

INSTALLER MANUAL

CUST

Kennis-KSS05

Input State

- ☐ Test Equipment
- ☐ Seat Switch

Output State

- ☐ EV Crane
- ☐ EV Stab
- ☐ OTE

Led State

- ☐ 90%
- ☐ 100%
- ☐ Power

Stab State

- ☐ Stab 1 Out
- ☐ Stab 1 Down
- ☐ Stab 2 Out
- ☐ Stab 2 Down

Current Tilting

Crane

Val rel [°]
Val abs [°]
Max rel [°]
Max abs [°]
Min rel [°]
Min abs [°]
Offset [°]
Crane Current Angle

Axle

Val rel [°]
Val abs [°]
Max rel [°]
Max abs [°]
Min rel [°]
Min abs [°]
Offset [°]
Axle Current Angle

Lever State

Err

Err

Err

Err

Err

Err

Err

Calibration

Configuration

Devices

Factory Test

Troubleshooting

 **KENNIS**
CRANES BY HYVA

Original instructions - 7845760-02 06/25

www.hyva.com

Installer Manual

CUST

MANUFACTURER:

Hyva Holding BV

A. van Leeuwenhoekweg 37
2408 AK Alphen aan den Rijn
The Netherlands.
Website: www.hyva.com

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INTRODUCTION

Scope of this guideline is to provide information on how to install and use the CUST software for setting Kennis cranes that comply with EN12999:2020 and EN13849.

In addition, this manual aims also to:

- improve the user experience by making it easier to learn how to use your software.
- explain the crane's configuration concepts as well as the procedure for stability calibration.
- reduce the support burden by giving the user the ability to solve his own problems.

Functions and features described in this manual refer to the versions below:

- CUST Prj last update: 20241111 or later
- CUST Plugin version: 1.0.1.113 or later

MENU OVERVIEW

HOMEPAGE	LEVEL 1	LEVEL 2
CALIBRATIONS	Stability Calibration	-
	Create Dataset Calibration File	-
	Installed Test	-
	Tilt Sensor Zero	-
	Crane Rest Pressure Autosetting	-
	Rotation Calibration	-
	Extensions Cable Reel Setting	-
	Boom Angles Calibration	-
	Hydraulic settings	-
CONFIGURATIONS	Machine Configuration	-
	Speed Reductions	Stabilizer Speed
		Above Horizontal
		End Stroke Cylinders
		Ramps
		Boom Crane Empty
		Boom Crane Loaded
		End of Inclination Limit (Booms)
		End of Inclination Limit (Ext/Rot)
		End of High Capacity Area CCW/CW
		End of High Capacity Area B1/B2/Ext
DEVICES	Parameters and Firmware Loading	-
FACTORY TEST	N/A	-
TROUBLESHOOTING	Keypad	-

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CUST : Installation

A INSTALLATION OF CUST

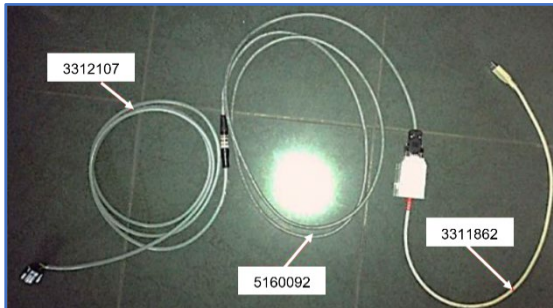
A.1 SYSTEM REQUIREMENTS

- Operating system: Microsoft Windows 10 or higher
- Communication interface: USB port 2.0 or higher

A.2 HOW TO CONNECT TO THE CRANE

The following parts are needed to connect the PC to the crane's electronic system:

CODE	DESCRIPTION
3311862	USB programmer
5160092	Cable from DB9 to M12 (L=10m)
3312107	Cable from M12 to multilink connector (L=1m)



The end of cable 3312107 shall be connected to the multilink connector on the crane.

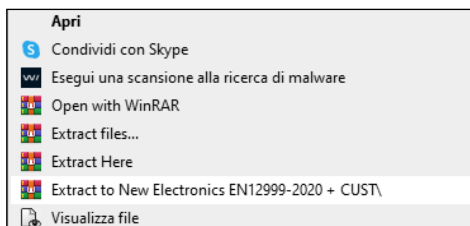
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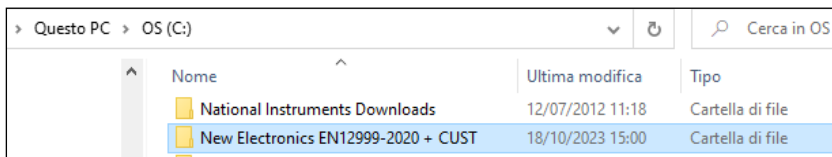
A.3 INSTALLATION AND ACTIVATION OF CUST

Follow the steps below to install and activate the software.

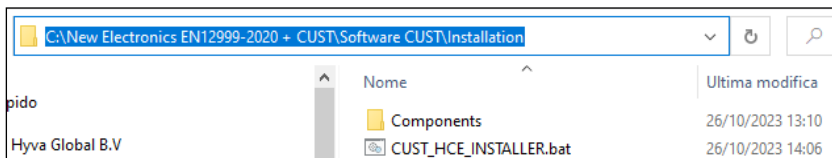
1. Copy the archive "**New Electronics EN12999-2020 + CUST**" on your desktop and extract it.



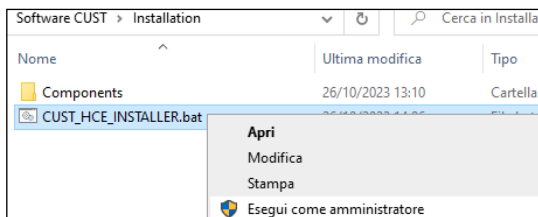
2. Copy the entire folder "**New Electronics EN12999-2020 + CUST**" in the "**C:**" drive.



3. Open this folder and browse subfolders to "**...Installation**".



4. Launch the "**CUST_HCE_INSTALLER.bat**" installation file, using "right-click" and "**Run as administrator**". (Esegui come amministratore).



Note: Administrator rights account is needed: please ask to your local IT support.

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CUST : Installation

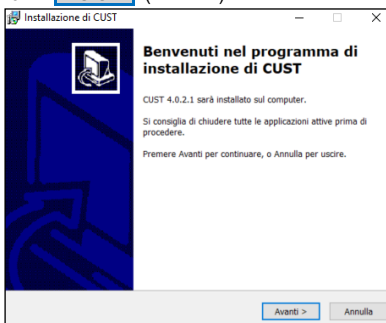
5. The procedure wizard starts: the black command window appears. First, the administrator rights are automatically checked. If the account is valid, then the CUST installer will proceed. If the account is not valid, then the CUST installer will open the login window again asking for administrator credentials: if they are not correct again, the CUST installer will abort.

```
CHECK ADMIN RIGHTS
---
Done
Click any key to continue . . .
Premere un tasto per continuare . . .
```

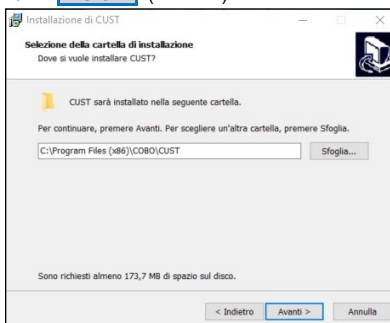
6. The installation of CUST is starting.

```
START INSTALLERS OF CUST AND DRIVERS
---
EN- Please follow guided procedures.
IT- Seguire le procedure guidate.
---
Click any key to continue . . .
Premere un tasto per continuare . . .
Done
```

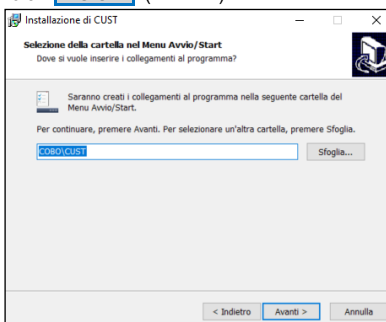
6.1. **Next >** (Avanti >)



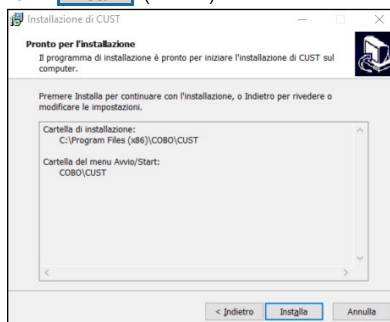
6.2. **Next >** (Avanti >)



6.3. **Next >** (Avanti >)



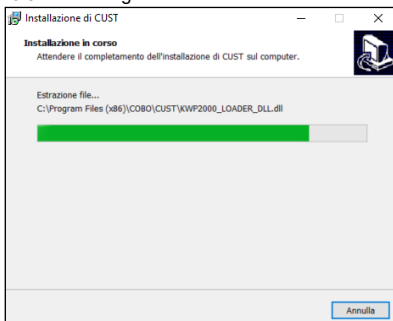
6.4. **Install** (Installa).



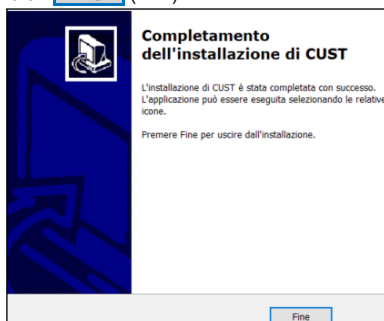
Installer Manual

CUST : Installation

6.5. Extracting files...



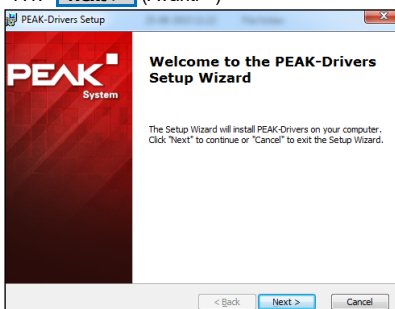
6.6. **Finish** (Fine)



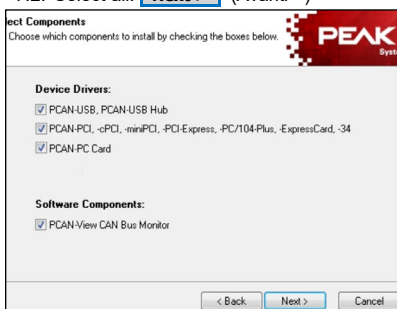
7. The installation of the 3 drivers is starting. Please connect the USB dongle "PEAK".

```
EN- Attention: Please connect the USB dongle "PEAK".
IT- Attenzione: Collegare il dispositivo USB "PEAK".
---
Click any key to continue . . .
Premere un tasto per continuare . . .
WAIT...
WAIT...
WAIT...
Done
Click any key to continue . . .
Premere un tasto per continuare . . .
```

7.1. **Next >** (Avanti >)



7.2. Select all. **Next >** (Avanti >)



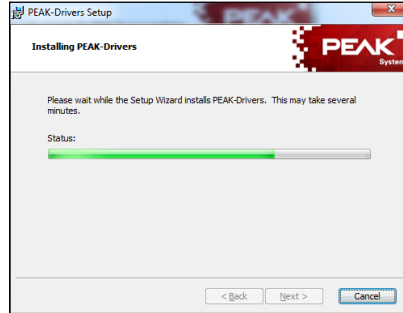
Installer Manual

CUST : Installation

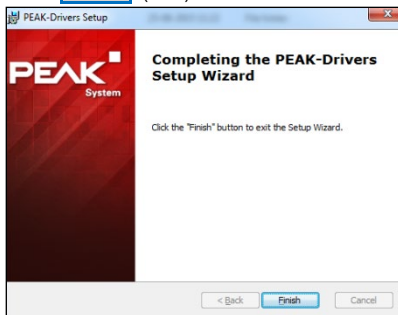
7.3. Select all. **Next >** (Avanti >)



7.4. Installing...



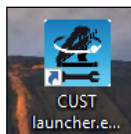
7.5. **Finish** (Fine)



8. The program creates links and shortcuts.

```
CREATE LINKS AND SHORTCUTS
---
      1 file copiati.
      1 file copied.
Done
Click any key to continue . . .
Premere un tasto per continuare . . .
```

A desktop shortcut pointing the CUST launcher is created. For more information please see A.4.



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CUST : Installation

9. The program clears datafiles of launcher.

```
CLEAR DATA FILE OF LAUNCHER
```

```
---
```

```
Done
```

```
Click any key to continue . . .
```

```
Premere un tasto per continuare . . .
```

10. The program configures the USB settings: please do NOT disconnect the USB dongle.

```
CONFIGURE USB SETTINGS
```

```
---
```

```
EN- Attention: Please do NOT disconnect the USB dongle "PEAK".
```

```
IT- Attenzione: NON scollegare il dispositivo USB "PEAK".
```

```
Click any key to continue . . .
```

```
Premere un tasto per continuare . . .
```

11. The window "Properties of CAN Hardware" opens. Make sure that "USB" is selected as "Active Device".

```
PCAN - PROPERTIES OF CAN HARDWARE
```

```
---
```

```
EN- In the next window please make sure that "USB" is selected next to "Active Device"  
Select and press OK.
```

```
IT- Nella prossima finestra verificare che "USB" sia selezionato presso "Active Device"  
Selezionare e premere OK.
```

```
---
```

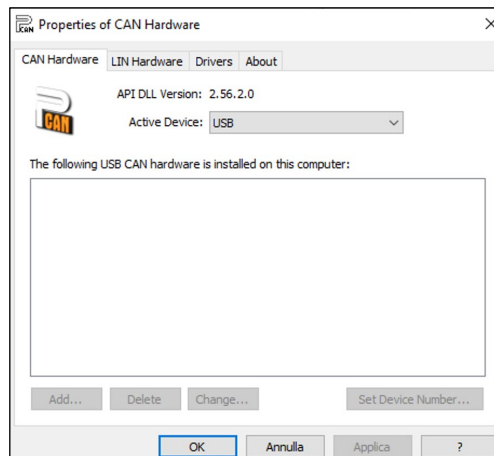
```
Click any key to continue . . .
```

```
Premere un tasto per continuare . . .
```

```
Done
```

```
Click any key to continue . . .
```

```
Premere un tasto per continuare . . .
```

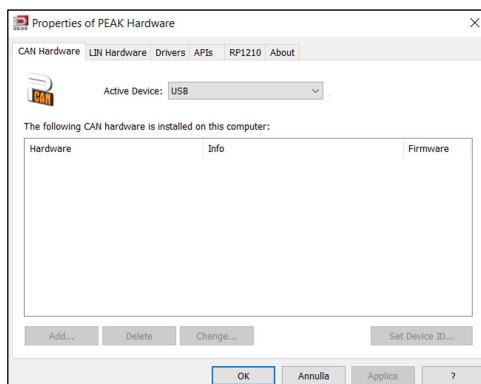


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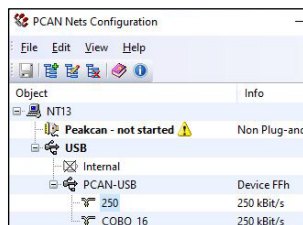
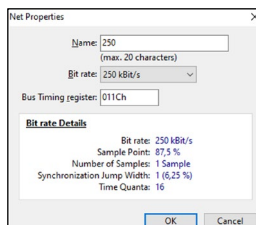
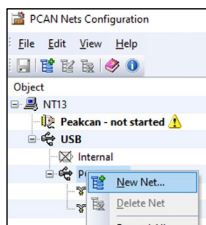
12. The window "Properties of PEAK Hardware" opens. Make sure that "USB" is selected as "Active Device".

```
PEAK - PROPERTIES OF PEAK HARDWARE
---
EN- Also in the next window please make sure that "USB" is selected next to "Active Device"
    Select and press OK
IT- Anche nella prossima finestra verificare che "USB" sia selezionato presso "Active Device"
    Selezionare e premere OK
---
Click any key to continue . . .
Premere un tasto per continuare . . .
Done
Click any key to continue . . .
Premere un tasto per continuare . . .
```



13. The window "PCAN Nets Configuration" opens.

```
PCAN NETS CONFIGURATION
---
EN- In the next window expand the tree-view menu clicking on USB and further on PCAN-USB
    views. Right-click on PCAN-USB and choose "New Net". Enter Name="250" and select Bit
    rate="250kBit/s". Click OK and then on SAVE. Close the window.
IT- Nella prossima finestra espandere il menu ad albero cliccando su USB e ancora su PCAN-
    USB. Cliccare tasto destro su PCAN-USB e selezionare "New Net". Scrivere Name="250" e
    selezionare Bit rate="250kBit/s". Cliccare OK e poi su SAVE. Chiudere la finestra.
---
Click any key to continue . . .
Premere un tasto per continuare . . .
Done
```



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14. The license program is starting.

