LibraPRO
Product Manual

Manual Version 2.0.9 for LibraPRO version 2.22

Document 9200006 V2.0.9

LibraPRO

Printed: January 2014

Publisher

Kinesys Projects Ltd

Technical Editors

Martin Honeywill

Lluis Diaz-Guerra Martinez

Table of Contents

1 Overview

This document explains the operation of the LibraPRO controller, used to monitor LibraCELL readings , provide overload and underload trips and to provide an Ethernet or USB interface to the Libra load cell system. This manual is written for LibraPRO firmware version 2.22.

The LibraPRO is a standalone LibraCELL controller. It can be configured to monitor LibraCELLs and operate outputs under a number of different fault conditions, i.e. LibraCELL overload and underload. It provides two mains switched outputs and two undedicated outputs, which can be configured to operate under a range of different fault conditions.

LibraPRO will support up to 100 load cells with addresses from 1 to 100. Any load cell with an address greater than 100 will not be discoverable by LibraPRO. These cells can be added to any one of 40 predefined groups. Individual overload and underload settings can be set for each cell and each group.

The LibraPRO provides external connectivity via its Ethernet port. The Ethernet port can be used to directly connect to a computer running the LibraWATCH software, or it can be used to connect to a LibraWIFI interface which allows connection to a mobile computer or tablet device running LibraWATCH.

The LibraPRO is the heart of the load cell monitoring system and it will continue running any programmed configuration irrespective of whether LibraWATCH is connected or not. Multiple devices running LibraWATCH can be connected to a LibraPRO at the same time.

The LibraPRO also supports a pass through mode that allows it to be used with an Elevation1+ system to combine the load read from a load cell with the messages that are received from an Elevation1+. This replaces the need to plug the load cell directly into an Elevation1+.

The LibraPRO is also able to work with the LibraVIEW software. When working with LibraVIEW the LibraPRO will switch to a simple repeater mode and LibraVIEW will take over control of the relay outputs. Any connected LibraWATCH applications will stop displaying loads until LibraVIEW is disconnected.

2 Operation

Complex configuration of the LibraPRO is performed using the LibraWATCH software, please refer to the LibraWATCH manual for more details.

Simple configuration of the LibraPRO can be performed using its front panel interface without the need for LibraWATCH.

The LibraPRO user interface consists of a 2 line 16 character display and six buttons to the right of the display; four black navigation buttons, left, right, up and down, a green tick button in the middle of the navigation buttons and a red cross button at the bottom left of the navigation buttons. The functions of these buttons are described in more detail later in the manual.

The LibraPRO display consists of four different display menus which are accessed in sequence by pressing the left or right buttons.

2.1 Auto discovering Cells

When the LibraPRO is powered up for the first time or it has been reset to factory defaults then no cells will be configured, otherwise the LibraPRO will start with the last used configuration. Whenever a LibraPRO powers up it will automatically switch to a discover mode for 30 seconds where it will find any load cells connected to it. Once discovered, cells will be remembered until they are deleted. This provides a very simple way to set up a system.

To simply set up a system using auto discover, plug all the cells together, then plug them into the LibraPRO and ensure they all have unique addresses, (refer to the LibraCELL manual for instructions on setting a LibraCELL address). Once all the cells have been uniquely addressed turn the LibraPRO off and then on again. It will switch to discover mode and will find all the connected LibraCELLs. The discover mode can also be selected from the configuration menu or remotely from LibraWATCH. At any time power cycling the LibraPRO or selecting Discover from the menu will find any newly added cells.

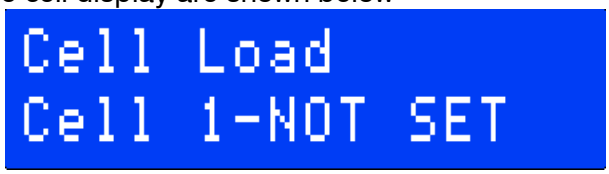
2.2 The Cell Load display menu

By default the LibraPRO powers up showing the load on cell 1. Pressing the up and down buttons will cycle the display through the current load on all the possible 100 LibraCELLs.

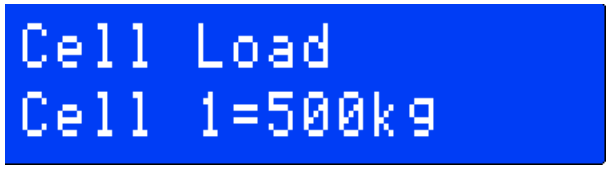
A cell display will show one of three different types of display
1. "**NOT SET**" which means the LibraPRO is not expecting to see a cell at this address,
2. "**NO RX**" which means that the LibraPRO is expecting to see a cell at this address and it cannot talk to it. This is an error condition
3. A message showing the load in kg reported by the cell.

