

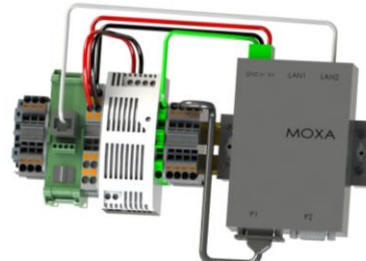
**Polycarbonate  
IP67 field housing**



**Stainless steel  
IP67 field housing**



**DIN-rail mount fieldbus  
converter PR-10941**



## FIELDBUS AND INDUSTRIAL ETHERNET CONNECTIVITY THROUGH FIELDBUS JUNCTION BOX FJB

### INTRODUCTION

Fieldbus Junction Box FJB is specially designed to make easier connections of Vaisala K-PATENTS instrumentation to Fieldbus and Industrial Ethernet through a Fieldbus converter. The Fieldbus Junction Box allows easy and safe device connections to the Modbus/TCP, Modbus RTU, Ethernet/IP, Profibus and Profinet networks.

The following Fieldbus Junction Box versions are available:

- FJB-UN-PCE-U/M-AC in Polycarbonate IP67 field housing and with M20x1.5 cable glands or 1/2 inch NPT type conduit hubs
- FJB-UN-SS-U/M-AC in Stainless steel IP67 field housing and with M20x1.5 cable glands or 1/2 inch NPT type conduit hubs
- PR-10941 without field housing for DIN-rail mounting into the user's own control cabinet.

The IP67 protective housings of the fieldbus junction boxes are designed for wall mounting. They also withstand harsh industrial environments and prevent dust, water and moisture reaching the electrical connections. For mechanical housing dimensions, please see dimensional drawing DIM-5467 for stainless steel housing and DIM-5468 for polycarbonate housing. Fieldbus junction boxes can be used for installations in safe areas (unclassified, ordinary locations) at a maximum ambient temperature of 45 °C (113 °F). Power supply is 100 - 240 VAC 50/60 Hz.

### CONNECTIONS

The converter software runs on an industrial computer. The computer has two Ethernet connectors. The one marked as "LAN1" is connected to a Modbus/TCP, Ethernet/IP or Profinet capable device (if used in one of these modes), the other one ("LAN2") to a K-Patents refractometer (or, in case of PR-23, the DTR transmitter). If used in Modbus RTU or Profibus mode, serial port P1 is connected to a Modbus RTU or Profibus network (see next page for system drawing).

The converter gets the data from the refractometer via UDP/IP communication and stores them in its Modbus registers, Ethernet/IP, Profinet or Profibus objects. On the "LAN1" port the converter acts as a Modbus/TCP or Profinet server or Ethernet/IP adapter. On serial port P1 the converter acts as Modbus RTU or Profibus slave.

If used in Modbus mode, clients can connect and read the registers containing various measurement and diagnostics data.

## Examples of data received via Modbus:

|           |       |
|-----------|-------|
| LED       | FLOAT |
| CCD       | FLOAT |
| nD        | FLOAT |
| T         | FLOAT |
| Tsens     | FLOAT |
| Traw      | FLOAT |
| RHsens    | FLOAT |
| CALC      | FLOAT |
| CONC      | FLOAT |
| PTraw     | INT   |
| QF        | FLOAT |
| mA        | FLOAT |
| BGLight   | INT   |
| Seq       | INT   |
| Timestamp | INT   |
| Status    | INT   |

When used in Ethernet/IP mode, the converter acts as an adapter, and waits for Ethernet/IP scanners to connect. Then the connection can be set up easily using provided Electronic Data Sheets (EDS) file, or manually with a set of parameters. For Profibus and

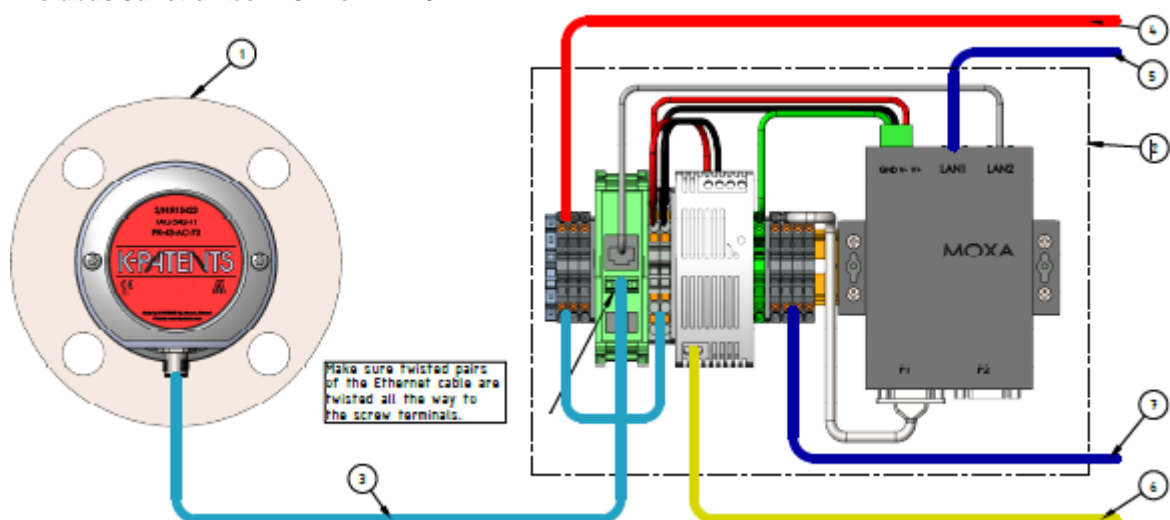
Profinet GSDML file is provided at [www.kpatents.com](http://www.kpatents.com).

