

ARF30 Analog User Guide



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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
283 rue Paul Louis NEEL
38920 CROLLES - FRANCE

declares that the product

Product Name: ARF30
Product Number(s): ARF6493D / ARF6494D
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 Annex III of the RTTE directive.
- The use of the spectrum is harmonised by the fact that the product never falls in one of the restrictions listed in appendix 3 (Annex 1, band E) of the CEPT recommendation 70-03.
- Receiver class (if applicable): 2.

Crolles, April 4th, 2001

VINCENT Hervé / Quality manager

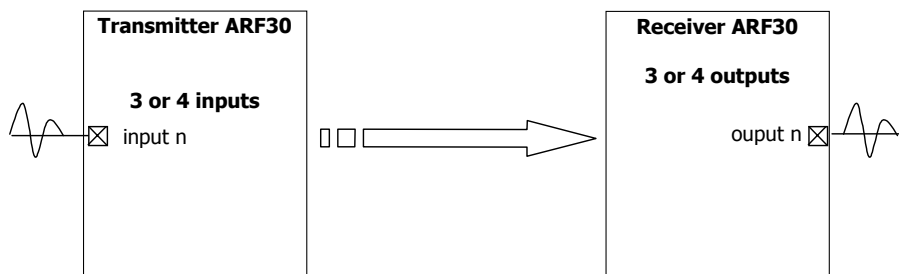
PRESENTATION

The ARF30 system enables four analogic values to be transmitted from one point to another. It is a unidirectional system - the transmitter converts and transmits the values by radio channel, and the receiver decodes the message received and restores the values. The values can be either a voltage value between 0 and 5V (10V) or a current value between 0 and 20 mA.

The transmitter scans its inputs continuously and triggers a radio transmission every 100 ms.

The link between a transmitter and one or more receivers is only effective after a learning phase.

The products are available either in card version to be integrated in an assembly or in an IP65 enclosure.

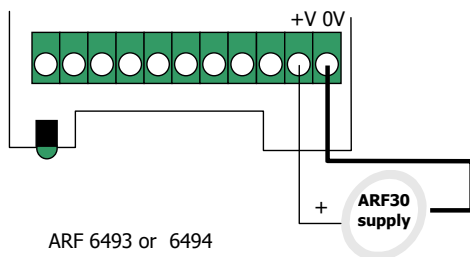


PRODUCT POWER SUPPLY

To perform wiring of these products, the bottom part of the housing (part with stuffing box) has to be opened by unscrewing the two black screws on each side.

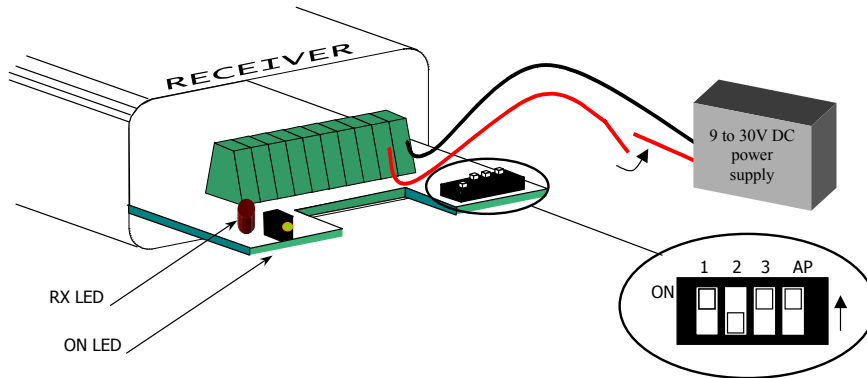


The ARF30 range products are supplied with a **DC voltage** supply. This supply should not exceed $27 V_{DC}$ for the transmitters and not exceed $30 V_{DC}$ for the receivers.

