# 1 Room Control Panel Kieback&Peter RPW414P-FTL

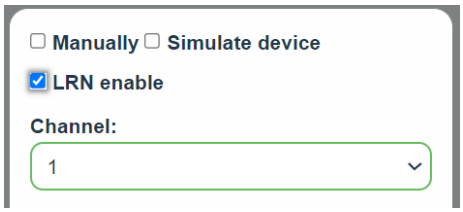
This document contains application notes on the use of Kieback&Peter's room control panel RPW414P-FTL (referred to as “panel” in the text) and on the support of EEP D2-10-30. The use of BACnet gateway EO-BAC-IP is supposed but most of the points apply to the Modbus gateway EO-MOD-IP as well.

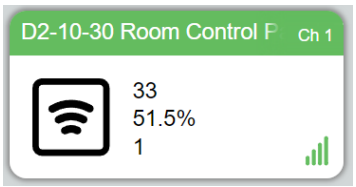
**References:**

[1] User manual of the room control panel RPW414P-FTL
in English: https://extranet.kieback-peter.de/download/?44285
in German: https://extranet.kieback-peter.de/download/?44284
in French: https://extranet.kieback-peter.de/download/?44286
[2] The official description of EEP D2-10-30:
http://tools.enocean-alliance.org/EEPViewer/profiles/D2/10/30/D2-10-30.pdf

## 1.1 Pairing procedure

1. Select any channel and enable pairing mode by ticking **“LRN enable”**.
2. Take the panel and transmit a teach-in query (see also **[1] > p. 26 > Teaching in an EnOcean system gateway**)
3. Gateway responds with a teach-in response and assigns the panel to the selected channel.




## 1.2 EnOcean Communication

There are many different telegrams defined that are distinguished by the data field named **Message ID**. Complete description of the telegrams is in [2]. They can be divided into four groups:

- Confirmation messages 0x00 and 0x20
- Status messages 0x21, 0x22, 0x23, 0x24: sent by panel. They contain measured data, such as temperature or humidity, information about the actual operational state, values of parameters configurable via commands.
- Configuration messages 0x61, 0x62, 0x63: bidirectional, sent by both panel and gateway. These messages are intended for commissioning, e.g. 0x62 allows clock setup.
- Commands 0x80, 0x81, … 0x9B: sent by gateway to change parameters and modify panel behaviour and state. Some of the values are reported back in status messages, e.g. commands 0x94, … 0x9A change parameters returned in 0x24.

| MSG ID | Direction | Title | Description |
|---|---|---|---|
| 0x00 (0) | G -> S | Heartbeat message | The response sent by the gateway if no commands or configuration messages are pending. It functions as a keepalive message. |
| 0x20 (32) | S -> G | Acknowledge message | Sent by the panel to confirm command reception. |

| | | | |
|---|---|---|---|
| 0x21 (33) | S -> G | Data message | Periodical message, period configurable. Contains data from sensors. |
| 0x22 (34) | S -> G | Status message | Event triggered, e.g. when a status value changes. Contains actual operational state and temperature setpoints. |
| 0x23 (35) | S -> G | Actuator status | Event triggered. Status of connected valve actuators. |
| 0x24 (36) | S -> G | Setpoint limits | Event triggered. It contains configuration related to temperature setpoints. |
| 0x61 (97) | S <-> G | Configuration message | |
| 0x62 (98) | S <-> G | Clock setup | |
| | | | |

The panel initiates a communication window by sending a status message and waits 250 ms for a response from gateway. The gateway must always respond with a command or heartbeat message, the faster the better, because the receiver mode is energy demanding.

Several commands can be sent during a single communication window, the panel confirms reception of each command by the acknowledge message 0x20 and the gateway must respond again within 250 ms. The communication window is terminated when the gateway sends heartbeat message 0x00. If any configuration or status is changed during the communication window, the panel then reports the actual values by sending the corresponding status or configuration message.

When a client application sends a command via the BACnet interface, it is not sent immediately, but the gateway stores it in its memory and sends it in the next communication window when the panel wakes up. The commands are sent in the same order as written to gateway. If two commands of the same type (message ID) are written, only the last written command is sent. If the command queue is empty, the gateway automatically sends heartbeat message.

## 1.3 Application interface – BACnet

### 1.3.1 Single channel

The panel occupies a single channel after teach-in and all incoming messages are received on this channel. The Analog Input (AI) objects always contain the last received telegram. The meaning of their present values changes dynamically according to the received Message ID, which is always stored in the first AI object (AIxx00, RxValue 0). Unused values (“None” values) are zeroed.

The same is for outgoing messages that are written to Analog Output (AO) objects. The Message ID is changed via the first AO object (AO1xxx00, TxValue 0).

The advantage of this setting is that it saves gateway’s resources. The disadvantage is the variable meaning of the values and that sometimes telegrams can be lost due to a short time interval between them.

