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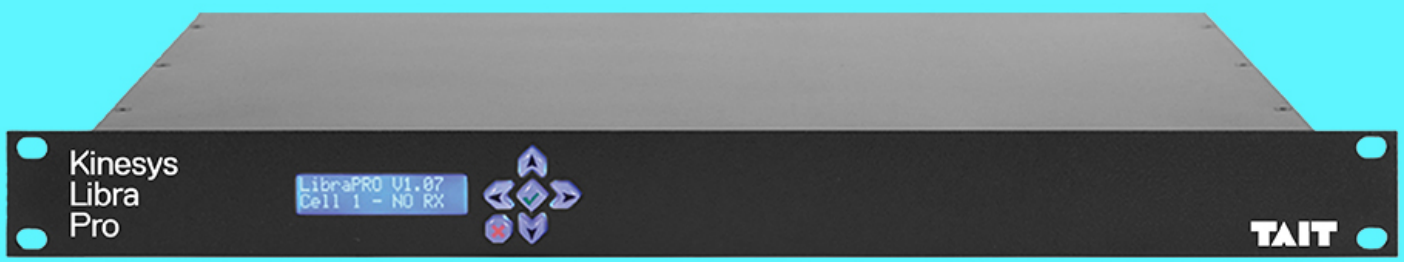
Kinesys Libra Pro

Operating Manual
[ORIGINAL]

A digital load cell interface



TAIT accepts no liability for any consequences resulting from inappropriate, negligent, or incorrect use of the equipment.

The contents of this manual are believed to be correct at the time of printing. In a commitment to a policy of continuous development and improvement, TAIT reserves the right to change the specification of the product or its performance, or the contents of this manual, without notice.

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1. Introduction

1.1 Product description

The Kinesys Libra Pro is a device used to monitor Kinesys Libra Cell load cells, provide overload and underload trips, and to provide an Ethernet or USB interface to the Libra load cell system.

The Libra Pro is a standalone Libra Cell controller. It can be configured to monitor Libra Cells and operate outputs under a number of different conditions, i.e. Libra Cell overload and underload. It provides two mains switched outputs and two dry contact outputs.

Libra Pro 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 Libra Pro. Load 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 Libra Pro provides external connectivity via its Ethernet port. The Ethernet port can be used to directly connect to a computer running the Libra Watch software, or it can be used to connect to a Libra WiFi interface which allows connection to a mobile computer or tablet device running Libra Watch.

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

The Libra Pro also supports a pass through mode that allows it to be used with an Elevation1+ system to combine the load reading from a load cell with the Elevation1+ control status and data. This avoids the need to plug the load cell directly into an Elevation1+.

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

1.2 Scope and purpose

This manual describes the key features and means of operation of the Libra Pro. The manual applies to Libra Pro firmware version 2.22.

The equipment described in this manual may only be operated by personnel qualified to do so. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with this and associated equipment.

1.3 Support requests

For support, please use the following contact details:

support@taittowers.com
Tel: +44(0) 20 8481 9850

To resolve your support request as quickly as possible, please provide the following information, if available, when contacting Kinesys:

- Site name, address, machine location details and your contact details.
- As much detail as possible on the behavior observed, including any unusual changes in behavior that are different from normal operation and any environmental conditions that may be a factor (e.g. fluctuations in temperature and water damage).
- Details on the behavior that should have been expected.
- The exact steps required that produce the issue.
- Any solutions to fix the issue that you have already tried.
- Any workarounds that you have found.
- Equipment item numbers and serial numbers, such as those displayed on the identification plates/labels.
- Version numbers of any software being used.
- Any screen shots, photographs or videos of the issue.

2. Safety information

2.1 Warnings

IF IN DOUBT ABOUT ANY ASPECT OF MOVING OBJECTS, ALWAYS SEEK PROFESSIONAL ADVICE BEFORE OPERATION.

Make sure this Operating Manual is always kept in a complete and fully readable condition and that it is always accessible to all operators of the equipment.