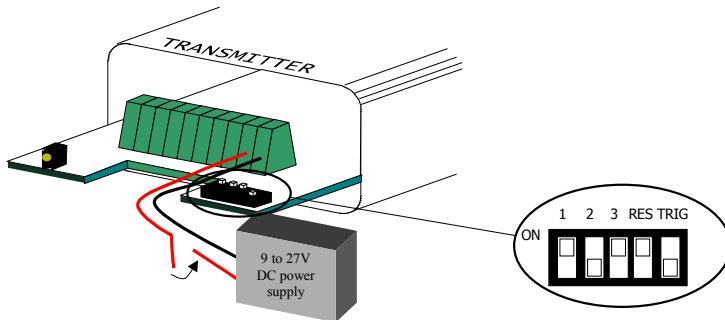


ASSOCIATING A TRANSMITTER TO A RECEIVER

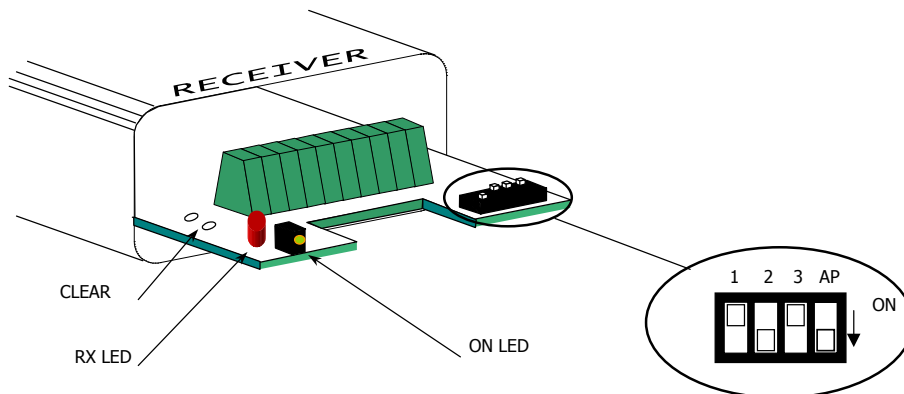
The red RX and green ON LED's are not lit, there is no transmitter associated to the receiver. Set the AP switch to ON to switch to learning mode. The green led flashes.



The address switches (ADD 1, 2 and 3) must be in the same position on the transmitter and receiver. These two pieces of equipment must be at least 3m apart. Set on the power supply of the transmitter to be associated to the receiver in learning mode.



After a few seconds, set the learning switch AP on the receiver to OFF. The red RX and green ON LED's should light up continuously. If the red RX led lights intermittently, this indicates transmission losses. When transmission is interrupted the red led remains shut.



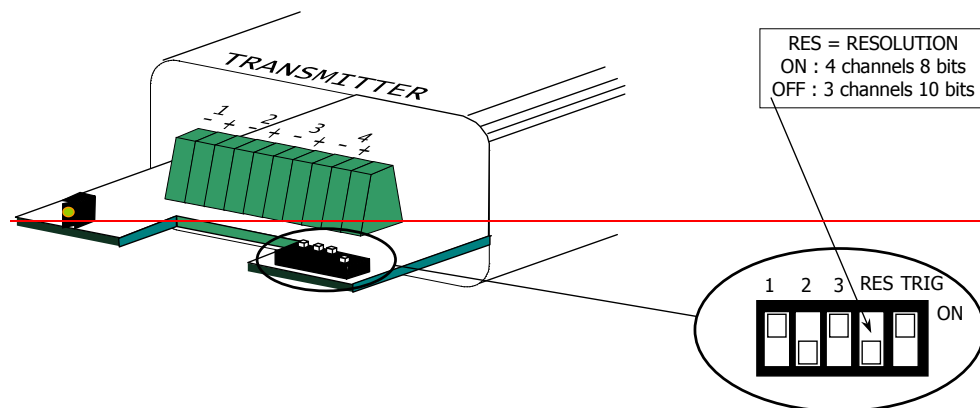
- Memory clear

To clear all the recorded serial numbers from the receiver memory, short-circuit the two pads marked "EFFACE" for more than 5 seconds. End of clearing is indicated by the green ON led flashing quicker.

When the operation has been successfully performed, the ON and RX LED's remain shut. To make the product operate again go back to the beginning of paragraph 4.

INPUT WIRING

The inputs are wired on the transmitter.

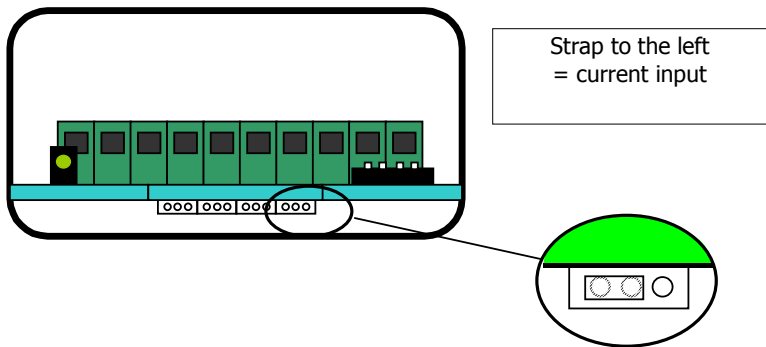


The channels are independent; they can be either a voltage or a current read. Full scale is respectively 0-5V or 0-20mA.