**Input data, Data message (0x21):**

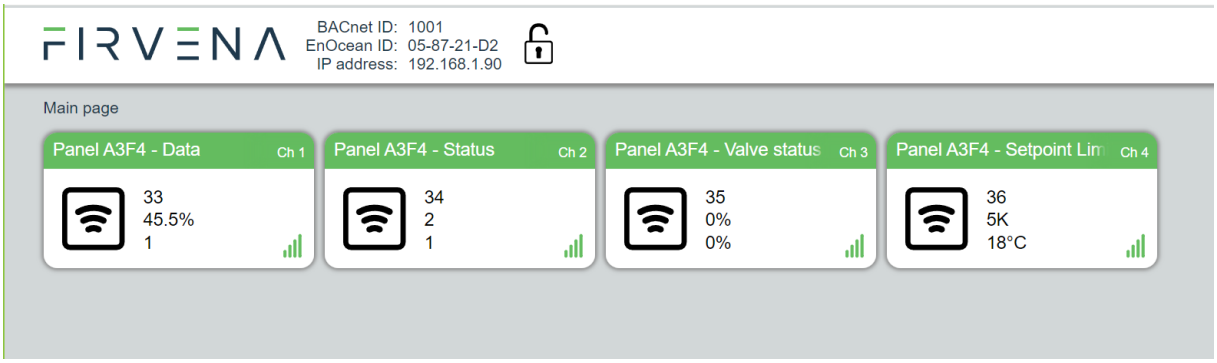
| | | | |
|---|---|---|---|
| AI 100 | MSG ID | 0:Heartbeat Messag… | 33:Data Message (0x21, S>G) |
| AI 101 | Humidity | 0...100 % | 41.5% |
| AI 102 | Open Window Detect | 0:NO_CHANGE;1:Wi… | 1:Window closed |
| AI 103 | Occupancy Button Status | 0:NO_CHANGE;1:O… | 3:Automatic mode |
| AI 104 | Room Control Mode | 0:NO_CHANGE;1:Ec… | 2:Comfort mode |
| AI 105 | Room Temperature | 0...50 °C | 20.5°C |
| AI 106 | PIR Status | 0:NO_CHANGE;1:M… | 2:No movement detected |
| AI 107 | Fan Speed | 0:NO_CHANGE;1:Le… | 6:NO FAN |
| AI 108 | Recent Temperature Set Point - absolute | 0...50 °C | 22°C |
| AI 109 | Recent Temperature Set Point - relative | -10...10 K | 0K |
| AI 110 | Analog Value | 0...100 % | 0% |
| AI 111 | None | 0...0 | 1 |
| AI 112 | None | 0...0 | 0 |
| AI 113 | None | 0...0 | 0 |
| AI 114 | None | 0...0 | 0 |
| AI 190 | Telegram counter | 0...65535 | 8 |
| AI 191 | Telegram age | 0...65000 s | 492s |

**Output data, Temperature Set Point Comfort Mode (0x92):**

| | | | |
|---|---|---|---|
| AO 100100 | MSG ID | 0:Heartbeat Messag… | 146:Temperature Set Point Comfort Mode (0x92, G>S) |
| AO 100101 | Temperature Set Point Comfort Mode | 0...50 °C | 0 °C |
| AO 100102 | None | 0...0 | 0 |
| AO 100103 | None | 0...0 | 0 |
| AO 100104 | None | 0...0 | 0 |
| AO 100105 | None | 0...0 | 0 |
| AO 100106 | None | 0...0 | 0 |
| AO 100107 | None | 0...0 | 0 |
| AO 100108 | None | 0...0 | 0 |
| AO 100109 | None | 0...0 | 0 |
| AO 100110 | None | 0...0 | 0 |

### 1.3.2 Multiple channels

In the "Interface type" setting, you can enable a receive filter that allows you to receive only the selected message type. In the maximum configuration, the panel occupies four channels, one channel for each status message.



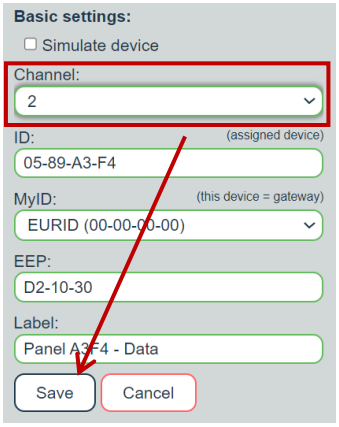
Clone the channel and change “Interface type”:

1. In [Edit channel > Settings] change “Channel” and “Save” to copy the settings.
2. Set “Input (Rx)” (interface type) to 1 (1:selected telegram)
3. Select “Telegram type” (Message ID) and “Save”

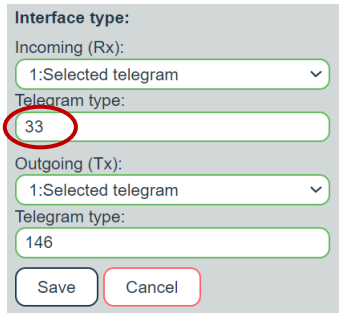
To disable receiving/sending on a channel, set Interface type = 1 and Telegram type = 240.

