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Kinesys Array 485

Operating Manual
[ORIGINAL]

An RS485 data and E-Stop distribution unit

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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Contents

List of Figures

1. Introduction

1.1 Product description

The Array 485 is an RS485 data and emergency stop distribution unit used specifically for the Kinesys Elevation system.

In large Elevation systems it may be necessary to split the data network into multiple branches. Additionally, the use of long data cables may cause problems with voltage drop and data loss. The Array 485 buffers the data and safety signals, allowing Elevation Drives to be positioned further away from the Kinesys Array PD-ES.

The Array 485 distributes incoming data to up to eight chains of devices using XLR7 data connections. The outputs can either be connected directly to Elevation Drives or daisy chained to other units to allow for the creation of much larger systems. The front panel offers link, data and emergency stop status indicators, and a connection to the Kinesys Elevation Rigger for local hoist control.

1.2 Scope and purpose

This manual explains the key features, functions and operation of the Array 485 .

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 technical support on this product, 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 behaviour observed, including any unusual changes in behaviour 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 behaviour 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 Safety regulations

The following regulations serve as the basis for assembly, installation, certification and maintenance of automation equipment within the area of the European community. For countries other than those mentioned, local legislation and directives may apply in addition to or in place of the European regulations as stated in this manual.

The manufacturer's guarantee depends on the consideration of these regulations and the operating instructions.

European directives

2014/30/EU	EC - EMC Directive
2014/35/EU	EC - Low Voltage Directive

Harmonized regulations

EN 62368-1	Audio/video, information and communication technology equipment. Safety requirements
EN 61000-6-1	Electromagnetic compatibility (EMC). Generic standards. Immunity for residential, commercial and light-industrial environments
EN 61000-6-3	Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments

2.2 Safety 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.

Prohibitions of operation

- **Do not use the Array 485 if it does not appear to be in 100% working order.**
- **Do not operate the equipment, cables or connectors when damaged or wet.**
- **Do not connect or disconnect cables while the system is powered on. Always switch off the power supply before making or breaking connections.**

Safety precautions before operation

- **Do a full risk assessment of the location where the Array 485 and its connected devices are intended to be used.**
- **Do not start movement operations until a qualified person has inspected the Array 485 and all other connected equipment, and confirmed that is in 100% working order.**
- **Software-independent means of stopping movement must be provided, including a hardware emergency stop system that is compliant with all local regulations.**
- **Make sure all machine stop buttons, emergency stop buttons and enabling switches in the system have been tested and are functioning correctly.**
- **Make sure all operators know the locations of the machine stop buttons, emergency stop buttons and enabling switches in the system.**
- **Make sure all attached loads are unobstructed and will not come into contact with other static or moving objects during movement.**
- **Make sure all attached loads are always visible to the operator where possible. If this is not possible, make sure the operator has reliable communication with a person who can clearly see the attached loads.**
- **Make sure all persons in the hazard zone underneath the lifting equipment are aware of the potential for movement.**

Safety instructions during operation

- **If you notice any unexpected or dangerous movement during operation, press the E-Stop button on the venue-wide safety controller to bring all movement to an immediate stop. Note that not all stop buttons in the system necessarily stop the movement an individual lifting device. Alternatively, if an enabling switch (hold to run) is being used in the system, then release the enabling switch.**
- **If an enabling switch is used in your system to initiate movement of the connected lifting device, be aware that releasing it may cause movement to stop unexpectedly.**
- **After a stop button has been pressed, the reason for its actuation must be found, and all possible failures in the system removed by trained personnel. The stop button must then be reset before continuing operation. Note that the stop button reset procedure may be different for different devices - refer to individual product manuals for more details.**

2.3 Visible damages

If any damage or breakages are detected during operation or during tests, do not operate the Kinesys Array 485 until it has been repaired and a qualified person has checked and approved it.

2.4 Spare parts

Only original fixing components, spare parts, and accessories listed in manufacturer's spare parts catalogue are acceptable for use. The manufacturer's guarantee is given for those spare parts only. The manufacturer cannot be held responsible for any damages due to the use of non-original parts or accessories.

2.5 Operating environment

The Array 485 is designed for indoor use only and to work at ambient temperatures between 0°C and 40°C (32°F and 104°F). The Array 485 has an Ingress Protection (IP) rating of IP30.

2.6 Transport and storage

Condensation

The Array 485 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 Kinesys Array 485 to a power source immediately. Leave the unit disconnected until it has reached a safe temperature.

