⊛ kinesys

DigiHoist
system

digital hoist controller

**Category A
D8+
Compliance**

kinesys

Kinesys is a technology company specialising in the design, manufacture and sale of motion control systems for the entertainment industry. In-house facilities include hardware and software design, product design and system integration. These skills are married to a service-driven approach to our clients and a keen desire to listen to and act upon feedback from users 'in the field'.

Summary

DigiHoist System

DigiHoist is a fixed speed digital control system for chain hoists with safety group functionality which has been created to be a flexible, configurable, next generation control solution. DigiHoist incorporates all the **safety functionality** required to work in **group halt mode** and is in compliance with many strict EU standards.
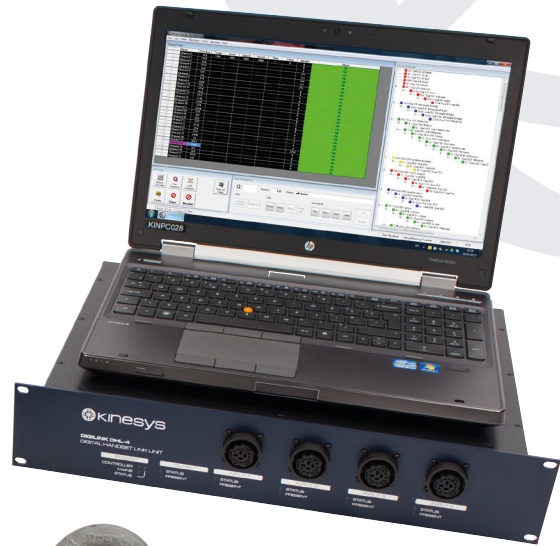
Load monitoring, group stop, positioning and self healing emergency stop are standard DigiHoist features, all working within a user friendly digital platform.

1 DigiHoist

4 Vector

DigiLink 3

2 DigiHandset

5 LibraCELL

1 **DigiHoist** is a linkable, fixed speed digital controller with safety group halt functionality built in. It can be used with local controls or an optional handset.

2 **DigiHandset** is an intelligent user friendly, digital remote control which allows operation of simple scenic movements.

3 The **DigiLink** module allows multiple DigiHandsets to be linked together to increase the number of channels controlled (Standard Mode) or allow control from multiple locations (Clone Mode).

4 **Vector** is a software program that allows cues to be built and run with a variety of linking options. The amount of cues that can be built and channels that can be controlled are limited only by your imagination.

5 The **LibraCELL** is a load measuring shackle with a highly visible LED display which allows users to view the live load being placed on the shackle. Switching between kg and lbs as well as inputting a tare value is all achieved via an easy to use menu system.

DigiHoist

DigiHoist offers digital communications, limit monitoring, load and position feedback and group halt functionality in a compact package.

At the core of the system is a digital communications link that enables multiple units to be daisy chained together. The units will **automatically assign channels** according to their position in the daisy chain. The high resolution displays offer comprehensive channel feedback including channel number, status and load cell information.

The digital link incorporates **SIL2 emergency stop** connections which eliminate the need for shorting plugs in the system. Safety features include hoist presence indication, limit monitoring, and group halting on fault conditions.*

*Not all features are available on Direct Control versions.

Channels and Load Monitoring
The screens display the automatically assigned channel numbers and load cell information.

Direction and Position
When hoists are moving, the screens show motion direction, encoder position and applied loads.

Example Symbols
From Left: Direction UP, Hard limit UP, Soft Limit DOWN, No Hoist Detected, Overload, Direction DOWN, Underload, No Load Cell data.

Adjusting Settings
The DigiHoist menu allows setting of all options including load cells, limits and group halt.

Information and Messages
Screen displays message errors, controller status, suggested actions and the devices connected.

