotary knobs beyond the stop!)
2. Connect the power and control connection
3. Place the motor in such a way that the shaft can move without tension
4. Perform a function check according to chapter 8.4.

8.4 Function control

First carry out all points according to chapters 8.2 and 0.

1. **Version -IOL:** By signal input on "DI Extend" or "DI Retract", the drive starts to move at a reduced reference speed (reference run according to chapter 8.5). The motor moves until it detects a mechanical end stop.
Version -MUL: The drive does not require a reference run and starts moving at the working speed as soon as the first drive command is given.
2. Press the opposite signal ("DI retract" or "DI extend") to move the drive to the other end position. The motor now moves at the working speed.
3. Install the device in its final mounting position.
4. If the drive is not operated in an infinite operating range when installed, but with external end stops, perform a teach run according to chapter 8.6 to teach in the new stroke.

8.5 Reference run

The reference run is used to move the drive slowly to an end position and to reference it there (set 0-position).

For the devices of the version -IOL a reference run is always necessary when the logic voltage has been disconnected from the drive. A disconnection of the power voltage does not require a new reference run.

This request is represented by the illumination of the "REF" LED

The -MUL device variant features a multi-turn position sensor that can detect movements even when the power is off. Therefore, no reference run is required with this variant.

A reference run is performed automatically as soon as a logic voltage is applied and a signal for retraction or extension is present. If the drive is already in the corresponding end position, no movement is performed, and the drive is referenced directly.

The reference run differs from the teach-in run in that a new stroke is taught in during the teach-in run. During the reference run, on the other hand, only the start position of the stroke is determined.

8.6 Teach run


The teach-in run is used to teach-in a new range of motion. Normally, the teach run is only required once during initial start-up or when replacing the drive. The motor moves at slow speed in the specified direction until an end stop is detected by reaching a torque threshold. The direction of movement is then changed until the second end stop has been detected with the same principle.

The teach-in run is always initiated in combination by the two signals "DI Teach" and the "DI Retract" or the "DI Extend".

"DI Teach" and "DI Extend" → Teach run starting with Extend*.

"DI Teach" and "DI Retracted" → Teach run starting with Retracted*.

*Possible teach run initiations may differ depending on the operating modes, see truth tables in chapter 7 Operating modes.


NOTE	
	If the device is operated in an infinite range of motion (i.e. without mechanical end stops), no teach run should be carried out.


Procedure Teach run:

1. Mount the drive in the intended installation location
2. Commissioning according to chapter 0 perform
3. Execute signal combination for teach-in operation:
 - a. "DI Teach" and "DI Extend" → Teach run starting with Extend
 - b. "DI Teach" and "DI Retracted" → Teach run starting with Retracted.
4. Drive extends/retracts slowly to the external end stop
5. Drive changes direction of movement and moves to the opposite end stop
6. Drive automatically saves the new stroke length.
 - a. Green LED (RUN) lights up.
 - b. Signal "DO drive is extended" or "DO drive is retracted" becomes active
7. Teach run completed

The teach run can be cancelled, if necessary, by pressing the "DI Teach" signal again

If the teach run fails, the red LED (ERR) lights up. Typically, this is because the power supply is too small or set too low for the desired power value.

NOTE	
	After successful teach-in run, the drive slows down before the end stops and remains in position at the end stops. The applied force of the drive only corresponds to the force required to hold the end position.

WARNING	
	<p>Using external stops without performing a teach-in run can lead to high wear and damage to the spindle.</p> <p>In addition, too much power is required because the drive always tries to reach the programmed end positions with the maximum set torque (torque threshold).</p>

9 Maintenance and care

9.1 Maintenance plan


When	What	Action
Annual	Servo motor	Check for visible damage (external) Contact Cyltronic AG in the event of visible, externally caused damage.
Annual	Mounting fastener	Check screw tightening torques, see tightening torques of screws 8.1

9.2 Relubrication

The bearings of the rotary drive shaft are factory-lubricated for the expected service life. Relubrication of the ball bearings is not possible.

9.3 Cleaning

The housing of the rotary actuator is designed to meet IP65 protection class in every configuration. The IP40 protection class, which can be found in the data sheet, refers to the shaft seal. Therefore, the housing can be cleaned with a damp cloth.