START LICENSE PROGRAM

EN- Also In the next window select "CUST.exe" file into local C: drive Program files. Click on "Generate" and copy the User Code. Send it by e-mail to Service Provider COBO and wait for activation code. Paste the received code into the form. Click on "Activate" and close.

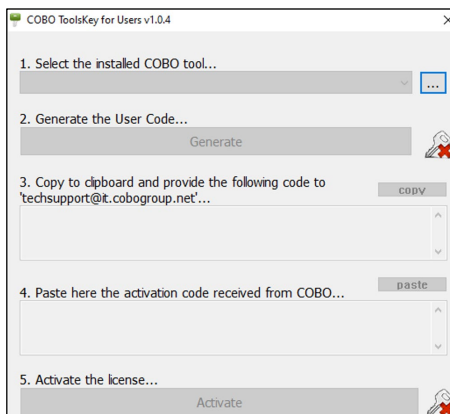
IT- Nella prossima finestra selezionare il file "CUST.exe" nel drive C: locale nella cartella Programmi. Cliccare su "Generate" e copiare lo User Code. Inviarlo per e-mail al Service Provider COBO. Incollare la chiave ricevuta nel form. Cliccare su "Activate" e chiudere.

Click any key to continue . . .

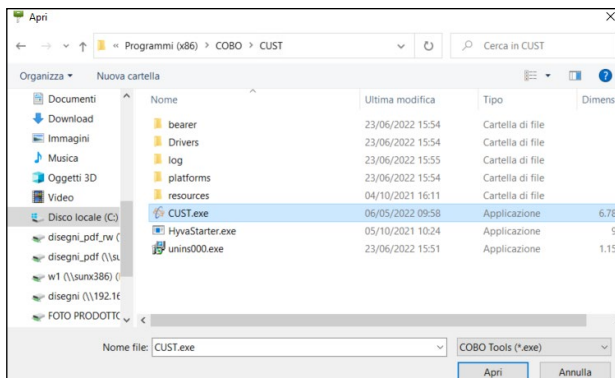
Premere un tasto per continuare . . .

Done

14.1. Click 



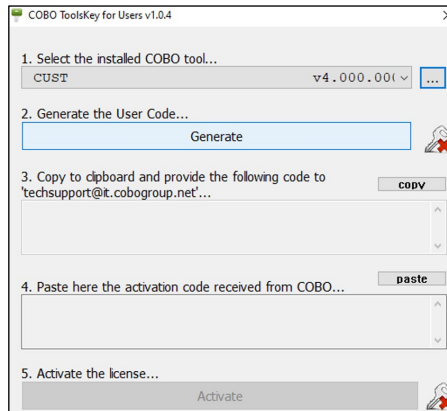
14.2. Select the path where the CUST is installed, "C:\Programs (x86)\COBO\CUST", and select the file "CUST.exe". Click  (Apri).



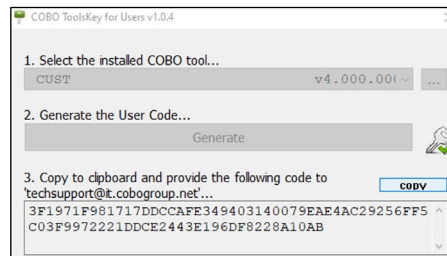
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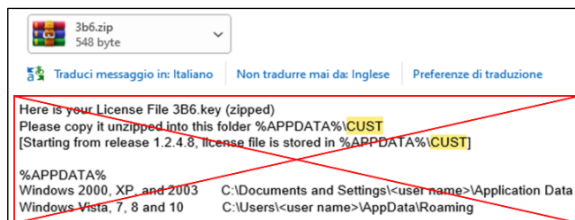
14.3. Click **Generate** to generate the User Code.



14.4. Copy the Code and send it by email to techsupport@it.cobogroup.net, by specifying that the license request is for HCE.



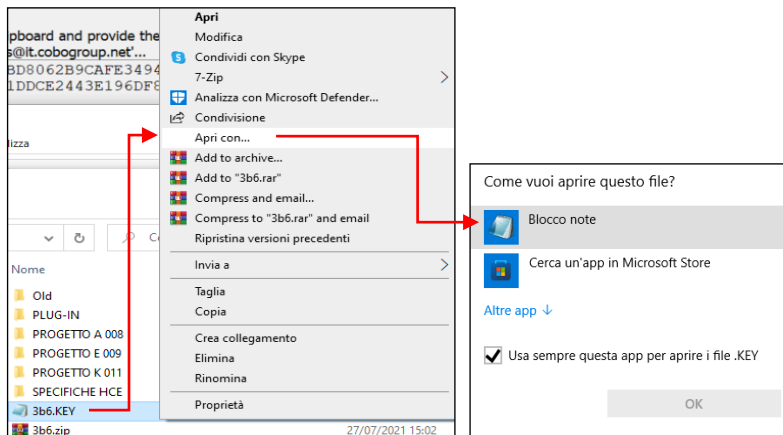
14.5. COBO Group will then reply by sending a zip file containing an activation code and instructions about how to copy the entire file on your laptop. Do NOT follow the instructions below but proceed please with the next steps in this document. Save the file anywhere on your PC.



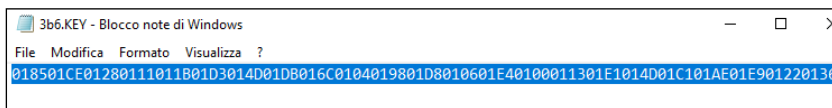
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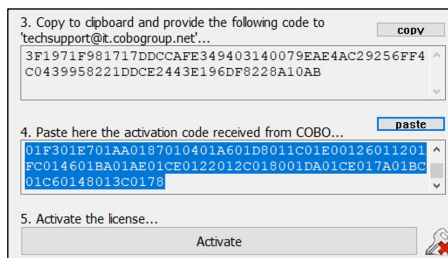
14.6. Unzip and open the "3b6.KEY" file with Notepad: right click → "Open with..." → "Notepad".



14.7. Select the entire text and copy it.



14.8. Click **paste** at "4." in the window and then click **Activate**.



15. The installation and the configuration have ended.

```
END OF INSTALLATION AND CONFIGURATION
...
Click any key to continue . . .
Premere un tasto per continuare . . .
```

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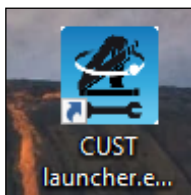
CUST : Installation

A.4 CONFIGURATION OF CUST LAUNCHER

The CUST software is the platform where the Graphical User Interface (GUI) runs. The GUI is composed of many project files (one for each different crane hardware) and one plug-in file: all these files are used by CUST.

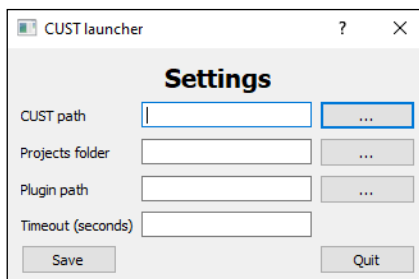
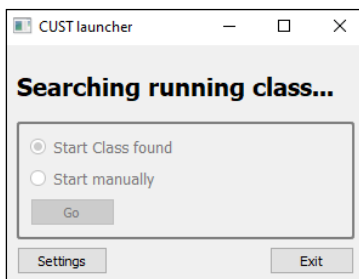
A launcher application was created to run the CUST and all these files: it can scan the network, identify the software embedded in the crane's system and finally link the correct project file. All these files shall be collected in a single folder and the Launcher must point to them. These files have been put in the "C:" drive together with the files archive.

The Launcher is automatically installed and a desktop shortcut is created. It is pointing to these files by default in the "C:" drive. If the Launcher runs properly, then you can skip this part.



If the Launcher does not work or it is not pointing to the correct files, because installed a long time ago and pointing other folders, then proceed with the following manual procedure.

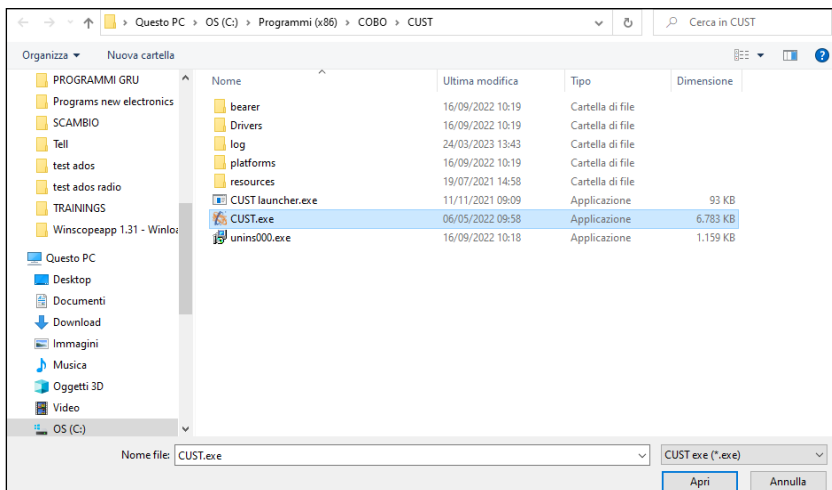
1. Open the CUST Launcher without any USB dongle connected and click **Settings**.



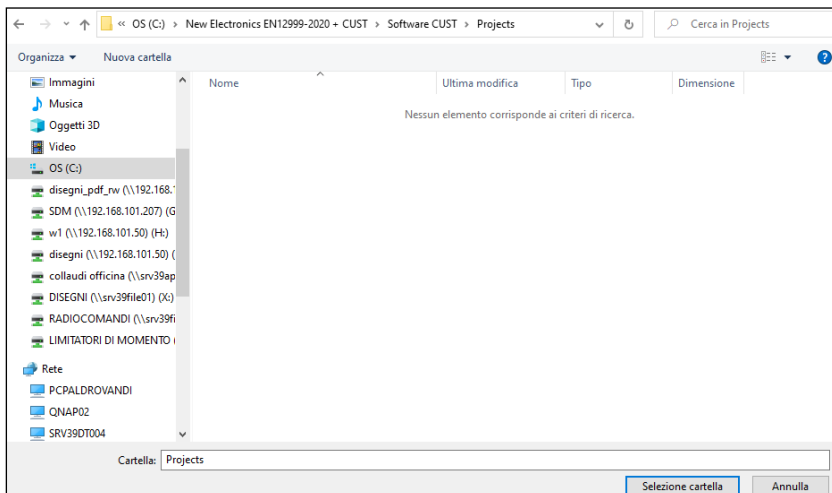
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2. Click  on the right of "CUST path" textbox and link the "CUST.exe" file in your "C:" drive. Alternatively, copy the path "C:\Program Files (x86)\COBO\CUST\CUST.exe". Click  (Apri).



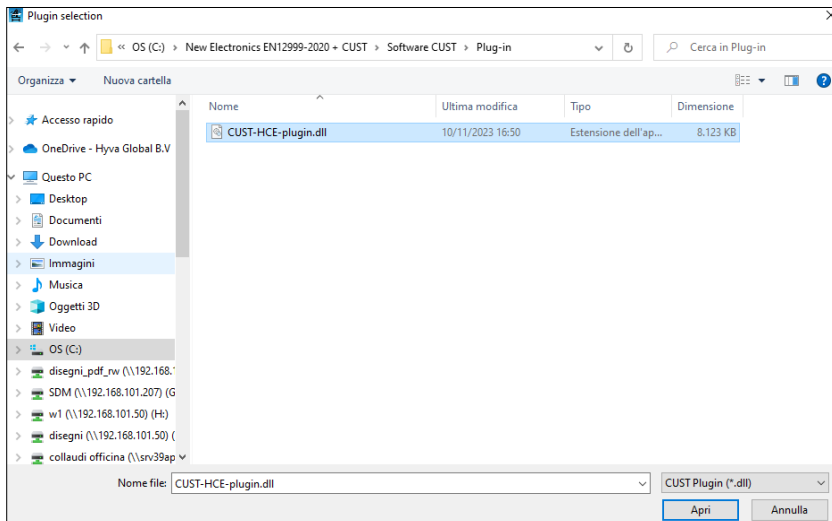
3. Click  on the right of "Projects folder" textbox and link the folder "Projects" located on "C:" drive in the archive. Alternatively, copy the path "C:\New Electronics EN12999-2020 + CUST\Software CUST\Projects". Click  (Selezione cartella).



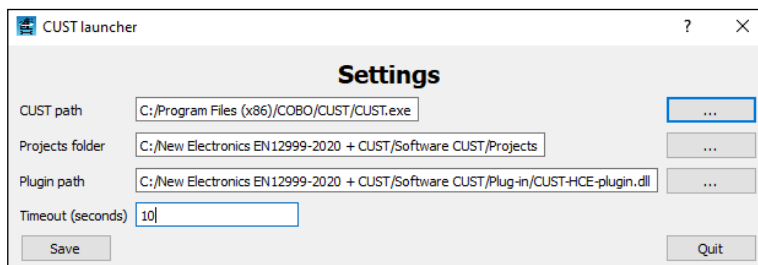
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4. Click **...** on the right of "Plugin path" textbox and link the file "**CUST-HCE-plugin.dll**" located on "**C:**" drive in the archive. Alternatively, copy this path "**C:\New Electronics EN12999-2020 + CUST\Software CUST\Plug-in\CUST-HCE-plugin.dll**". Click **Open** (Apri).



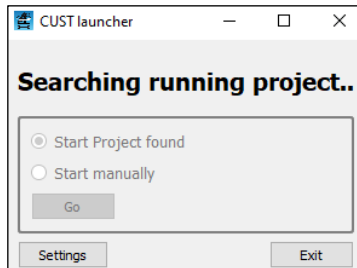
5. Enter Timeout value (10 is ok) and click **Save**.