The DigiHoist platform has been designed from the ground up to be fully upgradable

Features

- 8 channel capacity
- Link up to 12 units together (96 channels)
- Low Voltage and Direct Control versions available
- Hoist presence and limit detection (low voltage units only). Individual channel feedback
- Self-healing emergency stop connections
- 8, 16 and 32 channel handheld remotes
- Local controls on the front panel
- Automatic phase reversal correction, with user override facility (override on LV units only)
- Universal voltage input for worldwide use
- Permanent and switched hoist power modes for use with 'pickles' (LV units only)
- Output options include industry standard Socapex & Harting connections
- 'GO' link to allow multiple units to be controlled from a single go button
- Miniature circuit breaker (MCB) protection for each pair of hoists
- Optional RCD protection available
- LibraCELL input

Mains Input

- 5-pin 32A Red 'Ceeform' type plug to IEC60309

Control Connections

- Amphenol C16-3 Link In Female 14 + PE
- Amphenol C16-3 Link Out Male 14 + PE

Positioning & Ethernet Upgrade

Order Code	Type	Output
DGH-00-1020	4 x Harting 16	LV
DGH-00-1021	8 x Harting 6	LV
DGH-00-1022	2 x Harting 32 + 1 x 32A CEE	LV
DGH-00-1023	8 x Socapex 7	LV
DGH-00-1024	4 x Socapex 19	LV
DGH-00-1025	8 x P14	LV
DGH-00-1040	2 x Harting 16 + 1 x 32A CEE	DC
DGH-00-1042	8 x CEE	DC
DGH-00-1043	2 x Socapex 19 + 1 x 32A CEE	DC

Standard

Order Code	Type	Output
DGH-00-0020	4 x Harting 16	LV
DGH-00-0021	8 x Harting 6	LV
DGH-00-0022	2 x Harting 32 + 1 x 32A CEE	LV
DGH-00-0023	8 x Socapex 7	LV
DGH-00-0024	4 x Socapex 19	LV
DGH-00-0025	8 x P14	LV
DGH-00-0040	2 x Harting 16 + 1 x 32A CEE	DC
DGH-00-0042	8 x CEE	DC
DGH-00-0043	2 x Socapex 19 + 1 x 32A CEE	DC

DigiHandset

Digital user-friendly pendant which allows safe fixed speed set up or scenic movements.

DigiHandset has channel selection switches, Emergency STOP, GO and RESET buttons and a simple intuitive display to communicate the status of the controller. As soon as the handset is plugged into a DigiHoist it will begin the **auto addressing process**. A solid blue status indicator above each channel states that a chain hoist is connected and ready to use.

The RESET button is used to acknowledge and reset a fault condition within the motor controller, it will flash when action is required. The GO button is used to initiate hoist movement, it will only illuminate if movement is possible.

If, for example, the system is in a reset state or if a selected channel has a fault then the GO button will not illuminate.

DigiHandset screen displays

System Ready to Run	**RDY**
System Reset Required	**RST**
Emergency Stop Button Pressed	**ESTP**
The System Has Stopped Movement Due to a Fault	**RSTL**
Emergency Stop Button Released With Go Button Held Down	**ER02**

Features

- The Starbust LED display provides status information about the system in addition to the indicators on the handset
- Blue status indicators provide information regarding the status of the hoist connected to that channel
  - ON, a hoist is present on that channel
  - OFF, no hoist detected
  - FLASHING, a problem has been detected with the hoist on that channel
- Group Halt. A group is defined as any hoists that are active on the system. **If a group of hoists are moving and one of them develops a fault, all movement will be stopped**
- Direction Indicators
  - Red ON, down selected
  - Red OFF, no direction selected
  - Red FLASHING, down selected and a down limit has been hit. Same criteria for UP with green arrow

- Handset menu can be used to modify operating parameters
- Menu is navigated using three buttons labelled M, Up and Down

Order Code	Description
DGH-00-0100	Digital Hoist Remote - 8 Channel
DGH-00-0110	Digital Hoist Remote - 16 Channel
DGH-00-0120	Digital Hoist Remote - 32 Channel

DigiLink

A DigiHandset link unit that allows multiple handsets to work together to control large arrays of DigiHoists.

