TLS 10K
Touch Screen Line and Contrast sensor
User's Manual

Seleguide 10K user's manual attachement

Version 1.1.2

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Disclaimer: The information in this manual is subject to change without notice at any time. The information provided by this manual is believed to be accurate and reliable. However, no responsibility is assumed by Selectra Srl for its use.

This manual supports SELEGUIDE 10K series Firmware Version v1.1.2

Translation of the original user's manual in Italian.

Contents

1. Introduction

Selectra's products have been designed in compliance to the highest quality and functional standards. We hope that your new line and contrast sensor **TLS 10K** fully meets your expectations.

This User's Manual describes the necessary steps to use the sensor **TLS 10K**. Before starting to use the system read carefully this User's Manual.

1.1. Safety Aspects

The system has been designed in conformance to CE regulations. In addition, the web guide has been designed to operate in harsh industrial environments.

Make sure that people using the equipment are totally in safe. The system has been manufactured according to high quality standards and should not pose risk in normal operating conditions.

In this manual attention to safety aspects have been marked as follows:

Danger: when the system is not handled correctly, it can create a dangerous situation with a serious possibility for injury or casualties.

Attention: when the system is not handled correctly, it can create a dangerous situation with serious possibility for light injury.

The attention to these safety aspects is however important, and it can avoid possible injuries or breakdowns of the system.

1.2. Safety Warnings

Before installing and during the utilization of the system check the following situations:

Danger: Disconnect all the external power connections before installing the system and remember to provide a solid ground connection.

Danger: Never open the cover of the web guide's electronic parts when the power is on or when the system is working. Never change or disassembly the system.

Danger: Never touch the electrical connections with wet hands.

Danger: Never use the control system in a potentially explosive environment, because of the danger of fire or explosion.

Danger: Use only the power and connection cables supplied together with the system. A damaged cable must be replaced immediately.

Danger: Use power cables that can deliver the amount of required current.

Attention: In case of incorrect operations due to EMC interferences, separate the power cables from the signal cables.

Attention: Do not install the system in a position subjected to conductive powder or to corrosive gases. Do not expose the system to high temperature, wind, vibration and exposure to weather.

Attention: Selectra is not responsible for any damage caused by repair, modification or tampering of the system, done by a third party and not authorized by Selectra.

Attention: The above-mentioned directives are subject to change without prior notice.

2. Supplied Material

- one sensor with LCD touch screen user interface - Dimensions 100 x 95 x 42 mm (WxHxL)
- one connection cable
- one sensor holder (optional)

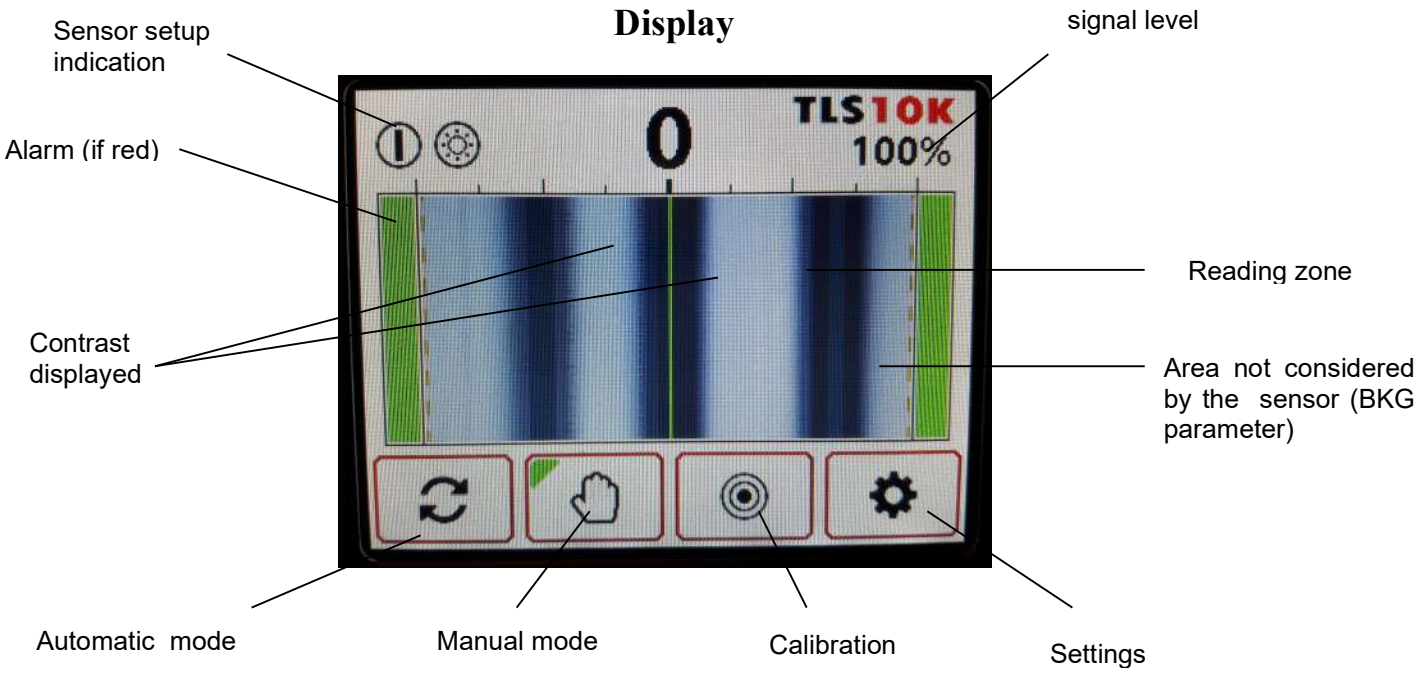
2.1. Installation Drawings

The mechanical dimensions are reported on drawing **SELEGUIDE 10K/SENSOR TLS/Dimensions, Drawings nr. 40E001E & PORTA TESTA QUADRO/TESTA TLS 10K, Drawing nr. 40M012E.**