Similarly, you can select the type of outgoing message. The message type can still be switched by writing Message ID to the first AO object, the “Telegram type” works as a default message selection in this case.

Channel clonning:




Changing interface type:




| Object ID | Value Name | Range | Value |
|---|---|---|---|
| AI 100 | MSG ID | 0:Heartbeat Messag… | 33:Data Message (0x21, S>G) |
| AI 101 | Humidity | 0...100 % | 42% |
| AI 102 | Open Window Detect | 0:NO_CHANGE;1:Wi… | 1:Window closed |
| AI 103 | Occupancy Button Status | 0:NO_CHANGE;1:O… | 1:Occupied |
| AI 104 | Room Control Mode | 0:NO_CHANGE;1:Ec… | 2:Comfort mode |
| AI 105 | Room Temperature | 0...50 °C | 20.8°C |
| AI 106 | PIR Status | 0:NO_CHANGE;1:M… | 2:No movement detected |
| AI 107 | Fan Speed | 0:NO_CHANGE;1:Le… | 6:NO FAN |
| AI 108 | Recent Temperature Set Point - absolute | 0...50 °C | 22°C |
| AI 109 | Recent Temperature Set Point - relative | -10...10 K | 0K |
| AI 110 | Analog Value | 0...100 % | 0% |
| AI 190 | Telegram counter | 0...65535 | 2 |
| AI 191 | Telegram age | 0...65000 s | 67s |
| | | | |
| AO 100100 | MSG ID | 0:Heartbeat Messag… | 146:Temperature Set Point Comfort Mode (0x92, G>S) |
| AO 100101 | Temperature Set Point Comfort Mode | 0...50 °C | 0 °C |
| | Telegram counter | 0...65535 | 0 |
| | Telegram age | 0...65000 s | 65535s |
| MSV 100195 | SEND | 1:None;2:SendNow;3… | 1:None |
| | | | |
| MSV 199 | CONFIG | 1:FREE;2:ASSIGNED | 2:ASSIGNED |

### 1.3.3 Sending a command

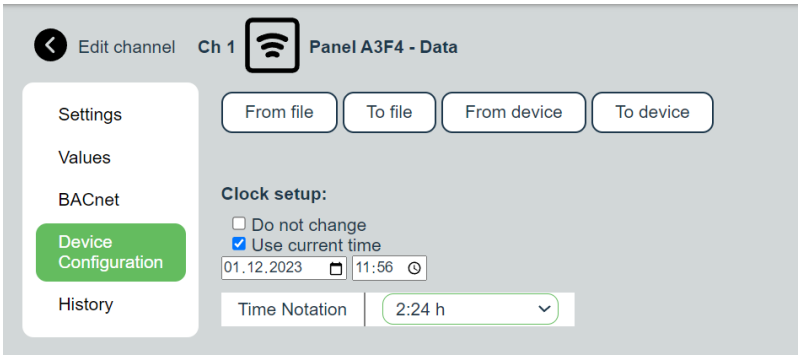
The Message ID written in the first Analog Output object (AO1xxx00, TxValue 0) switches the command. Write data to Analog Outputs and write value 2:SendNow to the "SEND" object (MSV1xxx95). To send another command, write its Message ID to the first AO object and parameters to the next AO objects and write "SendNow".

Writing "SendNow" does not transmit the message immediately. As stated before, the gateway keeps the command in the memory until the panel wakes up.

You can also use the configuration options 11:OnWriteV0, 12:OnWriteV2, …; the message will be added to the command queue when the selected value is written. If multiple values are written at once (WritePropertyMultiple service), the "OnWrite" event is processed after all values are updated, so "SEND" can be set to "OnWriteV0" and "SendNow" is not used.

### 1.3.4 Device configuration

The panel has configurable parameters that can be changed via EnOcean interface. These parameters usually need to change once during commissioning. The editor of these parameters is in [Edit channel > Device configuration] tab. The device configuration can be exported to a file and reused in another panel.




There are four commands:

1. **From file**: import configuration from file to editor
2. **To file**: export configuration from editor to file, the file is saved to "Downloads"
3. **From device**: receive actual configuration from panel to editor.
4. **To device**: send the new configuration from editor to panel

The panel sends its configuration during pairing procedure, so "From device" is not necessary immediately after pairing. The panel also sends its configuration after it receives new configuration.

A manual action is necessary to communicate with panel:

1. **From device**: click the button and invoke teach-in request on the panel
2. **To device:** click the button and
    a. press occupancy button
    b. or invoke teach-in request on the panel

    Sometimes the manual action must be repeated to finish sending procedure, because a telegram loss can interrupt the communication window and panel leaves receiver mode.