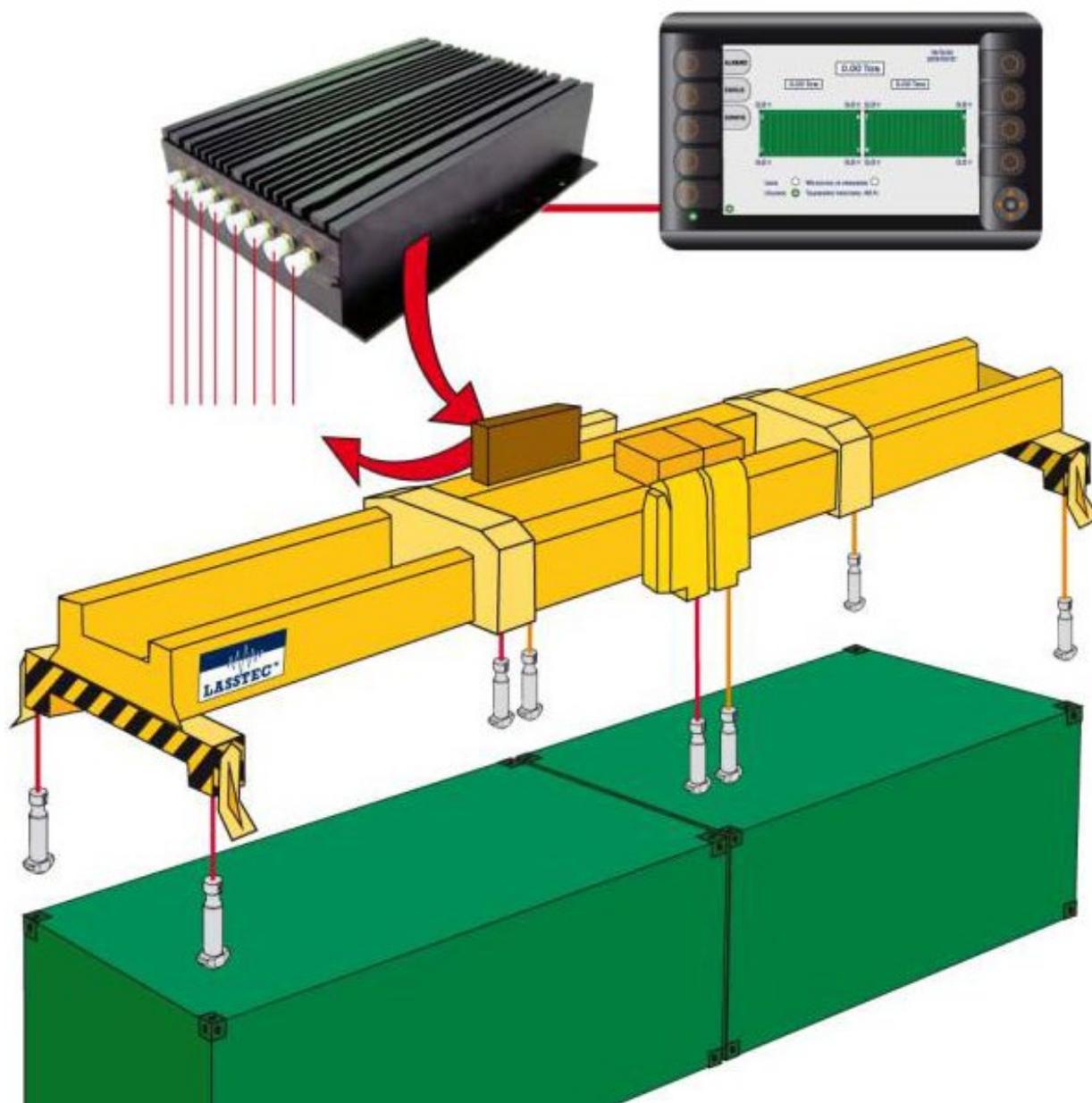


# Operating Instructions



## LASSTEC Weighing System 0521

Order Number:  
0521xx-....



## Contents

1	General Notes .....	6
1.1	Information about this Document.....	6
1.2	Limitation of Liability .....	6
1.3	Copyright .....	6
1.4	Spare Parts.....	7
1.5	Material Defects.....	7
1.6	Technical Support.....	7
2	Safety Instructions.....	8
2.1	Explanation of the Symbols .....	8
2.2	Personal Requisition.....	9
2.2.1	Qualification.....	9
2.2.2	Unauthorized Persons .....	9
2.3	Equipment Security .....	10
2.4	Safety Measures by the Operator.....	10
2.5	Behaviour in Case of Accidents and Disturbances.....	11
3	Technical data .....	11
3.1	General.....	11
3.2	Dimensions .....	11
3.2.1	Cabinet on Spreader .....	11
3.2.2	HMI in Crane Cabin .....	13
3.2.3	Sensors glued in Twistlock.....	14
3.3	Standard Connection Diagram .....	14
4	Description of the functional Principle .....	15
5	Configuration of the Interrogator .....	16
5.1	Required Software to be installed in advance .....	16
5.1.1	LabView Runtime .....	16
5.1.1.1	Requirements for installation .....	16
5.1.1.2	Installation instruction .....	16
5.1.2	NIVISA Communication Driver .....	16
5.1.2.1	Requirements for Installation.....	16
5.1.2.2	Installation Instruction.....	17
5.2	LASSTEC Interrogator Configuration Software.....	17
5.3	User Guide .....	18
5.3.1	Connecting the Interrogator.....	18

## LASSTEC

### Weighing System 0521

---

5.3.2	Program Start .....	18
5.3.3	Interrogator Connection Manager.....	18
5.3.4	Communication Parameters .....	20
5.3.5	Password and Accessing restricted Sections.....	22
5.3.5.1	The first Access/Password Change.....	22
5.3.5.2	Entering Password to access restricted Sections.....	24
5.3.6	Start Menu .....	25
5.3.7	Display State of LASSTEC System .....	26
5.3.7.1	Recording Management .....	27
5.3.7.2	Advanced Parameters .....	28
5.3.7.2.1	Sensor 1 (to 8) tab.....	28
5.3.7.2.2	Thresholds tab.....	29
5.3.7.2.2.1	Container Overload sub tab.....	29
5.3.7.2.2.2	Eccentricity Sub Tab.....	30
5.3.7.2.2.3	Twistlock Load & Overload Sub Tab .....	31
5.3.7.2.2.4	Dragging sub tab .....	31
5.3.7.2.2.5	Snag load sub tab.....	31
5.3.7.2.2.6	Not carrying Sub Tab.....	32
5.3.7.2.3	Interrogator Tab.....	32
5.3.7.2.3.1	Stabilized weight sub tab.....	32
5.3.7.2.3.2	Optical Sub Tab.....	32
5.3.7.2.3.3	ADC Vref Tab .....	33
5.3.7.2.3.4	Functions Sub Tab .....	33
5.3.7.2.3.5	Communication Sub Tab .....	33
5.3.7.2.3.6	Identification Sub Tab.....	33
5.3.8	Configure the LASSTEC System Authorized Persons Only.....	34
5.3.8.1	Communication.....	35
5.3.8.2	Calibration .....	36
5.3.8.2.1	Sensor Calibration .....	37
5.3.8.2.2	Advanced Calibration .....	39
5.3.8.2.3	Calibration per Twistlock .....	40
5.3.8.2.3.1	Calibration per Twistlock – Step by Step Explanation .....	42
5.3.8.2.4	Container Adjustment .....	51
5.3.8.2.4.1	Step by Step Guide .....	53
5.3.8.2.5	Temperature Calibration.....	59
5.3.8.3	Thresholds Adjustment.....	61
5.3.8.3.1	Load & Overload.....	62
5.3.8.3.1.1	Single Tab .....	63

## LASSTEC

### Weighing System 0521

---

5.3.8.3.1.2	Twistlock .....	63
5.3.8.3.1.3	Container counter .....	64
5.3.8.3.2	Over-Eccentricities .....	65
5.3.8.3.2.1	X and Y over-eccentricity Thresholds .....	65
5.3.8.3.3	Snag Load Detection .....	67
5.3.8.3.3.1	Global Threshold .....	67
5.3.8.3.3.2	Start Threshold .....	68
5.3.8.3.4	Dragging Detection .....	68
5.3.8.3.5	Not carrying Detection .....	69
5.3.8.4	Date and Time setting .....	70
5.3.8.5	Advance Configuration .....	71
5.3.8.5.1	Stabilized Weight .....	71
5.3.8.5.2	Time delays .....	72
5.3.8.5.3	Interrogator .....	73
5.3.8.5.4	Pstab Measurement .....	73
5.3.8.5.5	Precision & Young Modul .....	74
5.3.8.6	Save / Load Configuration .....	74
5.3.8.7	Reset the Interrogator .....	75
5.3.8.8	Download Data Logging .....	76
5.3.9	About the Lasstec System .....	77
6	Use of the Display .....	78
6.1	HMI overview .....	78
6.1.1	Glossary .....	78
6.1.2	Hardware .....	78
6.2	Page description .....	81
6.2.1	Loading .....	81
6.2.2	Home .....	81
6.2.2.1	Single-Lift Mode .....	81
6.2.2.2	Twin-Lift Mode .....	85
6.2.3	Status of the Lasstec System .....	88
6.2.4	Load Alarm .....	90
6.2.5	System alarms of the Lasstec system .....	94
6.2.6	Configuration of the load display .....	96
6.2.7	Download Datalogging to USB Memory Stick .....	98
6.2.8	User Configuration .....	101
6.2.8.1	Set the date and time .....	105

## LASSTEC

### Weighing System 0521

---

6.2.8.2	Counters .....	106
6.2.8.3	Reset counters .....	107
6.2.8.4	TCP/IP server configuration .....	108
6.2.8.5	TCP/IP HMI configuration .....	109
6.2.9	Advanced configuration .....	109
6.2.10	About .....	110
6.2.11	Historical .....	111
6.2.12	Common visualisation elements .....	112
6.3	Procedures .....	113
6.3.1	How to type a password .....	113
6.3.2	How to set the date and time .....	113
6.3.3	How to type the IP-Address .....	114
6.4	HMI / TOS Communication .....	114
6.4.1	TCP-IP communication protocol .....	114
6.4.2	Serial communication protocol .....	117
6.4.3	Bluetooth communication protocol .....	118
7	Status and Alarm description .....	119

## 1 General Notes

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### 1.1 Information about this Document

This operating instructions allow the safe and efficient handling of the equipment.

Moreover, you have to observe the local accident prevention guidelines and the general regulations for the application of the equipment. Illustrations in this documentation are for basic comprehension and can deviate from the real design of the equipment.

The HMI description (see chapter 6) assist users of LASSTEC HMI V4.6 to use and configure the HMI screen. Description may differ in minor parts depending on the actual software version. This also applies to the description of the configuration software V2.5.1 (see chapter 5).

### 1.2 Limitation of Liability

All specifications and advice of these Operating Instructions have been made up with regard to the existing standards and prescriptions, the state-of-the-art and many years of technical expertise and experiences.

The manufacturer does not take over any liability for damage due to:

- Non-observance of the mounting and operating instructions,
- Application not in accordance with the regulations,
- Employment of non-qualified staff,
- Unauthorized reconstructions,
- Technical modifications,
- Application of unapproved replacement parts and accessories.

The effective volume of delivery may deviate from these explanations and descriptions in case of special design, the utilization of additional order options or on account of to the latest technical modifications.

The commitments of the supply contract, the general terms and conditions as well as the manufacturer's terms of delivery and the legal regulations at the time of the contract conclusion have to be observed.

We reserve the right of technical modifications in the context of revision of useful properties and further developments.

### 1.3 Copyright

These operating instructions are copyrighted and intended for customer internal use only.

Surrender of the operating instructions to third party, any type of copying - even in extracts - as well as utilization and/or communication of the contents are not permitted without written approval by the manufacturer, except for customer internal purposes.

Violations will cause indemnities. We reserve the right to further claims.

#### 1.4 Spare Parts



#### **WARNING!**

#### **Safety risk due to faulty replacement parts!**

Faulty or defective replacement parts might affect the security and cause damage, malfunction or complete failure.

Therefore:

- Use only original replacement parts of the manufacturer!

#### 1.5 Material Defects

The regulations about material defects are listed in the general terms and conditions of business.

#### 1.6 Technical Support

For technical support please contact our staff from the Customer Support Department.

**Conductix-Wampfler GmbH**  
Rheinstrasse 27 + 33  
79576 Weil am Rhein - Maerkt  
Germany

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info.de@conductix.com  
www.conductix.com

Moreover, our staff is constantly interested in new information and experiences, which will arise from the application and which might be valuable for the improvement of our products.

## 2 Safety Instructions

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### 2.1 Explanation of the Symbols



**DANGER!**

Refers to an imminent danger, which might cause deathly or serious injuries if not avoided.



**WARNING!**

Refers to a possibly dangerous situation, which might cause deathly or serious injuries if not avoided.



**CAUTION!**

Indicates a possibly hazardous situation, which if not avoided, may result in moderate or minor injury and property damage.



**ADVICE!**

**Advice and recommendations:**

Gives advice and recommendations as well as information for an efficient and undisturbed operation.

## LASSTEC

### Weighing System 0521

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## 2.2 Personal Requisition

### 2.2.1 Qualification



**WARNING!**

#### **Risk of injury in case of insufficient qualification!**

Incorrect handling can cause serious injuries to persons and heavy damage to property.

Therefore:

- All activities must be carried out by qualified staff!

The operating conditions indicate the following qualifications for the various fields of activity:

- **Instructed personnel/operators**  
have been instructed by the operator about the tasks assigned to them and the possible dangers due to improper behaviour.
- **Specialized staff**  
is able to carry out the works assigned to them and realize and avoid any dangers in this regard, based on their training, knowledge, experiences and knowledge of the respective regulations.
- Only those persons are authorized for these works, who are expected to do their work properly. Persons with restricted responsiveness, e.g. due to drugs, alcohol or medication are not permitted.
- For the selection of personnel observe the age-specific and job-related prescriptions effective at the place of installation.

### 2.2.2 Unauthorized Persons



**WARNING!**

#### **Danger caused by unauthorized personnel!**

Unauthorized personnel, who do not comply with the requirements described hereunder, are not familiar with the dangers that might occur within the working area.

Therefore:

- Keep unauthorized personnel away from the working area.
- In case of doubt talk to those people and dismiss them from the working area.
- Interrupt the works as long as there are unauthorized persons within the working area.

## 2.3 Equipment Security

The equipment has been exclusively designed and constructed for the intended purpose.

### **Danger caused by application not in accordance with regulations!**

Each application of the equipment not in accordance with and/or different from the regulations can result in dangerous situations.

Therefore:

- Only use the equipment in accordance with the regulations.
- All details of these mounting and operating instructions must be strictly observed.



**WARNING!**

The following applications of the equipment are prohibited. Applications not in accordance with regulations are as follows:

- Application of the equipment with accessories not permitted or authorized by the manufacturer.
- Operation of the equipment by not instructed personnel.
- Exceeding / be lower than projected supply voltages.
- Changing of the delivered software modules.
- Changing, bridging and/or deactivation of control circuits or interlocking.
- Bridging and/or deactivating electrical sensors or switches.
- Use of non-approved protective devices.
- Re-adjustment of protective devices.

## 2.4 Safety Measures by the Operator

The equipment is used in the commercial sector. The operator is therefore responsible for occupational safety. Besides the safety advice of these mounting and operating instructions he must observe the safety, accident prevention and environmental protection regulations effective for the range of application of this equipment. Please note in particular:

- The operator must read the valid work safety regulations and determine any additional dangers in a risk assessment, dangers that might arise from special working conditions at the place of installation of the equipment. He then must work out the operating instructions for handling the equipment.
- During the complete operating time the operator must check if his operating instructions are in accordance with the state of technology of rules and standards and adapt them if required.
- The operator must clearly regulate and establish the responsibilities for installation, handling, fault repair and maintenance.
- The operator must ensure that all employees who are handling the equipment, have read and understood these mounting and operating instructions. Moreover he must instruct the personnel at regular intervals and inform them about any dangers.
- The operator must have checked all safety devices regularly for their operational capability and completeness.

## 2.5 Behaviour in Case of Accidents and Disturbances

### Measures to be taken in case of accidents:

- Start with first aid measures.
- Bring the people out of the danger zone.
- Inform responsible persons on the site of operation.
- Call the emergency medical services.
- Clear access routes for rescue vehicles.

### Measures to be taken in case of faults:

- Analysis of fault.
- Fixing of fault cause.
- Check of correct functions after fault fixing.

## 3 Technical data

### 3.1 General

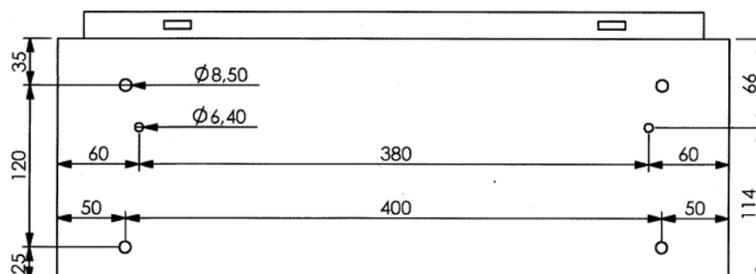
LASSTEC™ is a container weighing system installed on a container spreader to determine the Verified Gross Mass (VGM). It is based on Fiber Optic (FO) technology and measures the elongation of each Twistlock to calculate the applied weight on each Twistlock and from this the mass of the container.

To enable the weight measurement with the Twistlocks, the original ones are replaced by Twistlocks equipped with a fibre-bragg-gratin (FBG) sensor. The Sensors are connected to an evaluation unit called interrogator which is mounted in a cabinet on the spreader and analyses the FBG signals, calculates the weights and sends them to a display (e.g.: in the driver cabin of a crane) where they are displayed to the driver. They can also be sent to secondary devices (e.g.: to a Terminal Operating System) via several communication protocols.

### 3.2 Dimensions

#### 3.2.1 Cabinet on Spreader

Side view:

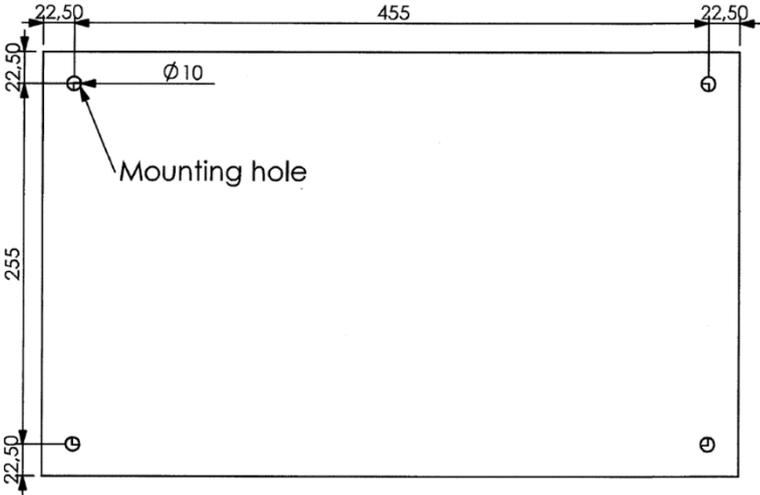


Operating Instructions

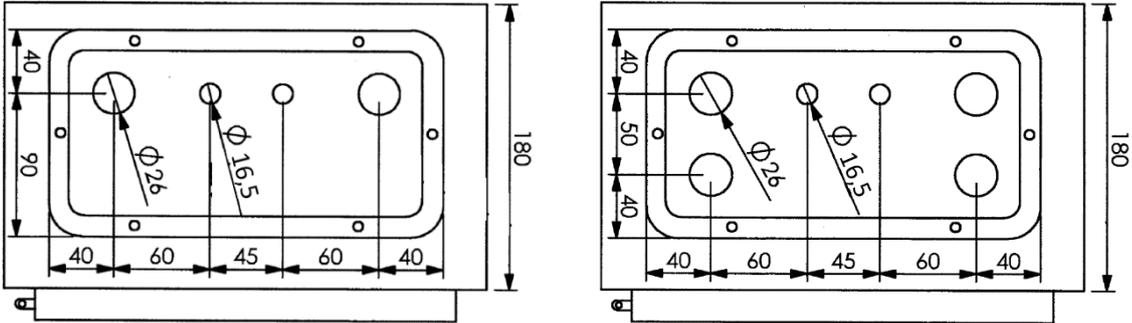


LASSTEC  
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Bottom view:



Connection plate:



LASSTEC

Weighing System 0521

3.2.2 HMI in Crane Cabin

Display mount set

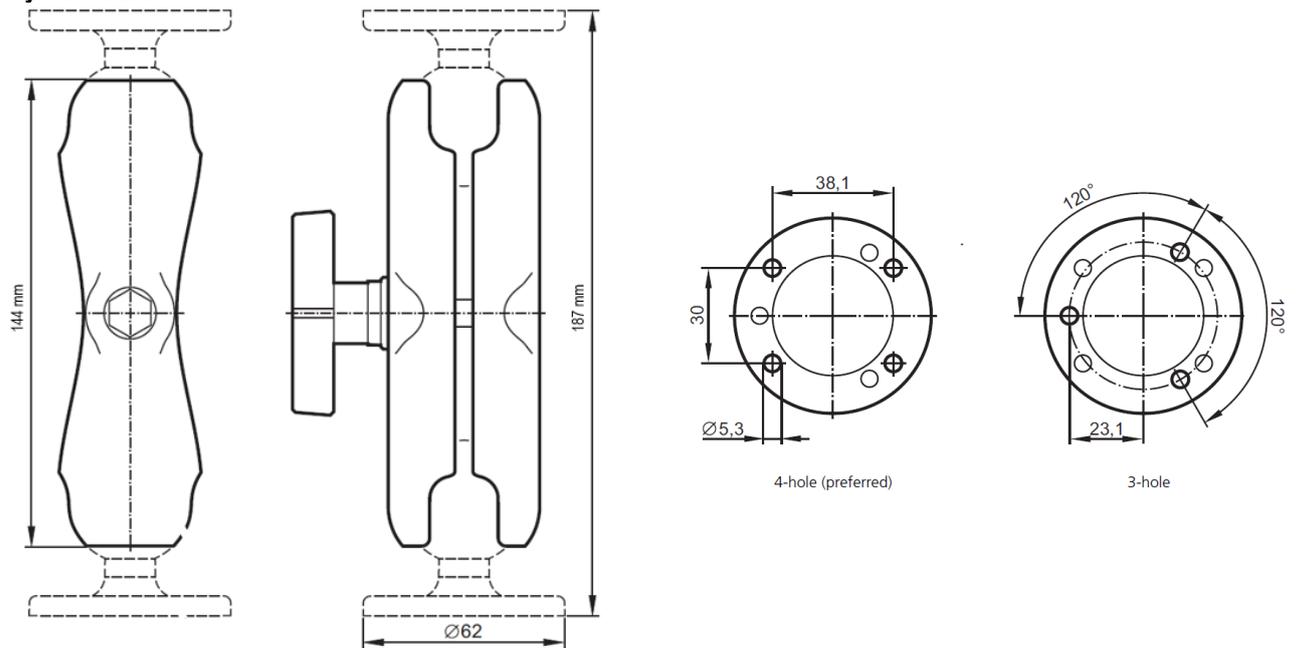


Image source: IFM electronic (CR1081)

Display

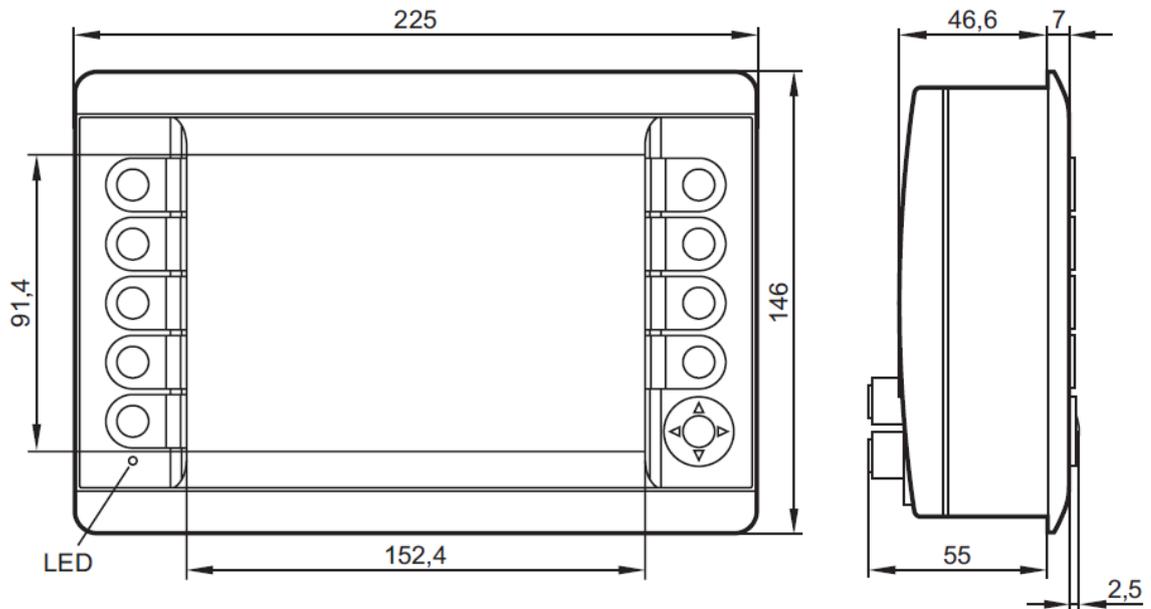


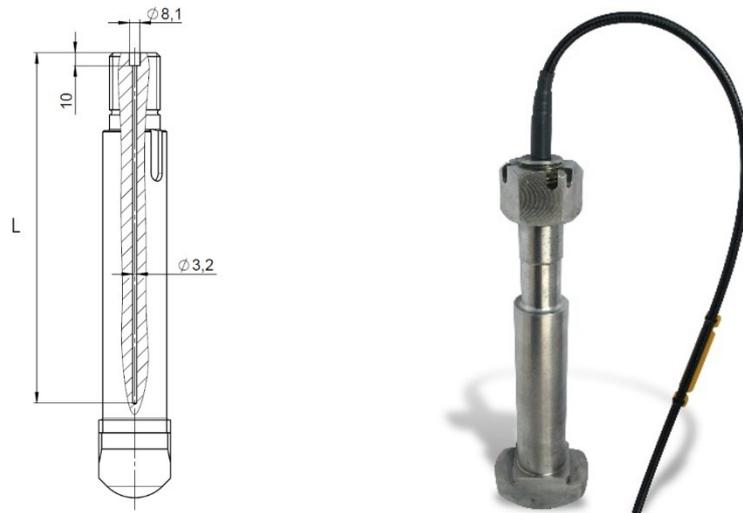
Image source: IFM electronic (CR1081)

## LASSTEC

### Weighing System 0521

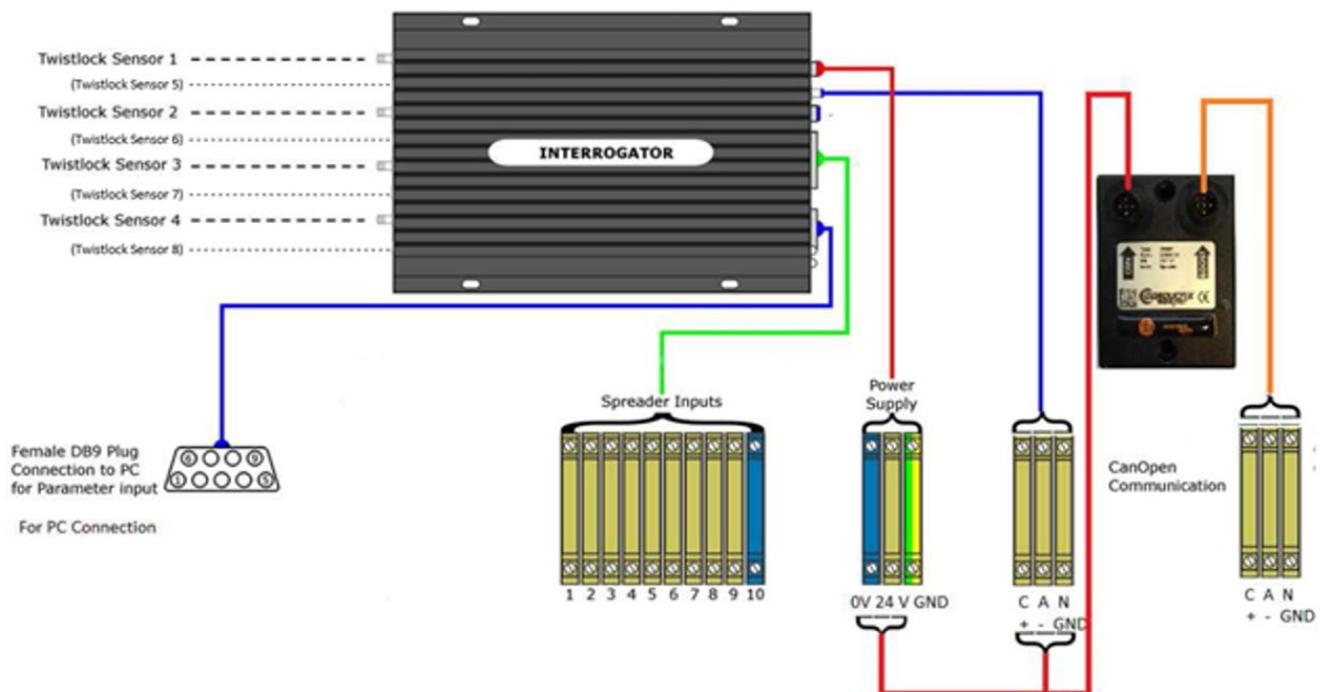
#### 3.2.3 Sensors glued in Twistlock

Depending on the Twistlock and spreader manufacturer, the form and dimensions of the Twistlock may change. The pictures shown here are for illustrative purposes only and do not reflect the parts installed in your system.



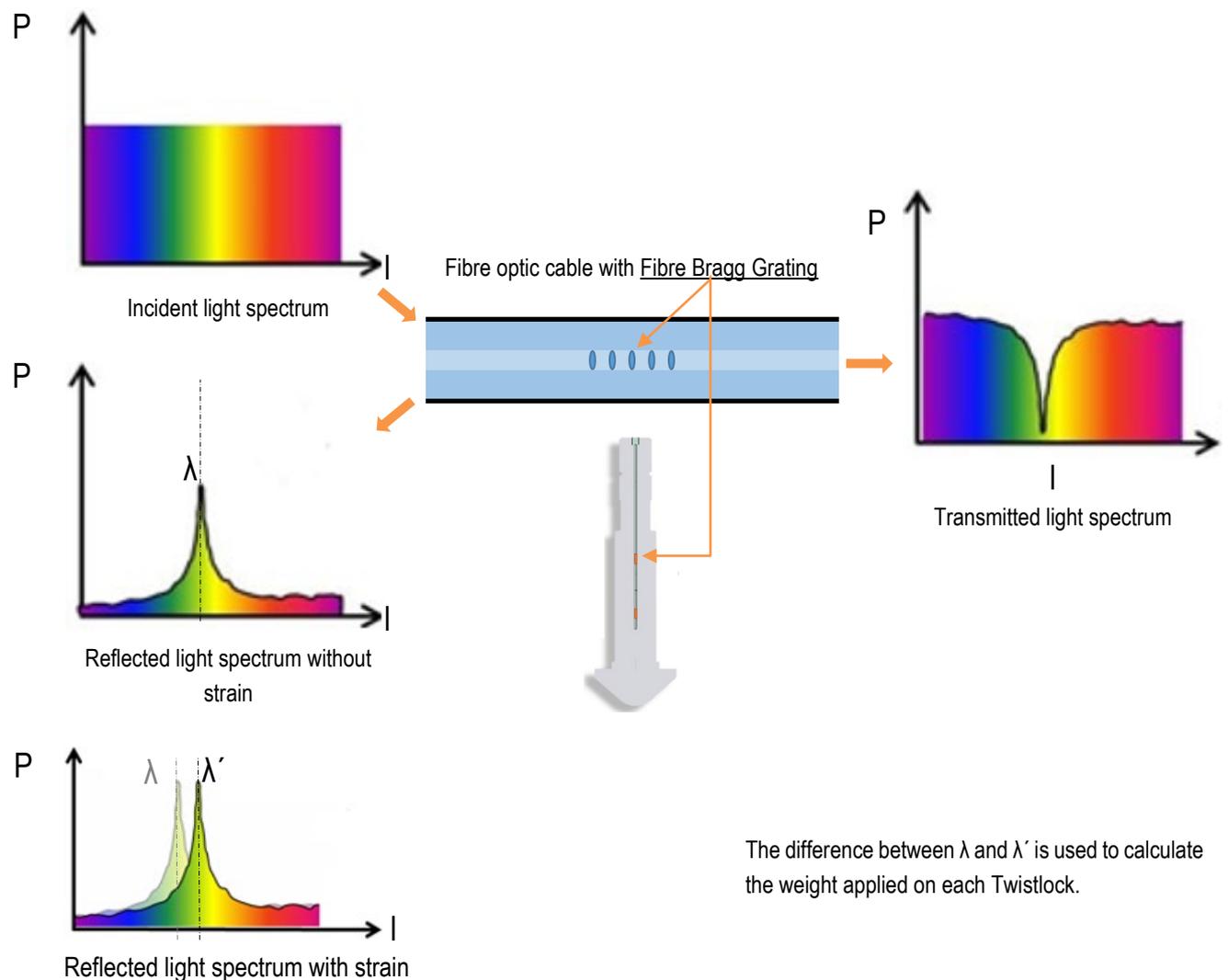
The Length L of the Sensor can, depending on the Twistlock type vary between 208 mm and 270 mm.

#### 3.3 Standard Connection Diagram



## 4 Description of the functional Principle

Lasstec uses Fibre Bragg Grating (FBG) sensors. These sensors consist of an optical fibre in which two FBG are integrated. When Light is sent through the optical fibre a certain wavelength is always reflected by the FBGs and is detected by the interrogator. When bonded into a Twistlock, one of the FBGs changes its length according to the elongation of the cylindrical part of the Twistlock. As a consequence of this, the reflected wavelength also changes. The second FBG is only sensitive to temperature changes and is located at the tip of the sensor (bottom of the sensor hole in the Twistlock). It is essential that the load sensing FBG is located in a cylindrical part of the Twistlock. The interrogator then extracts the extension of the steel due to strain only.



$\lambda$ : Bragg wavelength without strain,  $\lambda'$ : Bragg wavelength with strain, P: Power, l: Wavelength

## LASSTEC

### Weighing System 0521

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It should be emphasized that the full scale (or the span) of the sensor output signal does not begin at zero. LASSTEC fibre-optic sensors always indicate a value for the reflected wavelength.

A weighing cycle begins with the applied "lock" signal, the interrogator measures the Bragg wavelength off all connected Twistlocks and stores them as reference. During the lifting of the container the Bragg wavelength are measured continuously and the interrogator processes the difference between the reference Bragg wavelength and the Bragg wavelength with load into the actual weight. Once the Twistlocks are unlocked again the load cycle is finished.

In case the lock signal is temporarily lost during a load cycle or the power of the crane or machine is switched off, the system continues to weigh when the power is back again. The system only ends the weighing cycle when it receives the unlock signal. The LASSTEC system always requires these signals to function.

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## 5 Configuration of the Interrogator

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### 5.1 Required Software to be installed in advance

#### 5.1.1 LabView Runtime

LabVIEW runtime is a free of charge software, and can be downloaded from the official National Instrument website.

The LabVIEW runtime version required for the LASSTEC configuration software V2.5.1 is:

- LVRTE2010sp1std.exe.

##### 5.1.1.1 Requirements for installation

- The LabVIEW runtime installation file.
- A compatible computer (see the National Instrument website for the PC requirements).

##### 5.1.1.2 Installation instruction

The following instructions are based on the LabVIEW runtime xxx.

1. Download the appropriate installation file (if not already done) from the official National Instruments website.
2. Execute the installation file.
3. Follow the instructions until the installation is complete

#### 5.1.2 NIVISA Communication Driver

NVISA runtime is a free of charge software, and can be downloaded from the official National Instrument website.

The NVISA runtime version required for the LASSTEC configuration software Vx.x is:

- NIVISA runtime.msi, version 3.0.

##### 5.1.2.1 Requirements for Installation

- The NVISA runtime installation file.
- A compatible computer (see the National Instrument website for the PC requirements).

## LASSTEC

### Weighing System 0521

#### 5.1.2.2 Installation Instruction

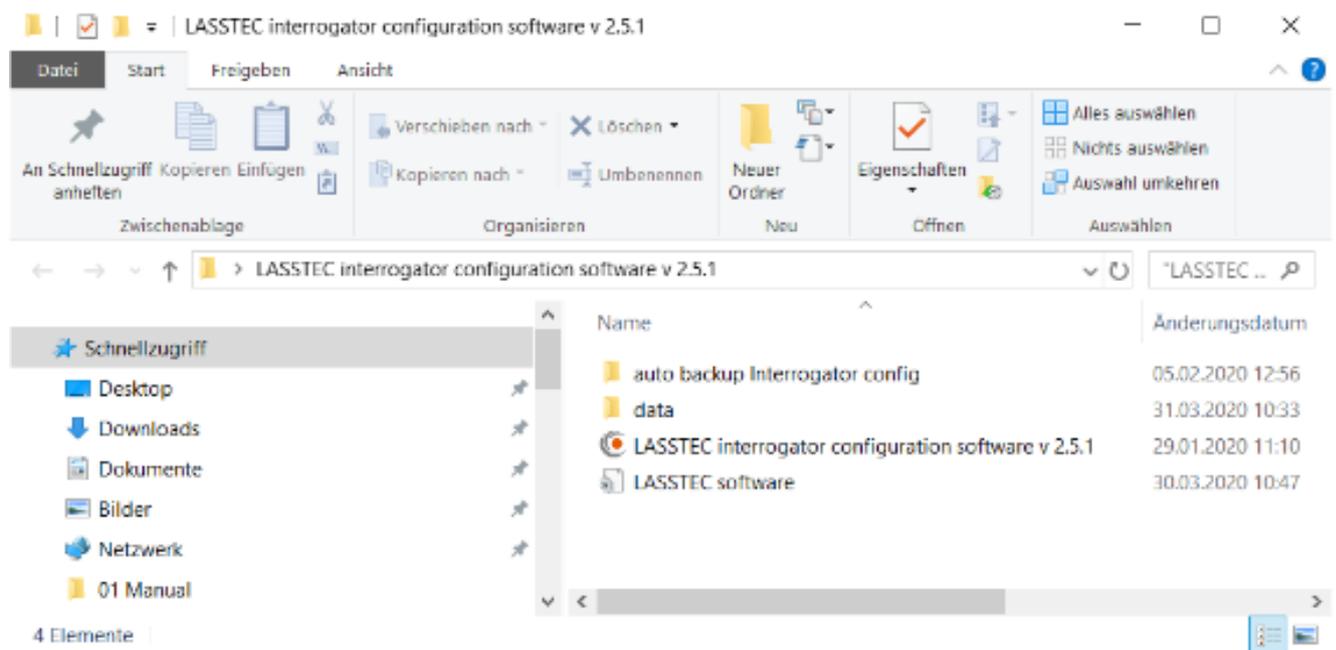
The following instructions are based on the NVISA runtime xxx.