The electrical connections are reported on drawings **SELEGUIDE 9000/Electrical Connections, Drawing nr. 40E007I.**

3. Sensor

TLS 10K sensor has small dimensions, it is light and easy to use. The LCD display the current operating conditions, the error messages and the measured web guide values.



3.1. Commands

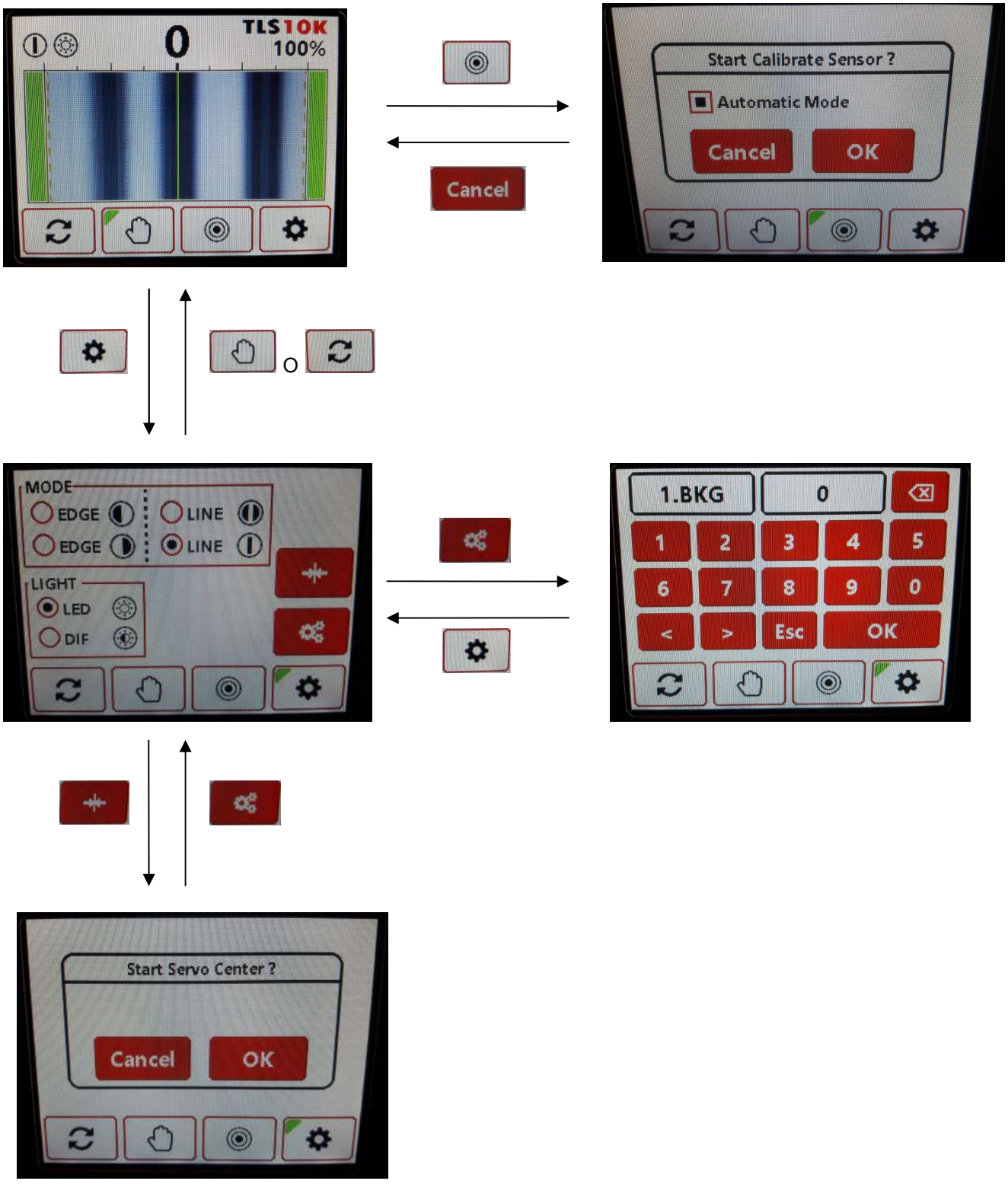
Activate the Automatic mode.

Activate the Manual mode.

Start the Calibration of the sensor.

Enter in the sensor setting.

3.2. Menu Pages



To select the various menus use the icons at the bottom of the display.

