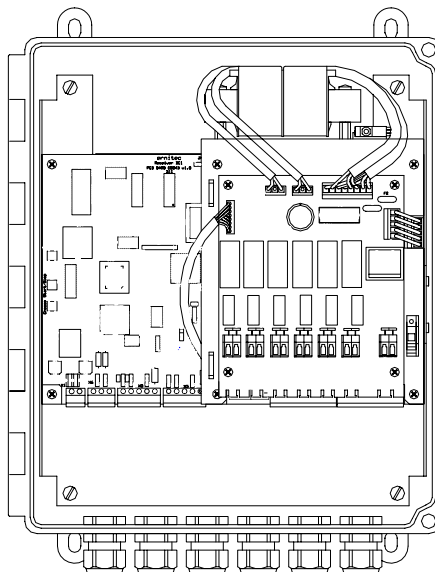


SYSTEM **V**

Variable Speed PTZ Receiver **R131VX**

Installation ***Manual***



Introduction

The **R131VX** is a LONWORKS® telemetry receiver designed for driving a 24 VDC variable speed pan & tilt head, a motorised zoom lens and six auxiliary functions operated via the potential free relay contacts.

A 12 VDC power supply output for driving e.g. a camera is available as well as possible fitting of an optional video transmission module; for twisted pair or optical fiber.

The R131VX features 128 pre-positions, four fully programmable pre-set tours, four privacy zones, Auto-pan, Home-function, soft-limits, programmable lens drive voltage, tamper alarm and selection of pan & tilt head brand and type.

All settings are selected remotely using the **S111SX Node Manager** - no on-board settings are required or even possible.

Daily operation is carried out using the keyboards Series K111DX.

Validity

This manual cover the R131VX, serial number R131VX-000100 or higher.

Compatibility

The R131VX is compatible with any SYSTEM X component.

Any motorised lens with two individual wires per function driven by 6-12 VDC can be used, however, to ease installation and for optimum Privacy Zone performance the use of the Ernitec motorised zoom lenses **Series Q** is highly recommended.

The following DC pan & tilt heads are compatible:

- Ernitec MPT-5P
- Conway C2020
- Molyntx Mustang PT12
- Shawley Prince 165
- Videmech 555P

Approvals

The R131VX is **CE**-certified and approved in accordance with the EU directives regarding Electromagnetic Compatibility (EMC) and Low Voltage safety (LVD) with respect to the EN 50081-1 (EMC, emission), the EN 50130-4 (EMC, immunity) and the EN 60950 (LVD, safety) standards.

Warning: To fulfil the above regulations make sure to carefully follow the installation instructions in this manual.

Trademarks

Echelon®, LON® and LONWORKS® are trademarks of Echelon Corporation registered in the United States of America and other countries.

Installation

All connections are shown on **Figure 1** at the fold-out page at the back of this manual.

Carefully follow the instructions in order not to cause mal-function, damage to the equipment or humans. Incorrect installation will void the warranty and repairs will consequently be invoiced according to current scale charges.

All settings are selected remotely using the **S111SX Node Manager** - no on-board settings are required or even possible.

Once all cable connections have been done installation is completed by activating the mains switch. Prior to activating the mains switch make sure the S111SX Node Manager is running and connected to the network.

If several R131VX units are present carefully note the exact time of mains switch activation - this information is crucial when identification and configuration of each unit later is carried out using the S111SX Node manager.

Warning: Self-test procedures, including moving the pan & tilt head to end-stops, are initiated when the calibrate function is activated from the S111SX Node Manager. Make sure all connections and adjustments, including setting the pan & tilt end-stops and/or limit switches are made prior to activating the calibrate function.

Unpacking the unit

Check that the carton box contains the following items:

- R131VX unit
- Connector kit
- Box mounting kit
- Installation Manual (this manual)

Carefully check for any sign of damage. Any such damage or parts missing should be reported to your supplier prior to installation.

Box installation

The box must be mounted on a plane surface to prevent the box from being twisted and thereby become leaky. The box should be oriented with the cable glands pointing downwards.

Fit the plastic mounting ears on the box. The mounting ears and screws are enclosed in the box mounting kit.

Drilling pattern: 203 mm (width) x 329 mm (height). For further details refer to **Figure 2** at the back of the fold-out page.

Cable glands


All cables are fed through the cable glands. For each cable choose an appropriate sized gland according to the table below close to the connector inside. Make sure to tighten the glands properly. For further details refer to **Figure 2** at the back of the fold-out page.

