Altronix® Pace

Pace1KRT
Long Range Single Pair (UTP) Ethernet Adapter Kit
Kit includes Pace1KR Receiver and Pace1KT Transceiver

CE

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 10/100 PoE device, such as a camera. For non-PoE remote devices, data only is transmitted.

Features:

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 PaceKT transceiver to device
- Speed: 10/100BaseT, 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.*

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,
  10/100Base-T/active.

Environmental:
- **Operating Temperature:**
  – 40ºC to 75ºC (– 40ºF to 167ºF).
- **Storage Temperature:**
  – 40ºC to 75ºC (– 40ºF to 167ºF).
- 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

*See note on Page 3.

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.

1. **Pace1KR installation:**
   a. 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.
   b. Connect structured cable from ethernet midspan or endspan device to RJ45 jack marked [PoE Input] *(Fig. 2, pg. 3)*.
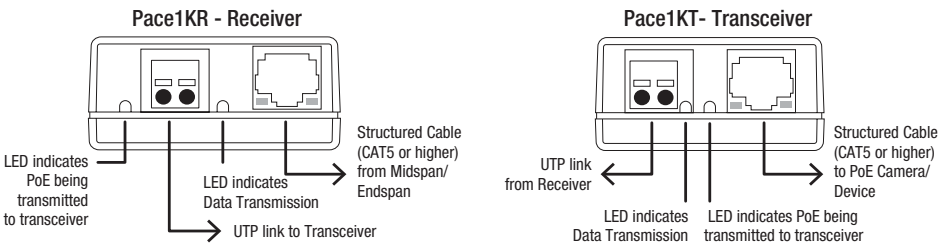   c. **UTP / 2-wire:** Connect UTP to connector marked [+, −] *(Fig. 2, pg. 3)*.
2. **Pace1KT installation:**
   a. Secure unit to the desired mounting surface with a proper fastening device utilizing the case's mounting hole *(Fig. 2a, pg. 3)*. Unit should be mounted in the proximity of camera/device.
   b. Connect structured cable from IP camera/device to RJ45 jack marked [PoE Out] *(Fig. 2, pg. 3)*.
   c. Connect UTP to the connector marked [+, −] from receiver (Pace1KR) *(Fig. 2, pg. 3)*.
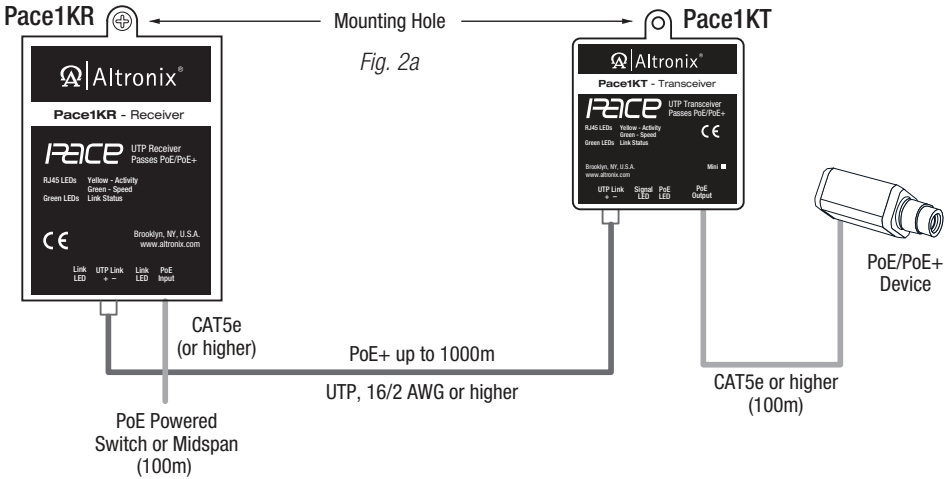
Technical Specifications:

Parameter	Description
Connections	RJ45 for CAT5/6 or higher ethernet link. UTP (2-wire) screw terminals to interconnect receiver/transceiver
Input power requirements	Midspan or endspan port connected. PoE compliant to IEEE 802.3af (15W) and PoE+ compliant to IEEE 802.3at (25W)
Indicators	**Yellow (RJ45 connector):** On - Link, Off - No Link, Blinking - Activity. **Green (RJ45 connector):** On - 100Base-TX, Off - 10Base-T. **Green Link LEDs:** Link active

Environmental Conditions	**Operating Ambient Temperature: UL60950-1**
	  Pace1KR: − 20ºC to 49ºC (− 4ºF to 120.2ºF).
	  Pace1KT: For 15W: − 40ºC to 75ºC (− 40ºF to 167ºF).
	    For 30W: − 40ºC to 49ºC (− 40ºF to 120ºF).
	Storage Temperature: − 40ºC to 75ºC (− 40ºF to 167ºF).
	Relative Humidity: 20 to 85%, non-condensing.
	Operating Altitude: − 304.8 to 2,000m.

Regulatory Compliance	CE European Conformity.
Weights (approx.)	Product: 0.4 lb. (0.18 kg) ǀ Shipping: 1 lb. (0.45 kg).

Fig. 1

Pace1KR - Receiver

LED indicates PoE being transmitted to transceiver

LED indicates Data Transmission

UTP link to Transceiver

Structured Cable (CAT5 or higher) from Midspan/ Endspan

Pace1KT- Transceiver

UTP link from Receiver

LED indicates Data Transmission

LED indicates PoE being transmitted to transceiver

Structured Cable (CAT5 or higher) to PoE Camera/ Device

Single PoE Camera Connection:

Fig. 2

Fig. 2a

CAT5e
(or higher)

PoE+ up to 1000m

UTP, 16/2 AWG or higher

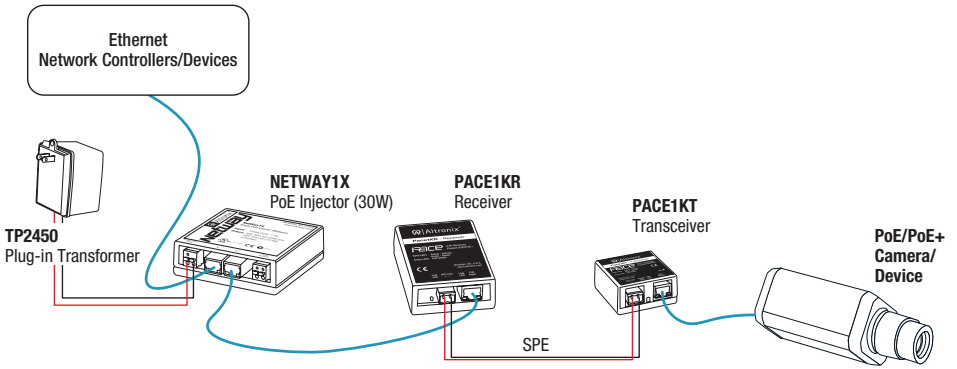CAT5e or higher
(100m)

PoE Powered
Switch or Midspan
(100m)

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

MEMBER