PR electronics

4801

**Modbus gateway
Installation and
connection guide**

No. 4801V100 - UK

DK ▶ PR electronics A/S tilbyder et bredt program af analoge og digitale signalbehandlingsmoduler til industriel automation. Programmet består af Isolatorer, Displays, Ex-barrierer, Temperaturtransmittere, Universaltransmittere mfl. Vi har modulerne, du kan stole på i selv barske miljøer med elektrisk støj, vibrationer og temperaturudsving, og alle produkter opfylder de strengeste internationale standarder. Vores motto »Signals the Best« er indbegrebet af denne filosofi – og din garanti for kvalitet.

UK ▶ PR electronics A/S offers a wide range of analogue and digital signal conditioning devices for industrial automation. The product range includes Isolators, Displays, I.S. Interfaces, Temperature Transmitters, and Universal Devices. You can trust our products in the most extreme environments with electrical noise, vibrations and temperature fluctuations, and all products comply with the most exacting international standards. »Signals the Best« is the epitome of our philosophy - and your guarantee for quality.

FR ▶ PR electronics A/S offre une large gamme de produits pour le traitement des signaux analogiques et numériques dans tous les domaines industriels. La gamme de produits s'étend des transmetteurs de température aux afficheurs, des isolateurs aux interfaces SI, jusqu'aux modules universels. Vous pouvez compter sur nos produits même dans les conditions d'utilisation sévères, p.ex. bruit électrique, vibrations et fluctuations de température. Tous nos produits sont conformes aux normes internationales les plus strictes. Notre devise »SIGNALS the BEST« c'est notre ligne de conduite - et pour vous l'assurance de la meilleure qualité.

DE ▶ PR electronics A/S verfügt über ein breites Produktprogramm an analogen und digitalen Signalverarbeitungsmodule für die industrielle Automatisierung. Dieses Programm umfasst Displays, Temperaturtransmitter, Ex- und galvanische Signaltrenner, und Universalgeräte. Sie können unsere Geräte auch unter extremen Einsatzbedingungen wie elektrisches Rauschen, Erschütterungen und Temperaturschwingungen vertrauen, und alle Produkte von PR electronics werden in Übereinstimmung mit den strengsten internationalen Normen produziert. »Signals the Best« ist Ihre Garantie für Qualität!

(1349)

4801 MODBUS GATEWAY INSTALLATION AND CONNECTION GUIDE

CONTENTS

Setting up the 4801 gateway

Setting up the 4801 gateway

A PC or MAC Computer must be used to setup the 4801 gateway.

If you are not able to maintain an internet connection -
while connected to the 4801 gateway - then you have to download a
certificate for your user ID.
A user ID can easily be created by entering www.pps.prelectronics.com
- the only requirement for doing this is to be on the internet.

> **Web browser requirements for your PC or MAC:**
> Internet Explore 9 or newer version
> Firefox 22 or newer version.
>
> **Please note**: Firefox must be used as web brow-
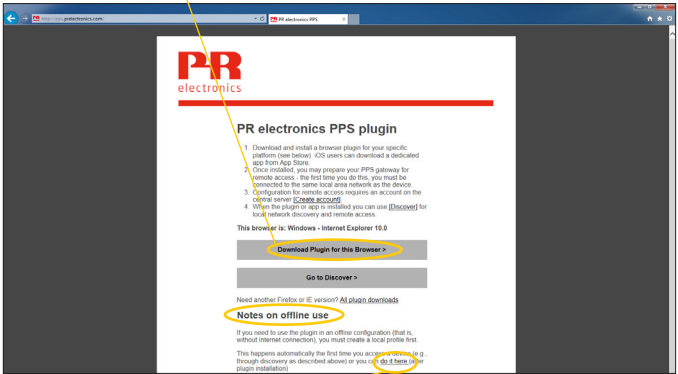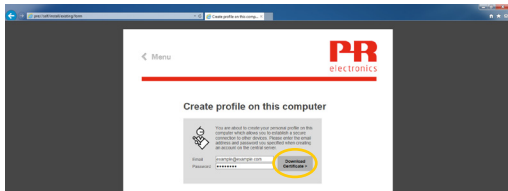> ser if you are using a PC running Windows XP.

