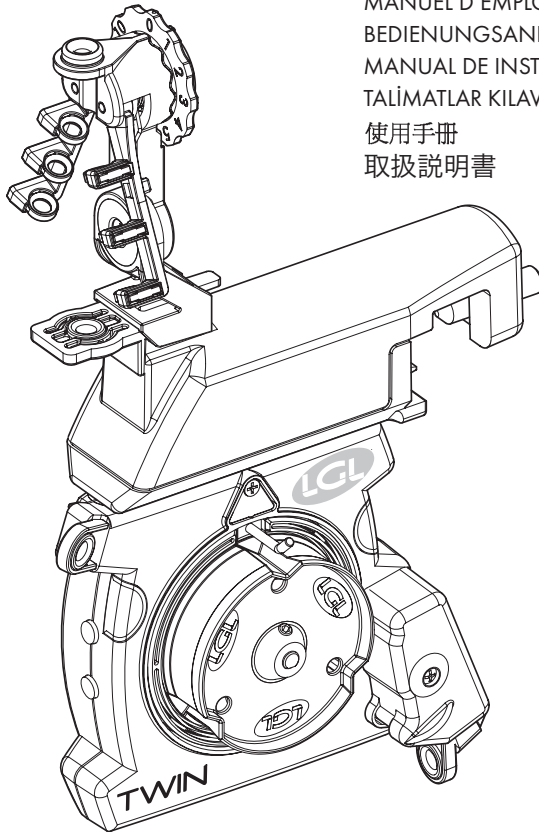




# TWIN

MANUALE DI ISTRUZIONE  
INSTRUCTION MANUAL  
MANUEL D'EMPLOI  
BEDIENUNGSANLEITUNG  
MANUAL DE INSTRUCCIONES  
TALİMATLAR KILAVUZU  
使用手冊  
取扱説明書



ALIMENTATORE DI FILO A SPIRE SEPARATE  
YARN ACCUMULATOR WITH SEPARATE COILS  
DELIVREUR DE FIL À SPIRES SÉPARÉES  
SCHUSSFADENGEBER MIT GETRENNTEN WINDUNGEN  
ALIMENTADOR DE HILO CON ESPIRAS SEPARADAS  
HARİCEN KULLANILAN İPLİK BESLEYİCİ (YÜRÜTÜCÜ)  
分离式线圈储纱器  
セパレート型コイル式 ヤーンアキュムレータ



Scope of supply: Design, manufacture and after sales service of yarn and weft feeders, measuring winders, stands, creels and oil systems for textile machinery.

TRADUZIONI DELLE ISTRUZIONI ORIGINALI.  
TRANSLATION OF THE ORIGINAL INSTRUCTIONS.  
TRADUCTION DES INSTRUCTIONS ORIGINALES.  
ÜBERSETZUNGEN DER ORIGINALANLEITUNG.  
TRADUCCIÓN DE LAS INSTRUCCIONES ORIGINALES.  
ORIJINAL TALIMATLARIN TERCÜMESİ.  
原说明书的译文  
オリジナルの取扱説明書の翻訳

L.G.L. Electronics is gratified by your choice  
and thanks you for the preference

# TWIN

## INSTRUCTION MANUAL

### Yarn accumulator

ISSUED BY:

Service

Date: 01/05/2019

Manager



APPROVED BY:

Technical

Date: 01/05/2019

Manager



# WARNINGS



- 1) *Switch off the power supply box and the yarn accumulator before starting any part connection, maintenance or replacement.*



- 2) *During standard machine operation, the yarn accumulator may suddenly start up without prior warning.*
- 3) *Before start-up, inspect the machine for physical damages (flywheel/ bush/moving parts)*
- 4) *Strictly avoid touching any moving part during operation.*



- 5) *Due to the high accuracy and sensitivity of the tension sensor, mobile or cordless phones might interfere with it. Operation of the device and the sensor is not affected. In any case, to avoid interference, we recommend that you keep a minimum distance of 3 metres.*
- 6) *Only use original L.G.L. Electronics spare parts and accessories.*
- 7) *Any repairs of electronic parts must be performed by appropriately qualified personnel, duly authorised by L.G.L. Electronics accordingly.*
- 8) *Yarn accumulators that are moved from warehouse storage into a warmer weaving mill environment may develop condensation. Please wait until they are completely dry before connecting them up. Failure to do so may damage the electronic components.*

# WARNINGS

## **TIPS TO KEEP THE YARN ACCUMULATOR IN GOOD WORKING ORDER AND EXTEND ITS SERVICE LIFE.**

*For you to achieve and maintain a satisfactory performance of the yarn accumulator, we suggest you should follow some simple steps:*

- 1. Yarn accumulators that are moved from warehouse storage into a warmer weaving mill environment may develop condensation; please wait until they are completely dry before connecting them up. Failure to do so may damage the electronic components.*
- 2. Water and moisture are harmful to the yarn accumulator's electronics. Keeping the yarn accumulator operating for long periods of time in very humid environments (humidity  $\geq$  80%) or using yarns impregnated with water may quickly result in damages to electronic cards. Moreover, never clean the yarn accumulator with water or similar liquids.*
- 3. Machines working in very dusty environments require greater maintenance. A clean workplace can prevent residual dust or dirt from negatively affecting machine performance by stressing its moving parts. The latter are protected, anyway dust accumulation might result in hindered movement and, hence, early wear*
- 4. We recommend that you store yarn accumulators that are not used for long periods of time in the appropriate polystyrene boxes, which guarantee optimum storage conditions.*
- 5. When the yarn accumulator is being threaded, used the appropriate heddle tool. Do not use other tools, especially metal ones.*

# INDEX

	page
<b>1 GENERAL FEATURES</b>	<b>8</b>
1.1 Main parts- Control and adjustment points	8
1.2 Overall dimensions	10
1.3 Intended use	10
<b>2 INSTALLATION AND START-UP</b>	<b>12</b>
2.1 Installation of yarn accumulator	12
2.2 Connections	14
2.2.1 Electrical connection	15
2.2.2 Connection problems	15
2.3 User interface on "buttons and LEDs"	16
<b>3 START-UP AND WINDING</b>	<b>17</b>
3.1 Basic use of the device	17
3.2 "WYW" Start-up and threading	17
3.3 Cell offset calibration (tension sensor)	19
3.4 Disabling the device. "SLP" sleep mode.	20
<b>4 PARAMETERS DESCRIPTION</b>	<b>21</b>
4.1 "T des. dgr"	21
4.2 "YR-YarnRig"	21
4.3 "BR-BrkRate"	21
4.4 "YB-YnBreak"	21
4.5 "TE-TensErr"	22
4.6 "TA-TimeAlr"	22
4.7 "DevSwchON"	22
4.8 "EN OFF Stp"	22
4.9 "RunAlrmDly"	22
4.10 "TEResetRun"	23
4.11 "Command "	23
4.12 "RL-RewLeng"	24
4.13 "RC-RewCycl"	24
4.14 "T read dgr"	24
<b>5 LED SIGNALS</b>	<b>25</b>

# INDEX

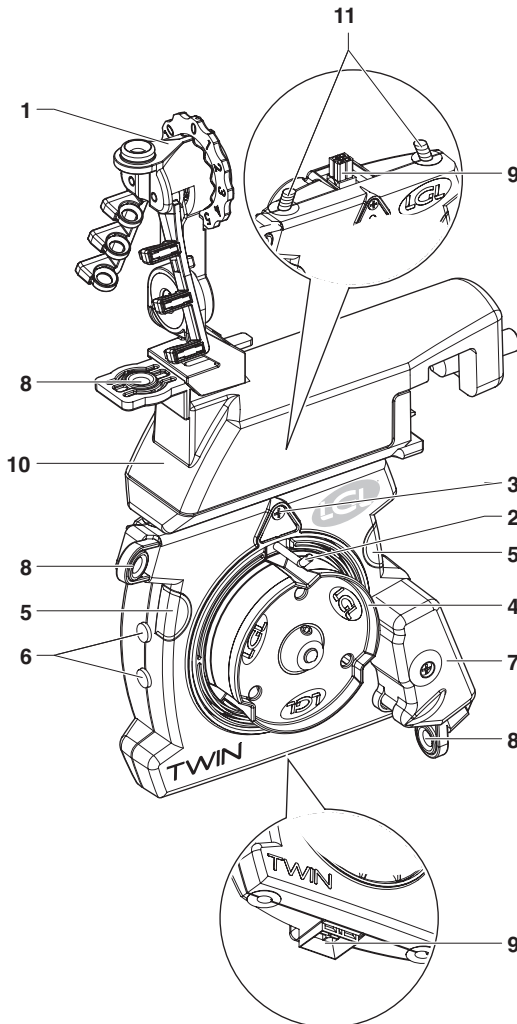
	page	
<b>6</b>	<b>WARNINGS, ALARMS E FAULTS</b>	<b>26</b>
6.1	Warnings	28
6.2	Alarms	29
6.2.1	Alarm OverFeed	29
6.2.2	Alarm Yarn Break	29
6.2.3	Alarm Tension Error	30
6.3	Error Faults	30
<b>7</b>	<b>CONVERSION TABLE</b>	<b>31</b>
7.1	Yarn conversion table in the various count systems	31
<b>8</b>	<b>SCRAPPING</b>	<b>32</b>
	<b>EC DECLARATION</b>	<b>33</b>