1. Download the appropriate installation file (if not already done) from the official National Instruments website.
2. Execute the installation file.
3. Follow the instructions until the installation is complete.

## 5.2 LASSTEC Interrogator Configuration Software

The LASSTEC Configuration Software does not require an installation to work but there are a few instructions to follow.

- After extracting the provided folder to your chosen path, the content should look like this:



- The execution file "LASSTEC interrogator configuration software v 2.5.1" must always remain in this folder structure as the software refers to the other files in it.
- To create a shortcut on the desktop, right click on the execution file, select "Send to" and click on "Desktop". A shortcut is then created on the desktop. This shortcut can then be moved to any desired folder.

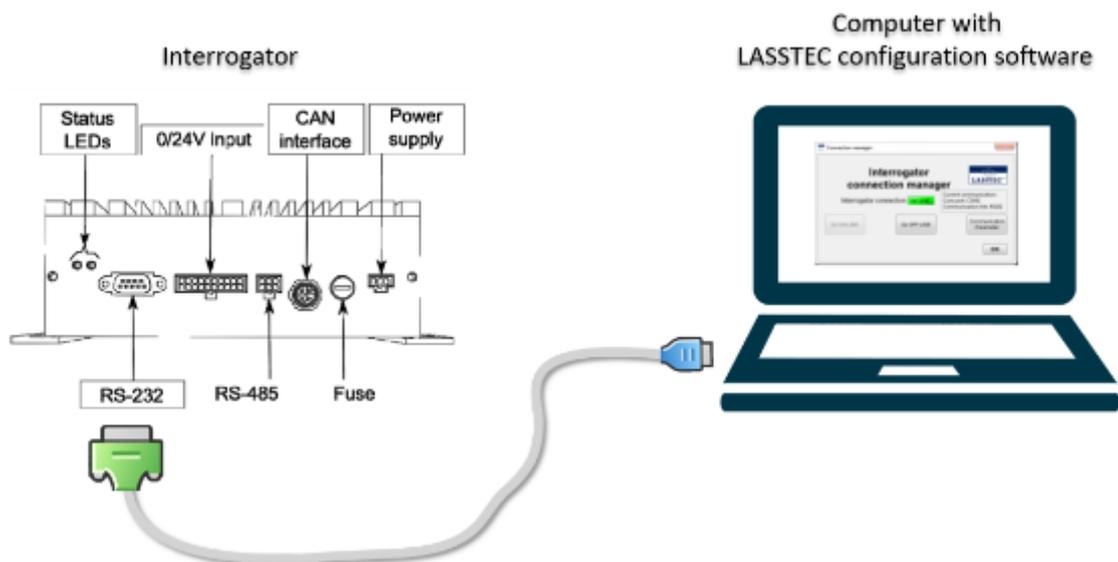
## LASSTEC

### Weighing System 0521

#### 5.3 User Guide

##### 5.3.1 Connecting the Interrogator

To configure an interrogator with the LASSTEC Configuration Software, the interrogator must be connected to a computer equipped with the software by an RS-232 to USB adapter.



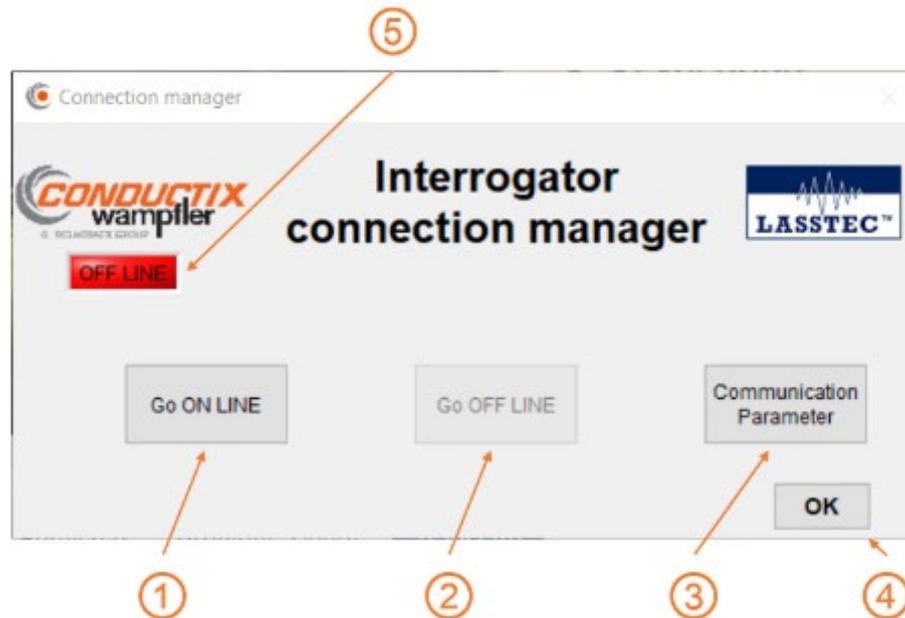
##### 5.3.2 Program Start

To start the program, perform a double right click on its icon.



##### 5.3.3 Interrogator Connection Manager

The first window which appears is the "Interrogator connection manager". It allows you to connect or disconnect the connection between the interrogator and the computer and to access the communication parameters. You will always come back to this view when clicking on "OFF LINE" or "ON LINE".



- ① **Go On LINE:**

Clicking “Go ON LINE” establishes the communication between the interrogator and the computer. “**Communication Parameters**” have to be defined first.
- ② **Go OFF LINE:**

Clicking “Go OFF LINE” closes down the communication if it has been established before.
- ③ **Communication Parameter:**

Clicking on “**Communication Parameter**” leads you to the “**Communication Parameters**” window.
- ④ **OK:**

Clicking “OK” leads you to the “**Start Menu**” window or simply to the previously accessed window.
- ⑤ **OFF LINE / ON LINE:**

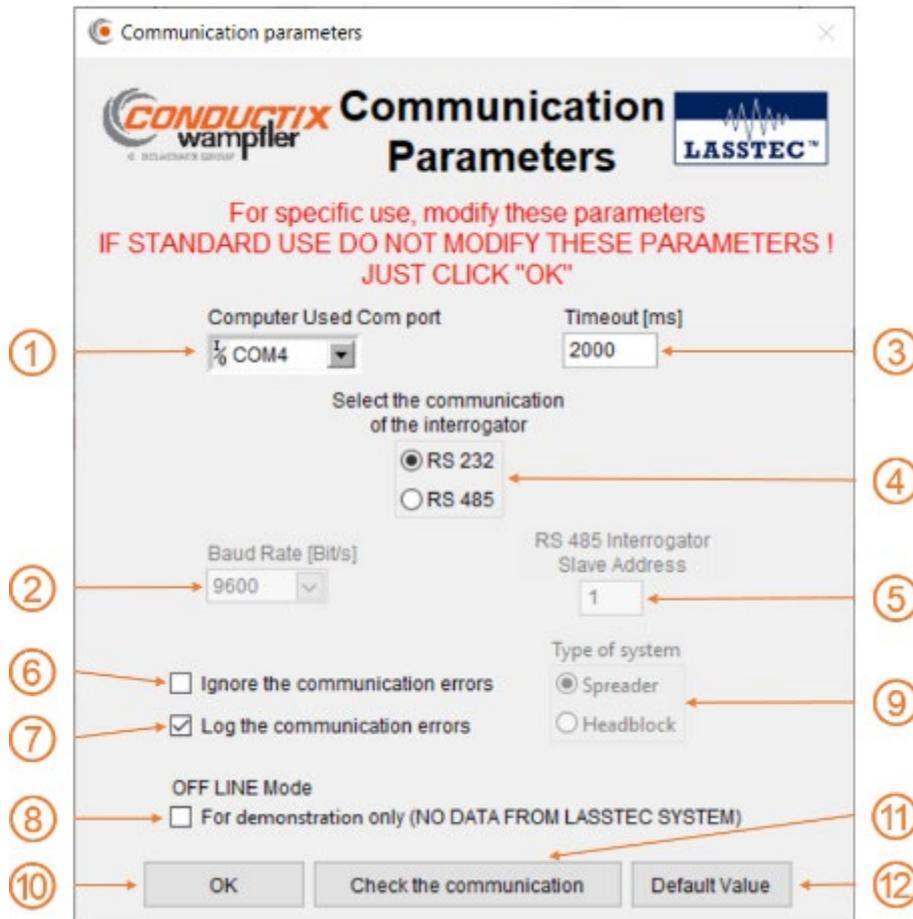
This shows the communication status between interrogator and computer.  
**ON LINE:** Communication between interrogator and computer is established.  
**OFF LINE:** Communication between interrogator and computer is NOT established.

## LASSTEC

### Weighing System 0521

#### 5.3.4 Communication Parameters

In the “Communication Parameters” window, you can define the settings for the communication between the software and the interrogator.



**① Computer Used Com port:**

Shows the selected serial port of your computer which will be used by the software for communicating with the interrogator. All available ports are listed here. You have to define the port via which the communication to the interrogator is going to be established and to which the interrogator is connected. If no serial ports are listed here, exit the software and check the installation of the NVISA driver.

**② Baud Rate [Bit/s]:**

This shows the speed at which information is exchanged between this software and the connected interrogator. When using the RS-232 protocol (④) for communication the baud rate is automatically set at 9600 [Bit/s]

## LASSTEC

### Weighing System 0521

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#### ③ Timeout [ms]:

There you can define the timeout after which, in case of a communication issue the communication is aborted and a failure message is displayed in order to not compromise the data stores in the interrogator. By default, this value is set to 2000 [ms]. In case of a poor connection due to a known reason (long cable), increase this value.

#### ④ Select the communication of the interrogator:

There are two possible communication options to configure the interrogator.

- RS-232
- RS-485

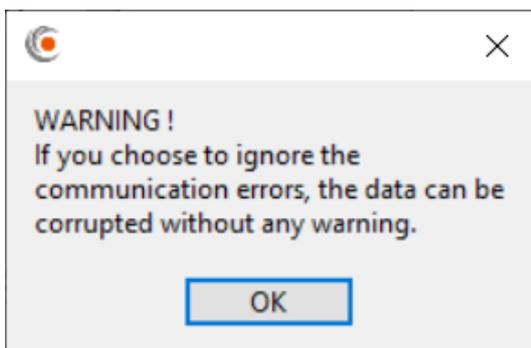
By default, it is RS-232 which is to be used.

#### ⑤ RS 485 Interrogator Slave Address:

When using the RS-485 communication option. This address is the Interrogator identifier for the ModBus network.

#### ⑥ Ignore the communication errors:

When activated, this option disables all communication error alerts and the displayed values in the software can be corrupted without any warnings. When activating it, you're asked for confirmation. It is recommended to only activate this option only when required for troubleshooting.



#### ⑦ Log the communication errors:

Activates / deactivates the recording of communication errors into a log file (Communication error.log). This file is located in the software main folder and can be used for troubleshooting. By default, it is activated and it's highly recommended to keep it so.

#### ⑧ OFF LINE mode:

By activating this option you're deactivating, the communication. You will still be able to brows trough the hall software but there will be not data exchange with the interrogator. It becomes automatically active when the connection cannot be established.

## LASSTEC

### Weighing System 0521

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9

#### Type of System:

When the communication with the interrogator is established the software, itself recognises the system type. But when the OFF LINE mode is activated this option gets available so that the user can define the system type itself. The system type spreader is selected by default. LASSTEC systems for headblocks aren't produced anymore.

10

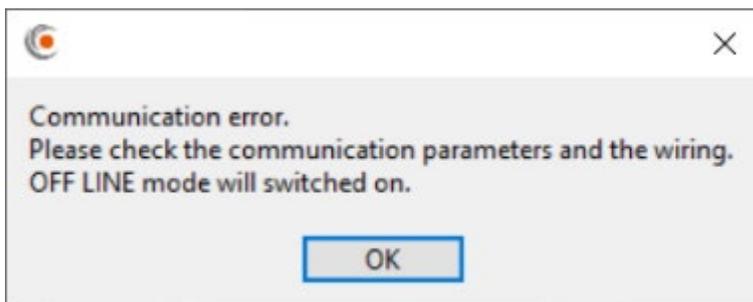
#### OK:

By clicking the OK button you're confirming the settings. A communication check is automatically done after OK has been clicked and it leads to the Start Menu page.

11

#### Check the communication:

By clicking this button, the communication between the software and the interrogator is established accordingly to the defined parameters. A failure message is displayed when the connection could not be established.



12

#### Default Value:

When clicking this button, all parameters are reset to their default values.

### 5.3.5 Password and Accessing restricted Sections

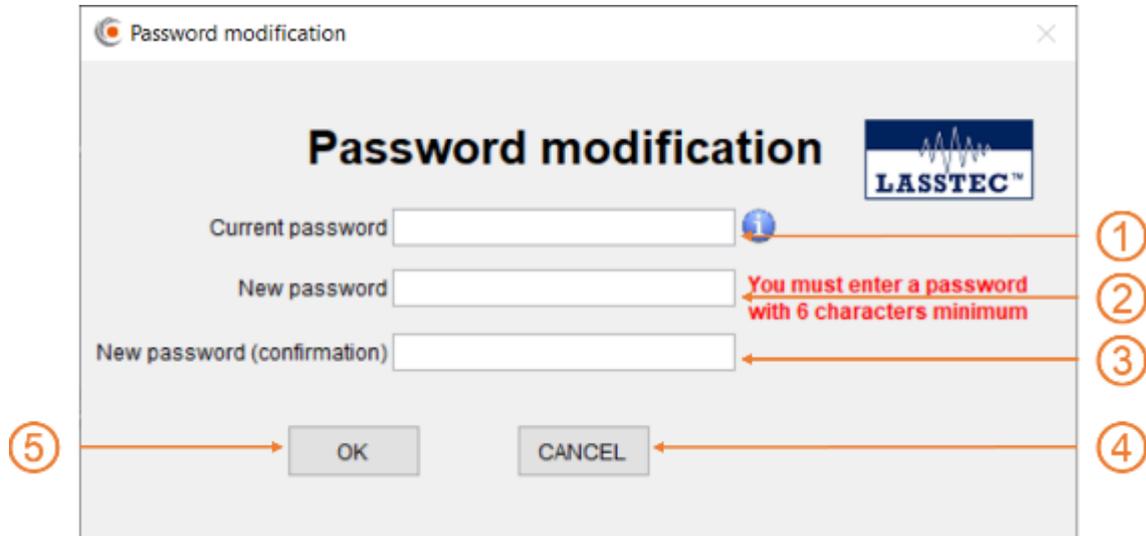
To get access to the restricted sections "Advanced parameters" or "Interrogator configuration", a password is required.

#### 5.3.5.1 The first Access/Password Change

When newly delivered the software has a default password.

- The default password is: **User**

When trying to access a restricted section for the first time the user is asked to change the default password to a personal one.



- ① **Current password:**  
There you enter the current password. If it is still the default password, enter the default password.  
The default password is: **User**
- ② **New Password:**  
There you enter your new password. Any character types can be used but it must at least contain six characters.
- ③ **New Password (confirmation):**  
Enter your new password again to confirm it.
- ④ **CANCEL:**  
Clicking on CANCEL aborts the process. The password won't be changed.
- ⑤ **OK:**  
Clicking on OK confirms your entry and changes the password.



**Your password is strictly personal!**

Do not share it!

Please note that Conductix-Wampfler cannot recover it if you forget it.

#### 5.3.5.2 Entering Password to access restricted Sections



① There you enter your password.

② **Change my password:**

Clicking on Change my password leads you to the **Password modification** Window. There you can change the password.

③ **OK:**

Clicking on **OK** confirms your password entry.

If it is correct you will access the restricted Section you are looking for.

If your entry was wrong; you will be redirected to the **Start Menu** window or the **System status** window, depending on which restricted section you were trying to access.

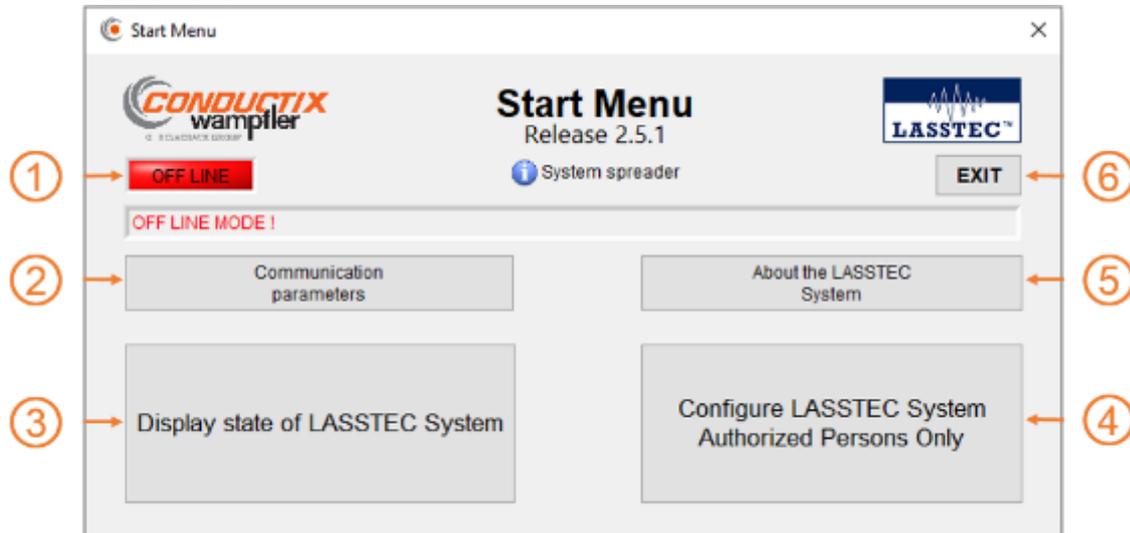
④ **CANCEL:**

Clicking on **CANCEL** aborts the password entry as well as the access to the restricted section. You will be redirected to the **Start Menu** window or the **System status** window, depending on which restricted section you were trying to access.

## LASSTEC

### Weighing System 0521

#### 5.3.6 Start Menu



① **OFF LINE / ON LINE:**

This shows the communication status between interrogator and computer.

**ON LINE:** Communication between interrogator and computer is established.

**OFF LINE:** Communication between interrogator and computer is NOT established. The system is in OFF LINE mode. Clicking on it leads you to the **Interrogator connection manager** window.

② **Communication parameters:**

Clicking on it leads you to the **Communication Parameter** window, see chapter 5.3.4 **Communication parameter**.

③ **Display state of LASSTEC System:**

Clicking on it leads you to the **System status** window.

This section displays the main parameters of the system like alarms, measured weights and the program status.

④ **Configure LASSTEC System Authorized Persons Only:**

Clicking on it leads you to the **Interrogator configuration** window. A password is required to access there. This section is for authorized persons only, for initial installation, calibration and maintenance.

⑤ **About the LASSTEC System:**

Clicking on it leads to the basic information about the configuration software (version, release date, historic) and the interrogator (software and hardware versions, serial number), when it is connected.

## LASSTEC

### Weighing System 0521

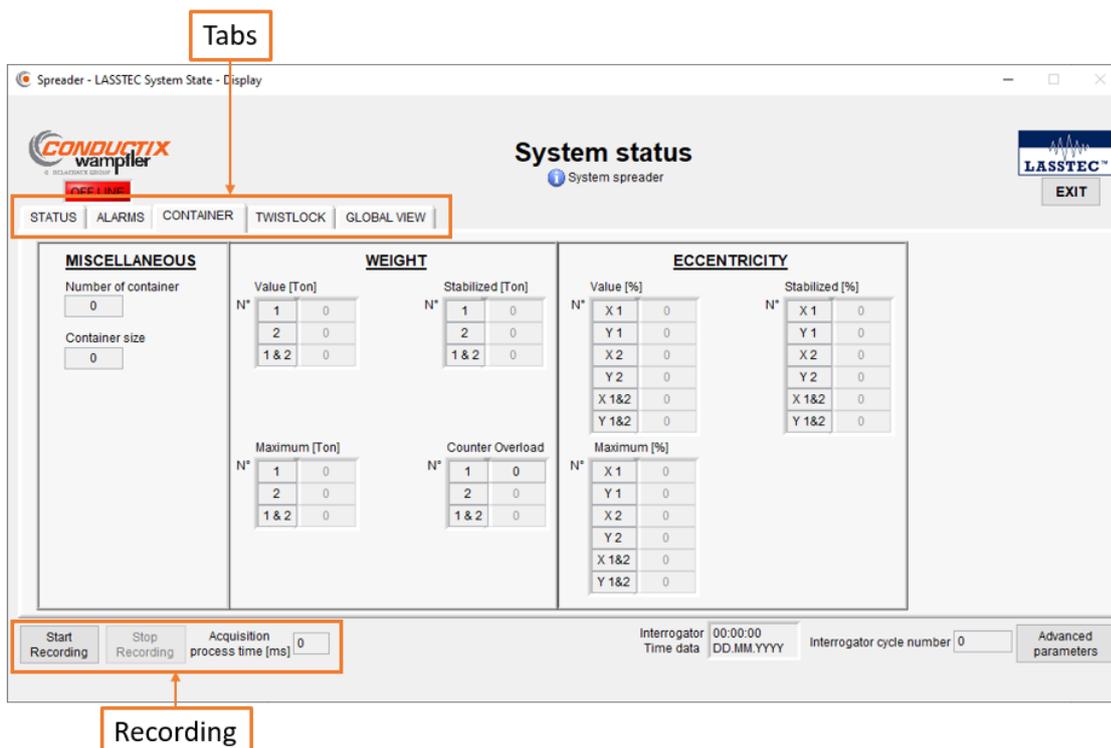
⑥

**EXIT:**

Clicking on it closes the application.

### 5.3.7 Display State of LASSTEC System

By clicking “Display state of LASSTEC System” you get to the **System status** window.



This program window has several tabs:

- **STATUS**  
Displays the system status variables of the system
- **ALARMS**  
Displays the alarm status of the system
- **CONTAINER**  
Displays the variable values related to the container weighing
- **TWISTLOCK**  
Displays the variable values related to the Twistlocks
- **GLOBAL VIEW**  
Displays an overview of variables related to the Twistlocks and the container weighing

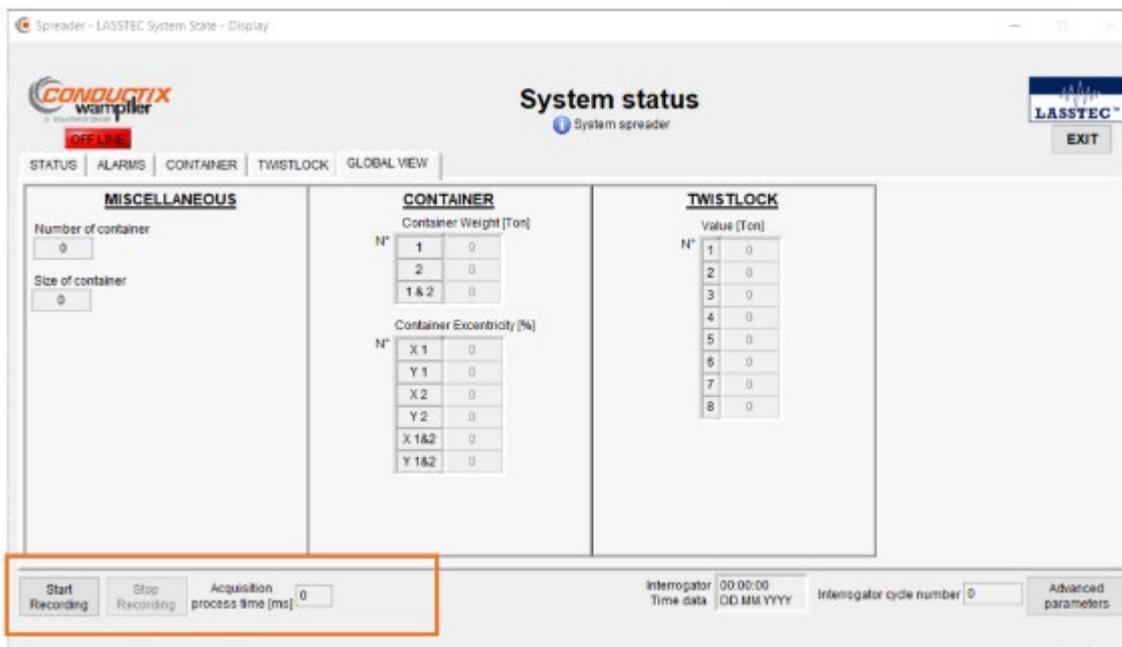


#### ADVICE!

You will find a more specific variable description in chapter 7.

#### 5.3.7.1 Recording Management

When recording the software reads all important variables out of the interrogator and stores it in a .csv on the computer. This can make trouble shooting easier.



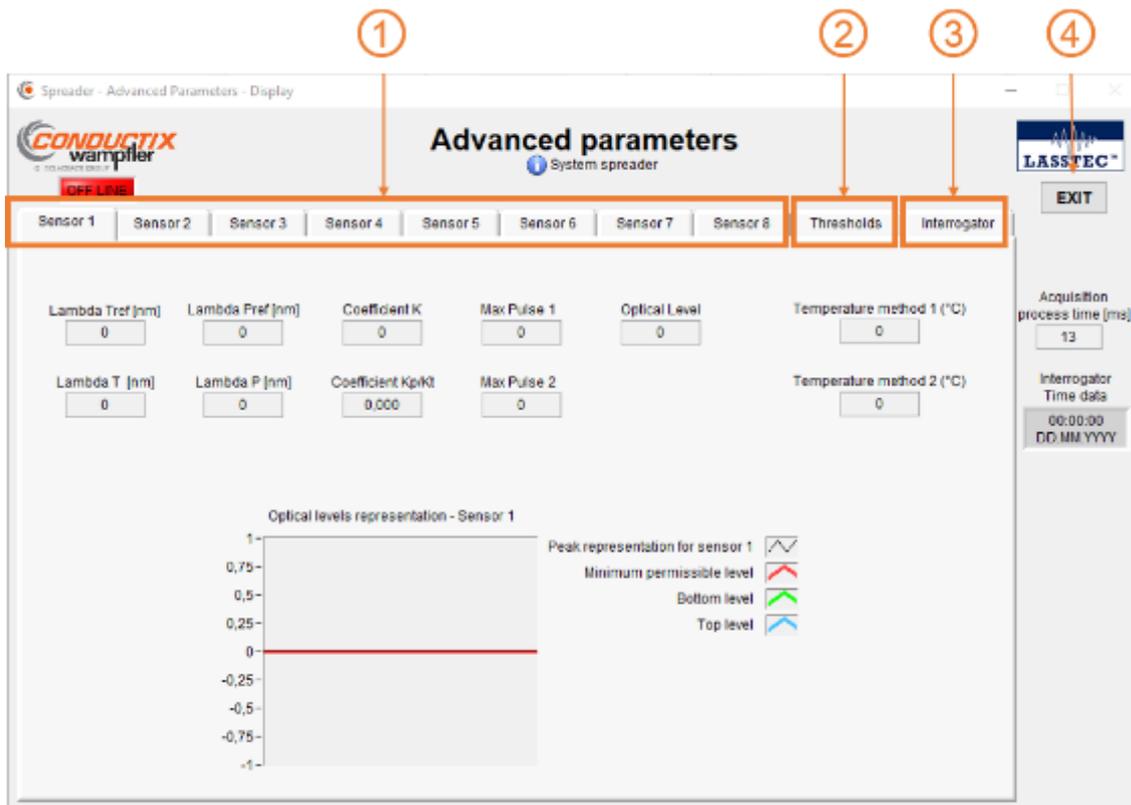
<b>Start Recording</b>	Starts, suspends or resumes recording. State 1: Start Recording: is available when no recording is processing right now. State 2: Suspend Recording: is available when recording is in progress. State 3: Resume Recording: is available when recording is suspended
<b>Stop Recording</b>	Stops recording.
<b>Acquisition process time [ms]</b>	Displays the time between two variable acquisitions

## LASSTEC

### Weighing System 0521

#### 5.3.7.2 Advanced Parameters

By clicking on **Advanced parameters** you are asked to enter your password to access the **Advanced parameters** window. There is one tag for the parameters of each sensor (the software automatically recognises if it is a Single or Twin configuration and adapts the number of sensor tabs accordingly).



#### 5.3.7.2.1 Sensor 1 (to 8) tab

① The same parameters are displayed in every sensor tab.

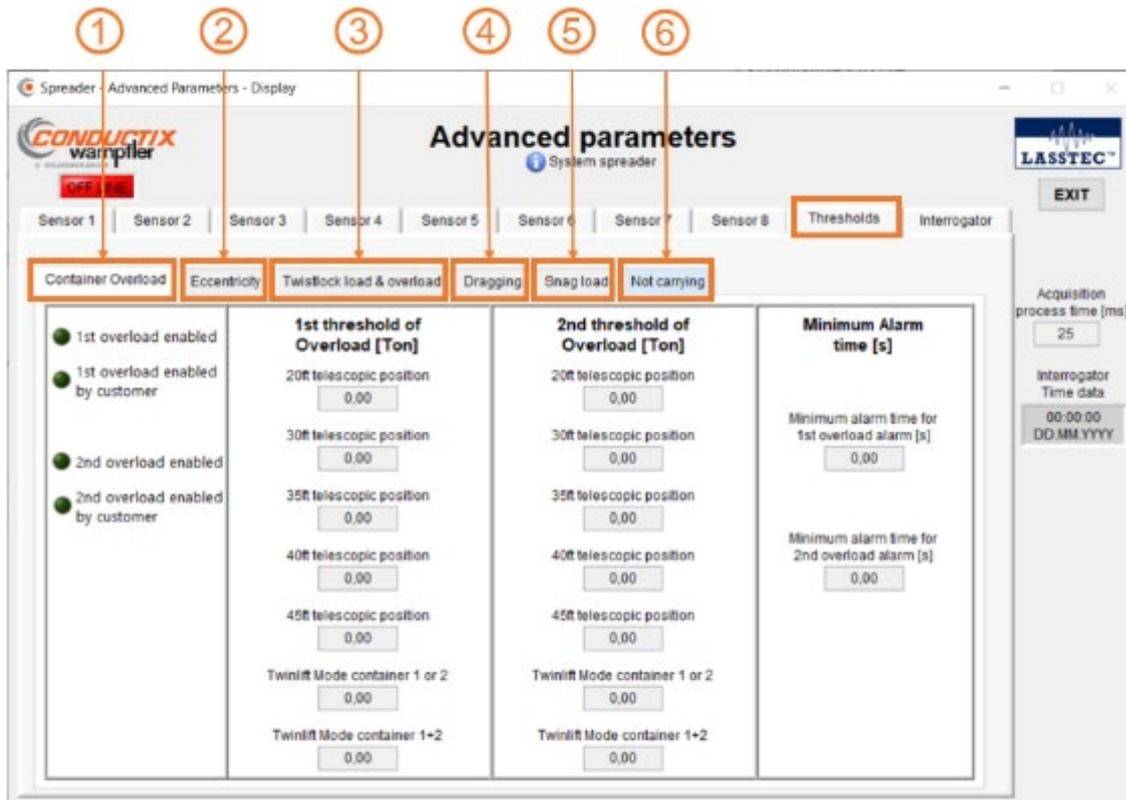
<b>Lambda Tref</b>	Displays the value of the variable $\lambda_{Tref}$ : reference of the temperature sensitive FBG
<b>Lambda T</b>	Displays the value of the variable $\lambda_T$ : actual $\lambda$ value for the temperature sensitive FBG
<b>Lambda Pref</b>	Displays the value of the variable $\lambda_{Pref}$ : reference of the strain sensitive FBG
<b>Lambda P</b>	Displays the value of the variable $\lambda_P$ : actual $\lambda$ value for the strain sensitive FBG
<b>Coefficient K</b>	Calibration coefficient of the Twistlock
<b>Coefficient Kp/Kt</b>	Coefficient for the Temperature compensation of the Twistlock
<b>Max Pulse 1</b>	Power of the optical sensor response
<b>Max Pulse 2</b>	Power of the optical sensor response
<b>Optical Level</b>	Level of the optical source 0 = 0% ; 255 = 100%
<b>Temperature method 1 (°C)</b>	Value of the Twistlock temperature measured through the FBG (experimental)
<b>Temperature method 2 (°C)</b>	Value of the Twistlock temperature measured through the FBG (experimental)

## LASSTEC

### Weighing System 0521

#### 5.3.7.2.2 Thresholds tab

② The Thresholds tab consists also of several tab which are explained below.



#### 5.3.7.2.2.1 Container Overload sub tab

①

<b>1<sup>st</sup> overload enabled</b>	Indicates if the function is active or not
<b>1<sup>st</sup> overload enabled by costumer</b>	Indicates if the function is active by the costumer or not
<b>2<sup>nd</sup> overload enabled</b>	Indicates if the function is active or not
<b>2<sup>nd</sup> overload enabled by costumer</b>	Indicates if the function is active by the costumer or not

<b>1<sup>st</sup> threshold of overload [TON]</b>	
<b>20ft telescopic position</b>	Displays the threshold of the 1 <sup>st</sup> overload for when the spreader is in 20ft telescopic position.
<b>30ft telescopic position</b>	Displays the threshold of the 1 <sup>st</sup> overload for when the spreader is in 30ft telescopic position.
<b>35ft telescopic position</b>	Displays the threshold of the 1 <sup>st</sup> overload for when the spreader is in 35ft telescopic position.

## LASSTEC

### Weighing System 0521

<b>40ft telescopic position</b>	Displays the threshold of the 1 <sup>st</sup> overload for when the spreader is in 40ft telescopic position.
<b>45ft telescopic position</b>	Displays the threshold of the 1 <sup>st</sup> overload for when the spreader is in 45ft telescopic position.
<b>Twinlift Mode container 1 or 2</b>	Displays the 1 <sup>st</sup> threshold of a twinlift spreader when carrying only one container
<b>Twinlift Mode container 1 + 2</b>	Displays the 1 <sup>st</sup> threshold of a twinlift spreader when carrying two container

<b>2<sup>nd</sup> threshold of Overload</b>	
<b>20ft telescopic position</b>	Displays the threshold of the 2 <sup>nd</sup> overload for when the spreader is in 20ft telescopic position.
<b>30ft telescopic position</b>	Displays the threshold of the 2 <sup>nd</sup> overload for when the spreader is in 30ft telescopic position.
<b>35ft telescopic position</b>	Displays the threshold of the 2 <sup>nd</sup> overload for when the spreader is in 35ft telescopic position.
<b>40ft telescopic position</b>	Displays the threshold of the 2 <sup>nd</sup> overload for when the spreader is in 40ft telescopic position.
<b>45ft telescopic position</b>	Displays the threshold of the 2 <sup>nd</sup> overload for when the spreader is in 45ft telescopic position.
<b>Twinlift Mode container 1 or 2</b>	Displays the 2 <sup>nd</sup> threshold of a twinlift spreader when carrying only one container
<b>Twinlift Mode container 1 + 2</b>	Displays the 1 <sup>st</sup> threshold of a twinlift spreader when carrying two container

<b>Minimum Alarm time [s]</b>	
<b>Minimum alarm time for 1<sup>st</sup> overload alarm [s]</b>	Minimum time for which the alarm remains active
<b>Minimum alarm time for 2<sup>nd</sup> overload alarm [s]</b>	Minimum time for which the alarm remains active

#### 5.3.7.2.2.2 Eccentricity Sub Tab

②

<b>Function enable</b>	Indicates if the function is active or not
<b>Customer function enable</b>	Indicates if the function is active by the costumer or not
<b>Minimum alarm time for eccentricity alarm [s]</b>	Minimum time for which the alarm remains active

## LASSTEC

### Weighing System 0521

#### 5.3.7.2.2.3 Twistlock Load & Overload Sub Tab

③

<b>Function enable</b>	Indicates if the function is active or not
<b>Customer function enable</b>	Indicates if the function is active by the costumer or not
<b>Minimum alarm time for eccentricity alarm [s]</b>	Minimum time for which the alarm remains active
<b>Threshold of load</b>	Displays the threshold for the 1 <sup>st</sup> overload alarm
<b>Threshold of Overload</b>	Displays the threshold for the 2 <sup>nd</sup> overload alarm

#### 5.3.7.2.2.4 Dragging sub tab

④

<b>Function enable</b>	Indicates if the function is active or not.
<b>Customer function enable</b>	Indicates if the function is active by the costumer or not.
<b>Twistlock weight [Ton]</b>	Configuration parameters for the dragging function.
<b>Time before detection [s]</b>	
<b>Minimum alarm timer [s]</b>	

#### 5.3.7.2.2.5 Snag load sub tab

⑤

<b>Function enable</b>	Indicates if the function is active or not.
<b>Customer function enable</b>	Indicates if the function is active by the costumer or not.
<b>Threshold snag load detection container 1 [Ton]</b>	Configuration parameters for the dragging function.
<b>Threshold snag load detection container 2 [Ton]</b>	
<b>Event counter to detect s snag load</b>	
<b>Minimum alarm time for Twistlock snag load [s]</b>	Minimum time for which the alarm remains active.
<b>Minimum alarm time for container snag load [s]</b>	

<b>Minimum total weight to enable the snag load detection [Ton]</b>	
<b>20 ft telescopic position</b>	Weight limit which activates the function.
<b>30 ft telescopic position</b>	
<b>35 ft telescopic position</b>	
<b>40 ft telescopic position</b>	
<b>45 ft telescopic position</b>	

## LASSTEC

### Weighing System 0521

#### 5.3.7.2.2.6 Not carrying Sub Tab

⑥

<b>Function enable</b>	Indicates if the function is active or not.
<b>Customer function enable</b>	Indicates if the function is active by the customer or not.
<b>Timer after container weight detection [s]</b>	Configuration parameters for the not carrying function.
<b>Twistlock weight [Ton]</b>	
<b>Minimum alarm time [s]</b>	
<b>Time before stabilized weight [s]</b>	
<b>Timer after stabilized weight [s]</b>	

#### 5.3.7.2.3 Interrogator Tab

③

##### 5.3.7.2.3.1 Stabilized weight sub tab

#### General

<b>Function used</b>	Displays the used function for activating the stabilisation process
<b>Minimum level of weight to start measuring [Ton]</b>	Displays the weight limit at which a weighing is carried out
<b>Weight threshold to start stabilized weight [Ton]</b>	Displays the weight limit at which the stabilisation process is carried out

#### Max weight function

<b>Time after max weight to record data [s]</b>	Displays the interval used for the average calculation
---	--

#### Digital input function

<b>Number of weight average</b>	Displays the numbers of samples used for the average calculation
<b>Time after digital input ON for stabilized weight [s]</b>	Displays the delay after which the stabilisation process is carried out

#### 5.3.7.2.3.2 Optical Sub Tab

<b>Optical source Temperature [°C]</b>	Displays the temperature of the SLED
<b>Filter Temperature [°C]</b>	Displays the temperature of the optical filter
<b>Top level of Optical regulation</b>	Displays the limit values of the optical detection used for the regulation of the SLED and the filter
<b>Bottom level of Optical regulation</b>	
<b>Minimum level of Optical detection</b>	

## LASSTEC

### Weighing System 0521

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#### 5.3.7.2.3.3 ADC Vref Tab

<b>2.5 V reference [Volt]</b>	Displays the reference values of the interrogator
<b>Ground reference [Volt]</b>	

#### 5.3.7.2.3.4 Functions Sub Tab

Displays which function of the interrogator is activated.