The sensor can operate in three different modes:

- **Manual Mode**: this mode allows the manual control of the web guide Seleguide 10K. The display shows the measured web position error and the actual position of the web can be

modified manually from the icons of the control unit Seleguide 10K. On certain conditions an alarm indicator is activated.

- **Automatic Mode**  : this mode measures the web position error and regulates the web guide using a PID automatic control algorithm. The display shows the measured web position error and, on certain conditions, an alarm indicator is activated.

- **Calibration**  : calibrate the sensor. The calibration screen will appear and you will be asked to confirm the starting of the automatic calibration.

- **Setting Mode**  : this setup allows the user to select manually the best reading configuration, combining the best type of control with the best type of lighting. In this mode, you can select:

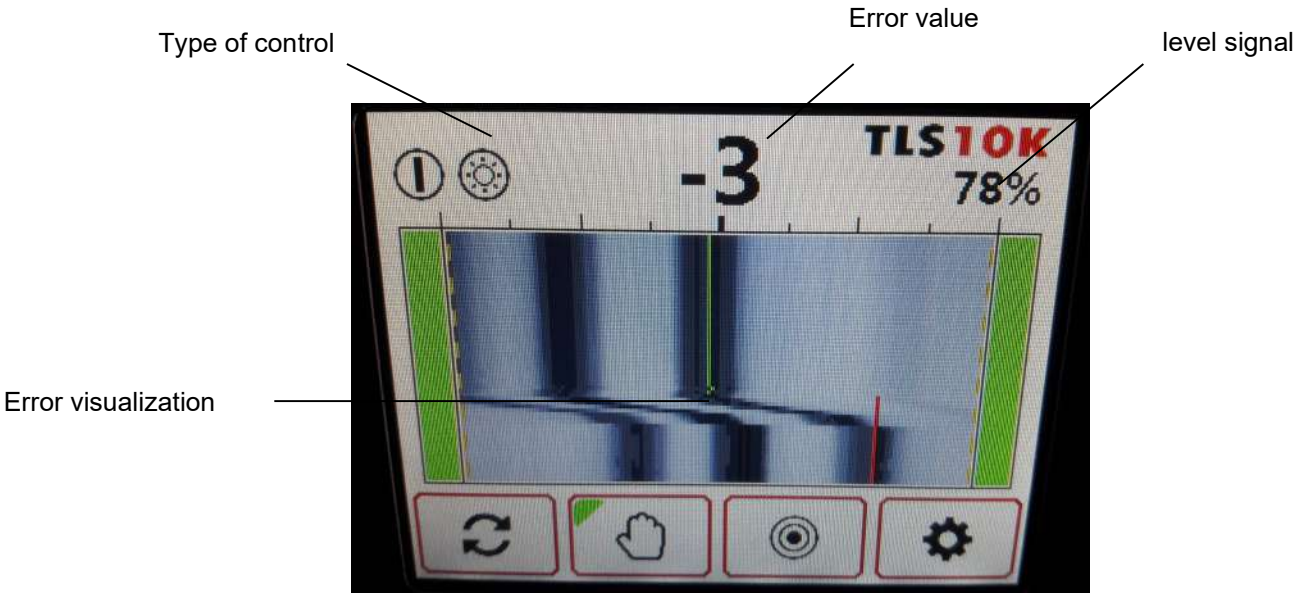
  – **Parameters setup**  : this setup allows to set the parameters of the sensor.

  – **Servo Center**  : this setup allows to move the web guide to its center position **ATTENTION**: At the end of the command, the logic will return to the previous screen (for example, if it is executed during the automatic mode, it will return to automatic)

4. Operating Modes

4.1. Manual

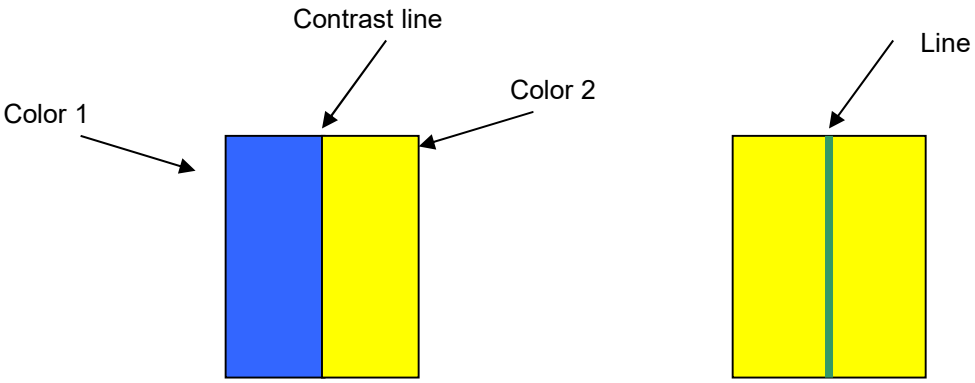
In Manual mode the user can manually move the pivoting or shifting rolls from the control logic Seleguide 10K. In Manual mode, the system visualizes the following (the figure is an example):



4.1.1. System calibration for the Contrast and Line control

By the calibration procedures the system is given the references for the error measurement.

