# ART-27C BALLOON PORTABLE STATION


# User Manual

## 1. Introduction

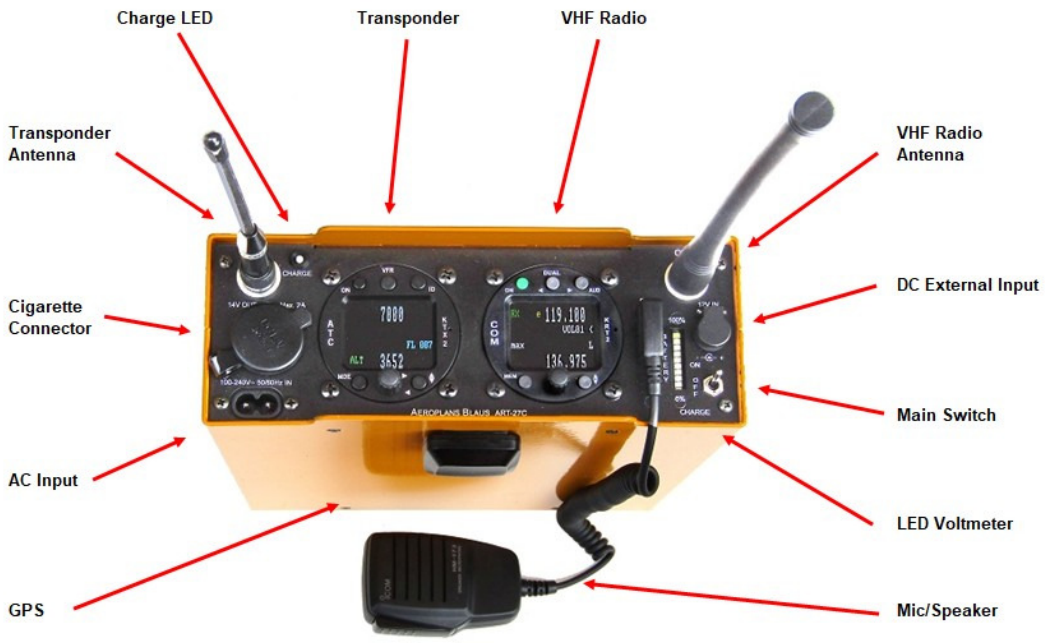
Dear customer, thank you very much for adquiring this top-line communications equipment. We have carefully designed it to provide many years of reliable operation.
Please read carefully the entire manual and keep it in a secure place for future reference, it contains important information about safety and operation of this device.

The ART-27C is a portable ATC/COM station specially designed for use in balloons, but will fulfill its function were a portable Transponder (ATC) and/or VHF radio (COM) are needed. To fit the needs of every customer it has modular design, so you can choose the equipments to be installed in.

## 2. Common parts

The box is made using rugged aluminum, lightweight but robust at the same time. Installed equipments are not waterproof so please protect them against rain and dust. Cordura carry bag with protective cover is supplied with every portable station.

The picture shows ART-27C in its maximum configuration, with all optional modules installed. In the front panel you will find the following:




### 2.1 Battery

Inside the box we have a very powerful 135Wh Lithium-Ion battery with a smart Battery Management Circuit (BMC) that controls over-charge, over-discharge, overload, cell balance and temperature for a long, safe and reliable operation. Don't worry about recharging a partially discharged battery because Lithium-Ion batteries are not affected for this. Battery performance will decrease over the time. Expected life is 1.500 charging / discharging cicles. If you think your battery is offering poor performance just contact us to replace it with a new one.

### 2.2 Charger

The charger is located inside the box also. It is designed to fully charge the battery in less than 7h and accepts any mains AC system. The charge LED will light red when the battery is charging and green when the battery is full. To charge the battery the main switch has to be in the CHARGE position and the AC cord pluged by both sides.

### 2.3 Cigarette connector

You can use this DC output to power any device up to 2A (check voltage range!). In the event of excessive current drain (or unexpected short circuit) the internal electronic fuse will disconnect the battery. To recover power just disconnect the external load, and cicle main switch to OFF and ON again.
If you prefer an USB power connector just use an adapter from cigarette to USB.