## CONVERTER CONFIGURATION

Configuration of the fieldbus converter is easy using Vaisala K-PATENTS® Refractometer Converter Assistant (software tool) via a Windows Computer and Ethernet connection.

The embedded industrial computer connects to a refractometer or to a DTR transmitter with a direct cable connection or via a larger network. If connection to the DTR is via a hub or switch or WLAN access point, please consult user's guide of your hub/switch/access point for the correct cable type. If longer cable is needed or the environment is electrically noisy, fiber optics Ethernet with media converters can be used.

## Fieldbus Junction box FJB for PR-43



| ITEM NO. | Drawing NO. | DESCRIPTION              | QTY. | SUPPLIED BY |
|----------|-------------|--------------------------|------|-------------|
| 1        | 4003        | PR-43-GP refractometer   | 1    | K-PATENTS   |
| 2        | 5462        | Fieldbus Junction Box    | 1    | KPATENTS    |
| 3        |             | PR-8437-XXX cable        | 1    | K-PATENTS   |
| 4        |             | mA cable                 | 1    | CUSTOMER    |
| 5        |             | RJ45 Ethernet cable      | 1    | CUSTOMER    |
| 6        |             | Mains power supply cable | 1    | CUSTOMER    |
| 7        |             | RS-422/485 signal cable  | 1    | CUSTOMER    |

One of these protocol can be used at a time:  
-Ethernet IP (5)  
-Modbus TCP (5)  
-Modbus RTU (7)

Make sure twisted pairs of the Ethernet cable are twisted all the way to the screw terminals.

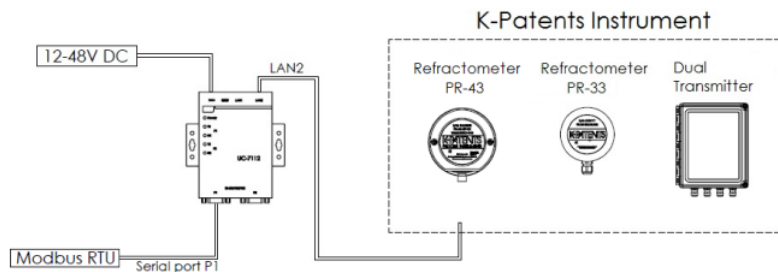


Figure 1.1 Connecting Modbus RTU

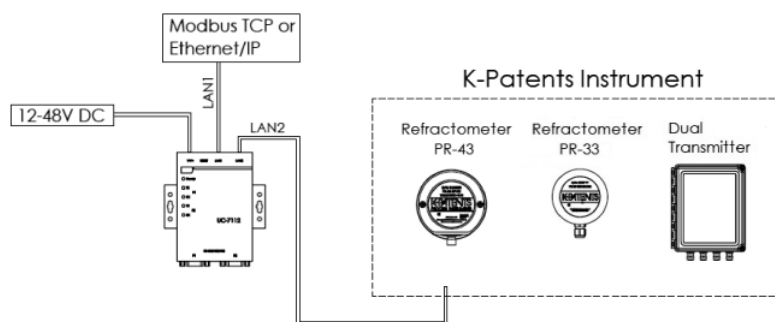


Figure 1.2 Connecting Modbus TCP or Ethernet/IP

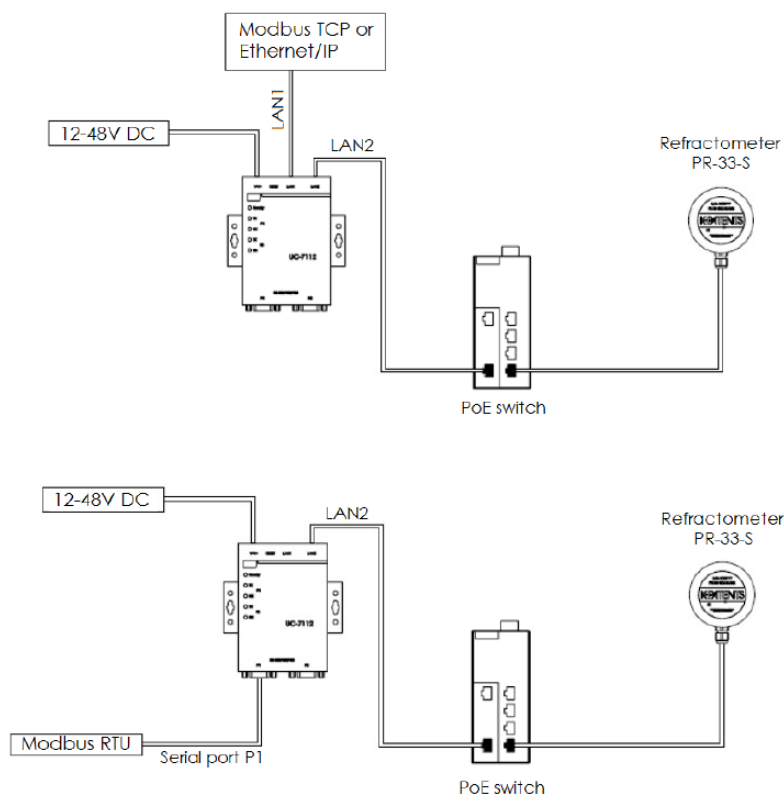


Figure 1.3 Connecting the refractometer PR-33-S via a PoE switch