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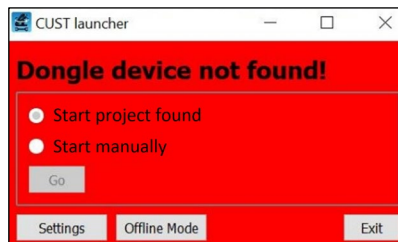
6. The CUST will now start with correct project based on crane connected.



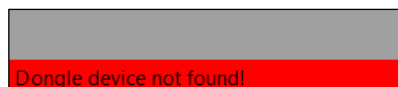
Note 1: From now on the operations above mentioned are not needed anymore.

In case of update we will share new projects and new plug-in files, to replace the existing ones in the same position. Attention! Do NOT move or delete these files and folders!

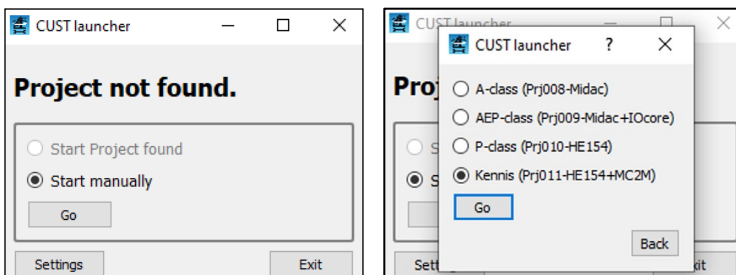
Note 2: If the dongle is not connected, the following window will appear: click **Offline Mode** to run the CUST program without any crane connection.



In Offline mode the following warning appears in the lower left corner.



If the dongle is connected without crane detection, the project can be started manually clicking **Go**.



Installer Manual

CUST : Installation

Note 3: If the USB device is connected but the crane is not connected or powered off, or in case of any other CAN-Bus line fault, then the following message will appear:



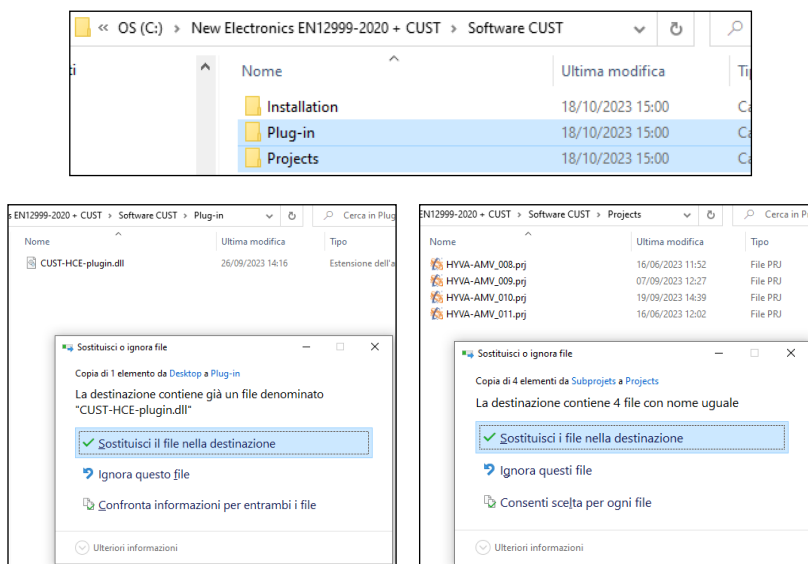
Installer Manual

CUST : Update

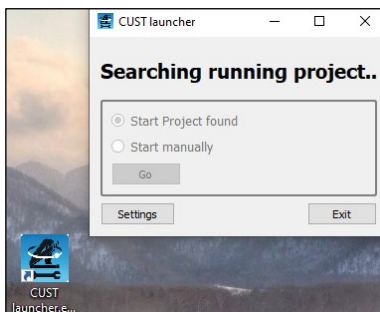
A.5 UPDATING THE CUST

Generally, you shall not update the CUST, except if requested by our Aftersales Service (see Note 2). However, to update the application just replace the project files and/or the plug-in file: the project files manage the communication with the crane software; the plug-in file manages the Graphical User Interface of the CUST. Proceed as follows.

1. Download the new files from the server or received directly.
2. Copy all the files into the CUST software package folder, overwriting the existing ones (delete all existing Projects/Subprojects ".prj" files and Plug-in ".dll" files). Keep the same folder names and **"Replace the files in the destination"** (Sostituisci i file nella destinazione).



3. Run the CUST Launcher and check that the program runs properly.



Installer Manual

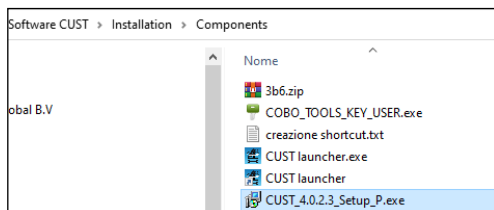
CUST : Update

4. In case there is a problem, i.e. the launcher does not point to the updated files due to the wrong name of folders/files, please re-check the launcher configuration clicking "Settings" and follow the instructions given in A.4.

Note 1: The last update dates of ".prj" and ".dll" files running with the application are shown on the CUST Home Page so you can compare them with the dates of files present on server.

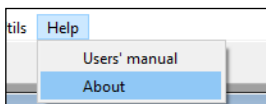
CUST Prj Last Update	230616
CUST Plugin Last Update	230919
CUST Plugin Vers	1.0.1.0

Note 2: Software versions of September 2023 and later require CUST version 4.0.2.3 or higher. If you are using a plug-in more recent you shall install the latest CUST version to get all needed components. Please download and run the latest installation file: follow all the steps described in the first installation (see A.3) till the end to update the existing files. Alternatively, you can install the CUST following the instructions given in C.1.1.



You shall not activate the License Code once again.

To check if the CUST needs an update, click **"Help"** → **"About"** to retrieve the current version.



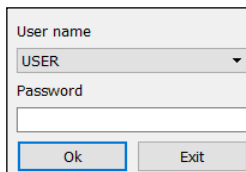
Installer Manual

CUST : Login

A.6 LOGIN

When the crane project is detected\selected and the plug-in is launched then it is necessary to login. Please proceed as follows.

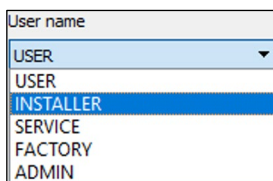
1. First select your access level (Username).



User name
USER
Password
Ok Exit

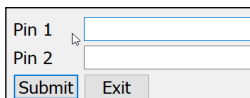
Operator	Passw. needed	Pin1+Pin2 needed	Accessible Menus
USER	No	No	Homepage, Troubleshooting
INSTALLER	No	Yes	Homepage, Calibration, Config., Devices, Troubleshooting.
SERVICE	Yes	Yes	Homepage, Calibration, Config., Devices, Troubleshooting, Parameters
FACTORY	Yes	No	Factory test (allowed only with Factory login).
ADMIN	Yes	No	All menus and options

2. Select "INSTALLER".



User name
USER
USER
INSTALLER
SERVICE
FACTORY
ADMIN

3. Type spacebar " " as password.
4. Click **OK**. The plug-in will be activated (this will take a few seconds).
5. Enter Pin1 and Pin2 codes, then click **Submit**. These codes are personal, and they are the same used in the past for other systems: if you do not have, please contact our Aftersales Service.



Pin 1
Pin 2
Submit Exit

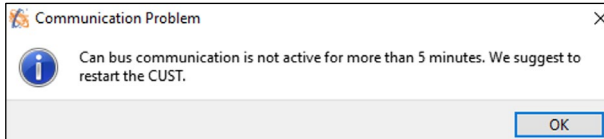
Installer Manual

CUST : Login

A.7 ERROR MESSAGES

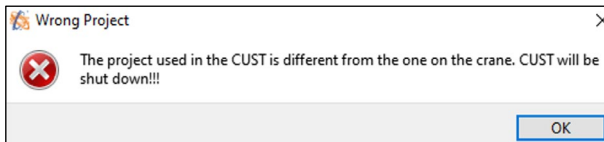
The following error messages pup up when critical errors occur.

- Communication Problem



This message warns that the CAN-Bus communication with the crane is disabled for more than 5 minutes: this fact could cause the USB port to go into standby mode. It is recommended to restart the CUST.

- Wrong Project



This message warns that the project used in the CUST does not match the crane project. Click **OK** to shut down the CUST, then run the CUST Launcher again.

Installer Manual

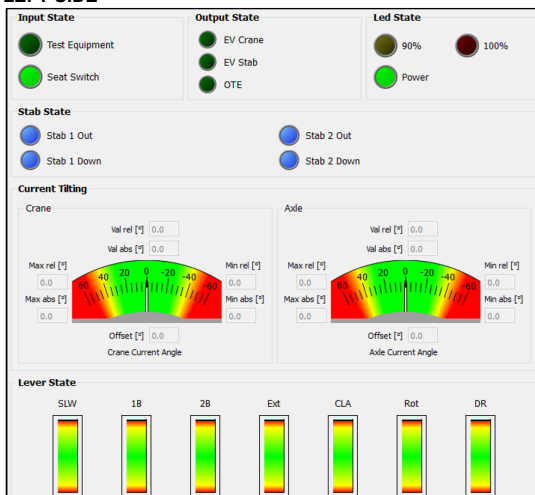
CUST : Homepage

B HOW TO USE THE CUST AND SET THE CRANE

B.1 HOMEPAGE

The Homepage shows the main crane's parameters in real time: these values cannot be changed.

LEFT SIDE



INDICATORS	DESCRIPTIONS
Input State Test Equipment Seat Switch	If OFF, the crane is working: the pressure at distr. inlet exceeds a given threshold. If ON, the operator is sitting on the top seat.
Output State EV Crane EV Stab OTE	Status of electrovalve on crane distr. If ON, all crane movements are permitted. Status of electrovalve on stab. distr. If ON, all stab. movements are permitted. Status of auxiliary electrovalve, OTE. If ON, the crane can be operated.
Led State 90% 100% Power	If ON, "P1 Current" exceeds 90% - 100% "P1 Max" If ON, the crane is powered and connected.
Stab State Stab Out Stab Down	If ON, the stabilizer beam is fully extended If ON, the stabilizer foot 2 is down
Tilting angle - Crane/Axle 	Relative and absolute current tilt angles (Val) detected by the crane tilt sensor and by the axle tilt sensor. On the left and on the right the Min/Max values allowed are shown. "Offset" is the difference between "Val rel" and "Val abs".
Lever State 	Bar indicators showing the travels of control levers. Manual cranes have digital indicators ON/OFF. Radio-controlled cranes have indicators showing the exact lever travel. SLW : crane slewing 1B : 1st boom articulation 2B : 2nd boom articulation Ext : hydraulic boom extensions CLA : clamp Rot : rotator DR : driving on trailer

Installer Manual

CUST : Homepage

RIGHT SIDE

Maintenance Expired		P2 Max [bar]	0	CRANE S/N	A42015
P1 Max [bar]	0	P2 Current [bar]	0	Main Unit Sw Vers.	-18486
P1 Current [bar]	74.9	P2 %	0	Aux Unit Sw Vers.	
P1 %	0	Extensions %	0.0	Display Sw Vers.	
A2 Angle [°]	-50.7	CUST Prj Last Update	20240520	CUST Plugin Last Update	20240718
A1 Angle [°]	-36.7	CUST Plugin Vers	1.0.1.79		
Rot Angle [°]	0.0				
Alarm Code	144	A Description	LEVER NOT CENTERED EXT		
Warning Code	0	W Description			
Movements State					
S1 DW		SL L		SL R	
S2 DW		B1 UP		B1 DW	
		B2 UP		B2 DW	
		EX IN		EX OUT	
S1 IN		RO L		RO R	
S2 IN		CL OP		CL CL	
		DR FW		DR BW	

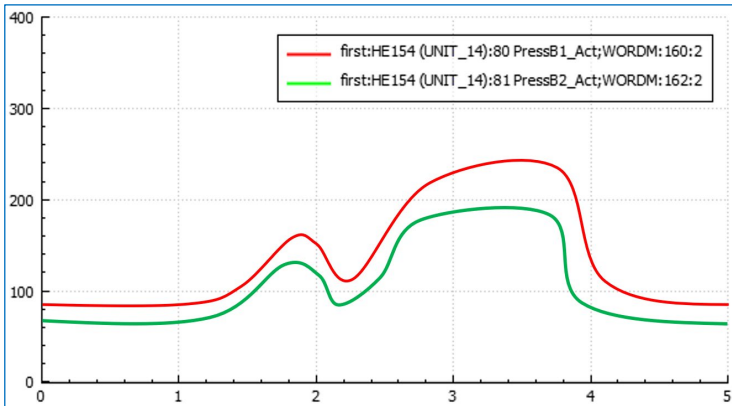
INDICATORS	DESCRIPTIONS
Maintenance expired	If ON, planned maintenance is required (<i>Not Available</i>)
P1 Max [bar]	Pressure limit for 1st boom cylinder (constant value).
P1 Current [bar]	Current pressure detected in the 1st boom cylinder.
P1 %	Ratio between "P1 Current" and "P1 Max", expressed as percentage
A2 Angle [°]	Current inclination angle of 2nd boom with respect to the horizontal
A1 Angle [°]	Current inclination angle of 1st boom with respect to the horizontal
Rot Angle [°]	Current slewing angle of column: 0° is towards the opposite direction of frontboard
P2 Max [bar]	Pressure limit for 2nd boom cylinder (constant value).
P2 Current [bar]	Current pressure detected in the 2nd boom cylinder
P2 %	Ratio between "P2 Current" and "P2 Max", expressed as percentage
Extensions %	Current extension of 2nd boom (if sensor is present)
CRANE S/N	Crane's Serial Number (only for cranes produced after June 2024)
Main Unit Sw Vers.	Current software version on the master controller (HE154)
Aux. Unit Sw Vers.	Current software version on the slave controller (MC2M)
Display Sw Vers.	Current software version on the display (Tera7)
CUST Prj Last Update	Current CUST version
CUST Plugin Last Update	
CUST Plugin Version	
Movements State	Indicators for the logic state signal of crane movements when using a lever. S1 S2 (UP/DW) : stabilizers feet S1 S2 (IN/OUT) : stabilizers beams SL : crane slewing B1 : 1st boom B2 : 2nd boom EX : hydraulic extensions RO : rotator CL : clamp DR : driving movement

Installer Manual

CUST : Homepage

Pressure graph

Timeline of P1 and P2 pressures (see below).



Installer Manual

CUST : Calibrations

B.2 CALIBRATIONS

This section allows to perform the calibration of the stability and the sensors.

Stability Calibration
Create Dataset Calibration File
Installed Test
Tilt Sensor Zero
Crane Rest Pressure Autosetting
Rotation Calibration
Extensions Cable Reel Setting
Booms Angles Calibration
Hydraulic Settings
Exit

BUTTONS	DESCRIPTIONS
	It exits the calibration.

B.2.1 STABILITY CALIBRATION

The Annex D describes the procedure to perform the stability calibration.