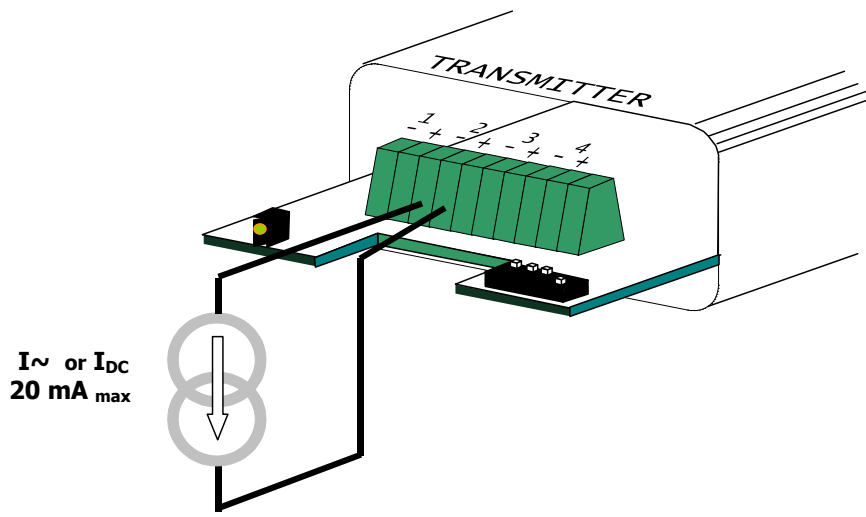
The choice of the value to be converted is made by moving the strap that is under the input terminal block.

Wiring can be performed with a 10-conductor 24 AWG multicore cable. For long connections, twisted multipair wires are recommended. The external diameter of the wire must be 6.5 mm maximum.

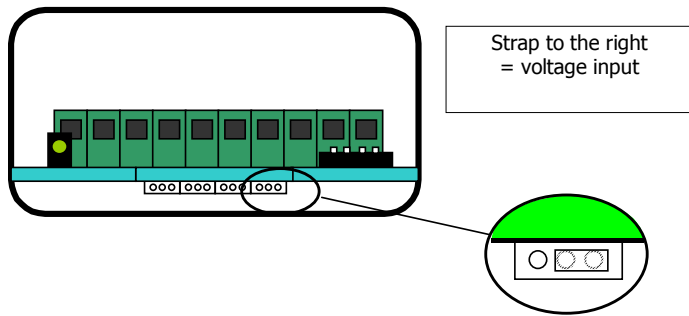
- 0-20 mA input



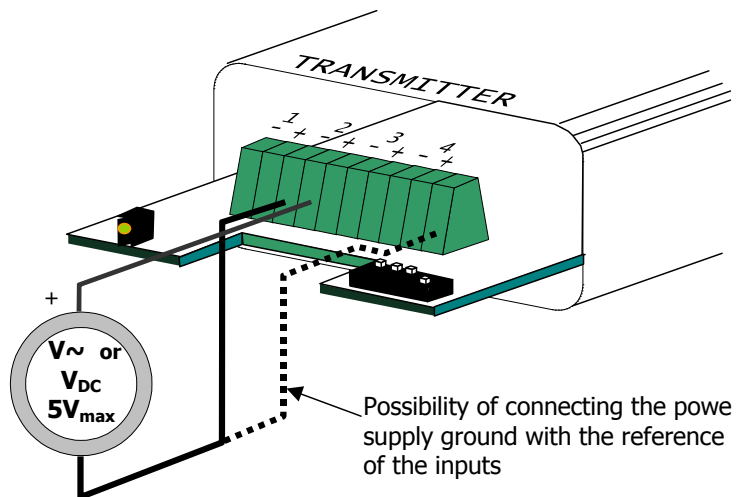
The current loop, output from the sensor, must be wired so that the current is input via the + terminal and output via the – terminal:



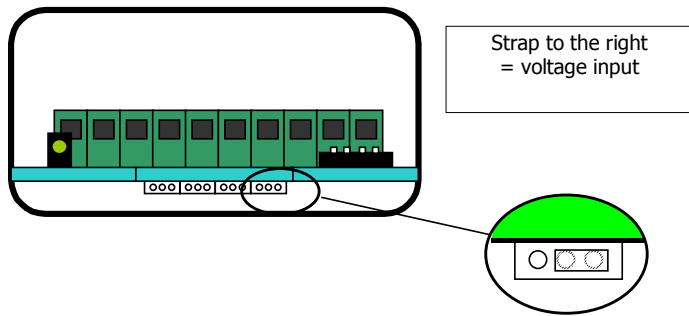
- 0-5 V input



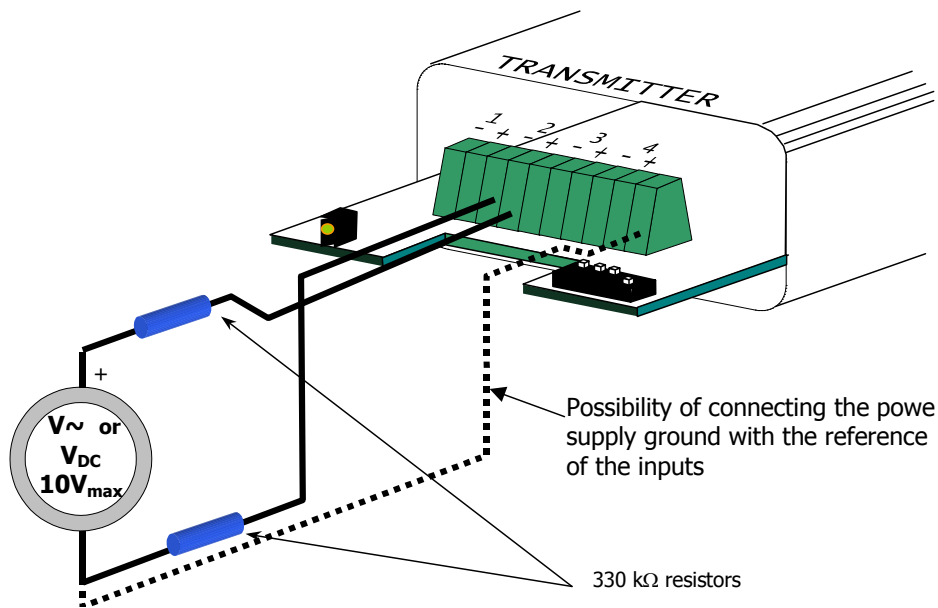
The voltage reference must be connected to the – terminal of the input concerned, and the voltage to be converted to the + terminal of this same input:



- 0-10 V input



The voltage reference must be connected to the – terminal of the input concerned via a 330 kΩ series resistor. The voltage to be converted to the + terminal via a 330 kΩ series resistor of this same input:



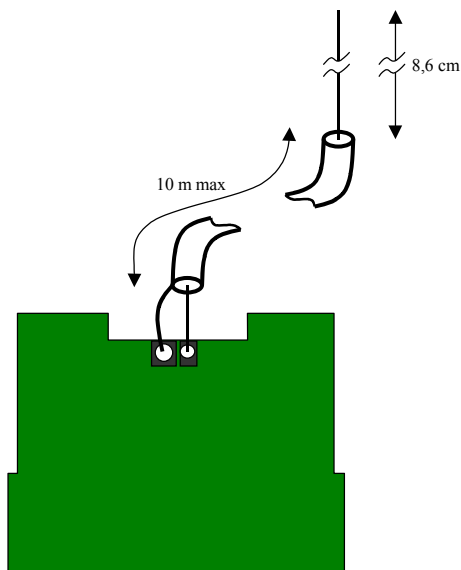
CAUTION: in this case the outputs remain between 0 and 5 V, there is division by two.