When displaying a load a cell will normally show its load preceded by a "=" symbol. If a cell is reporting a load below its underload limit then the load is shown preceded by a "<" symbol. If the load is above its overload limit then it is shown preceded by a ">" symbol.

Some examples of the cell display are shown below



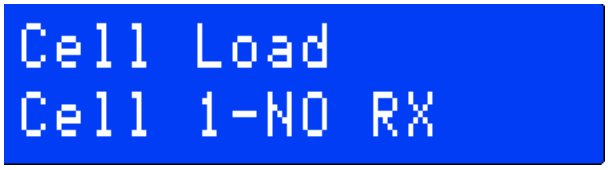
LipraPRO is configured to not expect a cell at address 1



A cell displaying a load of 500kg

A cell displaying a load of 100kg which below its underload limit

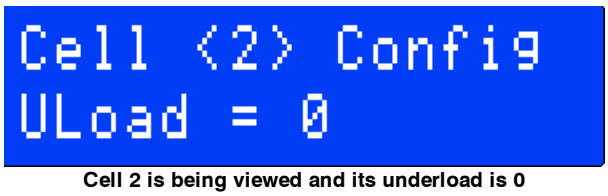
A cell displaying a load of 1000kg which is above its overload limit



The message displayed when a cell is not connected or communicating

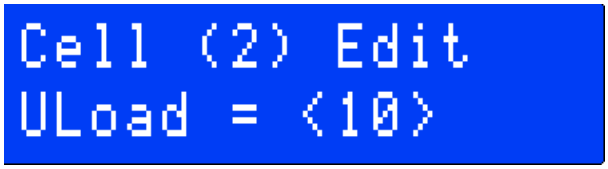
2.2.1 Setting Cell Overloads and Underloads

Whilst showing cell loads, if the tick button is pressed, the underload and overload values for a specific load cell can be edited. The first line of the display will switch to displaying the current cell highlighted with angle brackets. Pressing up or down will select different cells.



Cell 2 is being viewed and its underload is 0

Pressing the up and down buttons will change the current cell. Pressing the left and right buttons will change the current cell property. Currently the only cell properties that can be edited are its overload and underload values. Once a particular cell property has been selected, pressing the tick button will allow the value of this property to be edited using the up and down buttons.



The underload for Cell 2 is being edited and its current value is 10kg

Once the desired value has been set, pressing the tick button will save and exit the edit mode. Pressing the cross button will exit the edit mode without saving any changes.

Property	Description
Uload	Loads less than this value are displayed preceded by a < symbol, and the channel will indicate an underload. A value of 0 means that no underload checking is performed.
Oload	Loads greater than this value are displayed preceded by a > symbol, and the channel will indicate an overload. A value of 0 means that no overload checking is performed.

2.3 The Group Load display menu

Load cell groups can only be set up from LibraWATCH but once configured groups can be displayed on the LibraPRO.

From the Cell Load display screen, pressing the right button switches the display to show the total load in each load cell group. Pressing the up and down buttons now cycles the display to show the total load in each available load cell group. This is the sum of all the individual loads of the load cells in the selected group.

The total load of all load cells in group 2 is 4200kg

The Group Load display uses the “<” and “>” symbols to indicate underload and overload conditions in the same way as the individual cell display does. Additionally, if any cell in a group is not replying, a message of "NO RX" is displayed alerting the user to this condition.

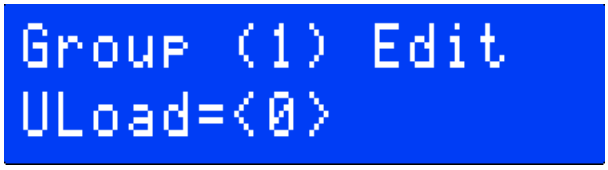
At least one cell in group 2 is not replying

2.3.1 Setting Group Overloads and Underloads

Whilst showing group loads, if the tick button is pressed, the underload and overload values for a specific group can be edited. The first line of the display will switch to displaying the current group highlighted with angle brackets.

Group 1 Underload property is being viewed

Pressing the up and down buttons will change the current group. Pressing the left or right buttons will change the current group property. Currently the only group properties that can be edited are its overload and underload values. Once a particular group property has been selected, pressing the tick button will allow the value of this property to be edited using the up and down buttons.



Group 1 Underload property is being edited

Once the desired value has been set, pressing the tick button will save and exit the edit mode. Pressing the cross button will exit the edit mode without saving any changes.

Property	Description
Uload	Loads less than this value are displayed preceded by a < symbol, and the group will indicate an underload. A value of 0 means that no underload checking is performed.
Oload	Loads greater than this value are displayed preceded by a > symbol, and the group will indicate an overload. A value of 0 means that no overload checking is performed.

