TECHNION

MOBILE CRANE CONTROL SYSTEM

USER MANUAL

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Introduction

The xCrane crane control system is used to control different types of cranes. This user manual provides instructions on the safe and efficient use of the xCrane control system that will enable you to maximize productivity.

The safe and effective use of the system ensures the best possible performance and financial return on your machine investment. It is for this reason that we highly recommend reading these instructions carefully before using the system.

This user manual has been drafted and arranged so that its systematic reading will provide a clear understanding of the structure, implementation and use of the control system.

The first section of the manual deals with safety issues related to the control system.

The second section provides an overview of the system architecture and GUI, followed by a detailed presentation of the functions controlled through the GUI.

All the technical specifications, functions and instructions presented in this manual are based on the latest system information available at the time this manual version was drafted. As the system is constantly being developed, the manufacturer reserves the right to make changes to the product without prior notice.

Table of contents

1 System safety 7
1.1 General warnings 8
2 System architecture 11
3 Navigation 13
3.1 Working view 14
3.1.1 Symbol definitions 15
3.1.2 Pop-up information 19
3.2 Main page buttons 20
3.2.1 Driver selection 20
3.2.2 General speed 20
3.2.3 USB settings 21
3.2.4 Menu 21
4 Operating modes 23
4.1 Suspend mode 25
4.2 Stabilizer control 26
4.3 Steering by joysticks mode 27
4.4 Axle lock 28
4.5 Trailer drawbar control 29
4.6 Trailer traction control 30
4.6.1 Differential lock 30
4.6.2 Trailer brake 30
4.7 Winch control 31
4.8 Floating mode 32
4.9 Radio control mode 33
5 System sensors 35
5.1 Outside temperature 36
5.2 Hydraulic oil temperature 37
5.3 Hydraulic oil pressure sensors 38
5.4 Load pressure sensor 39
5.5 Hydraulic oil filter clogging indicator 40
5.6 Hydraulic oil level warning 41
6 Operator presence detections features 43
6.1 Seat switch mode 45
6.2 Door switch mode 46
6.3 Dead man switch safety mode 47
6.4 Temporary presence detection mode 48
7 Technion Quick trim 49
7.1 Introduction 50
7.2 Speed setting process 51
7.3 Examples of Quick Trim 53
8 Settings menu 55

8.1 Menu structure 56
8.2 Settings - Crane 57
8.2.1 Max speed. 57
8.2.2 Min speed 58
8.2.3 Acceleration ramps. 58
8.2.4 Deceleration ramps. 59
8.2.5 Speed balance 59
8.2.6 Rotator direction. 60
8.2.7 Progression control. 61
8.3 Adjusting setting values. 62
8.4 Data saving 65
8.5 Settings - Joystick 66
8.5.1 Calibration 66
8.5.2 Dead band. 67
8.5.3 Filter 68
8.6 Settings - Diagnostic 69
8.6.1 Output. 69
8.6.2 Joysticks 69
8.6.3 Sensors 70
8.6.4 Inputs 71
8.6.5 System 71
8.6.6 Software info 72
8.6.7 Fault log 72
8.7 Settings - System 73
8.7.1 Display settings 73
8.7.2 Copy parameters. 74
8.7.3 Factory reset 75
9 USB settings 77
9.1 Read information 79
9.1.1 Backup 79
9.1.2 Configure 79
9.1.3 Default driver 79
9.1.4 Logs 80
9.1.5 Current driver 80
9.2 Write information 81
9.2.1 Restore 81
9.2.2 Configure 81
9.2.3 Default driver 81
9.2.4 Current driver 82
9.3 File transfer information 83
9.3.1 File operation errors 84

1 System safety

1.1 General warnings

Use of the control system involves items that are vital to the safe operation of the machine. Operators must comply with these. Failure to observe these warnings will invalidate your guarantee.

WARNING	
	Performing maintenance work while the system is powered and the machine is pressurized could cause death or severe injury. **Always switch off the system and depressurize the machine before performing maintenance work.**

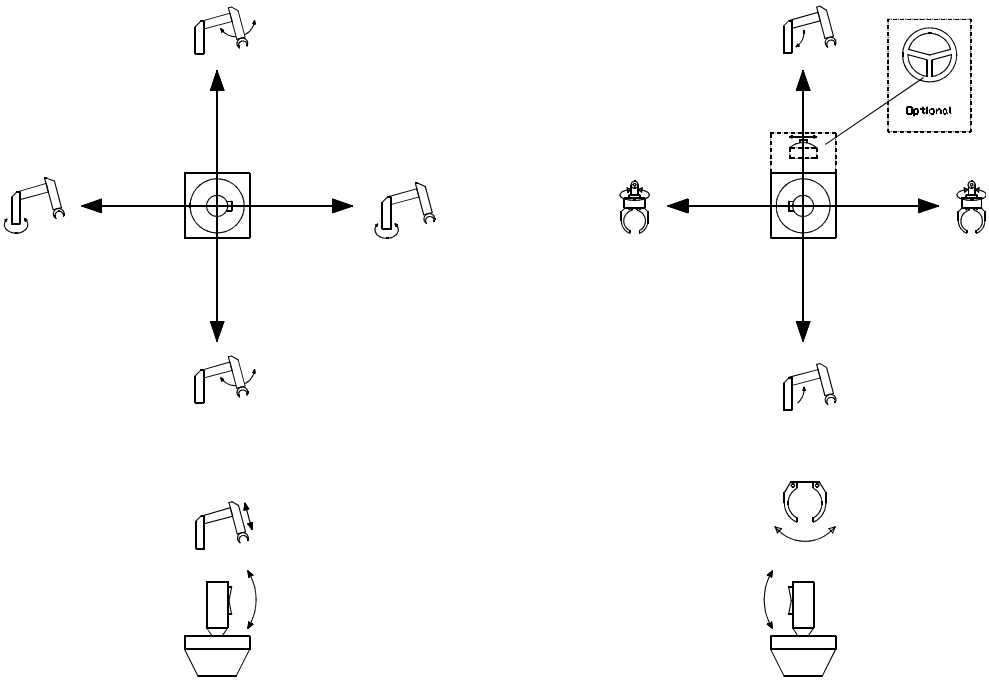
NOTICE	
	The xCrane system may only be used and adjusted by trained personnel! **The example values given for the parameters in this manual are guideline values, not optimal values for all machines.**

NOTICE	
	Performing welding work while the connectors of the modules are connected could damage the system. **Always disconnect all the connectors of the modules before performing welding work.**

NOTICE	
	Always use a specific CAN cable with twisted and shielded pair for the CAN bus.

2 System architecture

The system is based on intelligent electronic control units connected via a CAN bus. The main system components are Technion Display Controller, Technion control unit TEC152 and joysticks.The system can also be used without the display.

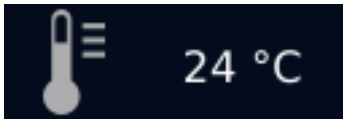


3 Navigation

3.1 Working view

In the working view user can change operator, speed for that operator and operating mode. Sensor data is available at the left side of the working view. At the top bar there are some system icons available. Crane manufacturer's system configuration defines, which working view icons are visible.

3.1.1 Symbol definitions

	System date and time
	If this button symbol is visible, there are faults in the system. Fault log can be accessed by pressing the button. If the warning triangle is orange, there are active faults in the system.
	If the symbol in the button is visible, a USB stick is connected to the system and USB settings can be used.
	Hydraulic oil pressure. Shows the pressure provided by an external sensor. This sensor is an option.
	Outside temperature. Shows the ambient temperature provided by an external sensor. This sensor is an option.
	Hydraulic oil temperature. Shows the oil temperature provided by an external sensor. This sensor is an option.
	Operating voltage. Voltage is read internally in the xCrane module.
	Overload indicator. Measures the hydraulic pressure of the lift boom and uses the pressure to calculate whether the load is a risk to the balance of the machine. The indicator has three states: OK, Warning and Alarm. This sensor is an option.

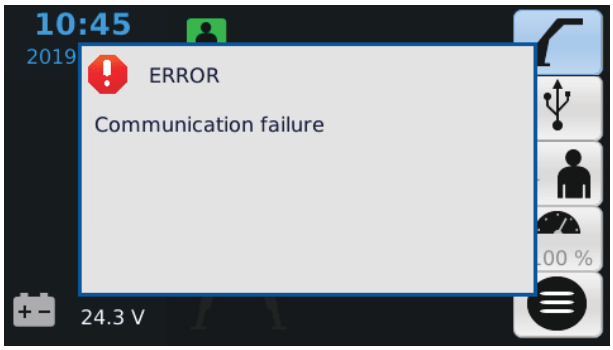
	Operator's seat indicator and door open/ closed indicator. If your crane is equipped with the seat switch safety function, the crane cannot be used if the operator is not in the operator's seat. The seat status can be observed from the display symbol. If the symbol is green, the operator is properly seated in the operator's seat. The symbol is orange when the seat is empty. When the door symbol is visible, the door is open. If the symbol is green and orange, the operator temporal presence mode is active. The green and orange bar on the left side of the icon indicates the remaining pre-defined time. This sensor is an option.
	Float mode active. This symbol is visible if the operator has activated the float mode from the switch. In this mode the crane's lift, jib and swing valves are in floating mode to make sure that the crane is following the trailer.
	The crane is not at the home position and it is not active. The joysticks have been activated to control other functions, such as moving the supporting legs.
	The crane is not at the home position and it is active. The joysticks have been activated to move the crane.
	The crane is at the home position and it is not active.

	The crane is at the home position and it is active.
	The supporting legs are not at the home position and they are not active. The joysticks have been activated to control other functions, such as moving the crane.
	The supporting legs are not at the home position and they are active. The joysticks have been activated to move the supporting legs.
	The supporting legs are at the home position and they are not active.
	The supporting legs are at the home position and they are active.
	There is steering function in the system but it is not activated.
	Steering by joysticks activated.
	Axle Lock is enabled and active if this symbol is visible.
	Trailer traction control activated.
	Differential lock is active. Differential lock function can be used with trailer traction.
	Trailer brake is active.
	Winch control deactivated.
	Winch control activated.

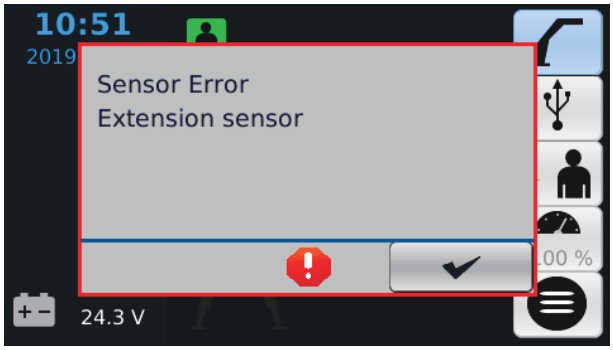
	Trailer drawbar control deactivated.
	The trailer drawbar control is active.
	Oil filter pressure switch indicator.
	Hydraulic oil level low indicator.
	Radio control indicator. The blue symbol indicates high radio signal strength. The yellow symbol indicates low radio signal strength. The red symbol indicates loss of the radio signal. The gray symbol indicates disabled radio control.