# 1 - GENERAL INFORMATION

## 1.1 MAIN PARTS – CONTROL AND ADJUSTMENT POINTS

### Main parts:

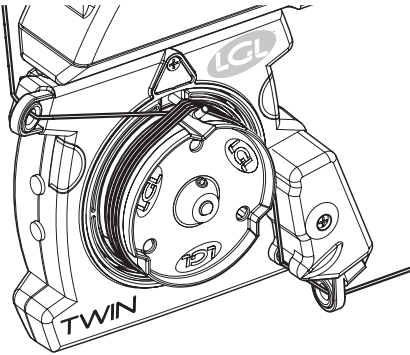
- 1 • TENSIONER
- 2 • SEPARATING PIN
- 3 • SEPARATION CONTROL SCREW
- 4 • YARN FEEDING WHEEL
- 5 • ALARM LIGHTS
- 6 • PUSH-BUTTONS
- 7 • LOAD CELL
- 8 • YARN GUIDE CERAMIC
- 9 • CONNECTOR
- 10 • CLAMP
- 11 • FIXING SCREW



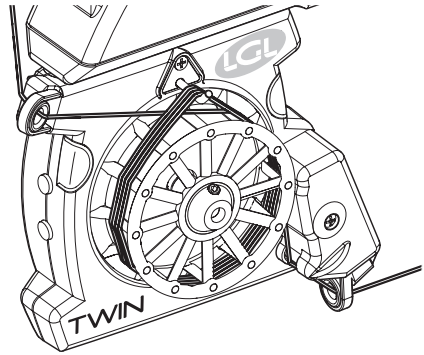


# 1 - GENERAL INFORMATION

The TWIN device is available in 2 different versions, one featuring a yarn recovery option (up to 20 cm), and another version which does not feature this option (the yarn feeding wheel only turns forward).



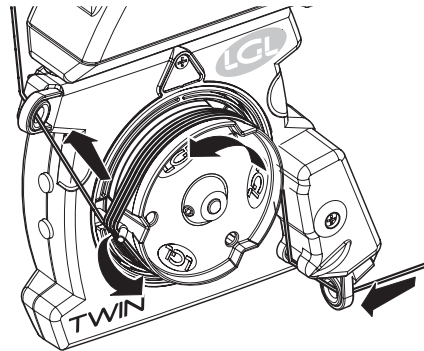
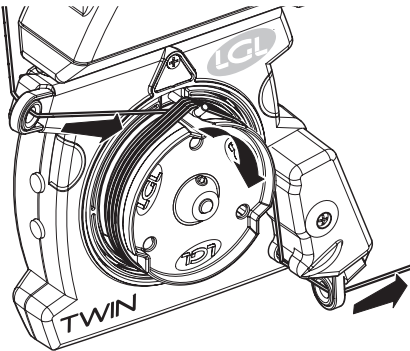
Version with yarn recovery



Version without yarn recovery

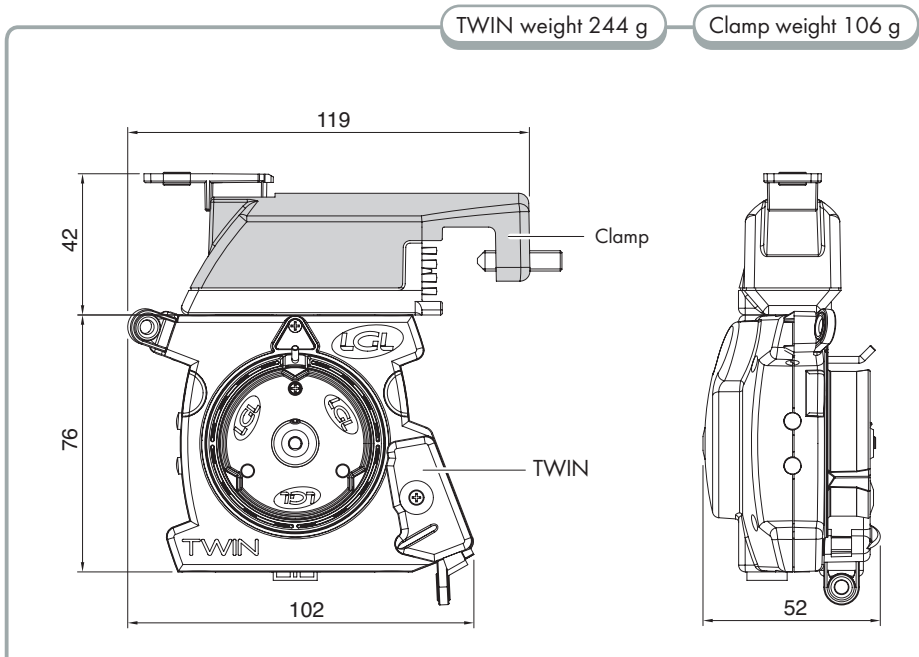
In the yarn recovery version, the separating pin is not fixed to the accumulator body, but to a wheel (coaxial with the yarn feeding wheel) and is free to rotate to an angle smaller than  $360^\circ$ . With the accumulator in normal operation mode, the feeding wheel supplies the machine located further downstream with yarn, turning clockwise. In this case, the separator wheel remains in an upright position.

When recovery is needed, the yarn must be pulled towards the accumulator, therefore the yarn feeding wheel turns counter clockwise thus trailing the separator wheel and, consequently, the separating pin itself.



# 1 - GENERAL INFORMATION

## 1.2 OVERALL DIMENSIONS



## 1.3 INTENDED USE

### Intended use:

LGL TWIN is a yarn accumulator that incorporates an accurate yarn tension and feeding speed control function. It can be used on knitting machines or textile machines in general to monitor elastic and non-elastic yarns.

The main feature of TWIN is that it is very compact in size and can be installed in clusters/batteries with a cascade chain connection, which provides savings in terms of wiring, and an easier installation.

The operating parameters of the device can only be modified via Can Bus serial communication, which provides a high degree of reliability and communication speed.

It can optimally work a variety of yarn counts ranging from **800 Den** (coarse yarn) to **10 Den** (fine yarn).

### Warning

The power supply of the electronic board inside the device must range within the limits stated in the "Technical Information" and, at all events, through the use of boards type-approved by LGL S.p.A.

# 1 - GENERAL INFORMATION

Turn off the power to the device before any maintenance or part replacement.  
Check the machine for damage before start-up (moving parts). Do not part the moving parts during operation.

## **UNINTENDED use**

All uses that are not clearly listed among the intended uses. namely:

- processing of yarns other than specified
- power supply to the machine other than specified
- use of the machine in an explosive atmosphere.