Installer Manual

CUST : Calibrations

B.2.2 CREATE DATASET CALIBRATION FILE

This function allows to create a dataset calibration file using an existing complete parameter file as a source. This file will contain only the calibration data selected with the checkboxes.

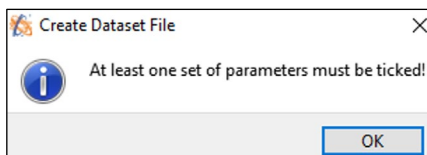
Once saved, you can load the dataset file on another crane as a complete parameter file to update only the parameters contained in the dataset.

BUTTONS	DESCRIPTIONS
	It allows to browse and select the existing complete parameter file from which create the dataset file.
	It creates the new dataset file: it will be saved in the same folder as the source file, with the same source name plus the end addition "-DATASET".
	It exits this function.

CHECKBOXES	DESCRIPTIONS
☒ Add Pump-Engine	If checked, the Pump-Engine parameters will be saved to the dataset file.
☒ Add Speed Reductions	If checked, the Speed Reductions parameters will be saved to the dataset file.
☐ Add Stability Angles Limits	If checked, the stability angle limits will be saved to the dataset file.

Note 1: if no checkboxes are clicked, the dataset file cannot be created.

Note 2: if no source parameter file has been selected, the following pup-up will appear.



Installer Manual

CUST : Calibrations

B.2.3 INSTALLED TEST

This function allows to perform the Installed Test with increased load capacity.

ATTENTION:
DURING THE INSTALLED TEST
THE CAPACITY LIMIT IS INCREASED

OK

Crane Speed @0%	9
Crane Speed @93%	76
B1 Max Angle	25.0
B2 Max Angle	28.0
P1 Max factor	1.25
P2 Max factor	1.25

PARAMETERS	DESCRIPTIONS
Crane Speed @0%	Speed percentage for all crane movements, with engine at 0% rpm.
Crane Speed @93%	Speed percentage for all crane movements, with engine at 93% rpm.
B1 Max Angle	Max. allowed inclination angle for 1st boom.
B2 Max Angle	Max. allowed inclination angle for 2nd boom.
P1 Max factor	Increase factor for the 1st boom cylinder pressure limit. P1 Test = P1 Nom x P1 Max factor.
P2 Max factor	Increase factor for the 2nd boom cylinder pressure limit during calibration. P2 Test = P2 Nom x P2 Max factor.

INSTALLED TEST

Stab1 DW ☐

Stab2 DW ☐

P1 = P1 Nom =

P2 = P2 Nom =

A1 = A2 =

Rot =

Ext =

Tilt Crane =

Tilt Trailer =

Tilt Crane Th R =

Tilt Trailer Th R =

Tilt Crane Th L =

Tilt Trailer Th L =

LIMITS OF PRESSURE AND TILT ARE CURRENTLY INCREASED BY DEFINED FACTOR.
PERFORM THE DYNAMIC TEST AND LATER EXIT FROM PROCEDURE.

Exit

Installer Manual

CUST : Calibrations

B.2.4 TILT SENSOR ZERO

This function allows to reset the difference between two redundant signals given by the tilt sensors. It is recommended to perform this procedure in case of replacement of a sensor.

Tilt Sensor Zero

Crane Sensor

Clear Crane Zero

Set Crane Zero

X Diff:

Y Diff:

Save

Axle Sensor

Clear Axle Zero

Set Axle Zero

X Diff:

Y Diff:

Exit

The test must be performed with crane base and vehicle in horizontal position and without oscillations. If a value is higher than 1.0°, the setting cannot be saved: the following warning appears and recommends removing and remounting the sensor with proper tightening torque.

ATTENTION - SENSOR IS NOT MOUNTED CORRECTLY.
PLEASE DISMOUNT AND REMOUNT THE SENSOR WITH PROPER TORQUE
SETTINGS.
IF THE ISSUE PERSISTS THEN REPLACE THE SENSOR.

Force Zero Setting
Close

In extreme cases it is possible to force the setting by clicking Force Zero Setting.

BUTTONS	DESCRIPTIONS
Clear Crane Zero	It clears the current setting of crane tilt sensor. This function is recommended before setting to zero.
Set Crane Zero	It sets the crane tilt sensor to zero.
Clear Axle Zero	It clears the current setting of axle tilt sensor. This function is recommended before setting to zero.
Set Axle Zero	It sets the axle tilt sensor to zero.
Save	It saves the setting.
Exit	It exits this function.
X Diff: 0.00 Y Diff: 0.00	Difference in degrees between the two redundant signals from a tilt sensor, along the X-axis and the Y-axis, respectively.
Force Zero Setting	It forces the setting with the current values. To be used in extreme cases.
Close	It closes the warning window without forcing the setting.

Installer Manual

CUST : Calibrations

B.2.5 CRANE REST PRESSURE AUTOSETTING

This section allows to re-set the pressure limit below which the crane is considered unloaded.

Crane Rest Pressure Autosetting

Image
to be defined

P1 =

- CRANE WITHOUT LOAD ATTACHED. IN CASE OF JIB OR SPECIAL TOOL ATTACH IT TO THE CRANE.
- OPEN THE CRANE AND PLACE IT IN USUAL REST POSITION (WHETHER FOLDED OR OVER THE TRAILER).
- PRESS "SET VALUE"

Exit

Current Value

New Value

Set Value

DATA	DESCRIPTIONS
P1	Current pressure in the 1st boom cylinder.
Current Value	Current pressure limit for crane folded in rest position.
New Value	New pressure limit for crane folded in rest position (= P1+10).

BUTTONS	DESCRIPTIONS
Set Value	It sets and saves the New Value as new pressure limit for crane folded in rest position.
Exit	It exits this function.

Installer Manual

CUST : Calibrations

B.2.6 ROTATION CALIBRATION

This section allows to set the slewing sensor to 0°.

It is necessary to perform this procedure in case of replacement of the sensor.

Rotation Calibration

Image
to be defined

- ROTATE THE COLUMN COUNTERCLOCKWISE TO THE 0°
- CLICK ON SET
- CLICK ON SAVE

Set

Save

Back

Note: "Rotate the column counterclockwise to the 0°" means rotating the booms towards the center of trailer, on the opposite side of the frontboard.

BUTTONS	DESCRIPTIONS
Set	It re-sets the current slewing angle as reference.
Save	It saves the parameters.
Back	It returns to previous window.

Installer Manual

CUST : Calibrations

B.2.7 EXTENSIONS CABLE REEL SETTING

This section allows to re-set the boom extension to 0% and 100% length.

It is necessary to perform this procedure in case of replacement of the sensor.

Extension Cable Reel Setting

Image
to be defined

- CLOSE EXTENSIONS
- SELECT 0%
- CLICK ON SET
- OPEN EXTENSIONS COMPLETELY
- SELECT 100%
- CLICK ON SET
- CLICK ON SAVE

0 %

Set

Save

Back

BUTTONS	DESCRIPTIONS
0 %	Select 0% to set the extensions fully IN. Select 100% to set the extensions fully OUT.
Set	It re-sets the current length as reference.
Save	It saves the parameters.
Back	It returns to previous window.

Installer Manual

CUST : Calibrations

B.2.8 BOOMS ANGLES CALIBRATION

This function allows to re-set the boom angle sensors to 0°.

You must bring the A1/A2 boom to horizontal position and verify the 0° by means of a bubble level.

Then click **Set** and **Save**.

Inclination Sensors Calibration

Set A1

0.0

Set A2

0.0

Save

Back

Note: You can reset the angle sensor only if the measured angle is between -5° and +5°.

BUTTONS	DESCRIPTIONS
Set A1	It re-sets the 1° boom angle sensor to 0°.
Set A2	It re-sets the 2° boom angle sensor to 0°.
Save	It saves the settings.
Back	It closes the window without saving.

B.2.9 HYDRAULIC SETTINGS

This function disables the torque control and all speed reductions, thus allowing the pump and the distributor to be set without interferences.



Torque control and speed reductions are currently OFF and it is possible to check hydraulic settings. Close this window to restore.

OK

Click **OK** to exit this function and restore all the controls.

Installer Manual

CUST : Configurations

B.3 CONFIGURATIONS

B.3.1 MACHINE CONFIGURATION

This page allows the installer to change the main configuration parameters.

For greater clarity we will divide the window into 5 parts:

- Upper checkboxes
- Left part
- Central part
- Right part
- Lower buttons

- CRANE CONFIGURATION: UPPER CHECKBOXES

CHECKBOXES	DESCRIPTIONS
☐ KSS05 ☐ KSS06 ☐ KSS07	These read-only checkboxes indicate the stability control system of crane.

- CRANE CONFIGURATION: LEFT PART

Nominal Press B1 [bar]	262.3	Distributor Type	Manual
Nominal Press B2 [bar]	320.0	Stabilizers Type	Pantographic
Press Crane loaded [bar]	150.0	Stabilizers Sensor	Absent
Press Pump Crane Move [bar]	25.0	Buzzer	Tower Light
Engine Type	Canbus	Extension Cable Reel	☒ Enabled
Timer autorm [s]	0.0	Axle Plan Sensor	☐ Enabled
Timer seat [s]	1.0	A2 Max Clamp Enable [°]	8.0
Timer clamp enable [s]	600.0	Tilttable Stab 1 Timer [s]	10.0
Torque max 25% [Nm]	0	Tilttable Stab 2 Timer [s]	10.0
Torque max 60% [Nm]	0	Rotation Control	Endless (BTS)
Torque max 75% [Nm]	0	Max tilt drive [%]	70
Torque max 93% [Nm]	0	Max tilt stab [%]	70
Torque max [Nm]	105		

The descriptions of parameters are on the next page.

Installer Manual

CUST : Configurations

PARAMETERS	DESCRIPTIONS
Nominal Press B1 [bar]	Nominal pressure limit for 1st boom cylinder.
Nominal Press B2 [bar]	Nominal pressure limit for 2nd boom cylinder.
Press Crane loaded [bar]	Pressure limit for 1st boom cylinder. If "P1 current" is less than this limit, the crane is considered unloaded.
Press Pump Crane Move [bar]	Pressure limit at distributor inlet. If the pressure at distr. inlet exceeds this limit, the crane is working.
Engine Type	It defines the engine mounted on the crane. Canbus Analog Electric Electric 380V
Timer autorm [sec]	Timer for autorm high period.
Timer seat [sec]	Time interval for operator seat detection. Interval in which the operator is still considered to be seated on the seat after the deactivation of sensor.
Timer clamp enable [sec]	Time interval for operator seat detection bypass. When the "clamp enable" button is pressed, this is the interval for which the operator can control only extra functions without being seated on the seat. If the operator seats within this interval, the timer is set to zero, and all movements are enabled.
Torque max 25%	Maximum engine torque at 25% rpm (CAN-Bus engine)
Torque max 60%	Maximum engine torque at 60% rpm (CAN-Bus engine)
Torque max 75%	Maximum engine torque at 75% rpm (CAN-Bus engine)
Torque max 93%	Maximum engine torque at 93% rpm (CAN-Bus engine)
Torque max par	Maximum engine torque at 93% rpm (analog engine)
Distributor Type	It defines the crane distributor. Manual Radio
Stabilizers Type	It defines the crane stabilizers. Absent Tilttable Pantographic Mechanical
Stabilizers Sensor	It defines if the stabilizers IN-OUT sensor is present or not. Absent Present
Buzzer	It defines the acoustic warning device. Tower Light Display Buzzer
Extension Cable Reel	It enables/disables the boom extension cable sensor.
Axle Plan Sensor	It enables/disables the trailer axle tilt sensor (KSS07).
A2 Max Clamp Enable	Angle of 2nd boom above which Clamp Enable function cannot be activated.
Tilttable Stab 1 Timer	Min. execution time of the stab. Down control, over which the stabilizer 1 is considered deployed (tiltable stab. only). If this control is interrupted the timer holds the value. If the stab. Up control is performed, the timer counts back.
Tilttable Stab 2 Timer	Min. execution time of the stab. Down control, over which the stabilizer 2 is considered deployed (tiltable stab. only). If this control is interrupted the timer holds the value. If the stab. Up control is performed, the timer counts back.
Rotation Control	It defines the rotation sensor. Endless (BTS) Rack/pinion (Baumer) Rack/pinion (Posital)
Max tilt drive [%]	Max. tilt percentage above which the "drive" movement is blocked.
Max tilt stab [%]	Max. tilt percentage above which the stab. Up control is blocked on the working side, and the stab. Down control is blocked on the opposite side.

Installer Manual

CUST : Configurations

- CRANE CONFIGURATION: CENTRAL PART

Pressure correction P1 dw [bar]	20.0 20.0	Low Capacity	☒ Enabled
Pressure correction P1 up [bar]	10.0 10.0	LC P1 Max [bar]	129.3
Pressure correction P1 time [s]	10.0	LC P2 Max [bar]	113.1
Pressure correction P2 dw [bar]	20.0 20.0	LC B2 Angle Max [°]	10.0
Pressure correction P2 up [bar]	0.0 0.0	LC Extension Max [%]	50.0
Pressure correction P2 time [s]	10.0	Crane Tilt stop 0-180 [°]	3.00
Crane close slew left [°]	169.5	Crane Tilt stop 180-360 [°]	-3.00
Crane close slew right [°]	189.5	Crane Tilt max 0-180 [°]	10.00
Crane close max angle 1 [°]	30.6	Crane Tilt max 180-360 [°]	-10.00
Crane close max angle 2 [°]	-60.3	Axle Tilt stop 0-180 [°]	1.00
		Axle Tilt stop 180-360 [°]	-1.00
		Axle Tilt max 0-180 [°]	6.00
		Axle Tilt max 180-360 [°]	-6.00
		Tilt autocal. Timer [s]	3.0

PARAMETERS	DESCRIPTIONS
Press Correction P1 dw [bar]	Pressure correction to apply when closing the 1st boom cylinder. The left box (1) gives the increase for pressure close to zero. The right box (2) gives the increase for pressure close to the nominal one.
Press Correction P1 up [bar]	Pressure correction to apply when opening the 1st boom cylinder. The left box (1) is the increase for pressure close to zero. The right box (2) is the increase for pressure close to the nominal one.
Press Correction P1 time [s]	Time interval in which the pressure correction for P1 applies. After this period, the correction will not apply.
Press Correction P2 dw [bar]	Pressure correction to apply when closing the 2nd boom cylinder. The left box (1) gives the increase for pressure close to zero. The right box (2) gives the increase for pressure close to the nominal one.
Press Correction P2 up [bar]	Pressure correction to apply when opening the 2nd boom cylinder. The left box (1) is the increase for pressure close to zero. The right box (2) is the increase for pressure close to the nominal one.
Press Correction P2 time [s]	Time interval in which the pressure correction for P2 applies. After this period, the correction will not apply.
Crane close slew left [°]	Min. slewing angle allowed for crane folded in rest position (CCW limit).
Crane close slew right [°]	Max. slewing angle allowed for crane folded in rest position (CW limit).
Crane close max angle 1 [°]	Max. 1st boom inclination angle for crane folded in rest position.
Crane close max angle 2 [°]	Max. 2nd boom inclination angle for crane folded in rest position.

The table continues on the next page.

Installer Manual

CUST : Configurations

Continued from the previous page.