- **Only personnel fully familiar with the operations and procedures outlined in this manual are permitted to operate the Libra Pro.**
- **Do a full risk assessment of the situation where you intend to use the Libra Pro and all its connected control devices.**
- **This equipment must only be used in a restricted access area.**
- **This equipment is not suitable for use in locations where children are likely to be present.**
- **Do not start movement operations until a competent and trained person has inspected the connected equipment.**
- **Do not use the Libra Pro if it does not appear to be in 100% working order.**
- **Do not dismantle or modify the Libra Pro unless instructed to do by Kinesys Projects Ltd.**
- **Do not use any spare parts other than those supplied by the manufacturer.**

2.2 Operating environment

The Libra Pro is designed for indoor use only and to work in ambient temperatures between 5°C and 40°C (41°F and 104°F). The humidity of the environment must not exceed 90%.

2.3 Handling and storage

Condensation

The Libra Pro is designed for indoor use only. If the product has been exposed to temperature fluctuations, for example during transport, there may be risk of condensation which may result in damage. Do not connect the Libra Pro to a power source immediately. Leave the unit disconnected until it has reached a safe temperature

Shocks

Do not shake, knock or drop the Libra Pro. Avoid excessive force when installing and operating the product.

Handling

Do not lift the Libra Pro by any of its cables or connectors as this may cause damage to the unit and/or the cables.

Packaging

Where possible, use the original packaging to transport the Libra Pro. Alternatively, a purpose-made flight case may be used (available separately).

3. Product overview

3.1 Front panel overview

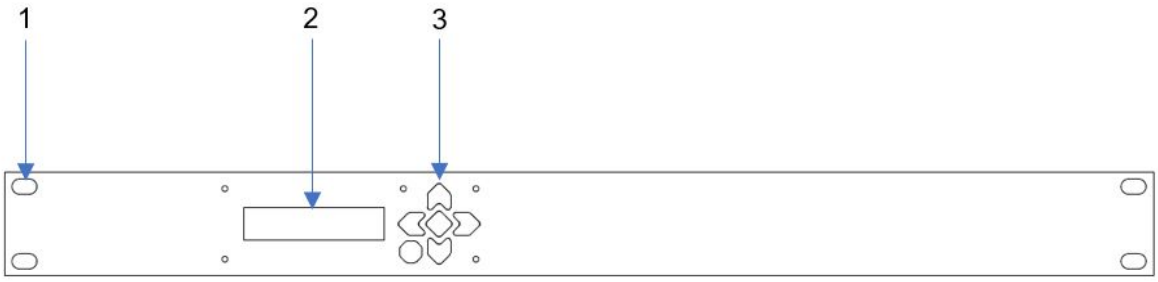


Figure 1. Front panel

Item #	Description	Notes
1	Mounting holes	For mounting the Libra Pro in a 19" rack.
2	Display screen	For viewing load cell data and configuring overloads / underloads.
3	Buttons	For navigating and editing the information on the display.