Shocks

Do not shake, knock or drop the Array 485. Avoid excessive force when installing and operating the product.

Handling

Do not lift the Array 485 by any of its cables or connectors as this may cause damage to the unit and/or cables.

Packaging

Where possible, use the original packaging to transport the Array 485.

3. Product overview

3.1 Front panel

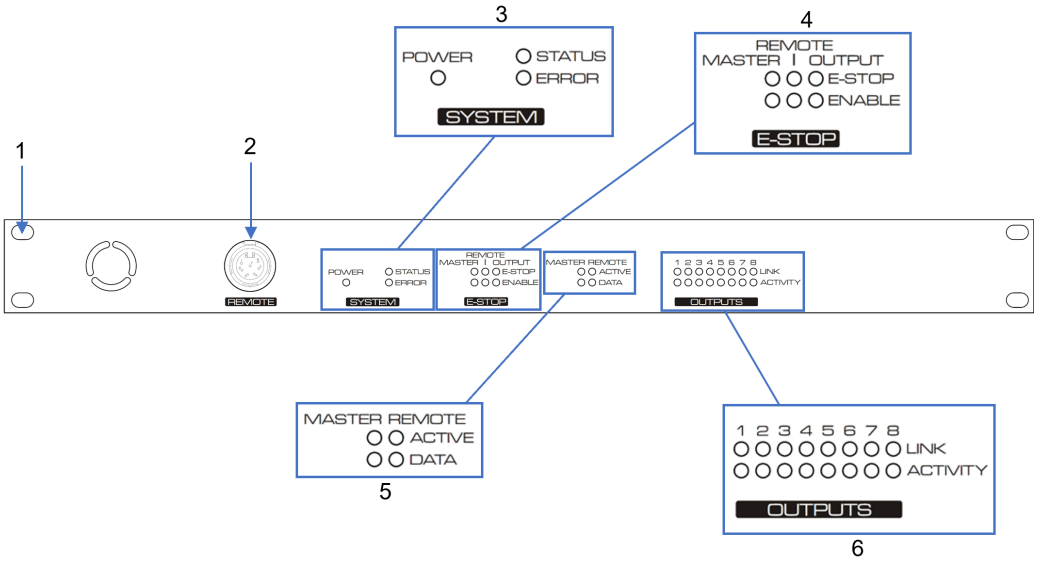

Figure 1. Front panel

Item	Description	Notes
1	Rack mount holes	For installation into a 19" rack
2	XLR7 data input	For connection to the Kinesys Elevation Rigger
3	System indicators	See section 3.3 for details
4	E-Stop indicators	See section 3.4 for details
5	Master / Remote indicators	See section 3.5 for details
6	Output indicators	See section 3.6 for details

3.2 Rear panel

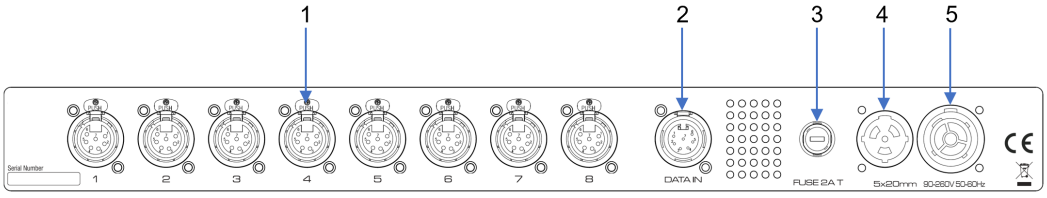

Figure 2. Rear panel

Item	Description	Notes
1	XLR7 data outputs 1-8	Data connections for up to eight Elevation Drives
2	XLR7 data input	Data connection for an input source such as a computer or console
3	Fuse	2A 5x20 mm, anti-surge, high breaking capacity (ceramic)
4	Mains input	
5	Mains link output	For linking a second Array 485 or other control equipment

3.3 System indicators

Power	• Solid blue when receiving power
Status	• Solid green when all communications are OK and the system is ready • Flashes gree during power-up to indicate the firmware version number. The number of flashes = the second digit in the version. For example, version 1.2 = two flashes, version 1.3 = three flashes etc
Error	• Flashes red if two or more connected Elevation Drives have the same address. If this happens, check the assigned IP addresses of each Elevation Drive.