PARAMETERS	DESCRIPTIONS
Low Capacity	It enables/disables the LC function (KSS06)
LC P1 max [bar]	Pressure limit for 1st boom cylinder, over which LC speed reduction applies.
LC P2 max [bar]	Pressure limit for 2nd boom cylinder, over which LC speed reduction applies.
LC B2 Angle Max [°]	Angle limit for 2nd boom, beyond which LC speed reduction applies if the crane is loaded.
LC Extension Max [%]	Extension percentage for boom extensions, over which LC speed reduction applies if the crane is loaded (for cranes with cable reel only).
Crane Tilt stop 0-180	Max. positive crane tilt angle allowed during crane operations within the slewing sector 0°-180°. If the value is ≤ 0 , the border of the textbox becomes red and the "Apply" and "Save" buttons are disabled.
Crane Tilt stop 180-360	Min. negative crane tilt angle allowed during crane operations within the slewing sector 180°-360°. If the value is ≥ 0 , the border of the textbox becomes red and the "Apply" and "Save" buttons are disabled.
Crane Tilt max 0-180	Max. positive crane tilt angle allowed before crane operations and during stability calibration within the slewing sector 0°-180°. If the value is ≤ 0 , the border of the textbox becomes red and the "Apply" and "Save" buttons are disabled.
Crane Tilt max 180-360	Min. negative crane tilt angle allowed before crane operations and during stability calibration within the slewing sector 180°-360°. If the value is ≥ 0 , the border of the textbox becomes red and the "Apply" and "Save" buttons are disabled.
Axle Tilt stop 0-180	Max. positive trailer tilt angle allowed during crane operations within the slewing sector 0°-180° (KSS07). If the value is ≤ 0 , the border of the textbox becomes red and the "Apply" and "Save" buttons are disabled.
Axle Tilt stop 180-360	Min. negative trailer tilt angle allowed during crane operations within the slewing sector 180°-360° (KSS07). If the value is ≥ 0 , the border of the textbox becomes red and the "Apply" and "Save" buttons are disabled.
Axle Tilt max 0-180	Max. positive trailer tilt angle allowed before crane operations and during stability calibration within the slewing sector 0°-180° (KSS07). If the value is ≤ 0 , the border of the textbox becomes red and the "Apply" and "Save" buttons are disabled.
Axle Tilt max 180-360	Min. negative trailer tilt angle allowed before crane operations and during stability calibration within the slewing sector 180°-360° (KSS07). If the value is ≥ 0 , the border of the textbox becomes red and the "Apply" and "Save" buttons are disabled.

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CUST : Configurations

- CRANE CONFIGURATION: RIGHT PART

Slew trailer limit RL @ext0% [°]	6.0
Slew trailer limit FL @ext0% [°]	174.0
Slew trailer limit FR @ext0% [°]	186.0
Slew trailer limit RR @ext0% [°]	354.0
Slew trailer limit RL @ext100% [°]	4.0
Slew trailer limit FL @ext100% [°]	176.0
Slew trailer limit FR @ext100% [°]	184.0
Slew trailer limit RR @ext100% [°]	356.0
Clamp pressure	☒ Enabled
Clamp Max Press. 1 [bar]	100.0
Clamp Max Press. 2 [bar]	200.0
Clamp Max Press. 3 [bar]	250.0
Clamp block release time [s]	2.0

PARAMETERS	DESCRIPTIONS
Slew trailer limit RL @ext0% [°]	Rear-Left limit slewing angle delimiting the trailer. Parameter used with extensions fully IN or without cable reel for LC function, zero calibration and vertical speed reduction.
Slew trailer limit FL @ext0% [°]	Front-Left limit slewing angle delimiting the trailer. Parameter used with extensions fully IN or without cable reel for LC function, zero calibration and vertical speed reduction.
Slew trailer limit FR @ext0% [°]	Front-Right limit slewing angle delimiting the trailer. Parameter used with extensions fully IN or without cable reel for LC function, zero calibration and vertical speed reduction.
Slew trailer limit RR @ext0% [°]	Rear-Right limit slewing angle delimiting the trailer. Parameter used with extensions fully IN or without cable reel for LC function, zero calibration and vertical speed reduction.
Slew trailer limit RL @ext100% [°]	Rear-Left limit slewing angle delimiting the trailer. Parameter used with extensions fully OUT for LC function, zero calibration and vertical speed reduction.
Slew trailer limit FL @ext100% [°]	Front-Left limit slewing angle delimiting the trailer. Parameter used with extensions fully OUT for LC function, zero calibration and vertical speed reduction.
Slew trailer limit FR @ext100% [°]	Front-Right limit slewing angle delimiting the trailer. Parameter used with extensions fully OUT reel for LC function, zero calibration and vertical speed reduction.
Slew trailer limit RR @ext100% [°]	Rear-Right limit slewing angle delimiting the trailer. Parameter used with extensions fully OUT for LC function, zero calibration and vertical speed reduction.
Clamp pressure	It enables/disables the limits for the clamp closing pressure.
Clamp Max Press. 1 [bar]	Lower limit for the clamp closing pressure.
Clamp Max Press. 2 [bar]	Intermediate limit for the clamp closing pressure.
Clamp Max Press. 3 [bar]	Upper limit for the clamp closing pressure.
Clamp block release time [s]	Delay in opening the clamp to prevent an accidental load release. Usually this value is set to 2 seconds.

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CUST : Configurations

- CRANE CONFIGURATION: LOWER BUTTONS

BUTTONS	DESCRIPTIONS
Back	It closes the window without saving.
Apply Parameters	It applies the parameters to the system. Any changes will be lost after switching off the crane.
Save Parameters	It overwrites the parameters on the main controller. Any changes are saved and will be kept at the next crane restart.
Speed Reductions	It opens the section for speed reductions.

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CUST : Configurations

B.3.2 SPEED REDUCTIONS

B.3.2.1 SPEED REDUCTION FOR STABILIZERS

This function is available only for cranes with pantographic or tiltable stabilizers.

This section allows to adjust the speed of each stabilizer operation for different engine rpm values.

Stabilizers Speed	Stabilizers Speed			
Above Horizontal	Stab In @rpm 25%	44	Stab In @rpm 60%	33
End Stroke Cylinders	Stab Out @rpm 25%	44	Stab Out @rpm 60%	33
Ramps	Stab Fold @rpm 25%	100	Stab Fold @rpm 60%	100
Boom Crane Empty	Stab Unfold @rpm 25%	100	Stab Unfold @rpm 60%	100
Boom Crane Load	Stab Up @rpm 25%	100	Stab Up @rpm 60%	100
End of Inclination Limit (Booms)	Stab Dw @rpm 25%	33	Stab Dw @rpm 60%	21
End of Inclination Limit (Ext/Rot)	Stab In @rpm 75%	33	Stab In @rpm 93%	27
End of High Capacity Area CCW/CW	Stab Out @rpm 75%	33	Stab Out @rpm 93%	27
End of High Capacity Area B1/B2/Ext	Stab Fold @rpm 75%	100	Stab Fold @rpm 93%	100
	Stab Unfold @rpm 75%	100	Stab Unfold @rpm 93%	100
	Stab Up @rpm 75%	100	Stab Up @rpm 93%	100
	Stab Dw @rpm 75%	16	Stab Dw @rpm 93%	15

Note: 25%, 60% and 75% are available for CAN-Bus engine only.

Note: by default, the speed is always set to 100% at 0% rpm.

PARAMETERS	DESCRIPTIONS
Stab In @rpm XX%	Speed percentage for stabilizer beams retraction, with engine at XX% rpm.
Stab Out @rpm XX%	Speed percentage for stabilizer beams extension, with engine at XX% rpm.
Stab Fold @rpm XX%	Speed percentage for stabilizer folding (tilting up for tiltable, folding up for pantographic - from sensor detection to fully folded), with engine at XX% rpm.
Stab Unfold @rpm XX%	Speed percentage for stabilizer unfolding (tilting down for tiltable, unfolding up for pantographic - from fully folded to sensor detection), with engine at XX% rpm.
Stab Up @rpm XX%	Speed percentage for stabilizer lifting movement (up to sensor detection), with engine at XX% rpm.
Stab Dw @rpm XX%	Speed percentage for stabilizer lowering movement (from sensor detection), with engine at XX% rpm.

Note: XX% is the generic rpm value: 25%, 60%, 75% or 93%.

BUTTONS	DESCRIPTIONS
Back	It closes the window without saving.
Apply	It applies the parameters to the system. Any changes will be lost after switching off the crane.
Save	It overwrites the parameters on the main controller. Any changes are saved and will be kept at the next crane restart.

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CUST : Configurations

B.3.2.2 SPEED REDUCTION FOR BOOMS ABOVE HORIZONTAL

This section allows to adjust the lowering speed of booms above the horizontal (referring to 2nd boom inclination angle), when the crane boom is slowed towards the trailer sides.

The reduction parameters are defined for Crane Empty (P1 < Press Crane Loaded) and Crane Loaded (P1 > Press Crane Loaded). Speed regulations are available for 0% and 93% rpm: for cranes equipped with CAN-Bus engine the intermediate values for 25%, 60% and 75% rpm are obtained by linear interpolation.

PARAMETERS	DESCRIPTIONS
A2 Middle point [°]	Middle inclination angle of 2nd boom: - Beyond this angle the speed reduction applies when lowering at least a boom; - Below this angle the speed reduction applies only when lowering both booms.
A2 End point [°]	Inclination angle of 2nd boom under which the speed reduction is deactivated.
Single Boom Dw @rpm XX%	Speed percentage when lowering a boom from the top up to the middle point, with engine at XX% rpm.
Double Boom Dw @rpm XX%	Speed percentage when lowering both booms from the middle point up to the horizontal, with engine at XX% rpm.

Note: XX% is the generic rpm value: 0% or 93%.

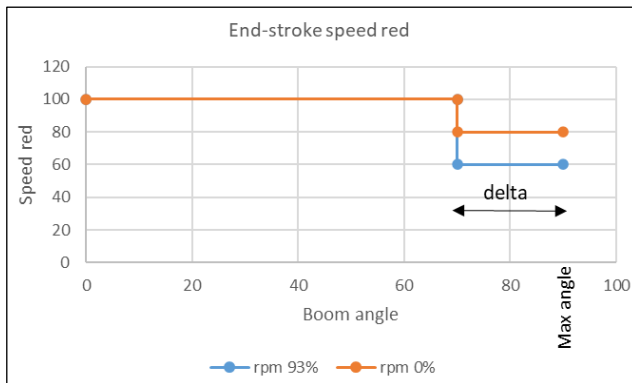
BUTTONS	DESCRIPTIONS
Back	It closes the window without saving.
Apply	It applies the parameters to the system. Any changes will be lost after switching off the crane.
Save	It overwrites the parameters on the main controller. Any changes are saved and will be kept at the next crane restart.

Installer Manual

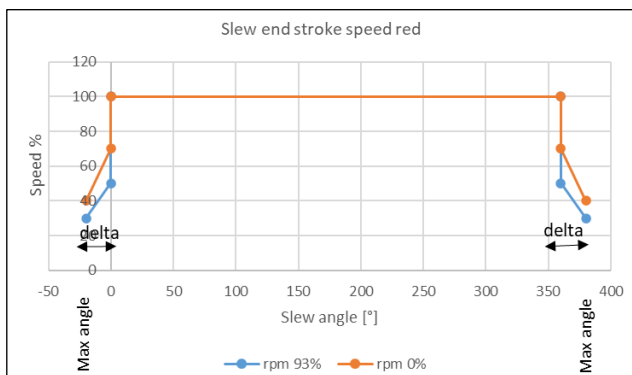
CUST : Configurations

B.3.2.3 SPEED REDUCTION AT END-OF-STROKE

This section allows to adjust the movement speed when approaching the end-of-stroke of cylinders. Speed regulations are available for 0% and 93% rpm: for cranes equipped with CAN-Bus engine the intermediate values for 25%, 60% and 75% rpm are obtained by linear interpolation. Booms speeds are constant within the approach range (delta angle): for this reason, only a setting parameter is needed (see example below):



Instead, slewing speeds vary proportionally within the approach range (delta angle) to avoid sudden changes in speed: in this case two setting parameters are needed (see example below):



Note: slewing speed reductions are available only to cranes with rack and pinion.

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CUST : Configurations

Stabilizers Speed

Above Horizontal

End Stroke Cylinders

Ramps

Boom Crane Empty

Boom Crane Loaded

End of Inclination Limit (Booms)

End of Inclination Limit (Ext/Rot)

End of High Capacity Area CW/CW

End of High Capacity Area B1/B2/Ext

End-Stroke Cylinders

B1 Max Angle [°]

88.7

B2 Min Relative Angle [°]

2.0

B1 Approach Angle [°]

3

B2 Approach Angle [°]

2

50

45

50

45

B1 Up @rpm 0%

B1 Up @rpm 93%

B2 Up @rpm 0%

B2 Up @rpm 93%

CW Stop Angle [°]

374.0

CCW Stop Angle [°]

-20

CW Approach Angle [°]

5

CCW Approach Angle [°]

5

80

40

80

40

CW Start @rpm 0%

CW Stop @rpm 0%

CCW Start @rpm 0%

CCW Stop @rpm 0%

55

35

55

35

CW Start @rpm 93%

CW Stop @rpm 93%

CCW Start @rpm 93%

CCW Stop @rpm 93%

PARAMETERS	DESCRIPTIONS
B1 Max Angle [°]	Max. inclination angle of 1st boom, with respect to the horizontal.
B1 Approach Angle [°]	Approach angle for the 1st boom below which the speed of 1st boom cylinder is reduced (delta). Speed reduction starts when: $A1 = B1 \text{ Max Angle} - B1 \text{ Approach Angle}$
B1 Up @rpm XX%	Speed percentage of the 1st boom cylinder within the reduction range, with engine at XX% rpm.
B2 Min Relative Angle [°]	Min. relative angle between 1st boom and 2nd boom (A1-A2).
B2 Approach Angle [°]	Approach angle for the 2nd boom beyond which the speed of 2nd boom cylinder is reduced. Speed reduction starts when: $A2 = A1 - (B2 \text{ Min Relative Angle} - B2 \text{ Approach Angle})$
B2 Up @rpm XX%	Speed percentage of the 2nd boom cylinder within the reduction range, with engine at XX% rpm.

A1 and A2 are the inclination angles with respect to the horizontal of 1st boom, 2nd boom, respectively

Note: XX% is the generic rpm value: 0% or 93%.

The table continues on the next page.

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CUST : Configurations

Continued from the previous page.

PARAMETERS	DESCRIPTIONS
CW Stop Angle [°]	Clockwise slewing stop angle. It should be set 2-3 degrees before the mechanical stop.
CW Approach Angle [°]	Angle of working arc adjacent the CW slewing stop where the slewing speed is reduced.
CCW Stop Angle [°]	Counterclockwise slewing stop angle. It should be set 2-3 degrees before the mechanical stop.
CCW Approach Angle [°]	Angle of working arc adjacent the CCW slewing stop where the slewing speed is reduced.
CW Start @rpm XX%	Clockwise slewing speed percentage at the start of CW Approach Angle, with engine at XX% rpm.
CW Stop @rpm XX%	Clockwise slewing speed percentage at the end of CW Approach Angle, with engine at XX% rpm.
CCW Start @rpm XX%	Counterclockwise slewing speed percentage at the start of CCW Approach Angle, with engine at XX% rpm.
CCW Stop @rpm XX%	Counterclockwise slewing speed percentage at the end of CCW Approach Angle, with engine at XX% rpm.