Typical PPS setup:

Setting up the 4801 gateway

Enter - www.pps.prelectronics.com

Download and install the plugin -
this by selecting: **"Download Plugin for this Browser"**

Press this link - to download a plugin certificate for
off-line use, which means setting up the 4801 gateway
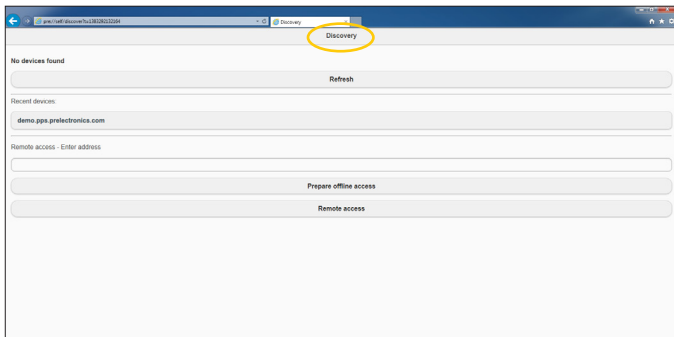without any internet connection.

When you have - downloaded the certificate to your Com-
puter, you will be directed to the "Discovery" view page.

Setting up the 4801 gateway

Save pre://self/discover - on your favorite list for easy future access.

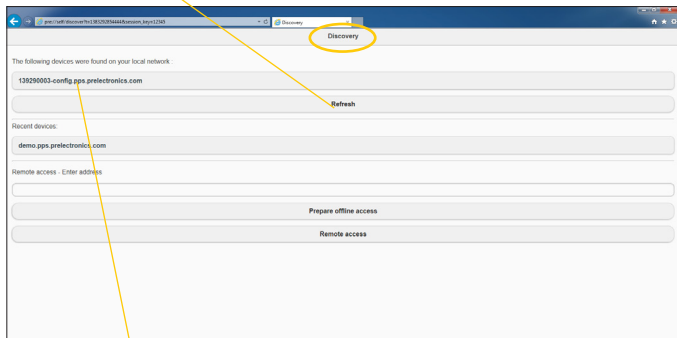**Please make sure** - that your Computer IP settings are set to dynamic.

Connect the 4801 gateway LAN2 (general configuration port)
- directly to your Computer by using a standard Ethernet cable.
**It may take some minutes** - before the connection is established.

Setting up the 4801 gateway

**Press "Refresh" -** to update the list with local found devices.

Select the 4801 gateway - from the local device list.
The 4801 gateway seriel number is a part of the device name.

Log in with your user ID - if you do not yet have a user ID, you have to create one by going to **www.pps.prelectronics.com.**
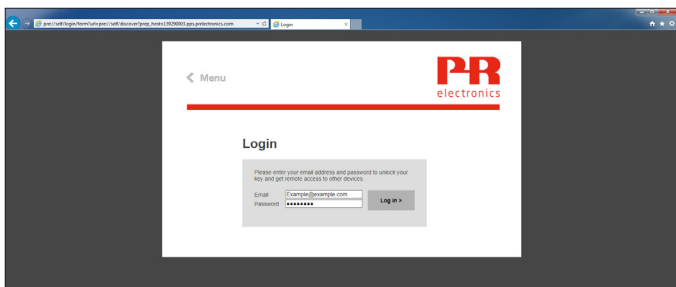
Setting up the 4801 gateway

