



## Pace1KRT

### Long Range Single Pair (UTP) Ethernet Adapter Kit

Kit includes Pace1KR Receiver and Pace1KT Transceiver

## Installation Guide



### Overview:

Altronix Pace1KRT is a long-range Ethernet adapter kit solution that transmits data and power via twisted pair (2-wire, UTP or shielded) in a PoE(+) compliant format. In addition to new SPE (UTP) Ethernet network installations for Surveillance-cameras/Security/Industrial/BMS/HVAC & Elevator Controllers, applications include upgrading of legacy networks, i.e. LONworks, RS485, 4-20ma Control Loops, etc. by using the existing two wire cabling, thus saving rip-out & reinstallation costs.

Operationally, the Pace1KR is connected to a POE midspan/endspan switch at the headend and passes network data and power to the Pace1KT from the switch via UTP up to 1km (1,000m, 3,280 ft.) to a remote 10 PoE device, such as a camera. For non-PoE remote devices, data only is transmitted.

### Features:

#### Agency Listings:

- UL/cUL Listed for Audio/Video, Information and Communication Technology Equipment (UL 62368-1).
- CE European Conformity.

#### Input (Pace1KR Receiver):

- Powered by midspan or endspan.  
PoE compliant to IEEE 802.3af (15W) and PoE+ compliant to IEEE 802.3at (30W).

#### UTP Connection:

- Wire type: Twisted pair (2-wire, UTP or shielded).
- Speed: 10Mbps
- Distance: 1km (1,000m, 3,280 ft.),  
16/2 AWG or higher @ 10Mbps  
(see *Maximum Length of Cable Type vs. Total Power Consumption*, pg. 3)

#### Ethernet Connection:

- Connectivity: RJ45, auto-crossover.
- Wire type: 4-pair CAT5e or higher.
- Distance: up to 100m from midspan to Pace1KR receiver (headend),  
100m from Pace1KT transceiver to device
- Speed: 10BaseT, half/full duplex, auto negotiation.  
PoE compliant to IEEE 802.3af (15W) and PoE+ compliant to IEEE 802.3at (25W) delivered to device by Pace1KR.  
Power provided by Pace1KR to Pace1KT by PoE protocol (See note on Page 3).

#### LED Indicators:

- **Pace1KR and Pace1KT:**  
Link LED: Green, PoE Active (left of UTP link)  
Link LED: Green, Active Indicate  
Data transmission (Next to Ethernet link)
- **Pace1KR and Pace1KT: (RJ45 jack):**  
Yellow and Green LED IP Link status,  
10Base-T/active.

#### Environmental:

- **Operating Temperature:**  
– 40°C to 75°C (– 40°F to 167°F).
- **Storage Temperature:**  
– 40°C to 75°C (– 40°F to 167°F).
- Relative humidity:  
20 to 85%, non-condensing.

#### Functions:

- Auto detection and protection of legacy non-PoE cameras/devices.

#### Applications:

- Upgrade LONworks, RS485, 4-20mA control loops to Ethernet over existing wire pair.
- Building Automation, Elevator Systems, HVAC, Lighting, Surveillance & Security.
- Utilize twisted pair for new installations or retrofit of IP devices over existing twisted pair cabling
- Extend Network link distance in an industrial environment over 1km (1,000m, 3,280 ft.).
- Works with Megapixel, HD720, HD1080 and VGA (SD) cameras with proper headend equipment.

#### Mechanical:

- Dimensions (W x L x H approx.):  
**Pace1KR:**  
3.8" x 2.5" x 1" (96.52mm x 63.5mm x 25.4mm).  
**Pace1KT:**  
2.27" x 2.65" x 1.12" (57.7mm x 67.2mm x 28.4mm)

*For dual port connectivity please refer to kit model:  
Pace2KRT*

## Installation Instructions:

Wiring methods shall be in accordance with the National Electrical Code/NFPA 70/ANSI, and with all local codes and authorities having jurisdiction. Wiring should be UL Listed and/or Recognized wire suitable for the application. Pace1KR and Pace1KT are not intended to be connected to outside plant leads and should be installed indoors within the protected premises. Pace1KR and Pace1KT are intended for indoor use only. Units should not be mounted above 2 meters if attached by themselves on an open wall.