## **Functional features:**

- CAN BUS communication.
- Addressing option via an external "E2PROM" prenumbered (T-Conn) or without "T-Conn" via "LGL3A" (Automated Assisted Addressing)
- LGL Can Open Addressing extended to 999.
- Signalling interface for user: Green LED and orange LED.
- Key interface for user: BLUE key (ON/OFF) and BLACK key (CONFIG).
- Yarn tension adjustment from 0.5g to 50g.
- Ceramic tension sensor: guarantees accuracy, precision and quick response
- Quick reaction to machine speed changes without producing tension peaks on the yarn.
- Quick reaction to set tension changes.
- Automatic speed control up to a maximum value of 1400 m/min.
- Yarn absorption speed measurement.
- Yarn consumption measurement per machine revolution.
- Maximum torque available at low speeds, too.
- Special attention for reduction of energy consumption.
- Easy to install and use.
- Possibility of cluster/battery installation with cascade connection leading to savings in wiring.

## **Technical information**

- Supply voltage data:  
24VDC  $\pm$  10% to 60VDC  $\pm$  10% (min 21,6VDC - max 66 VDC).
- Standstill average power: 1,5W.
- Average power in operation: 5-15W
- Maximum rated power: 35W.
- Power surge: 120W
- Sound pressure level A, at maximum speed, lower than 70dB (A).
- Operating temperature range: +10 to +50 °C.
- Storage temperature range: -10 to +70 °C.
- Max humidity: 80%.
- Maximum number of devices for each cascade battery/cluster: 4.

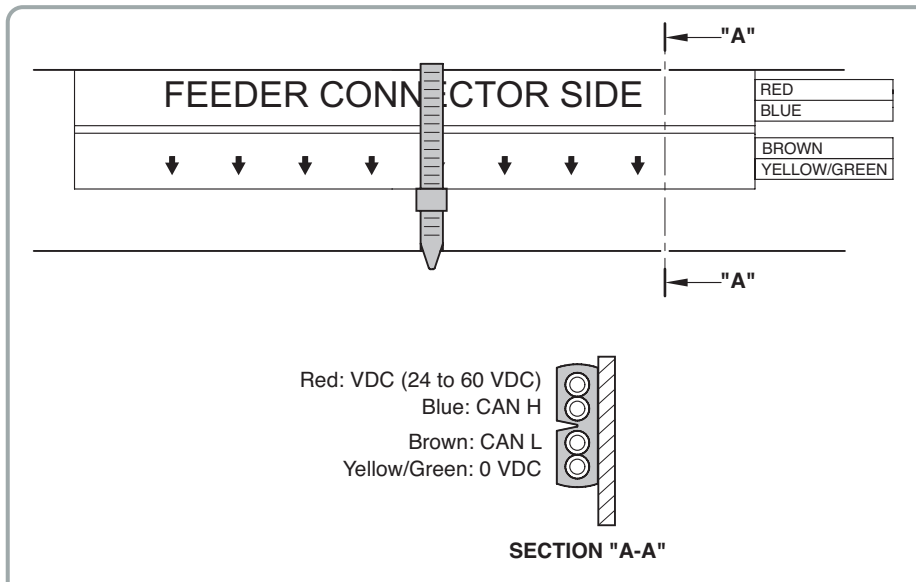
## 2 - INSTALLATION AND START-UP

### 2.1 INSTALLATION OF YARN ACCUMULATOR

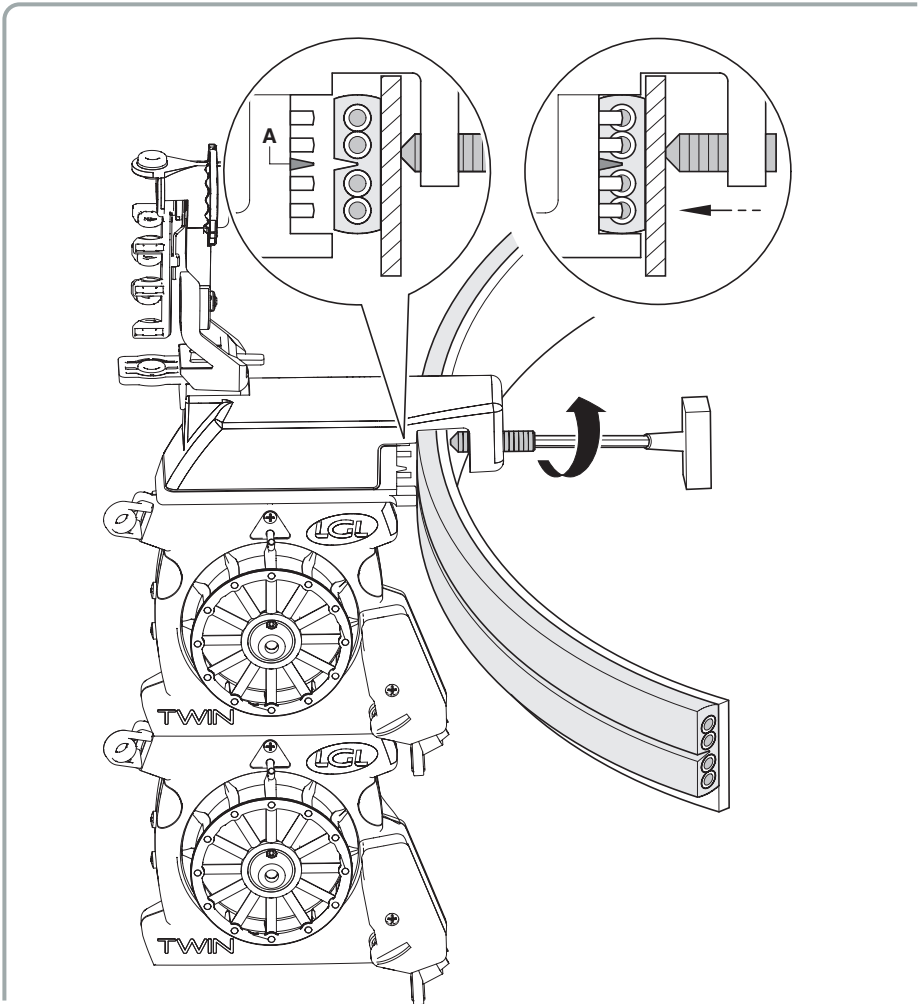
**N.B.:** Yarn accumulators that are moved from warehouse storage into a warmer weaving mill environment may develop condensation; please wait until they are completely dry before connecting them up. Failure to do so may damage the electronic components.

To install the yarn accumulator onto the machine, proceed as follows:

1. Place the flat cable onto the outer edge of the support ring and fix it by means of straps. The text "FEEDER CONNECTOR SIDE" on the cable must be read on the correct reading end, and not reversed; the arrows must be turned downwards.



## 2 - INSTALLATION AND START-UP



Keep flat cable with top portion flush to ring profile.

N.B.: The support ring shall be sized as follows:

- Height not less than 25mm
- Max thickness 10 mm

2. Place the clamp in the desired position; close the clamp grab screw until the strip is punctured, taking care to have the clamp connector guide (A) match the seat on the plate.

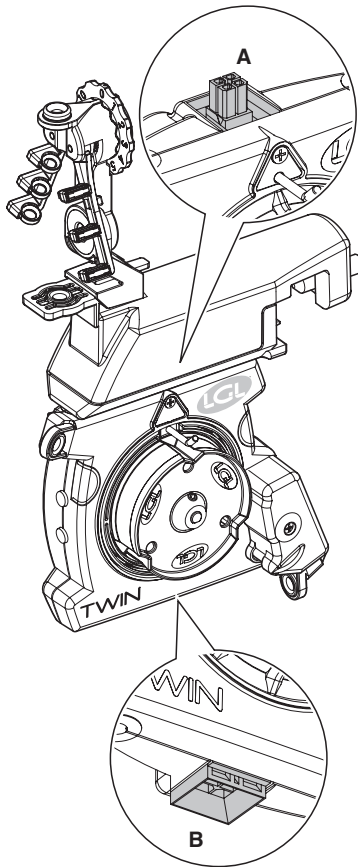
## 2 - INSTALLATION AND START-UP

### 2.2 CONNECTIONS

Each TWIN device is equipped with an “Receptacle” input connector (**A**) and a “Header” output connector (**B**) having the same “pinout”, which enables a cascade connection of several devices in a “battery” embodiment.

The device topping each battery must be inserted into the special clamp that enables connection to a 4-wire flat cable.

Each battery can be composed of a maximum of 4 devices.



## 2 - INSTALLATION AND START-UP

### 2.2.1 Electrical connection

Owing to the lack of a display unit, “Standalone” use is not possible. The device can only operate in systems with a Can Bus communication line and Master devices for the setup of the operating parameters.

