User Manual
Galaxis Showtechnik

PYROTEC

PFM Advanced
USB Wireless Modem

Firmware 2.6C4n
Revision date: December 8th 2017

Batch No.: EUPFM100100, USPFM100100

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PFM Advanced – USB Wireless Modem

**Illustration with control
elements and indicators**

2. Description of indicators and control elements

1	Info LED	Shows the current information of the device.

After connecting to a PC, the LED flashes in white color (lamp test) for a short time. After this the LED lights green.

Permanent green light means, that the Modem is ready to use. Blue means receiving protocols, red means transmitting of protocols. During High-Speed-Programming the LED switches fast between green and red.

2	Connector 'Antenna'	To connect the provided antenna.
3	Connection 'USB'	To connect the provided USB cable and to provide cable connection to the PC.

3. Driver Installation

To successfully install the drivers of the PFM Advanced Wireless Modem, please follow the instructions of the PDF file, which is on your Desktop after successful installation of the PYROTEC Composer software.

4. Selection of the radio channel

During the driver installation, the PFM Advanced Wireless Modem will be set to radio channel 60 (applicable for both versions USA/Canada and EU). To change the radio channel, click in the Composer 'Extras', 'Options' and navigate to 'PFM Advanced'. Now you can choose if you want to use the EU or US version as well as the radio channel. You have to choose the same radio channel as set in your devices.

European Version (and also various other countries):

There are 70 different frequencies available between 433.0500 MHz and 434.7750 MHz in steps of 25 kHz. Normally you should use the frequency that has been assigned by the manufacturer and only switch to another channel if the selected frequency is occupied.

The frequency 433.9250 MHz (radio channel 35) and the two neighboring channels should not be used. This is a heavily used standard frequency and radio interferences are likely to occur.

In the countries Azerbaijan, Georgia and Russia the European harmonization standards have not been completely implemented so far. If you have an application in these countries, please ask the manufacturer or the appropriate authorities in the specific countries if a license exempt usage is possible or if you can apply for a license or if the usage is prohibited.

Other regulations may apply in non-European countries. Please ask the manufacturer if you need more information about the usage of frequencies. Most non-European countries allow the frequencies used by us. For customers in the USA and Canada we provide devices with a different frequency band. Please see 'Version for USA/Canada'.

Version for USA/Canada:

There are 360 different frequencies available between 458.0000 MHz and 462.4875 MHz with a channel spacing of 12.5 kHz.

You need to choose a frequency which allows nationwide use and which is exempt from any duties. More information can be obtained from frequency coordinators, the authority who is in charge of frequency allocation or the manufacturer. <u>Even if the duty-free and nationwide usage of specific frequencies is possible, you have to register as user at the FCC before operating the devices. Upon your request we will provide the contact details of a competent frequency coordinator who will support you in this process.</u>

Alternatively you can apply for a license. In that case you will get a frequency assigned by a frequency coordinator. The disadvantage of a license is that the usage of the assigned frequency is only allowed in a certain region. You are allowed to use this frequency in a specific radius only. Every usage outside of this radius demands an additional license, except you are using a nationwide frequency (see above).

Attention: It is not allowed to operate two or more systems which are only differing in the programmed RF channel in relative proximity (within radio range). In this case there is no safety in regard to unintended firings. To safely operate two or more systems in relative proximity in addition either different system IDs need to be assigned by the manufacturer or different system IDs need to be assigned by the user.

5. Programming of the devices

To program your devices after finishing the script, click in the Composer "PFM Advanced" and "PFE Advanced and G-Flame - Remote Access". You can either program the devices separately via Normal- or High-Speed-Programming, or via batch programming with Normal- or High-Speed-Programming. For the batch programming simply mark the devices you would like to program and choose the relevant option. In the Log-List on the right side, you will be informed about the current steps of the programming.

Note: More information about remote programming can be found in the manual of the PYROTEC Composer.

6. Troubleshooting

If you encounter problems during programming or remote access, e. g. the message box 'Error during programming', close the access tab in the Composer and disconnect the PFM Advanced from your computer by simply unplugging the cable connection. Wait a few seconds and reconnect the PFM Advanced. Now you can access the PFM Advanced again. If this does not work, close again all access tabs in the Composer and the Composer itself and all other programs and restart your computer.

If the error appears again or the connection becomes disrupted frequently, you need to check if the driver is successfully installed. An incorrectly installed driver or driver conflicts lead to problems and the function of the PFM Advanced can be impaired.

Note: To check if the driver is successfully installed, open the hardware manager and search for PFM Advanced. You will see two drivers, one under 'USB' and the other under 'COM-Port'. Both are correctly installed if no yellow exclamation mark is being displayed next to the device name. The entry 'PFM Advanced' under 'COM Port' should be deactivated to avoid access problems.

Note: If the error remains after checking the drivers and a potential reinstalling of the drivers, close all running applications and restart your computer. This maintains that the previous installations become effective.

7. Technical data

General data:

Radio parameters EU version	Frequency Band: 433.05 - 434.79 MHz
	Maximum radio-frequency power transmitted: <=10 mW
	Channel Spacing: 25 kHz
	Number of radio channels: 70 (433.050 - 434.775 MHz)
	Modulation: FM narrow band
	Frequency Shift: +/- 3 kHz
	Duty Cycle: <10%
	Radio equipment class according to 2014/53/EU (RED): 1
	Radio equipment type: non-specific short range device,
	                     transmitter and receiver (Transceiver)
	Receiver Category according to ETSI EN 300 220 V3.1.1:
	   demanded by the application: 3 (lowest performance level)
	   fulfilled by the device: 1.5 (second-best performance level)
	Receiver Principle: Double superheterodyne
	Receiver Sensitivity: -119 dBm @ 12 dB SINAD
	Wave Length: 70 cm
	Standard antenna included in delivery:
	   Center Frequency: 434 MHz
	   Radiation Pattern: omnidirectional
	   Radiator Length: Lambda/4, not coiled
	   Antenna Gain: 0.00 dBd, 2.15 dBi

Radio parameters US version	Frequency Range: 458 - 462.5 MHz
	License: FCC Part 90, FCC-ID: V9X-LMD400R
	Maximum radio-frequency power transmitted: <10 mW
	Channel Spacing: 12.5 kHz
	Number of radio channels: 360 (458.0000 - 462.5000 MHz)
	Modulation: FM narrow band
	Frequency Shift: +/- 3 kHz
	Receiver Principle: Double superheterodyne
	Receiver Sensitivity: -119 dBm @ 12 dB SINAD
	Wave Length: 65 cm
	Standard antenna included in delivery:
	   Center Frequency: 460 MHz
	   Radiation Pattern: omnidirectional
	   Radiator Length: Lambda/4, not coiled
	   Antenna Gain: 0.00 dBd, 2.15 dBi

Protocol parameters	half-duplex, PCM with Manchestercoding, Checksum: 40 Bit CRC, data rate approx. 2,500 bps
Temperature range	Transport und storage: -30 to +70°C Operation: -20 to +65°C The maximum temperature difference between devices must not exceed 60 K in order to enable unimpaired radio communication.
Humidity	10 - 90% rH, no condensation
Protection class	III

Dimensions (L x W x H) and weight, each without antenna:
102-54-42 mm; 114 g

Power supply:
5.0 VDC via USB Port of a PC

Supplied accessories, included in delivery:
1 Standard antenna
1 USB cable
1 User manual

8. CE marking of the EU version

The EU version of this device is marked with the CE logo:

$$C \epsilon$$

9. Address of the manufacturer and contact details for requesting an EU declaration of conformity

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Please use these contact details if you want to request an EU declaration of conformity.