IMPORTANT	
	<p>Before cleaning, make sure that the screw plugs are correctly tightened. Cleaning of the product may only be carried out when it is at a standstill.</p> <p>Direct directing of strong jets of water at the grease nipple must be avoided and may cause damage.</p> <p>The product must be in dry condition before restarting after cleaning.</p>


10 Removal and repair

In the event of damage or defect, the entire unit must be returned to Cyltronic AG. The repair may only be carried out by Cyltronic AG trained personnel.

11 Disposal

Dispose of the device properly according to the prevailing legal regulations or return it to Cyltronic AG.

12 Troubleshooting

IMPORTANT	
	Do not attempt to open the device or remove individual parts. Improper disassembly may result in damage. Any warranty claims will be forfeited.

Malfunction	Possible cause	Remedy / further measures
Loud running noises	Shaft bearing worn	Contact Cyltronic or your Cyltronic dealer.
Shaft cannot be moved electrically	- Force set too low - Device defective	1. Increase force potentiometer 2. Contact Cyltronic or your Cyltronic dealer.
Shaft cannot be turned by hand when switched off	Device defective	Contact Cyltronic or your Cyltronic dealer.

12.1 Error codes

Faults are indicated by the flashing pattern of the red LED on the device. If a fault occurs, the respective flashing pattern is repeated continuously with a pause of 1s. Faults can be acknowledged with the digital input signal "Reset" or via IO-Link.

Blink / light pattern	Error Code	Possible cause	Remedy
LED red lights constantly (after teach or reference run)	Voltage dip during teach or reference run, teach or reference run could not be completed	The power supply delivers less current than the actuator requires. Torque setting too high.	-Reduction of the torque using the potentiometer -test by a new run command whether sufficient reduction has been made, if not-> repeat -If the torque should then no longer be sufficient, a power supply with a higher output current must be used.
LED flashes red: 1x, Pause, 1x, ...	Power voltage too high	- Overvoltage generated by braking loads	- Check the power supply - Reduction of the speed - Reduction of the deceleration - Installation of a brake chopper
LED flashes red: 2x, pause, 2x, ...	Temperature too high	Overload of the device	Allow the device to cool down. If the error occurs again, reduce the load or the time under load.
LED flashes red: 3x, pause, 3x, ...	Error controller	Current internally too high or tracking error	Tracking Error Monitoring is active, and device is in tracking error. Alternatively, this error indicates a defect in an internal electronic component. If the error occurs repeatedly or cannot be acknowledged, contact Cyltronic.

LED flashes red: 4x, pause, 4x, ...	Internal error	Internal error, incompatible firmware	Indicates a defect in an internal electronic component. If the error occurs repeatedly or cannot be acknowledged, contact Cyltronic.
LED flashes red: 5x, pause, 5x, ...	Signal voltage too high	- Overvoltage generated by braking loads - Overvoltage caused by another device in the 24V intermediate circuit	- Checking the signal power supply - If necessary, install a separate power supply unit for the signal voltage supply.
LED flashes red: 6x, pause, 6x, ...	Signal voltage too low		- Checking the signal power supply

13 Appendix

13.1 Declaration of incorporation



Declaration of incorporation CTR-060

in the sense of the Machinery Directive 2006/42/EC, Annex II, 1.8 for partly completed machinery

The manufacturer:

Cyltronic AG
Technoparkstrasse 2
CH-8406 Winterthur

Confirms that the said product

Product name: Cyltronic servo motor
Type designation: CTR-060
Trade name: CTR-060

Year of manufacture: from 01/2024
Function: Generation of a rotary movement in which the angular position of the motor shaft as well as the rotational speed and acceleration are controlled.

meets the requirements of an **incomplete machine** according to the EC Machinery Directive 2006/42/EC.

The following essential requirements of the Machinery Directive 2006/42/EC according to Annex I are applied and fulfilled:

Appendix I, Paragraph: 1, 1.1.2, 1.1.3, 1.1.5, 1.3.1, 1.3.2, 1.3.3, 1.3.4, 1.3.7, 1.5.1, 1.5.2, 1.5.4, 1.5.8, 1.6.1, 1.7.1, 1.7.1.1

Standard	Title	Edition
DIN EN ISO 12100	Safety of machinery - General principles for design - Risk assessment and risk reduction	12100:2010

It also declares that the specific technical documentation has been prepared in accordance with Annex VII, Part B.

It is expressly declared that the **incomplete machinery** complies with all relevant provisions of the following EC Directives:

2011/65/EU Directive 2011/65/EU of the European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Cyltronic AG undertakes to transmit the technical documentation on the partly completed machinery in electronic form to the national authorities upon justified request.