#### 5.3.7.2.3.5 Communication Sub Tab

Displays the speed and the slave address of the interrogator for the used communication type.

#### 5.3.7.2.3.6 Identification Sub Tab

Displays the type, hardware and software version of the interrogator.

<b>User ID</b>	Displays the actual ID of the interrogator
<b>Interrogator Serial Number</b>	Displays the serial number of the build in optical filter. It's a part of the interrogator serial number written on the outside of the interrogator housing.
<b>Interrogator Type</b>	Displays the type of the interrogator (single or twin)
<b>Interrogator hardware configuration</b>	Displays the hardware configuration of the interrogator
<b>Interrogator firmware PIC32</b>	Displays the firmware of the build in microchip PIC32
<b>Interrogator firmware PIC33</b>	Displays the firmware of the build in microchip PIC33

## LASSTEC

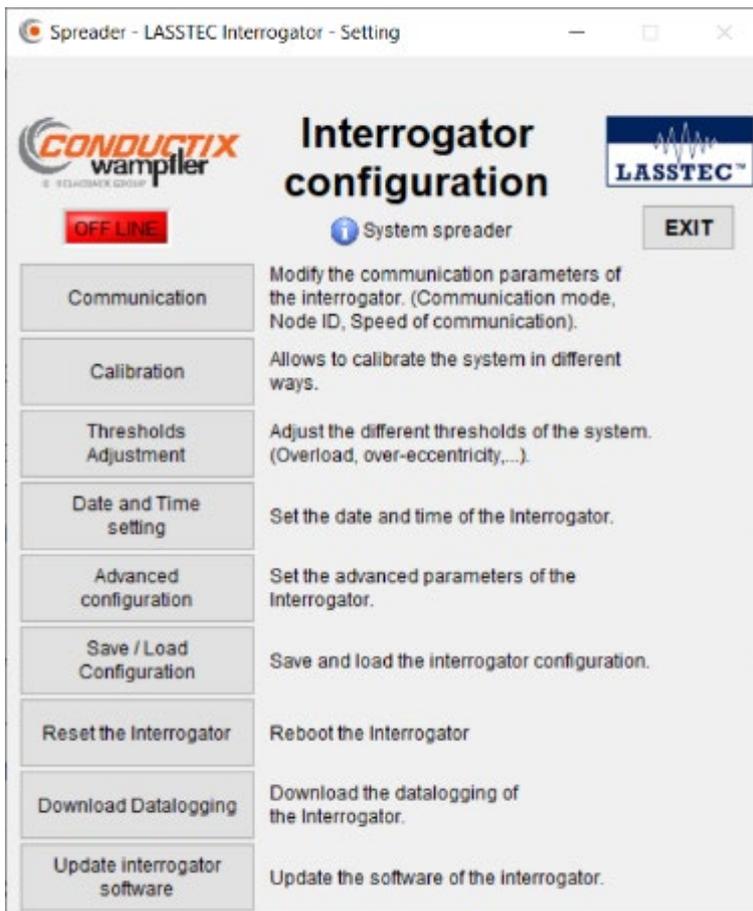
### Weighing System 0521

#### 5.3.8 Configure the LASSTEC System Authorized Persons Only

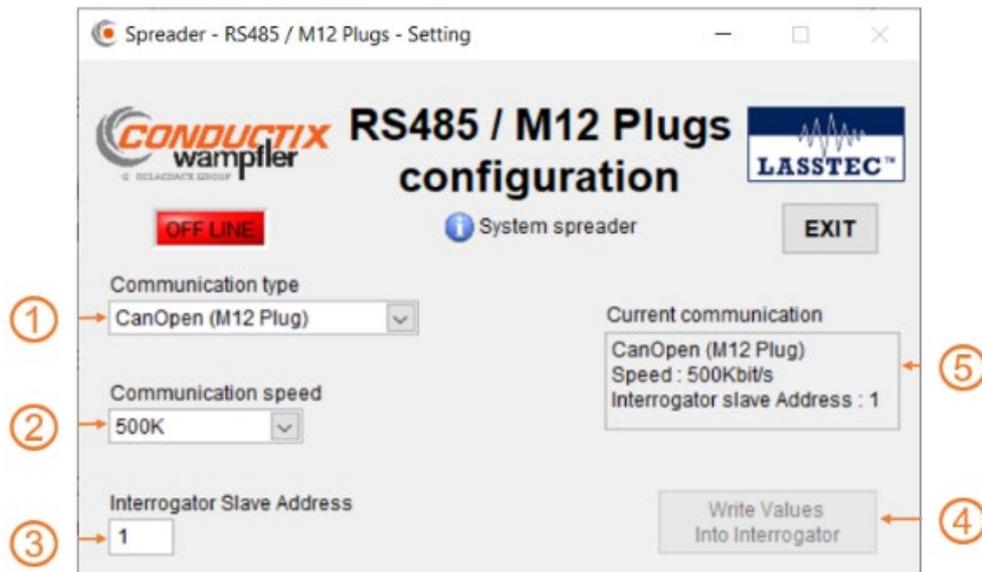


**DANGER!**

This chapter of the software is for authorized persons only in order to take care of the initial installation, calibration and maintenance. It is secured with a password.



#### 5.3.8.1 Communication



This chapter is meant to modify the Modbus / CanOpen communication parameters of the interrogator. The default setting is CanOpen as it is used by the Lasstec monitor.



#### **Do not change the factory settings!**

Changes to these settings can lead to malfunctions of the communication

#### ① Communication type

There you can choose between two communication methods:

- Modbus (RS-485)
- CanOpen (M12 plug)

#### ② Communication speed

There you can define the data transmission speed.

When selecting Modbus as communication type, the following speeds are available:

- 4800 bit/s
- 9600 bit/s
- 19200 bit/s
- 57600 bit/s
- 115200 bit/s

When selecting CanOpen as communication type, the following speeds are available:

- 20 Kbit/s
- 50 Kbit/s
- 100 Kbit/s
- 125 Kbit/s
- 250 Kbit/s
- 500 Kbit/s
- 1 Mbit/s

#### ③ Interrogator Slave Address

There you can define the network address of the Interrogator

#### ④ Write Values Into Interrogator

By clicking on this button you confirm the changes in this communication section. Without confirming, all changes will be dismissed.

#### ⑤ Current communication

Displays the current communication settings of the interrogator.

#### 5.3.8.2 Calibration

This chapter of the software it is for authorized personnel only (installation and maintenance). It allows trained personnel to calibrate the system using one of the following methods:

- With sensor characteristics, Twistlock diameter
- With a parameter file, or directly with calibration data (these must be prepared in advance)
- With a load test on each Twistlock individually
- Verify / adjust the calibration with a known weight container



**CAUTION!**

#### **This part of the software is for authorized persons only!**

If the calibration is not done correctly, the system will not work properly.

Conductix-Wamplifier will not be responsible for system malfunctioning if the calibration is not correctly done.



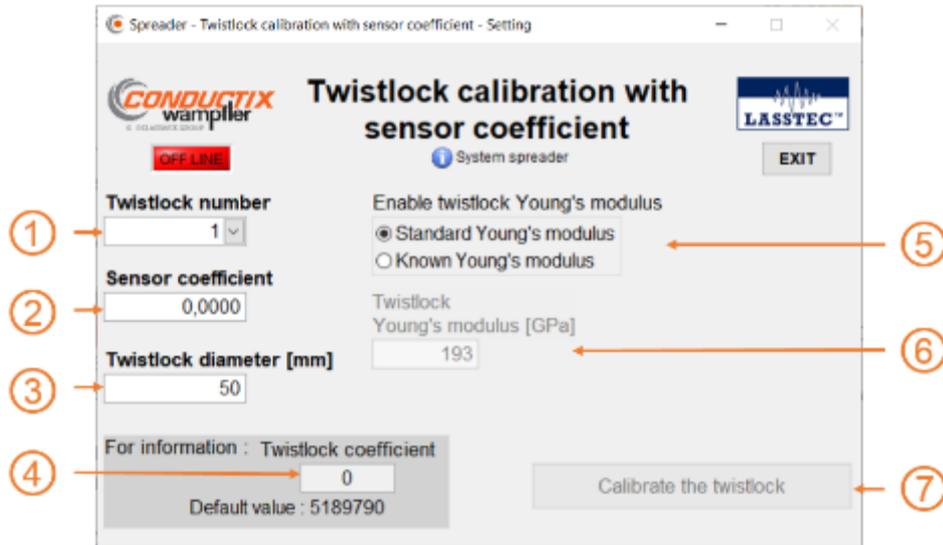
#### 5.3.8.2.1 Sensor Calibration

When calibrating with the **Sensor Calibration** method, each Twistlock will be affected individually. For each Twistlock with sensor you will have to specify the according sensor coefficient, the Twistlock diameter and the Young's modulus of the Twistlock steel. Then click on **Calibrate the Twistlock** and the Software will automatically calculate the overall Twistlock coefficient and store it in the interrogator. It is used by the interrogator to calculate the weight on each Twistlock.



#### ADVICE!

The information about the Young's modulus usually has large deviations. Therefore this calibration method is the most inexact.



### ① Twistlock number.

There you select the Twistlock you want to calibrate. With a single system you will have to calibrate 4 and with a twin system 8 Twistlocks.

### ② Sensor coefficient.

There you can enter the coefficient of the sensor. It has been determined by the sensor manufacturer and can be provided by Conductix-Wampfler if needed.

### ③ Twistlock diameter.

There you can specify the diameter [mm] of the Twistlock.

### ④ Twistlock coefficient.

Displays the calculated overall Twistlock coefficient

### ⑤ Enable Twistlock Young's modulus.

By selecting **Standard Young's modulus** or **Known Young's modulus** you can define if the program uses either a predefined value for the modulus (193 [GPa]) or one you can specify (see next point) according to the manufacturer's specifications

### ⑥ Twistlock Young's modulus [GPa].

When **Known Young's modulus** is selected this is where you can specify the value of the Twistlock Young's modulus according to the manufacturer's specifications.

## LASSTEC

### Weighing System 0521

#### ⑦ Calibrate the Twistlock.

Once all the previous points have been edited, you can calibrate by clicking on **Calibrate the Twistlock**. The software then determines the overall Twistlock coefficient based on the entered values and stores it in the interrogator. The calculated coefficient is then displayed as **Twistlock coefficient**.

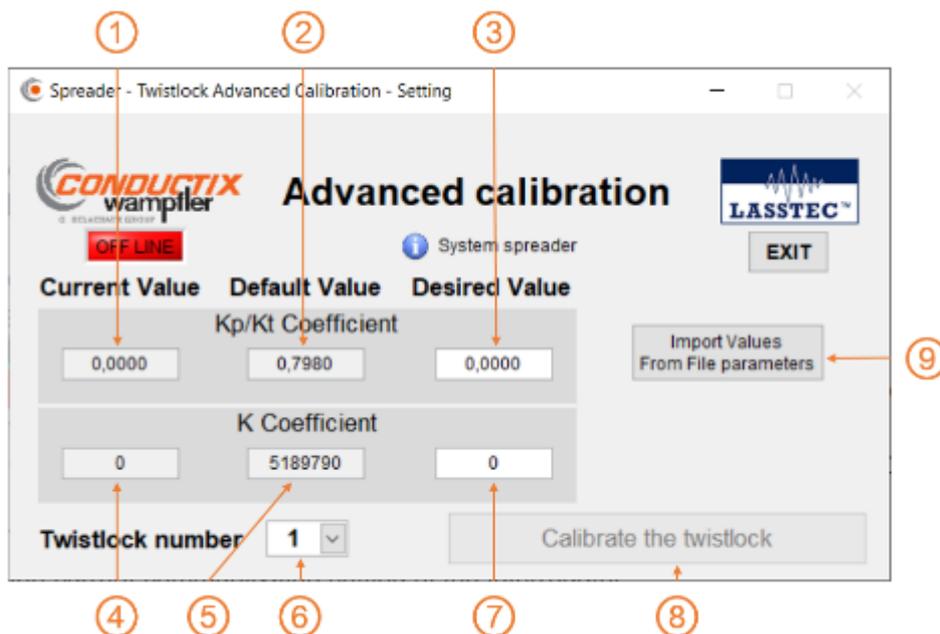
#### 5.3.8.2.2 Advanced Calibration

Here you can calibrate the Twistlock either by importing a calibration parameter file or by entering the coefficients for each Twistlock manually. This calibration method affects each Twistlock individually.



**ADVICE!**

This method is mainly used for testing purpose as the calibration parameter file as well as the coefficients of each Twistlock have to be generated in advance with an already calibrated Lasstec system which used the same Twistlock as the ones which have to be calibrated now.



#### ① Kp/Kt coefficient – Current Value.

Displays the current value of the Kp/Kt coefficient stored in the interrogator.

#### ② Kp/Kt coefficient – Default Value

Displays the factory value of the Kp/Kt coefficient stored in the interrogator.

## LASSTEC

### Weighing System 0521

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#### ③ Kp/Kt coefficient – Desired Value

Here you enter the new value of the Kp/Kt coefficient.

#### ④ K coefficient – Current Value

Displays the current value of the K coefficient stored in the interrogator.

#### ⑤ K coefficient – Default Value

Displays the factory value of the K coefficient stored in the interrogator.

#### ⑥ Twistlock number.

Here you can select which Twistlock you want to calibrate. You can choose from 1 to 4 in case of a single system or 1 to 8 in case of a twin system.

#### ⑦ K coefficient – Desired Value

Here you enter the new value of the K coefficient.

#### ⑧ Calibrate the Twistlock.

Once you have specified the new values for the coefficients and you have chosen the according Twistlock, by clicking on **Calibrate the Twistlock** the new values are stored in the interrogator and the Twistlock is calibrated

#### ⑨ Import Values From File parameter

This opens a new window where you can search for the path of the calibration parameter file and import it for calibration. Remember: this file has to be generated in advance with an already calibrated Lasstec system which uses the same Twistlocks as the ones which have to be calibrated now.

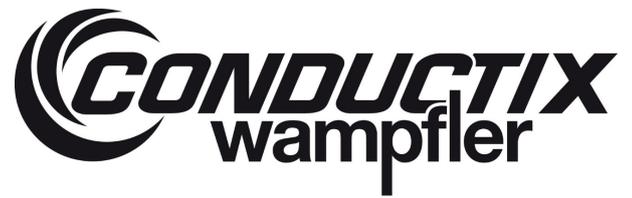
#### 5.3.8.2.3 Calibration per Twistlock

The **calibration per Twistlock** method is, together with the **Container adjustment** method, the most accurate method to calibrate the Lasstec weighing system. The **Container adjustment** method also provides very accurate results on its own, provided that the test container used has a uniformly distributed load on all four corner castings. If this is not the case, a previous calibration with the **calibration per Twistlock** method is recommended and if needed followed by the **Container adjustment** method.

For this calibration procedure:

- The Lasstec system has to be completely installed on operational crane.
- A computer with the Lasstec configuration Software has to be connected to the interrogator.

# Operating Instructions



## LASSTEC

### Weighing System 0521

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- A test weight between 5 and 10 tons must be available. The mass of the test weight must be known as exact as possible. To achieve the maximum accuracy of the Lasstec System, a test weight with a maximal tolerance of  $\pm 25$  Kg is recommended.
- A fixing device with which the test weight can be lifted by only one Twistlock. It is mandatory that the used fixing device does not apply any bending forces on the Twistlock. The Twistlock may only be pulled down straight downwards.



**DANGER!**

Observe the safety regulation of your lifting device on which the Lasstec weighing system is installed.

Conductix-Wampfler will not be responsible for system malfunctioning if the calibration is not correctly done.

Here is an example of a fixing device consisting of a corner casting with a welded plate where the test weight can be attached:

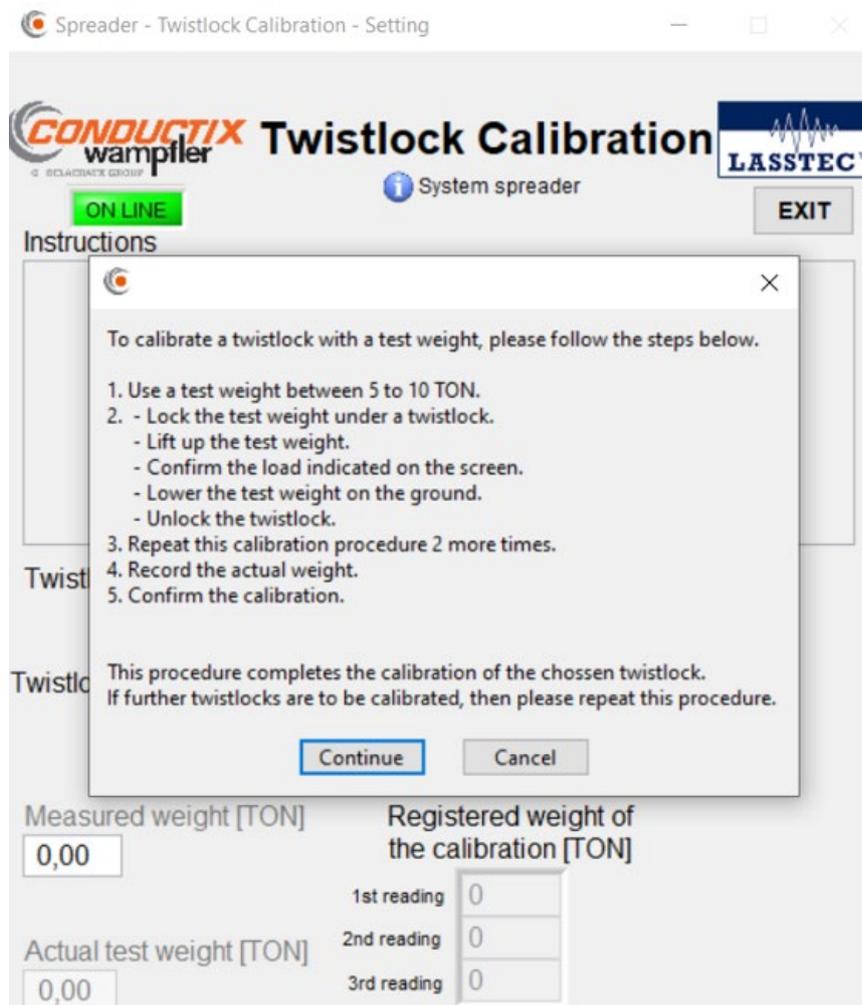


## LASSTEC

### Weighing System 0521

#### 5.3.8.2.3.1 Calibration per Twistlock – Step by Step Explanation

1. Attach the test weight to the Twistlock you want to calibrate as described above. Do not lift the test weight up now.
2. When clicking on **Calibration per Twistlock** an instruction window will appear. After reading these instructions carefully click on **Continue**



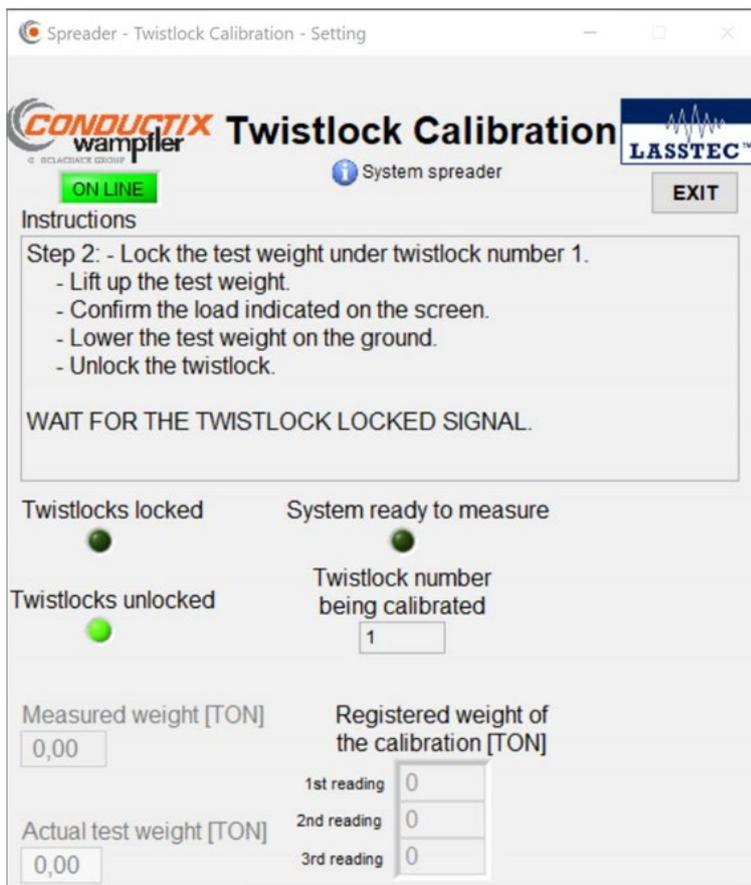
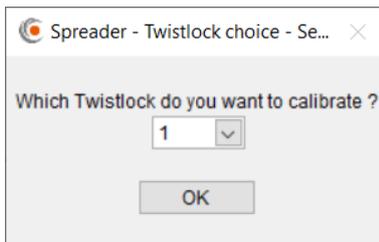
# Operating Instructions



## LASSTEC

### Weighing System 0521

3. You are asked which Twistlock you want to calibrate. Select the according Twistlock and confirm with **OK**. The system is then waiting for the Twistlock to be locked.



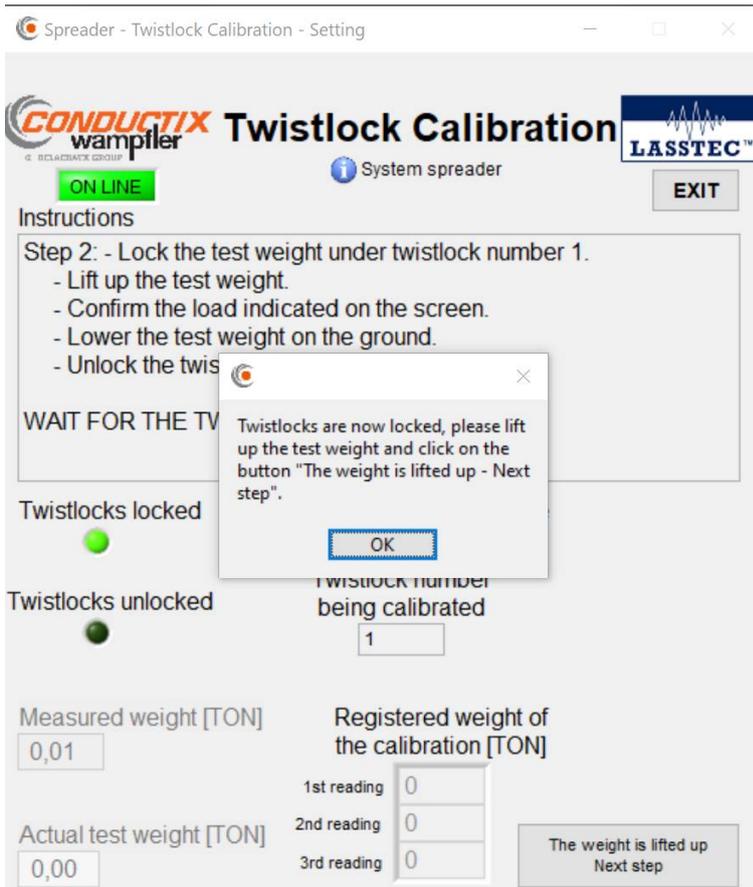
# Operating Instructions



## LASSTEC

### Weighing System 0521

- Once the Twistlocks are locked a small information window appears informing you about the next step. Confirm it by clicking on **OK**. Lift the test weight up and once the indication of the **Measured weight [TON]** is stable (no variation greater than  $\pm 300$  Kg), click on **The weight is lifted up - Next step**.

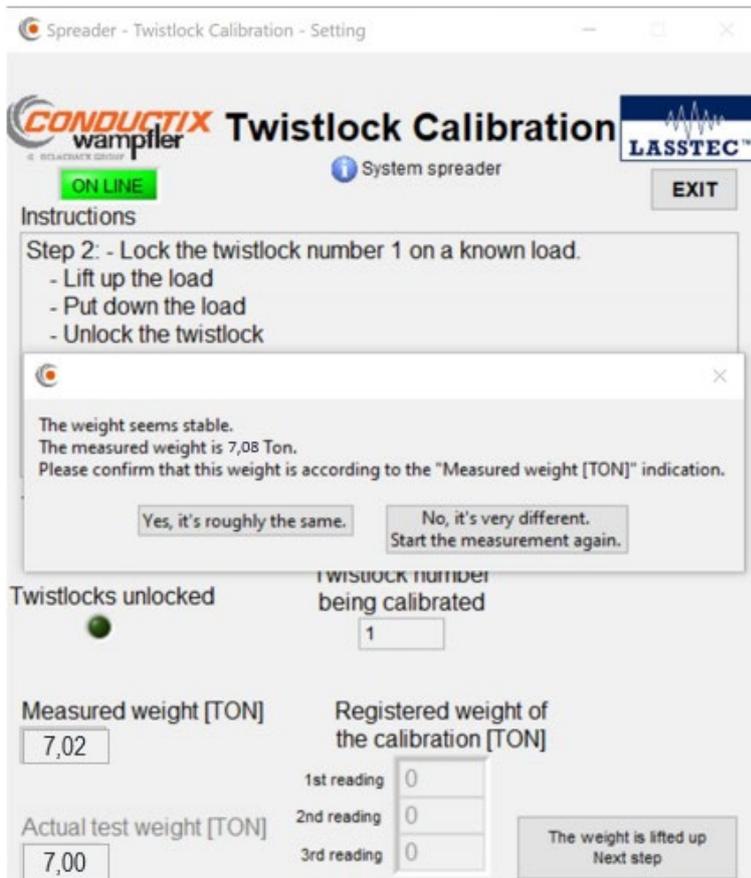


## LASSTEC

### Weighing System 0521

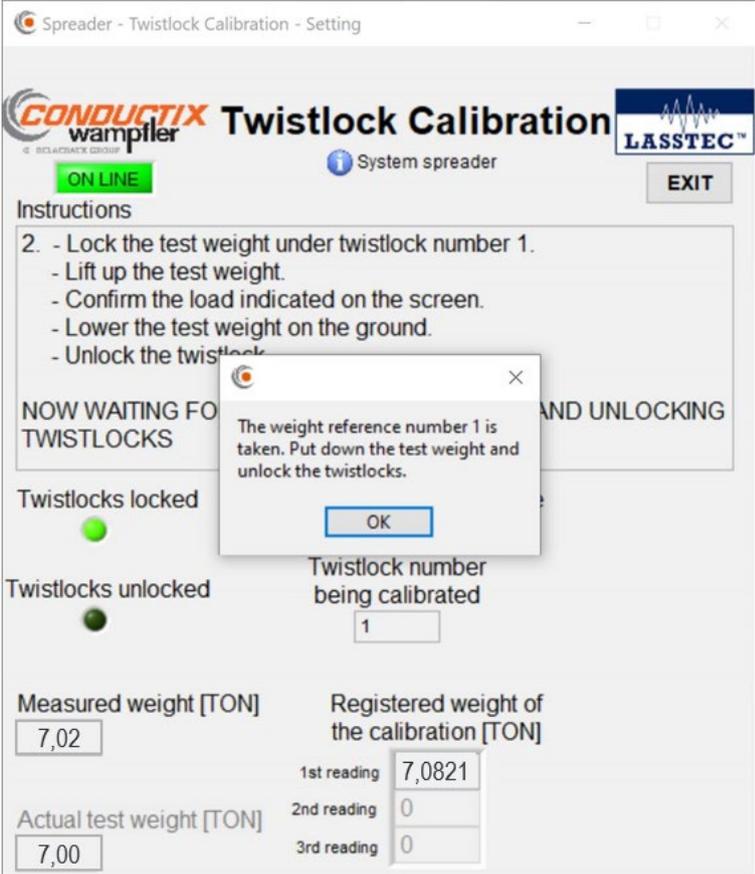
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5. The System processes the measured weights in order to get a stable, more accurate value. Once this acquisition is done you're informed about the processed value through an information window and are asked to confirm it. If the deviations are too large, click on **No, it's very different. Start the measurement again** (step 4 to 5). If they are similar, click on **Yes it's roughly the same.**



6. You're than informed about the successful measurement of the first of three calibration values for the calibration of your selected Twistlock and have to confirm it.  
Put the test weight down, unlock the Twistlock and repeat step 3 to 6 two more times until the three values for the **Registered weight of the calibration [TON]** are displayed.

LASSTEC  
Weighing System 0521



# Operating Instructions



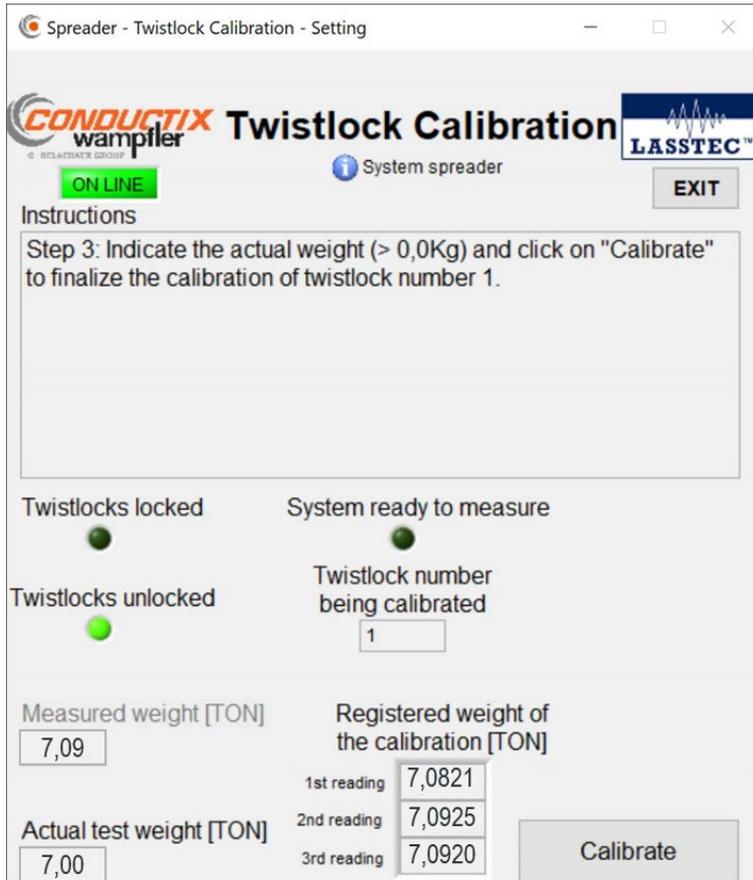
## LASSTEC

### Weighing System 0521

## LASSTEC

### Weighing System 0521

7. After all three **Registered weight of the calibration [TON]** have been measured and confirmed, you are asked to enter the actual true weight of the test weight in the bottom left corner of the window. The **Calibrate** button appears in the bottom right corner of the program window. Click on **Calibrate** to execute the calibration of your selected Twistlock.



Spreader - Twistlock Calibration - Setting

**CONDUCTIX wampfler** **Twistlock Calibration** **LASSTEC™**

ON LINE System spreader EXIT

Instructions

Step 3: Indicate the actual weight (> 0,0Kg) and click on "Calibrate" to finalize the calibration of twistlock number 1.

Twistlocks locked System ready to measure

Twistlocks unlocked Twistlock number being calibrated

1

Measured weight [TON] Registered weight of the calibration [TON]

7,09 1st reading 7,0821

Actual test weight [TON] 2nd reading 7,0925

7,00 3rd reading 7,0920

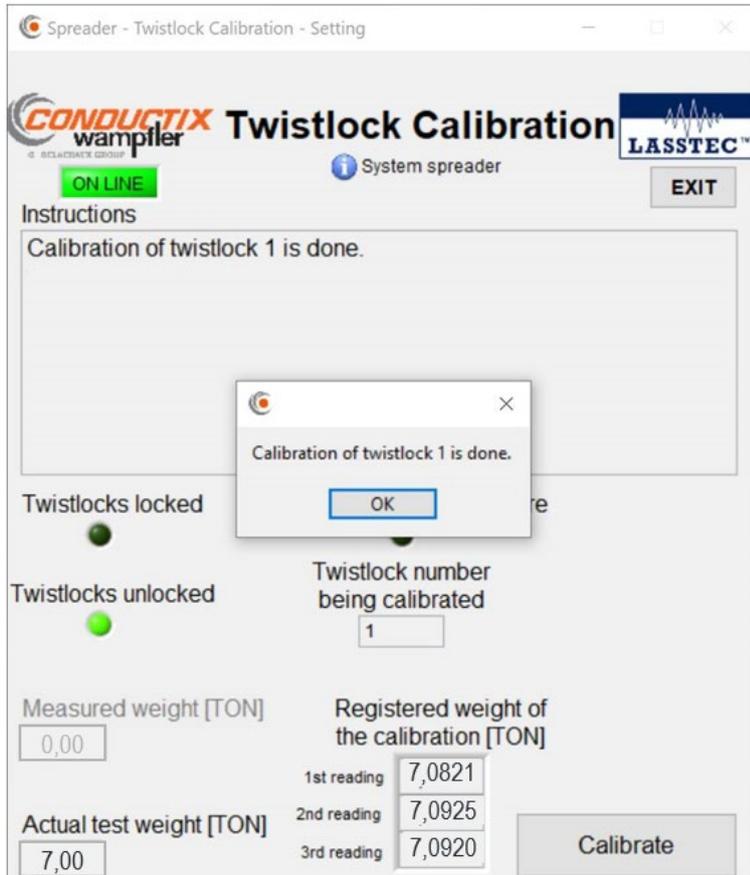
Calibrate

## LASSTEC

### Weighing System 0521

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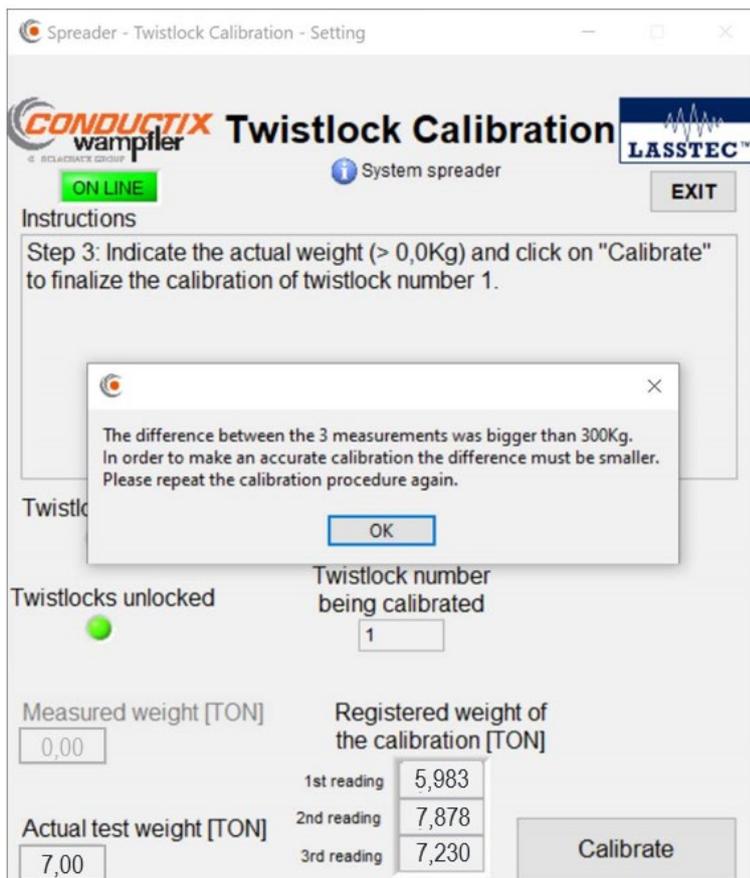
8. If the three measured values for the **Registered weight of the calibration [TON]** are consistent, the calibration is confirmed by an information message which you have to confirm. The selected Twistlock is now calibrated. You will have to repeat this procedure with all remaining Twistlocks.