3.1.2 Pop-up information

If the CAN connection between TEC152 controller and display is compromised, then following pop-up window will appear.

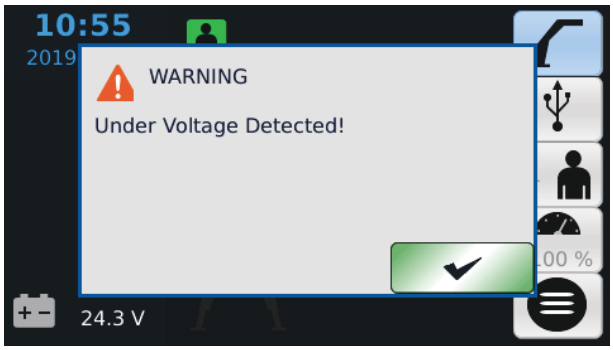


If fault is detected, it is informed to the user by showing pop-up.



Fault pop-up informs user where the fault is detected (Joystick, valve control or supply).

If system voltage drops below certain level, this situation is informed to the driver with the following pop-up.



If the under-voltage situation happens, all crane movements will stop. System should recover from this situation and working can continue by centering the joysticks. Pop-up can be acknowledged by pressing OK button.

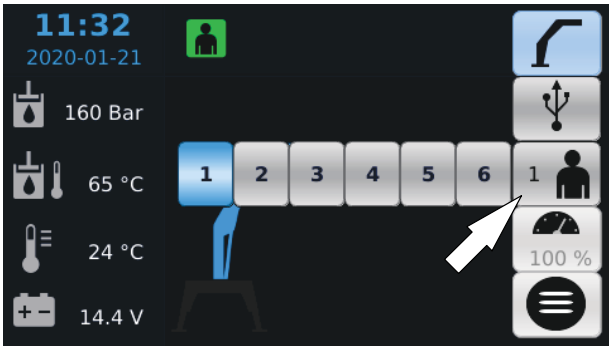
3.2 Main page buttons

At the main working view, a variety of settings can be changed.

1. Menu
2. General speed
3. Driver selection
4. USB settings
5. Not in use

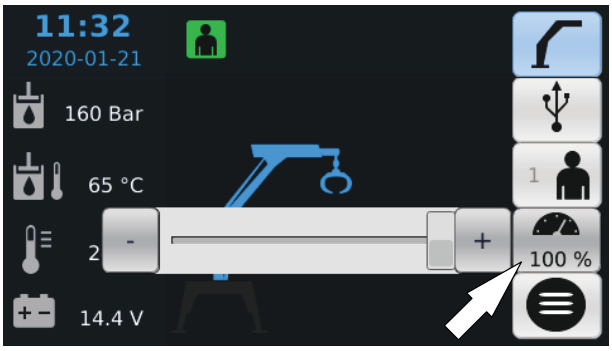
If any of the selections (2, 3 or 5) is active, all other menus/selections are disabled.

3.2.1 Driver selection



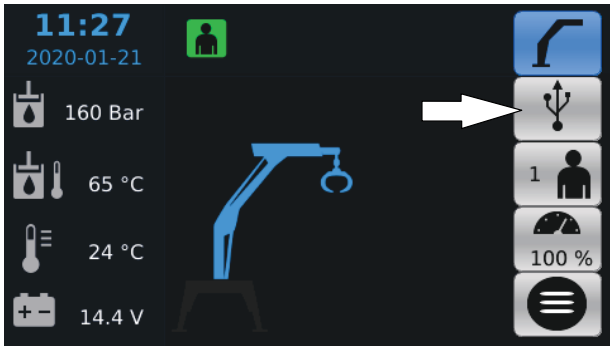
Driver selection menu can be activated by pressing the button at the right side of the working view. There are six operators in the system, and each operator can have their own set of parameters.

3.2.2 General speed



General speed setting can be activated by pressing the button at the right side of the working view. Value can be set from the slider. Each operator can have their own general speed (more about general speed and Technion Quick Trim can be found from page *49*).

3.2.3 USB settings



If the USB is connected and the symbol is active, the USB settings can be accessed by pressing the button at the right side of the working view.

3.2.4 Menu

Enter the menu by pressing the button.

4 Operating modes

The xCrane system has a variety of different operating modes that can be used alongside with the crane. This chapter will have some information about the operating modes and how to use them.

Please contact your dealer about the operating modes

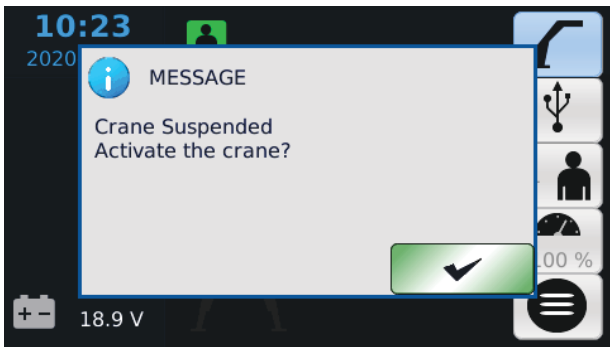
4.1 Suspend mode

If the crane is put to the suspend mode, all the main crane functions are disabled. The color of the crane symbol shows the state of the suspend mode.

	The suspend mode is active.
	The suspend mode is not active.

As a default setting, the suspend mode can be activated from the display. Alternatively, the crane manufacturer can configure an external switch to be used for the suspend mode activation.

Press the crane symbol for two seconds. A pop-up will appear telling that the crane is now suspended. To exit the suspend mode, press the "Yes" button on the pop-up.



4.2 Stabilizer control

Stabilizers can be controlled with joystick Y-axis or using separate thumbwheel or buttons.

If the joystick Y-axis is used, then stabilizer control needs to be enabled with switch.

Stabilizer control state is shown in the working view bellow the crane image. If the system doesn’t have stabilizers configured, the symbol is not shown at all.

4.3 Steering by joysticks mode

The steering mode can be activated by pressing the steering mode switch on the dashboard. Alternatively, xCrane can detect the steering mode automatically from the tractor's control system.

When the steering mode is activated, the functioning of the joystick changes. The rotator movement will be disabled, and the joystick will control the steering valve instead.

Or alternatively steering can be controlled with separate thumbwheel, and then activation switch is not needed, and crane controls are not disabled.

The symbols below indicate the status of the steering mode. When the symbol is blue, the steering by joysticks mode is active. If the symbols are not visible on the display, the steering by joysticks mode is not available.

4.4 Axle lock

The axle lock mode can be activated by pressing the axle lock mode switch on the dashboard. Alternatively, xCrane can detect the axle lock mode automatically from configuration and tractor's control system.

The symbol below indicates the state of the axle lock mode. If symbol is visible, axle lock is enabled and active. If axle lock function hasn't been configured to the system, symbol is not visible at all.

4.5 Trailer drawbar control

Trailer drawbar can be controlled by activating the drawbar control enable switch or alternatively, xCrane system can detect the machine driving speed and activate the drawbar control automatically. Symbol bellow indicates, if the drawbar control is activated.

Drawbar control can be operated from left or right joystick X-axis or with separate thumbwheel. Crane controls can be disabled during drawbar controls. This is done with separate configure.

4.6 Trailer traction control

Trailer traction can be controlled from xCrane system. Traction is activated manually with direction switches connected to the system or it can be activated automatically based on the machine's driving direction and speed.

System has two types of traction controls: On-Off controlled and proportional controlled. ON-OFF control can be controlled from switches or with machines driving direction and speed. Proportional control can be operated with potentiometer or with machines driving direction and speed.

Symbol below indicates that trailer traction control is active.

4.6.1 Differential lock

Differential lock control is an extra feature with trailers that has traction with differential lock mechanism. Differential lock is controlled with switch and it engages/disengages only while the traction control is disabled. Symbol below tells that the differential lock is active.

4.6.2 Trailer brake

The trailer brake function is an extra feature to work alongside with the trailer traction. The brake can be activated with a switch or it can activate and deactivate automatically based on the machine's driving speed.

Following symbol will indicate the state of the trailer brake.

4.7 Winch control

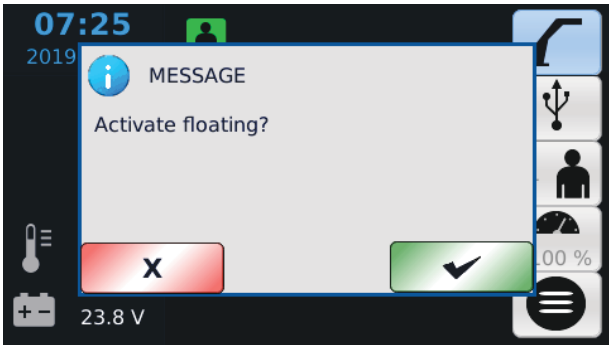
Winch control can be activated with switch and can be controlled from thumbwheel.

If the symbol is gray, then the winch control is disabled and if it is blue then winch control is active.

4.8 Floating mode

It is possible to float the crane during trailer transportation in the xCrane application. This means that when the crane is mounted on the tractor, the boom can be safely placed on the trailer during transportation. The floating mode is activated normally by using an external switch, and the manufacturer can configure two activation sequences:

1. If xCrane is configured so that confirmation is not required from the display: press the activation button on the dashboard for at least 2 seconds, release it for 0.5–2 seconds and press it again for more than 0.3 seconds.
2. If xCrane is configured so that display activation is required: press the activation button on the dashboard once and then confirm the selection from the display.
3. Activate floating from the switch. Display confirmation not required.



This pop-up window will appear if the floating confirmation is enabled and floating is activated. Floating request can be rejected by pressing “X” button.

The floating mode is switched off by pressing the button again for more than 0.5 seconds.

The symbol below is visible when the floating mode has been activated.

Please contact your dealer to confirm which activation sequence is configured in your crane.

4.9 Radio control mode

The xCrane system can be used with variety of radio controllers.

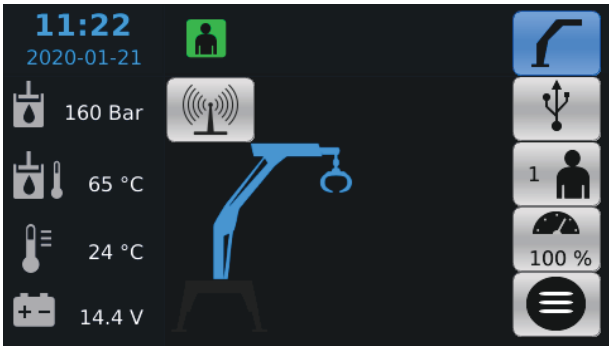
The radio control is activated and deactivated from a switch. When deactivating the radio, the pop-up will appear to inform the user about the deactivation of the radio. The deactivation is done by pressing the "yes" button.