For each single device, the signal arrangement of both connectors (J1 and J2) is as follows:

No. of pins on J1	Signal description
1	CAN L
2	CAN H
3	+Vdc Alim.
4	GND

### 2.2.2 Connection problems

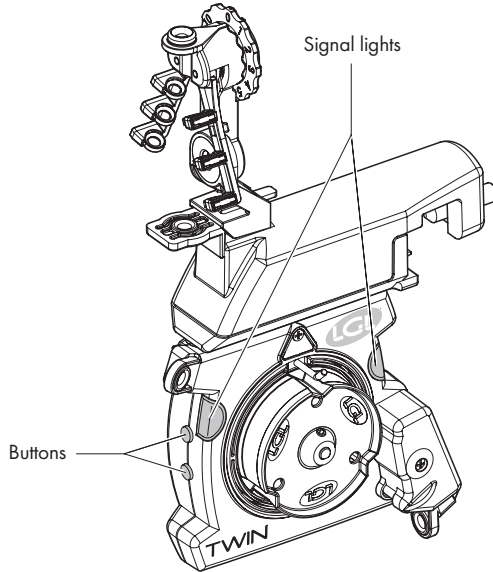
The TWIN devices are designed to ensure that, in the event of connection errors, they are not damaged. Of course if voltage ratings applied range within the limits set for the device. The main connection problems are listed below.

- **Inverted power supply:** If the “+Vdc Alim.” power supply is connected with inverted “GND”, the device will not turn on.
- **GND failure:** If only the GND contact is missing from the device, the latter will not turn on. However, as it is still connected to the power supply line, it prompts the Can Bus communication line to rise towards “+Vdc Alim.”. In this condition all the other connected TWIN units cannot communicate, but detect the high-voltage fault on Can Bus and show it via the blinking of “Can Bus Fault” (see dedicated chapter).  
Please bear in mind that in this condition the termination resistor of the Can Bus line might be damaged.
- **Short circuit between Can Bus and “+Vdc PS.”:** If a short circuit occurs between the Can Bus communication line and the “+Vdc Alim.” power supply, the TWIN devices cannot communicate but detect the high-voltage fault on Can Bus and show it via the blinking of “Can Bus Fault” (see dedicated chapter). Please bear in mind that in this condition the termination resistor of the Can Bus line might be damaged.
- **Short circuit between Can Bus and GND:** If a short circuit occurs between the Can Bus communication line and the “GND” contact, the TWIN devices are not in a position to communicate. Indeed, if the short circuit only occurs between one of the two Can Bus signals and the GND, then in given conditions communication is still possible, even though reliability is not guaranteed.
- **Short circuit between Can H and Can L:** If a short circuit occurs between the two signals of the Can Bus communication line, the TWIN devices cannot communicate.

## 2 - INSTALLATION AND START-UP

### 2.3 USER INTERFACE ON “BUTTONS AND LEDS

The TWIN device is equipped with 2 buttons and 2 signal lights.



The upper button, blue in colour, is defined as the ON/OFF button and is used for the Turn ON/Turn OFF functions as well as for the main functions.

The lower button, Black in colour, is defined as the CONFIG button and is used for the advanced configuration functions.

The signal lights, one on the right and the other on the left, can take two different colours, Green and orange. They can also take a yellow colour when they are turned on at the same time. The state of the device is conveyed to the user by means of the above-mentioned LEDs with fixed lights or various forms of blinking.

See the relevant chapter dealing with LED signals.



## 3 - START-UP AND WINDING

### 3.1 BASIC USE OF THE DEVICE

Once turned on, the TWIN device runs an initialization and diagnostic check. If at this stage no issues are found, the device sets itself to the RUN mode.

In the RUN mode the following condition will be found:

- Green LED ON;
- Orange LED OFF;
- Motor and Yarn tension sensor enabled;
- Can Bus communication enabled.

### 3.2 "WYW" START-UP AND THREADING

Once turned on and before starting the threading, you need to set the device to WAIT YARN WINDING (THREADING) – WYW mode.

To reach this mode, hold the ON/OFF (Blue) button pressed for 1 sec and then release it.

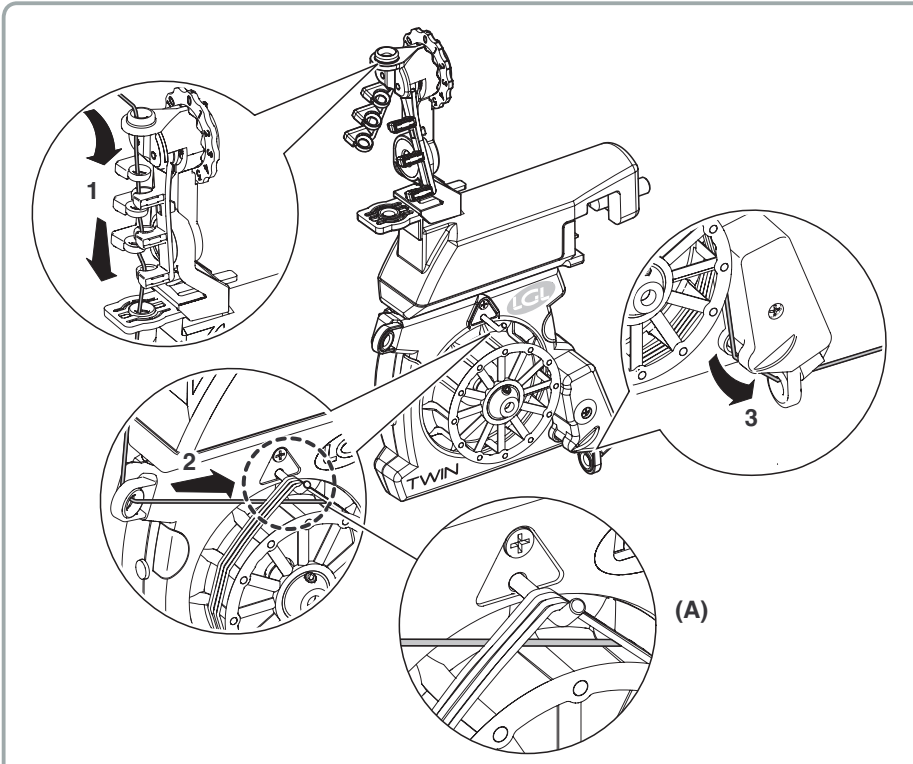
In the WYW mode, the following condition will be had:

- Green LED off;
- Orange LED ON;
- Motor enabled at limited speed

### 3 - START-UP AND WINDING

At this point it will be possible to insert the thread into the special eyelets and wind it around the yarn feeding wheel.

**THREADING:** Wind the yarn around the feeding wheel as shown in the figures, taking care that the first coil is run below the separation pin, whereas for the following coils the yarn shall run above the pin (A). Insert the the yarn into the output yarn guide bush so that the yarn runs on the load cell. (3).



**The number of coils to be wound around the feeding wheel varies as a function of the yarn type. The following values are given as an indication:**

- Bare Lycra: 1-2 coils
- coated Lycra, cotton, nylon and polyester: 3-5 coils

Once the threading is over, click on either button to re-enable the device and set it back to the RUN state.

**N.B.:** When the device is in WYW mode, the "Stop" string will be read via Can Bus.

## 3 - START-UP AND WINDING

Transition	Button control
from <b>RUN</b> to <b>WYW</b>	Hold <b>ON/OFF</b> pressed for <b>1sec</b> and then release it.
from <b>WYW</b> to <b>RUN</b>	Click on <b>ON/OFF</b> .
from <b>WYW</b> to <b>SLP</b>	Hold <b>ON/OFF</b> pressed for <b>1sec</b> .