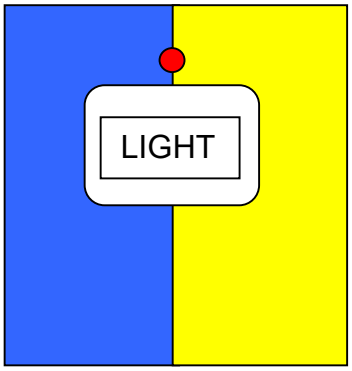
The distance between the web and the optical sensor should be of 10-15mm + or -3mm to get the best.



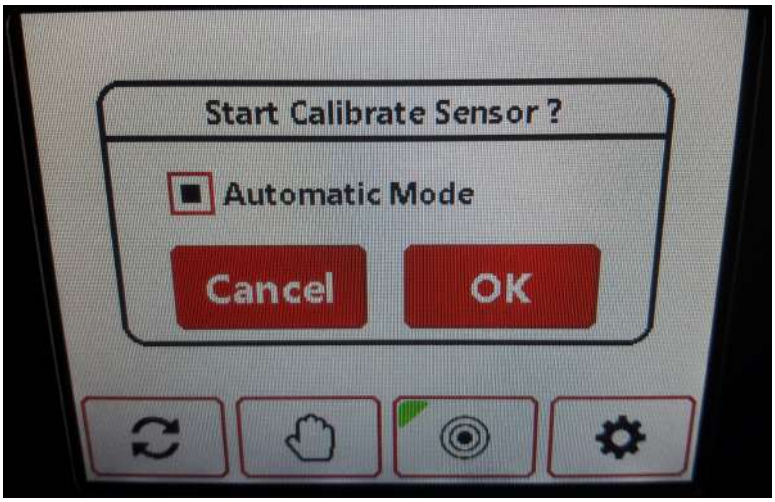
- There are two ways to search the contrast: Automatic (A) or Manual (by selecting the type of control).

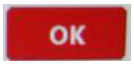
Automatic search of the type of control

- Place the sensor at the correct distance: the red LED must be on the contrast that you want to read and must blink (you can be helped by the cut at the center of the sensor).



- press the  icon and select the Automatic search of the type of control.



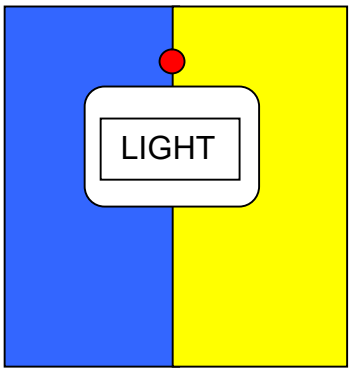
- press the  icon

The sensor will begin the search for the best reading configuration, combining the best type of control with the best type of lighting. You will see the light of the sensor keep flashing. At the end of this operation the red light on the contrast line will begin to flash. It means that the calibration is complete. The higher the frequency of flashing of the red light, the greater will be the acquisition of the signal.

Attention: Do not press any buttons until the sensor has finished searching the best configuration.

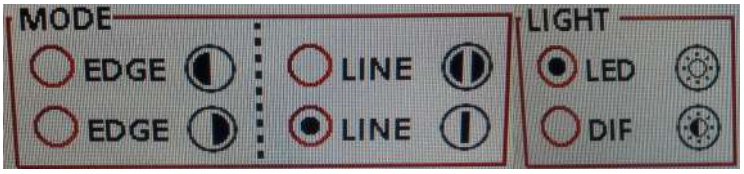
Manual search of the type of control

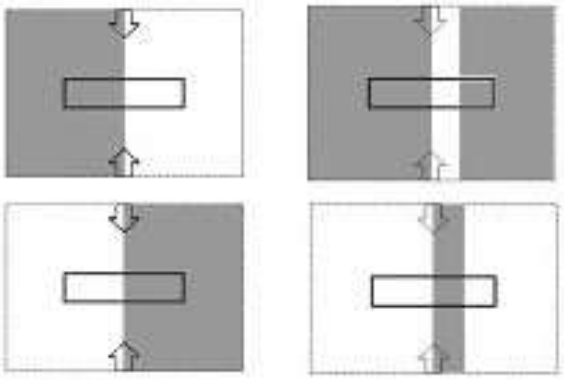
- Place the sensor at the correct distance: the red LED must be on the contrast that you want to read and must blink (you can be helped by the cut at the center of the sensor).



- press the  icon and select the type of control from the *Sensor Setting* menu:

Contrast control Line control

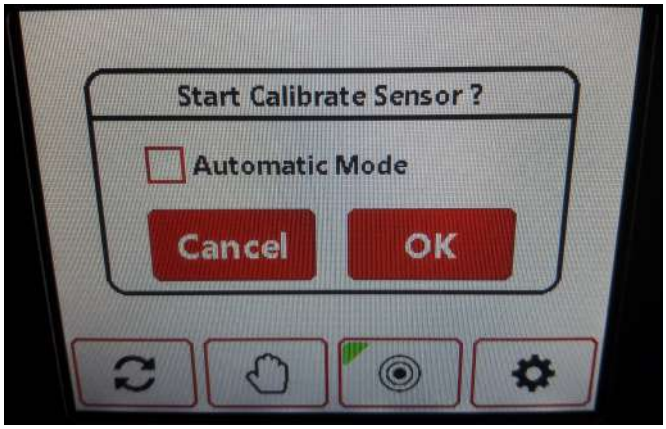


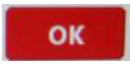


- Choose the reading configuration you want (left edge control, right edge control, line control, contrast control, and if the light has to be direct or diffused).