Note: XX% is the generic rpm value: 0% or 93%.

BUTTONS	DESCRIPTIONS
	It closes the window without saving.
	It applies the parameters to the system. Any changes will be lost after switching off the crane.
	It overwrites the parameters on the main controller. Any changes are saved and will be kept at the next crane restart.

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CUST : Configurations

B.3.2.4 SPEED RAMPS

This section allows to adjust the speed ramps used for reducing the starting accelerations of all crane movements.

Stabilizers Speed	Ramps
Above Horizontal	Start rotation ramp 0
End Stroke Cylinders	Start booms ramp 0
Ramps	Start drive ramp 0
Boom Crane Empty	
Boom Crane Loaded	
End of Inclination Limit (Booms)	
End of Inclination Limit (Ext/Rot)	
End of High Capacity Area CCW/CW	
End of High Capacity Area B1/B2/Ext	

PARAMETERS	DESCRIPTIONS
Start rotation ramp	Ramp parameter for slewing movement. The lower this parameter, the smoother the slewing start. If zero, the ramp is disabled.
Start booms ramp	Ramp parameter for lifting/lowering of booms and extending/retracting of hydraulic extensions. The lower this parameter, the smoother the movements start. If zero, the ramp is disabled.
Start drive ramp	Ramp parameter for driving movement. The lower this parameter, the smoother the driving start. If zero, the ramp is disabled.

BUTTONS	DESCRIPTIONS
Back	It closes the window without saving.
Apply	It applies the parameters to the system. Any changes will be lost after switching off the crane.
Save	It overwrites the parameters on the main controller. Any changes are saved and will be kept at the next crane restart.

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CUST : Configurations

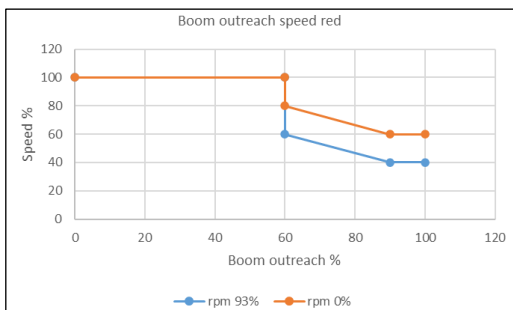
B.3.2.5 SPEED REDUCTIONS DUE TO BOOM OUTREACH

These functions are available only for cranes equipped with cable reel sensor.

These sections allow to adjust the movements speed depending on the current boom outreach percentage for empty and loaded crane.

Speed regulations are available for 0% and 93% rpm: for cranes equipped with CAN-Bus engine the intermediate values for 25%, 60% and 75% rpm are obtained by linear interpolation.

The speeds vary proportionally within the approach range, i.e. between the Start Point and the End Point (see example below).



Stabilizers Speed

Above Horizontal

End Stroke Cylinders

Ramps

Boom Crane Empty

Boom Crane Loaded

End of Inclination Limit (Booms)

End of Inclination Limit (Ext/Rot)

End of High Capacity Area CCW/CW

End of High Capacity Area B1/B2/Ext

Speed Related To Boom Outreach

Start Point [%] 90

End Point [%] 100

Crane Empty / Loaded

60	45	50	45
Rot Start Point @rpm0%	Rot End Point @rpm0%	Rot Start Point @rpm93%	Rot End Point @rpm93%
60	45	50	45
B1 Dw Start Point @rpm0%	B1 Dw End Point @rpm0%	B1 Dw Start Point @rpm93%	B1 Dw End Point @rpm93%
55	45	50	45
B2 Dw Start Point @rpm0%	B2 Dw End Point @rpm0%	B2 Dw Start Point @rpm93%	B2 Dw End Point @rpm93%

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CUST : Configurations

PARAMETERS	DESCRIPTIONS
Start Point [%]	Outreach percentage where the speed reduction starts, with empty/loaded crane.
End Point [%]	Outreach percentage where the speed reduction ends, with empty/loaded crane. Usually, it is = 100%.
Rot Start Point @rpmXX%	Slewing speed percentage at the outreach start point, with engine at XX% rpm
Rot End Point @rpmXX%	Slewing speed percentage at the outreach end point, with engine at XX% rpm
B1 Dw Start Point @rpmXX%	Speed percentage for 1st boom lowering at the outreach start point, with engine at XX% rpm
B1 Dw End Point @rpmXX%	Speed percentage for 1st boom lowering at the outreach end point, with engine at XX% rpm
B2 Dw Start Point @rpmXX%	Speed percentage for 2nd boom lowering at the outreach start point, with engine at XX% rpm
B2 Dw End Point @rpmXX%	Speed percentage for 2nd boom lowering at the outreach end point, with engine at XX% rpm

Note: XX% is the generic rpm value: 0% or 93%.

Data must be defined for empty and loaded crane in the dedicated sections:

- "Boom Crane Empty"
- "Boom Crane Loaded"

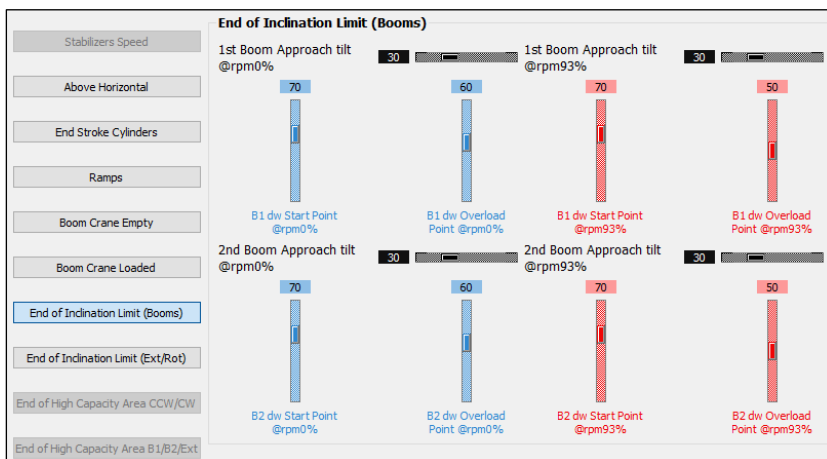
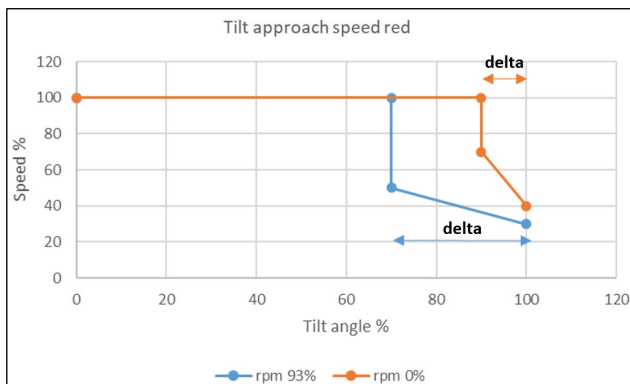
BUTTONS	DESCRIPTIONS
Back	It closes the window without saving.
Apply	It applies the parameters to the system. Any changes will be lost after switching off the crane.
Save	It overwrites the parameters on the main controller. Any changes are saved and will be kept at the next crane restart.

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CUST : Configurations

B.3.2.6 SPEED REDUCTIONS FOR BOOMS DUE TO TILTING ANGLE

This section allows to adjust the boom lowering speed when approaching the Max Tilting Angle. Speed regulations are available for 0% and 93% rpm: for cranes equipped with CAN-Bus engine the intermediate values for 25%, 60% and 75% rpm are obtained by linear interpolation. The speeds vary proportionally within the approach range (see example below).



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CUST : Configurations

PARAMETERS	DESCRIPTIONS
1st Boom Approach tilt @rpmXX%	Tilt percentage approach range (delta) where the 1st boom speed reduction starts, with engine at XX% rpm.
B1 dw Start Point @rpmXX%	Speed percentage for 1st boom lowering where the speed reduction starts, with engine at XX% rpm.
B1 dw Overload Point @rpmXX%	Speed percentage for 1st boom lowering at Max. tilting angle, with engine at XX% rpm.
2nd Boom Approach tilt @rpmXX%	Tilt percentage approach range (delta) where the 2nd boom speed reduction starts, with engine at XX% rpm.
B2 dw Start Point @rpmXX%	Speed percentage for 2nd boom lowering where the speed reduction starts, with engine at XX% rpm.
B2 dw Overload Point @rpmXX%	Speed percentage for 2nd boom lowering at Max. tilting angle, with engine at XX% rpm.

Note: XX% is the generic rpm value: 0% or 93%.

BUTTONS	DESCRIPTIONS
Back	It closes the window without saving.
Apply	It applies the parameters to the system. Any changes will be lost after switching off the crane.
Save	It overwrites the parameters on the main controller. Any changes are saved and will be kept at the next crane restart.

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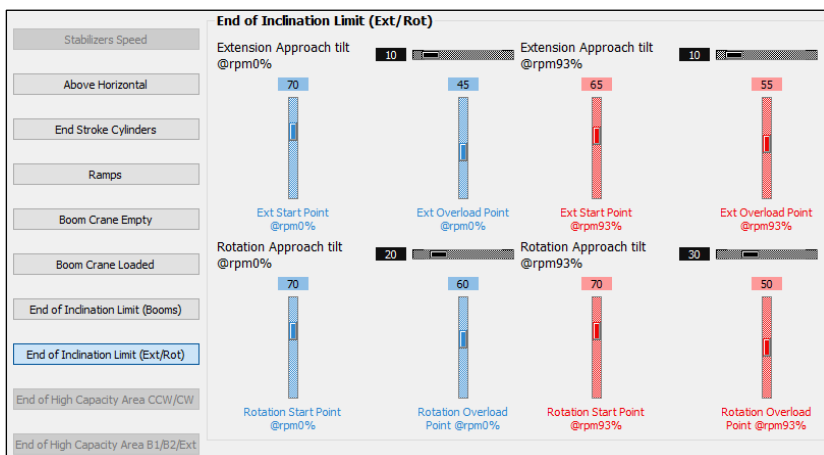
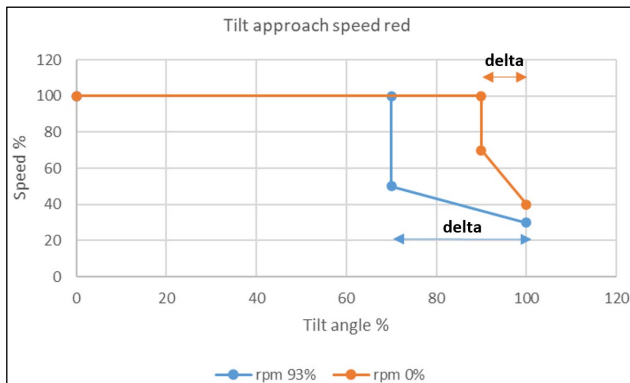
CUST : Configurations

B.3.2.7 SPEED REDUCTIONS FOR EXT/ROT DUE TO TILTING ANGLE

This section allows to adjust the speed of boom extension and of crane slewing when approaching the Max Tilting Angle.

Speed regulations are available for 0% and 93% rpm: for cranes equipped with CAN-Bus engine the intermediate values for 25%, 60% and 75% rpm are obtained by linear interpolation.

The speeds vary proportionally within the approach range (see example below).



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CUST : Configurations

PARAMETERS	DESCRIPTIONS
Extension Approach tilt @rpmXX%	Tilt percentage approach range (delta) where the boom extension speed reduction starts, with engine at XX% rpm.
Ext Start Point @rpmXX%	Speed percentage for boom extension where the speed reduction starts, with engine at XX% rpm.
Ext Overload Point @rpmXX%	Speed percentage for boom extension at Max. tilting angle, with engine at XX% rpm.
Rotation Approach tilt @rpmXX%	Tilt percentage approach range (delta) where the slewing speed reduction starts, with engine at XX% rpm.
Rotation Start Point @rpmXX%	Speed percentage for slewing movement where the slewing speed reduction starts, with engine at XX% rpm.
Rotation Overload Point @rpmXX%	Speed percentage for slewing movement at Max. tilting angle, with engine at XX% rpm.

Note: XX% is the generic rpm value: 0% or 93%.

BUTTONS	DESCRIPTIONS
Back	It closes the window without saving.
Apply	It applies the parameters to the system. Any changes will be lost after switching off the crane.
Save	It overwrites the parameters on the main controller. Any changes are saved and will be kept at the next crane restart.

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CUST : Configurations

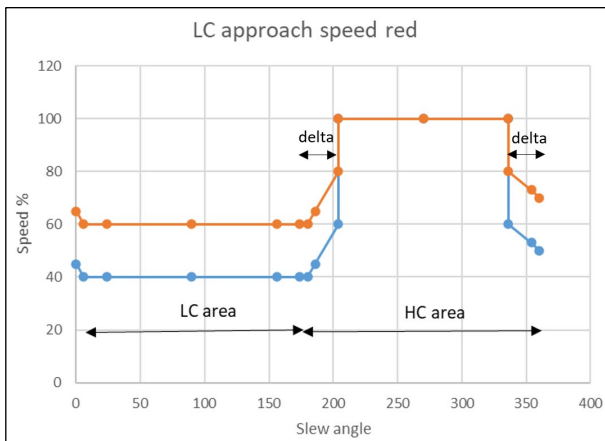
B.3.2.8 SPEED REDUCTION FOR SLEWING OUTSIDE THE HC AREA

This function is available only for cranes equipped with KSS06.

This section allows to adjust the speed reduction parameters in approaching the end of High Capacity Area (HC area) where the slewing speed start reducing.

Speed regulations are available for 0% and 93% rpm: for cranes equipped with CAN-Bus engine the intermediate values for 25%, 60% and 75% rpm are obtained by linear interpolation.

The speeds vary proportionally within the approach range (see example below).



Stabilizers Speed

Above Horizontal

End Stroke Cylinders

Ramps

Boom Crane Empty

Boom Crane Loaded

End of Inclination Limit (Booms)

End of Inclination Limit (Ext/Rot)

End of High Capacity Area CCW/CW

End of High Capacity Area B1/B2/Ext

End of High Capacity Area CW/CCW

CCW Rotation Approach Slew [°]

30

55

50

60

35

CCW Start Point @rpm0%

CCW End Point @rpm0%

CCW Start Point @rpm93%

CCW End Point @rpm93%

CW Rotation Approach Slew [°]

30

55

50

60

35

CW Start Point @rpm0%

CW End Point @rpm0%

CW Start Point @rpm93%

CW End Point @rpm93%

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CUST : Configurations

PARAMETERS	DESCRIPTIONS
CCW Rotation Approach Slew [°]	CCW approach slewing angle (delta) close to the end of HC area.
CCW Start Point @rpmXX%	Slewing speed percentage at the start of CCW approach slewing range, with engine at XX% rpm.
CCW End Point @rpmXX%	Slewing speed percentage at the end of CCW approach slewing range, with engine at XX% rpm.
CW Rotation Approach Slew [°]	CW approach slewing angle (delta) close to the end of HC area.
CW Start Point @rpmXX%	Slewing speed percentage at the start of CW approach slewing range, with engine at XX% rpm.
CW End Point @rpmXX%	Slewing speed percentage at the end of CW approach slewing range, with engine at XX% rpm.