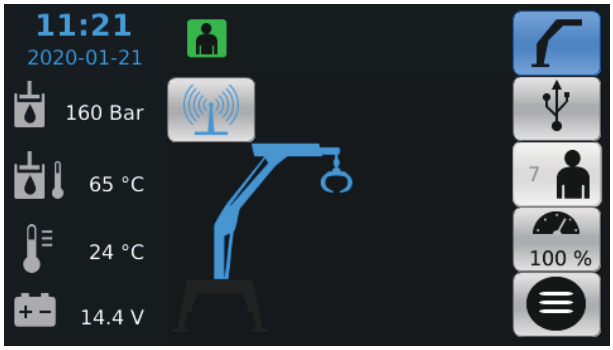
The following icons tell the state of the radio control.

The blue symbol indicates that the radio is operational and the radio signal strength is high. The yellow signal indicates that the radio signal strength is low. If the symbol is red, there is communication lost with the radio. When the radio control is disabled the symbol is gray.

While the radio control is enabled, the driver cannot be changed.

The radio control can be activated by a button on the display. The icon turns blue when the radio is activated. During this time the driver cannot be changed and the driver symbol is gray.

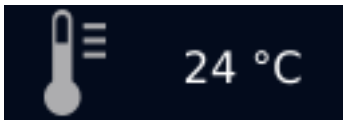




5 System sensors

5.1 Outside temperature

System can measure outside temperature and show it at the left side of the display.



5.2 Hydraulic oil temperature

System can measure the hydraulic oil temperature and show it at the left side of the display.

5.3 Hydraulic oil pressure sensors

If the hydraulic oil pressure sensor is connected to the system, it is shown on the display.

With the pressure sensor, the operator can see the operating pressure of the hydraulic system. This will help with the diagnostics.

5.4 Load pressure sensor

Load pressure sensor is usually mounted to the main boom cylinder. It can measure the pressure and indicate to the operator if the load is too high. Symbols bellow will indicate the status of the load pressure.

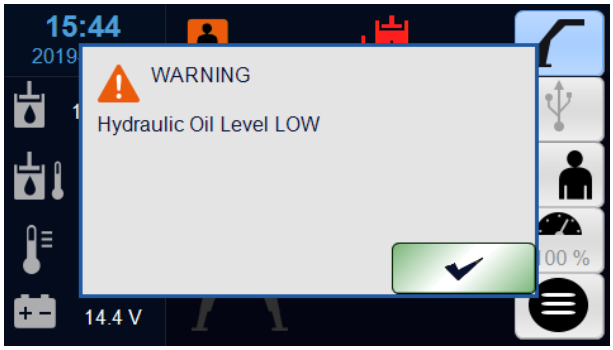
5.5 Hydraulic oil filter clogging indicator

Crane can be mounted with a hydraulic oil clogging indicator that indicates the clogged hydraulic oil filter. If the clogging indicator is active, the system show the symbol below.

5.6 Hydraulic oil level warning

There is possible to add a hydraulic oil level switch to the system. The symbol below indicates if the hydraulic oil level is too low.

If the hydraulic oil level is too low, it will trigger the fault and sets the following pop-up information.



If the operator resets the warning, it will pop-up again after 1 minute.

Please contact your dealer about this feature.

6 Operator presence detections features

There are variety of operator presence detection features that can be configured to the xCrane system.

6.1 Seat switch mode

The xCrane control system includes a function for detecting whether the operator is seated in the cabin. The safety feature is optional.

If your crane is equipped with the seat switch function, the crane cannot be used if the operator is not in the operator's seat. The seat status can be observed from the display symbol. The symbol is green when all functions are working, and the operator is properly seated in the operator's seat. The symbol is orange when the seat is empty. If the symbol is red, there is an error in the sensor.

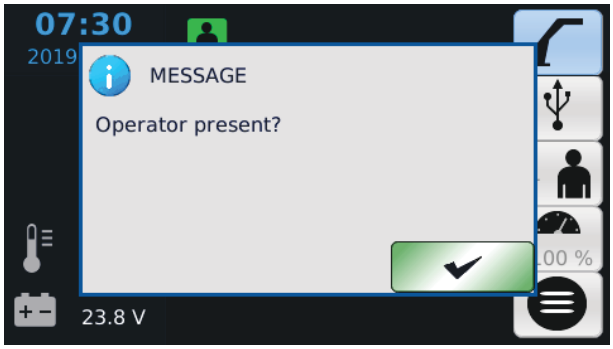
Please contact your dealer to confirm whether your crane includes this function.

6.2 Door switch mode

The xCrane control system includes a function for detecting whether the cabin door is properly closed. The door position can be observed from the display.

The safety feature is optional and it has 3 alternative configurations:

1. Door switch is disabled.
2. Door switch is enabled, allows operating when door is closed.
3. Door switch is enabled, allows operating after an operator acknowledges his/her presence in the cabin.



Please contact your dealer to confirm whether your crane includes this function.

6.3 Dead man switch safety mode

The xCrane control system includes a “Dead man” function. The feature is optional, and it can be activated with a following sequence from the button or switch.

- Press the button for predetermined time and the release
- Dead man mode is active for a predefined time
- Mode can be activated during that time again by pressing the button
- When there is 10 seconds left of the active time the operator icon starts to blink between green and orange

All the crane movements are disabled if mode is not active.

Please contact your dealer to confirm whether your crane includes this function.

6.4 Temporary presence detection mode

If one of the aforementioned presence detection modes is configured to the system, then it is possible to access temporary presence detection mode. This feature can be activated by pressing 2 seconds the defined push button or right joystick Z-axis control.

The temporary operator presence mode can also be activated from the display. The mode is activated by pressing X-button when the driver selection is highlighted and operator presence icon is orange. When this mode is active, the crane can be operated during the pre-defined time. Icon below indicates the state of the temporal operator presence mode. The green bar on the left side of the icon indicates the remaining pre-defined time.

Please contact your dealer about this feature.

7 Technion Quick trim

7.1 Introduction

The Technion Quick Trim feature enables the operator to quickly adjust the speed of the crane according to instant needs. Technion Quick Trim is designed for daily work. Different situations require different crane speeds.

The feature increases or decreases the speed of all functions simultaneously. Technion Quick Trim can be adjusted from the display or from the potentiometer mounted on the dashboard.

Please confirm your Quick Trim configuration from your dealer.

7.2 Speed setting process

The speed of the crane is adjusted through three parameters: Maximum Speed, Speed Balance and Technion Quick Trim.

When Technion Quick Trim is adjusted to 100% the crane moves according to the Max Speed settings. Speed Balance will not take effect at all. Adjust first the Maximum Speed while Technion Quick Trim is set to 100%

With lower Quick Trim values, the operator can adjust the balance between different movements. In order to adjust balance, the Quick Trim value can be decreased to 50%, for instance. The user will then be able to experience how the Speed Balance parameters will affect the system.

Once the Speed Balance parameters meet the requirements of the operator, the speed setting process of the Maximum Speed and Speed Balance parameters is complete. Technion Quick Trim can now be adjusted according to the current working mode.

7.3 Examples of Quick Trim

Technion Quick Trim/Speed balance system is simple and fast way to adjust your crane speed. In this chapter the use of this system is explained with three simple examples.

The basic formula of speed can be determined as shown below

$$\left(100 - \frac{(100-SpeedBalance)*(100-QuickTrim)}{100}\right) * \frac{MAXSpeed}{100}$$

Example 1

Speed balance = 0%

Max speed =100%

Quick trim = 50

$$\left(100 - \left(\frac{(100-0)*(100-50)}{100}\right) * \frac{100}{100}\right) = 50\%$$

The result is that the motion speed of a function is 50% of the max speed

Example 2

Speed balance =100%

Max speed =100%

Quick Trim =50%

$$\left(100 - \left(\frac{(100-100)*(100-50)}{100}\right) * \frac{100}{100}\right) = 100\%$$

The result is that the Quick trim doesn't affect the selected motion speed at all.

Example 3

Speed balance = 25%

Max speed = 80%

Quick trim = 50%

$$\left(100 - \frac{(100-25)*(100-50)}{100}\right) * \frac{80}{100} = 50\%$$

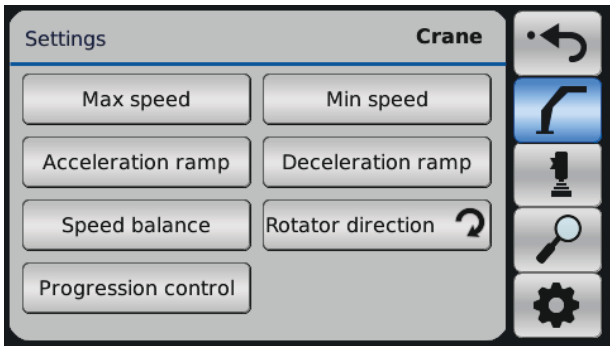
The result is that the motion speed of a function is 50% of the max speed.

8 Settings menu

8.1 Menu structure

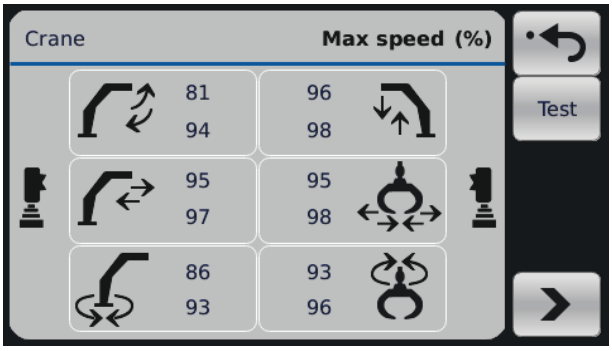
Settings - Crane	Settings - Joystick	Settings - Diagnostics	Settings - System
• Max speed	• Calibration	• Output	• Display settings
• Min speed	• Dead band	• Joysticks	• Copy parameters
• Acceleration ramps	• Filter	• Sensors	• Factory reset
• Deceleration ramps		• Input	
• Speed balance		• System	
• Rotator direction		• Software info	
• Progression control		• Fault log	

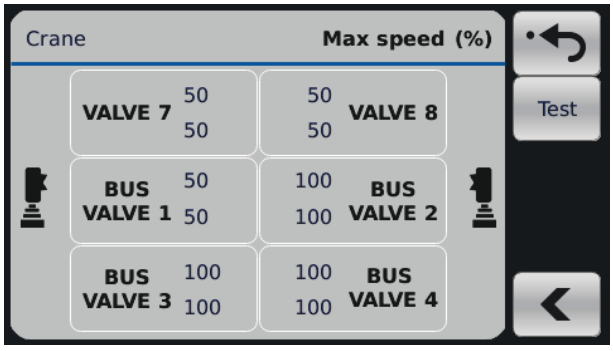
8.2 Settings - Crane



In the Settings menu, the Crane submenu can be found under the boom symbol which is highlighted in the image above.