- press the  icon

The following screen will appear:

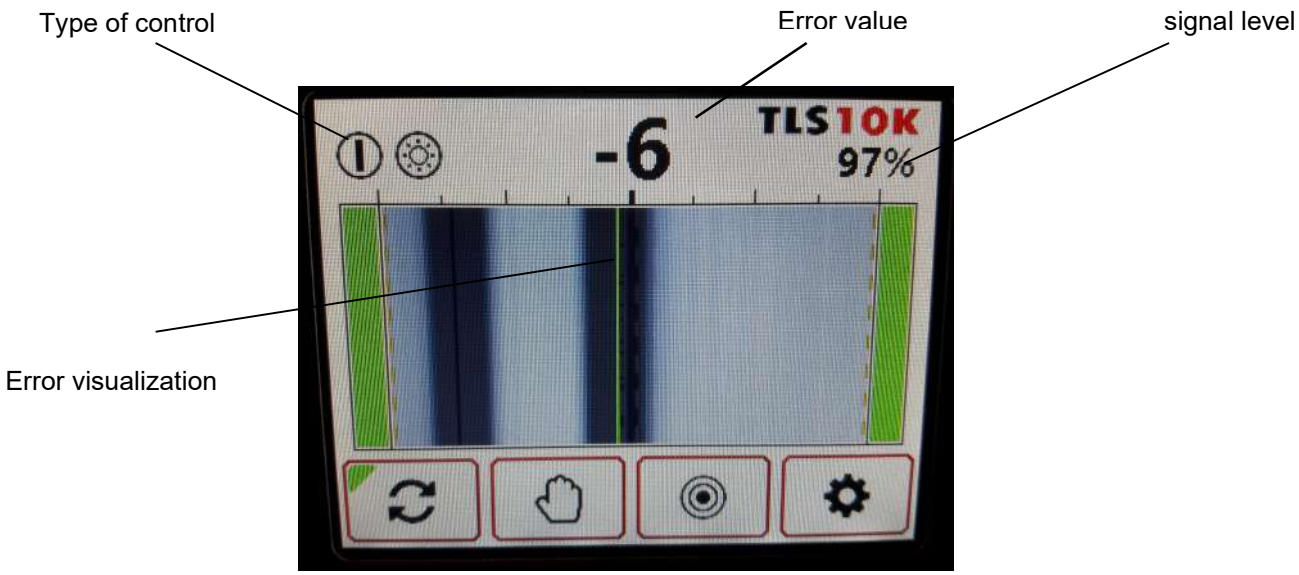


- Remove the "Automatic mode" Flag
- Press 

The red light will start to flash. The higher the frequency of flashing, the greater will be the acquisition of the signal.

4.2. Automatic

By selecting the automatic mode the system automatically corrects the measured error. The display looks like the following figure:



4.3. Sensor setup

In setting mode  user can set the following:

a) Manual calibration

EDGE

-  Dark / light contrast scanning
-  Light / dark contrast scanning

LINEA

-  scan of light line on dark background (or between dark lines)
-  scan of dark line on light background (or between light lines)

b) Lighting type

It specifies the illumination type used by the sensor:

- Led = direct signal
- Dif = diffused signal (for reflecting materials)

4.4. Parameter Setup

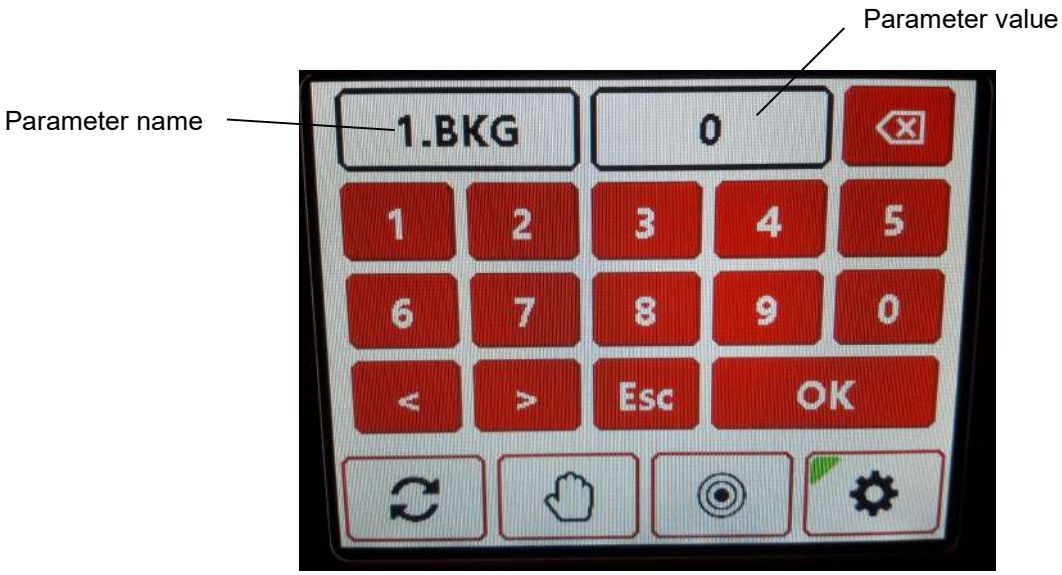
The device parameters determine the system behaviour. They are numeric values used to program and configure the sensor **TLS 10K**. The parameters values should be checked for each specific application. It is advised to write down the programmed parameter values after installing the sensor. Programming of these parameters requires a good knowledge of the system functionality and of the meaning of every single parameter.