3.2 Rear panel overview

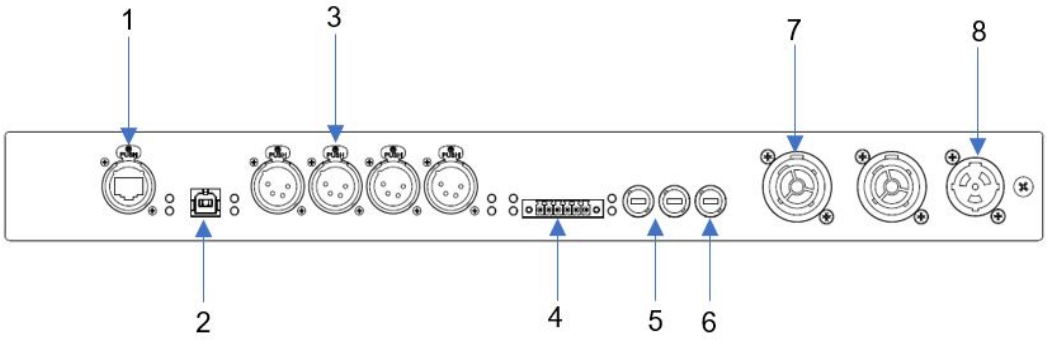


Figure 2. Rear panel

Item #	Description	Notes
1	Power over Ethernet connection (PoE)	For connection to Ethernet device e.g. Libra WiFi.
2	USB connection	For connecting to USB device such as computer for Libra View software.
3	4 x Libra Cell connections	XLR4 power and data connections for up to 25 load cells per connection.
4	Relay outputs	40V, 2A max
5	Output fuses	5A, 5x20mm, anti-surge
6	Power supply fuse	2A, 5x20mm, anti-surge
7	Relay outputs	5A max per output
8	Mains input	90-240V, 50-60 Hz

4. Installation

4.1 Rack mount installation

The Libra Pro can be installed into an industry standard 19" rack.

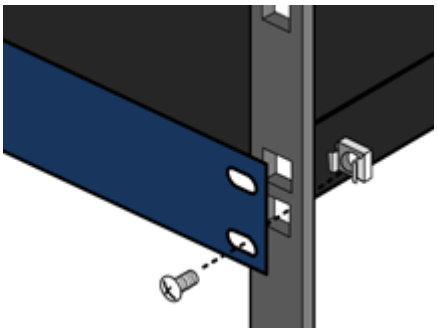


Figure 3. Rack mount installation

To install the Libra Pro into a rack continue as follows:

1. Align the rack mount holes with those of the rack on both sides of unit.
2. Use cage nuts and bolts (user-supplied) to secure the unit to the frame of the rack on both sides.
3. Make sure there is enough space within the rack to allow for cables and connections at the rear of the unit.
4. Make sure there is adequate ventilation to the unit once installed to the rack.

4.2 System integration

Libra Pro is the core of a larger system of Kinesys load-monitoring products. Up to 25 Libra Cell load cells can be connected to each of the four XLR4 inputs on the rear panel, giving a maximum of 100 Libra Cells for the whole unit. The Libra Cells may be daisy chained as shown or connected via the four-way LibraSPLIT.

To view load data as measured by the Libra Cells and for advanced programming, either Libra View software or the Libra Watch application may be used. Libra View software can be used by connecting a computer via USB to the rear panel, while Libra Watch requires a Libra WiFi wireless connection. For more information on Libra View and Libra Watch, consult the relevant operating manuals.

The Libra system setups shown in this section are simplified examples to show how the main components in a Libra system connect to the Libra Pro. If you require assistance with your specific setup, contact support@taittowers.com.