## LASSTEC

### Weighing System 0521

- 8.1. If the three measured values for the **Registered weight of the calibration [TON]** are not consistent you will get an error message and the calibration is aborted. You will have to repeat step 4 to 9



## LASSTEC

### Weighing System 0521

#### 5.3.8.2.4 Container Adjustment

The **Container Adjustment** method can be used as a standalone calibration method as long as the mass of the test container is evenly distributed over all four corner castings. It can also be used as an adjustment method of the **calibration per Twistlock method**. In this case it has to be performed after the Twistlock calibration.

For this calibration procedure:

- The Lasstec system has to be completely installed on operational crane.
- A test container with a weight between 20 and 30 tons must be available. The test mass must be evenly distributed over all four container castings of the test container. The total mass of the container must be known as exact as possible. To achieve the maximum accuracy of the Lasstec System, a test container weight with a maximal tolerance of  $\pm 100$  Kg is recommended.



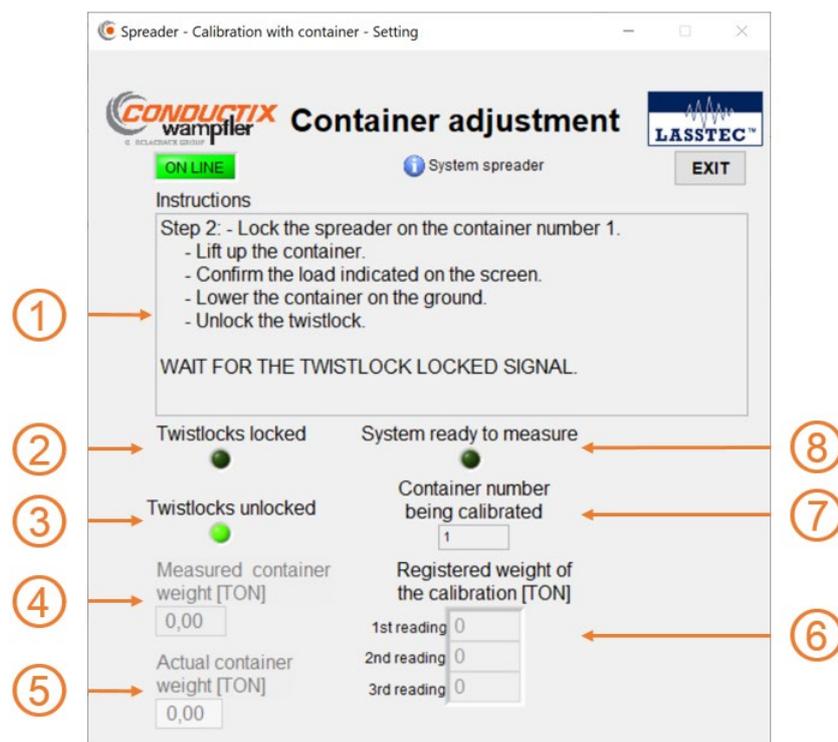
**DANGER!**

**Observe the safety regulation of your lifting device on which the Lasstec weighing system is installed!**

Conductix-Wampfler will not be responsible for system malfunctioning if the calibration is not correctly done.

The procedure consist of lifting the test container three times, an average value of the measured weight is calculated and compared with the actual weight of the container (this value has to be entered by the user) to calibrate the corresponding coefficients used for the calculation of the stabilized weight.

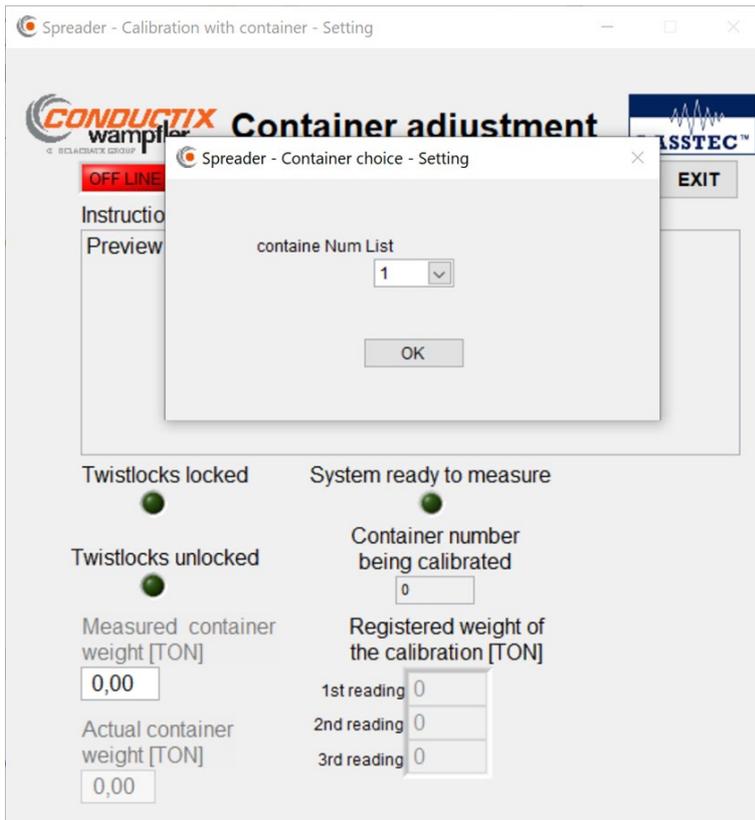
The main Window of the Container Adjustment program chapter looks like this:



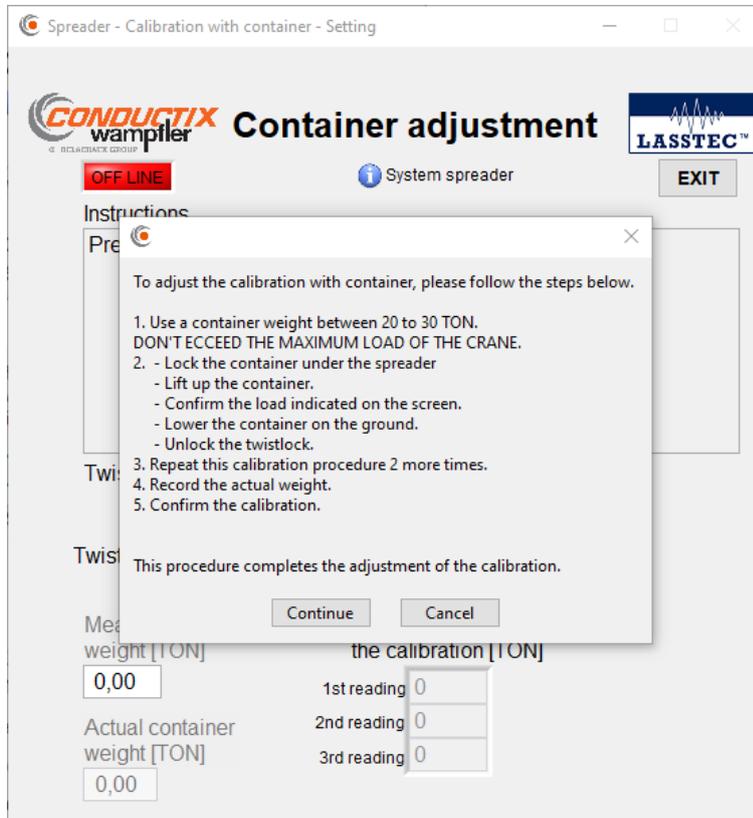
- ① Instruction section. In this area, instructions are displayed which must be followed.
- ② & ③ Displays the status of the incoming lock / unlock signal of the crane.
- ④ Displays the measured weight without post-processing.
- ⑤ Here the user has to enter the actual known weight of the test container.
- ⑥ Displays the processed results of the three weighing operations.
- ⑦ Displays the actual selected container which is going to be calibrated.
- ⑧ Displays when the system is ready to start a measurement.

#### 5.3.8.2.4.1 Step by Step Guide

1. When selecting **Container Adjustment** as calibration method and using a twin system you're asked to select the spreader where the test weight is going to be lifted with.



An instruction message is displayed. You have to click on **Continue** start with the calibration process.



In the **Instruction section** you're informed that the system is waiting for the lock signal.

- Lock the Twistlocks. An information message confirms the incoming lock signal.
- Click on **OK**.

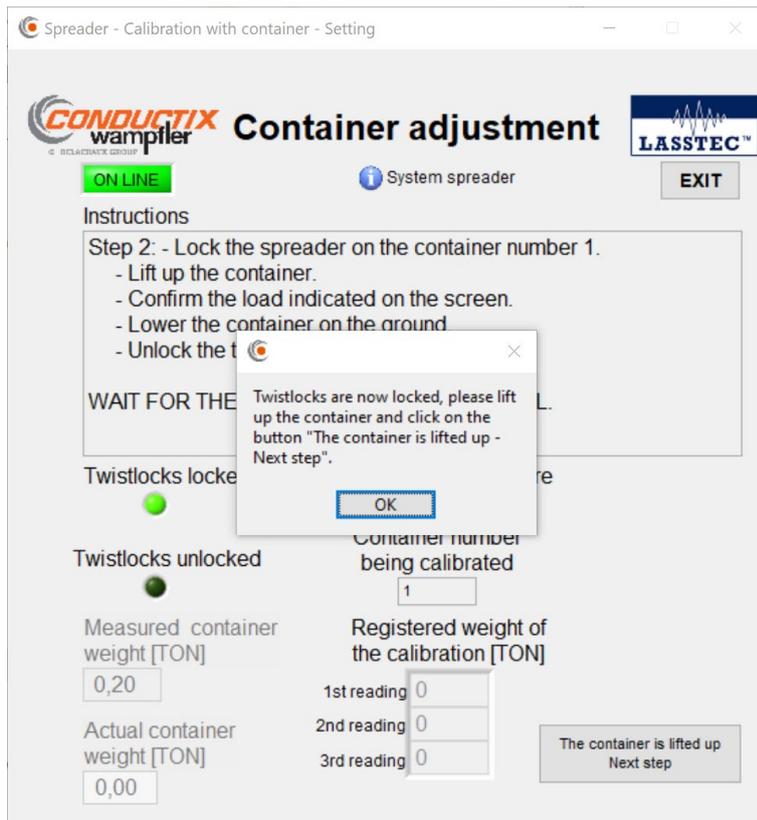
# Operating Instructions



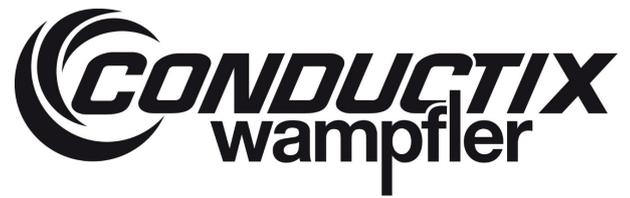
## LASSTEC

### Weighing System 0521

2. Once the Twistlocks are locked, a small information window appears informing you about the next step. Confirm it by clicking on **OK**. Lift the test weight up and once the indication of the **Measured weight [TON]** is stable (no variation greater than  $\pm 300$  Kg), click on **The weight is lifted up - Next step**.



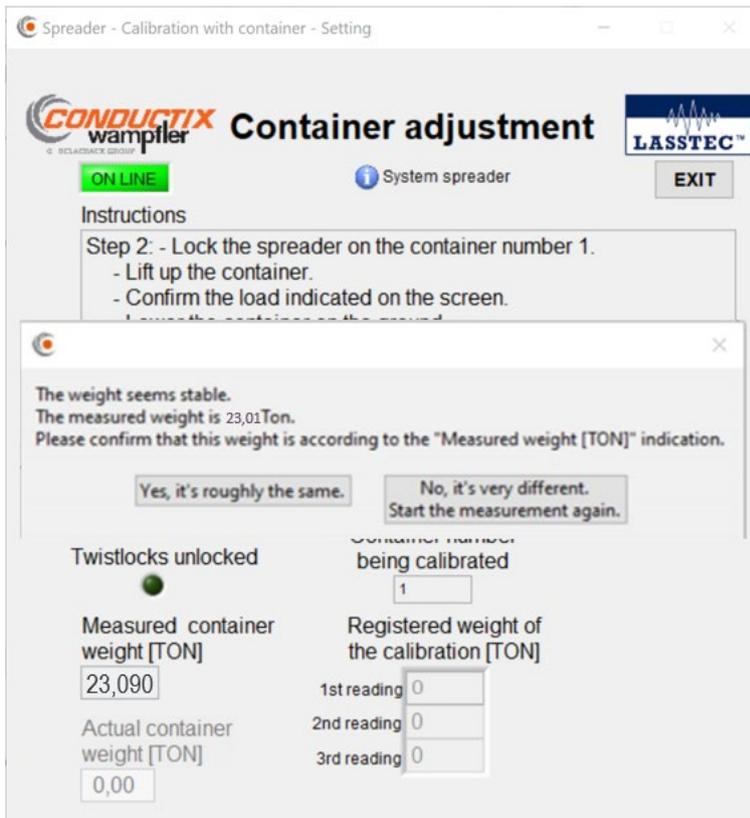
# Operating Instructions



## LASSTEC

### Weighing System 0521

- The System processes the measured weights in order to get a stable, more accurate value. Once this acquisition is done you're informed about the processed value through an information window and are asked to confirm it. If the deviations are too large, click on **No, it's very different. Start the measurement again** (step 4 to 5). If they are similar, click on **Yes it's roughly the same**.



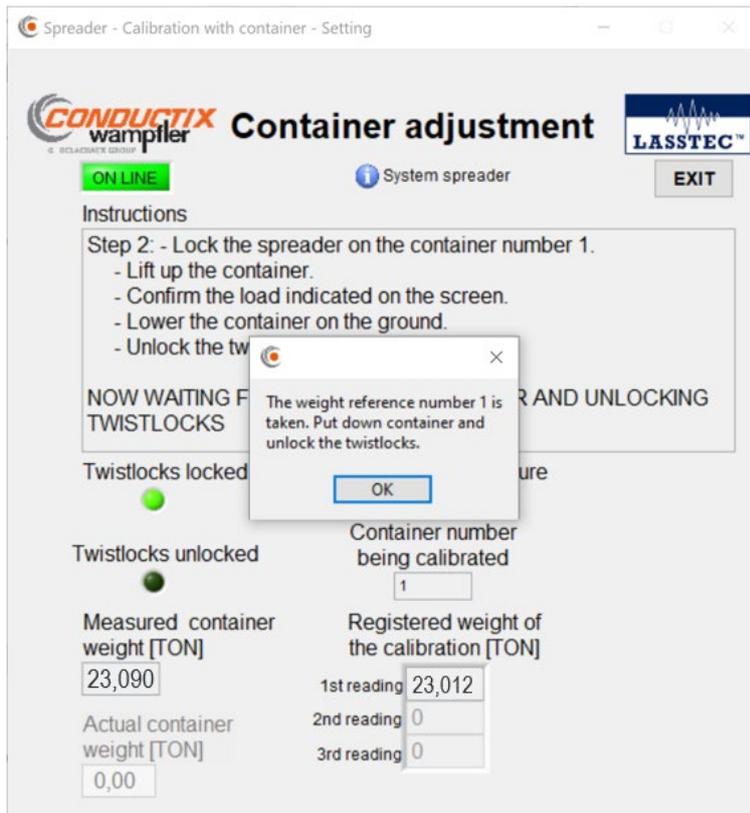
# Operating Instructions



## LASSTEC

### Weighing System 0521

4. You're than informed about the successful measurement of the first of three calibration values for the calibration of your selected Twistlock and have to confirm it.  
Put the test weight down, unlock the Twistlock and repeat step 3 to 5 two more times until the three values for the **Registered weight of the calibration [TON]** are displayed.

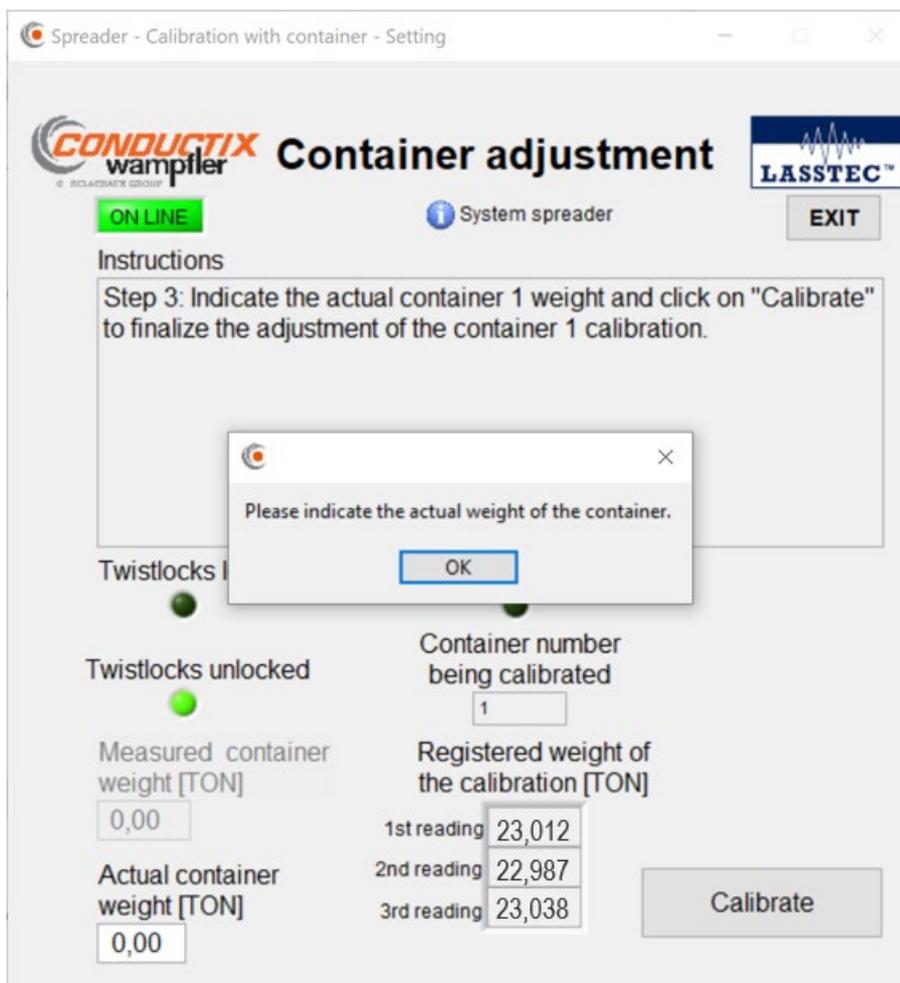


## LASSTEC

### Weighing System 0521

- Once you've performed the three measurements are done you are asked to enter the actual weight of the container. Then click on the calibrate button. If the three measured values for the **Registered weight of the calibration [TON]** are consistent, the calibration is confirmed by an information message which you have to confirm. The Lasstec system on this spreader is now calibrated.

If you're using a Twin System, you have to perform this operation with the second spreader as well.



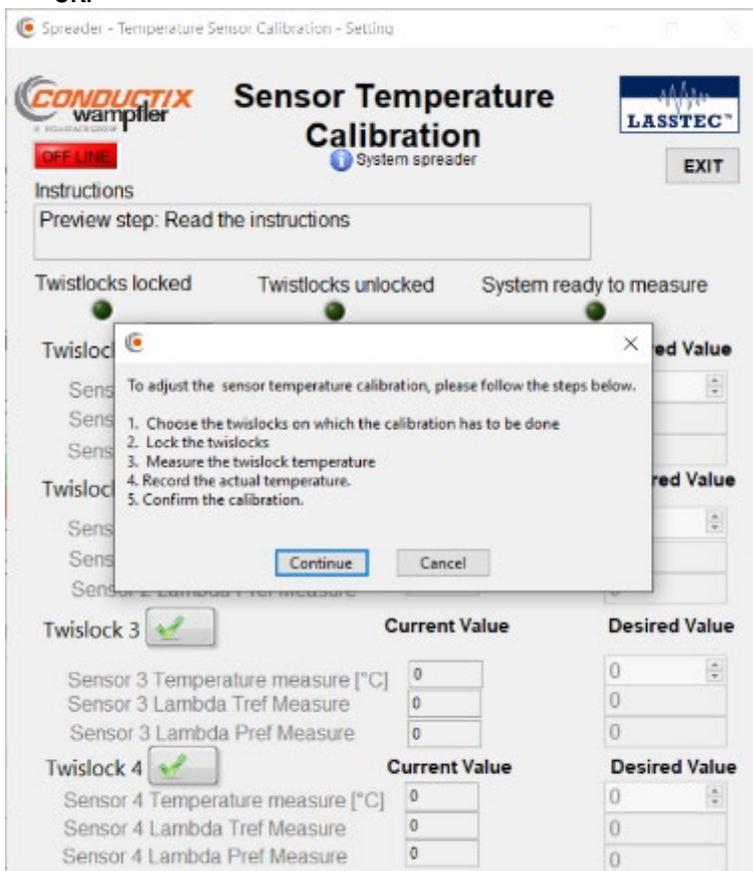
## LASSTEC

### Weighing System 0521

#### 5.3.8.2.5 Temperature Calibration

The temperature calibration enables the temperature measurement for the Twistlocks. Each Twistlock has to be calibrated individually. In order to carry out the temperature calibration, the current temperature of the Twistlocks must be known. An infrared thermometer is suitable for this purpose. No test weight is needed to perform this calibration

1. After selecting **Temperature calibration** an instruction window is displayed. Read the instructions carefully and confirm by clicking **OK**.

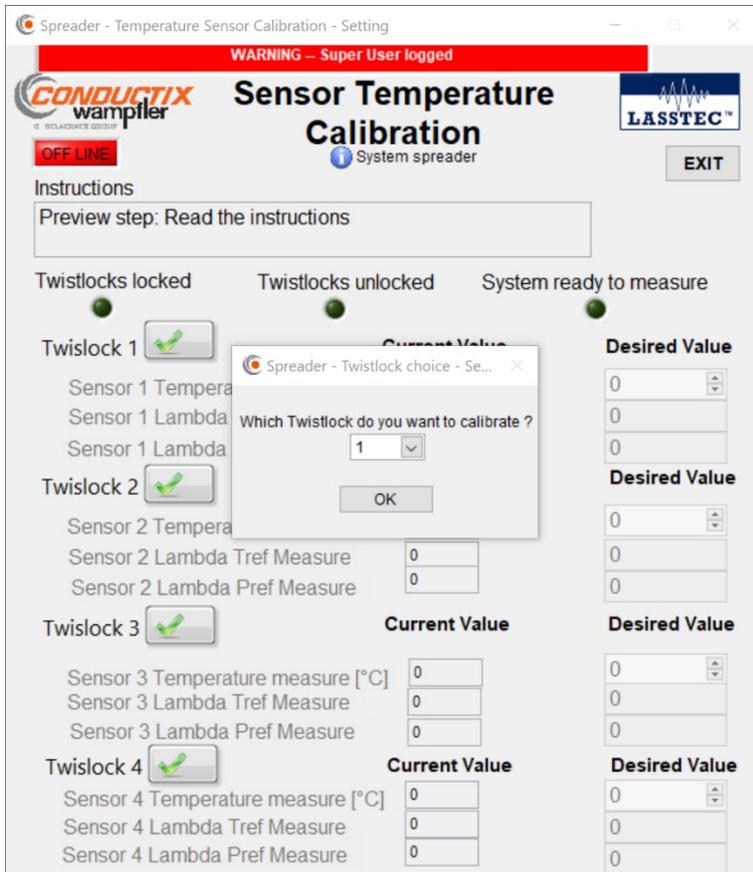


2. You are then asked to select the Twistlock you want to calibrate. Select it and confirm by clicking **OK**.

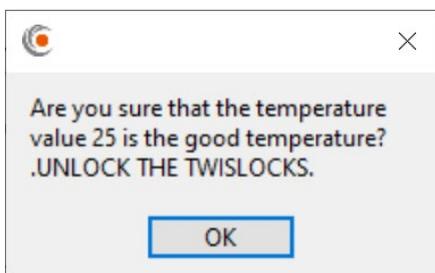


#### ADVICE!

If you are not sure about the number of your selected Twistlock take a look at the Lasstec monitor. The Twistlock number is displayed in the main screen, next to the Twistlock weight.



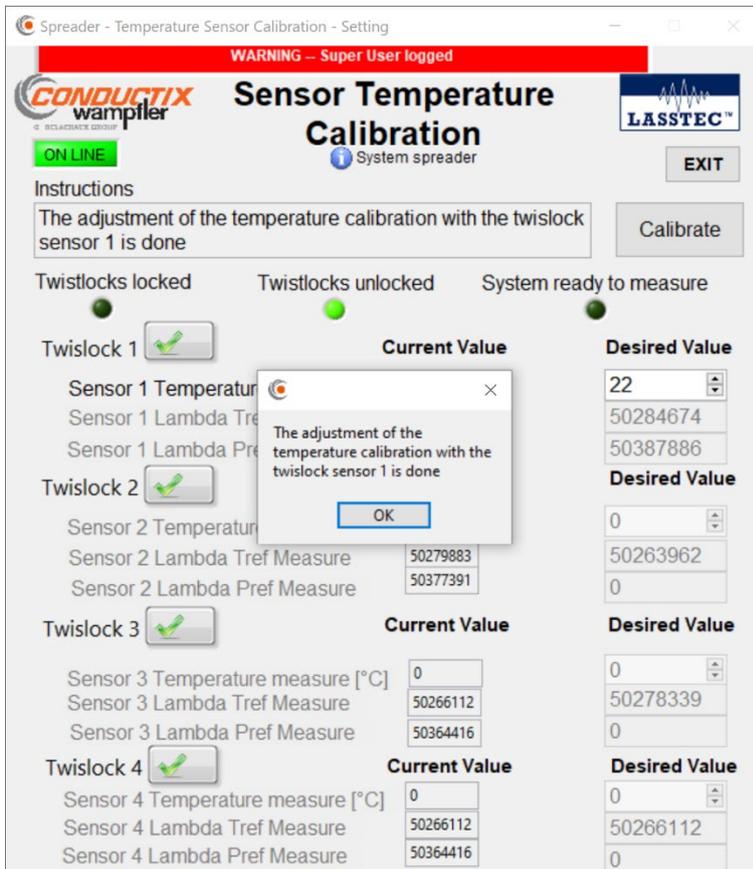
3. You are then asked to lock the Twistlock. Once it is locked, the system performs the required measurements. It can take up to 2 minutes.
4. You are then asked to enter the actual temperature of the Twistlock which you have to measure manually and click on **Calibrate**. Based on the previous measurements and the entered temperature, the software calculates the corresponding temperature coefficient. If correct, confirm the temperature indication by clicking **OK**.



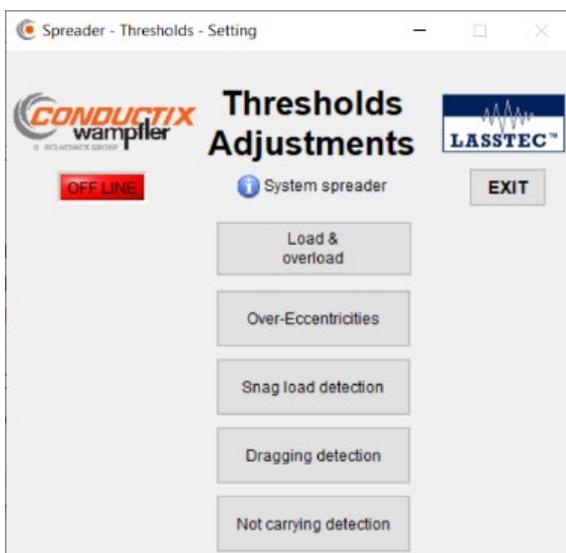
## LASSTEC

### Weighing System 0521

5. The calibration of the first Twistlock is accomplished. Repeat these steps for the remaining Twistlock.



#### 5.3.8.3 Thresholds Adjustment



## LASSTEC

### Weighing System 0521

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In this chapter you can define the thresholds of the overload and eccentricity alarms according to the overall system capacities and the spreader positions as well as modify the parameters for **Snag load** detection, **Dragging detection** and **not carrying** detection.

#### The thresholds directly influence the alarms generated by the Lasstec system!



Wrongly adjusted thresholds can lead to wrong alarm or no alarm at all. Conductix-Wamplifier will not be responsible for system malfunctioning if the adjustment is not correctly done.

The Lasstec Overload, eccentricity, snag load, dragging and not carrying detection are to be used only as an informative function and in no case as a security-relevant function. Conductix-Wamplifier is not to be held responsible for injuries or damage caused by an un-triggered or disregarded alarm.

Each parameter which is meant to be modified if necessary is displayed in three states:

- **Current Value:**  
Actual value of the parameter
- **Default Value:**  
The default value of the parameter predefined during the manufacturing process. If the **Current Value** and the **Default Value** are not identical, it means that this parameter has been changed at least once.
- **Desired Value:**  
There you can enter the new value of the parameter you want to change and by clicking **Overwrite the current Value** it will be stored in the interrogator and displayed as **Current Value**.

#### 5.3.8.3.1 Load & Overload



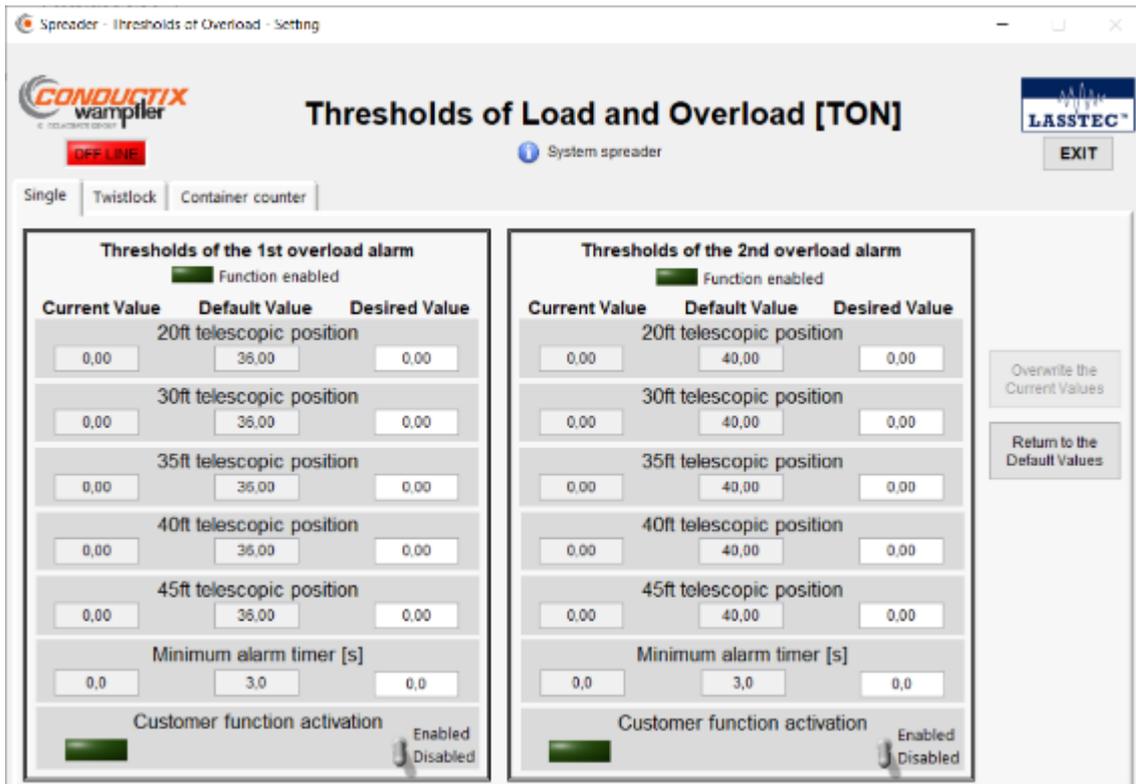
The Lasstec load and overload detection is to be used only as an informative function and in no case as a security-relevant function. Conductix-Wamplifier is not to be held responsible for injuries or damage caused by an un-triggered or disregarded alarm.

## LASSTEC

### Weighing System 0521

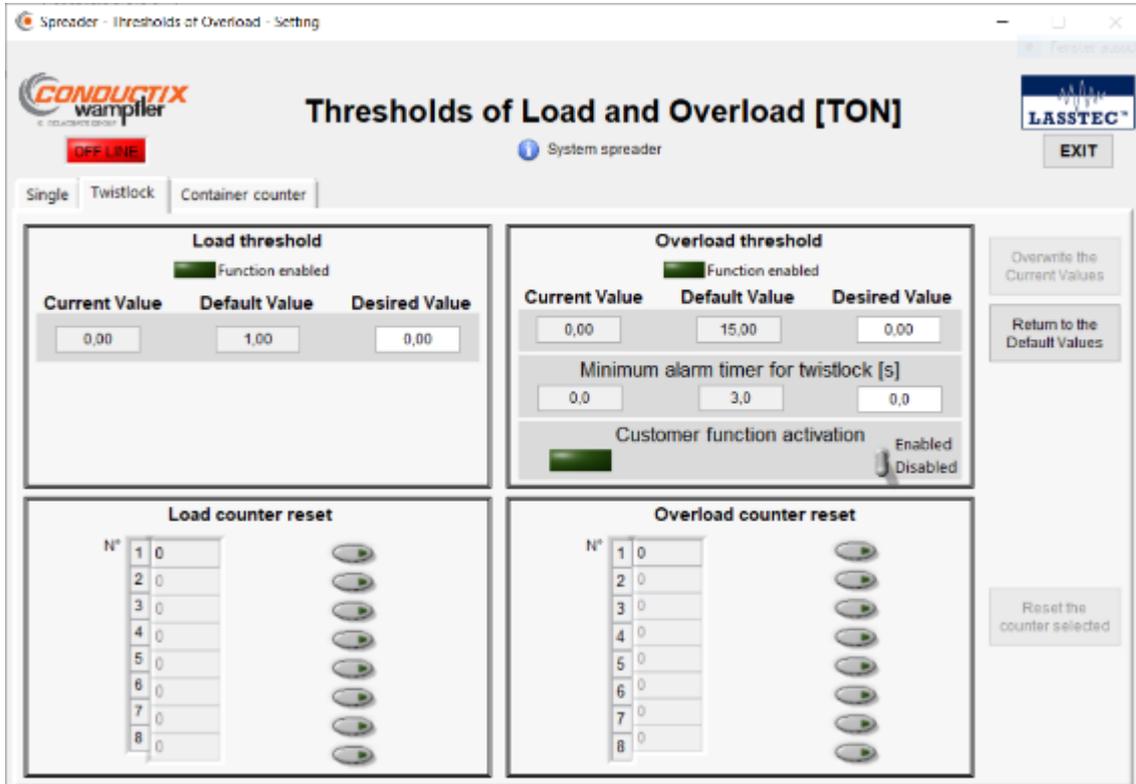
#### 5.3.8.3.1.1 Single Tab

In this chapter you can modify the threshold values for the 1<sup>st</sup> and 2<sup>nd</sup> **overload alarm** depending on the spreader size. When a telescopic spreader with different load capacities, depending on its position is used you can define a threshold for both overload alarms, for each position.



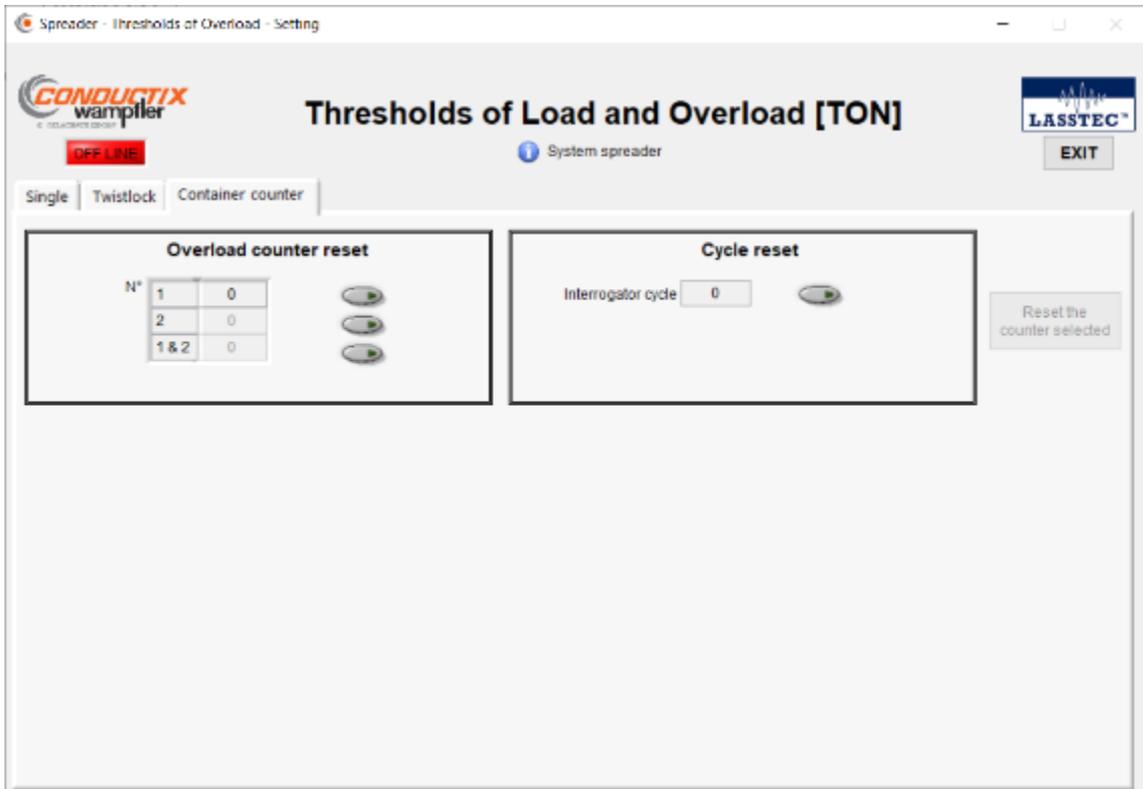
#### 5.3.8.3.1.2 Twistlock

In this chapter you can modify the threshold values for the overload alarms of the Twistlocks. These Thresholds are applied regardless of the telescopic position of the spreader. Also this chapter is meant to reset the Load and overload counter of each Twistlock by clicking on the corresponding reset button and confirming by clicking on **Overwrite the current Values**.