### **N.B.:**

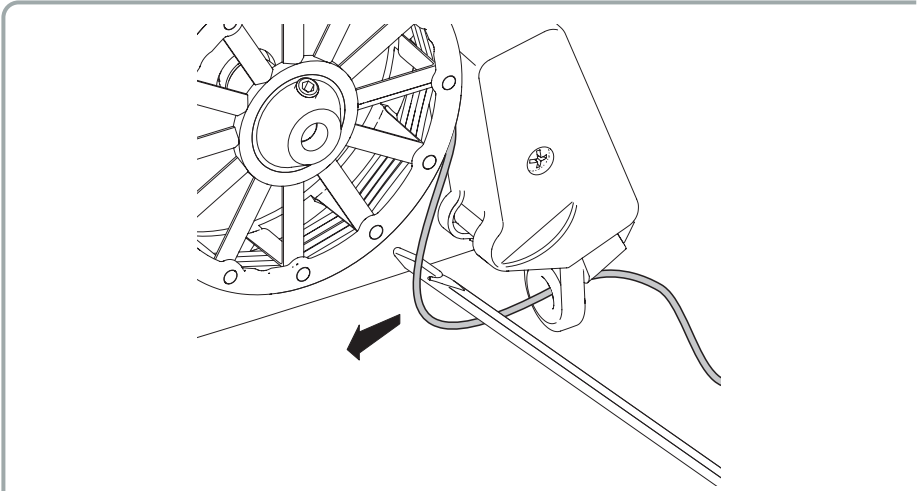
The device can be set to the WYW state also through a special command via the communication can bus by sending the related value to the "Command" parameter (See dedicated table in chapter 4.11).

### 3.3 CELL OFFSET CALIBRATION (TENSION SENSOR)

As already known, the Offset Cell calibration procedure envisages that the yarn is removed from the sensor.

To prevent the motor from being set in motion while the yarn is being removed, you need to set the device to the WYW mode.

Once in the WYW mode, remove the yarn from the tension sensor.



After that, to perform the calibration, press both buttons for 2 seconds and release them as soon as the Orange LED starts "flickering".

During this stage the device will perform the real calibration, therefore it is good rule to avoid touching the device not to affect the acquisition.

At the end of the flickering of the Orange LED,, if the calibration has been successful the device will generate an "Approval" signal with a quick double blinking of the green LED

### 3 - START-UP AND WINDING

and then will set itself back to WYW mode to allow the yarn to be placed back on the sensor. If the calibration proves to be Incorrect, the device will set itself to the Fault mode.

Transition	Button control
from <b>RUN</b> to <b>WYW</b>	Hold <b>ON/OFF</b> pressed for <b>1sec</b> and then release it.
Offset calibration execution	Hold <b>both buttons</b> pressed for <b>2sec</b> and then release them.
from <b>WYW</b> to <b>RUN</b>	Click on <b>ON/OFF</b>

#### N.B.:

The Cell Offset Calibration can also be executed by means of a special command via can bus communication. To do this, you must first remove the yarn from the cell, after which you must send the corresponding value to the "Command" parameter (See relevant table in chapter 4.11).

#### 3.4 DESABLING THE DEVICE. "SLP" SLEEP MODE

When the device is installed but is not in use, it can be disabled to prevent it from actuating the motor from running or that textile alarms are sent to the machine needlessly. This condition is defined as SLEEP(SLP) mode.

When the device is in SLEEP mode, the motor and the tension sensor are disabled. If the device is in the Fault "FLT" state, it will be possible to shift to SLEEP to reset the signal. There are, however, some serious Fault conditions that do not allow the device to shift to SLEEP, or others that, upon re-enabling the device, will still show the Fault signal.

As regards the "CBF" Can Bus Fault indication, concerning the detection of a high voltage along the Can Bus line, the device cannot be set to the SLEEP mode.

Transition	Button control
from <b>RUN</b> or <b>WRN</b> to <b>SLP</b>	Hold <b>ON/OFF</b> pressed for <b>2sec</b> .
from <b>ALR</b> or <b>FLT</b> to <b>SLP</b>	Hold <b>ON/OFF</b> pressed for <b>1sec</b> .
from <b>SLP</b> or <b>RUN</b>	Click on <b>ON/OFF</b> .

## 4 - PARAMETERS DESCRIPTION

**N.B.:** It is possible to edit the various operating parameters through the interface of various devices, Computers, Tablets, KYC devices. Please refer to the specific instructions for use of the device. Here follows a description of the various parameters and the possible settings.

### 4.1 "T des. dgr"

Read/write: tension reference.

### 4.2 "YR-YarnRig"

Read/write: yarn rigidity.

For elastic yarns a low "YR" value is advisable, whereas for rigid yarns a high "YR" value is recommended.

**N.B.:** yarn rigidity may depend on yarn type and item pattern. This value can be set from 1 to 5. The default setting is 1.

### 4.3 "BR-BrkRate"

Read/Write: Brake rate. Motor brake strength when tension becomes 0. The greater their value, the greater the braking strength.

Minimum braking	<b>0</b>
Medium braking	<b>1</b>
Maximum braking	<b>2</b>

### 4.4 "YB-YnBreak"

Yarn break alarm. When enabled, it stops the machine if the tension read falls below a given threshold, for a time calculated as a function of the machine speed.

**0** = Disables the alarm.

**1 to 5 (positive values)** = Automatic alarm reset

**Da -1/-5 (negative values)** = Manual alarm reset

**N.B.:** the tripping time goes from slow to fast moving from 1 upwards, until 5.

## 4 - PARAMETERS DESCRIPTION

### 4.5 "TE-TensErr"

Read/Write: it is the maximum yarn tension tolerance allowed during device operation, as to the set tension.

If one or both parameters between "TE-TensErr" and "TA-TimeAlr" is at 0, the alarm is disabled. 0 = disables the alarm.

If > 0 = enables the alarm with tension threshold (in tenths of a grams).

If < 0 = enables the alarm with percent threshold (%) of the reference tension (0% to 100% of the reference tension).

### 4.6 "TA-TimeAlr"

Read/Write: minimum time during which the tension of the yarn must exceed the set tolerance to generate the "Tension Error" alarm.

If one of the two parameters between "TE-TensErr" and "TA-TimeAlr" is at 0, the alarm is disabled. 0 = disables the alarm.

If > 0 = enables the alarm with Automatic Reset. The alarm resets automatically when the tension of the yarn ranges within the tolerance thresholds.

If < 0 = enables the alarm with manual Reset. Once occurred, the alarm can only be reset by the user, by pressing the blue button.

### 4.7 "DevSwchON"

Parameter to turn the device on and off.

• **1** = ON (RUN)

• **0** = OFF (SLEEP)

Default setting = 1.

### 4.8 "EN OFF Stp"

Read/Write

- **0** (default) = when the device is in OFF-state (SLEEP), no alarm is sent to the machine and the latter can work.
- **1** = when the device is in the in OFF-state (SLEEP), the STOP signal is sent to the machine (Error Code 1) and the latter cannot work.

### 4.9 "RunAlrmDly"

Read/Write: after the machine has started, this parameter makes it possible to enable the TE tension error alarm with a time delay.

## 4 - PARAMETERS DESCRIPTION

- **0** (default) = the TE tension error alarm is enabled soon after the RUN signal
- **1 to 100** = the alarm is actuated with a delay in seconds equal to "RunAlrmDly", see examples below.

**"RunAlrmDly" = 1      delay of 0.1 seconds**

**"RunAlrmDly" = 20      delay of 2 seconds**

**"RunAlrmDly" = 100      delay of 10 seconds**

### 4.10 "TEResetRun"

Read/Write: this parameter resets all the alarms when the machine starts.

- **0** (default) = when the machine starts, the device does not reset the alarms states (if any).
- **1** = when the machine starts, the device resets the alarms states, if any.

This parameter enables the machine to start with no need to manually reset the device alarms. These alarms may have occurred owing to a low tension. If the device is in an alarm state owing to a non-resettable fault having occurred (e.g. yarn break), it will actuate the alarm again after the reset.

### 4.11 "Command"

Values from 0 to 7 can be set with the description provided below. This parameter makes it possible to send some commands to all the devices in one go from the PC/tablet. Each time the operator sends a numeric value to the feeders, this number will be reset to 0 soon after the transmission.

This means that on the JAVA screen the operator will always read 0. Please note: "Command" = 1 makes it possible to give the load cell offset to all the feeders in one go. However, the yarn must necessarily be removed from the load cell beforehand. Conversely, the offset with the yarn on the load cell would lead to sensor to take a wrong measurement. "Command" = 7 can be useful to set all the feeders to the yarn winding state. In this condition it is possible to operate on the feeders (or accumulators) with no risk of having the yarn accumulating on the wheel due to an accidental contact with the tension sensor.