8.2.1 Max speed



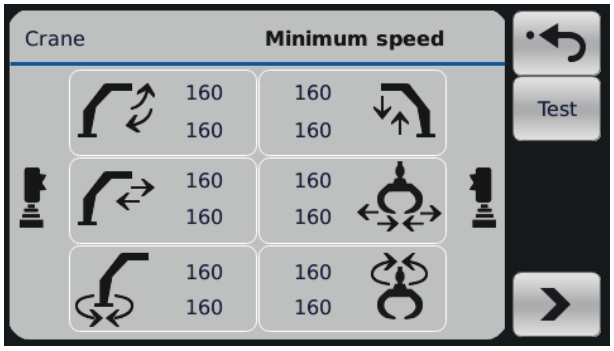


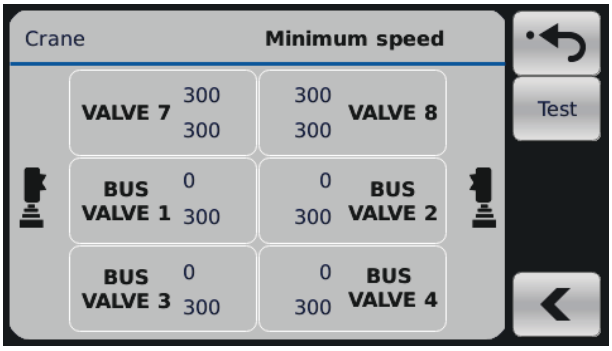
The speed of each movement from maximum speed. The Max speed value is a percentage ratio of the total speed range. Both directions of each movement can be adjusted separately.

Use the “next page” and “previous page” buttons to scroll between auxiliary valve and crane valve settings.

Before you adjust the maximum current, set the Quick Trim value to 100%. Otherwise it will limit the speed of your setting.

8.2.2 Min speed



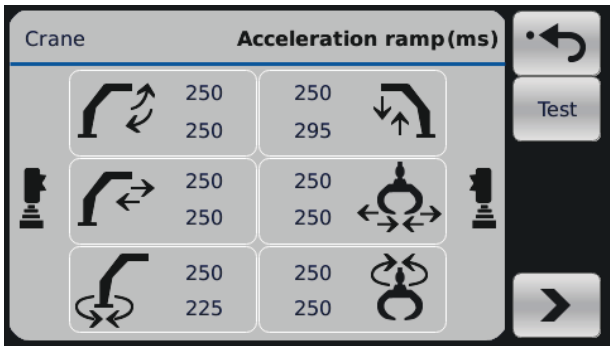


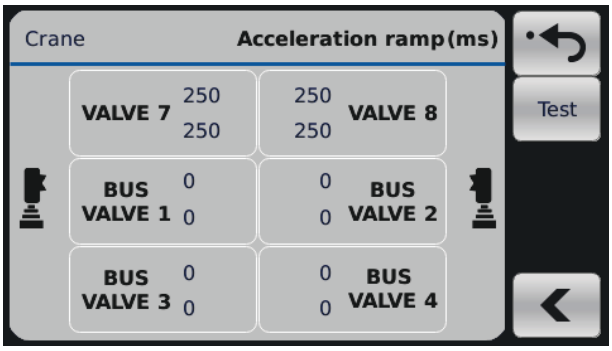
Minimum current for the solenoid. Should be set according to following process:

1. Increase the value that crane function barely starts to move
2. Decrease the value back until the moving ends
3. Decrease 2 steps more (=10mA) from the limit that moving ended
4. Perform this for each function and for each direction

Use the “next” and “previous” buttons to scroll between auxiliary valve and crane valve settings.

8.2.3 Acceleration ramps

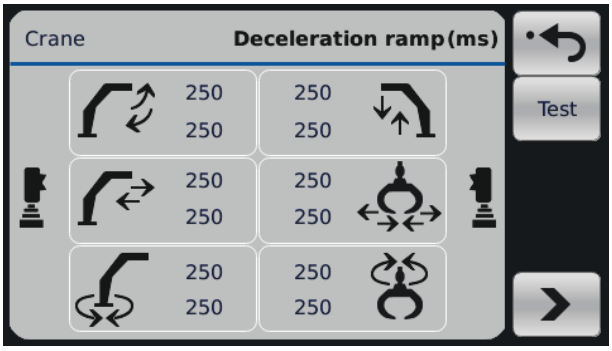


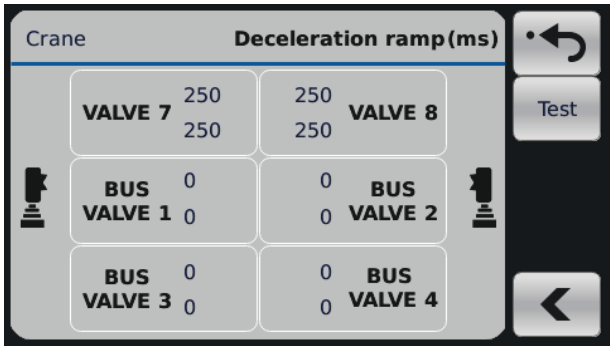


The acceleration ramps define how quickly control values go from min speed to max speed. The bigger the ramp value, the longer it will take for a control value to go from min speed to max speed. Set the acceleration ramps so that crane movements are smooth but without long delays in control.

Use the “next” and “previous” buttons to scroll between auxiliary valve and crane valve settings.

8.2.4 Deceleration ramps

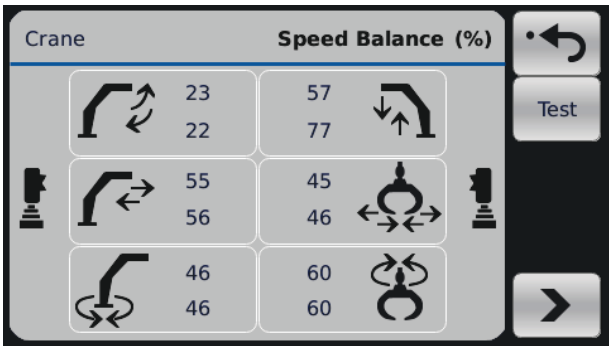


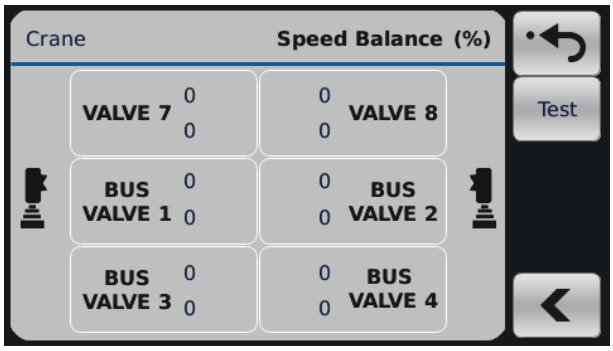


The deceleration ramps define how quickly control values go from max speed to min speed. The bigger the ramp value, the longer it will take for a control value to go from max speed to min speed. Set the deceleration ramps so that crane movements are smooth but without long delays in control.

Use the “next” and “previous” buttons to scroll between auxiliary valve and crane valve settings.

8.2.5 Speed balance

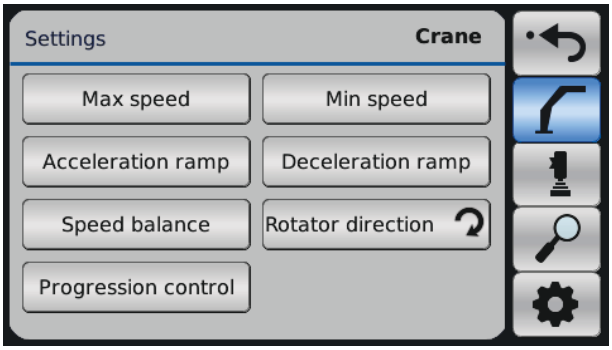




With the Speed balance settings, you can define the relative speed between each crane function when adjusting the crane speed by using Technion Quick Trim in the Working view. In this example, the operator wants the grapple functions to be as fast as possible in all situations.

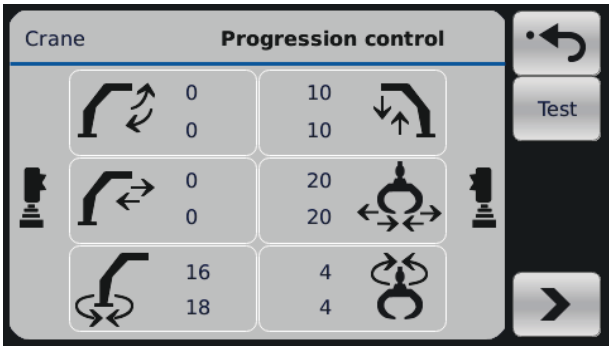
Use the “next” and “previous” buttons to scroll between auxiliary valve and crane valve settings.

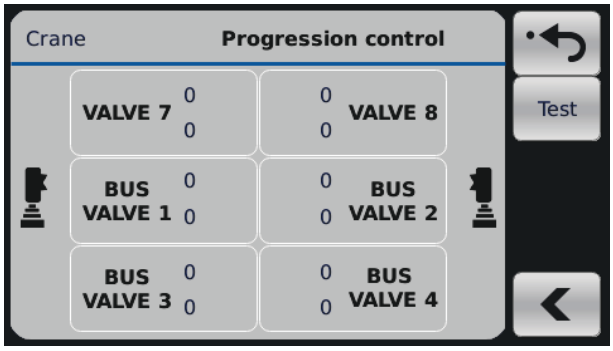
8.2.6 Rotator direction



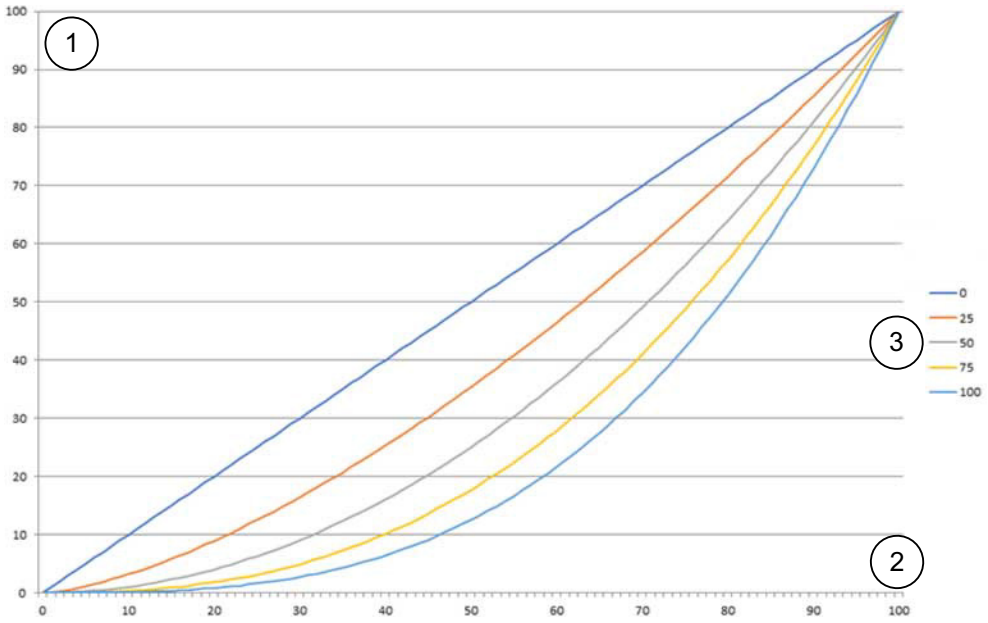
It is possible to change the rotation direction of the rotator. The change is made by pressing the button. Arrow shows the direction of the rotator.