### 5.3.8.3.1.3 Container counter

This chapter is meant to reset the Overload counter for the container weighing as well as the Cycle counter for the number of container handled by clicking on the corresponding reset button and confirming by clicking on **Overwrite the current Values**.



#### 5.3.8.3.2 Over-Eccentricities



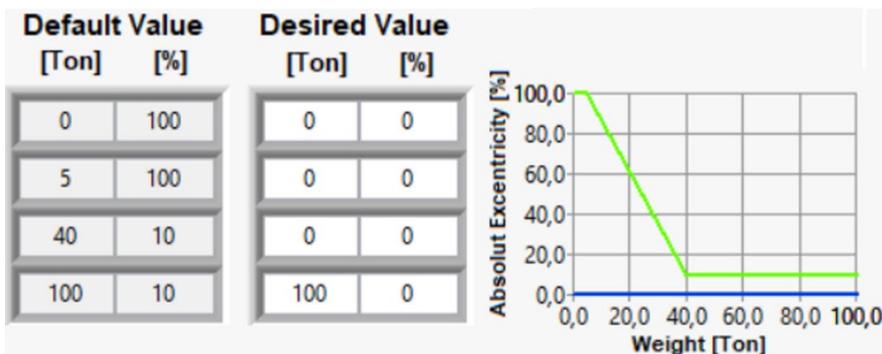
**DANGER!**

The Lasstec Over-Eccentricities detection is to be used only as an informative function and in no case as a security-relevant function. Conductix-Wampller is not to be held responsible for injuries or damage caused by an un-triggered or disregarded alarm.

##### 5.3.8.3.2.1 X and Y over-eccentricity Thresholds

In this chapter you can define the thresholds for eccentricities alarms of the X and Y axes

On the graphic in the following picture, the green graph represents the default threshold for the eccentricities.

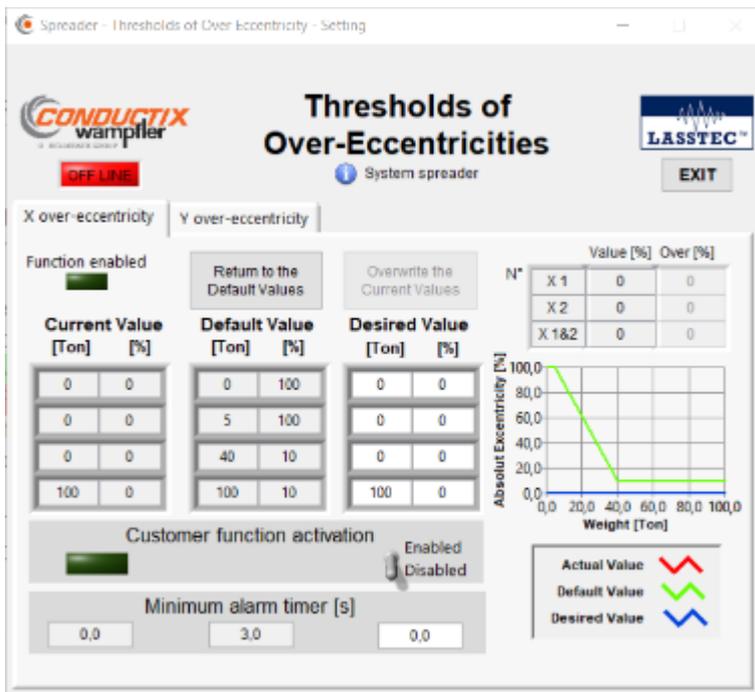


## LASSTEC

### Weighing System 0521

It is interpreted as follows:

For a fictive container weight of 0 to 5 ton, the eccentricity can reach 100 % without generating an alarm. For a container weight of 40 ton, the eccentricity can reach 10% before an alarm is generated and for a fictive container weight of 100 ton the eccentricity can reach 10% before an alarm is generated. Out of this parameters, a function is created which defines the threshold for every possible container weight between 0 ton and 100 ton.



## LASSTEC

### Weighing System 0521

#### 5.3.8.3.3 Snag Load Detection



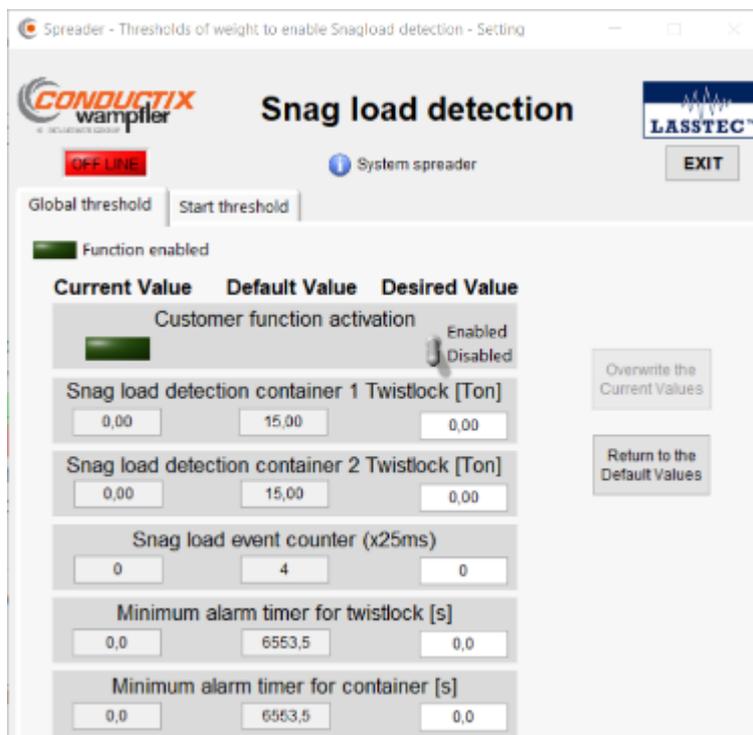
**DANGER!**

The Lasstec Snag load detection is to be used only as an informative function and in no case as a security-relevant function. Conductix-Wamplifier is not to be held responsible for injuries or damage caused by an un-triggered or disregarded alarm.

##### 5.3.8.3.3.1 Global Threshold

In this chapter you can define the Threshold for the snag load detection

<b>Snag load detection container 1 Twistlock [Ton]</b>	Defines the threshold which enables the function for 20ft container
<b>Snag load detection container 2 Twistlock [Ton]</b>	Defines the threshold which enables the function for 30ft container
<b>Snag load event counter (x25ms)</b>	Timer variables used for the counter and alarm of the snag load function
<b>Minimum alarm timer for Twistlocks [s]</b>	
<b>Minimum alarm timer for container [s]</b>	

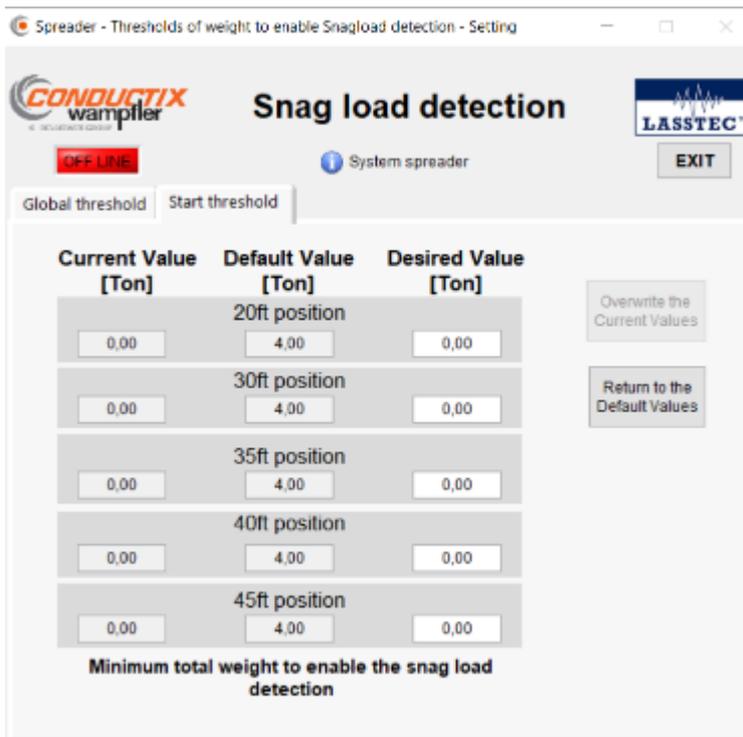


## LASSTEC

### Weighing System 0521

#### 5.3.8.3.3.2 Start Threshold

This chapter is meant to define the minimum measured weight at which the snag load function is activated



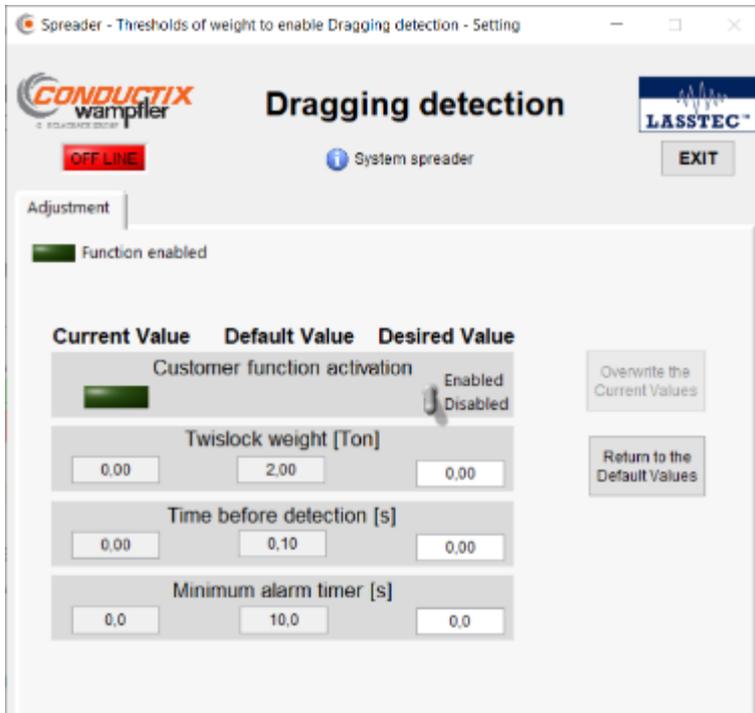
#### 5.3.8.3.4 Dragging Detection



**DANGER!**

The Lasstec Dragging detection is to be used only as an informative function and in no case as a security-relevant function. Conductix-Wamplifier is not to be held responsible for injuries or damage caused by an un-triggered or disregarded alarm.

<b>Twistlock weight [Ton]</b>	Threshold which enables the function
<b>Time before detection [s]</b>	Required Timer settings
<b>Minimum alarm timer [s]</b>	



#### 5.3.8.3.5 Not carrying Detection



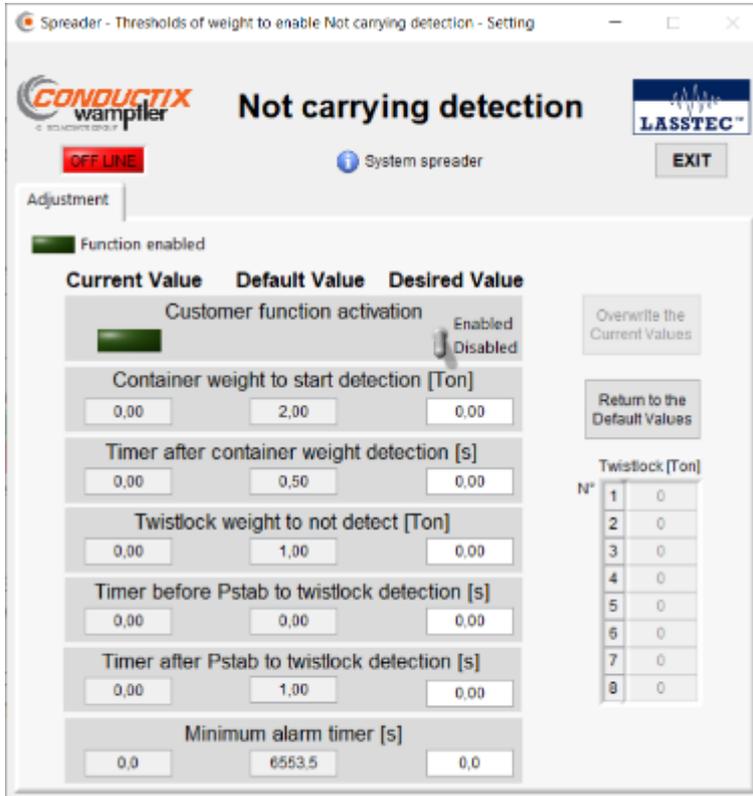
**DANGER!**

The Lasstec Not carrying detection is to be used only as an informative function and in no case as a security-relevant function. Conductix-Wampfler is not to be held responsible for injuries or damage caused by an un-triggered or disregarded alarm.

<b>Container weight to start detection [Ton]</b>	Threshold which defines the minimum container weight after which the function is enabled
<b>Timer after container weight detection [s]</b>	Timer threshold after which the detection is enabled
<b>Twistlock weight to not detect [Ton]</b>	Twistlock weight threshold
<b>Timer before Pstab to Twistlock detection [s]</b>	These timers are defining a time range in which the function is enabled
<b>Timer after Pstab to Twistlock detection [s]</b>	
<b>Minimum alarm timer [s]</b>	Minimum duration of the alarm

## LASSTEC

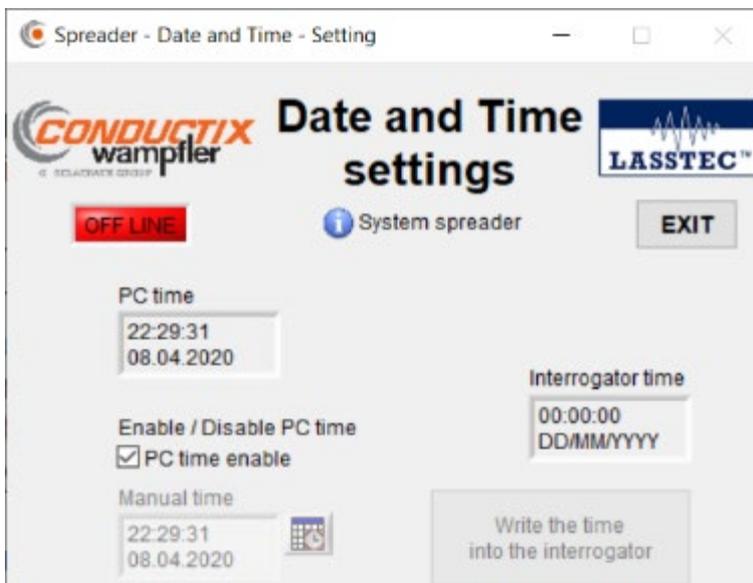
### Weighing System 0521



#### 5.3.8.4 Date and Time setting

In this chapter you can define the internal time of the interrogator.

- By defining it manually and clicking on **Write the time into the interrogator.**
- By using the time of the connected computer and clicking on **Write the time into the interrogator.**



## LASSTEC

### Weighing System 0521

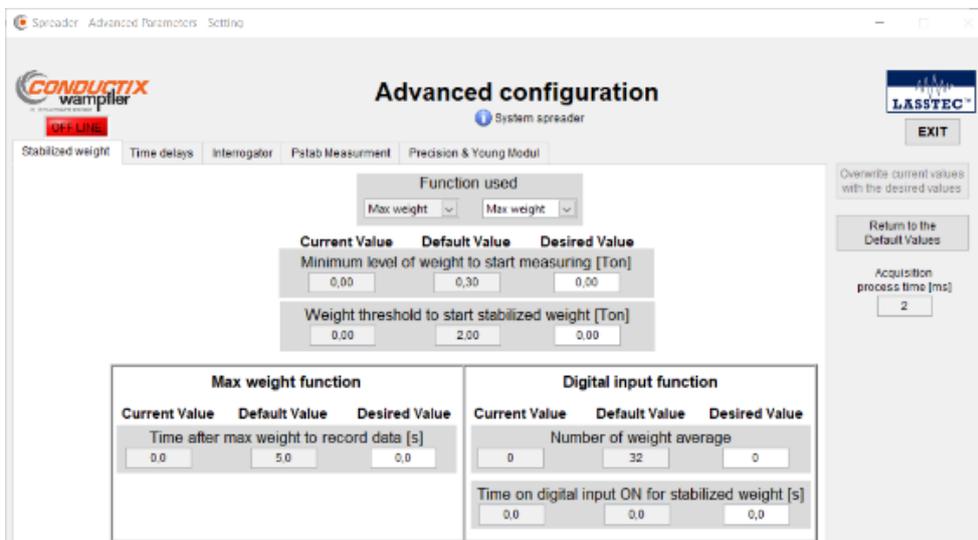
#### 5.3.8.5 Advance Configuration



**CAUTION!**

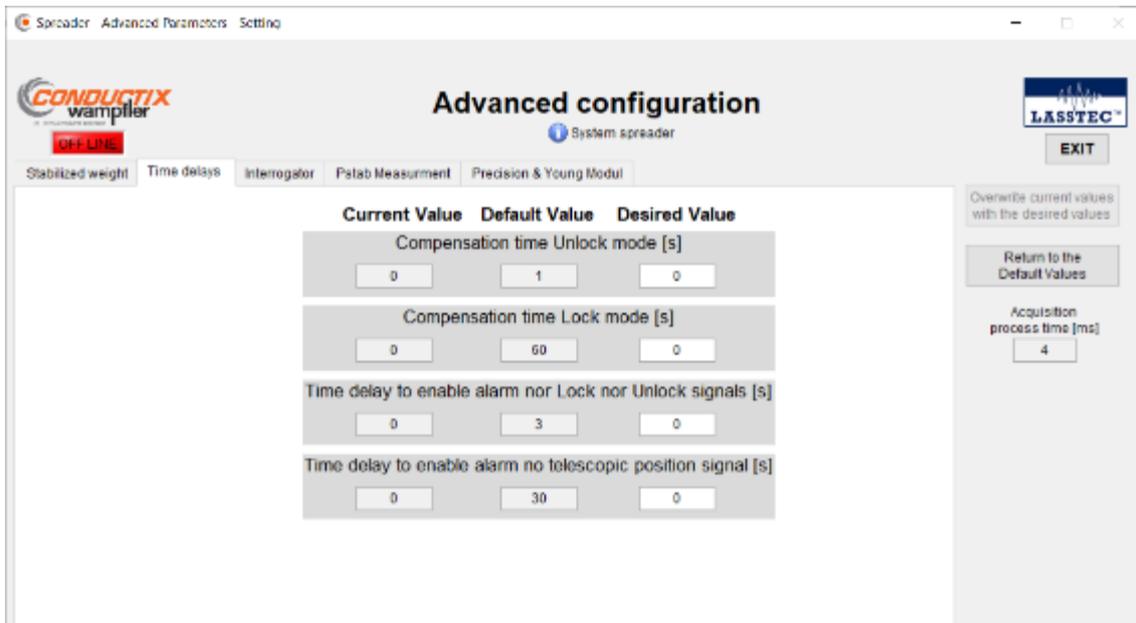
This chapter of the software is for authorized persons only in order to take care of the initial installation, calibration and maintenance. Only change this values in case the accuracy expectations are not met after the calibration. Be aware that changing any of the following parameters can corrupt the weighing process. Conductix-Wampller is not to be held responsible for injuries, damage or wrong weighing results caused by incorrectly set parameters.

#### 5.3.8.5.1 Stabilized Weight



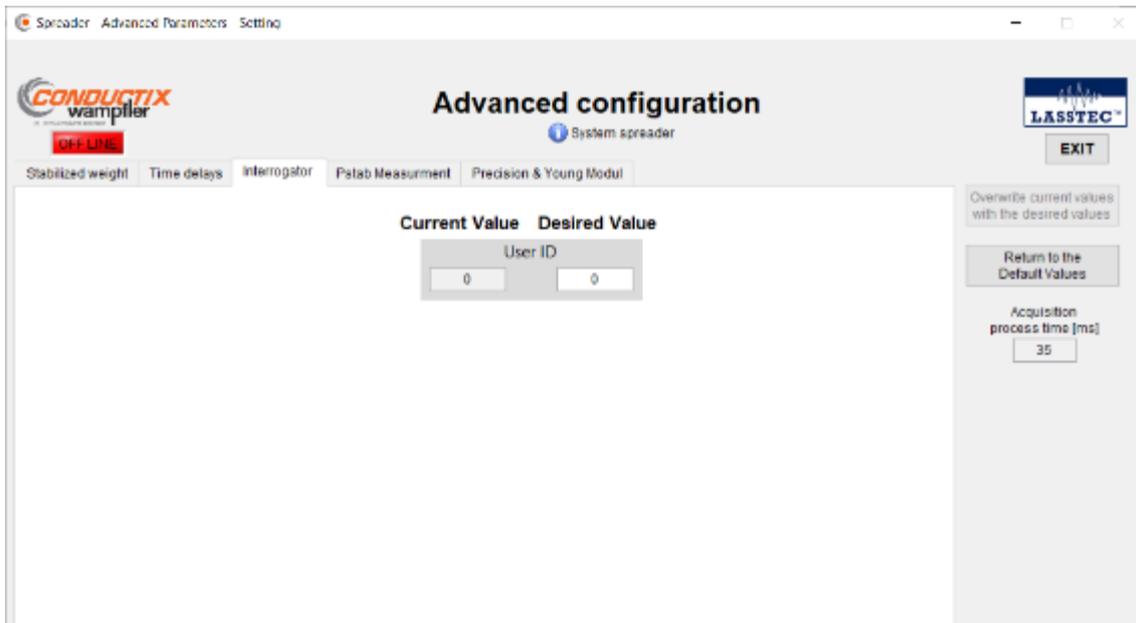
<b>Function used</b>	<b>Max weight</b>	The system identifies autonomously when the weight has been lifted
	<b>Digital input:</b>	The crane driver defines when the weight has been lifted (e.g.: with a switch in the driver cabin)
<b>Minimum level of weight to start measurement [Ton]</b>		Weight limit from which the measurement starts. The factory setting is 0.3 tonnes. With this setting, lower weights are not displayed.
<b>Weight threshold to start stabilized weight [Ton]</b>		Minimum weight which must be reached for the stabilization process to be carried out
<b>Time after max weight to record data [s]</b>		Defines the time range in which the samples for the stabilized weight are taken.
<b>Number of weight average</b>		Defines the numbers of samples for the stabilized weight
<b>Time on digital input ON for stabilized weight [s]</b>		Timer after which the stabilisation process is carried out. Only for the Digital input function. Starts with incoming Digital Input ON.

#### 5.3.8.5.2 Time delays



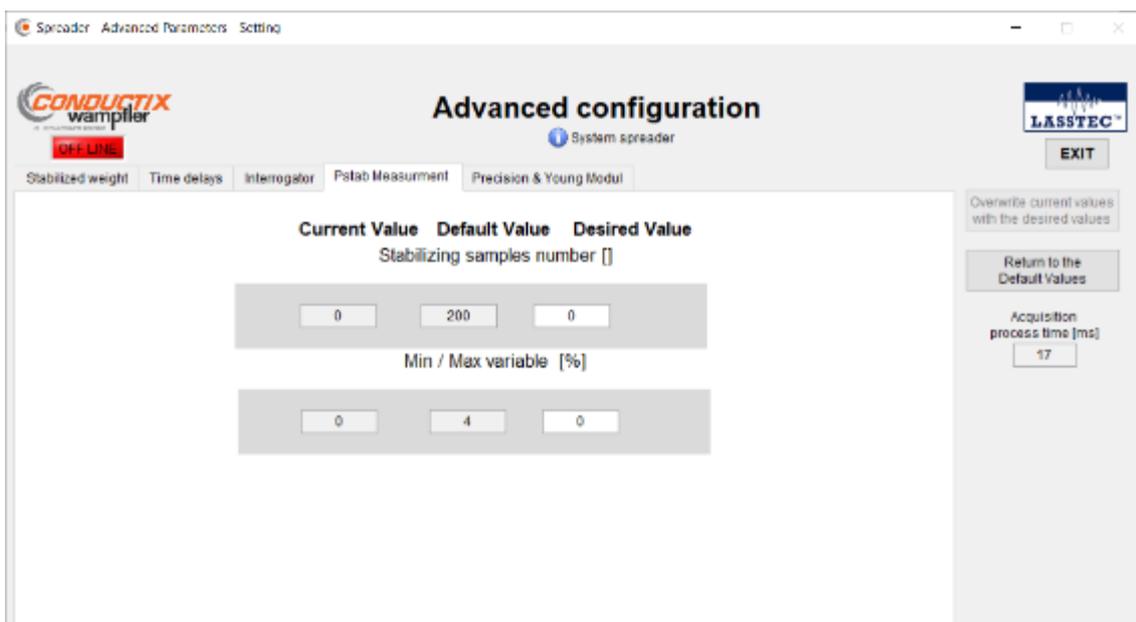
<b>Compensation time Unlock mode [s]</b>	Time for compensation used by the interrogator
<b>Compensation time Lock mode [s]</b>	Time for compensation used by the interrogator
<b>Time delay to enable alarm nor Lock nor Unlock signals [s]</b>	Delay after which the alarm is triggered when the signal for Lock and Unlock are lost
<b>Time delay to enable alarm no telescopic position signal [s]</b>	Delay after which the alarm is triggered when the signal for the telescopic position is lost.

#### 5.3.8.5.3 Interrogator



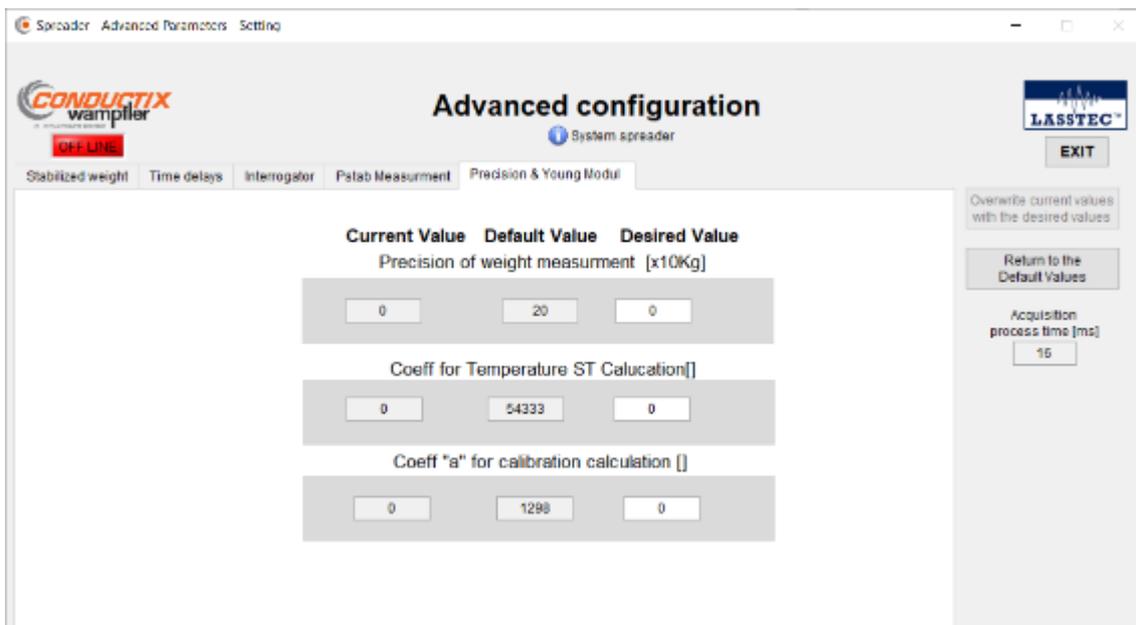
User ID	Identification of the interrogator
---------	------------------------------------

#### 5.3.8.5.4 Pstab Measurement



<b>Stabilization samples number [ ]</b>	Numbers of samples taken for the stabilized weight
<b>Min / Max variable [%]</b>	Max deviation of the measurement for the stabilization process to begin

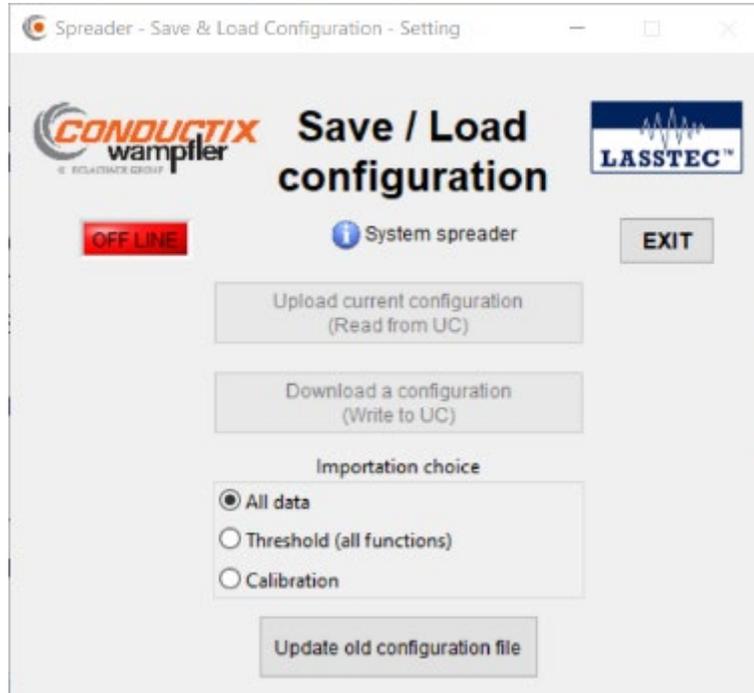
#### 5.3.8.5.5 Precision & Young Modul



<b>Precision of weight measurement [x10Kg]</b>	Defines the scale of the displaying of the weight.
<b>Coeff for Temperature ST calculation [ ]</b>	Coefficient for the calculation of the temperature. Is set with the temperature calibration
<b>Coeff "a" for calibration calculation [ ]</b>	Coefficient for the calculation of the temperature. Is set with the temperature calibration

#### 5.3.8.6 Save / Load Configuration

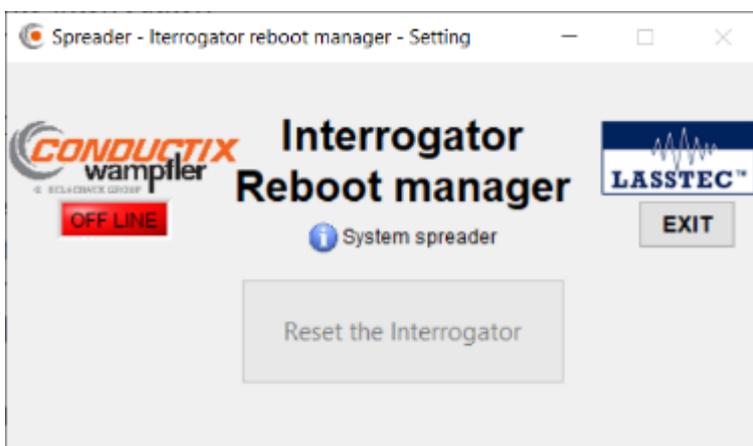
In this chapter you can download the actual configuration of the interrogator on a configuration file on your computer and re-upload it back in the interrogator. This can be useful when you have to reset the interrogator as you won't have to perform the whole configuration again. You can choose between three types of configuration files:



<b>All Data</b>	Saves / loads all configuration options
<b>Thresholds (all functions)</b>	Saves / loads only the configuration and thresholds of the functions
<b>Calibration</b>	Saves / loads only the calibration parameters

#### 5.3.8.7 Reset the Interrogator

In this chapter you can reset the interrogator. This function can be used when the functionality of the interrogator is corrupted due to parameter and threshold changes. With a reset, all parameters, thresholds and calibration settings are reset to the default factory settings and the system has to be recalibrated before usage.

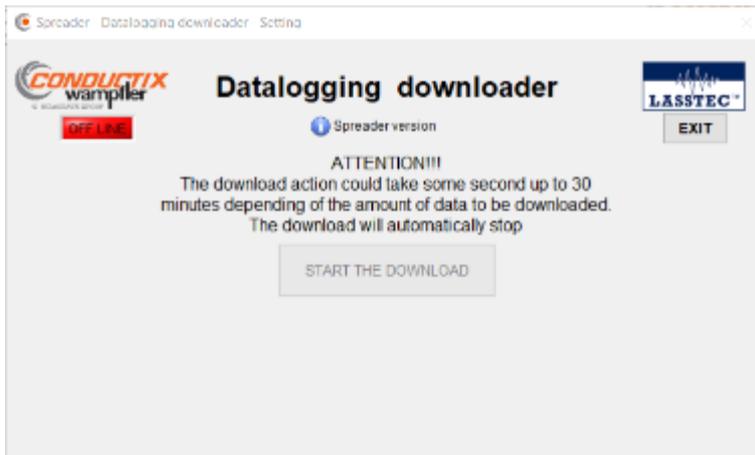


## LASSTEC

### Weighing System 0521

#### 5.3.8.8 Download Data Logging

The interrogator is equipped with a data logging function which stores the main parameters of every weighing cycle. These parameter can then be downloaded as a CSV file to your computer by clicking on **START DOWNLOAD**. The download can take up to 30 min, depending on the amount of stored weighing cycles.



For each weighing cycle, the following parameters are logged:

<b>Date – Time</b>	Interrogator date and time of the performed weighing cycle
<b>Interrogator cycle</b>	Counts the amount of weighing cycles
<b>Status 0</b>	Refer to chapter 7 of this document
<b>Status 1</b>	Refer to chapter 7 of this document
<b>Alarm 1</b>	Refer to chapter 7 of this document
<b>Alarm 2</b>	Refer to chapter 7 of this document
<b>Alarm 3</b>	Refer to chapter 7 of this document
<b>Alarm 4</b>	Refer to chapter 7 of this document
<b>Alarm 5</b>	Refer to chapter 7 of this document
<b>Weight 1 [Ton]</b>	Stabilized weight of Twistlock 1
<b>Weight 2 [Ton]</b>	Stabilized weight of Twistlock 2
<b>Weight 3 [Ton]</b>	Stabilized weight of Twistlock 3
<b>Weight 4 [Ton]</b>	Stabilized weight of Twistlock 4
<b>Weight Container 1 [Ton]</b>	Stabilized weight of container 1
<b>Eccentricity X [%]</b>	Percentage of eccentricity in the X axis
<b>Eccentricity Y [%]</b>	Percentage of eccentricity in the Y axis
<b>Maximum weight 1 [Ton]</b>	Maximum measured weight on Twistlock 1 in this weighing cycle
<b>Maximum weight 2 [Ton]</b>	Maximum measured weight on Twistlock 2 in this weighing cycle
<b>Maximum weight 3 [Ton]</b>	Maximum measured weight on Twistlock 3 in this weighing cycle
<b>Maximum weight 4 [Ton]</b>	Maximum measured weight on Twistlock 4 in this weighing cycle
<b>Maximum weight container 1 [Ton]</b>	Maximum measured weight on container 1 in this weighing cycle
<b>Load counter Twistlock 1</b>	Counts the amount off load cycles off Twistlock 1

## LASSTEC

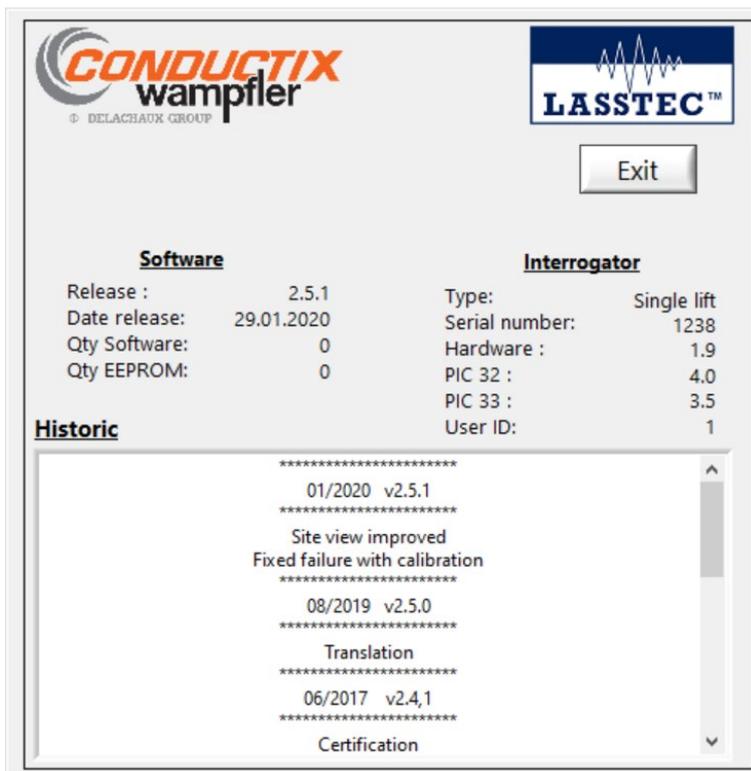
### Weighing System 0521

<b>Load counter Twistlock 2</b>	Counts the amount off load cycles off Twistlock 2
<b>Load counter Twistlock 3</b>	Counts the amount off load cycles off Twistlock 3
<b>Load counter Twistlock 4</b>	Counts the amount off load cycles off Twistlock 4
<b>Overload counter Container 1</b>	Counts the amount off occurred overload on the position off container 1
<b>Overload counter Twistlock 1</b>	Counts the amount off occurred overload on Twistlock 1
<b>Overload counter Twistlock 2</b>	Counts the amount off occurred overload on Twistlock 2
<b>Overload counter Twistlock 3</b>	Counts the amount off occurred overload on Twistlock 3
<b>Overload counter Twistlock 4</b>	Counts the amount off occurred overload on Twistlock 4
<b>Data integrity</b>	Confirms the data integrity by OK

\*for Twinlift systems the parameters for the Twistlocks 1 to 8 and the second container are added.

