

Installation Guide for TDRM Sensor Box

Radiation sensor, computer and interface circuitry of a TDRM Sensor Station are mounted on the backside of the cover of a 10x15x20 cm plastic box. The box should be installed at an outdoor location, distant from electrical appliances, and protected against driving rain as well as direct solar radiation. Ideally it would be mounted, at 1 m above ground, to a wall under a balcony or porch.

The box needs

- (1) a 5V DC power supply (like a phone charger to be plugged in a 230V AC mains outlet) connected via USB cable, and
- (2) internet access via a LAN cable (ethernet data cable with RJ45 clip connectors) to your domestic DSL router to deliver its measurement data to the remote server.

Cabling

The installation is straight forward if a mains outlet (230V AC) is available close to the intended outdoors location of the sensor box, and if a LAN cable to your router can be laid. Follow the guide lines at the bottom. If you want to (or must) avoid additional cables you would have two options:

- (A) Instal without LAN cable: Given a mains outlet close to the location of the sensor box, then the mains cable can be used also for the data transmission. This will be accomplished by applying a pair of *powerline adapters*, one to be plugged in a mains outlet close to the router, the counterpart plugged in the outdoor mains outlet. Then the data ports of either unit have to be connected, with short LAN cables, to the router and the sensor box resp, see fig.1.
- (B) Instal without mains supply: If an outdoor mains outlet is not available, the LAN cable can be used to supply also the power to the box. This will be accomplished by applying a pair of *PoE adapters* (power-over-ethernet). The pair consists of the 'Injector' at the location of the router to feed the power at 48V DC into the LAN cable, and the 'Splitter' at the location of the sensor box. It separates data vs power and transforms the delivered 48V DC to the required 5V DC, see fig. 2. (Some routers already deliver PoE. So an Injector is no more necessary.)

Putting the sensor box into operation

We recommend to make the first test indoors at a convenient location close to your router:

- (1) Remove the cover of the box with the computer board. Connect a LAN cable to the LAN socket of the computer board (fig. 3, left top), and the other end to a free port of your router.
- (2) Connect a microUSB cable to the microUSB socket of the computer board (fig3, left bottom), and the other end into the power supply. Insert the power supply in the mains outlet. Done!
- (3) Surf to tdrm.fiff.de/data/diagram, and insert the station ID (number of your TDRMxx box). After 2...3 minutes the server should have captured the messages sent by your box once per minute, and the current values (counts/min) should appear in the diagram. It may take some 15 minutes after the 15-min average values will be registered on the [TDRM.eu website](http://TDRM.eu).

If you still find your box "offline", you should try a restart of your box by disconnecting the power supply for a few seconds. If your attempts fail, give us a call (see below), please.

- (4) If you are successful you may relocate the box to its final outdoors location after having installed the appropriate cables and/or adapters.

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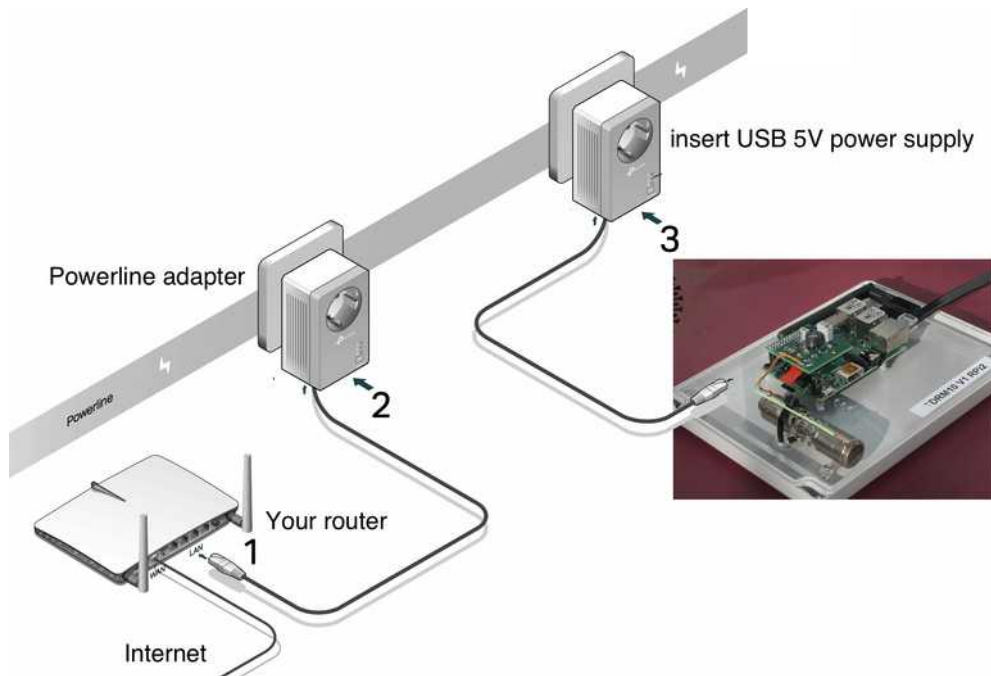