8.2.7 Progression control





With progression control, the operator can change the linearity of the control signal.



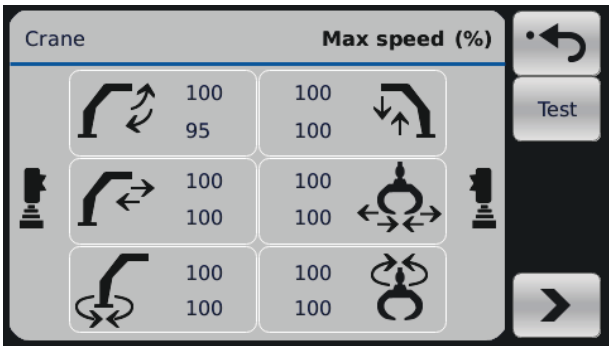
1 Movement speed (vertical axle)
- **0 % - No movement**
- **100 % - The maximum speed**

2 Joystick position (horizontal axle)
- **0 % - Center position**
- **100 % - Extreme position**

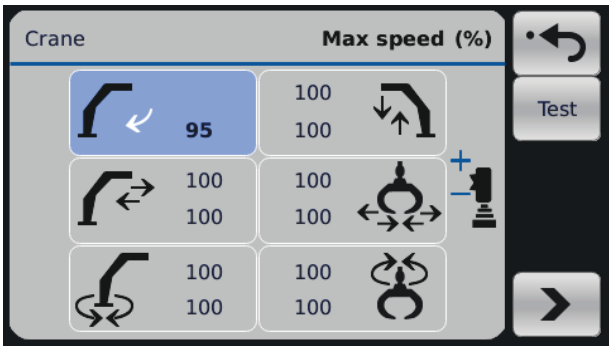
3 Progression value
- **0 % - No progression**
- **100 % - The maximum progression**

If the value is 0%, the control signal is the same as the position of the joystick. By increasing the value, the operator can improve precision at the beginning of the joystick movement. Use the arrows to scroll between auxiliary valve and crane valve settings.

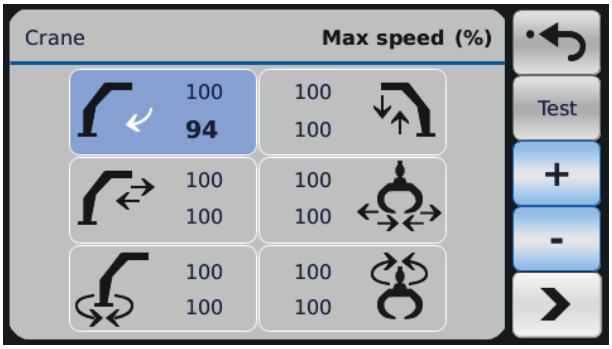
8.3 Adjusting setting values



To select the function, you would like to adjust, activate the desired function by using the joystick. The icon of the selected function will turn blue and next to the opposite joystick appears – and + symbols. Use the z-axis of the opposite joystick to increase or decrease the value. Once you have set the correct value, you can return to the submenu or start adjusting another function.

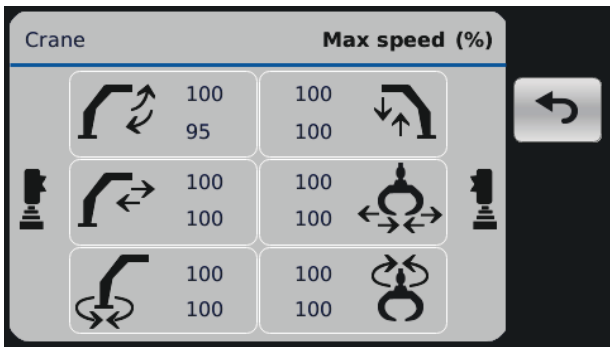


In the example above, the operator has selected the Outer boom in function by using the left joystick. The operator is now able to adjust the max speed for that function by using the z-axis of the right-hand joystick.



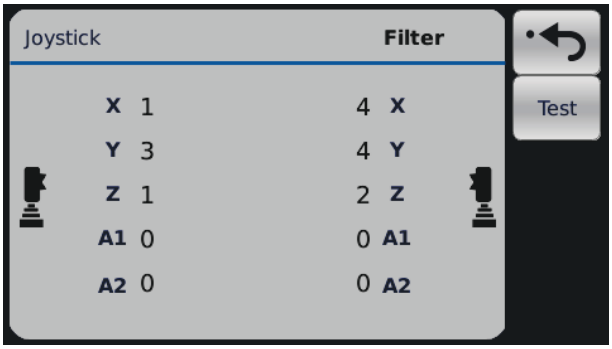
It is also possible to adjust values via the display. Activate then movement and direction by pressing the icon, then press the blue “up” or “down” arrows

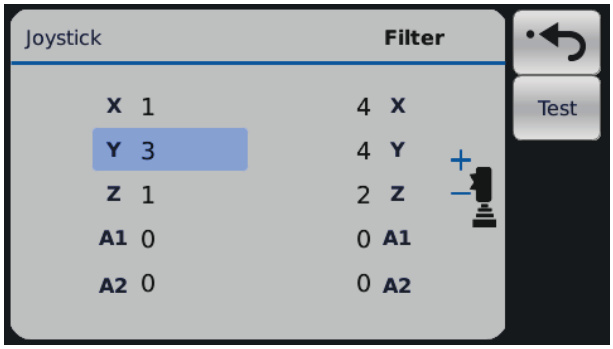
to adjust the value. Exit from the selected movement adjust by pressing “return” button or pressing the icon.



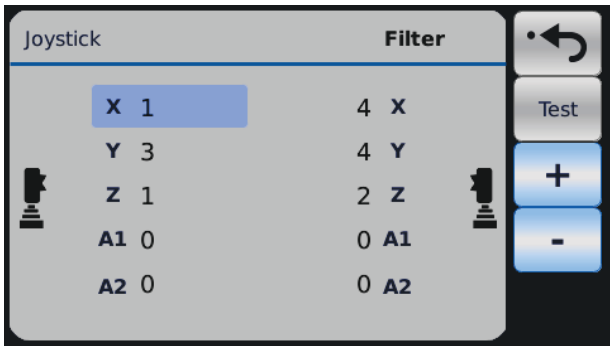
The operator can test adjusted values by pressing “Test” button in the adjust mode. Test mode sets the crane to the normal operation mode, all crane movements are available. Press the button to exit the test mode and return to the adjust mode.

To go back to the Settings menu, press the “Return” button.





Joystick parameter adjusting is basically the same as the valve parameter adjusting. First choose channel to adjust and change value from the opposite side joystick Z-axis.

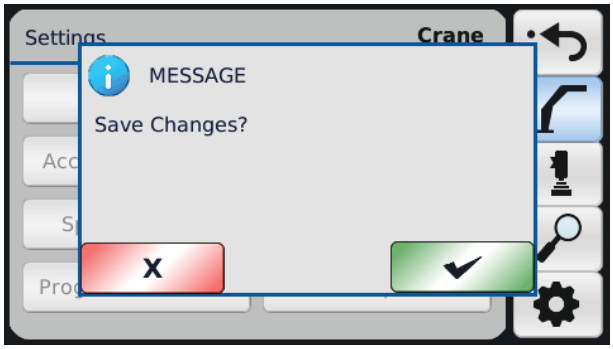


It is also possible to adjust joystick parameter values via display. Axis is selected by pressing the joystick icon. Each press changes the channel. Value is changed by pressing the blue “up” or “down” buttons. Exit the active channel adjust by pressing the joystick icon or by pressing the return button.

8.4 Data saving

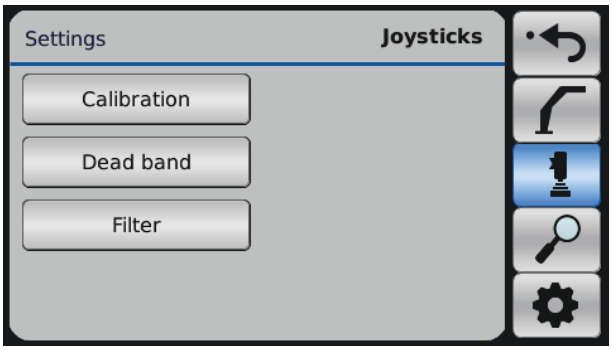
Data saving needs to be done if any of the crane or joystick values are changed.

After all the necessary adjustments has been done and user wants to return to working view, press the return button. If there are any changes at the parameters, then user is asked to save the values.



User can save the parameters by pressing OK (green button) or discard made changes by pressing the “Deny” (red button). After the saving (or discarding) screen goes back to working view.

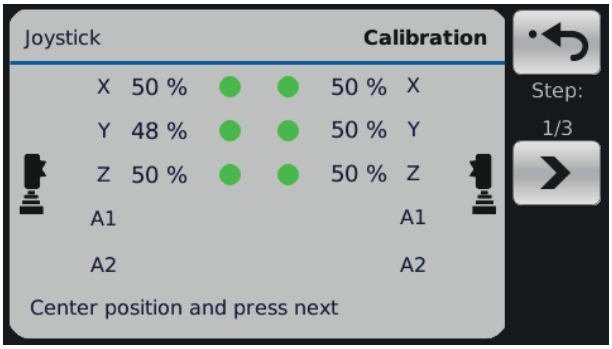
8.5 Settings - Joystick



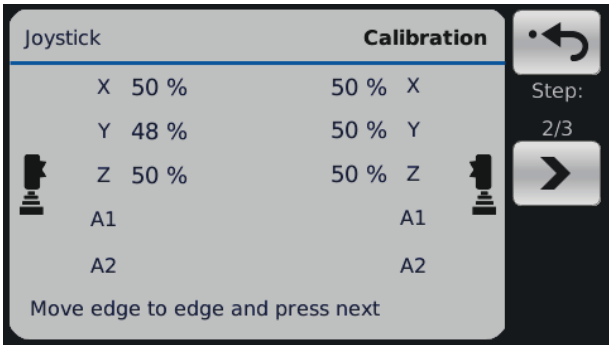
In the Settings menu, the Joystick submenu can be found under the Joystick icon.