### 5.3.9 About the Lasstec System

Displays information about the interrogator configuration software and the connected interrogator.



## 6 Use of the Display

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### 6.1 HMI overview

#### 6.1.1 Glossary

##### Glossary:

- **Standard LASSTEC system, LASSTEC system or system:** the LASSTEC system installed onto a spreader (single-lift or twin-lift).
- **Single-lift:** a position or a type of spreader which consist of lifting up one container with 4 Twistlocks.
- **Twin-lift:** a position or a type of spreader which lifts up two containers with 4 Twistlocks into each container (8 Twistlocks).
- **Page:** a visualisation on the screen.
- **Interrogator:** refers to the LASSTEC interrogator.
- **HMI:** refers to the current developed human machine interface.
- **Current load, current weight:** refers to the “real time” measured load by the LASSTEC system
- **Stabilized load, stabilized weight:** refers to the actual weight determined by the LASSTEC system for the current load cycle.
- **Load cycle:** for a standard LASSTEC system, a load cycle starts when a container is locked under a spreader until it will be released by unlocking the Twistlocks.

#### 6.1.2 Hardware

Adjustable mounting bracket for the HMI.

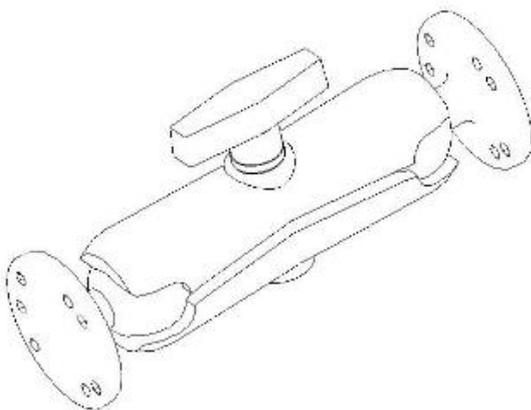


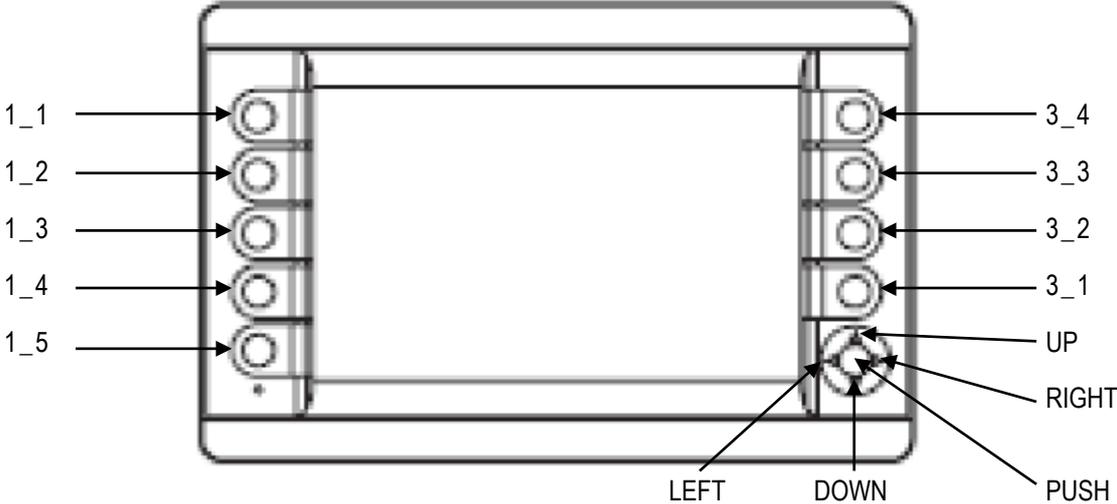
Image source: IFM electronic (CR1081)

# Operating Instructions



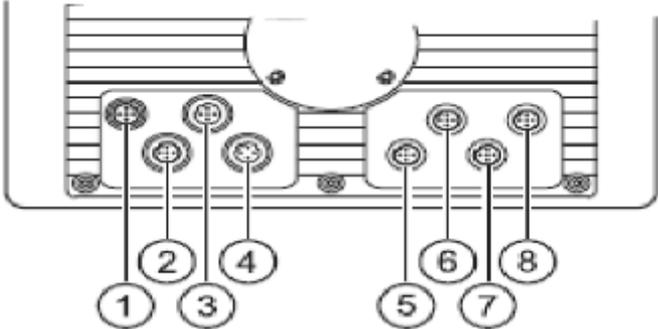
## LASSTEC Weighing System 0521

Front view and buttons description:



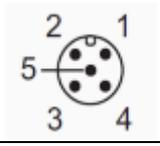
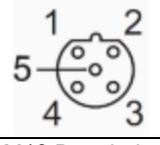
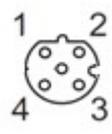
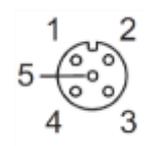
✓ Non touch screen with robust physical key

Rear view and electrical connection description:



## LASSTEC

### Weighing System 0521

N°	Description	Wiring			Wire colour
1	Power supply		1	10...32V DC	Brown
			2	Not used	White
			3	0V	Blue
			4	Not used	Black
			5	10...32V DC	Grey
Note: 1 and 5 must be connected together otherwise the screen will not function.					
2	Not Used				
3	USB (for downloading the datalogging files only)		1		
			2	- Data	
			3	+ Data	
			4	ID	
			5	GND	
4	Ethernet		1		
			2		
			3		
			4		
5	Can bus		1	Not used	Brown
			2	Not used	White
			3	CAN GND	Blue
			4	CAN Hi (+)	Black
			5	CAN Lo (-)	Grey
6	Not used				
7	Not used				
8	Not used				

For more information, see the IFM CR1081 manual.

## LASSTEC

### Weighing System 0521

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## 6.2 Page description

### 6.2.1 Loading

When starting up the system, the following page will appear:

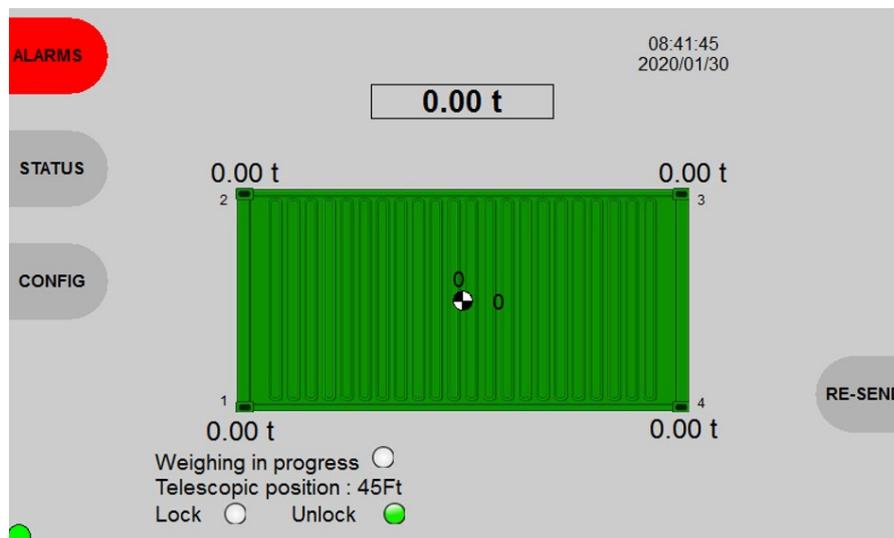


This page displays the Conductix-Wampfler and LASSTEC logo during the initialisation stage of the screen (a few seconds) and then automatically switches to the single-lift or twin-lift page (depending of the interrogator which is detected).

### 6.2.2 Home

#### 6.2.2.1 Single-Lift Mode

After the initialisation of the screen or after the home page timer has expired, this single-lift home page is displayed (single-lift or twin-lift in single-lift mode):



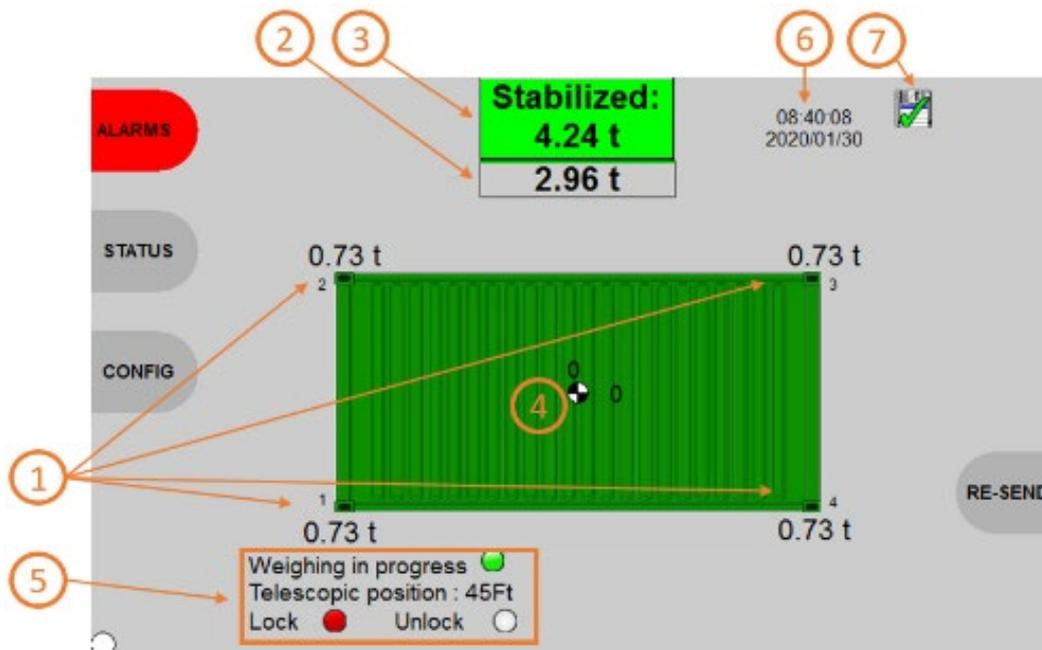
## LASSTEC

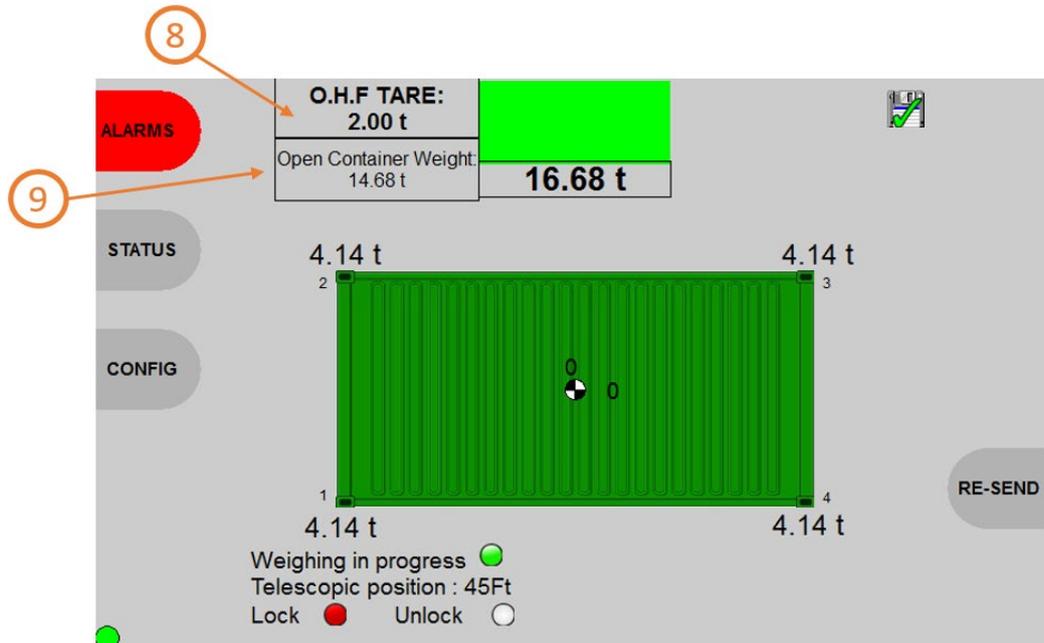
### Weighing System 0521

#### Navigation:

Button	Action
1_1	Go on page alarms
1_2	Go on page status
1_3	Go on page configuration of the screen
3_1	Resend the weighting data to the TOS
3_2	Print the weighting data (visible if the print function activated).
3_3	Generation of O.H.F Tare (visible if O.H.F function activated).
3_4	Stopped the alarm buzzer (visible if the buzzer is active)

During a load cycle, this page displays the container representation with the following indications:





#### Information details:

- ① **Twistlock weight:**  
Each Twistlock current measured weight in tonnes.
- ② **Current container weight:**  
The current measured container weight in tonnes.
- ③ **Stabilized container weight:**  
The stabilized container weight in tonnes (determined after the weighing process).
- ④ **Centre of gravity:**  
The centre of gravity from the container and the eccentricities of the container in % (X: longitudinal and Y: transversal).
- ⑤ **Weighing state:**  
**Weighing in progress:** green when the LASSTEC system measure the weight and white when not.  
**Telescopic position:** indicate the telescopic position of the spreader in feet. Available if the spreader signals are fed into the interrogator.  
**Lock:** red when the spreader Twistlocks are in lock position and white when the spreader Twistlocks are not in lock position.  
**Unlock:** green when the spreader Twistlocks are in unlock position and the system does not measure the weight. White when the spreader Twistlocks are not in unlock position.
- ⑥ **Date and Time:**  
Current date and time.

## LASSTEC

### Weighing System 0521

⑦

#### Datalogging:

A recorded pictogram:  appear when the datalogging of the current load cycle is in progress and then:  when the datalogging is done.

⑧

#### O.H.F TARE:

Saved Tare (unladen weight), generated with Button "3\_3".

⑨

#### Open Container Weight:

Weight without the Tare (the stabilized weight is not displayed).

#### Alarm indication:



#### Alarms:

- Snag load alarm individual for each Twistlock (blinking "SNAG LOAD" indication and red background of the concerned Twistlock weight).
- Over-eccentricities alarms (X-; X+; Y-; Y+; blinking "OVER ECCENTRICITY" indication according to the side of the alarm).
- Limit load alarm (or 1<sup>st</sup> overload alarm; blinking "LIMIT LOAD" indication, yellow background of the current container weight and the container become yellow).
- Overload alarm (blinking "OVERLOAD" indication, red background of the current container weight and the container become red).
- A trailer lift alarm appears when the system detects a lifted trailer.
- Dragging Alarm (blinking "DRAGGING" indication).
- Not Carrying Twistlock (blinking "NOT CARRYING" indication, for each Twistlock).

## LASSTEC

### Weighing System 0521

If the Value Max weight + 9e (40 000 + (9\*200)) is exceeded an "OUT OF RANGE" message is displayed together with the stabilized value (red highlighted due to out of range).



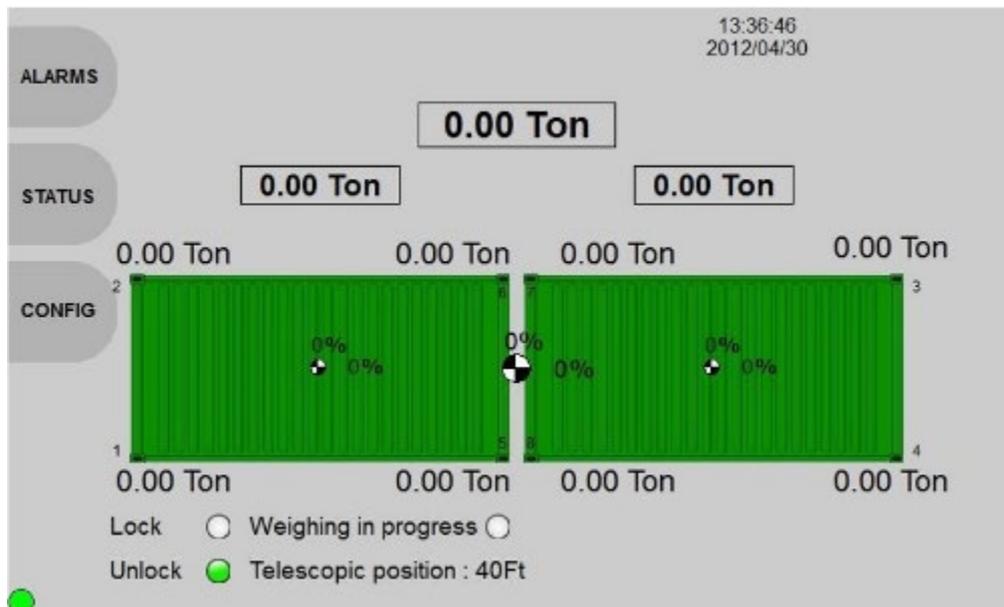
**DANGER!**

**If a fault occurs, the load has to put down. A new weighing operation may only carry out after the error has been rectified!**

The Lasstec Overload, eccentricity, snag load, trailer lift, dragging and not carrying detection are to be used only as an informative function and in no case as a security-relevant function. Conductix-Wampller is not to be held responsible for injuries or damage caused by an un-triggered or disregarded alarm.

#### 6.2.2.2 Twin-Lift Mode

If the screen is part of a twin-lift system in twin-lift mode, after the initialisation, the following page will appear:



You will also be redirected to this page after the "home page timer" expires.

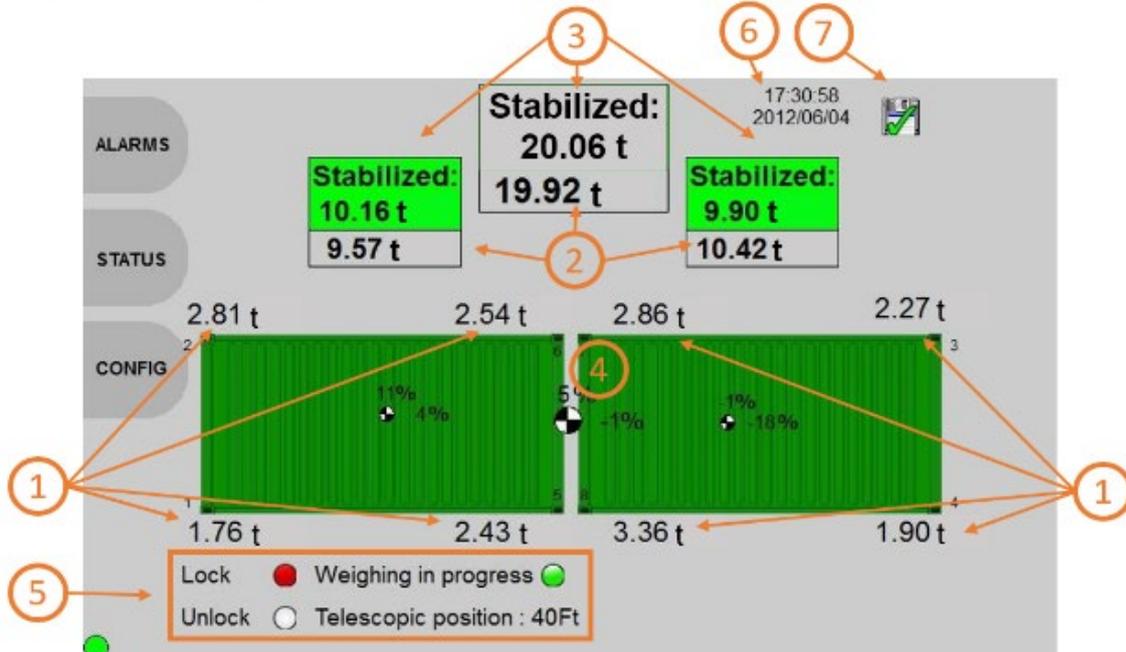
#### Navigation:

Button	Action
1_1	Go on page twin-lift alarms
1_2	Go on page twin-lift status
1_3	Go on page configuration of the screen
3_4	Stopped the alarm buzzer (visible if the buzzer is active)

## LASSTEC

### Weighing System 0521

During a load cycle, this page displays the two containers representation with the following indications:



#### Information details:

- ① **Twistlock weight:**  
Each Twistlock weight in tonnes.
- ② **Current container weight:**  
The current measured container weight in tonnes. The current measured added weight of both containers, displayed on the top centre of the page.
- ③ **Stabilized container weight:**  
The stabilized weight of each container and the total stabilized weight of both containers in tonnes (determined after the weighing process).
- ④ **Centre of gravity:**  
The centre of gravity of each container and from the spreader. The eccentricities of each container and of the spreader in % (X: longitudinal and Y: transversal).
- ⑤ **Weighing state:**  
**Weighing in progress:** green when the LASSTEC system measure the weight and white when not.  
**Telescopic position:** indicate the telescopic position of the spreader in feet. Available if the spreader signals are fed into the interrogator.  
**Lock:** red when the spreader Twistlocks are in lock position and white when the spreader Twistlocks are not in lock position.  
**Unlock:** green when the spreader Twistlocks are in unlock position and the system does not measure the weight. White when the spreader Twistlocks are not in unlock position.

## LASSTEC

### Weighing System 0521

⑥

#### Date and Time:

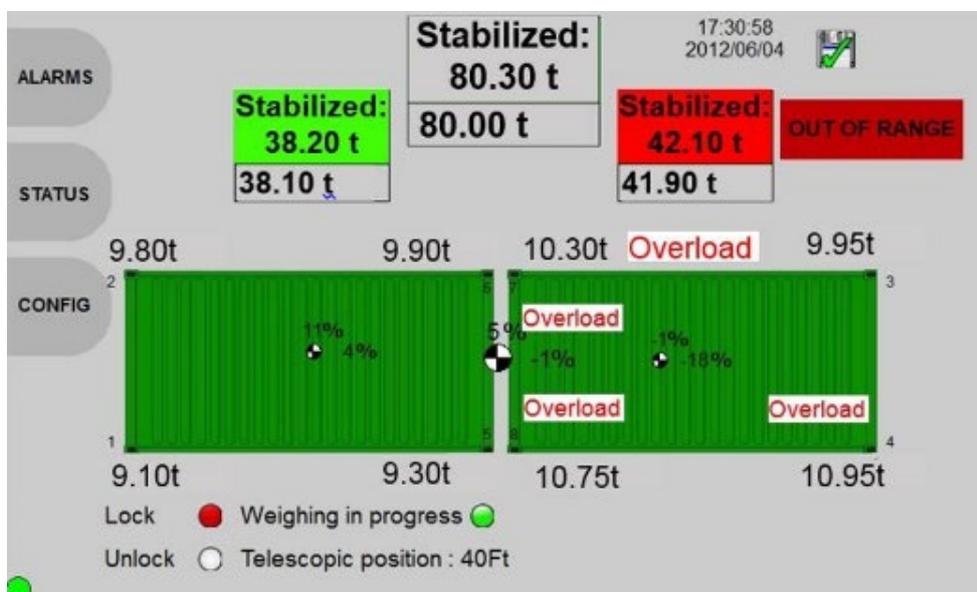
Current date and time.

⑦

#### Datalogging:

A recorded pictogram:  appear when the datalogging of the current load cycle is in progress and then:  when the datalogging is done.

#### Alarm indication:



#### Alarms:

- Snag load alarm individual for each Twistlock (blinking "SNAG LOAD" indication and red background of the concerned Twistlock weight).
- Over-eccentricities alarms for each container (X-; X+; Y-; Y+; blinking "OVER ECCENTRICITY" indication according to the side of the alarm).
- Over-eccentricities alarms for the spreader (X-; X+; Y-; Y+; blinking "OVER ECCENTRICITY" indication according to the side of the alarm).
- Limit load alarm individually for each container (or 1<sup>st</sup> overload alarm; blinking "LIMIT LOAD" indication, yellow background of the concerned current container weight and the concerned container become yellow).
- Limit load alarm for the spreader (or 1<sup>st</sup> overload alarm; blinking "LIMIT LOAD" indication, yellow background of the total current weight and both containers become yellow).
- Overload alarm individually for each container (blinking "OVERLOAD" indication, red background of the concerned current container weight and the concerned container become red).
- Overload alarm for the spreader (blinking "OVERLOAD" indication, red background of the total current weight and both containers become red).
- A trailer lift alarm appears when the system detects a lifted trailer.
- Dragging Alarm (blinking "DRAGGING" indication).
- Not Carrying Twistlock (blinking "NOT CARRYING" indication, for each Twistlock).

## LASSTEC

### Weighing System 0521

If the Value Max weight + 9e (40 000 + (9\*200)) is exceeded an "OUT OF RANGE" message is displayed together with the stabilized value (red highlighted due to out of range).



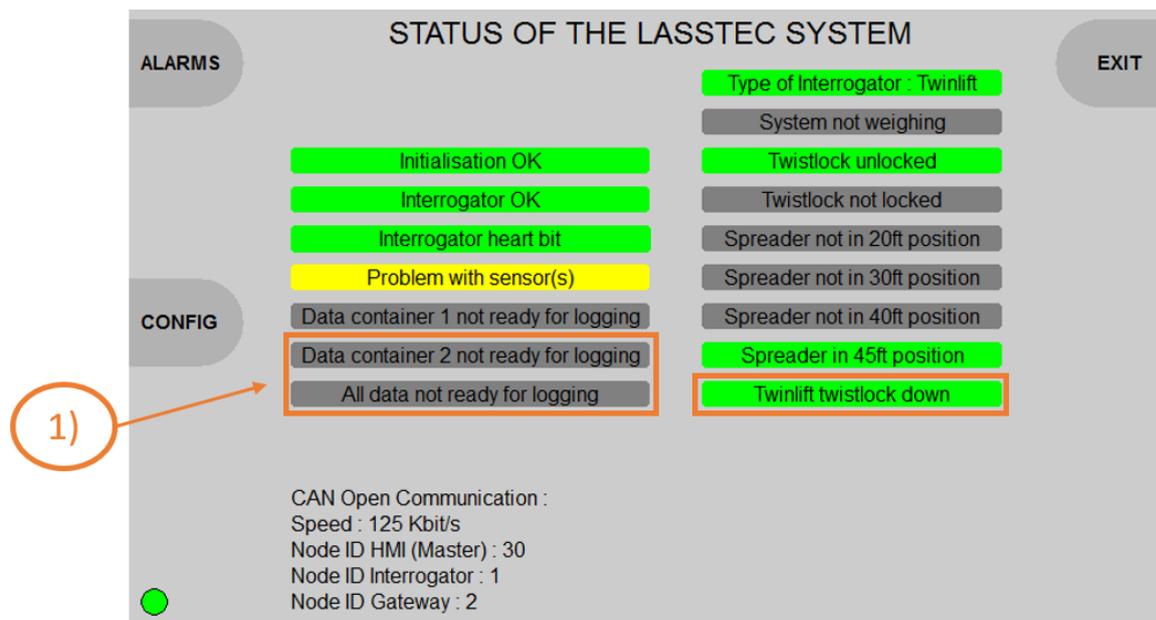
**DANGER!**

**If a fault occurs, the load has to put down. A new weighing operation may only carry out after the error has been rectified!**

The Lasstec overload, eccentricity, snag load, trailer lift, dragging and not carrying detection are to be used only as an informative function and in no case as a security-relevant function. Conductix-Wampfler is not to be held responsible for injuries or damage caused by an un-triggered or disregarded alarm.

### 6.2.3 Status of the Lasstec System

If the status button is pressed, the following page will appear:



This page displays the status of the single-lift Lasstec system.

#### Information detail:

Status bit false	Status bit true	Description
Initialisation not done	Initialisation OK	Indicates if the interrogator is initialising or if the initialisation is done.
Problem of Interrogator	Interrogator Ok	Indicates if there is an internal problem of the interrogator or not.
Interrogator heart beat	Interrogator heart beat	Heartbeat of the interrogator communication, switch every second.

## LASSTEC

### Weighing System 0521

Status bit false	Status bit true	Description
Problem with sensor(s)	Sensor OK	Indicates if there is a problem or not with one or more sensors.
Data container 1 not ready for logging	Data container 1 ready for logging	Indicates if the data from the interrogator is ready for logging or not.
Data container 2 not ready for logging <sup>1)</sup>	Data container 2 ready for logging	Indicates if the data from the interrogator is ready for logging or not.
All data not ready for logging <sup>1)</sup>	All data ready for logging	Indicates if the data from the interrogator is ready for logging or not (container 1 and container 2).
Type of interrogator: Single lift	Type of interrogator: Twin-lift	Indicates the connected type of interrogator.
Weighing in progress	System not weighing	Indicates if a load cycle is in progress.
Twistlock not unlocked	Twistlock unlocked	Indicates if the spreader Twistlocks are unlocked or not.
Twistlock not locked	Twistlock locked	Indicates if the spreader Twistlocks are locked or not.
Spreader not in 20ft position	Spreader in 20ft position	Indicates if the spreader is in 20ft position or not.
Spreader not in 30ft position	Spreader in 30ft position	Indicates if the spreader is in 30ft position or not.
Spreader not in 40ft position	Spreader in 40ft position	Indicates if the spreader is in 40ft position or not.
Spreader not in 45ft position	Spreader in 45ft position	Indicates if the spreader is in 45ft position or not.
Twinlift Twistlock not down <sup>1)</sup>	Twinlift Twistlock down	Indicates if the twin-lift system is in twin-lift mode = 1 / if the twin-lift system is in single-lift mode = 0.

1) = Only available with the twin-lift system.



**WARNING!**

**All indications are related to the information feed into the interrogator via the wiring from the spreader. If the interrogator is not properly wired, the described status can be wrong.**

#### CanOpen configuration:

- Speed: the speed of the CAN bus (125Kbit/s by default).
- Node ID HMI (Master): CAN network address of the screen.
- Node ID Interrogator: CAN network address of the interrogator.
- Node ID Gateway: CAN network address of the CanOpen/Profibus gateway (if declared).

## LASSTEC

### Weighing System 0521

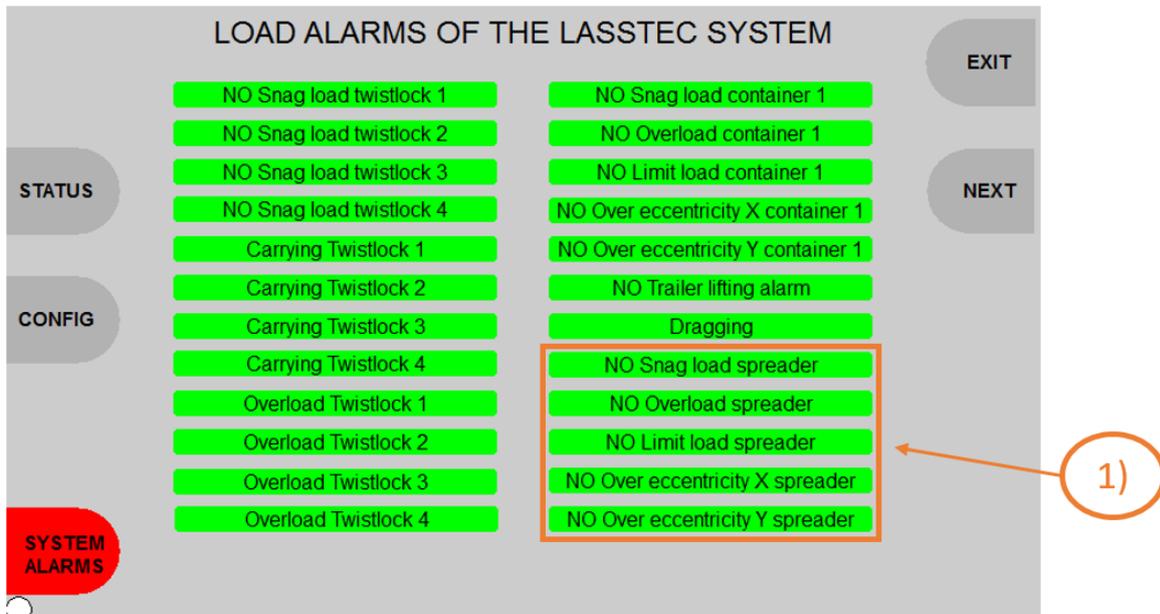
Navigation:

Button	Action
1_1	Go on page Alarms
1_3	Go on page configuration of the screen
3_4	Exit the current page and go on home page

#### 6.2.4 Load Alarm

If the alarms button is pressed, the following page will appear:

Alarm screen 1:



This page displays the load alarms of the LASSTEC system.

Information detail:

Alarm bit false (green background)	Alarm bit true (red background)	Description
NO Snag load Twistlock 1	Snag load Twistlock 1	Indicates if there is a snag load on the Twistlock 1.
NO Snag load Twistlock 2	Snag load Twistlock 2	Indicates if there is a snag load on the Twistlock 2.
NO Snag load Twistlock 3	Snag load Twistlock 3	Indicates if there is a snag load on the Twistlock 3.
NO Snag load Twistlock 4	Snag load Twistlock 4	Indicates if there is a snag load on the Twistlock 4.
Carrying Twistlock 1	Not Carrying Twistlock 1	Indicates if the Twistlock 1 is carrying.
Carrying Twistlock 2	Not Carrying Twistlock 2	Indicates if the Twistlock 2 is carrying.

## LASSTEC

### Weighing System 0521

Alarm bit false (green background)	Alarm bit true (red background)	Description
Carrying Twistlock 3	Not Carrying Twistlock 3	Indicates if the Twistlock 3 is carrying.
Carrying Twistlock 4	Not Carrying Twistlock 4	Indicates if the Twistlock 4 is carrying.
Overload Twistlock 1	Overload Twistlock 1	Indicates if there is an overload on the Twistlock 1.
Overload Twistlock 2	Overload Twistlock 2	Indicates if there is an overload on the Twistlock 2.
Overload Twistlock 3	Overload Twistlock 3	Indicates if there is an overload on the Twistlock 3.
Overload Twistlock 4	Overload Twistlock 4	Indicates if there is an overload on the Twistlock 4.
NO Snag load container 1	Snag load container 1	Indicates if there is a snag load on one or more spreader Twistlocks.
NO Overload container 1	Overload container 1	Indicates if there is an overload on the container.
NO Limit load container 1	Limit load container 1	Indicates if the limit load (or 1 <sup>st</sup> overload) is reached on the container.
NO Over eccentricity X container 1	Over eccentricity X container 1	Indicates if there is a longitudinal over eccentricity.
NO Over eccentricity Y container 1	Over eccentricity Y container 1	Indicates if there is a transversal over eccentricity.
NO Trailer lifting alarm	Trailer lifting alarm	Indicates if a trailer is lifted.
NO Dragging	Dragging	Indicates if there is dragging
NO Snag load spreader <sup>1)</sup>	Snag load spreader	Indicates if there is a snag load on one or more spreader Twistlocks.
NO Overload spreader <sup>1)</sup>	Overload spreader	Indicates if there is an overload on the spreader.
NO Limit load spreader <sup>1)</sup>	Limit load spreader	Indicates if the limit load (or 1 <sup>st</sup> overload) is reached on the spreader.
NO Over eccentricity X spreader <sup>1)</sup>	Over eccentricity X spreader	Indicates if there is a longitudinal over eccentricity on the spreader.
NO Over eccentricity Y spreader <sup>1)</sup>	Over eccentricity Y spreader	Indicates if there is a transversal over eccentricity on the spreader.

#### Navigation:

Button	Action
1_2	Go on page Status
1_3	Go on page configuration of the screen
1_5	Go on page system alarms
3_3	Go on second page load alarms <sup>1)</sup>
3_4	Exit the current page and go on home page

1) = Only available with the twin-lift system.

## LASSTEC

### Weighing System 0521

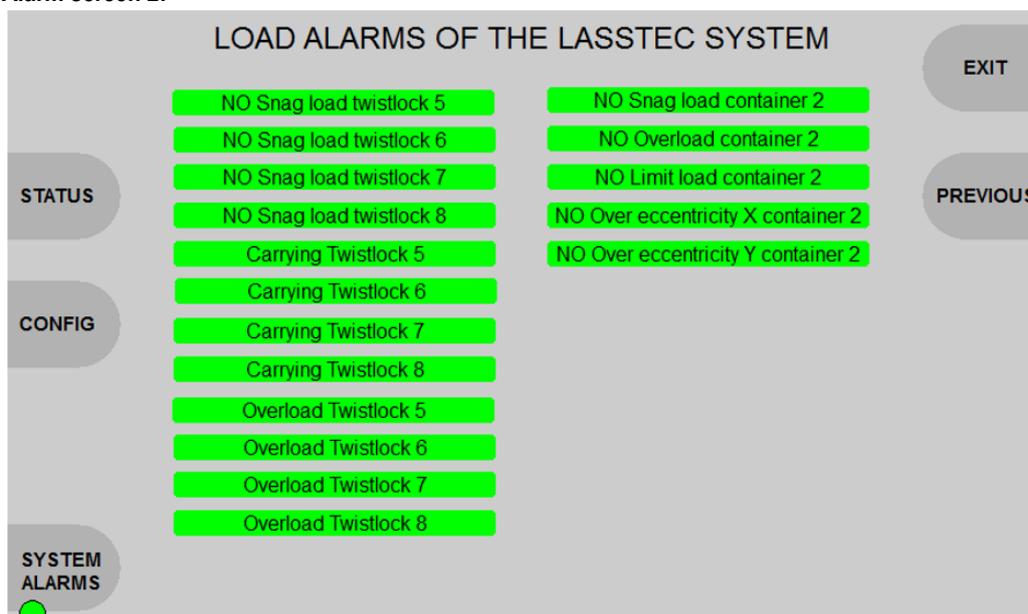


**If a fault occurs, the load has to put down. A new weighing operation may only carry out after the error has been rectified!**

The Lasstec overload, eccentricity, snag load, trailer lift, dragging and not carrying detection are to be used only as an informative function and in no case as a security-relevant function. Conductix-Wamplfer is not to be held responsible for injuries or damage caused by an un-triggered or disregarded alarm.