ANTENNA WIRING

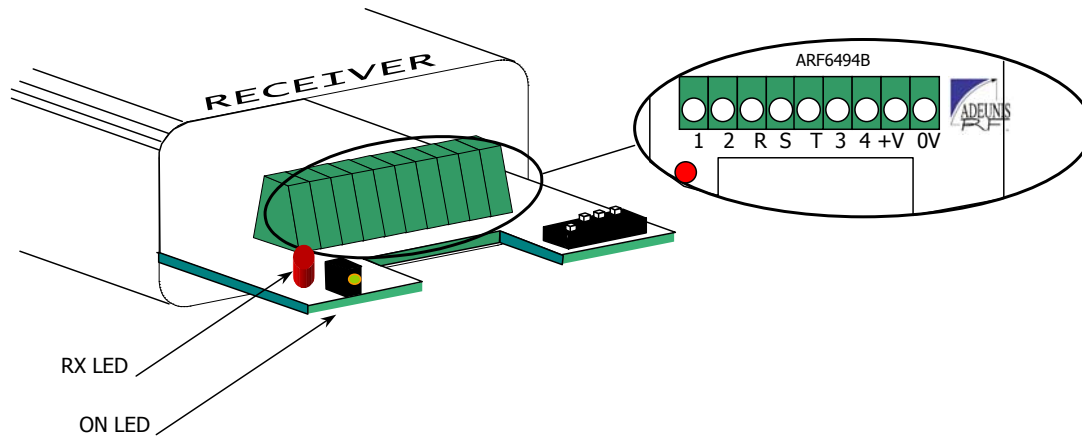
In daughter card version, an antenna has to be added to obtain correct communication between the products.

This antenna should be a wire with a length of $\frac{1}{4}$ wave i.e. about 8.6 cm. This length is that which has to extend outside the housing if the latter is metallic.

This antenna can be located remotely by using a coaxial cable with its braid stripped over the last 8.6 centimetres.



OUTPUT WIRING



The outputs are wired on the receiver.

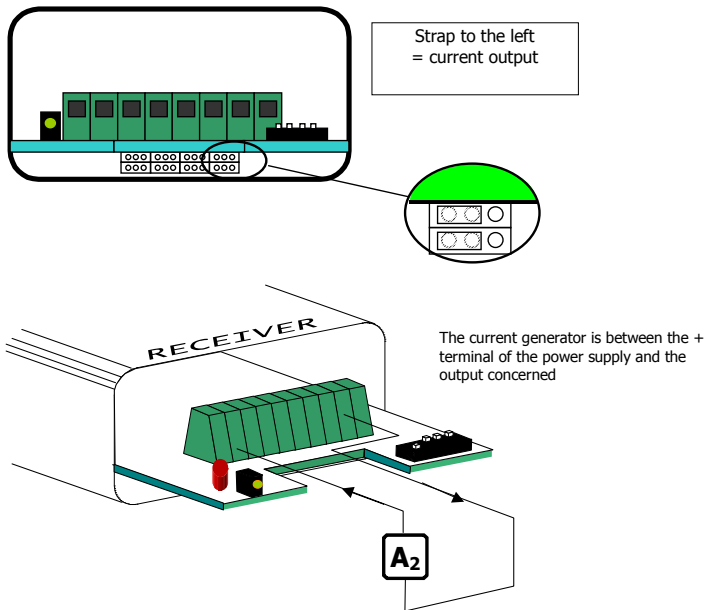
The outputs are independent from one another and from the nature (voltage or current) of the inputs. The type of output is changed by moving the two corresponding straps horizontally

Output 1 copies the level on input 1, output 2 that of input 2, etc.

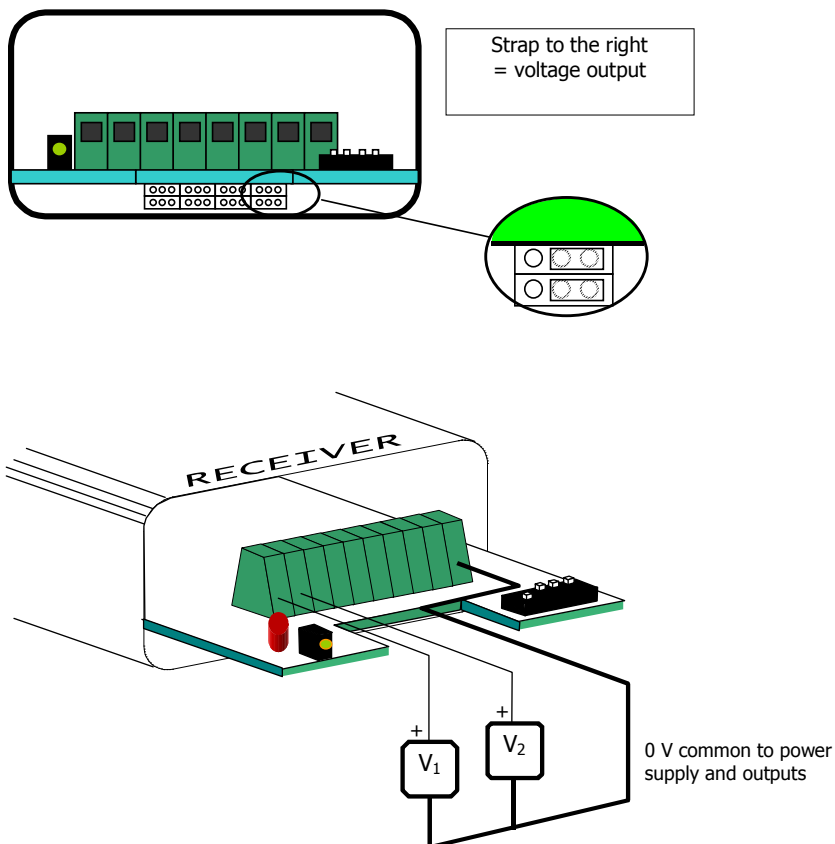
However use of the ARF30 system for conversion purposes introduces an error of 10% compared with the expected result e.g.: a voltage of 2.5V on input which on output should supply a current of 10 mA will deliver 11 mA. Inversely, a current loop generating 4 mA, which would correspond to a voltage of 1V will generate a voltage of 0.9V.