Person established in the Community authorized to compile the relevant technical documentation:

Daniel Baumann
Cyltronic AG
Technoparkstrasse 2
CH-8406 Winterthur

Commissioning is prohibited until the machine into which this incomplete machine is installed complies with the provisions of EC Directive 2006/42/EC.

Before being placed on the market, this must comply with the CE directives, including documentation.

Winterthur / 03.09.2025

(Ort/Datum)

(Unterschrift)

Daniel Baumann
CTO

(Angaben zum Unterzeichner)

Cyltronic AG
Technoparkstrasse 2
8406 Winterthur

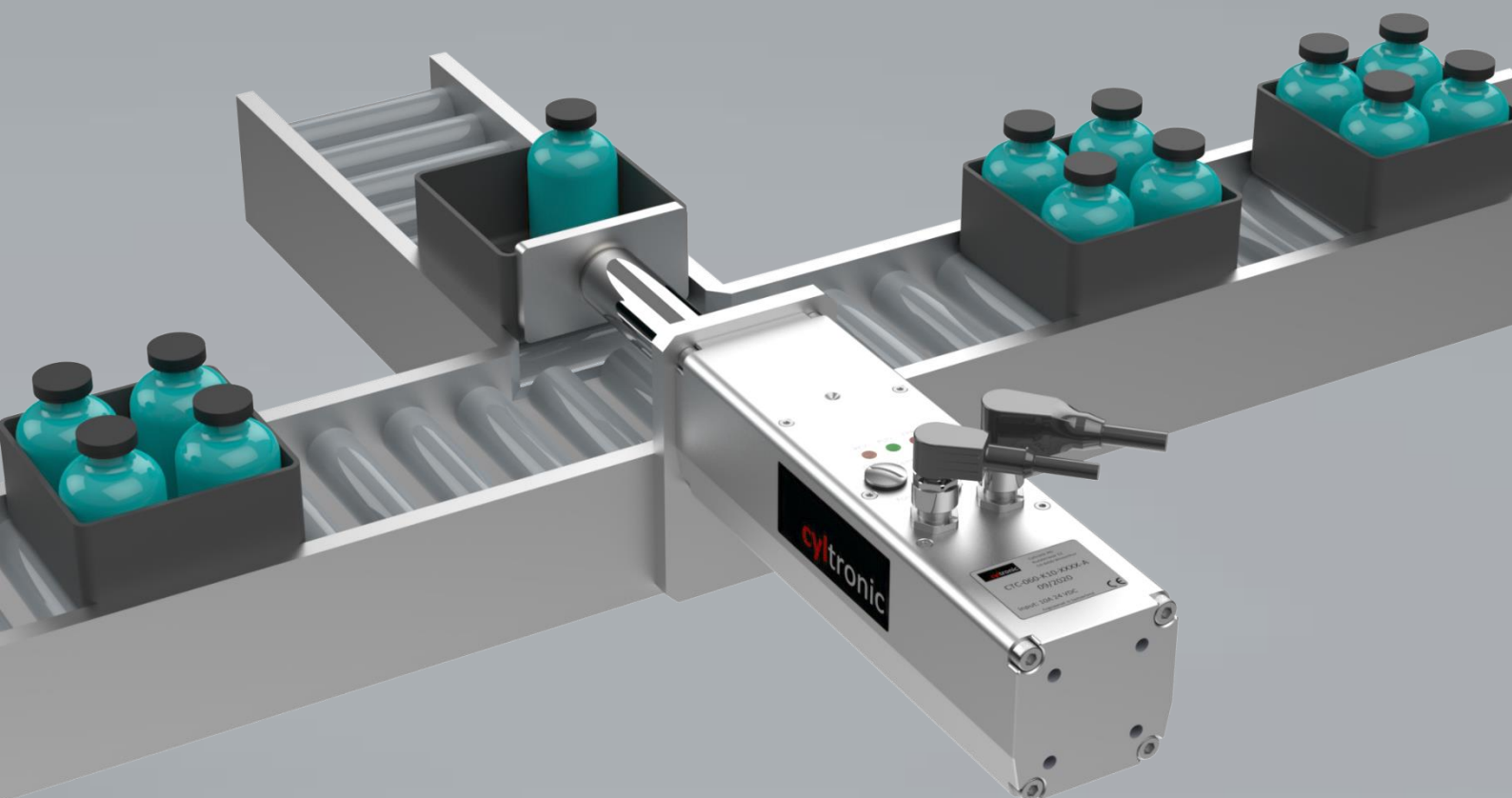
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