If the NEXT button is pressed on the Load alarm page, the following page will appear **(only available with the twin-lift system)**:

#### Alarm screen 2:



This page displays the load alarms of the twin-lift LASSTEC system.

#### Information detail:

Alarm bit false (green background)	Alarm bit true (red background)	Description
NO Snag load Twistlock 5	Snag load Twistlock 5	Indicates if there is a snag load on the Twistlock 5.
NO Snag load Twistlock 6	Snag load Twistlock 6	Indicates if there is a snag load on the Twistlock 6.
NO Snag load Twistlock 7	Snag load Twistlock 7	Indicates if there is a snag load on the Twistlock 7.
NO Snag load Twistlock 8	Snag load Twistlock 8	Indicates if there is a snag load on the Twistlock 8.
Carrying Twistlock 5	Not Carrying Twistlock 5	Indicates if the Twistlock 5 is carrying.
Carrying Twistlock 6	Not Carrying Twistlock 6	Indicates if the Twistlock 6 is carrying.
Carrying Twistlock 7	Not Carrying Twistlock 7	Indicates if the Twistlock 7 is carrying.
Carrying Twistlock 8	Not Carrying Twistlock 8	Indicates if the Twistlock 8 is carrying.
Overload Twistlock 5	Overload Twistlock 5	Indicates if there is an overload on the Twistlock 5.

## LASSTEC

### Weighing System 0521

Alarm bit false (green background)	Alarm bit true (red background)	Description
Overload Twistlock 6	Overload Twistlock 6	Indicates if there is an overload on the Twistlock 6.
Overload Twistlock 7	Overload Twistlock 7	Indicates if there is an overload on the Twistlock 7.
Overload Twistlock 8	Overload Twistlock 8	Indicates if there is an overload on the Twistlock 8.
NO Snag load container 2	Snag load container 2	Indicates if there is a snag load on one or more spreader Twistlocks of container 2.
NO Overload container 2	Overload container 2	Indicates if there is an overload on the container 2.
NO Limit load container 2	Limit load container 2	Indicates if the limit load (or 1 <sup>st</sup> overload) is reached on the container 2.
NO Over eccentricity X container 2	Over eccentricity X container 2	Indicates if there is a longitudinal over eccentricity on the container 2.
NO Over eccentricity Y container 2	Over eccentricity Y container 2	Indicates if there is a transversal over eccentricity on the container 2.

#### Navigation:

Button	Action
1_2	Go on page Status
1_3	Go on page configuration of the screen
1_5	Go on page system alarms
3_3	Exit the current page and go on alarms 1
3_4	Exit the current page and go on home page



**DANGER!**

**If a fault occurs, the load has to put down. A new weighing operation may only carry out after the error has been rectified!**

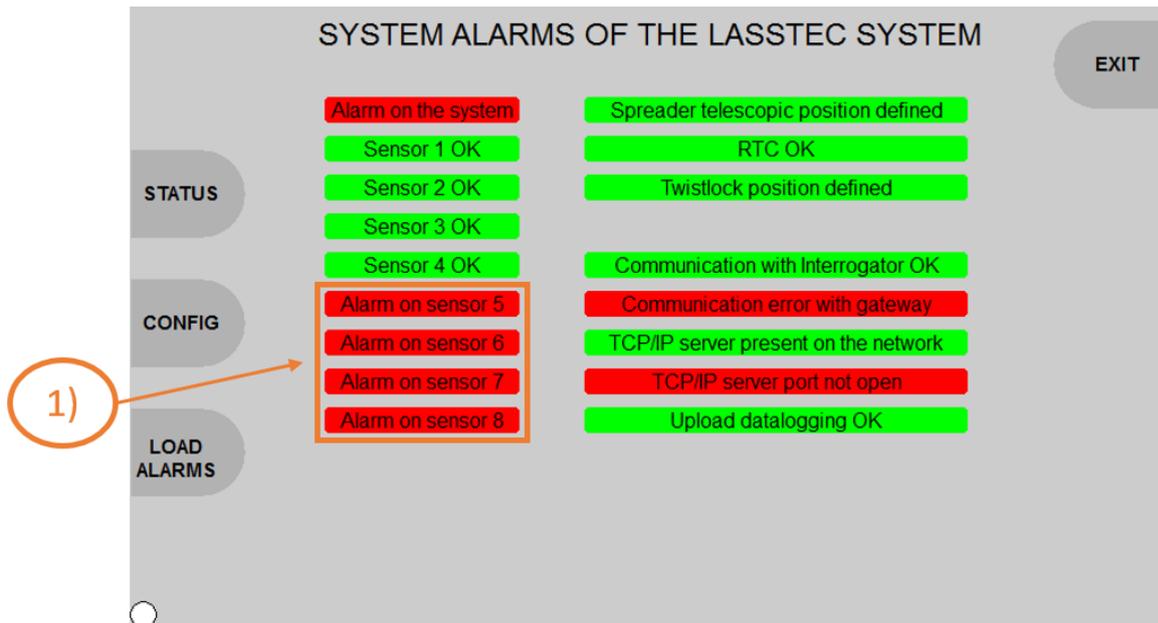
The Lasstec Overload, eccentricity, snag load, trailer lift, dragging and not carrying detection are to be used only as an informative function and in no case as a security-relevant function. Conductix-Wampller is not to be held responsible for injuries or damage caused by an un-triggered or disregarded alarm.

## LASSTEC

### Weighing System 0521

#### 6.2.5 System alarms of the Lasstec system

If the system alarms button is pressed on the load alarms page, the following page will appear:



This page displays the system alarms of the LASSTEC system.

These alarms are not related to the security Alarms (overweight, eccentricity alarms), they concern only the functionality of the LASSTEC system.

#### Information detail:

Alarm bit false (red background)	Alarm bit true (green background)	Description
Alarm on the system	System OK	Indicates if there is an alarm on the system
Alarm on sensor 1	Sensor 1 OK	Indicates if there is an alarm on the sensor 1 (broken sensor, bad connection, broken cable...).
Alarm on sensor 2	Sensor 2 OK	Indicates if there is an alarm on the sensor 2 (broken sensor, bad connection, broken cable...).
Alarm on sensor 3	Sensor 3 OK	Indicates if there is an alarm on the sensor 3 (broken sensor, bad connection, broken cable...).
Alarm on sensor 4	Sensor 4 OK	Indicates if there is an alarm on the sensor 4 (broken sensor, bad connection, broken cable...).
Alarm on sensor 5 <sup>1)</sup>	Sensor 5 OK	Indicates if there is an alarm on the sensor 5 (broken sensor, bad connection, broken cable...).
Alarm on sensor 6 <sup>1)</sup>	Sensor 6 OK	Indicates if there is an alarm on the sensor 6 (broken sensor, bad connection, broken cable...).
Alarm on sensor 7 <sup>1)</sup>	Sensor 7 OK	Indicates if there is an alarm on the sensor 7 (broken sensor, bad connection, broken cable...).

## LASSTEC

### Weighing System 0521

Alarm bit false (red background)	Alarm bit true (green background)	Description
Alarm on sensor 8 <sup>1)</sup>	Sensor 8 OK	Indicates if there is an alarm on the sensor 8 (broken sensor, bad connection, broken cable...).
Spreader telescopic position not defined	Spreader telescopic position defined	Indicates if the interrogator does not receive the telescopic position of the spreader (hard wiring).
Loss power supply of the time data	RTC OK	Indicates if the date and time of the interrogator was lost and need to be set.
Twin down with single-lift interrogator <sup>2)</sup>	-	Indicates if a signal is fed into the twin-down input of the interrogator although it is a single-lift interrogator. In this case the measurement is blocked.
Twistlock nor lock nor unlock	Twistlock position defined	Indicates if the interrogator does not receive the Locked or Unlocked signal from the spreader (hard wiring).
Communication error with Interrogator	Communication with Interrogator OK	Indicates if there is no communication with the interrogator.
Communication error with gateway	Communication with gateway OK	Indicates if there is no communication with the gateway. (if declared)
TCP/IP server not present on the network	TCP/IP server present on the network	Indicates if there is no communication with the TCP/IP server. (if declared)
TCP/IP server port not open	TCP/IP server port open	Indicates if TCP/IP server port is open. (if declared)
Upload datalogging not OK	Upload datalogging OK	Indicates if the data logging works

- 1) = Only available with the twin-lift system.  
 2) = Only available with the single-lift system.

#### Navigation:

Button	Action
1_2	Go on page Status
1_3	Go on page configuration of the screen
1_4	Go on page load alarms
3_4	Exit the current page and go on home page

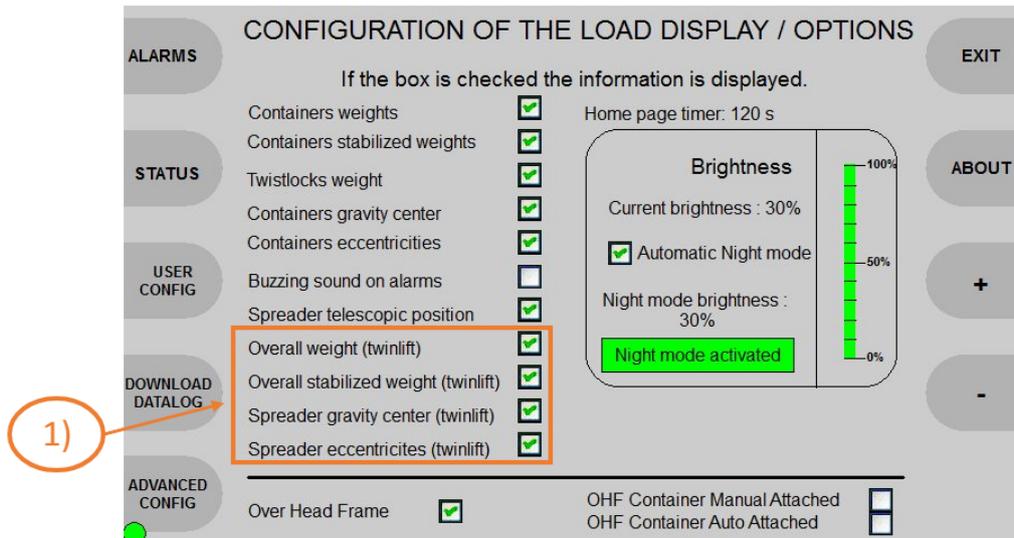


**DANGER!**

If a fault occurs, the load has to put down. A new weighing operation may only carry out after the error has been rectified.

#### 6.2.6 Configuration of the load display

If the config button is pressed, the following page will appear:



#### Information detail:

This page allows to configure the screen with the following parameter:

- Display / hide the containers weight on the home page.
- Display / hide the Twistlocks weight on the home page.
- Display / hide the containers gravity centre on the home page.
- Display / hide the containers eccentricities
- Enable / Disable the buzzing sound on alarms.
- Display / hide the telescopic position of the spreader.
- Display / hide the overall weight (container 1+2) on the home page. <sup>1)</sup>
- Display / hide the overall stabilized weights (container 1+2) on the home page. <sup>1)</sup>
- Display / hide the spreader gravity centre on the home page. <sup>1)</sup>
- Display / hide the spreader eccentricities. <sup>1)</sup>
- Set the home page timer (10s to 120s; default: 60s).
- Set the brightness of the screen.
- Enable / Disable the automatic night mode (the brightness decrease to the night mode value when it becomes to be dark).
- Set the night mode brightness value.
- Activation of the Over Head Frame function (additional function). <sup>2)</sup>
- The OHF Container Manual Attached / OHF Container Auto Attached are future functions (not operative).

1) = Only available with the twin-lift system.

2) = Only operative with the single-lift system.

## LASSTEC

### Weighing System 0521

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#### Navigation:

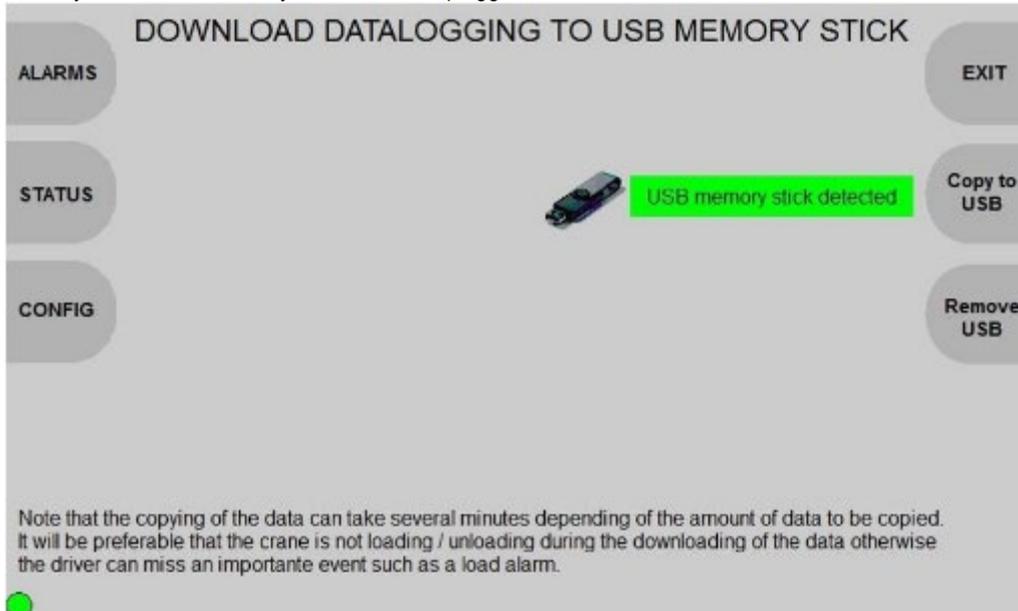
Button	Action
1_1	Go on page alarms.
1_2	Go on page status.
1_3	Go on page user configuration (access to set the date and time of the HMI, Ethernet configuration and alarms display configuration).
1_4	Go on page download datalogging to USB memory stick.
1_5	Go on page advanced configuration. Advanced configuration (protect by password: Conductix-Wamplfer use only)
UP	Navigation: select the previous editable element Edition of night mode brightness: Increase by 10 % the night mode brightness.
DOWN	Navigation: select the next editable element Edition of night mode brightness: Decrease by 10 % the night mode brightness.
PUSH	Edit the selected element. Enable or disable the selected checkbox or allows to edit the night mode brightness.
3_1	Decrease by 10 % the current brightness.
3_2	Increase by 10 % the current brightness.
3_3	Go on page about.
3_4	Exit the current page and go on home page.

## LASSTEC

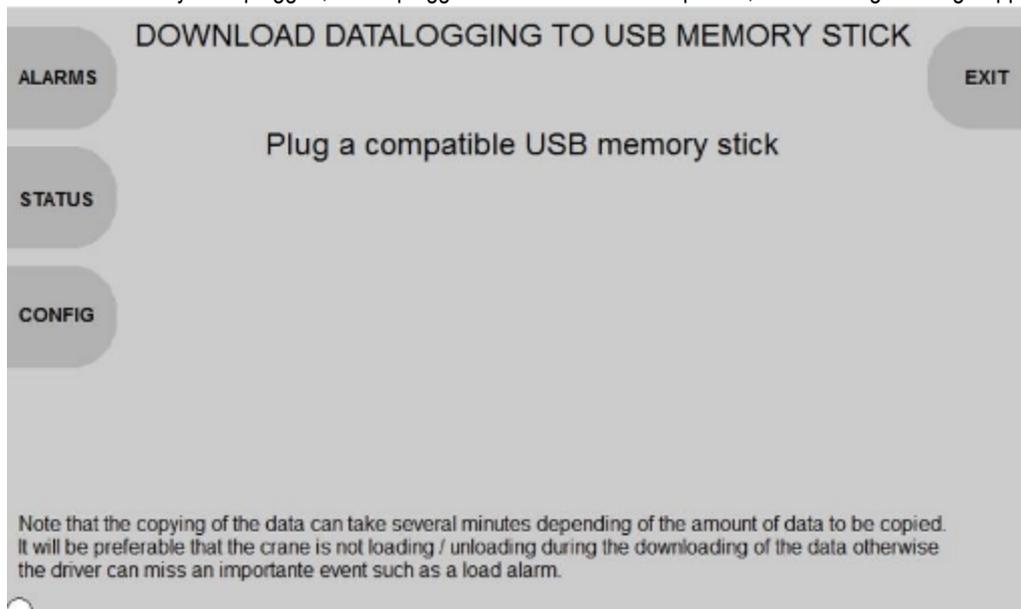
### Weighing System 0521

#### 6.2.7 Download Datalogging to USB Memory Stick

When the download datalog button is pressed on the configuration page, the following page will appear. On this page, a compatible USB memory stick is automatically detected when plugged.



If no USB memory stick plugged, or the plugged USB stick is not compatible, the following message appears:



In order to enable the downloading possibility, plug a compatible USB memory stick.  
(See the IFM CR1081 manual for further information about compatible USB devise)

## LASSTEC

### Weighing System 0521

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Information detail:



**WARNING!**

The copying of the data can take several minutes depending of the amount of data to be copied. It will be preferable that the crane is not loading / unloading during the downloading of the data otherwise the driver can miss an important event such as a load alarm.



**WARNING!**

The data logging must be made when the crane is not in use, in order to not disturb the driver and operations, unless otherwise specified.

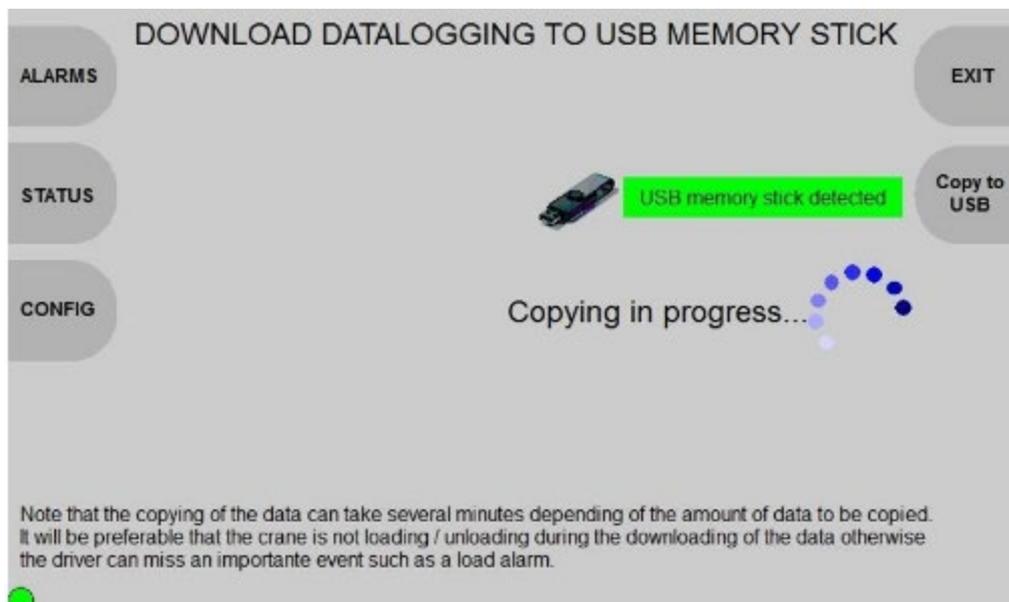
When the “Copy to USB” button is pressed, all recorded data from the HMI memory are being downloaded. The time needed for downloading depend on the amount of data to be copied. It can take from a few seconds up to several minutes.

The datalogging files are “.csv” files named depending of the installed system:

- YYYY-MM\_LASSTEC\_singlelift\_Datalog.csv
- YYYY-MM\_LASSTEC\_twinlift\_Datalog.csv

With the YYYY the corresponding year and MM the corresponding month of the datalog and tabulation for column separators.

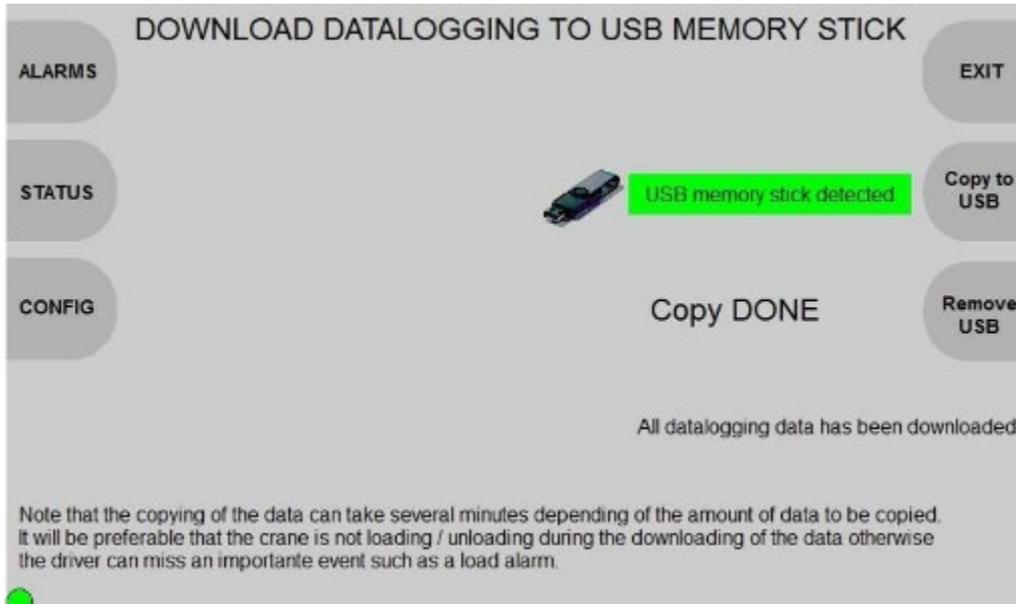
During copying process the following animation appears:



## LASSTEC

### Weighing System 0521

Wait until the data download is complete. Once the download process is complete, the following window appears:



When the download process is completed “eject” the USB memory stick by pressing the “Remove USB” button and unplug the USB memory stick.

#### Navigation:

Button	Action
1_1	Go on page alarms
1_2	Go on page status
1_3	Go on page configuration of the screen
3_2	When USB in: Eject the USB memory stick
3_3	When USB in: Copy the datalogging from the HMI to the USB memory stick.
3_4	Exit the current page and go on home page

## LASSTEC

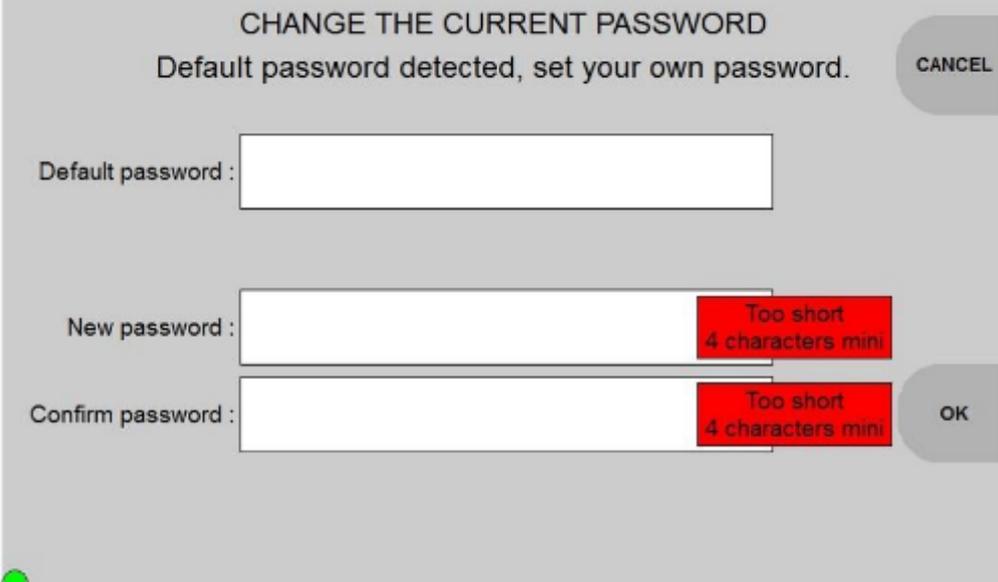
### Weighing System 0521

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#### 6.2.8 User Configuration

When the USER CONFIG button is pressed on the configuration page, a password must first be entered or a new one has to be created.

When the default password is detected, the following page will appear:



Set a password:



**ADVICE!**

The password has to be 4 characters minimum, it can be any type of HMI supported characters (letter, digit and special characters).  
The password is case sensitive, respect the uppercase and lowercase.

The way to change a password is to enter the default password, enter the new password two times and confirm by click on OK button.  
The default password is "User" without quote.



**ADVICE!**

If you lost your current password there is no possibility to login again or to change the password.

## LASSTEC

### Weighing System 0521

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When the default password changed, the following page will appear:



To enter a password, select the password to be enter with key UP or DOWN use keys PUSH to edit and validate the password, UP and DOWN to choose the character and LEFT and RIGHT to select the cursor position (for further information see chapter 6.3.1).

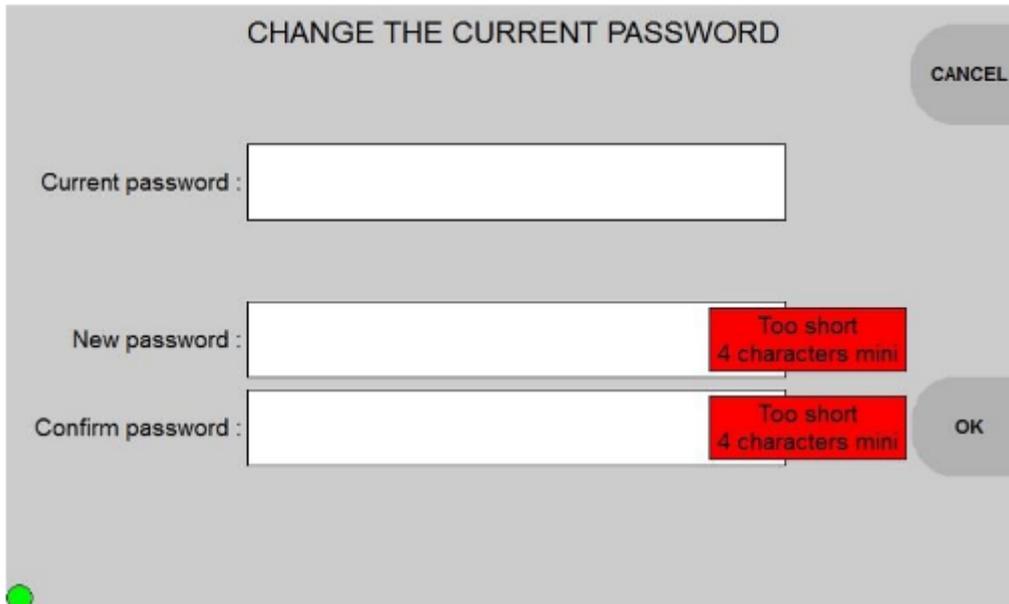
#### Navigation:

Button	Action
3_1	Confirm the password and go to the target page
3_3	Go on page change the current password
3_4	Exit the current page and go on configuration page
UP	Navigation: select the previous editable element Edition: select the next character.
DOWN	Navigation: select the next editable element Edition: select the previous character.
LEFT	Edition: move the cursor on the left.
RIGHT	Edition: move the cursor on the right.
PUSH	Edit or validate the password.

## LASSTEC

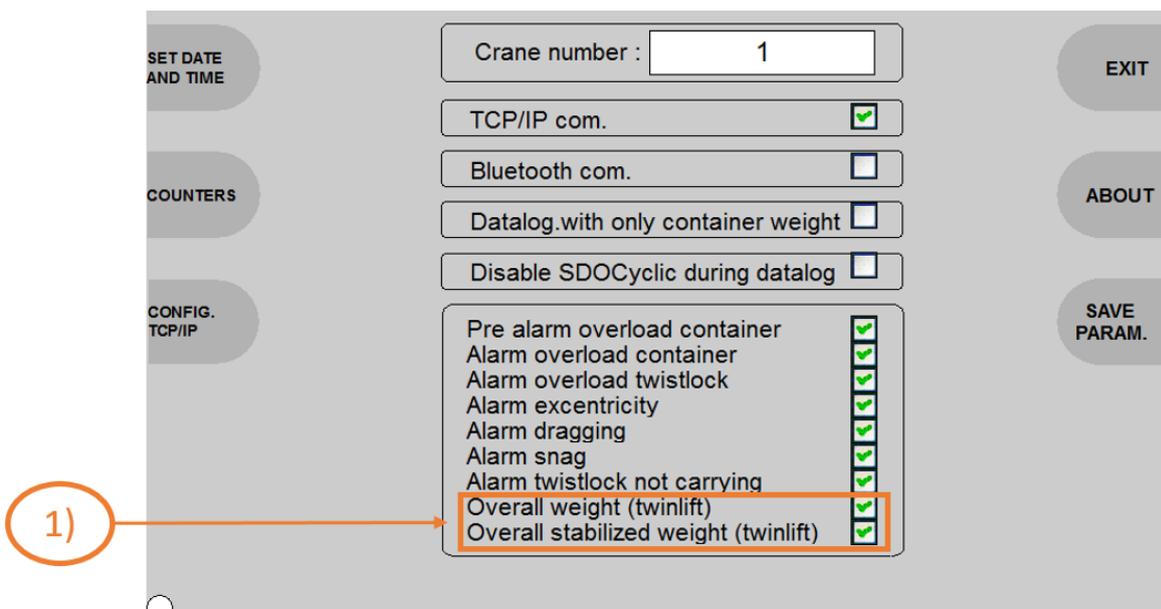
### Weighing System 0521

When the change pwd button is pressed on the password prompt page, the following page will appear:



The way to change a password is to enter the current password, enter the new password two times and confirm by click on OK button. To enter a password (see chapter 7.3.1 How to type a password).

When the USER CONFIG button is pressed on the configuration page and the password entered, the following page will appear:



## LASSTEC

### Weighing System 0521

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#### Information detail:

This page allows to configure the home page with the following parameters:

- Crane number (this parameter is used with TCP/IP communication).
- Enable / Disable the TOS TCP/IP communication.
- Enable / Disable the TOS Bluetooth communication.
- Enable / Disable data logging with only container weight.
- Enable / Disable SDO cyclic during datalog.
- Enable / Disable alarm (You have to push the button "SAVE PARAM. to validate your choice).

1) = Only available with the twin-lift system.

#### Navigation:

Button	Action
1_1	Go on page set date and time.
1_2	Go on page counters.
1_3	Go on page config TCP/IP.
3_2	Save alarms configuration. This button is disable when the system is lock.
3_3	Go on page about.
3_4	Exit the current page and go on configuration home page.
UP	Navigation: select the previous editable element
DOWN	Navigation: select the next editable element
PUSH	Edit the selected element. Enable or disable the selected.



**DANGER!**

**Alarms that are deactivated no longer appear on the main screen and are not displayed on the error page.**

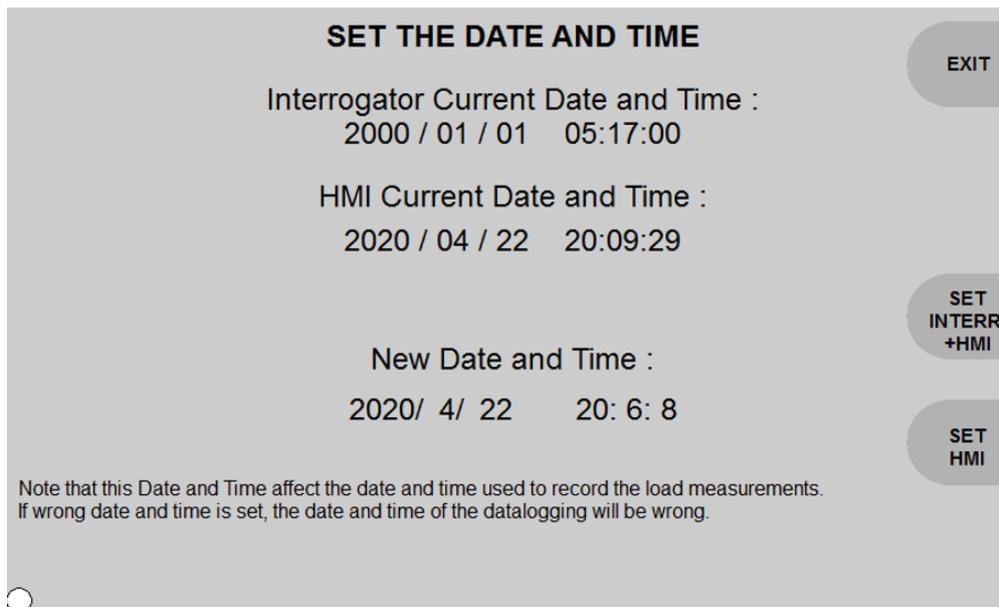
## LASSTEC

### Weighing System 0521

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#### 6.2.8.1 Set the date and time

When the set date and time button is pressed on the user configuration page, the following page will appear:



**SET THE DATE AND TIME**

Interrogator Current Date and Time :  
2000 / 01 / 01 05:17:00

HMI Current Date and Time :  
2020 / 04 / 22 20:09:29

New Date and Time :  
2020/ 4/ 22 20: 6: 8

Note that this Date and Time affect the date and time used to record the load measurements.  
If wrong date and time is set, the date and time of the datalogging will be wrong.

EXIT

SET INTERR. +HMI

SET HMI

#### Set the date and time:

The way to set the date and time of the HMI is to enter the Year/ Month/ Day and Hour: Minute: Second separately, then confirm by click on SET button.

Year: selection of the digit to be configured and increment 1 by 1. Minimum: 2014; Maximum 9999

Month: increment the number 1 by 1. Minimum 1; Maximum 12.

Day: increment the number 1 by 1. Minimum 1; Maximum 31.

Hour: increment the number 1 by 1. Minimum 0; Maximum 23.

Minute: increment the number 1 by 1. Minimum 0; Maximum 59.

Second: increment the number 1 by 1. Minimum 0; Maximum 59.

To enter the date and time (see chapter 6.3.2).

#### Navigation:

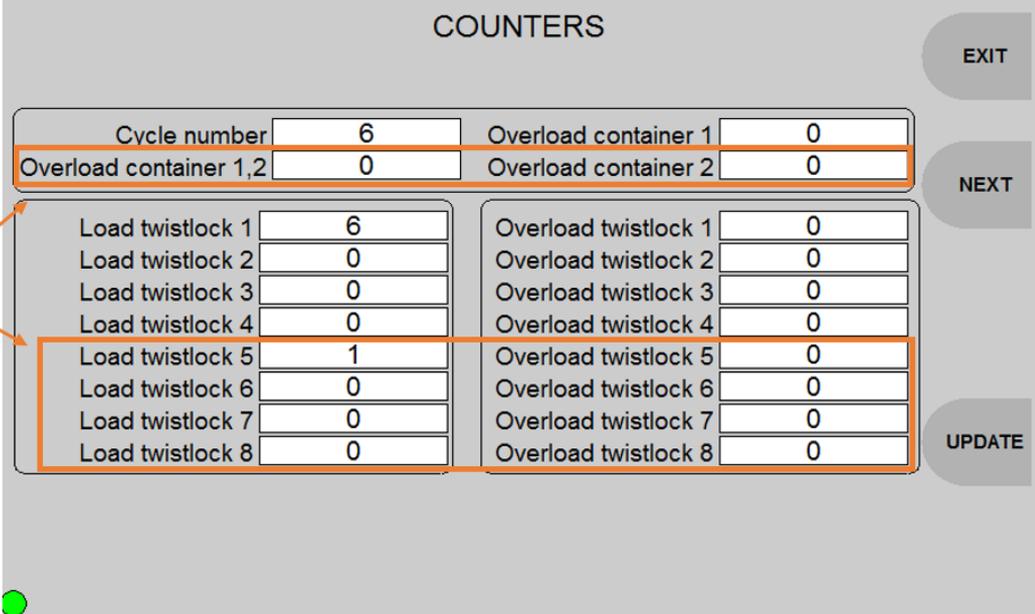
Button	Action
3_1	Confirm and set the HMI date and time
3_2	Confirm and set the Interrogator and HMI date and time. This button is disable when the system is locked.
3_4	Exit the current page and go on configuration page

## LASSTEC

### Weighing System 0521

#### 6.2.8.2 Counters

When the Counters button is pressed on the user configuration page, the following page will appear:



COUNTERS			
Cycle number	6	Overload container 1	0
Overload container 1,2	0	Overload container 2	0
Load twistlock 1	6	Overload twistlock 1	0
Load twistlock 2	0	Overload twistlock 2	0
Load twistlock 3	0	Overload twistlock 3	0
Load twistlock 4	0	Overload twistlock 4	0
Load twistlock 5	1	Overload twistlock 5	0
Load twistlock 6	0	Overload twistlock 6	0
Load twistlock 7	0	Overload twistlock 7	0
Load twistlock 8	0	Overload twistlock 8	0

This page displays the following counters:

- Cycle number: Number of measuring cycles
- Overload container 1, 2: Overload count from container 1 and container 2 <sup>1)</sup>
- Overload container 1: Overload count container 1
- Overload container 2: Overload count container 2 <sup>1)</sup>
- Load Twistlock 1: Number of Twistlock 1 loads
- Load Twistlock 2: Number of Twistlock 2 loads
- Load Twistlock 3: Number of Twistlock 3 loads
- Load Twistlock 4: Number of Twistlock 4 loads
- Load Twistlock 5: Number of Twistlock 5 loads <sup>1)</sup>
- Load Twistlock 6: Number of Twistlock 6 loads <sup>1)</sup>
- Load Twistlock 7: Number of Twistlock 7 loads <sup>1)</sup>
- Load Twistlock 8: Number of Twistlock 8 loads <sup>1)</sup>
- Overload Twistlock 1: Number of Twistlock 1 overloads
- Overload Twistlock 2: Number of Twistlock 2 overloads
- Overload Twistlock 3: Number of Twistlock 3 overloads
- Overload Twistlock 4: Number of Twistlock 4 overloads
- Overload Twistlock 5: Number of Twistlock 5 overloads <sup>1)</sup>
- Overload Twistlock 6: Number of Twistlock 6 overloads <sup>1)</sup>
- Overload Twistlock 7: Number of Twistlock 7 overloads <sup>1)</sup>
- Overload Twistlock 8: Number of Twistlock 8 overloads <sup>1)</sup>

## LASSTEC

### Weighing System 0521

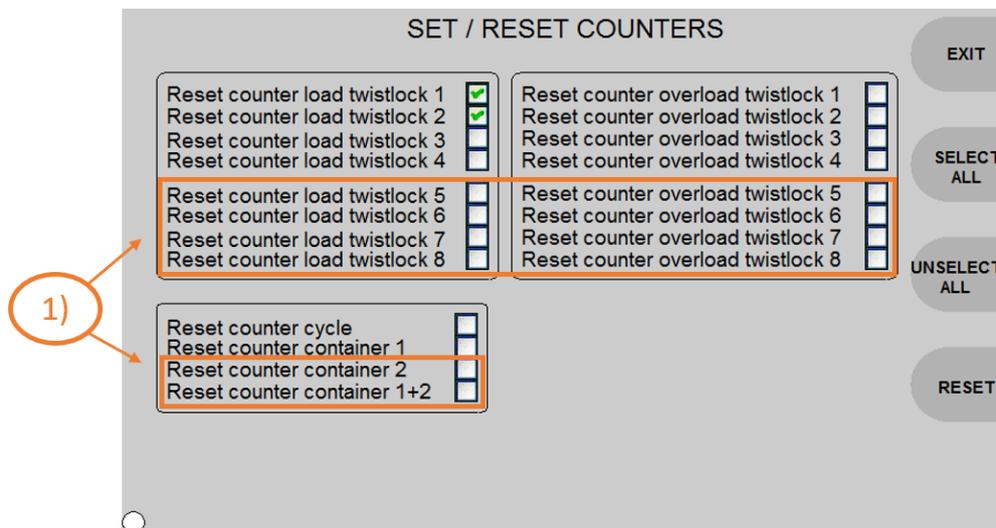
#### Navigation:

Button	Action
3_1	Update the counters.
3_3	Go on page reset counters.
3_4	Exit the current page and go on configuration page.