The receiver also has a TTL level series data output (S) and a data validity output (R).

- 0-20 mA output

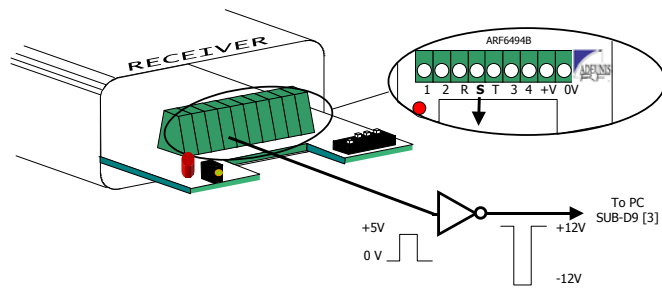


- 0-5 V output



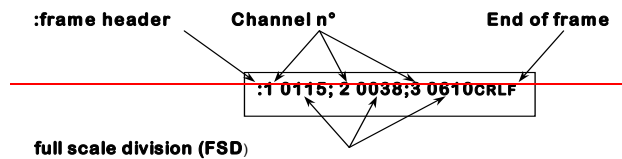
The voltages generated are available between the 0V of the power supply and the outputs.

- Serial link output

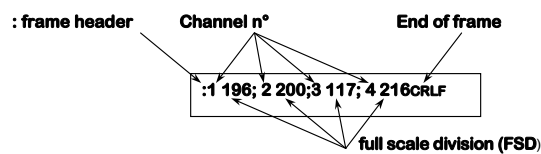


This output is on the terminal marked S. It supplies at 9600 bauds, 8 bits with no parity 1 stop, 8N1, the ASCII string described hereafter.

Electrically it delivers TTL levels that have to be converted into RS232 for example to connect to a PC.



4 channels on 8 bits



In the example above

channel 1 equals: $196/256 = 0.766.FSD$

channel 2: $200/256 = 0.781.FSD$

channel 3: $117/256 = 0.457.FSD$

channel 4: $216/256 = 0.844.FSD$

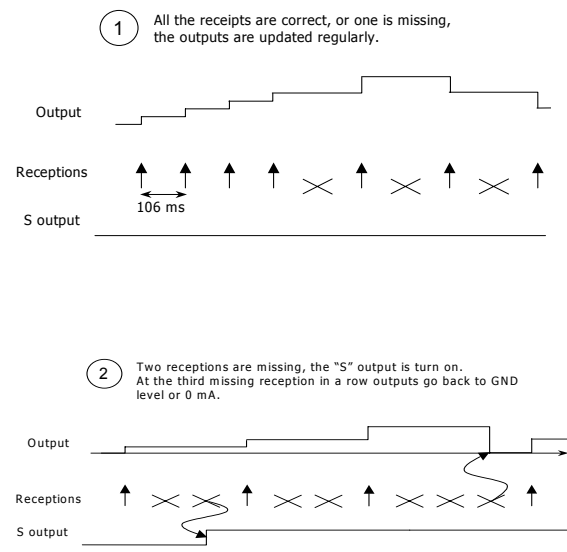
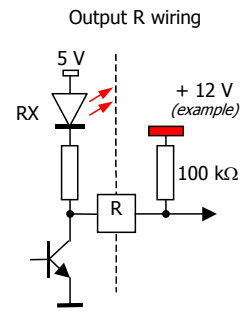
N.B. Depending on the cases $FSD = 5V$ or $20 mA$.

