

## Loading REG-PED firmware with REG-PEx Loader (RPL)

The REG-PE and REG-PED are multi-function, multi-protocol cards used with a range of A.Eberle products, including REG-D and REG-DA voltage regulators, to provide a flexible and upgradeable SCADA connection. The REG-PE is similar to the REG-PED, except that it has only a single Ethernet port.

WinConfig is the primary software for the REG-PED, and is used to switch protocols, make protocol mapping and configuration changes, change the IP addresses of the REG-PED, and even to perform minor firmware upgrades.

RPL is used to update older non-WinConfig cards to WinConfig, to perform firmware downgrades, and to carry out major firmware upgrades. Additionally it can be used to completely reset the REG-PED by reconfiguring the IP addresses and reloading the firmware.

This document is applicable to both the REG-D with external REG-PE or REG-PED card, and to the REG-DA with internal REG-PE or REG-PED card. For the sake of clarity, the generic term REG-PED has been used in this document to mean any of the above.

This document is intended to provide an overview of the process, and is current at time of writing. The software versions used in this example are WinConfig 11.06 and RPL 3.2.2. Always refer to the most current manufacturer's documentation for details, or contact HV Power for specific advice.

**WARNING: Once this procedure is started, it must be followed till the selected protocol is fully loaded, including the customer specific settings. For this reason, please ensure that all the appropriate software is installed on your PC prior to starting this process.**

**HALTING OR CHANGING THE PROCEDURE MIDWAY WILL RESULT IN THE PED CARD BECOMING LOCKED UP!**

### YOU WILL NEED:

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A PC with serial port and Ethernet connection  
A null modem DB9 cable (supplied)  
An Ethernet cable  
Fibre convertor & fibre cable if appropriate  
The correct version of RPL installed  
The correct version of WinConfig installed

## UPDATING REG-PED FIRMWARE USING RPL:

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The firmware update section described below does not need to be followed if simply updating the customer specific protocol settings. WinConfig can be used directly for settings changes, or for changing between protocols.

RPL works by issuing commands to the REG-PED via a serial connection, then using a (faster) Ethernet connection to load the firmware files. **It is essential that both of these connections work correctly.**

### Set up and test the serial connection:

- From the PC, connect a null modem cable to the PARAM port of the REG-PED card in case of the REG-D version, or to the DB9 connector which is attached via a cable to terminals 95 to 98 of the REG-DA version.
- Start RPL (found in a sub-directory of the WinConfig folder). Push the 'Settings' button at bottom right. If necessary, enter the COM-Port you'd like to use, and fill in the login data using **root** and **root** for the FTP server login.
- Navigate to the Terminal tab. Confirm that a response is received after pushing the return key.

If no response is received, proceed no further.

### Set up the Ethernet connection:

- Plug the Ethernet or fibre cable into the REG-PED, and the other end of the Ethernet cable into the PC. Generally the first Ethernet port on the REG-PED should be used for this purpose. On the REG-D version, this is the upper port; on the REG-DA version, this is the right hand port. An orange link LED will illuminate on the REG-PED as the connection is established.

If the link LED does not illuminate, proceed no further.