1) = Only available with the twin-lift system.

#### 6.2.8.3 Reset counters

When the Next button is pressed on the counters page, the following page will appear:



This page allows to reset the counters to "0". A reset is only possible when the version of the Interrogator is ok and the Twistlocks are unlocked.

#### Navigation:

Button	Action
3_1	Reset the selected counters. This button is disable when the system is lock.
3_2	This button permits to unselect all the reset counter.
3_3	This button permits to select all the reset counter.
3_4	Exit the current page and go on counters page.
UP	Navigation: select the previous editable element
DOWN	Navigation: select the next editable element
PUSH	Edit the selected element. Enable or disable the selected.

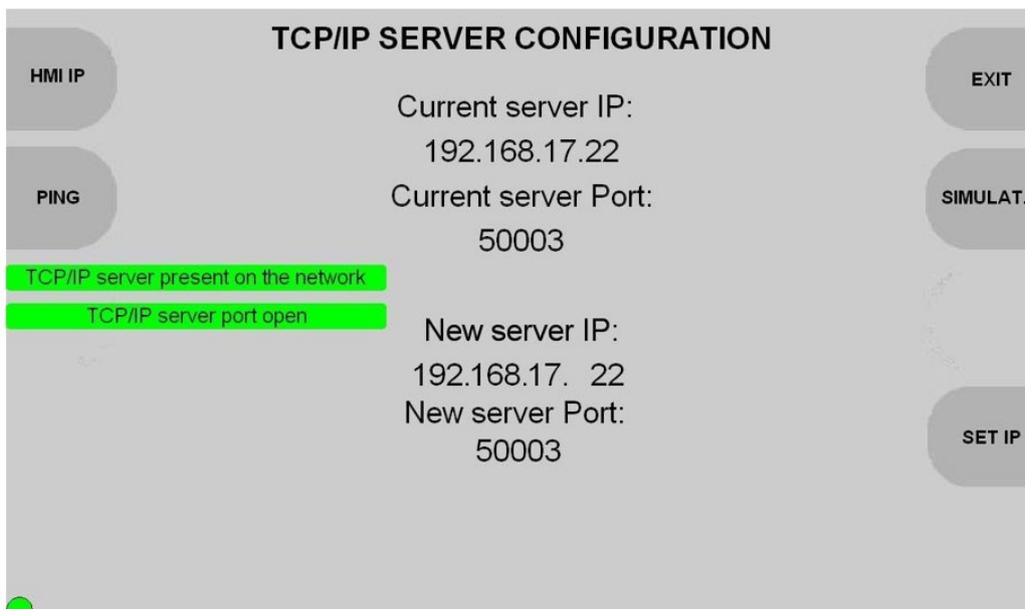
1) = Only available with the twin-lift system.

## LASSTEC

### Weighing System 0521

#### 6.2.8.4 TCP/IP server configuration

When the config TCP/IP button is pressed on the user configuration page, the following page will appear:



This page allows to set the IP address of the server (not of the HMI) and simulate a data send.

#### Set the new server IP:

The way to set the IP address of the server is to enter the four parameters of the IP address separately, then confirm by click on SET button.

To enter the IP-Address (see chapter 7.3.3 How to type the IP-Address).

#### Simulation:

If you press with button, the HMI will send test data to the server. This function will be used, if no test weight is available.

#### Navigation:

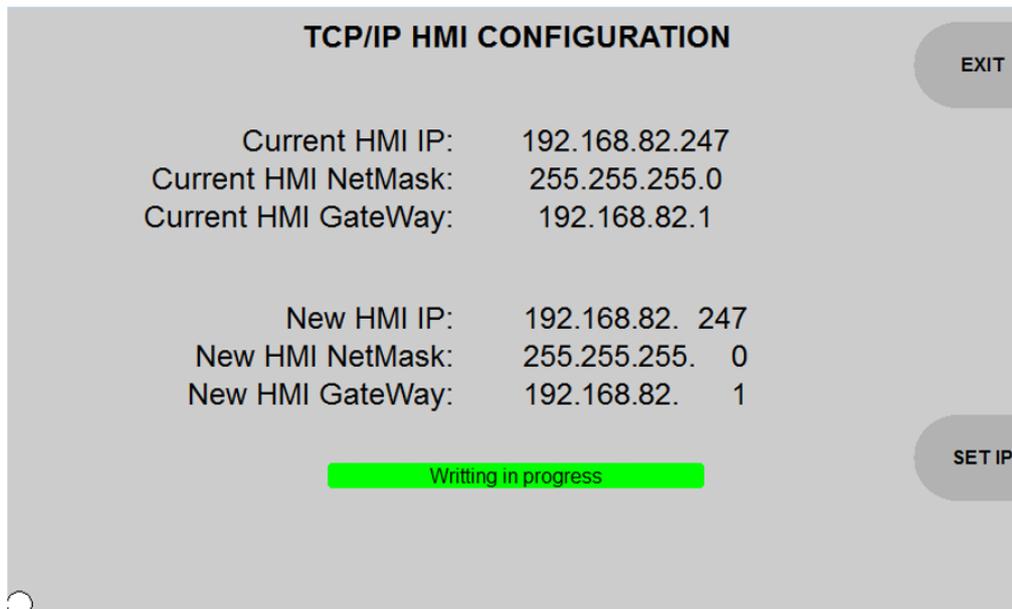
Button	Action
1_1	Exit the current page and go on HMI IP configuration page
1_2	Ping request (Enable if Unlock)
3_1	Confirm and set the new IP address (Enable if Unlock)
3_3	Send data to the server (Enable if Unlock)
3_4	Exit the current page and go on configuration page

## LASSTEC

### Weighing System 0521

#### 6.2.8.5 TCP/IP HMI configuration

When the HMI IP button is pressed on the TCP/IP server configuration page, the following page will appear:



**TCP/IP HMI CONFIGURATION**

EXIT

Current HMI IP: 192.168.82.247  
Current HMI NetMask: 255.255.255.0  
Current HMI GateWay: 192.168.82.1

New HMI IP: 192.168.82. 247  
New HMI NetMask: 255.255.255. 0  
New HMI GateWay: 192.168.82. 1

Writing in progress

SET IP

This page allows to set the IP address of the HMI.

#### Set the new HMI IP:

The way to set the IP address of the HMI is to enter the parameters of the IP address, subnet mask and create if necessary a new gateway, then confirm by click on SET button.

To enter the IP-Address (see chapter 6.3.3).

#### Navigation:

Button	Action
3_1	Confirm and set the new IP address (Enable if Unlock)
3_4	Exit the current page and go on TCP/IP server configuration page

#### 6.2.9 Advanced configuration

This page is reserved for Conductix-Wamplfer configuration only.

## LASSTEC

### Weighing System 0521

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#### 6.2.10 About

When the about button is pressed on the configuration page, the following page will appear:



This page displays extra information about the LASSTEC system:

- Conductix-Wampfler contact.
- HMI software and firmware version.
- HMI Cycle time.
- CAN Bus load.
- Duration of the last data logging upload.
- Power supply voltage of the HMI.
- Internal temperatures of the HMI.
- Interrogator serial numbers and software versions.
- Counter EEPROM for Seal value.

Navigation:

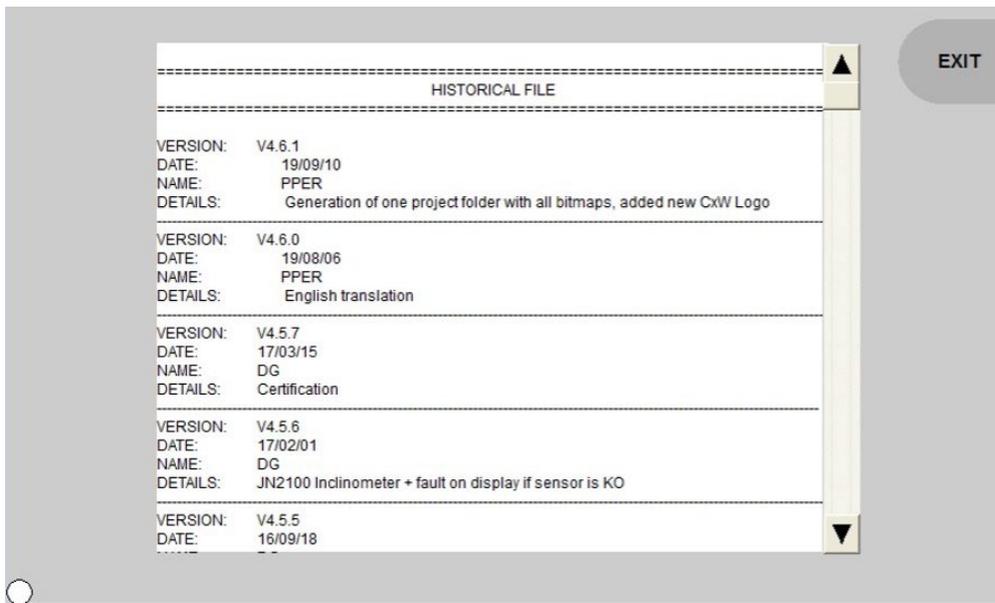
Button	Action
3_4	Exit the current page and go on main configuration page
1_1	Exit the current page and go on historical page

## LASSTEC

### Weighing System 0521

#### 6.2.11 Historical

When the historical button is pressed on the about page, the following page will appear:



#### Information detail:

- This page displays an historical of the PLC program modification.

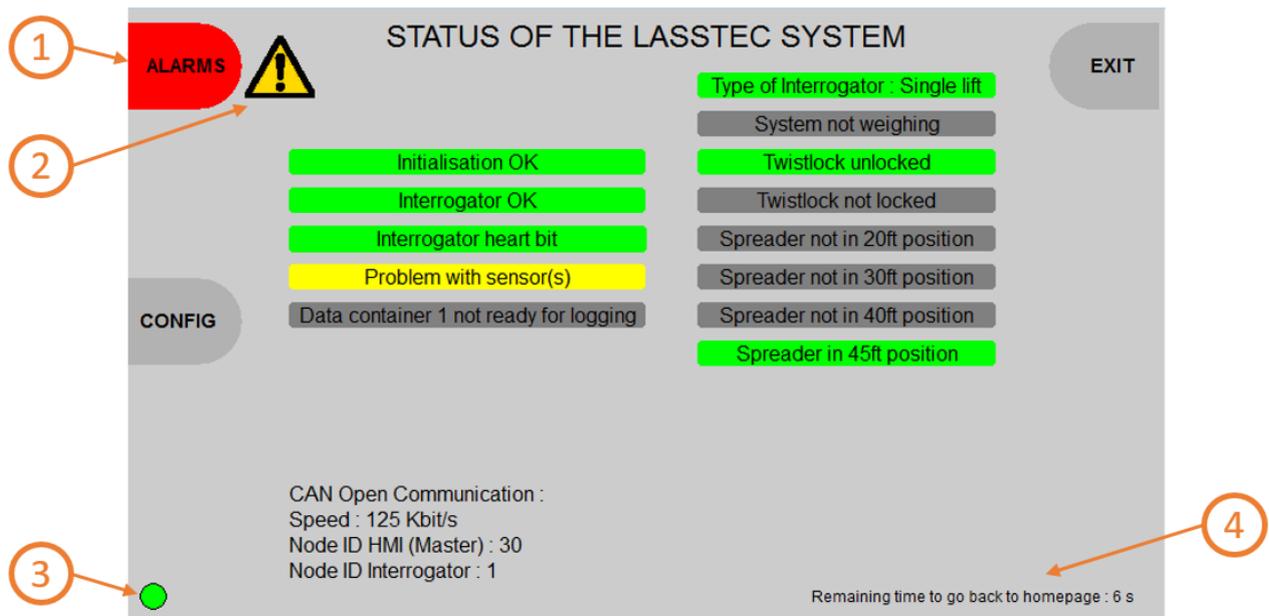
#### Navigation:

Button	Action
3_4	Exit the current page and go on about page

## LASSTEC Weighing System 0521

### 6.2.12 Common visualisation elements

Example with the status page:



- ① When the current page allows to access to an alarm page, the background of the button label switch red when an alarm appears.
- ② When the current page allows to access to a load alarm page and an alarm appears, a warning pictogram appears next to the ALARMS button.
- ③ In all pages: a blinking white / green / red light flashes on the left bottom to indicate the interrogator heartbeat  
 Blinking white  
 green: communication with the interrogator is ok  
 Red: no communication with the interrogator. If the communication is not ok, the following image will appear on the screen:



- ④ In all pages: the home page timer is shown when the time left to back to home page is above 10 seconds.

## LASSTEC

### Weighing System 0521

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#### 6.3 Procedures

This chapter describes the procedures in order to configure the HMI.



**WARNING!**

**All these procedures must be made when the crane is not in use, in order to not disturb the driver and operations, unless otherwise specified.**

##### 6.3.1 How to type a password

If you try to access to User config page or to change the current password, you have to enter a password, following an example of how typing a password:

For example, type "LASSTEC" as password:

1. Select the text box with navigation keys (UP or DOWN).
2. Edit the text box by pressing the PUSH button.
3. Press the UP key (once for choose the next character; keep pressed for fast change of character), press DOWN key for choose previous character.
4. Once you have the "l" character press the RIGHT key once to move the cursor by one character on the right.
5. Then proceed the same way for the next characters
6. Once the "c" character is entered, press the PUSH key to validate the password.
7. The password is now display with "\*" for each entered character and ready for validation.

##### 6.3.2 How to set the date and time

The date and time setting of the IHM is related to the date and time of the datalogging, make sure to set a correct date and time in order to avoid a wrong datalogging.

To set the date and time:

1. From the home page of the HMI, press the Config button.
2. From the configuration page, press the user Config button.
3. Enter your password (see the password chapter 6.3.1).
4. From the user config page, press the set date and time button.
5. From the set date and time page, select the year by pressing the UP or DOWN key.
6. Press the PUSH key to edit the year.
7. Now the keyboard is displayed, the keys UP/DOWN/LEFT/RIGHT must be pressed to get to the requested keyboard button.
8. At first the keyboard button CLEAR or BACK must be selected and confirmed with the PUSH key.
9. Enter the year number between 2014 and 9999.
10. After the year has been entered, the entry can be terminated with OK (select OK and press the PUSH key).
11. The points 6-10 are to be carried out again for the month, day, hour, minute and second.
12. Once the date and time is according to your local time, press the SET button in order to validate the change of the date and time of the HMI and Interrogator

## LASSTEC

### Weighing System 0521

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#### 6.3.3 How to type the IP-Address

The correct HMI IP-Address and TCP/IP server IP-Address are necessary for the communication between the TOS and the LASSTEC system.

To set the IP-Address:

1. From the home page of the HMI, press the Config button.
2. From the configuration page, press the user Config button.
3. Enter your password (see chapter 6.3.1).
4. From the user configuration page, press the Config TCP/IP button.
5. To select the IP-Address number, the key UP or DOWN have to be pressed.
6. Press the PUSH key to edit the selected IP-Address number.
7. Now the keyboard is displayed, the keys UP/DOWN/LEFT/RIGHT must be pressed to get to the requested keyboard button.
8. At first the keyboard button CLEAR or BACK must be selected and confirmed with the PUSH key.
9. Enter the new IP-Address number between 0 and 255.
10. After the new IP-Address number has been entered, the entry can be terminated with OK (select OK and press the PUSH key).
11. Select the next IP-Address number with the UP or DOWN key.
12. When the IP-Address completely filled in, press the SET IP button.

#### 6.4 HMI / TOS Communication

The following communication options are available for the HMI <-> TOS communication:

1. TCP-IP communication
2. Serial communication
3. Bluetooth communication

##### 6.4.1 TCP-IP communication protocol

###### Single-lift mode

Index	Parameter	Description
0	Crane number	Number of the crane (optional)
1	Interrogator cycle	Number of measuring cycles
2	Numbre of container	Number of the container (optional)
3	Container Size	Container size (20ft, 30ft, 40ft, 45ft) [Ft]
4	Weight Container	Stabilized total container weight [Ton]
5	Eccentricity X (length) container	Eccentricity in x direction [%]
6	Eccentricity Y (width) container	Eccentricity in y direction [%]
7	Weight Twistlock 1	Weight on Twistlock 1 [Ton]
8	Weight Twistlock 2	Weight on Twistlock 2 [Ton]
9	Weight Twistlock 3	Weight on Twistlock 3 [Ton]
10	Weight Twistlock 4	Weight on Twistlock 4 [Ton]
11	Max Weight Container	Maximum container weight during the measurement [Ton]
12	Max Eccentricity X (length) Container	Maximum Eccentricity in x direction during the measurement [%]

## LASSTEC

### Weighing System 0521

Index	Parameter	Description
13	Max Eccentricity Y (width) Container	Maximum Eccentricity in y direction during the measurement [%]
14	Max Weight Twistlock 1	Maximum weight on Twistlock 1 during the measurement [Ton]
15	Max Weight Twistlock 2	Maximum weight on Twistlock 2 during the measurement [Ton]
16	Max Weight Twistlock 3	Maximum weight on Twistlock 3 during the measurement [Ton]
17	Max Weight Twistlock 4	Maximum weight on Twistlock 4 during the measurement [Ton]
18	Number of cycle Twistlock 1	Number of Twistlock 1 loads
19	Number of cycle Twistlock 2	Number of Twistlock 2 loads
20	Number of cycle Twistlock 3	Number of Twistlock 3 loads
21	Number of cycle Twistlock 4	Number of Twistlock 4 loads
22	Overload Twistlock 1	Number of Twistlock 1 overloads
23	Overload Twistlock 2	Number of Twistlock 2 overloads
24	Overload Twistlock 3	Number of Twistlock 3 overloads
25	Overload Twistlock 4	Number of Twistlock 4 overloads
26	Overload Container 1	Number of Container 1 overloads
27	Status 0	For the Status 0 definition (see chapter 7).
28	Status 1	For the Status 1 definition (see chapter 7).
29	Status 2	For the Status 2 definition (see chapter 7).
30	Status 3	For the Status 3 definition (see chapter 7).
31	Alarm 1	For the Alarm 1 definition (see chapter 7).
32	Alarm 2	For the Alarm 2 definition (see chapter 7).
33	Alarm 3	For the Alarm 3 definition (see chapter 7).
34	Alarm 4	For the Alarm 4 definition (see chapter 7).
35	Alarm 5	For the Alarm 5 definition (see chapter 7).

#### Twin-lift mode

Index	Parameter	Description
0	Crane number	Number of the crane (optional)
1	Interrogator cycle	Number of measuring cycles
2	Number of container	Number of the container (optional)
3	Container Size	Container size (20ft, 30ft, 40ft, 45ft) [Ft]
4	Weight Container 1	Stabilized total weight container 1 [Ton]
5	Eccentricity X (length) container 1	Eccentricity in x direction container 1 [%]
6	Eccentricity Y (width) container 1	Eccentricity in y direction container 1 [%]
7	Weight Container 2	Stabilized total weight container 2 [Ton]
8	Eccentricity X (length) container 2	Eccentricity in x direction container 2 [%]
9	Eccentricity Y (width) container 2	Eccentricity in y direction container 2 [%]
10	Total Weight Container 1+2	Stabilized total weight container 1+2 [Ton]
11	Eccentricity X (length) spreader	Eccentricity in x direction spreader [%]
12	Eccentricity Y (width) spreader	Eccentricity in y direction spreader [%]
13	Weight Twistlock 1	Weight on Twistlock 1 [Ton]
14	Weight Twistlock 2	Weight on Twistlock 2 [Ton]

## LASSTEC

### Weighing System 0521

Index	Parameter	Description
15	Weight Twistlock 3	Weight on Twistlock 3 [Ton]
16	Weight Twistlock 4	Weight on Twistlock 4 [Ton]
17	Weight Twistlock 5	Weight on Twistlock 5 [Ton]
18	Weight Twistlock 6	Weight on Twistlock 6 [Ton]
19	Weight Twistlock 7	Weight on Twistlock 7 [Ton]
20	Weight Twistlock 8	Weight on Twistlock 8 [Ton]
21	Max Weight Container 1	Maximum weight during the measurement (container 1) [Ton]
22	Max Eccentricity X (length) Container 1	Maximum eccentricity in x direction during the measurement (container 1) [%]
23	Max Eccentricity Y (width) Container 1	Maximum eccentricity in y direction during the measurement (container 1) [%]
24	Max Weight Container 2	Maximum weight during the measurement (container 2) [Ton]
25	Max Eccentricity X (length) Container 2	Maximum eccentricity in x direction during the measurement (container 2) [%]
26	Max Eccentricity Y (width) Container 2	Maximum eccentricity in y direction during the measurement (container 2) [%]
27	Max Total Weight Container 1+2	Maximum weight during the measurement (container 1+2) [Ton]
28	Max Eccentricity X (length) Spreader	Maximum eccentricity in x direction during the measurement (container 1+2) [%]
29	Max Eccentricity Y (width) Spreader	Maximum eccentricity in y direction during the measurement (container 1+2) [%]
30	Max Weight Twistlock 1	Maximum weight on Twistlock 1 during the measurement [Ton]
31	Max Weight Twistlock 2	Maximum weight on Twistlock 2 during the measurement [Ton]
32	Max Weight Twistlock 3	Maximum weight on Twistlock 3 during the measurement [Ton]
33	Max Weight Twistlock 4	Maximum weight on Twistlock 4 during the measurement [Ton]
34	Max Weight Twistlock 5	Maximum weight on Twistlock 5 during the measurement [Ton]
35	Max Weight Twistlock 6	Maximum weight on Twistlock 6 during the measurement [Ton]
36	Max Weight Twistlock 7	Maximum weight on Twistlock 7 during the measurement [Ton]
37	Max Weight Twistlock 8	Maximum weight on Twistlock 8 during the measurement [Ton]
38	Number of cycles Twistlock 1	Number of Twistlock 1 loads
39	Number of cycles Twistlock 2	Number of Twistlock 2 loads
40	Number of cycles Twistlock 3	Number of Twistlock 3 loads
41	Number of cycles Twistlock 4	Number of Twistlock 4 loads
42	Number of cycles Twistlock 5	Number of Twistlock 5 loads
43	Number of cycles Twistlock 6	Number of Twistlock 6 loads
44	Number of cycles Twistlock 7	Number of Twistlock 7 loads
45	Number of cycles Twistlock 8	Number of Twistlock 8 loads
46	Overload Twistlock 1	Number of Twistlock 1 overloads
47	Overload Twistlock 2	Number of Twistlock 2 overloads
48	Overload Twistlock 3	Number of Twistlock 3 overloads
49	Overload Twistlock 4	Number of Twistlock 4 overloads
50	Overload Twistlock 5	Number of Twistlock 5 overloads
51	Overload Twistlock 6	Number of Twistlock 6 overloads
52	Overload Twistlock 7	Number of Twistlock 7 overloads
53	Overload Twistlock 8	Number of Twistlock 8 overloads

## LASSTEC

### Weighing System 0521

Index	Parameter	Description
54	Overload Container 1	Number of Container 1 overloads
55	Overload Container 2	Number of Container 2 overloads
56	Overload Container 1+2	Number of Container 1+2 overloads
57	Status 0	For the Status 0 definition (see chapter 7).
58	Status 1	For the Status 1 definition (see chapter 7).
59	Status 2	For the Status 2 definition (see chapter 7).
60	Status 3	For the Status 3 definition (see chapter 7).
61	Alarm 1	For the Alarm 1 definition (see chapter 7).
62	Alarm 2	For the Alarm 2 definition (see chapter 7).
63	Alarm 3	For the Alarm 3 definition (see chapter 7).
64	Alarm 4	For the Alarm 4 definition (see chapter 7).
65	Alarm 5	For the Alarm 5 definition (see chapter 7).

#### 6.4.2 Serial communication protocol

The serial communication is only available for the single-lift mode.

##### Communication option 1

Index	Parameter	Description
0	Weight Container	Stabilized total container weight [kg]
1	Weight Twistlock 4	Weight on Twistlock 4 [Ton]
2	Weight Twistlock 3	Weight on Twistlock 3 [Ton]
3	Weight Twistlock 1	Weight on Twistlock 1 [Ton]
4	Weight Twistlock 2	Weight on Twistlock 2 [Ton]
5	Eccentricity X (length) container	Eccentricity in x direction container [%]
6	Eccentricity Y (width) container	Eccentricity in x direction container [%]

##### Communication option 2

Index	Parameter	Description
0	Weight Container	Stabilised total container weight [kg]
1	Date	Date of measurement [dd.mm.yyyy]
2	Time	Time of measurement [hh.mm.ss]

##### Communication option 3

Index	Parameter	Description
0	Crane number	Number of the crane (optional)
4	Weight Container	Stabilized total container weight [Ton]
5	Eccentricity X (length) container	Eccentricity in x direction [%]
6	Eccentricity Y (width) container	Eccentricity in y direction [%]
7	Weight Twistlock 1	Weight on Twistlock 1 [Ton]
8	Weight Twistlock 2	Weight on Twistlock 2 [Ton]
9	Weight Twistlock 3	Weight on Twistlock 3 [Ton]

## LASSTEC

### Weighing System 0521

Index	Parameter	Description
10	Weight Twistlock 4	Weight on Twistlock 4 [Ton]
18	Number of cycles Twistlock 1	Number of Twistlock 1 loads
19	Number of cycles Twistlock 2	Number of Twistlock 2 loads
20	Number of cycles Twistlock 3	Number of Twistlock 3 loads
21	Number of cycles Twistlock 4	Number of Twistlock 4 loads
22	Overload Twistlock 1	Number of Twistlock 1 overloads
23	Overload Twistlock 2	Number of Twistlock 2 overloads
24	Overload Twistlock 3	Number of Twistlock 3 overloads
25	Overload Twistlock 4	Number of Twistlock 4 overloads
26	Overload Container 1	Number of Container 1 overloads
27	Status 0	For the Status 0 definition (see chapter 7).
28	Status 1	For the Status 1 definition (see chapter 7).
29	Status 2	For the Status 2 definition (see chapter 7).
30	Status 3	For the Status 3 definition (see chapter 7).
31	Alarm 1	For the Alarm 1 definition (see chapter 7).
32	Alarm 2	For the Alarm 2 definition (see chapter 7).
33	Alarm 3	For the Alarm 3 definition (see chapter 7).
34	Alarm 4	For the Alarm 4 definition (see chapter 7).
35	Alarm 5	For the Alarm 5 definition (see chapter 7).

#### 6.4.3 Bluetooth communication protocol

The Bluetooth protocol and the serial protocol are equal (see chapter 6.4.2).

## 7 Status and Alarm description

Status/Alarm words	Status/Alarm bits	Description
<b>Status 0</b>	0	The Lasstec system powered on (Status ON)
	1	System initialisation completed
	2	Interrogator self-test completed (UC OK)
	3	All 4 or 8 sensors are detected present
	4	The system is waiting for a Lock or Unlock signal after power on
	5	Software version bit 0 (UC type register 1)
	6	Software version bit 1 (UC type register 2)
	7	Spare
	8	Reference detection on weight 1
	9	Reference detection on weight 2
	10	Reference detection on weight 3
	11	Reference detection on weight 4
	12	Stabilized weight detected
	13	This bit changes at the end of each cycle (life bit)
	14	UC measurement is running (all Twistlocks are locked and the system is weighing)
15	Ready signal (Interrogator ready to measure)	
<b>Status 1</b>	0	Input status: Indicates if the twin-lift system is in twin-lift mode = 1 / if the twin-lift system is in single-lift mode = 0 (Twinlift down).
	1	Input status: Twistlocks are locked
	2	Input status: The spreader is landed on a container (Spreader seated)
	3	Interrogator mode: 0=Single-Lift / 1=Twin-Lift
	4	Input status: The spreader is in the 20ft telescopic position
	5	Input status: The spreader is in the 30ft telescopic position
	6	Input status: The spreader is in the 35ft telescopic position
	7	Input status: The spreader is in the 40ft telescopic position
	8	Input status: The spreader is in the 45ft telescopic position
	9	Input status: Twistlocks are unlocked (1=unlocked)
	10	Bit 0 status container1
	11	Bit 1 status container1
	12	Bit 0 status container2
	13	Bit 1 status container2
	14	Ramp adjustment running
15	No acceleration input (stab. Weight)	
<b>Status 2</b>	0	SLED setting is OK on TL 1
	1	SLED setting is OK on TL 2
	2	SLED setting is OK on TL 3
	3	SLED setting is OK on TL 4

## LASSTEC

### Weighing System 0521

Status/Alarm words	Status/Alarm bits	Description	
	4	SLED setting is OK on TL 5 <sup>1)</sup>	
	5	SLED setting is OK on TL 6 <sup>1)</sup>	
	6	SLED setting is OK on TL 7 <sup>1)</sup>	
	7	SLED setting is OK on TL 8 <sup>1)</sup>	
	8	Reference measurement is OK on TL1	
	9	Reference measurement is OK on TL2	
	10	Reference measurement is OK on TL3	
	11	Reference measurement is OK on TL4	
	12	Reference measurement is OK on TL5 <sup>1)</sup>	
	13	Reference measurement is OK on TL6 <sup>1)</sup>	
	14	Reference measurement is OK on TL7 <sup>1)</sup>	
	15	Reference measurement is OK on TL8 <sup>1)</sup>	
	<b>Status 3</b>	0	Derivation measurement after weight max
		1	Container 1 data memorisation Flag trigger
		2	Container 2 data memorisation Flag trigger <sup>1)</sup>
3		Container 1 + 2 data memorisation Flag trigger <sup>1)</sup>	
4		Weight ref and Tref measurement after lock signal	
5		Weight max measurement	
6		Tref measurement after weight max	
7		Wstab measurement after Tref	
8		Tref measurement is OK on sensor 1	
9		Tref measurement is OK on sensor 2	
10		Tref measurement is OK on sensor 3	
11		Tref measurement is OK on sensor 4	
12		Tref measurement is OK on sensor 5 <sup>1)</sup>	
13		Tref measurement is OK on sensor 6 <sup>1)</sup>	
14		Tref measurement is OK on sensor 7 <sup>1)</sup>	
15	Tref measurement is OK on sensor 8 <sup>1)</sup>		
<b>Alarm 1</b>	0	Alarm on sensor 1 (Malfunction of sensor 1 or broken fibre optic cable)	
	1	Alarm on sensor 2 (Malfunction of sensor 2 or broken fibre optic cable)	
	2	Alarm on sensor 3 (Malfunction of sensor 3 or broken fibre optic cable)	
	3	Alarm on sensor 4 (Malfunction of sensor 4 or broken fibre optic cable)	
	4	Alarm on sensor 5 (Malfunction of sensor 5 or broken fibre optic cable) <sup>1)</sup>	
	5	Alarm on sensor 6 (Malfunction of sensor 6 or broken fibre optic cable) <sup>1)</sup>	
	6	Alarm on sensor 7 (Malfunction of sensor 7 or broken fibre optic cable) <sup>1)</sup>	
	7	Alarm on sensor 8 (Malfunction of sensor 8 or broken fibre optic cable) <sup>1)</sup>	
	8	Impulse acquisition alarm	
	9	Pulse measurement alarm	
	10	Pulse high level alarm	

## LASSTEC

### Weighing System 0521

Status/Alarm words	Status/Alarm bits	Description
	11	SLED temperature alarm
	12	FILTER temperature alarm
	13	Ramp setting alarm
	14	Bad data in the RAM RTC alarm
	15	Global alarm
<b>Alarm 2</b>	0	2nd overload alarm Container 1
	1	2nd overload alarm Container 2 <sup>1)</sup>
	2	1st overload alarm Container 1
	3	1st overload alarm Container 2 <sup>1)</sup>
	4	Container 1 over excentricity X alarm
	5	Container 1 over excentricity Y alarm
	6	Container 2 over excentricity X alarm <sup>1)</sup>
	7	Container 2 over excentricity Y alarm <sup>1)</sup>
	8	Container 1 + 2 overload alarm <sup>1)</sup>
	9	Container 1 + 2 Excentricity X <sup>1)</sup>
	10	Container 1 + 2 Excentricity Y <sup>1)</sup>
	11	Alarm: No input "lock or unlock" enable for more than 3 seconds
	12	Alarm: Input "twinlift down" enable in single-lift mode <sup>2)</sup>
	13	RTC power supply lost alarm. The Interrogator was initialised without correct value into the power up memory.
	14	Low voltage 24V alarm
15	Container 1 + 2 overload Pre-alarm in twin mode <sup>1)</sup>	
<b>Alarm 3</b>	0	Snag load alarm on Twistlock 1
	1	Snag load alarm on Twistlock 2
	2	Snag load alarm on Twistlock 3
	3	Snag load alarm on Twistlock 4
	4	Snag load alarm on Twistlock 5 <sup>1)</sup>
	5	Snag load alarm on Twistlock 6 <sup>1)</sup>
	6	Snag load alarm on Twistlock 7 <sup>1)</sup>
	7	Snag load alarm on Twistlock 8 <sup>1)</sup>
	8	Event on container 1
	9	Event on container 2 <sup>1)</sup>
	10	Snag Alarm on container 1
	11	Snag Alarm on container 2 <sup>1)</sup>
	12	Snag Alarm on container 1 or 2 <sup>1)</sup>
	13	Dragging alarm
	14	Trailer lift alarm
15	No container size input detected	
<b>Alarm 4</b>	0	No load alarm on TL1. No load is measured on Twistlock 1 despite it is measured on the other Twistlocks.

## LASSTEC

### Weighing System 0521

Status/Alarm words	Status/Alarm bits	Description
	1	No load alarm on TL2. No load is measured on Twistlock 2 despite it is measured on the other Twistlocks.
	2	No load alarm on TL3. No load is measured on Twistlock 3 despite it is measured on the other Twistlocks.
	3	No load alarm on TL4 (no load is measured on Twistlock 4 despite it is measured on the other Twistlocks)
	4	No load alarm on TL5. No load is measured on Twistlock 5 despite it is measured on the other Twistlocks. <sup>1)</sup>
	5	No load alarm on TL6. No load is measured on Twistlock 6 despite it is measured on the other Twistlocks. <sup>1)</sup>
	6	No load alarm on TL7. No load is measured on Twistlock 7 despite it is measured on the other Twistlocks. <sup>1)</sup>
	7	No load alarm on TL8. No load is measured on Twistlock 8 despite it is measured on the other Twistlocks. <sup>1)</sup>
	8	Overload alarm on TL 1. Exceeding the threshold overload limit on Twistlock 1
	9	Overload alarm on TL 2. Exceeding the threshold overload limit on Twistlock 2
	10	Overload alarm on TL 3. Exceeding the threshold overload limit on Twistlock 3
	11	Overload alarm on TL 4. Exceeding the threshold overload limit on Twistlock 4
	12	Overload alarm on TL 5. Exceeding the threshold overload limit on Twistlock 5 <sup>1)</sup>
	13	Overload alarm on TL 6. Exceeding the threshold overload limit on Twistlock 6 <sup>1)</sup>
	714	Overload alarm on TL 7. Exceeding the threshold overload limit on Twistlock 7 <sup>1)</sup>
	15	Overload alarm on TL 8. Exceeding the threshold overload limit on Twistlock 8 <sup>1)</sup>
<b>Alarm 5</b>	0	EPROM read alarm
	1	Spare
	2	Spare
	3	Spare
	4	Spare
	5	Spare
	6	Spare
	7	Spare
	8	Spare
	9	Spare
	10	Spare
	11	Spare
	12	Spare
	13	Spare
	14	Spare
	15	Spare

1) = Only available with the twin-lift system.

2) = Only available with the single-lift system.

# Operating Instructions



**LASSTEC**

**Weighing System 0521**

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