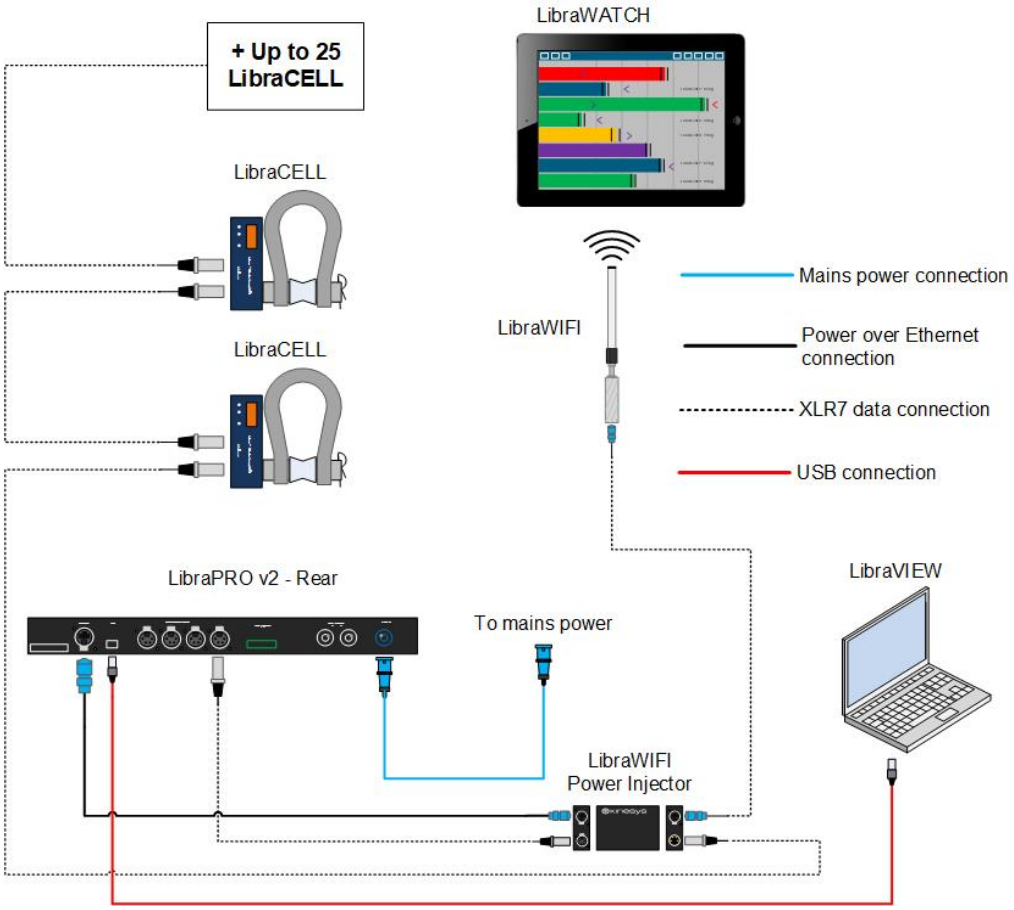


Figure 4. System example 1

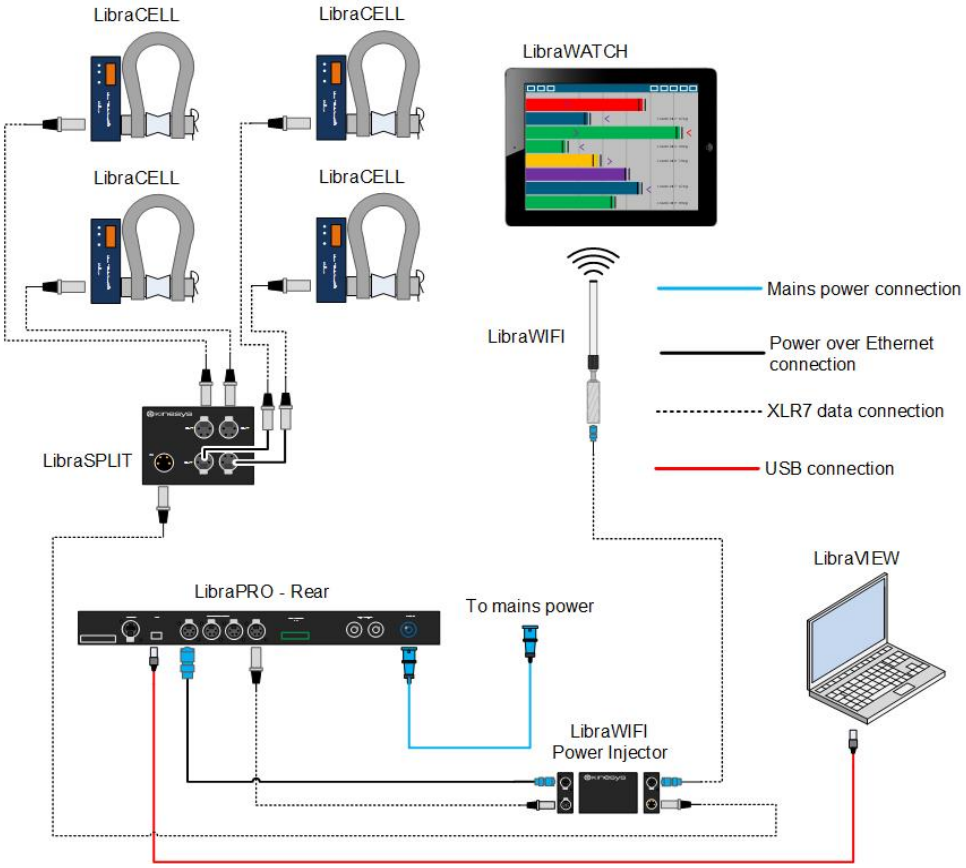


Figure 5. System example 2

5. Operation

Complex configuration of the Libra Pro is performed using the Libra Watch software. Refer to the Libra Watch manual for more details.