2.4 Relay Mode menu

The relay mode displays how each of the 4 relay outputs operate. Any relay can be in one of the following modes

Relay Mode	Description
OFF Always	The selected relay output is always off
ON if Warning	The selected relay output is on if any cells or groups are reporting an overload or underload warning, or a configured cell is missing. These warning levels are set up using LibraWATCH
ON if Overload	The selected relay output is on if any cells or groups are reporting an overload, or a configured cell is missing
ON if Underload	The selected relay output is on if any cells or groups are reporting an underload, or a configured cell is missing
ON if Alarms	The selected relay output is on if any cells or groups are reporting an underload, overload or a configured cell is missing
ON if any Trip	As "ON if Alarms" but the relay is also on if any cell or group is displaying a warning
OFF if Warning	The same as "ON if Warning" except that the relay is normally ON and will switch off to indicate a fault, this has the advantage of activating if the LibraPRO is powered off
OFF if Overload	The same as "ON if Overload" except that the relay is normally ON and will switch off to indicate a fault, this has the advantage of activating if the LibraPRO is powered off
OFF if Underload	The same as "ON if Underload" except that the relay is normally ON and will switch off to indicate a fault, this has the advantage of activating if the LibraPRO is powered off
OFF if Alarms	The same as "ON if Alarms" except that the relay is normally ON and will switch off to indicate a fault, this has the advantage of activating if the LibraPRO is powered off
OFF if any Trip	The same as "ON if any Trip" except that the relay is normally ON and will switch off to indicate a fault, this has the advantage of activating if the LibraPRO is powered off
ON Always	The selected relay output is always on

To change the mode of any relay press the tick button, the number of the relay being edited will be highlighted with angle brackets. Pressing the up and down buttons will allow a different relay to be selected. Pressing the tick button again will allow the mode of the

selected relay to be changed. The relay number will be shown in curved brackets and pressing the up and down buttons will change the selected relay mode. Once the desired value has been set, pressing the tick button will save and exit the edit mode. Pressing the cross button will exit the edit mode without saving any changes.

If the LibraPRO has its relays wired up to inhibit movement or set an alarm off if a fault occurs then to bypass this condition the appropriate relay should be set to an alternative state depending on the fault that has occurred. Ensure that the relay mode is set back to the correct state when the fault has cleared.

2.5 Configuration menu

The configuration menu allows for various system settings to be viewed and configured, the following options are available

Property	Editable	Description
Software Version	No	Displayed as a message for example "LibraPRO V2.11"
Discover	Yes	Switches the LibraPRO into auto discover mode for 30 seconds
Fact Def	Yes	Resets the LibraPRO to factory defaults with no cells discovered
Local IP	Yes	This will display the IP address of the LibraPRO, by default this is 192.168.18.41
Temp	No	This will display the internal board temperature of the LibraPRO in Celsius
uTran IP	Yes	This will display the IP address of the uTransform used in Elevation1+ pass through mode. by default this is 192.168.18.51

To edit any of the editable configuration settings display the required setting and press the tick button. The editable property will then be shown in angle brackets and the property can be edited by pressing the up and down buttons. Once the desired value has been set, pressing the tick button will save and exit the edit mode. Pressing the cross button will exit the edit mode without saving any changes.

To trigger an auto discover or to reset to factory defaults edit the appropriate property and change its value from NO to YES and press the tick button.

3 Operation with LibraWATCH

The LibraPRO provides external connectivity via its Ethernet port. The Ethernet port can be used to directly connect to a computer running the LibraWATCH software, or it can be used to connect to a LibraWIFI interface which allows connection to a mobile computer or tablet device running LibraWATCH.

To utilise the full functionality of LibraPRO use LibraWATCH. Once configured by a device running LibraWATCH, LibraPRO can be run in a standalone mode without having to have LibraWATCH connected. It will continue to run as configured by LibraWATCH with the warnings and groups as set up from LibraWATCH.

Refer to the LibraWATCH manual for more details on advanced configuration.

The latest version of LibraWATCH is always available on the Kinesys website here http://kinesys.co.uk/product/librawatch

4 Operation with LibraVIEW

The LibraPRO is able to work with the previous generation of Kinesys load cell software LibraVIEW. When working with LibraVIEW the LibraPRO will switch to a simple repeater mode and LibraVIEW will take over control of the relay outputs and all load cell configuration. Any internal configurations and settings set up when using LibraWATCH will be stopped until LibraVIEW is disconnected. Any connected LibraWATCH devices will stop displaying loads until LibraVIEW is disconnected.

The LibraPRO supports connection to LibraVIEW by both its USB and Ethernet interfaces. The USB port will appear as a serial port on the attached PC whilst the Ethernet has a default fixed IP address of 192.168.18.41. The Ethernet port will automatically sense the correct data rate 10/100 and cable type, so a crossover Ethernet cable is not needed to allow the LibraPRO to be directly connected to a Computer.