8.5.1 Calibration

The calibration of the joysticks involves three steps.

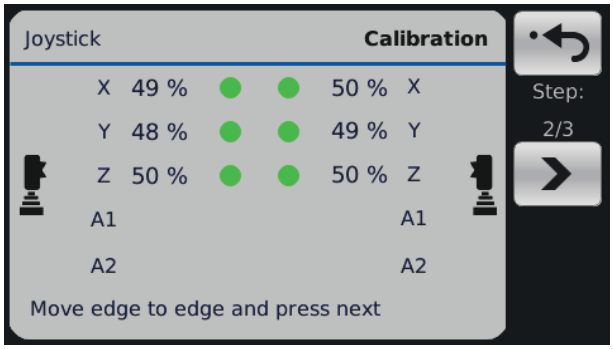


Leave the joysticks in the center position and press “Next”. Green dot next to the joystick value indicates that the current channel is OK.



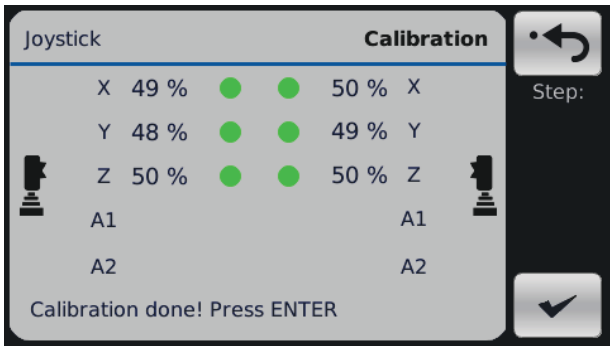
Move both joysticks so that all joystick directions reach the full stroke position. Do not forget the Z-axis movement. When all movements have reached the full stroke position, press Enter. If nothing happens when pressing Enter, one of the movements has not reached the end position.

Please repeat the step and make sure that all the functions for both joysticks have been covered.



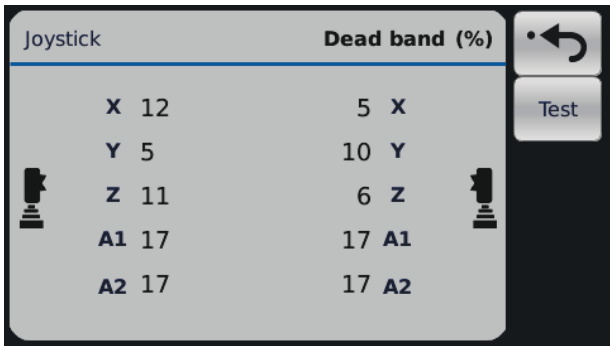
Green dot next to the joystick value indicates that the current channel is OK.

If “A1” or “A2” from either side is showing values, then it means that there is auxiliary joystick configured to the system, and that needs to be calibrated just like other channels



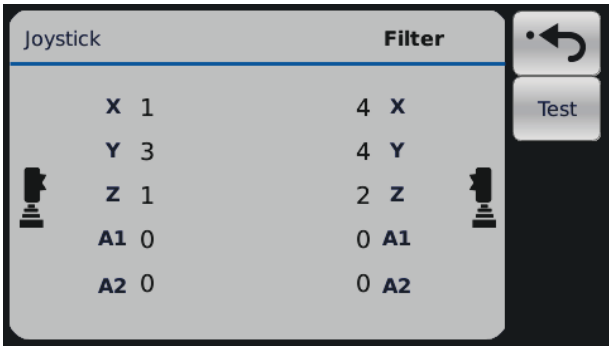
The calibration has been completed. Press “Enter” to confirm your calibration data. Save your data by returning to the working view.

8.5.2 Dead band



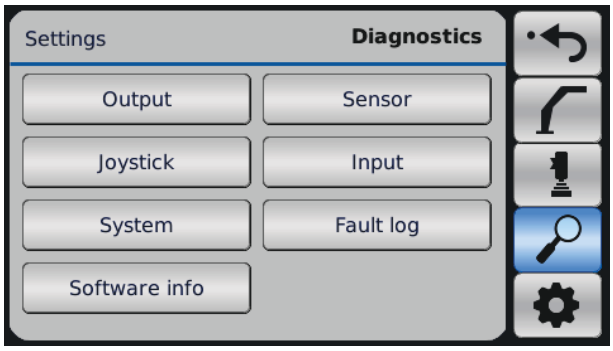
The Dead band settings define how much the joystick has to move from the center point to activate a movement. This is used to prevent unwanted movements, for example while driving.

8.5.3 Filter



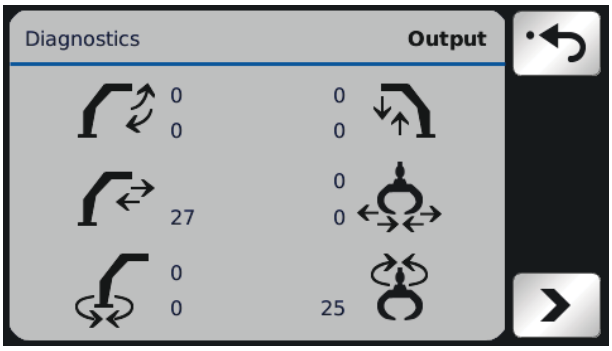
This function filters small vibration in the joysticks that occurs when machine is shaking in the working environment. It also filters too fast moves generated by operator. The bigger the value is, the more the incoming joystick signal is filtered.

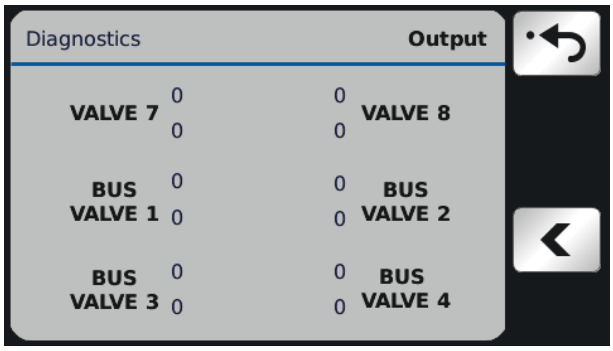
8.6 Settings - Diagnostic



In the Settings menu, the Diagnostic submenu can be found under the magnifying glass symbol. Diagnostic gives a user to possibility to check different parts of xCrane system.

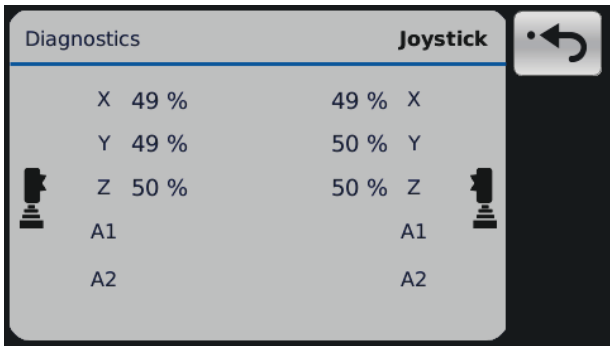
8.6.1 Output





This screen displays control signals to the valve. Use the arrows to scroll between auxiliary valve and crane valve settings.

8.6.2 Joysticks



This screen displays incoming joystick signals. Signal are percentage values of the measured joystick signal. Values should be around 50% when the joystick is centered.

Value of the channels should be as mentioned bellow to meet the xCrane system requirements.

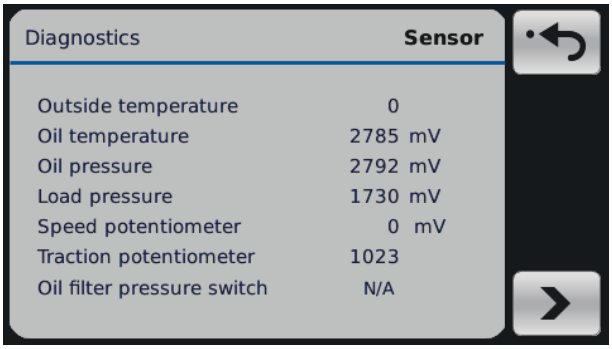
Correct values for joystick directions:

- Right joystick X-Axis to left =~ 90% and to right =~10%
- Right joystick Y-Axis to up =~ 10% and to down =~ 90%
- Right joystick Z-Axis to up =~ 10% and down =~90%
- Left joystick X-Axis to left =~ 10% and to right =~ 90%
- Left joystick Y-Axis to up =~ 90% and to down =~10%
- Left joystick Z-Axis to up =~ 10% and down =~90%

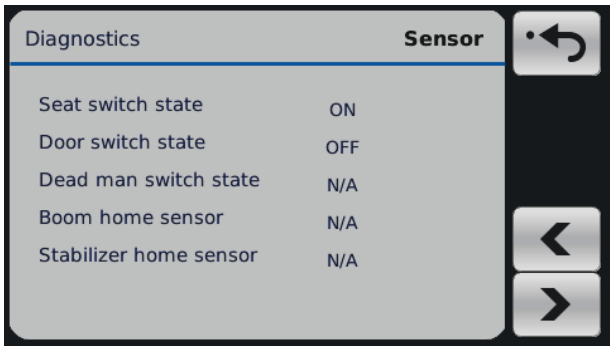
If these values are not met, then there is wrong joystick configuration, or the wiring of the joystick doesn't meet with the requirements. In that case please contact your dealer.

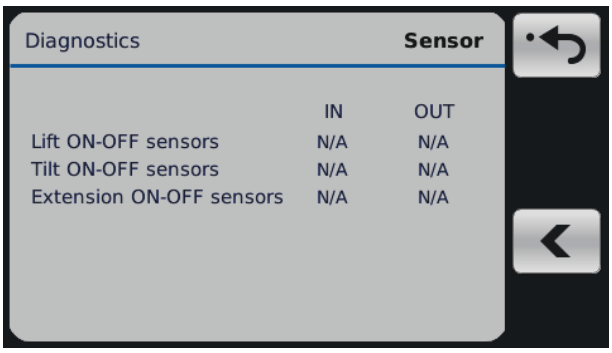
It is vital for the software that the joystick channel directions are correct.