It is now possible - to configure the LAN1 and LAN2 ports of the 4801 gateway, and also possible to change the settings on the Modbus RTU serial ports (P1 and P2).
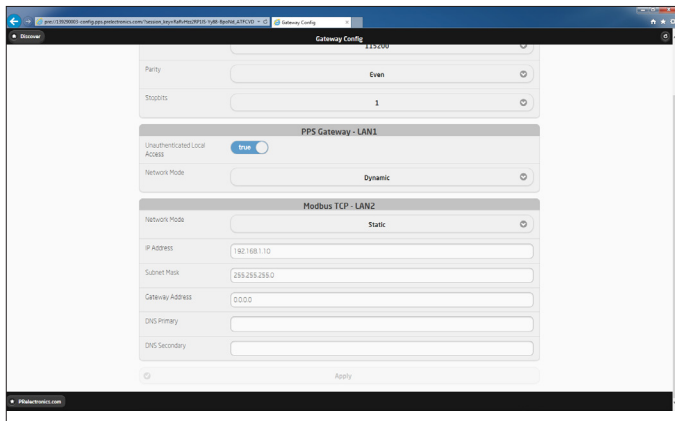
Port 1 & 2 - Modbus RTU communications
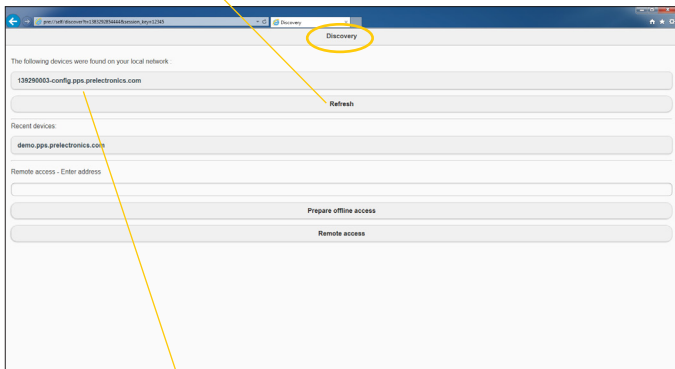
LAN1 - Ethernet for PPS application

LAN2 - TCP/IP Ethernet

Change from point to point communication to LAN communication

Change from point to point communication to LAN communication

Enter the "Discovery" view page - to get here please refer to the "**Setting up the 4801 gateway**" guide found at page 2.
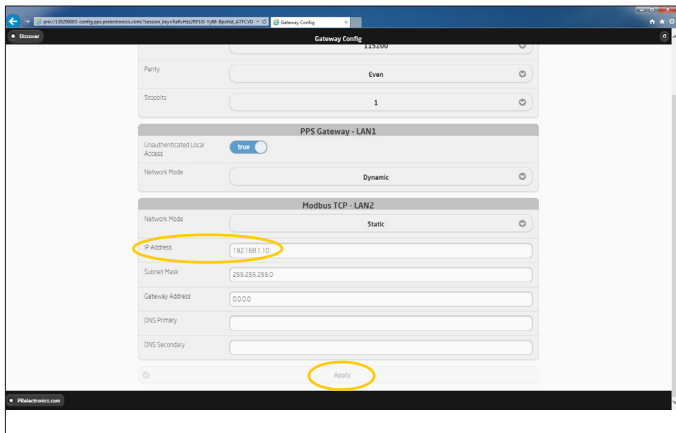
Press "Refresh" - to update the list with available local devices.

Select the 4801 gateway, "device s/n"-config.pps.prelectronics.com, from the devices list.

Change from point to point communication to LAN communication

Give the 4801 gateway - an available IP address on your local network. Press "Apply" to acknowledge.
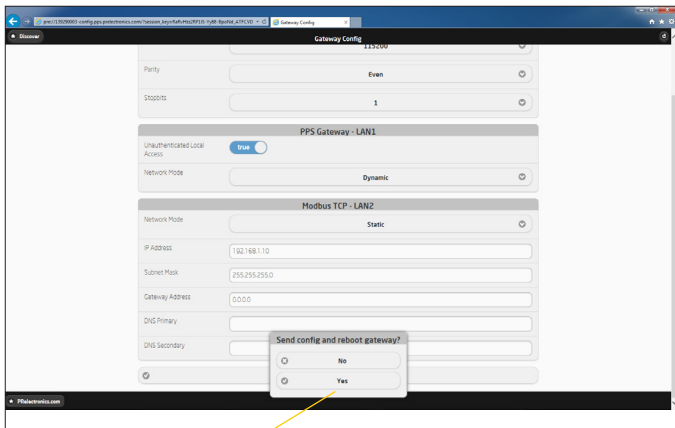

An example:

A Computer on the local network has the following setup:
IP: 192.168.1.126 and Subnet Mask: 255.255.255.0.

Configure the 4801 gateway as the following:
IP: 192.168.1.X - where X is a number between 1 and 255.
(Make sure the number isn't used by another device).

Subnet Mask: 255.255.255.0

Change from point to point communication to LAN communication

Press "Yes" - to confirm and use the new settings. The 4801 gateway will now reboot.

Connect the LAN2 port - on the 4801 gateway - to the local network, by using a standard Ethernet cable.

You can now - use TCP/IP communication from any device, connected to the local network.