The parameters have default values but they can be changed by an enabled operator.

By default the system is not password protected. If the password feature is enabled, the operator needs to enter the correct password to change the parameters.

To enter the menu parameters, press the  icon and then enter the menu by pressing the  icon.

Once the parameter programming mode has been entered, the display appears like the following figure:



The displayed parameter is selected by pressing tasti the  and  . keys. Each digit of the value field can be changed pressing the desired number icon. The modified number will appear between square brackets. When all digits have been changed, the  icon will confirm the value written, removing the brackets [ ] .

To delete the last value entered, press the delete icon 

To cancel the modifications press  .

4.5. List of Parameters

4.5.1. BKG – Background

Usage: Restrict the visual field of the optical sensors.

Description: This parameter tells the system how many pixels on both sides of the optical sensor have not to be considered when processing the signal from the sensor.

Range: 0 … 63

Default: 5

4.5.2. ZON – Working Zone

Usage: Defines the tolerance (thickness) to accept a new line or edge if the "original" line is lost (interrupted printing, paper, etc.)..

Description: The system "hooks" to the position (line or edge) that was selected at the calibration. If this line disappears, the system waits for a DLY time before jumping to a new reference position (line or board). The research is done using the same calibration settings (mode / light). The first line in the search sense that respects the thickness is taken as a new reference line and the system returns "green".
The value is expressed in pixels. The value 0 indicates the thickness of the line as tolerance or 2mm (25pixels) when reading an edge.

Range: 0 … 63 pixels

Default: 0

4.5.3. DLY – Jumping Delay

Usage: Waiting time before starting to look for a new reference line.

Description: In case of a sudden error (for interrupt printing, tape, etc.), the system waits a DLY time expressed in tenths of a seconds before making a "jump" to a new reference line. The value 0 disables the "jump".

Range: 0 … 99

Default: 0

4.5.4. DLX – Delay for activation contrast mode

Usage: Waiting time before starting to look for the edge of the material.

Description: In the event of a sudden error, the system waits for a DLX time expressed in seconds before searching for the reference edge.

The value 0 disables the search, it only works when the border mode is selected.

Range: 0 … 99

Default: 0

4.5.5. VIS – Number of samples to display

Usage: Number of measurements considered in the error visualization.

Description: The error shown on the display is an average. This parameter defines the number of measurements that the system uses to calculate that average.

Range: 0 … 6

Default: 3

4.5.6. PWD – Password

Usage: To protect the setting of the parameters.

Description: When this parameter is set to 1 the operator is asked to enter a (fixed) password to change the parameters. Value 0 means no password required.

Range 0 … 32767

Default: 0

4.5.7. VER – Firmware Version

Usage: Displays the firmware version.

