

ARF18 ARF7293 User Guide

Remote control receiver MODULE

DECLARATION OF CONFORMITY	2
OVERVIEW	3
INTERFACE	4
<i>Mechanical specifications</i>	<i>4</i>
<i>Signal description</i>	<i>5</i>
LEARNING MODES	5
COMMAND MODE	6
COMMANDS	6
SET OF COMMANDS	6
REGISTERS DESCRIPTION	7
NORMAL MODE	7
SPECIFICATIONS	8

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN45014



Manufacturer's name: **ADEUNIS R.F.**

Manufacturer's address: Parc technologique PRE ROUX IV
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declares that the product

Product Name: ARF18
Product Number(s): ARF7293
Product options:

conforms to the RTTE Directive 99/5/EC:

EMC:
conformity is proven by compliance to the standard EN 301489 according to the requirements of EMC Directive 89/336/EEC.

Safety:
conformity to the standard EN 60950 according to the requirements of Low Voltage Directive 73/23/EEC.

Radio:
conformity is proven by compliance to harmonised standard EN 300220 covering essential radio requirements of the RTTE directive.

Notes:
- Conformity has been evaluated according to the procedure described in Appendix III of the RTTE directive.
- The use of the spectrum is harmonised by the fact that the product never falls under one of the restrictions listed in appendix 3 (Appendix 1, band E) of the CEPT recommendation 70-03.
- Receiver class (if applicable): 2.

Crolles, November 4th, 2005

VINCENT Hervé / Quality manager

OVERVIEW

This user guide is associated with the “ARF18 remote control learning process” document.

The ARF7293 radio receiver converts radio frame coming from a remote control transmitter.

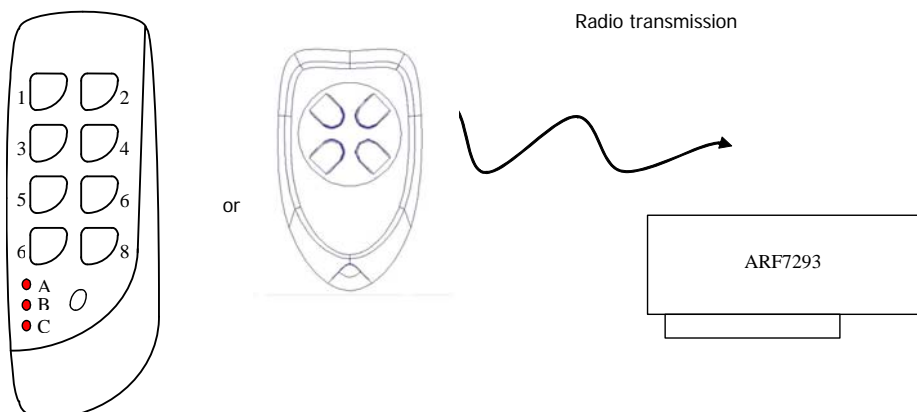
The ARF7293 sends the remote control information on the serial link and/or can manage 4 outputs.

It is a one-way system: the system behaves as 4 links where, for example, digital output 1 corresponds to input 1 (remote control key 1), digital output 2 to input 2 (remote control key 2), etc.

The serial output is permanently available.

The 4 digital outputs are available after a learning phase. The outputs can operate in monostable mode (closed during the remote control key pressed time) or bistable mode (position change each time the corresponding remote control key is pressed). The module has several inputs dedicated to the selection of the learning mode and the choice between monostable and bistable configuration for the outputs.

The operating parameters of the ARF7293 (serial link, programming mode, output mode...) can be updated through AT commands via the serial link. With an appropriate serial adapter the module can be connected to a RS232 cable.



INTERFACE

- Mechanical specifications

1) The transceiver is available as a plugged module without an antenna.