Value	Description
<b>0</b>	Default value
<b>1</b>	"Cell Offset Calibration" command.
<b>2</b>	"Reset Alarms" command only for resettable alarms) and exit from "WYW".
<b>3</b>	"TE-TensionError" alarm enable command.
<b>4</b>	"TE-TensionError" disable command.
<b>7</b>	Command to set the device to the "Waiting Yarn Winding" state. Use "Reset Alarms" to reset the "Waiting Yarn Winding" state.

## 4 - PARAMETERS DESCRIPTION

### 4.12 "RL-RewLeng"

Parameter used to set the yarn recovery function. Default value = 0 = recovery disabled  
If RL-RewLeng > 0 and the feeder is equipped with the related wheel, the yarn can be recovered. By setting a value ranging between 1 and 200, the wheel will recover this amount in millimetres.

**N.B: parameter available only for the version with yarn recovery feature.**

### 4.13 "RC-RewCycl"

Parameter used to set the maximum number of recovery reset cycles.

**0** = OFF the recovery reset is disabled, therefore the device performs the recovery once and then stops.

From **1** to **10** = Number of reset cycles (not including the first recovery).

**11** = Endless recovery cycles. Recovery is always reset.

**N.B: parameter available only for the version with yarn recovery feature.**

### 4.14 "T read dgr"

Read-only: actual yarn tension measured by the sensor.



## 5 - LED SIGNALS

Below are tables providing details on the actuation and blinking modes of the LEDs as a function of the states of the device, plus additional signals related to the interaction with the user. Please note that all signals related to Can Bus failures involve the flickering of the Orange LED light.

State signal table:

Description	Description	Signal detail
<b>RUN</b>	Device ready for work.	Green LED ON only.
<b>WYW</b>	Winding/threading.	Orange LED ON only.
<b>SLP</b>	Sleep.	Green LED OFF. Orange LED ON with a "feeble" light.
<b>WRN</b>	Warning.	Green LED ON. Orange LED blinking three times followed by a 1 sec. pause
<b>ALR</b>	Alarm.	Green LED ON. Orange LED single continuous blinking at 1 cycle per sec.
<b>FLT</b>	Fault.	Green LED ON. Orange LED double flickering followed by a pause of 1 sec.
<b>CFG</b>	Advanced configuration.	Green and orange LEDs ON.
Flickering for Can Bus Failure signals		
<b>CBF</b>	Can Bus Fault	Green LED OFF. Orange LED continuous flickering.
<b>CBW 0</b>	Can Bus Warning 0	Green LED OFF. Orange LED in alternating flickering (0.5 sec flickering – 0.5sec OFF).
<b>CBW 1</b>	Can Bus Warning 1	Green LED ON. Orange LED alternating flickering (0.5 sec flickering – 0.5sec OFF).
<b>CBW 2</b>	Can Bus Warning 2	Green LED ON. Orange LED Double flickering followed by a pause of 1 sec.
<b>CBW 3</b>	Can Bus Warning 3	Green LED ON. Orange LED flickering three times followed by a pause of 1 sec.

## 6 - WARNINGS, ALARMS E FAULTS

In the **TWIN device** failures are divided into 3 categories: **Warnings, Alarms** and **Faults**. These states can be seen from the LEDs of the device and via the Can Bus communication.

<b>WARNING</b>	<b>WRN</b>	Device in Warning state. Low alarm not preventing the device from running, but warning that device is not at best conditions.	Green LED ON Orange LED flickering 3 times followed by a pause of 1 sec.
<b>ALARM</b>	<b>ALR</b>	Alarmed device. Functional alarm that can be reset by user.	Green LED ON. Orange led: single continuous blinking at 1 cycle per sec.
<b>FAULT</b>	<b>FLT</b>	Device in Fault state. It differs from Alarm since it is actuated for more serious reasons and requires turn-off (or SLEEP mode) and removal of cause to resume operation.	Green LED ON. Orange LED: blinking twice followed by a pause of 1 sec.
<b>CAN BUS FAILURES</b>			
<b>CAN BUS FAULT</b>	<b>CBF</b>	High-Voltage fault along Can Bus line. In this state the device is not able to operate and communicate.	Green LED OFF. Orange LED: continuous flickering.
<b>CAN BUS WARNING 0</b>	<b>CBW 0</b>	Warning on Can Bus line for failed Acknowledgement or termination. In this state the device can continue to operate but cannot communicate.	Green LED OFF. Orange LED: alternating flickering (0.5 sec flickering–0.5 sec OFF).
<b>CAN BUS WARNING 1</b>	<b>CBW 1</b>	Warning on Can Bus line for no “Verification” of NMP address (by Santoni machine). In this state the device can continue to run but is not able to communicate.	Green LED ON. Orange LED: alternating flickering (0.5 sec flickering – 0.5 sec OFF).
<b>CAN BUS WARNING 2</b>	<b>CBW 2</b>	Can Bus warning due to failed acknowledgement of T-Conn. In this state the device can continue to run, but is not able to communicate.	Green LED ON . Orange LED: flickering twice followed by a pause of 1 sec.
<b>CAN BUS WARNING 3</b>	<b>CBW 3</b>	Can Bus warning for virgin T-Conn or change in addressing mode. In this state the device can continue to run, but is not able to communicate.	Green LED ON. Orange LED: flickering 3 times followed by a pause of 1 sec.

## 6 - WARNINGS, ALARMS E FAULTS

For further details, see tables in chapter **LED signals**.

Via Can Bus communication an error code can be read along with the related description string. Each error code can correspond to one or more device states.

The last letter (A or F) in the Error type description string indicates whether the state related to that error corresponds to an Alarm or Fault state.

Of course, in the event of "**Can Bus Failures**" it will not be possible to obtain the device via Can Bus communication.

Here follows a table of equivalence between error strings and device states, with their meaning:

<b>Error string</b>	<b>Description</b>	<b>State</b>
<b>" RUN "</b>	Device properly operating. The OK msg.is returned even in case of warning as it is not considered a real condition in which the device cannot work.	<b>RUN WRN</b>
<b>" Stop "</b>	Device not ready to work.	<b>WYW CFG</b>
<b>"Switch OFF"</b>	Device disabled. SLEEP(OFF) state.	<b>SLP</b>
<b>"OverFeed A"</b>	Yarn overfeeding alarm. It is actuated when the device, although giving yarn at high speed, cannot adjust the desired tension. Alarm always ON, the user cannot disable it.	<b>ALR</b>
<b>"TensErrorA"</b>	Tension error or Yarn break alarm. Weaving alarms that can be enabled by the user.	<b>ALR</b>
<b>"InitChk F"</b>	Device Initial check fault. It may be actuated due to: - Out-of-range supply voltage alarm; - Hot-Swap circuits check error; - Motor current offset calibration error; - Motor coil check error.	<b>FLT</b>
<b>"MotVPwr F"</b>	Motor Supply voltage Fault.	<b>FLT</b>
<b>"AlimVDC F"</b>	Out-of-range supply voltage fault.	<b>FLT</b>
<b>"TempHigh F"</b>	High inner temperature fault.	<b>FLT</b>
<b>"MotCalib F"</b>	Motor calibration fault. It can be actuated due to: - Analog Hall Sensor calibration ended with FAULT signal; - No Analog Hall Sensor calibration.	<b>FLT</b>
<b>"CellVRef F"</b>	Out-of-range cell reference tension Fault.	<b>FLT</b>
<b>"Generic F"</b>	Generic Fault. Currently not implemented, hence it should never show up.	<b>FLT</b>

*(to be continued)*

## 6 - WARNINGS, ALARMS E FAULTS

Error string	Description	State
"CellOfs F"	Out-of-range Cell Offset calibration fault.	FLT
"CellGdn F"	Out-of-range Cell Gain calibration fault.	FLT
"MotLock F"	Motor Lock fault.	FLT
"MotIMax F"	Motor I-Max fault.	FLT
"MotHalls F"	Analog Hall sensor signal reading Fault.	FLT
"CanBus F"	High-Voltage Fault on Can Bus line (of course in the presence of this Fault this alarm cannot be read via Can Bus communication).	FLT
"Mot I <sup>2</sup> T F"	Motor I <sup>2</sup> T Fault. Average power consumption of motor too high. The device exits the Fault condition automatically when I <sup>2</sup> T is back within safety levels.	FLT

### 6.1 WARNINGS

Warnings are alerts that show up in the event of minor failures that do not affect device operation. These alerts indicate the unit is not working in less than ideal conditions. In the presence of this condition, the state detected via Can Bus communication will be one of normal running ("RUN"), since it is not actually considered a circumstance in which the device cannot operate.