The DigiLink unit offers the user the opportunity to control large numbers of DigiHoists remotely.

In order to control a system of greater than 32 channels multiple handsets are required. The DigiLink connects up to four handsets together so that a single handset GO button can control up to 96 hoists. While limiting the start of movement to a single GO button the DigiLink ensures that all emergency stops remain active at all times for maximum safety.

The DigiLink also offers an innovative Clone feature. This allows multiple handsets to take control of the same DigiHoist controllers. The DigiLink ensures that only one DigiHandset has control of the hoists at any one time while ensuring all the emergency stops stay active. Control is moved between handsets by simply pressing the emergency stop on any handset and then pressing RESET on the handset that is to take control.

Features

- 4 Inputs for connection to DigiHandsets
- 1 Output for connection to DigiHoists
- Status and Presence Indicators for all connections
- Standard and Clone modes
- 2U 19" rack format

Control Connections

- 4 x Amphenol C16-3 Female 14 + PE for DigiHandset
- 1 x Amphenol C16-3 Male 14 + PE for DigiHoists

Order Code	Description
DGH-00-0210	Digital Hoist - Handset Link Unit

DigiHoist Conformity

Achieving BS7906-1:2001 and D8+ (SQ P2:2010) Compliance with the DigiHoist System

The DigiHoist controller may be used as part of a **BS7906-1:2001 Category A system**, for lifting and suspension of loads above people, and as part of a D8+ (SQ P2:2010) system, for suspension of loads above people without the need of a secondary suspension. In order to achieve full conformity with the above codes of practice the following conditions must be respected:

Category A and D8+ Systems

Category A

Hoist must be compliant with BS7905-1:2001 and BS7906-1:2005 Category A.
This must include but is not necessarily limited to the following:

- Double brakes
- Brakes must act directly to stop the load
- Top, bottom and ultimate limits
- End of travel stops
- Chain container must be no more than 50% full when the hook is fully retracted
- Safety Factor 8:1

D8+

Hoist must be compliant with DIN 56950:2012 and SQ P2-2010.
This must include but is not necessarily limited to the following:

- Double brakes
- Brakes must act directly to stop the load in case of statically indeterminate loads
- Top and bottom limits are recommended.
- End of travel stops
- Safety Factor 10:1
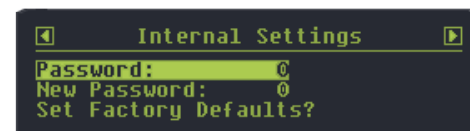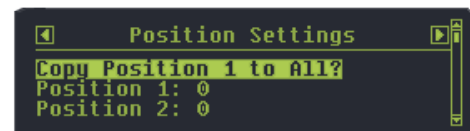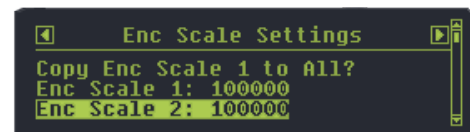
Positioning Feedback

When complex (statically indeterminate) loads are being lifted, position feedback may be required in addition to load monitoring. This is to ensure that the position relationship between all the hoists in the group is maintained. To achieve this the hoists must be fitted with incremental or absolute encoders and connected to a DigiHoist Controller fitted with the position control option. A risk assessment of the lifting operation will determine whether position feedback is required.

E-STOP system

DigiHoist includes an Emergency Stop System **compliant with SIL2** in accordance with EN 62061:2005. Emergency stop switches are located on the DigiHoist controller and on the DigiHandset. One additional emergency stop switch may be connected into a standard DigiHoist system **(SIL3 Estop available on request)**.

Testing

Following installation of a Category A or D8+ system (including installation at each venue in the case of a touring system) a series of tests must be carried out - before any load is applied to the lifting system. These must be in accordance with BS7906-1:2005 section 6.5 - in the case of a Category A system, and in accordance with SQ P2:2010 section 6.1, 6.2, 6.3 in the case of a D8+ system.