Cable gland, Type 1	Cable diameter \varnothing 5-9 mm
Cable gland, Type 2	Cable diameter \varnothing 6-12 mm

Mains connection

Mains connection is located on the relay board, terminal **J1**.

The R131VX must be used with a 3-wire mains connection (2W+PE @ min. 0,75 mm², PE=yellow/green, neutral=blue).

Note: Terminals marked with hazardous live symbol  requires installation by an instructed person.

The wires must be secured to the *Cable Anchoring Fingers* on the board using a cable tie. Each wire must be connected exactly as shown on the fold-out page drawing. The unit is designed for continuous operation.

Warning: Make sure correct mains voltage 230/115 VAC is selected with the voltage selector **S2** prior to activating the mains switch.

Mains voltage selector and mains fuse

Prior to connecting mains voltage make sure the correct nominal mains voltage 230VAC (factory default position) or 115 VAC is selected with **S2** located on the relay board.

The mains fuse **F1** located on the relay board is factory set for 230 VAC operation. A fuse suitable for 115 VAC operation is included in the connection kit.

Replace with same type and rating only; i.e.:

- 230 VAC: T500mA
- 115 VAC: T1A

LON® Network Installation

All SYSTEM X components (nodes) are connected together in a common LONWORKS® communication network.

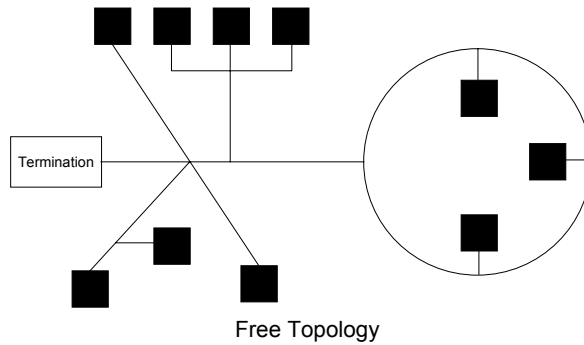
The network is polarity insensitive and therefore either of the two twisted pair wires can be connected to either of the LON® connectors on the SYSTEM X components.

Due to the risk of cross-talk/interference, it is recommended not to run LON® Network cables close to high voltage cable, or cables carrying video signals.

In countries where the CE approval is mandatory, LON® cables with an overall screen must be used in order to comply with EMC/EMI standard EN 50130-4. The cable screen should be connected to the cable clamp next to the LON® connector.

Selection of network Topology

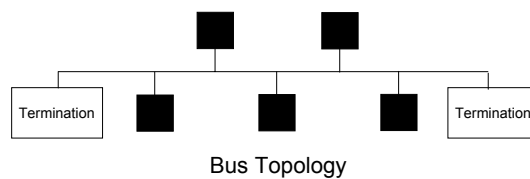
In a **free topology network**, there are no demands as to how the cables are routed between the nodes. It can be point-to-point, bus, star, tree, or a mixture.



When using free topology, the maximum cable length in one segment is approx. 500 meters, and is calculated adding together all cables used. The maximum number of nodes in one segment is 64. If more than 500 meters, or more than 64 nodes, is required, two or more network segments can be made, using a repeater between each segment.

Bus Topology

In a bus topology network, all nodes are connected on a bus. Cable stubs can be used to connect the individual nodes to the bus, as long as the length of the stub is maximum 3 meters. The advantage of bus topology, is that the cable length can be longer than when using free topology. This can be useful e.g. when making network connection to remote PTZ cameras.



The maximum number of nodes on one bus is 64. Maximum length of the network bus depends on the type of cable used. If more nodes, and/or longer cable length, is required, two or more network segments can be made, using a repeater between each segment.

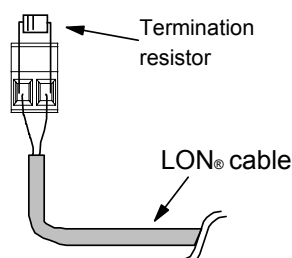
Termination

Each network segment require termination for proper data transmission performance. The type of termination varies depending on whether Free topology or Bus topology is used.

In a free topology network segment, only one termination is required and may be placed anywhere on the network. The termination resistor should be a 52 Ω , 1/4W type.

In a bus topology network segment, two terminations are required, one at each end of the bus. The termination resistors should each be a 105 Ω , 1/4W type.

Termination resistors, which are included with the SYSTEM X keyboard, are easily fitted using the LON[®] connectors on the SYSTEM X units as shown below.