8.6.3 Sensors



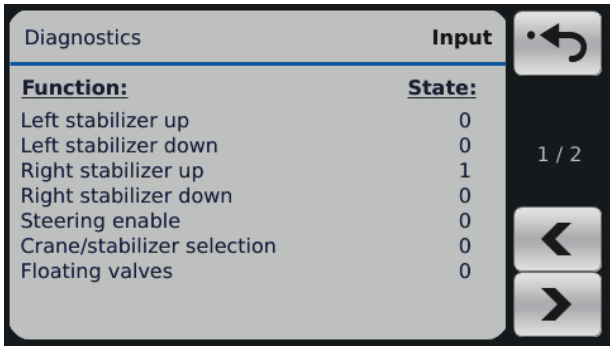
This screen displays the diagnostic measurements provided by optional external sensors. Unit after the signal value depends on the sensor configuration. Unit can be voltage (mV), ampere(mA) or resistive(Ω). If the sensor is not configured to your system, the signal value is zero (0) and no unit is shown. Potentiometers are always measured by voltage hence the mV unit after the value.





This screen shows states provided by external (on-off) sensors. States of the switches/sensors are: ON, OFF, ERROR and N/A.

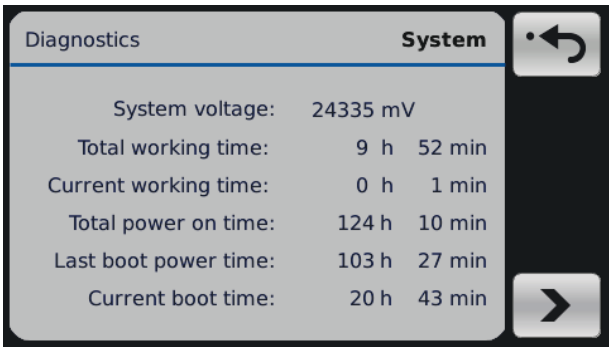
8.6.4 Inputs

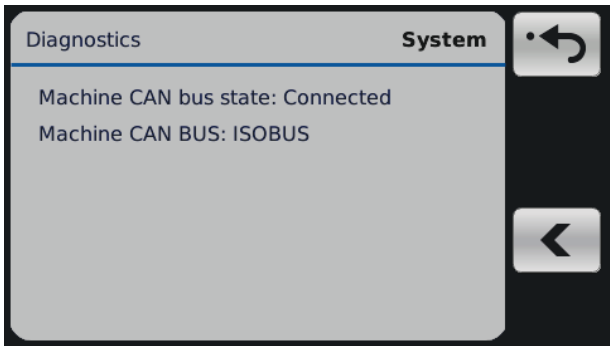


The diagnostic pages display the status of system inputs. The state of the input changes from 0 to 1 if the button or switch is working properly.

Use the arrows to scroll between pages.

8.6.5 System



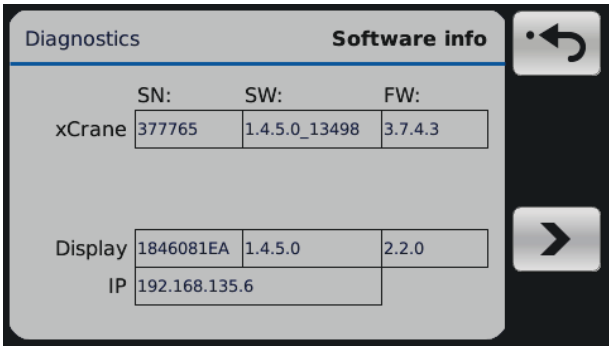


The Supply Voltage and Power ON Time are visible in the system diagnostics menu. The Power ON Time is the cumulative number of hours the xCrane power supply has been switched on.

Other time variables on the system diagnostic page has been calculated from the total working time. These time variables can be helpful in fault and other diagnostic.

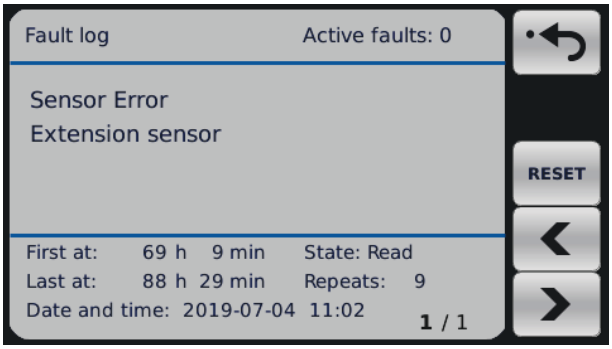
The operator can see the status of the connected machine bus by pressing the arrow button.

8.6.6 Software info



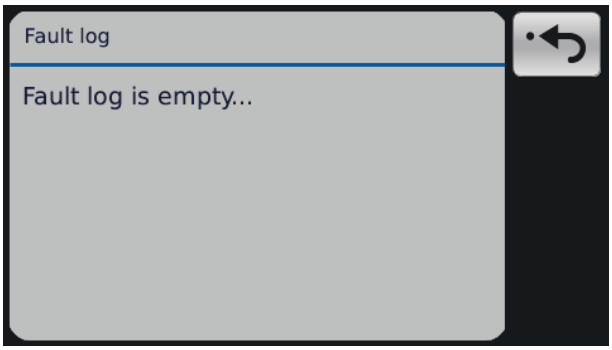
This screen displays information about the software of the system modules (TEC152, display, possible external joystick and/or steering module).

8.6.7 Fault log



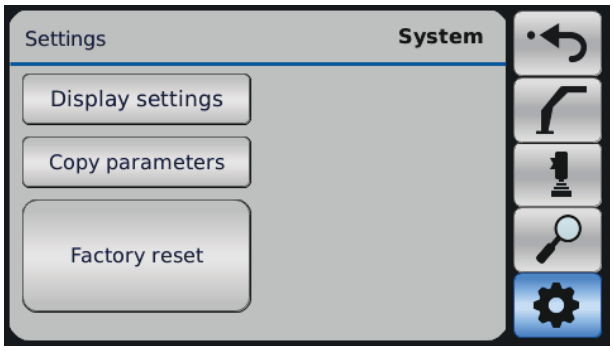
The Fault log displays all warnings and alarms. This information is only intended for the manufacturer.

Use “Arrows” to scroll through the fault log.



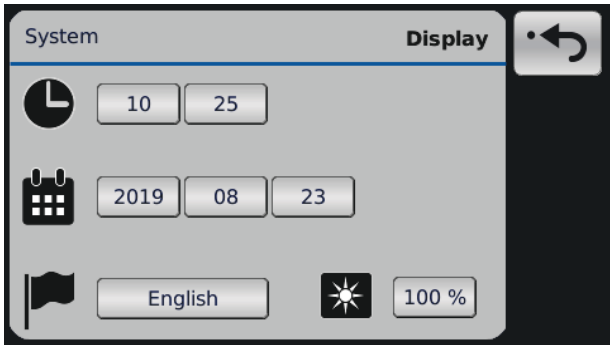
Fault log page, if there are no fault in the system.

8.7 Settings - System



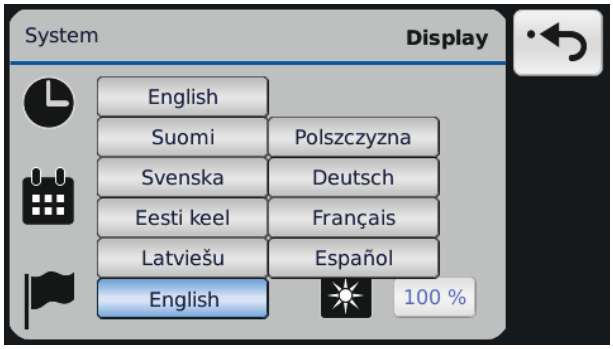
In the Settings menu, the System submenu can be found under the gear symbol.

8.7.1 Display settings



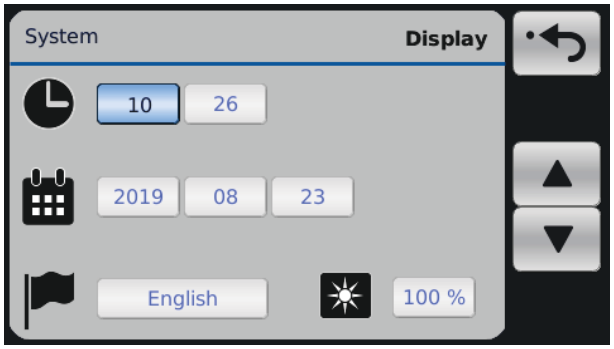
The language, time, date and display brightness can be set here.

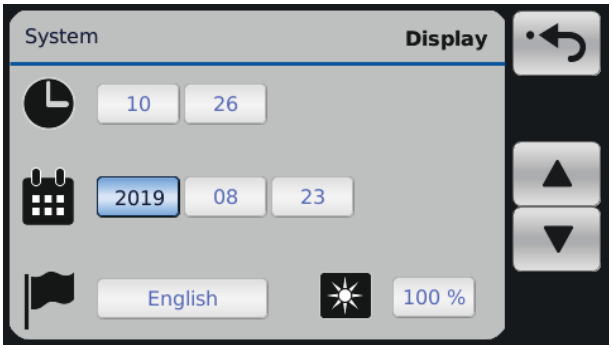
Language can be changed from language menu. Menu is opened by pressing the button where with the current language.



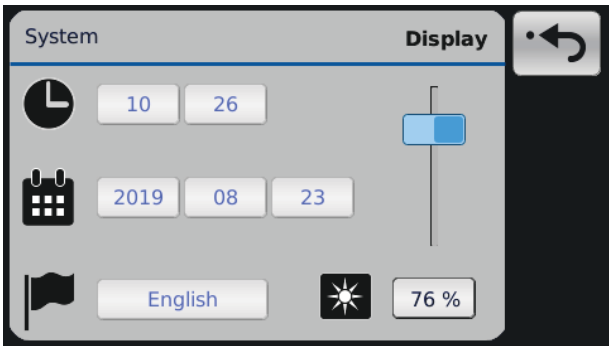
Time can be changed by pressing the time value buttons. The format of the time is “hh:mm”.

Date can be changed by pressing the date value buttons. The format of the time is “yyyy:mm:dd”.

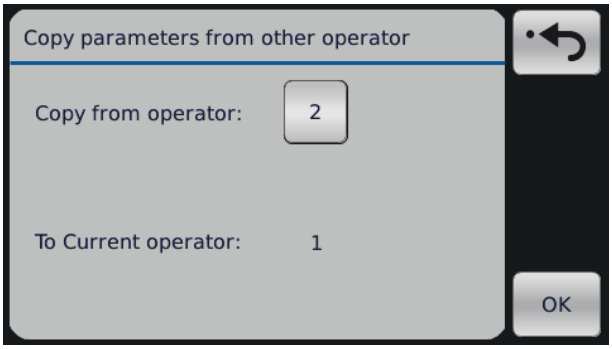




Brightness is adjusted by slider that will appear when the button has been pressed. Brightness is set from the slider.