3.4 E-Stop indicators

Master	E-Stop	• Solid amber when an E-Stop signal is detected at the master data input.
	Enable	• Solid green when the system is enabled and ready. • If the connected input device has an Enable/Disable keyswitch, this must be turned to the 'Enable' position in order for the indicator to turn green.
Remote	E-Stop	• Solid amber when an E-Stop signal is detected on the Rigger connected to the front panel.
	Enable	• Solid green when the Rigger is enabled and ready. • If the Rigger has an Enable/Disable keyswitch, this must be turned to the 'Enable' position in order for the indicator to turn green.
Output	E-Stop	• Solid amber when an E-Stop signal has been sent to the output devices.
	Enable	• Solid green when the output devices are enabled and ready. • If the output device has an Enable/Disable keyswitch, this must be turned to the 'Enable' position in order for the indicator to turn green.

When an E-Stop is pressed, the E-Stop and Enable indicators for that device and all Output indicators will turn off until the E-Stop is reset and re-enabled.

3.5 Master / Remote indicators

Master	Active	• Solid blue when a master input device is detected.
	Dat	• Flashes violet when data is received from the master input device.
Remote	Active	• Solid blue when a Rigger is detected.
	Data	• Flashes violet when data is received from the Rigger.

When a Rigger is connected to the front panel, a relay inside the unit switches off the communications from the master controller, allowing the Rigger to take control. Therefore it is not possible for both sets of status indicators to be on at the same time.

3.6 Output indicators

Each numbered set of status indicators represents XLR7 data outputs 1 to 8 on the rear panel.

Link	• Solid blue when a device is detected at the output.
Activity	• Flashes violet when data is being transmitted between that output and the device.

4. Installation

4.1 Rack mount installation

The Array 485 has rack mount holes on either side on the front panel to enable it to be installed into 1U of space in an industry standard 19” rack. To install the Array 485 into a 19” rack, follow the procedure below.

1. Position the Array 485 within the 19” rack and align the rack mount holes with those of the rack in the desired position on both sides.
2. Secure the Array 485 to the frame of the rack on both sides using cage nuts and bolts (available separately).
3. Make sure there is enough space within the rack to allow for the installation of cables at the front and rear of the Array 485.
4. Make sure there is adequate ventilation once the Array 485 is installed in the rack.

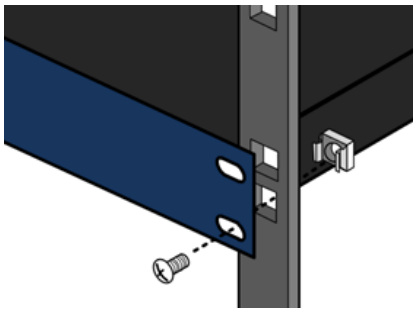

Figure 3. Rack mount installation

4.2 System example

The example in Figure 4 shows the following connections:

- Array PD-ES as the primary Power/E-Stop distribution unit connected to the mains power supply.
- Array 485 connected to the power supply via the mains input connection on the rear panel.
- Vector Console connected to the Array PD-ES (this could also be a laptop running a software program).
- XLR7 data connection from the Array PD-ES to the Array 485.
- XLR7 data connection from the Array 485 to the first Elevation Drive in the chain.
- 32 A 3-phase power connection from the Array PD-ES to the first Elevation Drive in the chain.
- Daisy chained 32 A 3-phase power connections and XLR7 data connections from the first Elevation Drive to the next Elevation Drive in the chain.
- XLR7 data connection from output 2 of the Array 485 to the next Elevation Drive in the chain.
- 32 A 3-phase power connection from output 2 of the Array PD-ES to the next Elevation Drive in the chain.