By default, there is no Warning signal. The only Warning signal provided is that of Motor "I<sup>2</sup>T" limitation, which can be only enabled through the special "I<sup>2</sup>TWarning" parameter, which switches this signal from "Fault" to "Warning". It occurs when the average power supply consumption is too high and the device limits the supply of power to the motor. It is possible to continue to work, but the performance will be reduced as long as the consumption remains out of the safety range.

#### Notes for "I<sup>2</sup>T" operating as a "Warning":

By setting the device to WYW when the **Warning I<sup>2</sup>T** state is ON, the signal disappears. However, if upon re-enabling the device the "I<sup>2</sup>T" value is not back within the safety range, the signal will show up again.

By setting the device to SLEEP when the **Warning I<sup>2</sup>T** state is ON, the signal disappears, and the device continues to simulate the motor temperature course. If upon re-enabling the device the "I<sup>2</sup>T" value is not back within the safety range, the signal will show up again. Conversely, if the device is switched off in hardware mode while the Warning state is ON, the I<sup>2</sup>T level recorded until that moment is lost and the signal will not show up again upon switch-on. Therefore, it must be borne in mind that a series of close I<sup>2</sup>T tripping cycles with the device switching off and back on again could lead the motor to overheat.

# 6 - WARNINGS, ALARMS E FAULTS

## 6.2 ALARMS

They are actuated when a failure occurs that is included in the normal application operation (textile processing) and only require the user's action to restore the normal working mode.

The alarms envisaged for the TWIN device are:

- **OverFeed**. This alarm cannot be disabled by the user.
- **Yarn Break** This alarm can be enabled by the user via a special "YB-YnBreak" parameter.
- **Tension Error**. Alarm that can be enabled by the user via special "TE-TensErr" and "TA-TimeAlr" parameters.

To reset any alarm simply click on the ON/OFF button.

N.B.:

1. The "Yarn Break" and "Tension Error" alarms can be enabled individually or together for parallel work, each one with its own settings.
2. The "Yarn Break" and "Tension Error" alarms show the same "Error Code" and "Error String": "TensErrorA".

### 6.2.1 Alarm OverFeed

The OverFeed alarm occurs when the device, cannot adjust the desired tension even if it is dispensing yarn at high speed.

This alarm is always available, and the user cannot disable it.

### 6.2.2 Alarm Yarn Break

Yarn break alarm. Parameter "**YB-YnBreak**".

It is generated when the measured tension falls below a given set tension, for a time that is automatically calculated by the device and depends on the yarn absorption speed.

The "**Yarn Break**" alarm can be disabled by setting the value to 0, or enabled by setting its value to 2. Operation mode:

1. Alarm with "**Automatic reset**". If the value set in parameter "YB- YnBreak" is positive, the alarm will be automatically reset when the yarn tension is back in its range.
2. Manual alarm. If the value set to the "YB-YnBreak" parameter is negative, the alarm will be enabled in manual mode, therefore, once operated, it can only be reset by the user.

## 6 - WARNINGS, ALARMS E FAULTS

### 6.2.3 Alarm Tension Error

Tension error. Parameters **"TE-TensErr"** and **"TA-TimeAlr"**.

It is generated when the measured tension is not within the set tolerances set for parameter **"TE-TensErr"** for a time defined in tenths of a second by parameter **"TA- TimeAlr"**.

The negative tolerance is however automatically limited to 0.4g, in cases when the value set in **"TE-TensErr"** is greater than the **"T des. Dgr"** tension reference.

The "Tension Error" alarm can be disabled by setting to 0 one or both parameters **"TE-TensErr"** and **"TA-TimeAlr"**.

It is possible to enable the "Tension Error" alarm in 2 action modes:

1. Alarm with **Tension tolerance**. If the value set to parameter "TE- TensErr" is **greater than 0** this value is a threshold of Yarn Tension in grams.
2. Alarm with **Percent tolerance (%)** as a percentage of the reference tension. If the value set to "TE-TensErr" is **less than 0**, this value is a percent threshold of the set reference tension. This method has the advantage that, by modifying the Yarn Reference tension of the setting, the threshold for the Tension Error is automatically reformulated.

It is furthermore possible to enable the **"Tension Error"** alarm in 2 action modes:

1. alarm with **"Automatic Reset"**. If the value set to parameter "TA- TimeAlr" is **greater than 0**, the alarm will be automatically reset when the Yarn tension is back within its range.
2. Manual alarm. If the value set to parameter "TA-TimeAlr" is less than 0, the alarm will be enabled in manual mode, therefore, once occurred, may only be reset by the user.

### 6.3 FAULTS

Faults show up in the presence of serious failures affecting the device that prevent it from operating in a proper and reliable manner. They involve the switch-off (or the SLEEP mode setting) and the removal of the cause to be able to resume operation.

However, for safety purposes, for some Faults it will not be possible to set the device to SLEEP mode to reset the alarm signal.

# 7 - CONVERSION TABLE

## 7.1 YARN CONVERSION TABLE IN THE VARIOUS COUNT SYSTEMS

Nm	Ne	tex	den	Dtex	Ne <sub>L</sub>	Nm	Ne	tex	den	Dtex	Ne <sub>L</sub>
<b>18.000</b>	10,63	56	<b>500</b>	550	29,76	<b>48.000</b>	28,35	<b>21</b>	187	208	79,37
18.140	10,71	56	496	551	<b>30</b>	48.380	28,57	<b>21</b>	186	206	<b>80</b>
19.350	11,43	52	465	516	<b>32</b>	<b>50.000</b>	29,53	<b>20</b>	<b>180</b>	200	82,68
<b>20.000</b>	11,81	<b>50</b>	<b>450</b>	<b>500</b>	33,07	50.800	<b>30</b>	<b>20</b>	177	197	84
20.320	<b>12</b>	<b>50</b>	443	492	33,60	54.190	<b>32</b>	<b>18</b>	166	184	89,6
21.170	12,50	48	425	472	<b>35</b>	54.430	32,14	<b>18</b>	165	183	<b>90</b>
22.500	13,29	44	<b>400</b>	440	37,20	<b>60.000</b>	35,43	17	<b>150</b>	<b>167</b>	99,21
23.710	<b>14</b>	<b>42</b>	380	420	39,20	60.480	35,71	17	149	166	<b>100</b>
24.190	14,29	42	372	413	<b>40</b>	60.960	36	<b>16</b>	147	165	100,8
25.710	15,19	38	<b>350</b>	390	42,52	64.350	38	<b>16</b>	140	156	106,4
27.090	<b>16</b>	<b>36</b>	332	369	44,80	67.730	40	<b>15</b>	132	147	112
27.210	16,07	<b>36</b>	331	367	<b>45</b>	<b>70.000</b>	41,34	14	129	143	115,7
<b>30.000</b>	17,72	34	<b>300</b>	<b>335</b>	49,61	74.510	44	<b>13</b>	121	134	123,2
30.240	17,86	34	297	330	<b>50</b>	75.000	44,29	<b>13</b>	<b>120</b>	<b>133</b>	124
30.480	<b>18</b>	<b>32</b>	295	328	50,40	<b>80.000</b>	47,24	<b>12,5</b>	112	125	132,3
<b>32.000</b>	18,90	<b>32</b>	280	310	52,91	81.280	48	<b>12,5</b>	110	122	134,4
33.260	19,64	<b>30</b>	270	300	<b>55</b>	84.670	50	<b>12</b>	106	118	<b>140</b>
33.870	<b>20</b>	<b>30</b>	266	295	56	<b>90.000</b>	53,15	11	<b>100</b>	<b>110</b>	148,8
<b>34.000</b>	20,08	<b>30</b>	265	294	56,22	101.600	60	<b>10</b>	88	97	168
<b>36.000</b>	21,26	28	<b>250</b>	<b>280</b>	59,53	118.500	70	<b>8,4</b>	76	<b>84</b>	196
36.290	21,43	28	248	275	<b>60</b>	<b>120.000</b>	70,86	<b>8,4</b>	<b>75</b>	<b>84</b>	198,4
39.310	23,21	<b>25</b>	229	254	<b>65</b>	135.500	80	<b>7,2</b>	66	73	224
<b>40.000</b>	23,62	<b>25</b>	225	250	66,14	<b>150.000</b>	88,58	6,8	<b>60</b>	<b>67</b>	248
40.640	<b>24</b>	<b>25</b>	221	246	67,20	152.400	<b>90</b>	<b>6,4</b>	59	64	252
42.330	25	24	212	235	<b>70</b>	169.300	<b>100</b>	<b>6</b>	53	58	<b>280</b>
44.030	<b>26</b>	<b>23</b>	204	227	72,80	186.300	<b>110</b>	<b>5,2</b>	<b>48</b>	53	-
<b>45.000</b>	26,57	22	<b>200</b>	<b>220</b>	74,41	203.200	<b>120</b>	<b>5</b>	<b>44</b>	49	-
47.410	<b>28</b>	<b>21</b>	189	210	78,40						