The PCB width is 12/10 mm

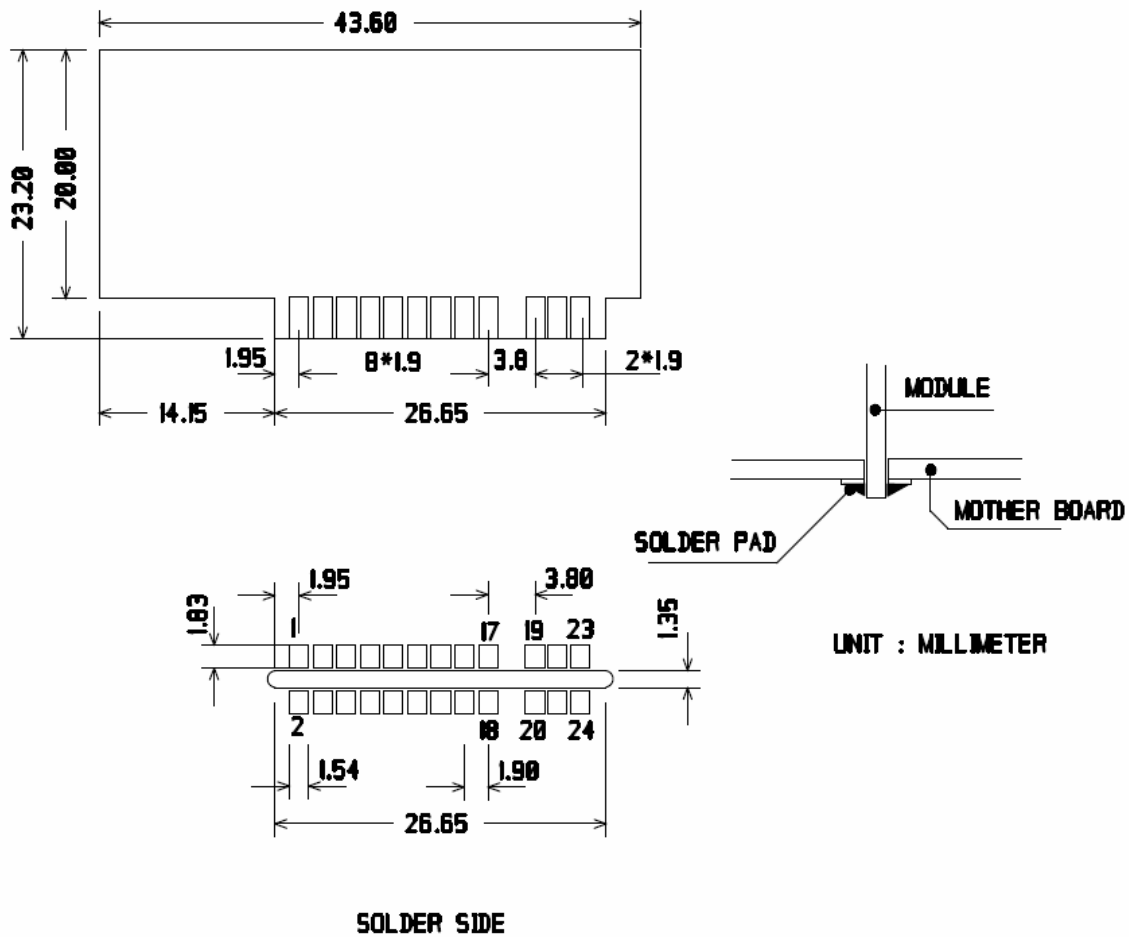


Figure 1: Plugged module mechanical features

- **Signal description**

Interface Pin	Name	I/O	Description
Digital interface			
1	GND		Ground
2	VDD		Operating voltage 3.3V +/-10%
3	Digital output 1	O	Digital output 1 (See the "ARF18 remote control learning process" document)
4	Led	O	Led (See ARF18 remote control learning process document)
5	Current saving output	O	Current saving output. Can be used with Relays. When a digital output 1 to 4 is set to "1" this output is set to level "1" during 50 ms and come back to level "0".
6	Erase	I	Erase (See ARF18 remote control learning process document)
7	RXD	I	Serial data reception
8	TXD	O	Serial data transmission
9	Digital output 4	O	Digital output 4 (See ARF18 remote control learning process document)
10	/RESET	I	Transceiver Hardware RESET, active LOW. Can be disconnected.
11	Digital output 3	O	Digital output 3 (See ARF18 remote control learning process document)
12	Global	I	Global (See ARF18 remote control learning process document)
13	Digital output 2	O	Digital output 2 (See ARF18 remote control learning process document)
14	Sel1	I	Sel1 (See ARF18 remote control learning process document)
15	Add/Remove	I	Add/Remove (See ARF18 remote control learning process document)
16	Sel0	I	Sel0 (See ARF18 remote control learning process document)
17, 18	GND		Ground
RF interface			
19, 20	GND RF		RF antenna ground
21, 22	RF in/out		RF antenna IN/OUT.
23, 24	GND RF		RF antenna ground.

