

@ Robby: seems the setup you have uses ASK (amplitude shift-key) modulation....there's also FSK (frequency) and PSK (phase) modulation available.

I noticed this thread just before the question to buy Smarttire sensors again or to change the system to a cheaper one. So I decided to change (my summer-tires also need new sensors...)...

I choose the Waeco TPMS (www.waeco.com) stuff for only 100 Euro and with 4 sensors but without a display (which I, and I guess you guys too, don't need) and it would be good to have a system from a vendor "with a name" (in 5-6 years if you need new sensors - but the batteries could be exchanged easily).

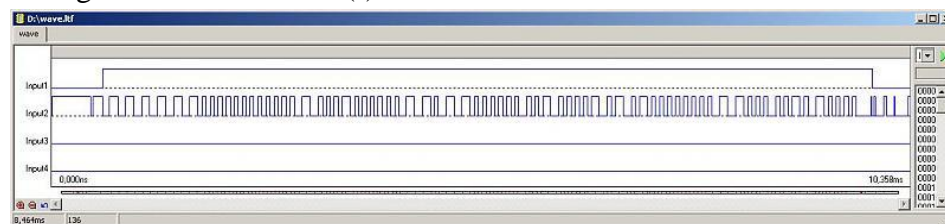
Quote: Originally Posted by **Robby BMW**

Discovered this, I've noticed that the whole data packet consist of 14 bytes (112 bits) organized in this way:

Preamble (32 bits) - The preamble is a series of 31 logic '1' bits followed by a single logic '0' bit (FFFE in hexadecimal), used to recognize the RF transmission as a valid TX message.

no 😊... the Preamble is 16 bits (FFFE) (your digitrace screenshots also shows only 15 bits at 1)...

The Waeco system also transmits on 433Mhz AM with a differential manchester coding... which looks like (!) that:

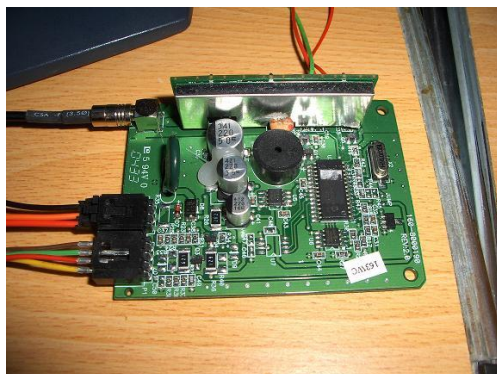


which gives for example a: FFFE 001C40F7 81 30 DA 01 E258

with Robby's findings these can be interpreted to a tire pressure of 2,2bar (I have a normal car!) and 8°C (which perfectly fits into a german winter) and 218 of 255 (new sensors with new batteries!) (How does the CRC fit inside ? I didn't get it to work...)

So I guess the Waeco system is compatible ?

This all sounds too good ? Then have a look at the PCB of the receiver 😊:



The receiver is this shielded box connected with 7 pins to the main pcb... it gets 5V+ , ANT

(external antenna!) and GND and devlievers the signal and the field strength...
easy to desolder ? 😊no saw needed.. only a soldering iron...

FMode, the CRC error also match, in fact the CRC of 001C40F78130DA01 is E258 (the last part of your data), so it seems to be 100% compatible.

What about the timing, is the bit length about 100 µs?

Can you verify which Rf-chip is on your receiver board? Is it the same TDA5200 ASK Receiver, or not - if different, can you give us a part number, please Fmode 😊

the problem is there is no number on this receiver... and I can't look inside (if you are really interested I can try to get a small hole...)...

your TDA5200 will need analog discrete parts 😊to work... but you are a very tough I guess 😊😊...

or didn't you find a source for complete receiver-modules ?

Here is one:

<http://www.funkmodul.com/funkmodule/empfaenger.htm>

you should take ERX-06 because it has the max. sensitivity...

I also have a Lynx RF receiver laying around 433.92 MHz, Think it will pick up the tires, I need to get the analyzer you used to see if it's receiving. Might be a way to get rid of cutting the board. Thoughts comments?

Theoretically any receiver with the following characteristics could work:

Frequency: 433.92MHz

Demodulation: ASK

RF input sensitivity: < -107dBm

Bandwidth: > 40 KHz

2 Robby BMW,

Hi Robby, if you don't mind I would like to ask you one questions concerning Sensor state in Storage mode

In case of the pressure in the wheel is absent will sensor sent data (low pressure) permanently or it will go in the "sleep" mode if during the long period the pressure is still absent (I am trying to follow exactly your idea, but implement the Car-PC interface for WAECO TMPS) ... LYHTSPD mentioned about it.

Only the sensors manufacturer can answer at this question with certainty, however, for what I was able to see, every time the pressure is below 1.5 bar, the sensor goes back in sleep mode.

Quote: Originally Posted by a__l ➡

And also the second question about data encoding:

Is your device using the Differential Manchester encoding that is specified here ->

http://en.wikipedia.org/wiki/Differential_Manchester_encoding

?

Yes, the device uses a differential Manchester encoding.

Quote: Originally Posted by a__I 

The 3-nd one if you don't mind :-)

Why did you decided to use Transistor between Receiver's signal and PIC? Just for inverting or the output signal is not 5V compatible? (I mean, why didn't you put in this signal direct into PIC)

The transistor has the dual function to invert the signal and bring it to 5V, as the output from the receiver is about 3.8V.

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The transistor has the dual function to invert the signal and bring it to 5V, as the output from the receiver is about 3.8V.

Robby, Thanks for the answer :-) In case of WAECO the output from the receiver is also about 3-4V but my micro controller (Atmel MEGA) recognizes 0 and 1 in the input. Does the PICs can't recognize 1 within 3.8V in the input? (I mean, might be I can put away this part from my realization).

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Maybe, but for safety I put the transistor which also operates as a sort of Schmitt trigger.

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My bad... in Italian "for safety" can also mean "just to be sure".

Hi Robby.

Thanks. Would like to confirm that WAECO device is fully compatible(including CRC) with your investigation and realization (I used my own program and ATmel device but based on your research. The only thing is the rate for getting pressure. In my case the formula is a little bit different[pressure = 2.38*RAW data(from sensor) - 70 but to get BAR] but the idea is the same) :-) By the way have you thought also about displaying the signal strength coming from sensors?