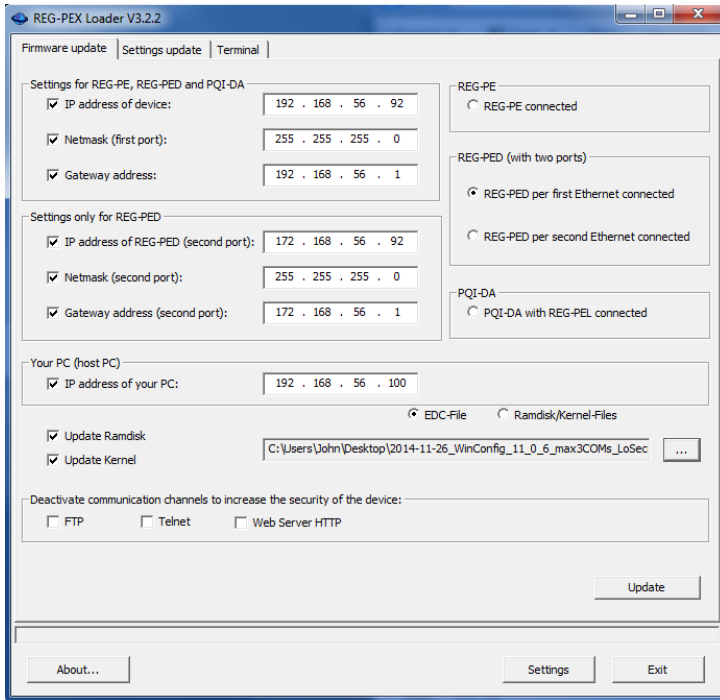
- Set an IP address on your PC in the same subnet as the intended IP address of the port on the REG-PED. In this example, the IP address of the first Ethernet port of the REG-PED will be the default 192.168.56.92, while the IP address of the PC will be 192.168.56.100.
- An exception needs to be added in your Firewall program to allow RPL to access the necessary files. Alternatively, your Firewall can be disabled temporarily. While there, also set up an exception for WinConfig.

### Update the REG-PED:

- Navigate to the Firmware Update tab of RPL and tick all entries to be changed.
- Enter a valid 'IP address of device', a 'Netmask (first port)' and 'Gateway address'. If necessary, also enter this information for the second port.
- Tick 'IP address of your PC' and enter the IP address as previously configured.
  - Tick 'Update Ramdisk' and 'Update Kernel' and select a firmware file from the edc folder of RPL. For inexperienced users, it is highly recommended that the following file is used:  
**2014-11-26\_WinConfig\_11\_0\_6\_max3COMs\_LoSecurity.edc**

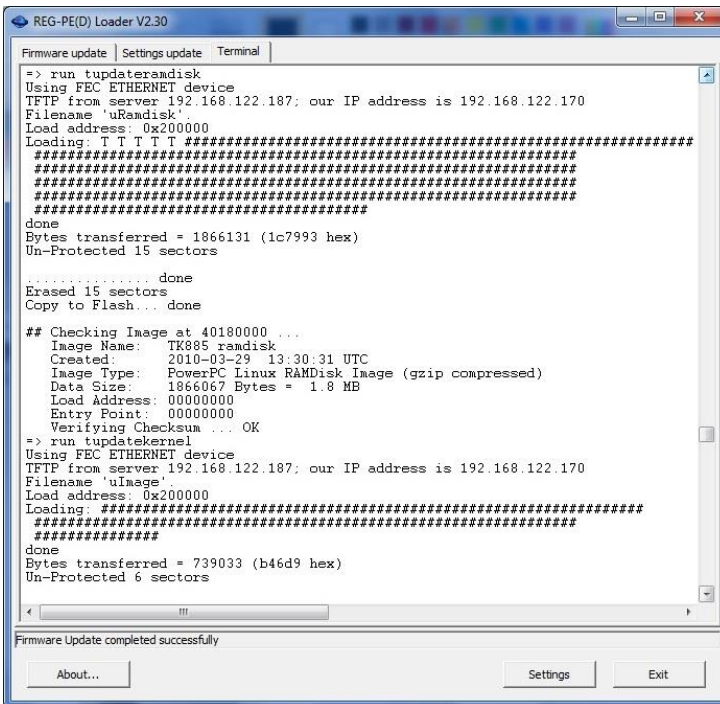
Failure to load the recommended firmware may result in the card becoming locked up and needing to be returned to the supplier.

- The following shows how the settings in the example would be configured:



- Press the 'Update' button. By navigating to the 'Terminal' tab, the update process can be observed.