Category A and D8+ systems - Load Monitoring

For a Category A system, each hoist must be fitted with a load measurement device. This device must be capable of halting lifting operations in excess of SWL + 15% and lowering operations in the event of a chain becoming slack. For D8+ systems, with 'statically indeterminate' loads, the overload protection should cut out at 120% of the lifting capacity.

This load measurement device or overload protection may be:
- Integral to the hoist and connected to its internal control circuit.
- Integral to the hoist and connected to the DigiHoist controller via a suitable interface.
- Separate to the hoist and connected to the DigiHoist controller.

LibraCELL load shackles may be used in a system to help achieve Category A or D8+ compliance.
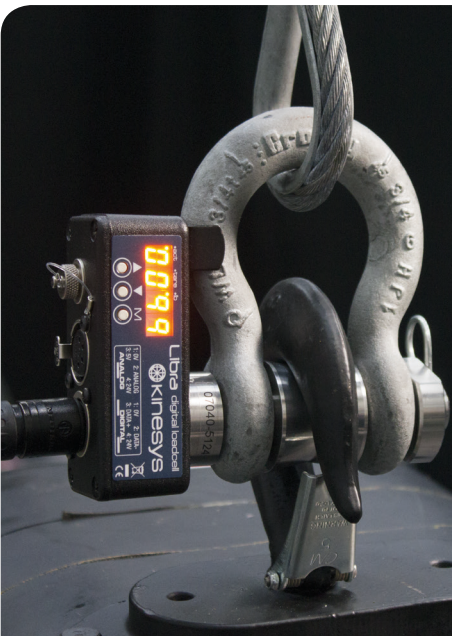
Load Monitoring

LibraCELL

The **LibraCELL** is a load measuring shackle with a highly visible LED display which allows users to view the live load being placed on the shackle. Switching between kg and lbs as well as inputting a tare value is all achieved via an easy to use menu system.

LibraWIFI

LibraWIFI permits LibraWATCH to connect wirelessly, allowing load data to be monitored on the go using multiple devices while at the same time allowing key parameters to be edited remotely.

LibraWATCH

LibraWATCH is a multi-platform load monitoring software application that enables data to be viewed on both computer and mobile devices.
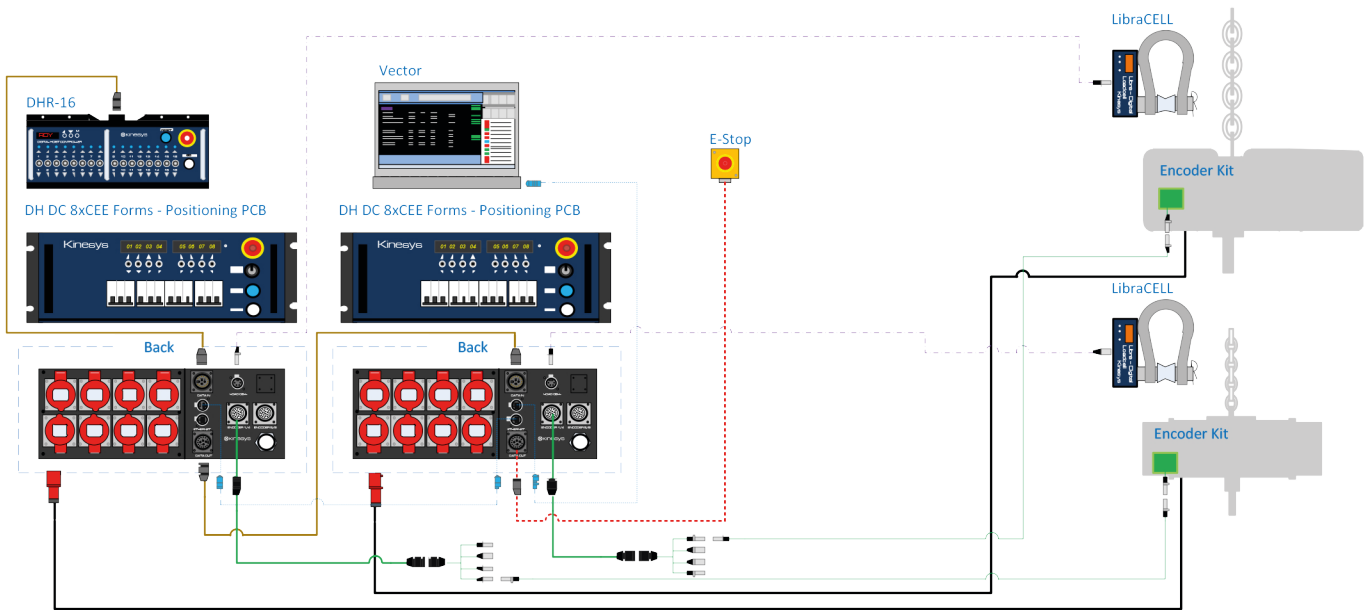
Vector