Please note - it is now **only** possible to access the configuration via your local network.

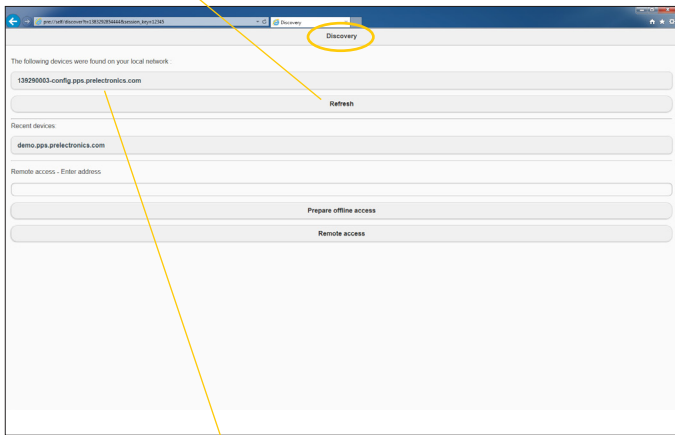# Change LAN communication setup back to point to point communication

Change LAN communication setup
back to point to point communication

There are two ways to do this...

<u>Method 1 (recommended):</u>

Connect to "pre://self/discover" - in your browser, by using a Computer connected to the local network.

Press "Refresh" - to update the list with local devices.

Select the 4801 gateway - from the available local devices list.

Please note:
If no devices appears in the local network list,
please check the Firewall settings for your network.

Change LAN communication setup
back to point to point communication

Change the IP settings - of the 4801 gateway -
back to default settings, which are:
IP: 169.254.0.10 and Subnet mask: 255.255.0.0

Press "apply" - to accept the changes.

Change LAN communication setup
back to point to point communication

Press "Yes" - to confirm and use the settings.
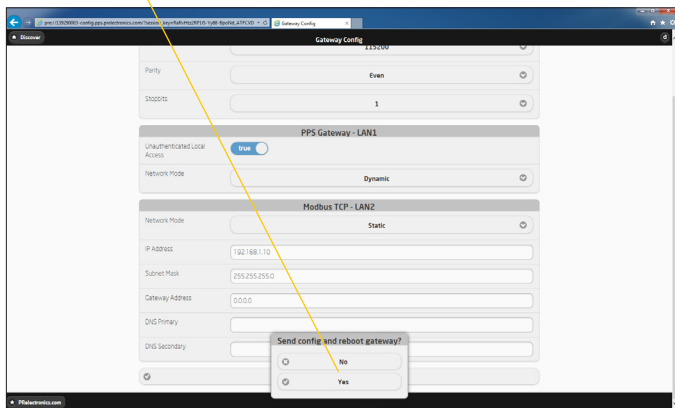
The 4801 gateway - will now reboot.

Connect the LAN2 port - on the 4801 gateway - to the Computer using an Ethernet cable. You can now use TCP/IP communication from Computer directly through LAN2.

Please note - It is now **only** possible to communicate with the 4801 gateway via TCP/IP by using a direct wired connection to the LAN2 port.

Change LAN communication setup
back to point to point communication

Method 2:

(Only use this method if you can't find the IP address of the gateway)

Press and activate - the reset button for 10 seconds; this will restore the settings to default, and clear the created user list.

After the reset - the 4801 gateway will have the following (default) settings:
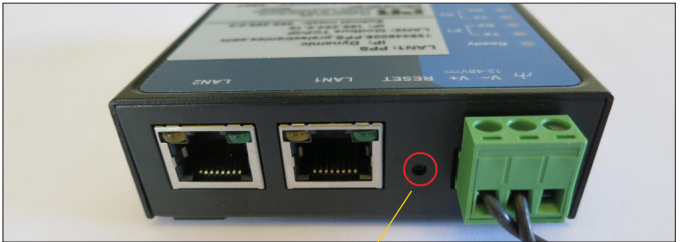**IP:** 169.254.0.10 and **Subnet Mask:** 255.255.0.0.

Connect the LAN2 port - on the 4801 gateway - to the Computer using an Ethernet cable. You can now use TCP/IP communication from Computer directly through LAN2.

Please note - It is now **only** possible to communicate with the 4801 gateway via TCP/IP by using a direct wired connection to the LAN2 port.