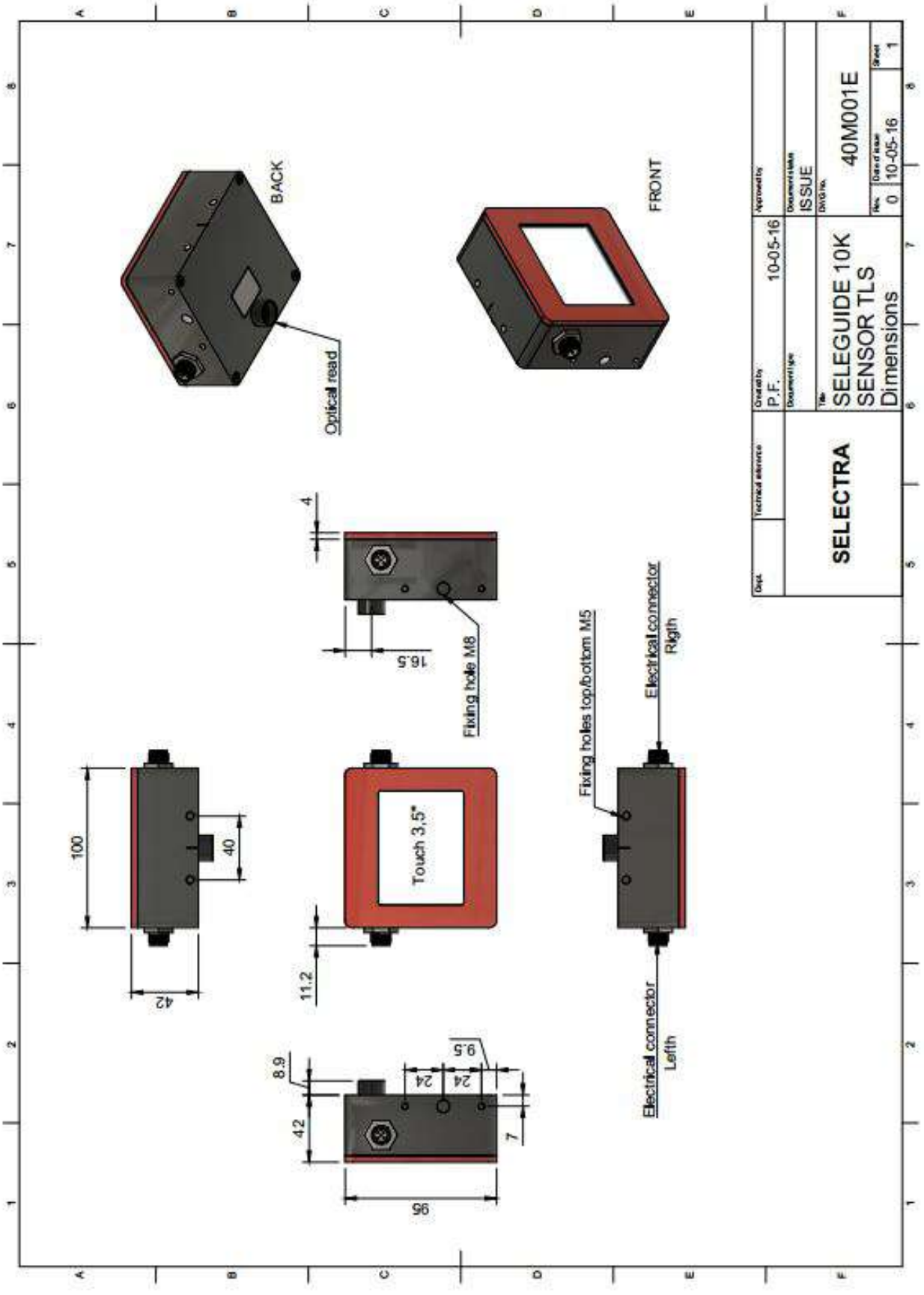
Description: This parameter displays the firmware version.