## 8 - SCRAPPING

If you decide to scrap the machine, you need to destroy/erase all machine identification plates and related documents.

If disposal is assigned to an external party, always resort to organizations duly authorized to recovery and/or disposal of the demolition materials.

If you perform the disposal on your own, you need to divide the material by type and instruct authorized organizations to dispose of them according to the various waste categories.

Separate metal parts, electric motor, rubber parts and parts from synthetic material to provide for their re-use. However, the disposal shall be performed in full compliance with the legal provisions in force at the time of disposal in the country where the machine is located.

Such provisions cannot be predicted at the time when this booklet is being printed, but compliance with them lies within the competence of the last owner of the machine or any of his representatives.

**L.G.L. Electronics** shall not be held responsible for damages to property or harm to people ensuing from the reuse of individual machine parts in functions or embodiments other than the original ones for which the machine was designed.



# **L.G.L. ELECTRONICS S.p.a.**

*Sede amministrativa, legale e stabilimento*  
*Via Foscolo 156, - 24024 Gandino (BG) - Italy*  
*Tel. (Int. + 39) 35 733408 Fax (Int. + 39) 35 733146*

---

— ITALIANO —

## **DICHIARAZIONE DI CONFORMITÀ CE**

La macchina è un alimentatore di trama per macchine per maglieria.

Produttore: **L.G.L. Electronics**  
Modello: **TWIN**



La macchina è conforme ai requisiti essenziali delle direttive 2006/42/CE, 2014/35/UE, 2014/30/UE.

— ENGLISH —

## **CE CONFORMITY DECLARATION**

This machine is a weft accumulator, suitable for knitting machines.

Manufacturer: **L.G.L. Electronics**  
Model: **TWIN**



The machine is in compliance with the main requirements of directives 2006/42/CE, 2014/35/UE, 2014/30/UE.

— FRANÇAISE —

## **DECLARATION DE CONFORMITE CE**

L'appareil est un délivreur de trame pour métiers à tricoter.

Producteur: **L.G.L. Electronics**  
Modele: **TWIN**



La machine est conforme aux conditions requises essentielles des directives 2006/42/CE, 2014/35/UE, 2014/30/UE.

— DEUTSCH —

## CE ÜBEREINSTIMMUNGS ANGABE

Die Maschine ist ein Vorspulgerät für Wirkmaschinen.

Hersteller: **L.G.L. Electronics**  
Typ: **TWIN**



Die Maschine entspricht der wesentlichen Anforderungen der Richtlinien 2006/42/CE, 2014/35/UE, 2014/30/UE.

— ESPAÑOL —

## DECLARACIÓN DE CONFORMIDAD CE

La máquina es un alimentador de trama para máquinas de género de punto por urdimbre.

Productor: **L.G.L. Electronics**  
Modelo: **TWIN**



La máquina está en conformidad con los requisitos esenciales de las directivas 2006/42/CE, 2014/35/UE y 2014/30/UE.

— PORTOGUES —

## DECLARAÇÃO DE CONFORMIDADE CE

A máquina è um alimentador de trama para máquinas de malha por urdimento.

Productor: **L.G.L. Electronics**  
Modelo: **TWIN**



A máquina está em conformidade com os requisitos essenciais das directivas 2006/42/CE, 2014/35/UE, 2014/30/UE.

— NEDERLANDS —

## VERKLARING VAN CE OVEREENSTEMMING

Deze machine is een inslagvoorspoelmachine voor breimachines.

Merk: **L.G.L. Electronics**  
Type: **TWIN**



De machine voldoet aan de essentiële vereisten van de richtlijnen 2006/42/CE, 2014/35/UE, 2014/30/UE.

— ΕΛΛΗΝΙΚΑ —

## ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ CE

Το μηχάνημα είναι ένας τροφοδότης υφαδιού που δουλεύει με μηχανικούς αργαλειούς με λαβίδες ή σαίτες.

Ἰσχυῆά: **L.G.L. Electronics**  
Τύπος: **TWIN**



Η μηχανή πληρεί τις βασικές προϋποθέσεις που ορίζονται από τις οδηγίες 2006/42/CE, 2014/35/UE, 2014/30/UE.

— SVENSKA —

## CE ÖVERENSSTÄMMELSEDEKLARATION

Maskinen är en stickmaskin.

Märke: **L.G.L. Electronics**  
Typ: **TWIN**



Maskinen överensstämmer med de grundläggande kraven enligt EU-direktiven 2006/42/CE, 2014/35/UE och 2014/30/UE.

— SUOMEKSI —

## CE VASTAAVUUSTODISTUS

Kone on neulekone.

Merkki: **L.G.L. Electronics**

Tyyppi: **TWIN**



Kone on direktiivien 2006/42/CE, 2014/35/CE ja 2014/30/UE olennaisten vaatimusten mukainen.

— DANSK —

## CE OVERENSSTEMMELSERKLÄRING

Maskinen er en strikkemaskine.

Mærke: **L.G.L. Electronics**

Type: **TWIN**



Maskinen opfylder de grundlæggende krav i EU-direktiverne 2006/42/CE, 2014/35/UE og 2014/30/UE.

*Gandino, 01/05/2019*

**Authorized to compile the technical file**

***Il Direttore Generale: Ing. Zenoni Pietro***

A handwritten signature in black ink, appearing to read 'Pietro Zenoni', written in a cursive style.



## **L.G.I. ELECTRONICS S.P.A**

Via Ugo Foscolo 156 – 24024 Gandino (BG) – Italy  
Tel. 0039 035 733408 – Fax 0039 035 733146 – Mail: [lg@lgl.it](mailto:lg@lgl.it)

---

### **DECLARATION OF CONFORMITY UKCA**

The machine is a weft accumulator.

Manufacturer: **L.G.I. Electronics S.p.A** **UK**  
Model: **TWIN** **CA**

#### **L.G.I. Electronics S.p.A** DECLARE

under its responsibility that the TWIN are designed, manufactured and commercialized in compliance with the following UKCA Standards:

- The Electrical Equipment (Safety) Regulations 2016 – UK SI 2016 No. 1101
- Electromagnetic Compatibility Regulations 2016 – UK SI 2016 No. 1091
- Supply of Machinery (Safety) Regulations 2008 – UK SI 2008 No. 1597

Gandino (BG), 19/09/2022

**CEO: Pietro Zenoni**

A handwritten signature in black ink, appearing to read 'Pietro Zenoni', is written below the printed name.



L.G.L. Electronics S.p.A. reserve the right to alter in any moment one or more specifications of his machines for any technical or commercial reason without prior notice and without any obligation to supply these modifications to the machines, already installed.

T +39 035 733 408 **L.G.L. Electronics S.p.A.**  
F +39 035 733 146 Via Ugo Foscolo, 156  
lgI@gl.it 24024 Gandino (BG)  
www.lgl.it Italy