Vector is a software program that allows cues to be built and run with a variety of linking options. The amount of cues that can be built and channels that can be controlled are limited only by your imagination.

Vector has a wealth of cue creation and editing features designed to allow the rapid programming of cues. Advanced linking features allow complex cue sequences to be easily constructed while maintaining maximum flexibility over the overall operation of the devices in motion. Four cue playbacks to allow cues to be run simultaneously and manual running features make all aspects of movement easy and safe. Vector runs on compatible Windows computers with the option of a USB keypad for faster editing and operation.
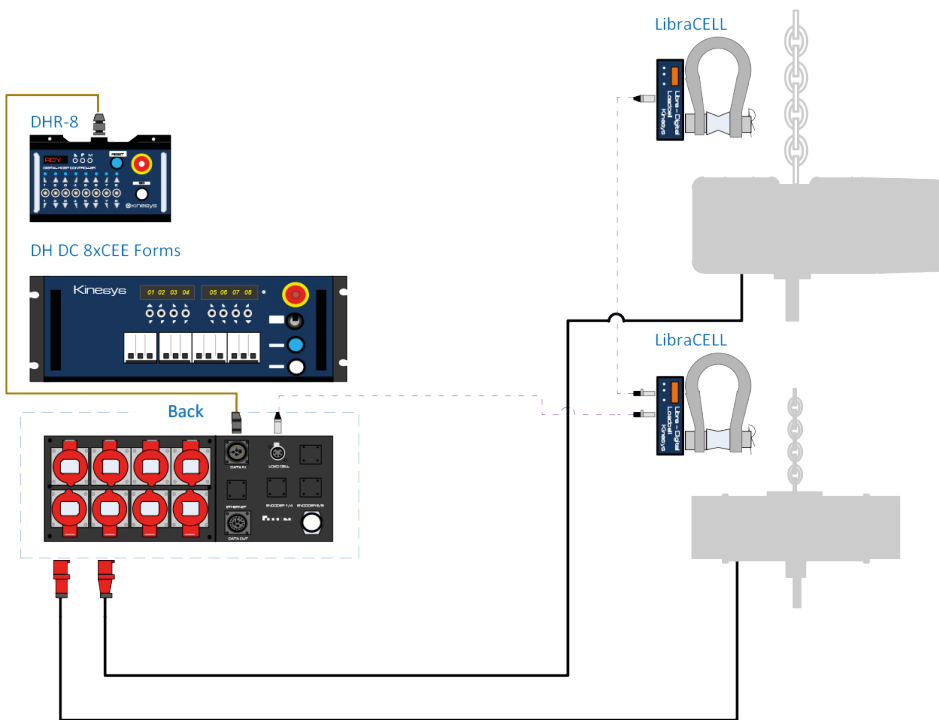
DigiHoist Configurations
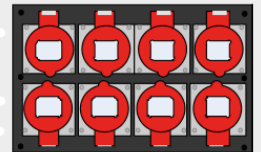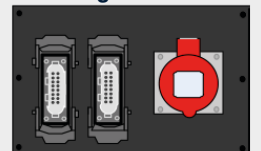
Direct Control Configurations