Simple configuration of the Libra Pro can be performed using its front panel interface without the need for Libra Watch.

The Libra Pro user interface consists of a two 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.

Figure 6. Libra Pro display and buttons

The Libra Pro display consists of four different menus which are accessed in sequence by pressing the left and right buttons.

5.1 Auto-disovering load cells

When the Libra Pro is powered up for the first time, or if it has been reset to factory default settings, then no cells will be configured. Otherwise the Libra Pro will start with the last used configuration. When the Libra Pro 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 set up a system using auto-discover, connect all the load cells together, then connect them to the Libra Pro and ensure they all have unique addresses (refer to the Libra Cell manual for instructions on setting a Libra Cell address). Once all the load cells have been uniquely addressed, turn the Libra Pro off and then on again. It will switch to Discover mode and will find all the connected load cells. Discover mode can also be selected from the configuration menu or remotely from Libra Watch. At any time, power cycling the Libra Pro or selecting "Discover" from the menu will find any newly added load cells.

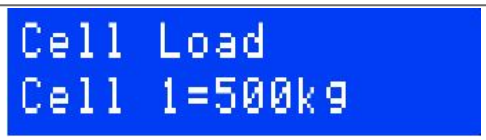
5.2 Cell Load display

By default the Libra Pro powers up showing the load on load cell 1. Pressing the up and down buttons will cycle the display through the current load on up to 100 connected load cells.

The cell load display will show one of three types of message on the second row:

1. "**NOT SET**" - the Libra Pro is not expecting to see a cell at this address
2. "**NO RX**" - the Libra Pro is expecting to see a cell at this address but cannot communicate with it. This is an error condition.
3. A message showing the load in kg reported by the load cell.

5.2.1 Example Cell Load displays

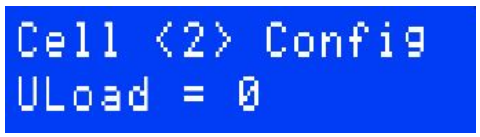
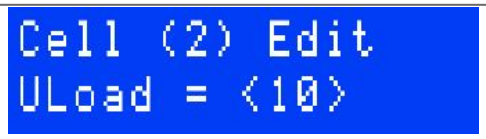
	Libra Pro is configured not to expect a load cell at address 1.
	The load cell is reporting a load of 500 kg.
	The load cell is reporting a load of 100 kg, which is below the underload limit.
	The load cell is reporting a load of 1000 kg, which is above the overload limit.
	The load cell is not connected or not communicating.

5.2.2 Setting overloads and underload limits

Whilst on the Cell Load display if the tick button is pressed, the underload and overload limit values for a specific load cell can be edited. The first line of the display will switch to displaying the current load cell, highlighted with angle brackets.

Pressing up or down will cycle through different load cells. Pressing the left and right buttons will change the 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.

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

	Cell 2 is being viewed and its underload is 0 kg.
	The underload for Cell 2 is being edited and its current value is 10 kg.

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.

5.2.3 Group Load display

Load cell groups can only be set up from Libra Watch but once configured groups can be displayed on the Libra Pro.

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

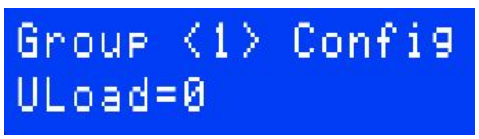
	The total load of all load cells in Group 2 is 4200 kg.
	At least one cell in Group 2 is not replying.

5.2.4 Setting group overloads and underloads

Whilst in the Group Load display, if the tick button is pressed the overload and underload 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.

Pressing up or down will cycle through groups. Pressing the left and right buttons will change the 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.

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

	An underload property is being viewed.
	An underload property is being edited.