5. Technical Specs

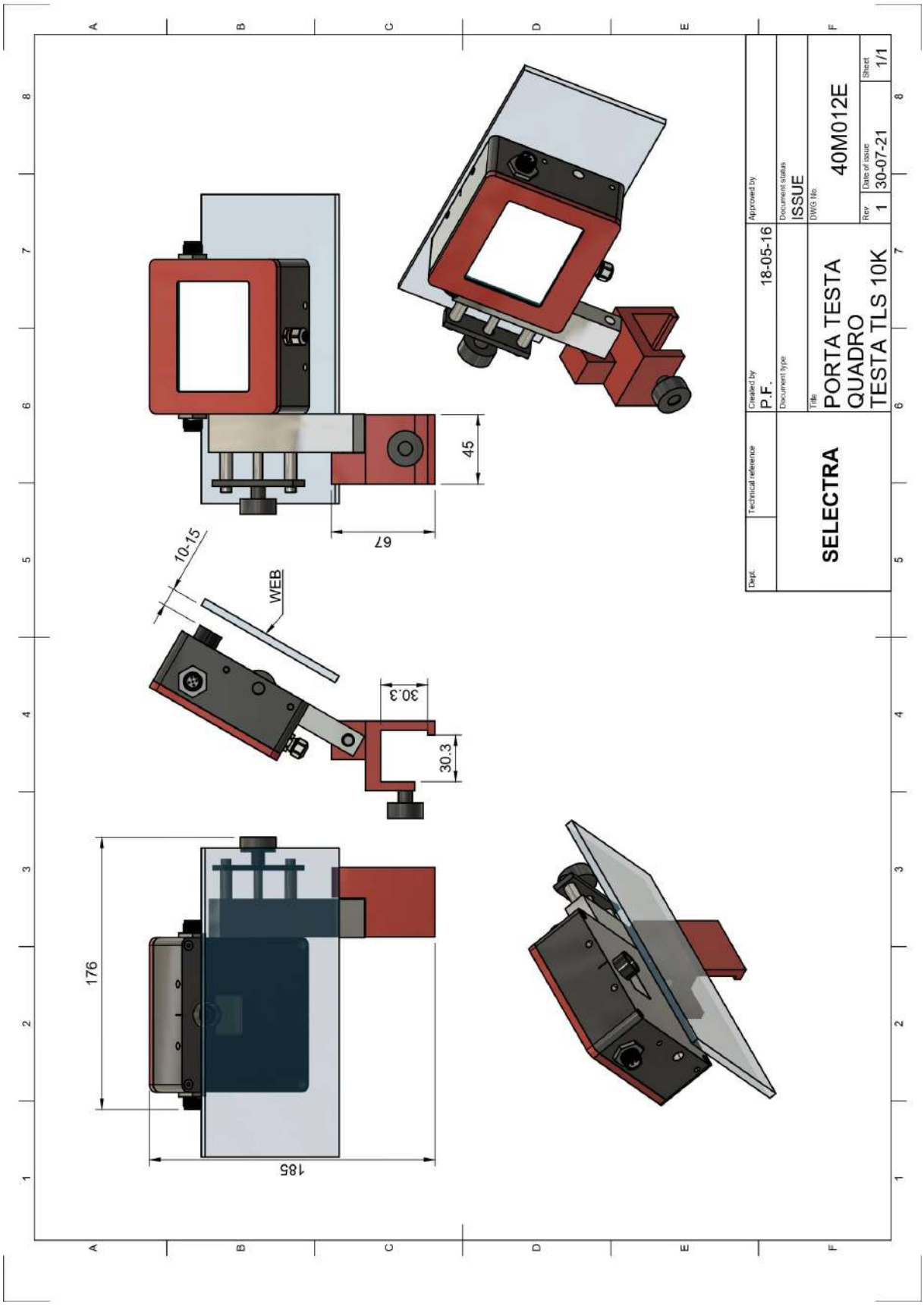
TLS optical Sensor

Size:	100 x 95 x 42 mm (WxHxL)
Weight:	0,6 Kg
Power:	24Vdc / 0,1A
Resolution:	0,06 mm / 16 mm scan width

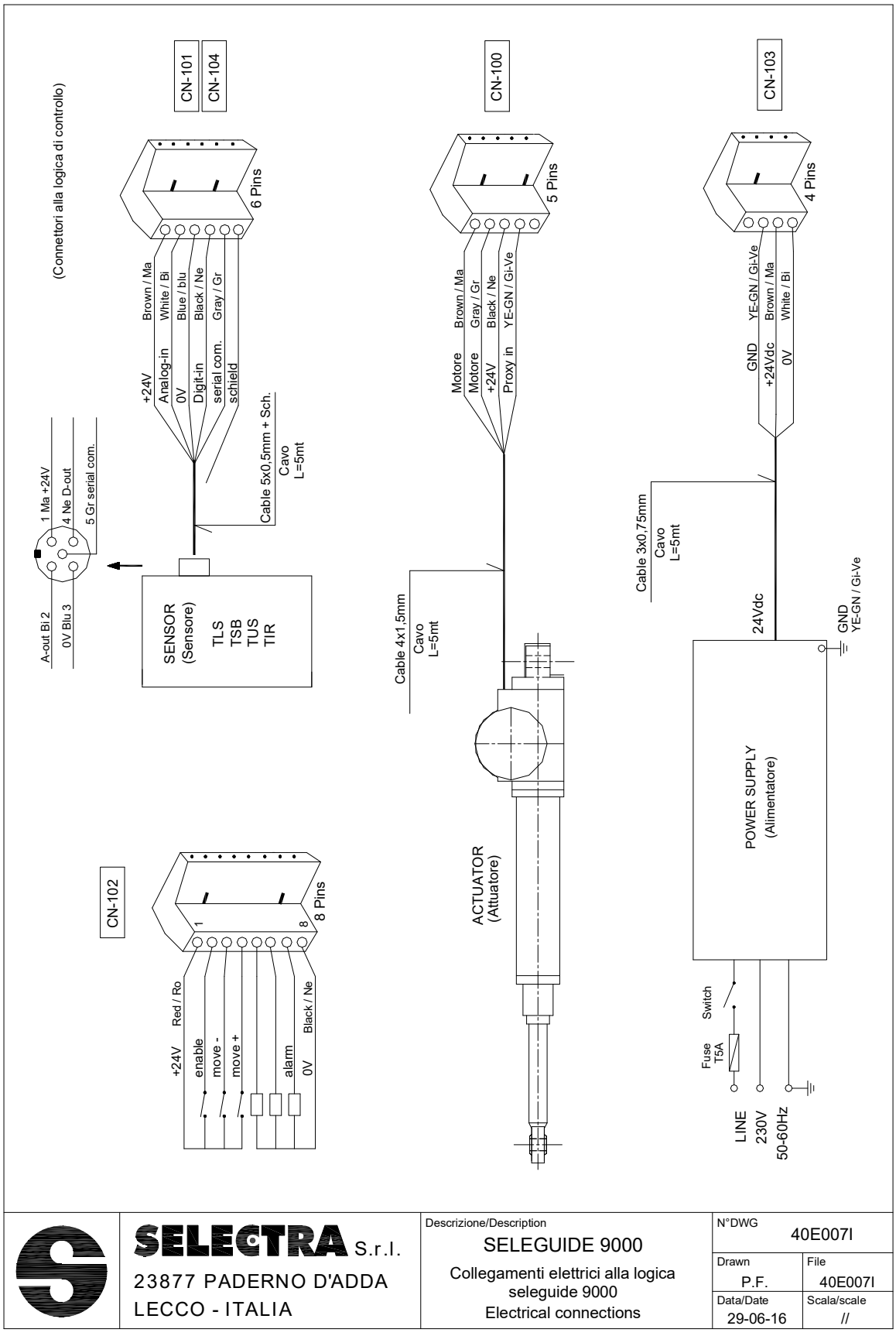
6. Drawings



Drawing 40E001E



Drawing 40E012E



Drawing 40E007I

7. Parameters and defaults

Number	Name	Usage	Default	User
1	BKG	Background	5	
2	ZON	Working Zone	0	
3	DLY	Jumping Delay	0	
4	DLX	Delay for activation contrast mode	0	
5	VIS	Visualization average	3	
6	PWD	Password	0	
7	VER	Firmware version	112	