4801 gateway specifications

4801 gateway specifications

TYPE 4801 .... Modbus Gateway

Applications .... PPS application communications gateway and Modbus RTU to Ethernet Modbus TCP/IP gateway.

Specifications:
Supply voltage .... 12...48 VDC - 4.5 W - max. 340 mA
Operating temperature .... -10...+60 °C
LAN1, RJ45 .... PPS communication port
"device s/n".pps.prelectronics.com
- IP: Dynamic
LAN2, RJ45 .... Modbus TCP/IP - IP: 169.254.0.10 -
Subnet mask: 255.255.0.0
Port 1 and 2, DB9 male .... Modbus RTU over RS - 485
(default baud rate: 57.6k bps)
Upto 32 PR 4511 devices can be
connected directly to each Port.

Accessories .... 2 pcs. of SUB-D9 to RJ45 cables are
included (200 mm) - for conneting
the 4511 devices to the Modbus
RTU P1 and P2 ports.

Modbus Basics

Modbus basics

Modbus is a "master-slave" system,
   where the "master" communicates with one or multiple "slaves".
   The master typically is a PLC (Programmable Logic Controller), DCS (Distributed Control System), HMI (Human Machine Interface), RTU (Remote Terminal Unit) or PC.
   The three most common Modbus versions used are: MODBUS ASCII, MODBUS RTU and MODBUS/TCP.
   In Modbus RTU, data is coded in binary, and requires only one communication byte per data byte. This is ideal for use over multi-drop RS485 networks, at speeds up to 115,200 bps. The most common speeds are 9,600 bps and 19,200 bps. Modbus RTU is the most widely used industrial protocol and is supported by the 4511.

Modbus RTU:
   To communicate with a slave device, the master sends a message containing:
   Device Address - Function Code - Data - Error Check

The Device Address is a number from 0 to 247.
   Messages sent to address 0 (broadcast messages) will be accepted by all slaves, but numbers 1-247 are addresses of specific devices. With the exception of broadcast messages, a slave device always responds to a Modbus message so the master knows the message was received.

4511 Supported Modbus Function Codes:

Command	Function code
Read Holding Registers	03
Read Input Registers	04
Write Single Register	06
Diagnostics	08
Write Multiple Registers	16

The Function Code defines the command that the slave device is to execute, such as read data, accept data, report status. Some function codes have sub-function codes.

The Data defines addresses in the device's memory map for read functions, contains data values to be written into the device's memory, or contains other information needed to carry out the function requested.

The Error Check is a 16-bit numeric value representing the Cyclic Redundancy Check (CRC).

Displays Programmable displays with a wide selection of inputs and outputs for display of temperature, volume and weight, etc. Feature linearisation, scaling, and difference measurement functions for programming via PReset software.

Ex interfaces Interfaces for analogue and digital signals as well as HART® signals between sensors / I/P converters / frequency signals and control systems in Ex zone 0, 1 & 2 and for some devices in zone 20, 21 & 22.

Isolation Galvanic isolators for analogue and digital signals as well as HART® signals. A wide product range with both loop-powered and universal isolators featuring linearisation, inversion, and scaling of output signals.

Temperature A wide selection of transmitters for DIN form B mounting and DIN rail devices with analogue and digital bus communication ranging from application-specific to universal transmitters.

Multifunctional PC or front programmable devices with universal options for input, output and supply. This range offers a number of advanced features such as process calibration, linearisation and auto-diagnosis.

www.prelectronics.fr
sales@prelectronics.fr

www.prelectronics.de
sales@prelectronics.de

www.prelectronics.es
sales@prelectronics.es

www.prelectronics.it
sales@prelectronics.it

www.prelectronics.se
sales@prelectronics.se

www.prelectronics.com
sales@prelectronics.co.uk

www.prelectronics.com
sales@prelectronics.com

www.prelectronics.cn
sales@prelectronics.cn

Head office

Denmark
PR electronics A/S
Lerbakken 10
DK-8410 Rønde

www.prelectronics.com
sales@prelectronics.dk
tel. +45 86 37 26 77
fax +45 86 37 30 85

DS CERTIFIED

QUALITY SYSTEM AND ENVIRON-
MENTAL MANAGEMENT SYSTEM
DS/EN ISO 9001
DS/EN ISO 14001

DANAK

CE