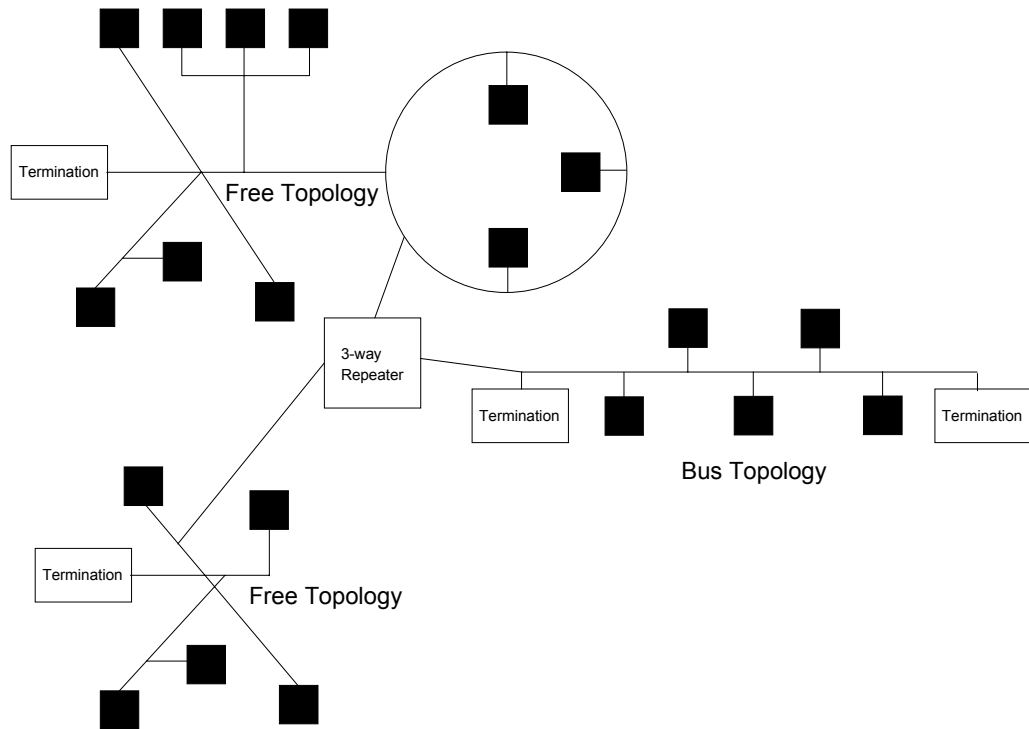


Repeater

If the maximum numbers of nodes (max. 64) or total cable distance are exceeded, a repeater can be added to interconnect two or more network segments.

A repeater can also be used to convert from a free topology network to a bus topology network. This can be useful when e.g. making network connection to remote PTZ cameras.

Note that only one Repeater should be placed in series between any two nodes in a segment



LON® Network Cables

The following five cables/cable types have been validated by Echelon®, but other cables may be used provided they have specifications similar to the ones listed below:

Validated Cables and Cable Types	AWG	Diameter	Shield ⁴⁾	Examples
TIA/EIA 568A ¹⁾ Category 5 cable	24AWG	0,5mm	Available	Belden 1624 ⁵⁾ Belden 1633A ⁵⁾ Belden 1668A ⁵⁾
Belden 8471 (PVC jacket) or equivalent	16AWG	1,3mm	No	-
Belden 85102 (Tefzel jacket) or equivalent	16AWG	1,3mm	No	-
Level IV ²⁾ cable	22AWG	0,65mm	Available	Anixter 9F220154 ⁵⁾
J-Y(St)Y ³⁾ 2x2x0.8	20,4AWG	0,8mm	Yes	Anixter 4QJB2 ⁵⁾ Coferro J-Y(St)Y ⁵⁾ Waschek 240208 ⁵⁾ Eupen J-Y(St)Y Lg ⁵⁾

¹⁾ Any cable that meets the TIA/EIA 568A standard, is suitable for LON® Networks.

²⁾ Standard originally specified by the National Electrical Manufacturers Association (NEMA).

³⁾ The J-Y(St)Y cable is normally only available in Europe.

⁴⁾ In order to comply with EMC/EMI standard EN 50130-4, shielded cable must be used.

⁵⁾ With shield.

A list of cable suppliers can be found in e.g. the *K111DX Keyboard X* manual.