Fig. 1: Type A installation, data transmitted over the mains cable by means of powerline adapters

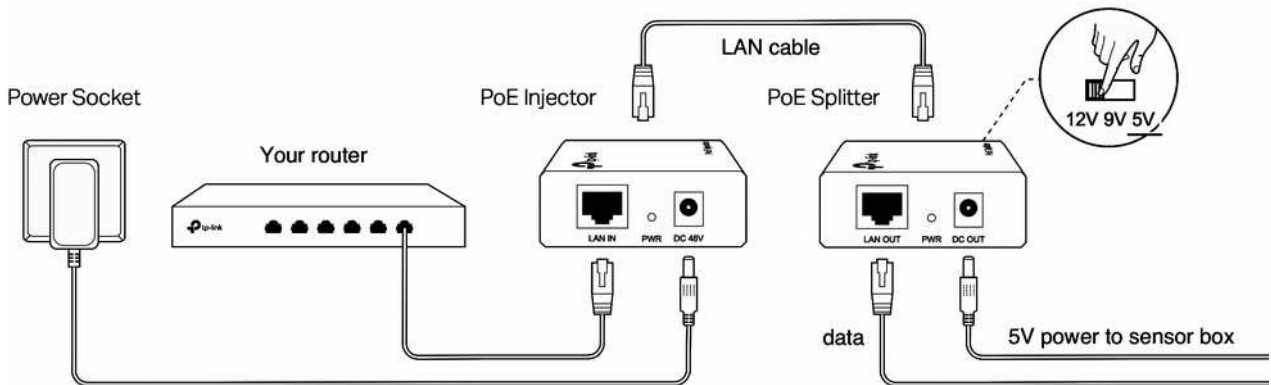


Fig. 2: Type B installation, power supplied to the sensor box over the LAN cable by PoE devices

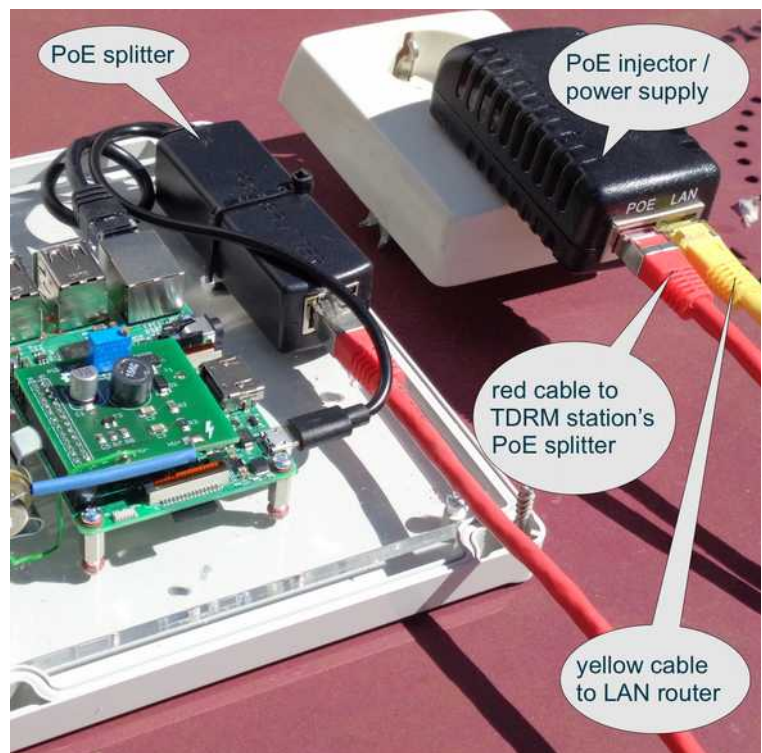
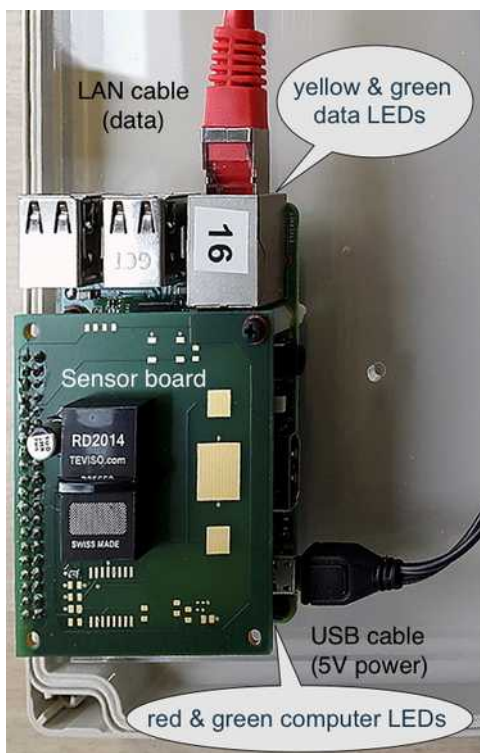


Fig. 3: Computer board, on top PIN diode sensor (left), PoE splitter and PoE injector (right)