### 2.4 Led Voltmeter

The LED voltmeter bar indicates the voltage supplied to the radio, transponder, GPS and cigarette connector. It can be used to know approximately the charging level of the battery, but it is not a precise indicator because Lithium batteries exhibit a very flat voltage/time discharge curve. This means the LED voltmeter will show full charge for 80% of discharged energy and then will decrease very suddenly from green to orange and red.

### 2.5 Main Switch

To turn on the box just move the power switch to the ON position and you will see the LED voltmeter battery reading. Then you can individually turn on the radio and/or transponder by its own power button.
To turn OFF the box just move the power switch to the OFF position and power supply will be removed from radio, transponder, GPS and cigarette connector.
Use the CHARGE position only to charge the battery.

### 2.6 External DC Input

For very long use the ART-27C can be externally powered by the DC External input connector. When using this input the main switch and the LED bar voltmeter are inoperative. This input is reverse polarity protected, but not over-voltage or over-current protected so that an external fuse in the supply cable is mandatory when using this input.

## 3. Optional parts

These are the available parts you can order to be installed in the portable box. That parts can only be installed in our facilities by our qualified engineers:

### 3.1 VHF Radio

We offer 2 possibilities: Get the TQ Avionics KRT2-S if you want a state of the art lightweight and fully featured (6W, dual watch, double channel spacing, etc... ) COM radio. Get the Funke ATR833S if you want a reliable but more economic option.
Supplied with the radio you will find an external mic/speaker and a rubber antenna.
To avoid the possibility of mistake the radio antenna has BNC connector and the transponder antenna has TNC connector.
Please use the supplied protective cap on the antenna connector when not in use.

EASA Form 1 Certificate of the VHF radio is provided. We strongly recommend to carefully read and understand the entire user manual provided by the manufacturer.

### 3.2 Transponder

We offer 2 possibilities. The TQ Avionics KTX2-S is the best priced, lightweight and energy saving all mode no ADS-B transponder. The Funke TRT800H-LCD allow to transmit uncertified ADS-B Out. Both transponders are all mode, do have built-in altimeter and can have up to 8 different registrations.
Important: Mode-S will be enabled only after programming the HEX code and balloon registration. Ask your local Air Control Agency to get that data.

Supplied with the Transponder you will find a rubber antenna and a 3m coaxial extension cord.
If you need a very compact installation you can directly connect the rubber Transponder antenna to the TNC base connector. Proceeding this way is ok, but due to high power transmission of the Transponder you will probably hear the squawk noise when squelch of the VHF radio is open. This do not decrease VHF communications performance in any way, but can be a little bit annoying.
To avoid that we suggest you to use the supplied 3m coaxial extension cord. Just connect the male TNC connector of the extension cord in the base female TNC connector of the box and the rubber Transponder antenna at the other end.
Be sure you screw all connectors correctly until tight. Now you can leave the antenna hanging out of the balloon basket. Proceeding this way will also increase Transponder performance.
Please use the supplied protective cap on the antenna connector when not in use.

Original printed manual and two EASA Form 1 Certificates (One for the Transponder and the other for the External Memory of the Transponder) are also provided. We strongly recommend to carefully read and understand the entire manual.

### 3.3 GPS

Why do we need a GPS in the communications box? To answer this question we have to take a look at the benefits of the new Mode-S transponders.
Considering Mode-A transponders only reply the squawk code and Mode-C the squawk code + altitude, the new Mode-S transponders can transmit a lot of important information for aircraft safety. This is the ADS-B protocol.
Basic Mode-S transponders broadcast the following information: Registration, altitude, VSI, squawk code, type of aircraft and its maximum speed and flight ID.
If you connect the GPS to the transponder then you can also broadcast the following information: GPS position, heading and ground speed.
Transmiting the complete data is important in order to warn traffic detection devices and precise position in the Airport Traffic Control screens.

## 4. Specifications

- Manufacturer: Aeroplans Blaus
- Model: ART-27C
- Weight of maximum configuration: 3,3 Kg
- Dimensions: 217x80x265mm
- Operating temp range: -15ºC to +55ºC
- Battery: 135Wh Li-Io + BMC
- Charging time: < 7h
- Mains AC input: 100 to 240V AC, 50-60Hz
- External DC input: 11,5V to 16,5V (6A max). Reverse polarity protected.
- Cigarette output: 15,4V to 10,8V (2A max) depending on battery charge.
  ***Before connecting any device in the cigarette output please verify it can handle the entire voltage range.***

For technical questions, ordering or service just contact us here:

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