emonBase_rfm69n.ino

There should be no need for an emonBase to use the new ‘RFM69 native’ format – it will only be required if and when the RFM69 native’ format becomes the standard. Until then, the only use case will be if it replaces an emonPiCM, thereby removing the need to convert the monitor nodes back to the ‘RFM69 classic’ format.

Description – emonBase front-end sketch

The sketch that runs in the Atmel ATMega 328P handles the radio traffic coming in from other sensor nodes.

The radio traffic is almost completely processed within the RFM69CW radio module, all the sketch needs to do is retrieve the complete message when it becomes available. It uses the SPI driver spi.h to interface to a patched version of the JeeLabs driver rf69.h. When a complete message is available, a call to rf.receive( ) will return a non-zero length, and the message is formatted and sent via the serial connection to the Raspberry Pi by print_frame( ).

It’s also possible to transmit a message – that function is handled by the outbound r.f. data handler.

Configuration values are stored in the EEPROM memory of the ATMega 328P. The task of saving the data to, and retrieving the data from, the EEPROM is handled in the configuration source file by calling functions from the oemEProm library.

Configuration

On-line configuration is locked for the first 3 minutes after the front-end sketch has started in order to allow the Raspberry Pi to start, without any data emitted to the serial port affecting the configuration.

The following setup/configuration commands are available:

```
l          - list config (terse)
L          - list config (verbose)
r          - restore defaults & restart
s          - save to EEPROM
v          - show version
V<n>       - verbose mode, 1 = ON, 0 = OFF
b<n>       - set r.f. band n = 4 > 433MHz, 8 > 868MHz, 9 > 915MHz
               (may require hardware change)
p<nn>      - set r.f. transmit power. nn (0 - 31) = -18 dBm to +13 dBm.
               Default: 25 (+7 dBm)
g<nnn>     - set Group (OEM default = 210)
n<nn>      - set node ID (1..60)
T<ccc>\n   - transmit a string.
w<n>       - n = 0 for radio transmit OFF, n = 1 for Transmit ON
?          - show this again
```

The command will be acknowledged, and confirmation given when saving the settings, only after verbose mode has been set. When you change one or more of the settings, the change will take effect immediately.

Option (‘s’) will save all the changes. If you do not do this, the settings will revert to the previous values at the next restart. After you save (‘s’) the changes, the new settings will be used forever, or until changed again.

If you restore the sketch default values (‘r’), all the EEPROM data is ignored and the sketch restarts immediately, using the values set in the sketch. There is then no means of recovering the EEPROM data.

If the EEPROM has been used previously and has had non-compliant values written, the EEPROM content will be ignored and the sketch will start using its own default values. Saving the configuration will format the EEPROM and the sketch’s set values will be stored.