Note: XX% is the generic rpm value: 0% or 93%.

CCW End Point and CW End Point must be equal: this value defines the speed % outside the HC area.

It is good practice that CCW parameters and CW parameters have the same respective values.

BUTTONS	DESCRIPTIONS
Back	It closes the window without saving.
Apply	It applies the parameters to the system. Any changes will be lost after switching off the crane.
Save	It overwrites the parameters on the main controller. Any changes are saved and will be kept at the next crane restart.

Installer Manual

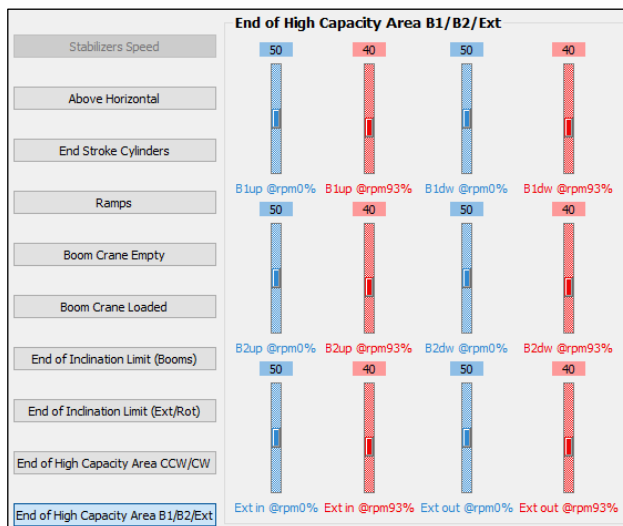
CUST : Configurations

B.3.2.9 SPEED REDUCTION FOR B1/B2/EXT OUTSIDE THE HC AREA

This function is available only for cranes equipped with KSS06.

This section allows to adjust the speed reduction parameters in approaching the end of High Capacity Area (HC area), where the booms and the extensions speed is reduced.

Speed regulations are available for 0% and 93% rpm: for cranes equipped with CAN-Bus engine the intermediate values for 25%, 60% and 75% rpm are obtained by linear interpolation.



PARAMETERS	DESCRIPTIONS
B1up @rpmXX%	Speed percentage for 1st boom lifting movement outside the HC area, with engine at XX% rpm.
B1dw @rpmXX%	Speed percentage for 1st boom lowering movement outside the HC area, with engine at XX% rpm.
B2up @rpmXX%	Speed percentage for 2nd boom lifting movement outside the HC area, with engine at XX% rpm.
B2dw @rpmXX%	Speed percentage for 2nd boom lowering movement outside the HC area, with engine at XX% rpm.
Ext in @rpmXX%	Speed percentage for boom retraction movement outside the HC area, with engine at XX% rpm.
Ext out @rpmXX%	Speed percentage for boom extension movement outside the HC area, with engine at XX% rpm.

Note: XX% is the generic rpm value: 0% or 93%.

BUTTONS	DESCRIPTIONS
Back	It closes the window without saving.
Apply	It applies the parameters to the system. Any changes will be lost after switching off the crane.
Save	It overwrites the parameters on the main controller. Any changes are saved and will be kept at the next crane restart.

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CUST : Devices

B.4 DEVICES

B.4.1 PARAMETERS AND FIRMWARE LOADING

This section allows to download updated firmware onto all devices and save/load the parameters files, as well as download the event log file data.

Param / Firmware Loading

Name	CPU Number	Node Id	MDS Unit	Connection Status
first:HE154 (UNIT_14)	0	0x0e	14	ON
first:MC2M_LOGIC_CPU0 (UNIT_12)	0	0x0c	12	OFF
first:MC2M_LOGIC_CPU1 (UNIT_11)	0	0x0b	11	OFF
first:TERA7		0x12		OFF

Device: first:MC2M_LOGIC_CPU0 (UNIT_12) SW Version:

Operations

☐ Save Params

☐ Load Params

☒ Load SW Application

☐ Save Event Log

☐ Show Event Log

File Path: Load New Device

Browse

Start Operation

0%

System messages:

Other Devices
Back

The listbox shows the devices connected on the CAN-Bus line.

FUNCTIONS	DESCRIPTIONS
Device ▼	It selects the device to operate with. For more information refer to C.2.
SW Version	It shows the current version of the device.
☒ Save Params ☐ Load Params ☐ Load SW Application ☐ Save Event Log ☐ Show Event Log	It loads a parameter file from the selected device on the laptop. It loads a parameter file from the laptop onto the selected device. It loads a new software onto the selected device. N/A N/A
Load New Device	If "Load SW Application" and a MC2M device are both selected, this button appears and allows to program blank MC2M devices (see B.4.1.1).
Browse	It allows to browse and select the path for loading/saving the file.
Start Operation	Starts the selected operation.
Other Devices	N/A
Back	It exits from this section.

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CUST : Devices

B.4.1.1 FIRMWARE LOADING FOR BLANK MC2M CONTROLLER

This section allows download the application firmware for blank MIDAC devices, both CPU0 and CPU1 controllers at the same time.

File name

Browse Cpu0

Browse Cpu1

Commands

System messages

Start process

Abort operation

Exit

BUTTONS	DESCRIPTIONS
Browse Cpu0	It selects the CPU0 file from the laptop.
Browse Cpu1	It selects the CPU1 file from the laptop.
Start process	It starts the programming procedure.
Abort operation	It interrupts the running procedure.
Exit	It closes the window.

Note: Be sure not to swap the files!

Installer Manual

CUST : Troubleshooting

B.5 TROUBLESHOOTING

This section shows the electric signals of sensors.

Switches

● Stab 1 NC

● Stab 2 NC

● Beam 1 NC

● Beam 2 NC

● Seat sw NC

● Crane in shape

● Stab 1 NO

● Stab 2 NO

● Beam 1 NO

● Beam 2 NO

● Seat sw NO

Pump Current

Pilot current [mA]

Torque current [mA]

Speed red current [mA]

Stabs current [mA]

Torque selected [nm]

Sensors

Press 1A ADC [mA]

Press 1B ADC [mA]

Angle 1A ADC [mA]

Press 2A ADC [mA]

Press 2B ADC [mA]

Angle 2A ADC [mA]

Angle 2B ADC [mA]

Press Pump 1A ADC [mA]

Press Pump 1B ADC [mA]

Digital Spool Controls

Lever 1A ● Lever 2A ● Lever 3A ● Lever 4A ●

Lever 1B ● Lever 2B ● Lever 3B ● Lever 4B ●

Lever 5A ● Lever 6A ● Lever 7A ● Lever 8A ●

Lever 5B ● Lever 6B ● Lever 7B ● Lever 8B ●

Lever 9A ●

Lever 9B ●

Outputs

Outputs HE154

LS ● Red Light ●

Heating Seat ● Venting ●

Working Light2 ● OTE ●

Working Light1 ● Working Light3 ●

Amber Light ● Clamp Open ●

Clamp Close ●

Feedback HE154

LS ● Red Light ●

Heating Seat ● Venting ●

Working Light2 ● OTE ●

Working Light1 ● Working Light3 ●

Amber Light ● Clamp Open ●

Clamp Close ●

Outputs MC2M

Outrigger Light ● Eng Relay ● Outr: Left Down ● Outr: Right Up ●

Working Light Basement ● Stop Engine ● Outr: Left Up ● Horn ●

LS ● Start Engine ● Outr: Right In ● Pos Kubota ●

Brake ● Outr: Left In ● Outr: Right Out ● Outrigger OTE ●

Auto RPM ● Outr: Left Out ● Outr: Right Down ●

Feedback MC2M

Outrigger Light ● Eng Relay ● Outr: Left Down ● Outr: Right Up ●

Working Light Basement ● Stop Engine ● Outr: Left Up ● Horn ●

LS ● Start Engine ● Outr: Right In ● Pos Kubota ●

Brake ● Outr: Left In ● Outr: Right Out ● Outrigger OTE ●

Auto RPM ● Outr: Left Out ● Outr: Right Down ●

Key Pad

Back

Key Pad

Back

This section shows the functions of every button of the keypad.

Canbus keypad

	A	B	C	D	E	F	
M	●	●	●	●	●	●	N
	G	H	I	J	K	L	
	●	●	●	●	●	●	

It returns to Homepage.

SECTION	DESCRIPTION
Switches	These LEDs indicate the digital inputs related to stabilizers sensors, seat sensor and "crane in shape" sensor, normally closed (NC) and normally open (NO).
Pump Current	These values determine the "Pilot current" to the pump; in fact, this is the minimum value between "Torque control current", "Speed reduction current" and "Stabilizers current". Note: the "Torque current" depends on the "Torque selected".
Sensors	These values show the current signals coming from analog sensors.
Digital Spool Controls	These LEDs indicate the digital inputs related to the distributor spool sensors (no CAN-Bus version).
Outputs	These LEDs indicate the digital outputs and their feedback signal, both for HE154 main controller and MC2M slave controller.

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CUST : Annexes

C ANNEXES

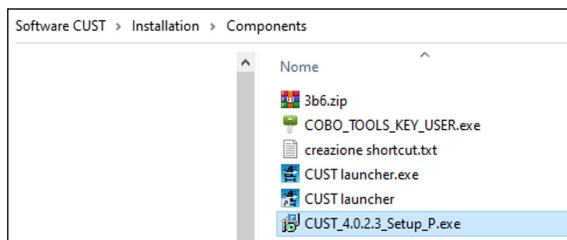
C.1 INSTALLATION OF PARTS OF CUST

Instead of installing all software parts at the same time by running the "CUST_HCE_INSTALLER.bat" file, you may install single components separately. This annex explains the old installing process that may suggest methods to adjust or re-install some parts already installed.

C.1.1 INSTALLATION AND ACTIVATION OF CUST APPLICATION

Follow the steps below to install and activate only the CUST application.

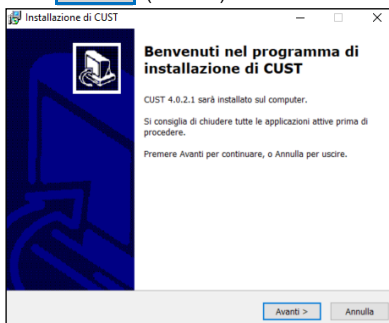
1. Run the CUST setup file.



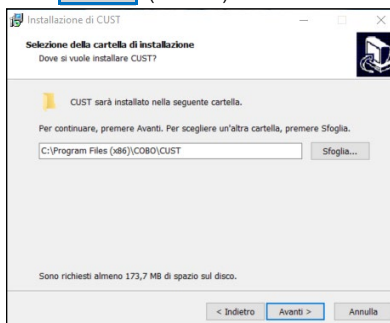
Note: Administrator rights account is needed: please ask to your local IT support.

2. Proceed at every following steps as described below.

2.1. **Next >** (Avanti >)



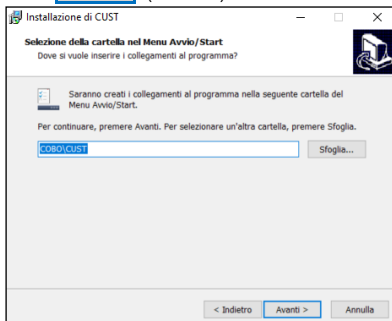
2.2. **Next >** (Avanti >)



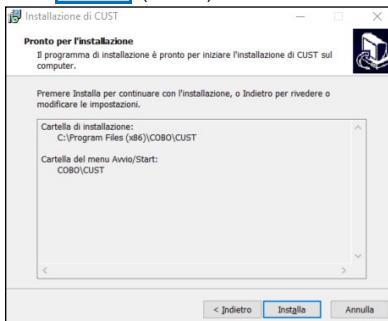
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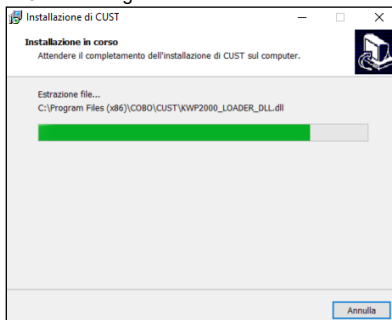
2.3. **Next >** (Avanti >)



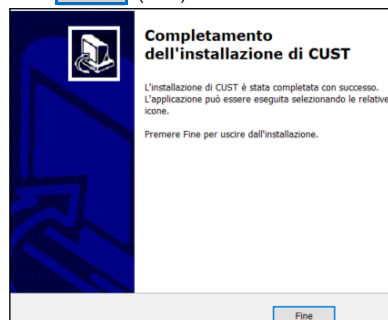
2.4. **Install** (Installa)



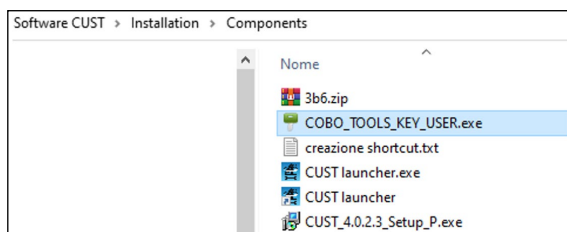
2.5. Extracting files...



2.6. **Finish** (Fine)



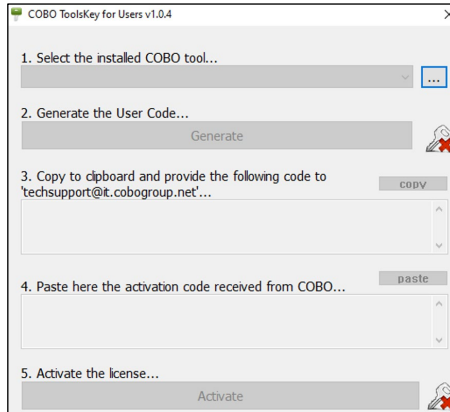
3. Run the software "COBO_TOOLS_KEY_USER.exe".



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4. Click  on the top right corner.



5. Continue the procedure resuming from point 14.2 in paragraph A.3.

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C.1.2 UPDATING THE DRIVERS

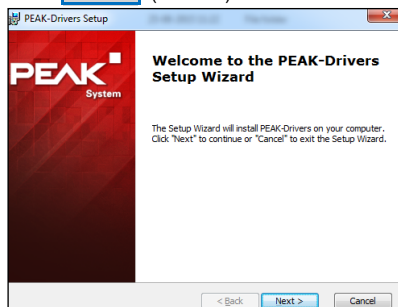
The CUST software runs properly with specific driver versions for the Peak (PCAN) USB dongle.

1. Open the folder CUST on your local "C:" drive, and the subfolder "Drivers".
2. Install all 3 driver files: please continue even if drivers are already installed: if message informing that more recent drivers are installed appears, then you can skip.