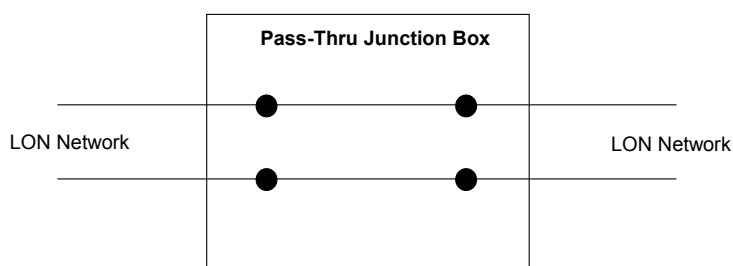
LON® Network Cable Lengths

Cable type	Free Topology Max. Node-to-Node/Total Length	Bus Topology Max. Total Length
TIA/EIA 568A Category 5	250/450 meters	900 meters
Belden 8471	400/500 meters	2700 meters
Belden 85102	500/500 meters	2700 meters
Level IV	400/500 meters	1400 meters
J-Y(St)Y 2x2x0,8	320/500 meters	900 meters

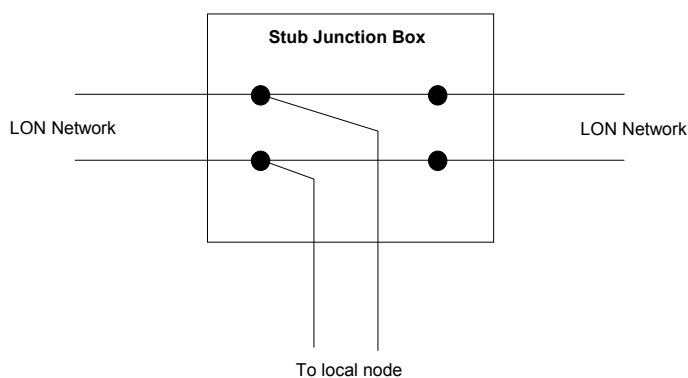
Junction Boxes

When splicing/terminating cables in the LON® Network installation, the following methods are normally used:

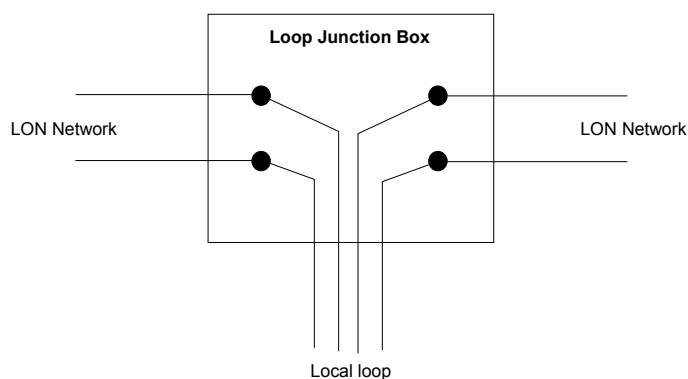
A **Pass-Thru Junction Box** is used to splice two cables. No SYSTEM X nodes or connectors are provided at a pass-thru junction box.



A **Stub Junction Box** is used to splice two cables and provide a stub for servicing a local SYSTEM X node.



A local **Loop Junction Box** is used to terminate two cables, and provide a wiring loop for servicing one, or more, local SYSTEM X nodes.



Pan & tilt head connection

Connections are shown on the fold-out drawing.

Do not use other heads than specified in the **Compatibility** section. The actual pan & tilt head type is set using the *S111SX Node Manager*.

Cables should be kept as short as possible and should not exceed 5 meters. When installed in areas where interference may be present, such as close to high-voltage cables, transformers, heavy duty motors, electrical trains, radar or radio transmitters, including GSM, GPRS, cell phone, DECT or similar digital mobile phone base antennas, shielded cable should be used. Cable shield should be connected to the X5-5 terminal.

In general it is recommended to run the feed-back potentiometer wires, i.e. the wires connected to X5 in a separate shielded cable, for optimum preset performance.

Motorised lens connection

Connections are shown on the fold-out drawing.

Any motorised lens with two individual wires per function driven by 6 to 12 VDC can be used, however, to ease installation and for optimum Privacy Zone performance the use of the Ernitec motorised zoom lenses **Series Q** is highly recommended. Lens drive voltage is set using the *S111SX Node Manager*.

Cables should be kept as short as possible and should not exceed 5 meters.

When installed in areas where interference may be present, such as close to high-voltage cables, transformers, heavy duty motors, electrical trains, radar or radio transmitters, including GSM, GPRS, cell phone, DECT or similar digital mobile phone base antennas, shielded cable should be used. Cable shield should be connected to the X3-5 terminal.