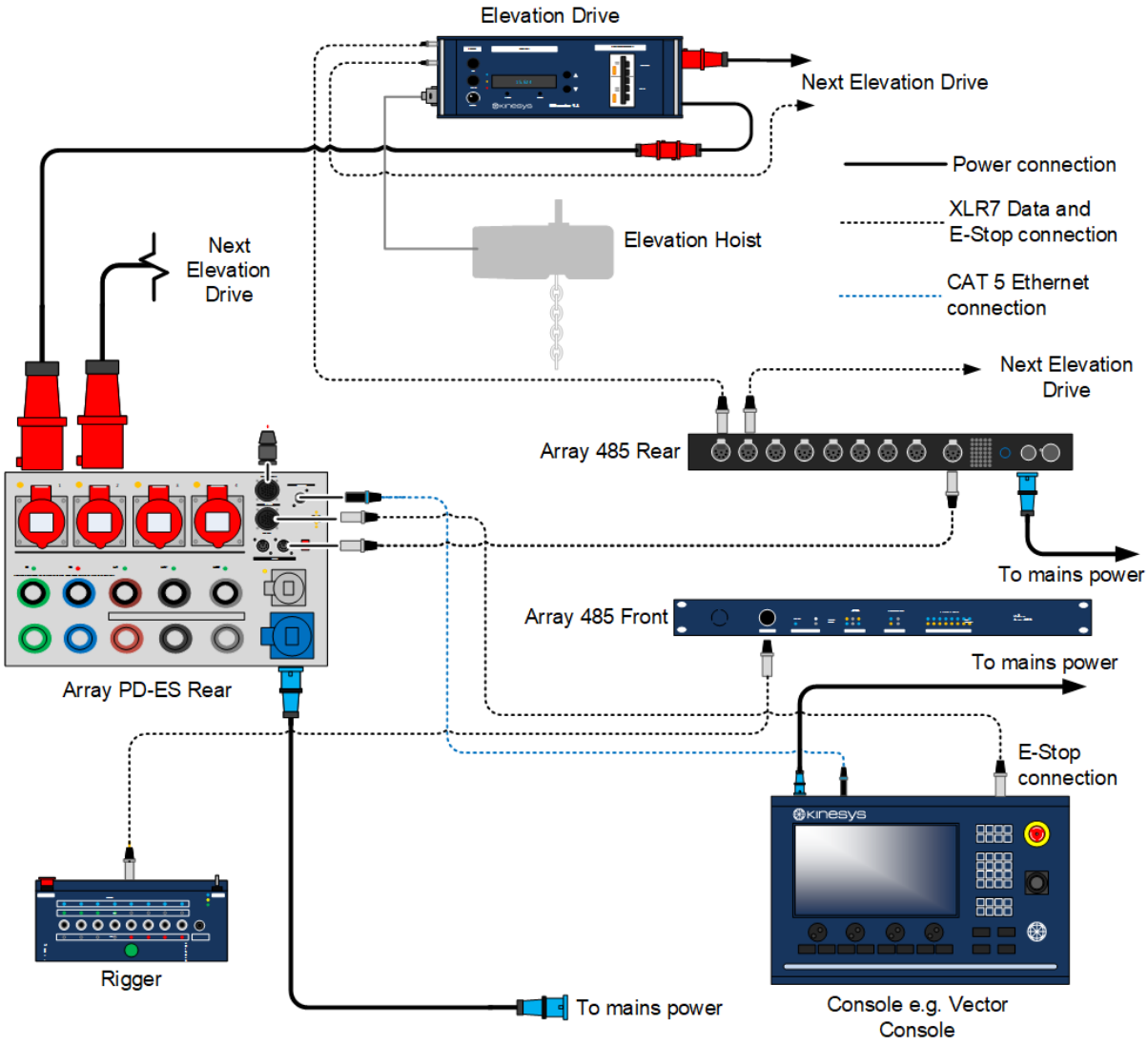

Figure 4. System example

For more details on the operation of the Array PD-ES, Elevation Drive, Rigger, computer software, or other products not included in this example, refer to the relevant operating manuals.

The system shown here is an example only. Please contact support@taittowers.com if you require support in setting up your specific application.

5. Product specifications

Feature	Specification
Power supply	• 1-phase + Neutral + Earth 50-60 Hz • 85 V to 264 V
Mains connection	PowerCON True1 mains plug
Front panel connections	1 x XLR7 Data In (for Rigger connection only)
Rear panel connections	• 8 x XLR7 Data Out • 1 x XLR7 Data In
Enclosure	• Case - Aluminium, black anodised, 1.5 mm (1.8 mm at rear panel) Front panel - Aluminium, 2.8 mm, RAL5011 textured paint
Cooling	Thermostatically controlled forced air
Temperature	• Operating: 0°C and 40°C (32°F and 104°F) • Storage: -20°C and 80°C (-4°F and 176°F)
Ingress Protection rating	IP30 (protected from solid objects larger than 2.5 mm; not protected from liquids)
Dimensions (L x W x H)	• 483 mm x 305 mm x 45 mm (19 in x 12 in x 1.8 in) • 1U 19" rack mountable
Weight	2.5 kg (5.5 lbs)

6. 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.

7. 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:	**Kinesys Array 485**
with part number:	**ELE-03-0073**

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

EN 62368-1	**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 2005.

D Weatherhead
Managing Director
Hampton, 21 January 2025

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.

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TAIT Technologies UK Ltd.
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