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.

5.3 Relay Mode menu

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

Relay	Description
OFF Always	The selected relay output is always off.
ON if Warning	The selected relay output is on if any load cells or groups are reporting an overload or underload warning, or a configured load cell is missing. These warning levels are set up using Libra Watch.
ON if Overload	The selected relay output is on if any load cells or groups are reporting an overload, or a configured load cell is missing.
ON if Underload	The selected relay output is on if any load cells or groups are reporting an underload, or a configured load cell is missing.
ON if Alarms	The selected relay output is on if any load cells or groups are reporting an overload or an underload, or a configured load 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 Libra Pro 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 Libra Pro 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 Libra Pro is powered off.
Off if Alarms	The same as "ON if Alarmsd" except that the relay is normally ON and will switch off to indicate a fault. This has the advantage of activating if the Libra Pro 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 Libra Pro 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 Libra Pro 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.

5.4 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 e.g. "Libra Pro V2.11".
Discover	Yes	Switches the Libra Pro into auto discover mode for 30 seconds.
Fact Def	Yes	Resets the Libra Pro to factory defaults with no loadcells discovered.
Local IP	Yes	Displays the IP address of the Libra Pro. By default this is 192.168.18.41.
Temp	No	Displays the internal board temperature of the Libra Pro in degrees Celcius.
uTran IP	Yes	Displays the IP address of theuTransform used in Elevation 1+ 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.

5.5 Operation with Libra Watch

The Libra Pro provides external connectivity via its Ethernet port. The Ethernet port can be used to directly connect to a computer running the Libra Watch software application, or to the Libra WiFi interface which allows wireless connection to a mobile computer or other device running Libra Watch.

To utilise the full functionality of theLibra Pro, Libra Watch is recommended. Once configured in Libra Watch, Libra Pro can be run in Standalone mode without further input from Libra Watch. It will continue to run using the warnings and groups configured in Libra Watch.

For more details on the operation of Libra Watch, refer to the Kinesys Libra Watch operating manual.

5.6 Operation with Libra View

The Libra Pro is compatible with the software application Kinesys Libra View. When working with Libra View the Libra Pro will switch to a simple repeater mode and Libra View will take over control of all relay outputs and load cell configurations. Any settings previously configured using Libra Watch will be stopped until Libra View is disconnected.

The Libra Pro supports connection to Libra View through 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 Libra Pro be directly connected to a computer.

For more details on the operation of Libra View, refer to the Kinesys Libra View operating manual.

6. Operation with Vector and K2

The Libra Pro supports a Elevation pass through mode that allows it to link Libra Cells to Elevation Drive channels in either Vector or K2. This feature can be used at the same time as Libra Watch.

If set up in this way the user would configure the Vector or K2 software to communicate to the Libra Pro 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 Libra Pro (By default this is 192.168.18.41). This will cause the Libra Pro to relay messages on to a uTransform. By default a Libra Pro will talk to a uTransform at IP address 192.168.18.51 but this can be changed in the Libra Pro configuration menu.

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

The Libra Pro will return a load cell weight in kg and therefore no scaling needs to be done on the load in Vector or K2.

6.1 Configuration for Vector

The load cell should be set up in Vector as shown below with a reference weight of 1024 kg and "LibraCell (Via LibraPRO)" selected from the drop-down menu.

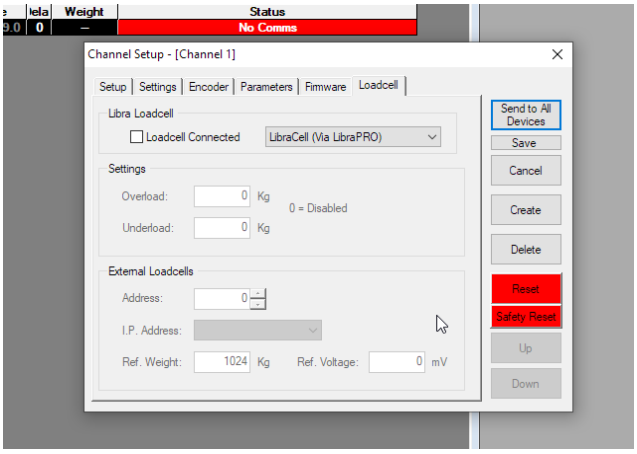


Figure 7. Load cell setup in Vector

6.2 Configuration for K2

The load cell should be set up in K2 as shown below with a reference weight of 1024 kg.