(C:) > Programmi (x86) > COBO > CUST > Drivers				
Nome	Ultima modifica	Tipo	Dimensione	
CAN DONGLE CONFIGURATION.pdf	28/11/2012 09:12	Adobe Acrobat D...	400 KB	
MT_API_V7.04.7800.zip	02/08/2018 13:00	WinRAR ZIP archive	19.803 KB	
PcanDrv.exe	13/04/2012 16:24	Applicazione	5.082 KB	
PeakOemDrv.exe	27/08/2014 14:18	Applicazione	7.561 KB	
PeakOemDrv_2018.exe	02/07/2018 11:35	Applicazione	44.847 KB	

3. Check that the USB Peak dongle is correctly enabled.
4. Proceed at every following steps as described below.

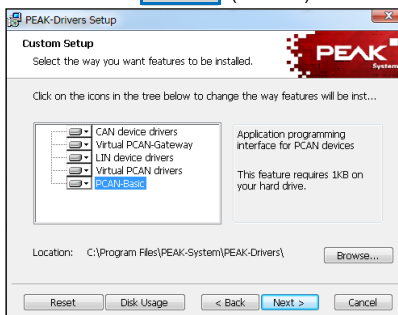
4.1. **Next >** (Avanti >)



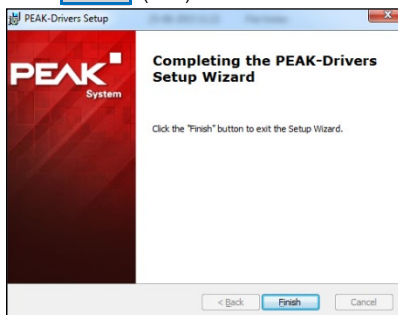
4.2. Select all. **Next >** (Avanti >)



4.3. Select all. **Next >** (Avanti >)



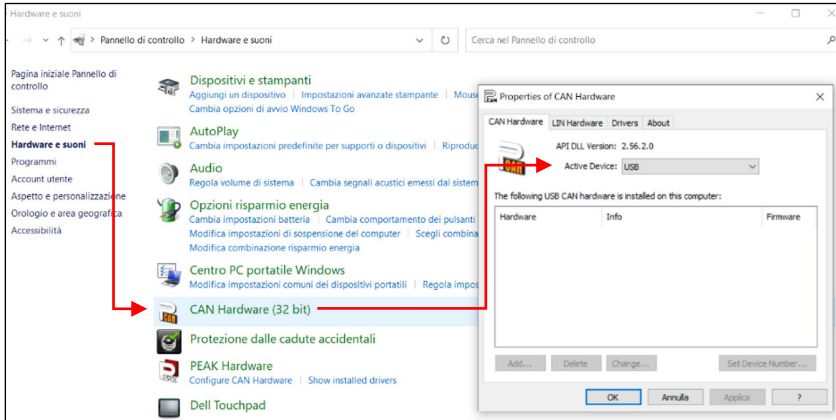
4.4. **Finish** (Fine)



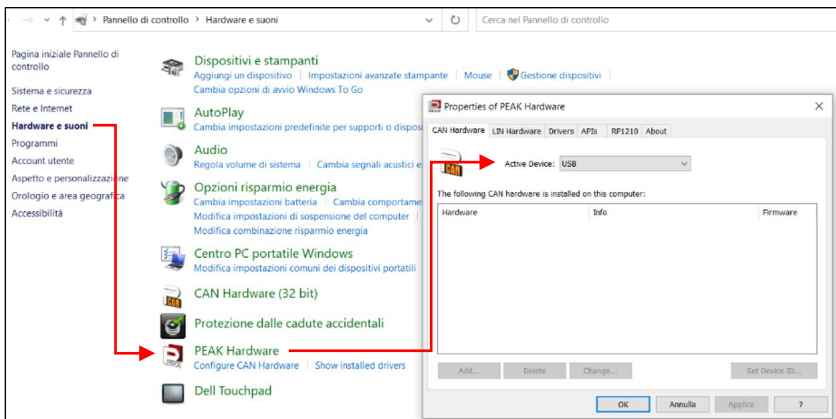
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5. Open "**Windows Control Panel > Hardware and sounds > CAN Hardware (32 bit)**". Make sure that "**USB**" is selected as "Active Device". Click **OK**.



6. Open "**PEAK Hardware**". Make sure that "**USB**" is selected as "Active Device". Click **OK**.



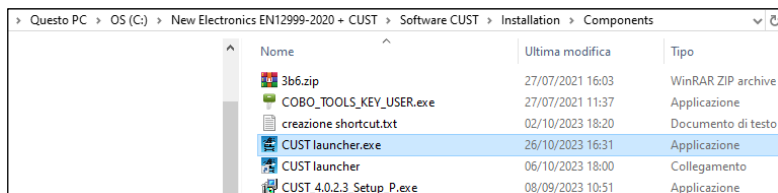
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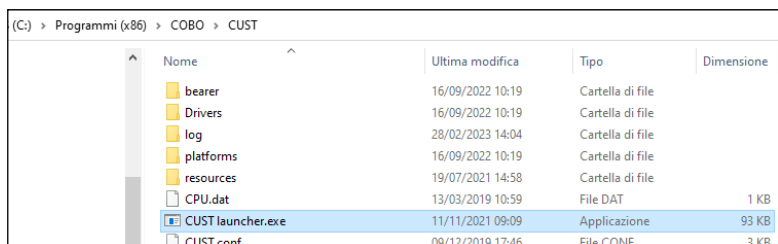
C.1.3 INSTALLATION OF CUST LAUNCHER

Follow this procedure:

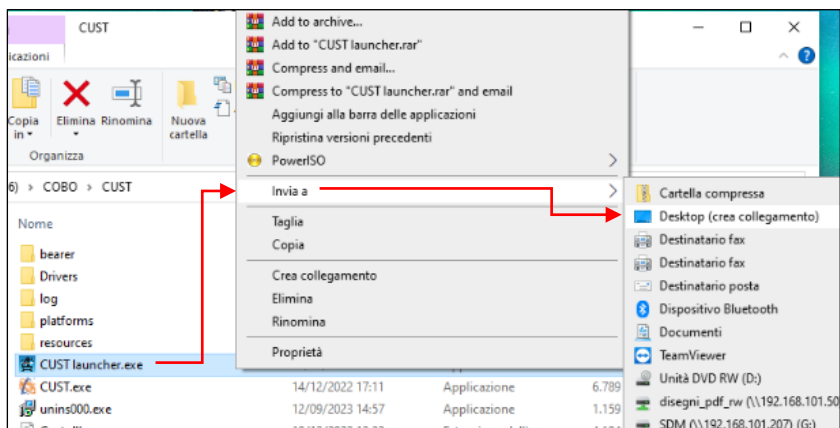
1. Copy the "CUST launcher.exe" file located in the following package folder:
"C:\New Electronics EN12999-2020 + CUST\Software CUST\Installation\Components".



2. Paste it on your local "C:\Programs\COBO\CUST" computer folder.



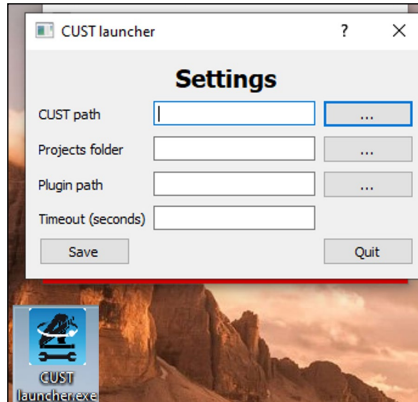
3. Create a shortcut on your desktop.



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CUST : Annexes

- Double-click "**CUST launcher.exe**" icon on desktop.



- Only the first time it is needed to link all the files.
- Please continue resuming from paragraph A.4.

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CUST : Annexes

C.2 LIST OF DEVICES

DEVICE NAME	DESCRIPTION	OPERATIONS PERMITTED	
		Save/Load param. file (extension)	Load sw application file (extension)
HE154(UNIT 14)	HE154 top seat controller to save/load parameter file on already programmed units	Yes (.U14)	No
LOADER_HE154_NEW_UNIT	HE154 top seat controller to program new units	No	Yes (.S19)
LOADER_HE154UPDATE	HE154 top seat controller to reprogram already programmed units	No	Yes (.S19)
MC2M_LOGIC_CPU0 (UNIT_12)	MC2M base controller CPU0	Yes (.U12)	Yes (.S19)
MC2M_LOGIC_CPU1 (UNIT_11)	MC2M base controller CPU1	Yes (.U11)	Yes (.S19)
TERA7	Top Monitor 7 display	No	Yes (.ZIP)

- Device -

```

first:HE154 (UNIT_14)
first:LOADER_HE154UPDATE
first:LOADER_HE154_NEW_UNIT
first:MC2M_LOGIC_CPU0 (UNIT_12)
first:MC2M_LOGIC_CPU1 (UNIT_11)
first:TERA7
  
```

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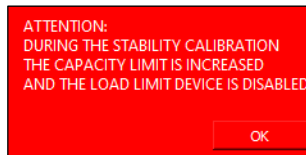
CUST : Stability calibration

D STABILITY CALIBRATION

The stability calibration must be performed after the crane has been installed on the trailer: the calibration allows to automatically set the tilting angle limits according to the safety regulations. Please refer to crane manual for the details.

After the CUST plug-in has been automatically selected, it is possible to access the stability calibration with the following steps:

1. Click **Calibration** in the Homepage.
2. Click **Stability Calibration**. A pop-up warns the operator that during the calibration the capacity limit will be increased since the moment limiter will be disabled.



3. Click **OK** to proceed.

Installer Manual

CUST : Stability calibration

D.1.1 CALIBRATION SETTINGS

During calibration, the crane speed is limited, the 1st boom and the 2nd boom inclination angles are limited as well, and the crane performance is increased by a safety factor (between 1.25 and 1.40). The page below allows to set the safety parameters.



Calibration Settings

Crane Speed @0% 

Crane Speed @93% 

B1 Max Angle

B2 Max Angle

P1 Max factor

P2 Max factor

PARAMETERS	DESCRIPTIONS
Crane Speed @0%	Speed percentage for all crane movements, with engine at 0% rpm.
Crane Speed @93%	Speed percentage for all crane movements, with engine at 93% rpm.
B1 Max Angle	Max. allowed inclination angle for 1st boom.
B2 Max Angle	Max. allowed inclination angle for 2nd boom.
P1 Max factor	Increase factor for the 1st boom cylinder pressure limit. P1 Test = P1 Nom x P1 Max factor.
P2 Max factor	Increase factor for the 2nd boom cylinder pressure limit. P2 Test = P2 Nom x P2 Max factor.

BUTTONS	DESCRIPTIONS
Exit	It exits the calibration without saving.
Save	It applies the parameters to the system.
Next	It goes to the calibration procedure.

Installer Manual

CUST : Stability calibration

D.1.2 STABILITY CALIBRATION MODE

CUST shows the following window.

Please Choose the Procedure

Stability Test

Continue from last Step (0)

Single Point

FL

Exit

BUTTONS	DESCRIPTIONS
Stability Test	It starts the stability calibration from beginning.
Continue from last Step (0)	It restarts the stability calibration resuming from the last step calibrated.
Single Point	It performs the calibration in one point (step) only (*). FL RL RR FR
Exit	It exits the calibration.

D.1.3 STABILITY TEST

The complete stability test must be performed for all the 4 steps:

- FL : Front-Left
- RL : Rear-Left
- RR : Rear-Right
- FR : Front-Right

The system displays at every step a calibration page showing the involved parameters (see next page). At every step you shall follow the procedure below to obtain and set the max. allowed tilting angles (see crane manuals for detailed procedure).

1. Attach the Test Load and lift it with extensions fully retracted;
2. Rotate the booms towards the target slewing angle (Target Rot).
3. Extend the booms till instability occurs: if the crane is fully stable extend up to max. outreach.
4. Set the pressure limit (Target P1 = P1/1.2) for the tilt test by clicking

Set Max Limit

.
5. Retract the boom extensions till P1 = Target P1.
6. Record the max. allowed tilting angle(s) by clicking

Set Tilt Limit

.
7. Go to next step by clicking

Next step

.
8. Continue the procedure till the last step.

After the calibration procedure is completed, the system sets the ultimate tilt limits as follows:

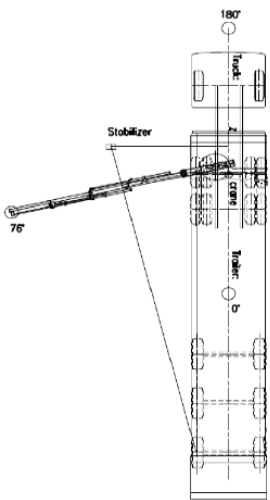
- the limit tilting angle on the left side of trailer is the minimum value between FL and FR results.
- the limit tilting angle on the right side of trailer is the minimum value between RL and RR results.

Installer Manual

CUST : Stability calibration

Title

STEP 1 (FL) - FRONT TRAILER LEFT SIDE



Target and sensors values

Stab1 DW ☐
Stab1 Out ☐

Stab2 DW ☐
Stab2 Out ☐

P1 =
P1 Test =
P2 =
P2 Test =
A1 =
Rot =
Ext =
Tilt Crane =
Tilt Trailer =

P1 Nom =
Target P1 =
P2 Nom =
Target Rot = 76°

- PLACE THE CRANE IN FRONT OF THE TRAILER
- ROTATE THE CRANE ON TARGET ANGLE
- PLACE STABILIZERS 100mm FROM GROUND
- IF DURING THE TEST ONE TOUCHES THE GROUND, LIFT IT 100mm
- EXTEND THE BOOM UNTIL THE INSTABILITY OCCURS
- PRESS "SET MAX LIMIT" BUTTON
- RETRACT UNTIL THE TARGET PRESSURE P1 VALUE IS REACHED
- PRESS "SET TILT LIMIT" BUTTON

Procedure

Save and Exit

Set Max Limit

Set Tilt Limit

Next step

DATA	DESCRIPTIONS
Title	Calibration step number (code) and position of calibration point.
Target and sensors values	Sensors values for pressures and angles. P1: current pressure in the 1st boom cylinder. P1 Nom: max. working pressure for the 1st boom cylinder. P1 Test: max. allowable pressure of 1st boom cyl. during test (P1 Nom x P1 Max factor). Target P1: P1 at instability or at max. outreach divided by 1.2. Tilt test pressure. P2: current pressure in the 2nd boom cylinder. P2 Nom: max. working pressure for the 2nd boom cylinder. P2 Test: max. allowable pressure of 2nd boom cyl. during test (P2 Nom x P2 Max factor). A1/A2: current inclination angle of 1st/2nd boom, respectively. Rot: current slewing angle Target Rot: slewing angle to be reached before starting the calibration. Tilt Crane/Trailer: current crane and trailer tilting angle.
Procedure	Procedure to be performed for the current calibration step.

The descriptions of the buttons are on the next page.

subject to change without notice

D.4

7845760-02


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CUST : Stability calibration

BUTTONS	DESCRIPTIONS
 Save and Exit	It saves the calibration step and exits the calibration procedure.
 Set Max Limit	It activates (green) when Target Rot is reached. Click this button after the max. limit (instability or max. outreach) is reached, to calculate and display the Target P1 value.
 Set Tilt Limit	It activates (green) when Target P1 is reached. Click this button when P1 = Target P1, to record the Max. tilting angle(s).
 Next step	It activates (green) after setting the tilt limit. It goes to next calibration step.