If ##### is observed during the loading process, the Ethernet connection was successful. TTTT indicates a failure of the Ethernet connection. A common cause of this (if everything else has been configured correctly) is an IT policy blocking the connection.



## LOADING PROTOCOL SETTINGS

The following procedure describes the basic process for making a new setting file with WinConfig and to how load this into the REG-PED.

All cabling from the previous step can be left in place, although only the Ethernet connection is required from now on.

**NOTE** that the REG-PED has to reboot before proceeding to loading the customer specific protocol settings. Wait a minimum amount of 30s after firmware update before proceeding with the next step.

### Make a new setting file:

- Start WinConfig and go to Advanced.
- Click the New button. Choose a board type, a protocol, and a SCADA Template. Click Continue.




### Add new settings

Add new settings from template

Board type:	<input type="text" value="REG-PED"/>
Protocol:	<input type="text" value="IEC 61850"/>
Template edition:	<input type="text" value="Edition 1"/>
SCADA template:	<input type="text" value="REG-D(A) Ed.1 Standard Configuration without GOI"/>
Attached Eberle devices:	<input type="text"/>

- Configure the SCADA Template as required.



- Click on the  transfer button.
- WinConfig automatically detects all REG-PEDs on the network.
- Accept the security warning.
- Select the required REG-PED:



IEC61850 on REG-PED  
eberle43\_REG-Dx1\_120914\_Std.xml

Basic

Advanced

### Transfer settings from PC

Transfer settings and firmware from PC to telecontrol board

Automatic firmware transfer:

Forced firmware transfer:

Please choose your application case

Usage of max. 3 COM ports

Usage of max. 4 COM ports (forbidden in case of double optic Ethernet)

HTTPS access

User name:

Password:

Card type	Firmware type, version	Version of settings, date	Name of settings	Device IP address	MAC address	PRP active
REG-PED (TK885)	unknown,	unknown	unknown	192.168.56.92	00D09322D8E8	no

- If only a single Device IP address is shown, the ports have been bonded by the firmware load. This is done for added data security and means that only one of the ports will be active at any given time, with the other in hot-standby mode. If the active port fails, the backup port takes over at the same IP and mac address, so that even GOOSE communication is continuous.
- If this port configuration is not appropriate for your application, click the Change board IP settings button at the bottom of the page. Select from the following options and configure the Ethernet settings accordingly:

Set IP settings to telecontrol board

Board type: REG-PED (TK885)

Board name: TK885

Use PRP V1 (Parallel Redundancy Protocol):

Use Ethernet interfaces bonding (Broadcast):

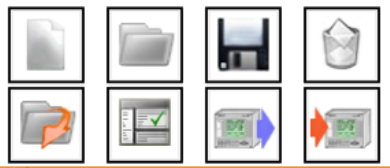
Use Ethernet interfaces independently:

- Click the Set button. The card reboots to activate the new IP address settings. Once completed, it is necessary to redetect the REG-PED with the new IP settings.



- Click on the  transfer button and select the required REG-PED.

- Enter Username: **Admin** Password: **teledata**



IEC61850 on REG-PED  
eberle43\_REG-Dx1\_120914\_Std.xml

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HTTPS access

User name: Admin

Password: .....

Card type	Firmware type, version	Version of settings, date	Name of settings	Device IP address	MAC address	PRP active
REG-PED (TK885)	unknown,	unknown	unknown	192.168.56.92, 172.168.56.92	00D09322D8E8, 00D09322D8E9	no

Operation

Progress:  100%

Status: Finished

Activity: Completed detecting devices

Detect on LAN

**Transfer from PC to device**

Change board IP settings

Steps to transfer settings

1. Detect board on LAN
2. Select board in the table
3. Transfer from PC to device

- Click Transfer from PC to Device; accept the security warning.

A 24 step process begins, after which the LEDs of the COM2 port on the REG-PED should begin pulsing yellow-green to indicate internal polling of the REG-D(A).