The latest version of LibraVIEW is always available on the Kinesys website here http://kinesys.co.uk/product/libraview

5 Using LibraPRO with Vector and K2

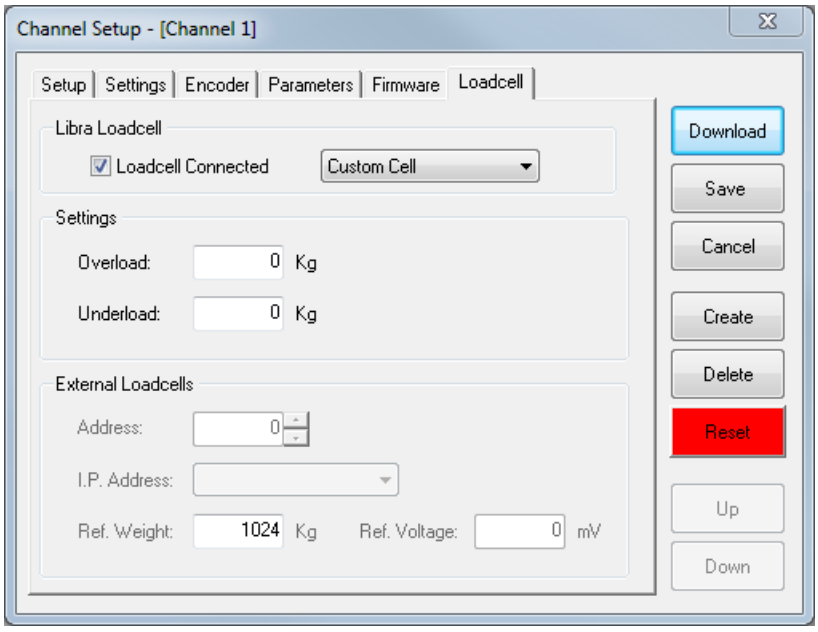
The LibraPRO supports a powerful Elevation1+ pass through mode that allows it to link LibraCELLS to Elevation1+ channels in either Vector or K2. This feature can be used at the same time as LibraWATCH.

If set up in this way the user would configure the Vector or K2 software to communicate to the LibraPRO rather than the uTransform located in the Array PD-ES or Mini Array PD-ES. To do this, in Vector or K2 change the IP address of the uTransform to be the IP address of the LibraPRO (By default this is 192.168.18.41). This will cause the LibraPRO to relay messages on to a uTransform. By default a LibraPRO will talk to a uTransform at IP address 192.168.18.51 but this can be changed in the LibraPRO configuration menu.

The LibraPRO then relays any Elevation1+ messages it receives on to the uTransform. When Vector or K2 requests load cell information from a particular Elevation1+ the message will be intercepted by the LibraPRO and it will substitute the load from the load cell whose address matches that of the Elevation1+ being communicated with.

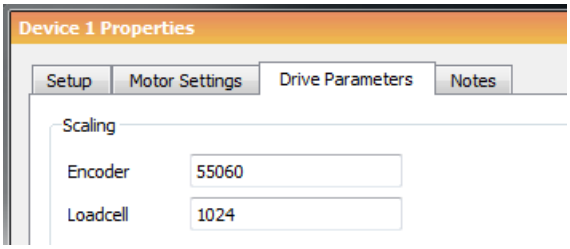
Specific configuration for Vector

Because the LibraPRO will return a load cell weight in kg, no scaling needs to be done on the load so the load cell should be set up as shown below with a reference Weight of 1024 kg.



Specific configuration for K2

Because the LibraPRO will return a load cell weight in kg, no scaling needs to be done on the load so the load cell Scaling factor should be set up as shown below with a load cell scaling of 1024.



6 Contact Information

If you would like to get in touch with Kinesys then please use any of the following methods.

Email: info@kinesys.co.uk
Website: www.kinesys.co.uk

Tel: +44 (0) 20 8481 9850
Fax: +44 (0) 20 8487 0396

Mail: Unit 2 Kempton Gate Business Centre
Oldfield Road
Hampton
Middlesex
TW12 2AF
United Kingdom

Google Map Link: http://www.google.co.uk/maps?q=tw122af

Firmware upgrade information will be made available on our website at http://www.kinesys.co.uk

6.1 Feedback

We are always keen to hear feedback from the users of Kinesys products. If you have a feature request for the software, any comments about the documentation or just want to say hello, please get in touch.

To leave feedback please email feedback@kinesys.co.uk or call us on +44 (0)20 8481 9850.

If you require technical support please email support@kinesys.co.uk or call us on +44 (0) 20 8481 9850