LibraCELL

DHR-16

Vector

E-Stop

Encoder Kit

DH DC 8xCEE Forms - Positioning PCB

DH DC 8xCEE Forms - Positioning PCB

LibraCELL

Back

Back

Encoder Kit

DGH-00-1042
POSITIONING & ETHERNET

LibraCELL

DHR-8

DH DC 8xCEE Forms

Back

LibraCELL

DigiHoist Direct Control Output Options

8xCEE Forms

2xHarting 16+32A

2xSocapex 19+32A

DGH-00-0042 STANDARD
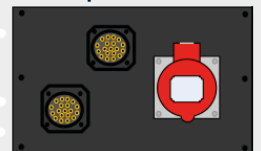
Low Voltage Configurations

LibraCELL

DHR-16

Vector

E-Stop

DH LV 4xHarting16 – Positioning PCB

DH LV 4xHarting16 – Positioning PCB

Encoder Kit

Back

Back

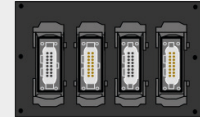LibraCELL

Encoder Kit
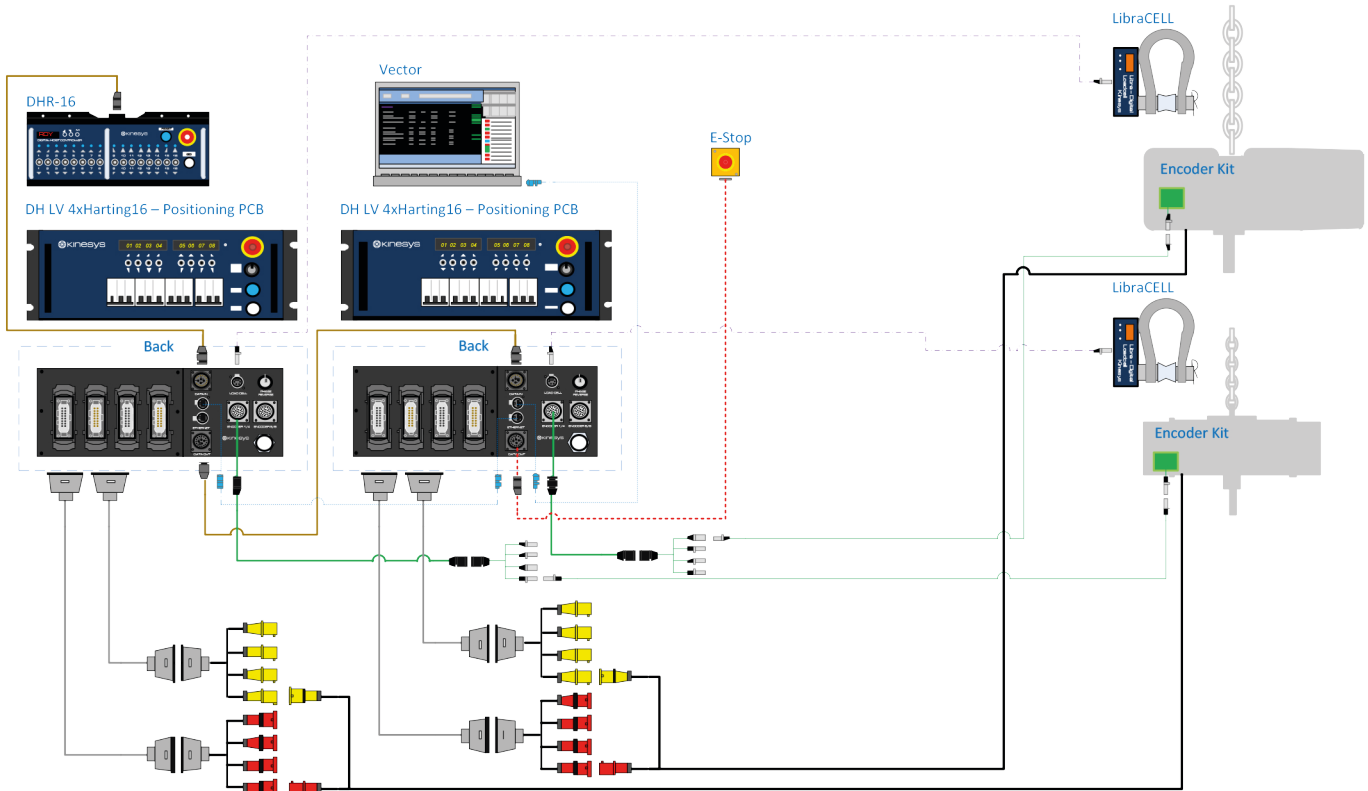
DGH-00-1020
POSITIONING & ETHERNET
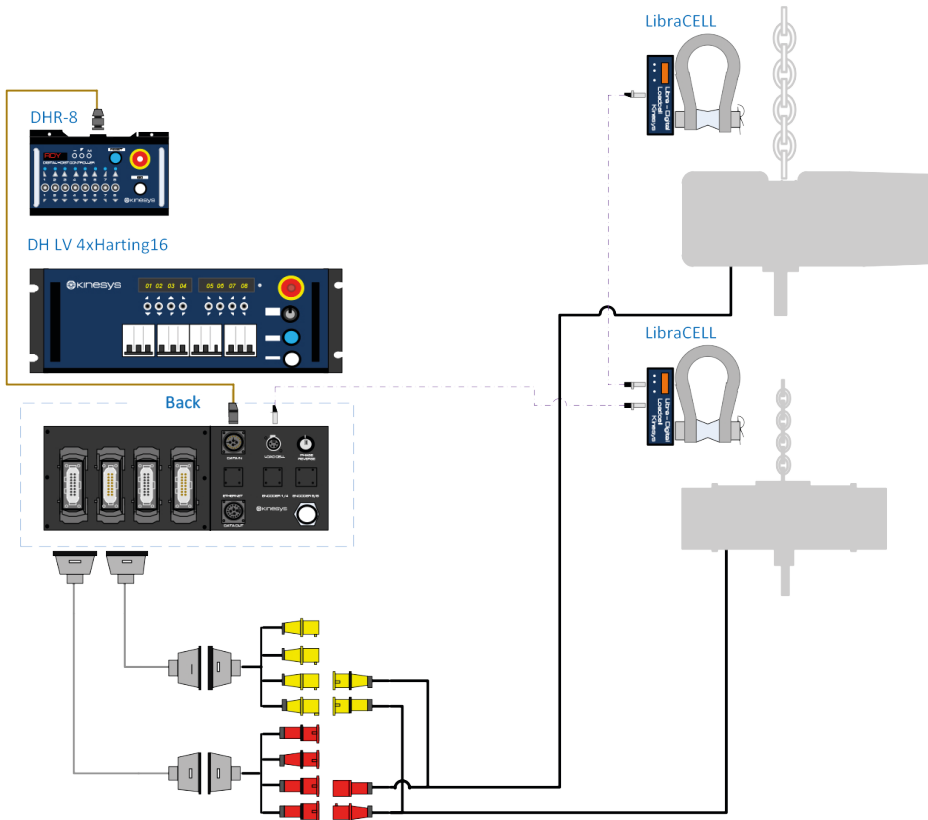
DigiHoist Low Voltage Output Options

4xHarting16

8xHarting6
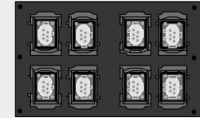
2xHarting32
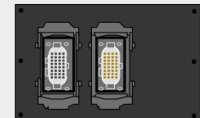
4xSocapex19

8xSocapex7

8xP14

LibraCELL

DHR-8

DH LV 4xHarting16

LibraCELL

Back

DGH-00-0020 STANDARD

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