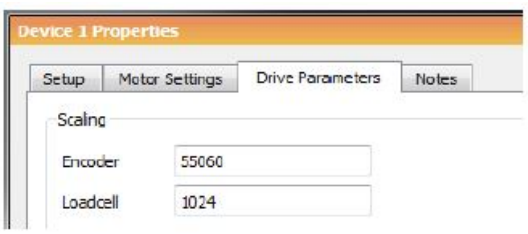


Figure 8. Load cell setup in K2

7. Product specifications

Feature	Specification
Power supply	1 phase + Neutral + Earth, 50-60 Hz, 90-250V
Display	LCD module, 16x2, blue, white edge
Mains connections	• PowerCON TRUE1 male plug IP65
Accessories	• PowerCON TRUE1 2m power cable, socket to bare ends • USB cable, CAT5E, 3m grey
Enclosure	Aluminium case, black anodised
Environmental	IP30- protected from tools and small wires greater than 2.5 mm (not protected from water).
Operating temperature	5°C and 40°C (41°F and 104°F)
Cooling	Thermostatically controlled forced air
Dimensions	482 mm x 305 mm x 44 mm (1U) (19 in x 12 in x 1.7 in)
Weight	2.3 kg (5.0 lbs)

8. Service & End of Life

In the event of a product being considered beyond economic repair it should be disposed of with care and in line with local legislation on disposal of Waste Electrical and Electronic Equipment (WEEE).

In Europe WEEE shall be disposed of in accordance with European Union Directive 2012/19/EU.

In most regions of the world, similar legislation exists to ensure that WEEE is handled separately to maximise reuse of materials and avoidance of landfill.

9. Declaration of Conformity

ORIGINAL

EC Declaration of Conformity

Manufacturer:	Kinesys Projects Limited
of the address:	Unit 2 Kempton Gate, Oldfield Road, Hampton, Middlesex, TW12 2AF, UK
in accordance with the following EC directives:	**Low Voltage Directive 2014/35/EU** **EMC Directive 2014/30/EU**
declares that the product: with description:	**Kinesys Libra Pro** **A digital load cell interface**

is in conformity with the applicable requirements of the following harmonised standards:

EN 60204-1:2006	**Safety of machinery. Electrical equipment of machines. Part 1: General requirements**
EN 61000-6-1:2007	**Electromagnetic compatibility (EMC). Generic standards. Immunity for residential, commercial and light industrial environments**
EN 61000-6-3:2007	**Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light industrial environments**

The manufacturer hereby declares that the products named above have been designed to comply with the relevant sections of the above referenced standards. The units comply with all applicable essential requirements of the directives.

In the EU the party authorised to compile the technical file is:
TAIT Netherlands B.V.
Weesperplein 4a, 1018 XA Amsterdam, The Netherlands
In the UK the party authorised to compile the technical file is:
Kinesys Projects Ltd.
Unit 2 Kempton Gate, Oldfield Road, Hampton,
Middlesex, TW12 2AF, UK

Equipment referred to in this Declaration of Conformity was first manufactured in 2009.

D Weatherhead
Managing Director
Hampton, November 2024

The attention of the specifier, purchaser, installer, or user is drawn to special measures and limitations to use which must be observed when these products are taken into service to maintain compliance with the above directives. Details of these special measures and limitations to use are available on request and are also contained in the product manuals.

Kinesys Projects Ltd.
TAIT Technologies UK Ltd.
Unit 5 Langthwaite Road, Langthwaite Grange Ind Estate, South Kirkby, Pontefract, West Yorkshire, UK, WF9 3AP
Registered in England and Wales No. 02962782 +44 2082 086000 taittowers.com

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