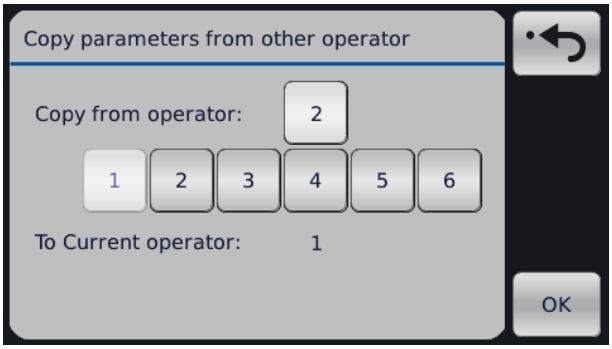


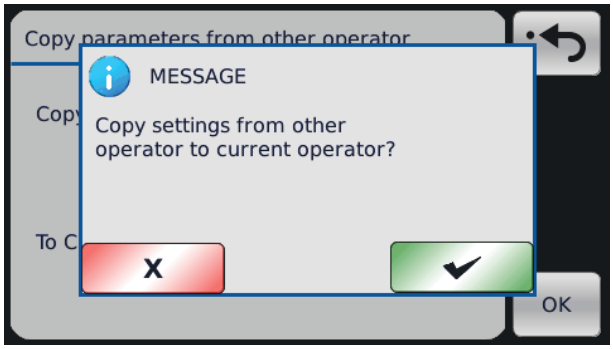
8.7.2 Copy parameters



Operator settings can be copied here. Select the operator from whom you would like to copy the settings to the active operator.

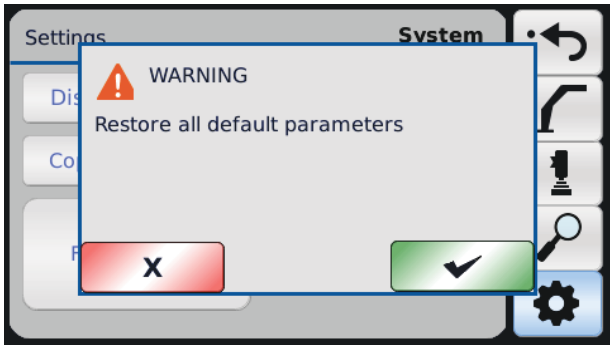
User can change the operator whom to copy the parameters by clicking the button.





Parameters are copied from selected driver to current by pressing the OK button. After this follows the pop-up.

8.7.3 Factory reset

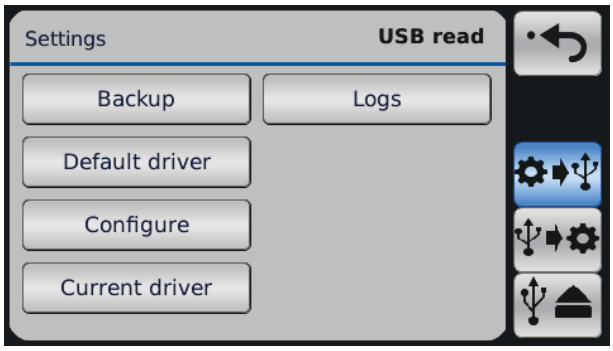


All parameters can be reset to factory values. This should not be done unless all parameters are badly wrong for some reason. The factory reset only resets the parameters of the current operator.

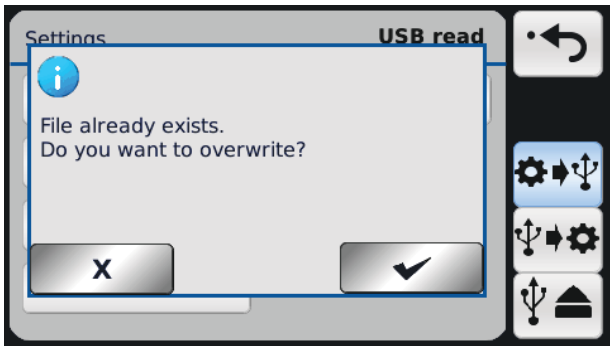
9 USB settings

USB settings are always allowed when USB stick is connected. If USB stick has been ejected, then it needs to be removed and then connect again.

9.1 Read information



In the Read information menu, the user can save configurations, parameters and fault logs to the USB stick.



If the any of the files below is already on the USB drive, then the display asks if the user wants to overwrite the existing file. Info also shows the corresponding file name. The “XCCONF.DAT” is shown as an example.

9.1.1 Backup

The Backup option creates an “XCBACKUP.DAT” file and saves it to the USB stick. The file contains configurations and parameters from all drivers.

9.1.2 Configure

The Configure option creates an “XCCONF.DAT” file and saves it to the USB stick. The file contains system configurations.

9.1.3 Default driver

The Default driver option creates an “XCDEF.DAT” file and saves it to the USB stick. The file contains the default parameters (the factory reset parameters).

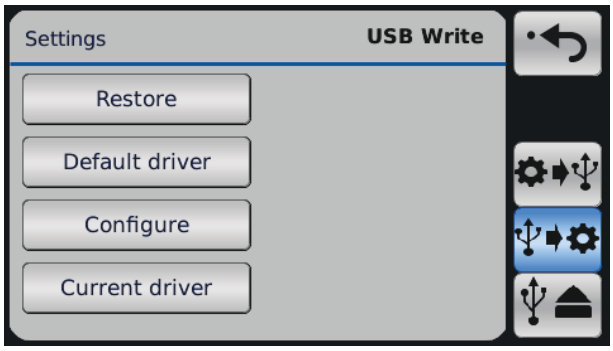
9.1.4 Logs

The Logs option uploads the fault log to the USB stick. The file is for the manufacturer only.

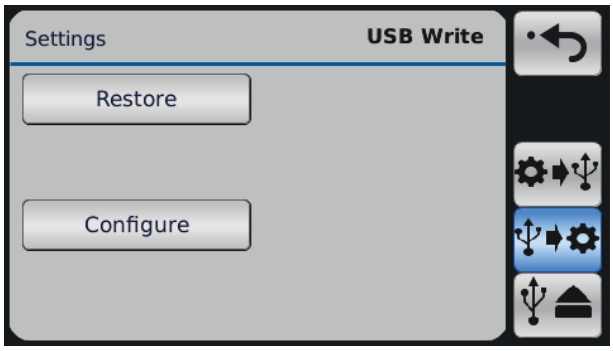
9.1.5 Current driver

The Current driver option creates an “XCCURR.DAT” file and saves it to the USB stick. The file contains parameter values from the currently active driver.

9.2 Write information



In the Write information menu, the user can load configurations and parameters from the USB stick to the system.



In Write information menu each button is invisible if function related file is missing from the USB stick. For example, if user wants to download factory settings and doesn't have "XCDEF.DAT" at the USB stick, the "Default driver" button is not visible.

9.2.1 Restore

This option is used to restore data to the system. The "XCBACKUP.DAT" file is needed to restore data. This feature can be used to transfer configurations and parameters to other xCrane systems.

9.2.2 Configure

The Configure option restores configurations from the "XCCONF.DAT" file.

9.2.3 Default driver

The Default driver option restores the default parameters from the "XCDEF.DAT" file.

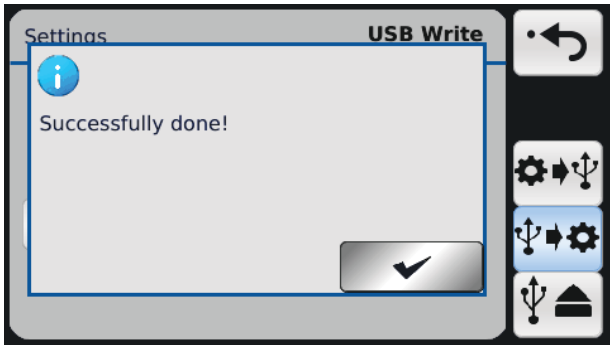
9.2.4 Current driver

The Current driver option restores the parameters from the “XCCURR.DAT” file to the currently selected driver.

9.3 File transfer information

If any of the Read or Write information options is selected and the USB stick contains the correct file, the system starts to scan the USB stick.

When the process of the write information has been successfully completed, the following screen appears.



When the process of the read information has been successfully done, the following screen appears.

After operations it is recommended to press “Eject USB button before removing the USB stick. By doing that the user can avoid data corruption with the configure, parameter and log files.

After pressing the “Eject USB” button, screen goes to back to working view.

9.3.1 File operation errors

There are different kinds of errors that can occur during USB operations. If an error occurs, a message is shown on the display. A list of all error messages can be found below.

Error message	Description
File not found!	Correct file is missing from USB stick
Communication error!	Connection to USB has been lost
File write error!	Error in writing to USB
File read error!	Error in reading from USB
File verify error!	System can’t verify file in USB
Zip creation error!	System error in creating the file
Zip extract error!	System error in extracting the file
Zip CRC error!	Checksum error in file
Zip mount error	Wrong file format or file not found on USB stick
Writing is not allowed!	USB stick is write protected
Error!	Any other reason that is not mentioned above

Index

Acceleration ramps 58
Adjusting setting values 62
Axle lock 28
Backup 79
Calibration 66
Configure 79
Configure 81
Copy parameters 74
Current driver 80
Current driver 82
Data saving 65
Dead band 67
Dead man switch safety mode 47
Deceleration ramps 59
Default driver 79
Default driver 81
Differential lock 30
Display settings 73
Door switch mode 46
Driver selection 20
Examples of Quick Trim 53
Factory reset 75
Fault log 72
File operation errors 84
File transfer information 83
Filter 68
Floating mode 32
General speed 20
General warnings 8
Hydraulic oil filter clogging indicator 40
Hydraulic oil level warning 41
Hydraulic oil pressure sensors 38
Hydraulic oil temperature 37
Inputs 71
Introduction 50
Joysticks 69
Load pressure sensor 39
Logs 80
Main page buttons 20
Max speed 57
Menu structure 56
Menu 21
Min speed 58
Navigation 13

Operating modes 23
Operator presence detections features 43
Output 69
Outside temperature 36
Pop-up information 19
Progression control 61
Radio control mode 33
Read information 79
Restore 81
Rotator direction 60
Seat switch mode 45
Sensors 70
Settings - Crane 57
Settings - Diagnostic 69
Settings - Joystick 66
Settings - System 73
Settings menu 55
Software info 72
Speed balance 59
Speed setting process 51
Stabilizer control 26
Steering by joysticks mode 27
Suspend mode 25
Symbol definitions 15
System architecture 11
System safety 7
System sensors 35
System 71
Technion Quick trim 49
Temporary presence detection mode 48
Trailer brake 30
Trailer drawbar control 29
Trailer traction control 30
USB settings 21
USB settings 77
Winch control 31
Working view 14
Write information 81