NB : The direction I (Input) and O (Output) are for the module.

LEARNING MODES

The learning process is described in the "ARF18 remote control learning process" document.

This process is mandatory and is used to associate the remote control with at least one of the digital outputs.

Up to 83 remote controls can be stored in the module database.

No learning process is necessary if only the serial output of the module is used. In this case all the data coming in a valid remote control frame is sent on the serial output.

COMMAND MODE

When delivered the module is fully operational (default factory configuration is 9600,n,8,1).

Nevertheless the module parameters can be customised using the serial input (RS232 or USB) which is dedicated for the AT commands. These commands can be sent from a terminal (with a delay between each character lower than 10 seconds).

The command mode is used to read and update the module configuration registers. The registers are shared in 2 types: write only (W) or read/write (R/W) (see chapter. « registers description » and the "ARF18 remote control learning process" document)

COMMANDS

A command starts with the 2 ASCII 'AT' characters. 'AT' means 'Attention' followed with one or several characters or other data.

Each command must be ended with <cr> (carriage return, ASCII code 0x0D).

The response sent on the serial output for each command corresponds to the ASCII character 'O' for an accepted command and ASCII character, 'E' for error.

SET OF COMMANDS

Commands	Register management
ATSn?	Display the Sn register content where n represents the register number. The response has the following format: Sn=y<cr><lf>
ATSn=m	Set the Sn register value with 'm'. n represents the register number (example, selection of number of stop bits: ATS213=1).
AT/S	Display registers value. The response has the following format: Sxxx=y<cr><lf> for each register.
AT/V	Software version display. The response has the following format: Adeunis RF : One way smart remote control receiver I Vx.yy<cr><lf>
ATR	All the registers are initialised with their default value
AT&W	To save the new configuration in EEPROM. Each time you switch on the serial decoder, the EEPROM configuration will be loaded in the serial decoder registers.

REGISTERS DESCRIPTION

The register value can be updated using the ATSn=m<cr> command and displayed using ATSn?<cr> command.

The value of the registers is located in RAM. The parameters are lost in case of power off. To save the registers, it is necessary to use the AT&W<cr> command.

Access	Registers	Function	Description
	<u>Serial link</u>		
R/W	S210	Baudrate	Serial link data rate: '2' : 2400 bits/s '3' : 4800 bits/s '4' : 9600 bits/s (default value) '5' : 19200 bits/s '6' : 38400 bits/s '7' : 57600 bits/s '8' : 115200 bits/s
R/W	S211	Data length	Number of bits '7' : 7 bits '8' : 8 bits (default value)
R/W	S212	Parity	Parity '1' : none (default value) '2' : even '3' : odd
R/W	S213	Number of Stop bits	Number of stop bits (serial link) '1' : 1 stop (default value) '2' : 2 stops

Other S8xx registers are available for the learning process. They are described in the "ARF18 remote control learning process" document.

NORMAL MODE

During normal operation, the module sends on the serial output the serial number and the key number of remote control received on its radio link. The format of the ASCII received frame is the following:

:<serial number> <Key number><CR><LF>

- : (ASCII code 0x3A)
- Serial number is the remote control serial number in decimal format (1 to 8 digits)
- Followed by a space (ASCII code 0x20)
- Key number is the key pressed number of the remote control (2 digits from 01 for key 1 up to 24 for key 24)
- CR (ASCII code 0x0D), LF (ASCII code 0x0A)

In addition, if the remote control was previously learned by the module, the receiver outputs 1 to 4 are managed according to the remote control key pressed. For example: output 1 for key 1 until output 4 for key 4. These outputs work in monostable or bistable mode according to the Sel0 and Sel1 input. See "ARF18 remote control learning process" document for details.

SPECIFICATIONS

• General characteristics

Parameters	Nominal values	Notes
<i>Radio characteristics</i>		
Frequency	433.92 MHz	-
Modulation	ASK	-
Sensitivity	-104 dBm	-
<i>Electrical characteristic</i>		
Power supply (VCC)	3.3 V _{DC}	+/- 10%
Consumption (Rx permanent listening)	15mA	
<i>Mechanical characteristics</i>		
Size (mm)	43.6 x 23.2mm	-
Operating temperature	-20 to +70 °C	-

• Reference

	board
ARF18	ARF7293A