AUX-connection

Six auxiliary functions can be operated via the AUX1 to AUX6 relays located on relay board. The relay contacts are potential free and may be loaded with maximum 230 V, 5 A.

Note, that the relay contacts are un-fused. High voltage wires must be secured with cable ties to the *Cable Anchoring Fingers* located on the edge of the board. Cable ties are not included.

Camera power supply

A fully regulated 12 VDC output with a maximum load of 800 mA for driving e.g. a camera is available. Connections are shown on the fold-out drawing. The output is over-load protected.

Other connections

An optional video transmission module for twisted pair or fiber optical cable may be fitted in the R131VX. Refer to the manual supplied with the module for installation instructions.

Connections X6-1 & 2 and connector J2 are reserved for internal use within Ernitec only.

All jumpers/pin-headers are factory set and should not be altered.

Warning: Do not make any connections to X6-1 or X6-2 and J2. All jumpers/pin-headers are factory set and must not be altered.

Mains switch activation

Once all cable connections have been done installation is completed by activating the mains switch. This will identify the unit on the network. Prior to activating the mains switch make sure the *S111SX Node Manager* is running and on-line to the network.

Warning: Make sure correct mains voltage 230/115 VAC is selected prior to activating the mains switch.

Note: If several R131VX units are present carefully note the exact time of activation of the mains switch - this information is crucial when identification and configuration of each unit later is carried out using the *S111SX Node manager*.

Push-buttons

Pressing **S1** *LONWORKS® Service Pin* will identify the unit on the network, just as when the mains switch is activated. Prior to pressing the Service Pin S1 make sure the *S111SX Node Manager* is running and on-line to the network.

The **S2** *Start/Stop* and **S3** *Choose* push-buttons are reserved for future applications and should not be activated.

Fault finding guide

If the guide below suggests new configuration use the S111SX Node Manager to configure the unit.

No operation possible

- If green "RUN CPU" LED H2 is off check mains fuse F1 located on the relay board. The unit is also equipped with resettable overload components - disconnect from mains supply and allow the unit to cool down for a few seconds.
- If yellow "LON" LED H1 is on or blinking the unit is unconfigured.
- Check the network cable connections and network termination.

No or intermediate Pan- and/or Tilt operation

- Check that the unit is configured for the actual pan & tilt head.
- Check the wiring for short-circuits or broken wires.
- If one function only is failing try to swap the pan and tilt wiring to determine the fault location. If e.g. the tilt initially was faulty connect the tilt wires to the pan output and try to operate the tilt by activating the pan function. If inoperative still the pan & tilt head is faulty - if operative now the output is overheated or defective.
- The outputs are overload protected - disconnect from the mains supply and allow the unit to cool down for a few seconds.

No or slow Zoom- and/or Focus operation

- Check the wiring for short-circuits or broken wires.
- If one function only is failing try to swap the zoom and focus wiring to determine the fault location. If e.g. the zoom initially was faulty connect the zoom wires to the focus output and try to operate the zoom by activating the focus function. If inoperative still the lens is faulty - if operative now the output is overheated or defective.
- If running too slow or fast reconfigure the lens setup.

Pre-positions cannot be found, are in-accurate or drifting

- Check the wiring for short-circuits or broken wires. Check feed-back potentiometers fitted in the pan & tilt head and lens electrically and mechanically. Note, that most potentiometers wear out in 4-18 months if used on a 24-hour tour basis.
- Cables are too long or exposed to excessive noise. Refer to the *Pan & Tilt head connection* section for possible solutions.

Technical specifications

Mains voltage, selectable	115/230 VAC, \pm 10%, 45-60 Hz
Current consumption	155 mA @ 230 VAC, 310 mA @ 115 VAC
Enclosure (protection / fire), glass-fiber reinforced polyester	IP65 / UL 94-5V
Temperature range	-15° to +55° Celcius
Pre-position accuracy with Ernitec MPT-5P pan & tilt head	<1°
AUX-relays, max. load (unfused)	230 V, 5 A
Power supply output (fully regulated)	12 VDC, 800 mA
CE-approvals (EMC / LVD)	EN 50081-1 , EN 50130-4 / EN 60950
Dimensions (X x Y*x Z) / Weight (*excl. glands)	278 x 318* x 267 mm / 5,2 kg
LONWORKS® Communication interface	TP/FT Free- or Bus-topology

ernitec

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