### 1. Pace1KR installation:

- Secure unit to the desired mounting surface with a proper fastening device utilizing the unit's mounting hole (Fig. 2a, pg. 3). Unit should be mounted in proximity to ethernet switch/network, NVR or video server.
- Connect structured cable from ethernet midspan or endspan device to RJ45 jack marked [PoE Input] (Fig. 2, pg. 3).
- UTP / 2-wire:** Connect UTP to connector marked [+ , -] (Fig. 2, pg. 3).

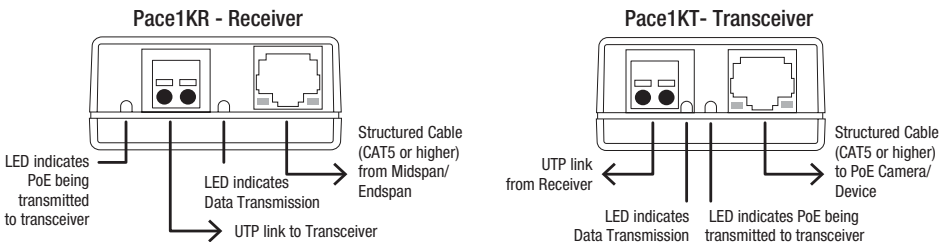
### 2. Pace1KT installation:

- Secure unit to the desired mounting surface with a proper fastening device utilizing the case's mounting hole (Fig. 2a, pg. 3). Unit should be mounted in the proximity of camera/device.
- Connect structured cable from IP camera/device to RJ45 jack marked [PoE Out] (Fig. 2, pg. 3).
- Connect UTP to the connector marked [+ , -] from receiver (Pace1KR) (Fig. 2, pg. 3).

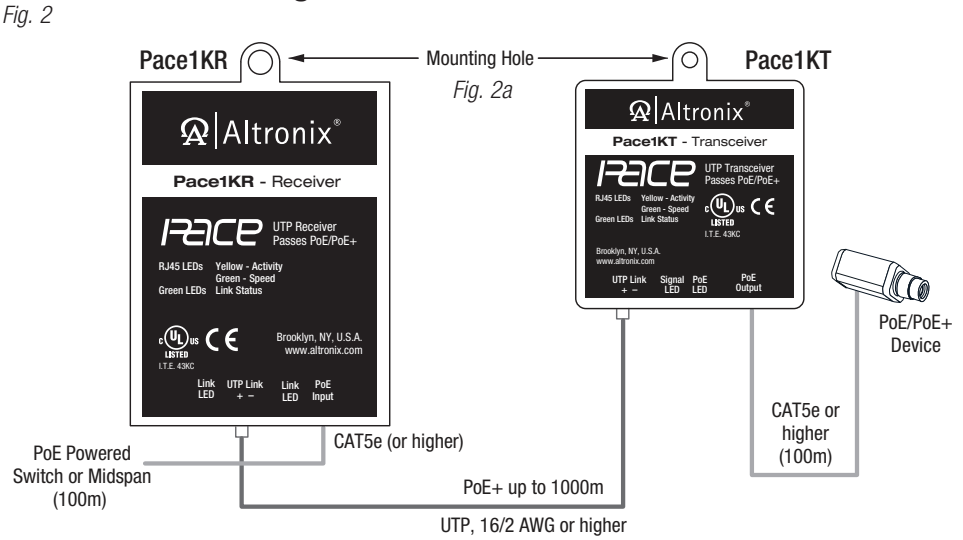
## Technical Specifications:

| Parameter                       | Description                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Connections</b>              | RJ45 for CAT5/6 or higher ethernet link.<br>UTP (2-wire) screw terminals to interconnect receiver/transceiver                                                                                                                                                                                                                                                                               |
| <b>Input power requirements</b> | Midspan or endspan port connected.<br>PoE compliant to IEEE 802.3af (15W) and PoE+ compliant to IEEE 802.3at (25W)                                                                                                                                                                                                                                                                          |
| <b>Indicators</b>               | <b>Yellow (RJ45 connector):</b> On - Link, Off - No Link, Blinking - Activity.<br><b>Green (RJ45 connector):</b> On - 10Base-TX, Off - 10Base-T.<br><b>Green Link LEDs:</b> Link active                                                                                                                                                                                                     |
| <b>Environmental Conditions</b> | <b>Operating Ambient Temperature: UL60950-1</b><br><b>Pace1KR:</b> - 20°C to 49°C (- 4°F to 120.2°F).<br><b>Pace1KT:</b> For 15W: - 40°C to 75°C (- 40°F to 167°F).<br>For 30W: - 40°C to 49°C (- 40°F to 120°F).<br><b>Storage Temperature:</b> - 40°C to 75°C (- 40°F to 167°F).<br><b>Relative Humidity:</b> 20 to 85%, non-condensing.<br><b>Operating Altitude:</b> - 304.8 to 2,000m. |
| <b>Regulatory Compliance</b>    | UL/cUL Listed for Audio/Video, Information and Communication Technology Equipment (UL 62368-1).<br>CE European Conformity.                                                                                                                                                                                                                                                                  |
| <b>Weights (approx.)</b>        | Product: 0.4 lb. (0.18 kg)   Shipping: 1 lb. (0.45 kg).                                                                                                                                                                                                                                                                                                                                     |

Fig. 1



# Single PoE Camera Connection:



## Maximum Length of Cable Type vs. Total Power Consumption:

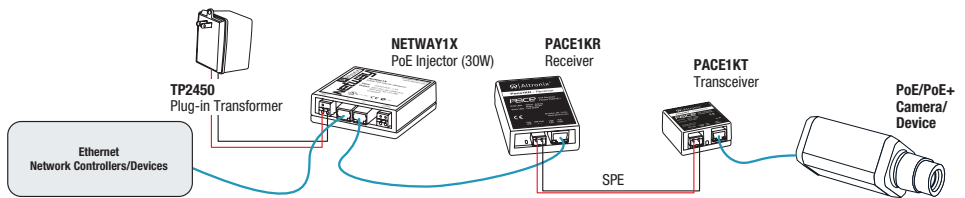
| Wire type            | Total Power Consumption | Max. Data Distance | Max. Power Distance |
|----------------------|-------------------------|--------------------|---------------------|
| 18 AWG (2-wire, UTP) | 7.5W                    | 1,000m (3,280 ft)  | 1,996m (6,548 ft.)  |
|                      | 15W                     | 1,000m (3,280 ft)  | 998m (3,274 ft.)    |
|                      | 30W                     | 1,000m (3,280 ft)  | 269m (882 ft)       |
| 16 AWG (2-wire, UTP) | 7.5W                    | 1,000m (3,280 ft)  | 3,169m (10,396 ft.) |
|                      | 15W                     | 1,000m (3,280 ft)  | 1,584m (5,196 ft.)  |
|                      | 30W                     | 1,000m (3,280 ft)  | 427m (1,400 ft.)    |

**Note:** Calculations based on 56VDC starting voltage from power source and accounts for a 10VDC voltage drop. IEEE standards voltage range requirement for powered devices are: PoE (15W) - 37VDC to 57VDC, PoE+ (30W) - 44VDC to 57VDC)

# Typical Application Utilizing Altronix PoE Injector and Pace1KRT:

Fig. 3

## Multi-point SPE Application utilizing Altronix PoE Injector and PoE Splitter(s)



Altronix is not responsible for any typographical errors.

140 58th Street, Brooklyn, New York 11220 USA | phone: 718-567-8181 | fax: 718-567-9056  
website: [www.altronix.com](http://www.altronix.com) | e-mail: [info@altronix.com](mailto:info@altronix.com) | Lifetime Warranty  
II Pace1KRT Rev. 012121 E21Z