- **Validity output**

This is an **Open Collector** output; it is marked R on the terminal block.

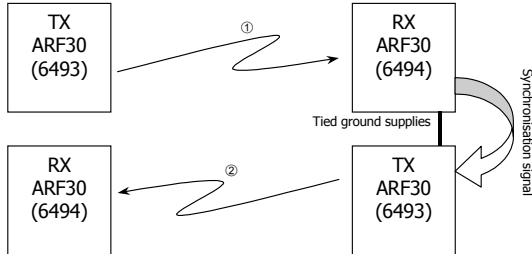
It is at 0V when the receiver is receiving correctly and at high level when receipt is bad. The red led RX indicates the state of this output: On - receipt is correct, Off - no receipt.

It is not a linear output. This enables a zero output level due to absence of receipt to be differentiated from that due to a zero level on input.



SYNCHRONISE MODE

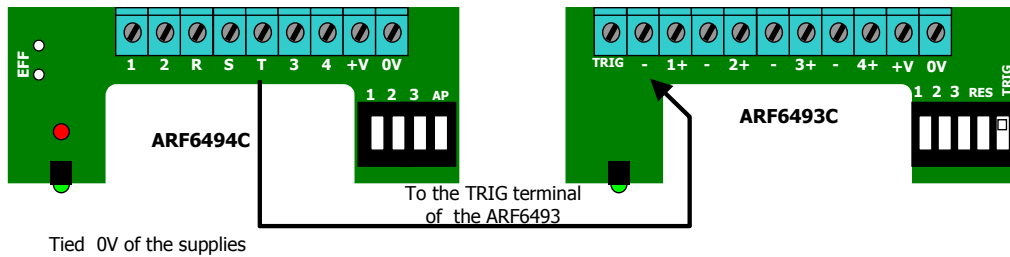
This mode allows bi-directional communication with 2 pairs of ARF30. With this functioning the return link is controlled by the first link.



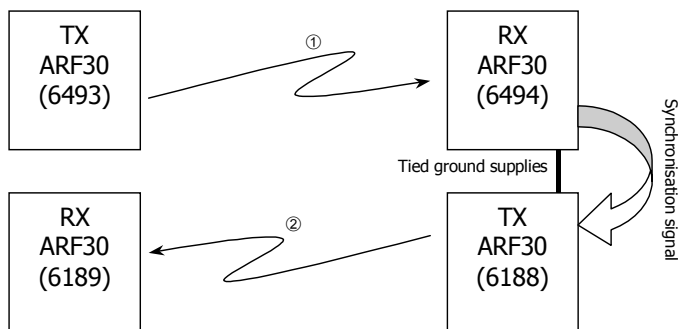
Number (2) transmission is being processed only when the link (1) is performed.

Positioning switch #5 marked TRIG on ON does putting an emitter in synchronised mode.

Then tied the synchronisation output of the receiver of the link (1) (terminal marked "T" / ARF6493) with the terminal tagged TRIG of the emitter of the link (2).



NB: It is potential to synchronise a digital ARF30 system and vice versa.



TECHNICAL DATA

- **Transmitter**

Four 8-bit inputs

Power: 500 mW / 50 Ω .

Consumption: 30 / 450 mA.

Operating temperature: -20°C / + 70°C

- **Receiver:**

Four 8-bit outputs

Serial data output.

Receipt quality output.

Sensitivity: better than 1.5 μ V.

Consumption: 53 mA except output.

Operating temperature: -20°C / + 70°C

Frequency: 869.525 MHz

- **Conversion:**

0-5 V or 0-20 mA inputs by moving a strap.

0-5 V or 0-20 mA outputs by moving 2 straps.

Precision 1%, temperature variation \pm 1 LSB.

Sampling period: 106 ms.

- **Dimensions**

IP65 chip: 104 x 300 x 35 mm

Distance between fixing points: 4 holes diam. 4 to 92 x 61 mm

- **References**

ARF6493C: ARF30 transmitter card version.

ARF6493D: ARF30 transmitter IP65 enclosure.

ARF6494C: ARF30 receiver card version.

ARF6494D: ARF30 receiver IP65 enclosure.

