**Polycon 004RLI Base Station**

**004RLI-00U Series**

**004RLI-11U Series**

**004RLI-21U Series**

**Installation and Operation**

# Revision history

| Revision | Date | Description | List of effective pages |
|---|---|---|---|
| Issue A | 2011-06-30 | First release of 004RLI series Installation and Operation manual. Replaces Operation manual PUBL040-0B Issue 3 | New document |
| Issue B | 2011-08-24 | Editorial change: Inconsistency in part number reference | Page 2-2: Section 2.5 Updated part number reference.<br><br>Page 2-5: Figure 2-4 updated part number reference.<br><br>Page 3-2: Section 3.4 and figure 3-1, updated part number reference. |
| Issue C | 2012-07-04 | Added 004RLI-21U Series, and editorial changes | Due to repagination, replace all pages. |
| Issue D | 2014-06-20 | Corrected dead reference<br><br>Updated figure 2-4 | Page 2-2: removed dead reference<br><br>Page 2-4:Updated figure 2-4 |
| Issue E | 2015-03-05 | Mounting holes measurement corrected to 161,5.<br><br>Channel separation corrected to 25KHz only.<br><br>Added equivalent colour code. | Page 1-3: Updated figure 1-2<br><br>Page 1-7: Channel separation<br><br>Page 1-7: Colour |

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# Section 1:        General information

## 1.1  Introduction

The Polycon system is a wireless extension of an aircrafts ICS. The system consist of one base station and one or more handheld radios. The base station is connected to the aircraft's ICS, and the handheld radios are connected to a headset. The headset can be incorporated in the helmet of the users. The base station works as a repeater station; both between the wireless crew, as well as between wireless crew connected through Polycon and crew connected to the wired ICS onboard the aircraft.

The system allows the users equipped with Polycon wireless radios to communicate with the rest of the crew as if he/she was connected to the wired part of the ICS. Due to purpose built technology and utilizing the UHF radio band, the wireless users may leave the aircraft and still retain robust and dependable communication over long distances, and to some extent even when the radio is located inside structures and even submerged.

Both the base station and the handheld units operate with Axnes Patented No Loss Voice activated transmission (NIVOX) solution, securing optimal VOX control of the communication. Noise cancelling electronics incorporated makes VOX operation achievable even inside or in close vicinity of the aircraft, on ground or in hover mode.

The system can be programmed with up to 16 channels in the ranges of 408,600 – 409,600 MHz (Base Station Rx) and 418,600 – 419,600 MHz (Base Station Tx). To accommodate for individual customer requirements or national radio licensing authority regulations, other frequencies outside this range may be supplied as an option, limited to the 406 to 470 MHz frequency band. The alternative frequency and other specifications changes must be discussed with Axnes Aviation prior to ordering in order to clarify the eventuality of any technical limitations.

This manual describes the installation and operation of the Polycon 004RLI Base Station.

The base station is compatible with all Polycon MP20-Series handheld radios as long as the systems match on channel and frequency specifications.

## 1.2  Mechanical description

The outline of the mechanics is found in Figure 1-1 and Figure 1-2 below.

The chassis is made out of painted saltwater resistant milled aluminium, and consist of two parts, a main body and a back lid. The back lid has mounting flanges with predrilled mounting holes.

Display, status indicators and user input buttons are located at the front facia of the base station. Connectors are located at the front on the 004RLI-00U series and 004RLI-11U series, and at the rear no the 004RLI-21U series.

The unit is designed to be mounted in the ceiling or bulkhead of the aircraft cabin, or in a suitable compartment. Depending on the user's operational mode and procedures, access to the front buttons and display might be required during operation.

The base station consists of the following main circuit board modules and electronic components:

- TX Radio module
- RX Radio module
- Interface processing module
- Duplex filter
- Control panel/display module
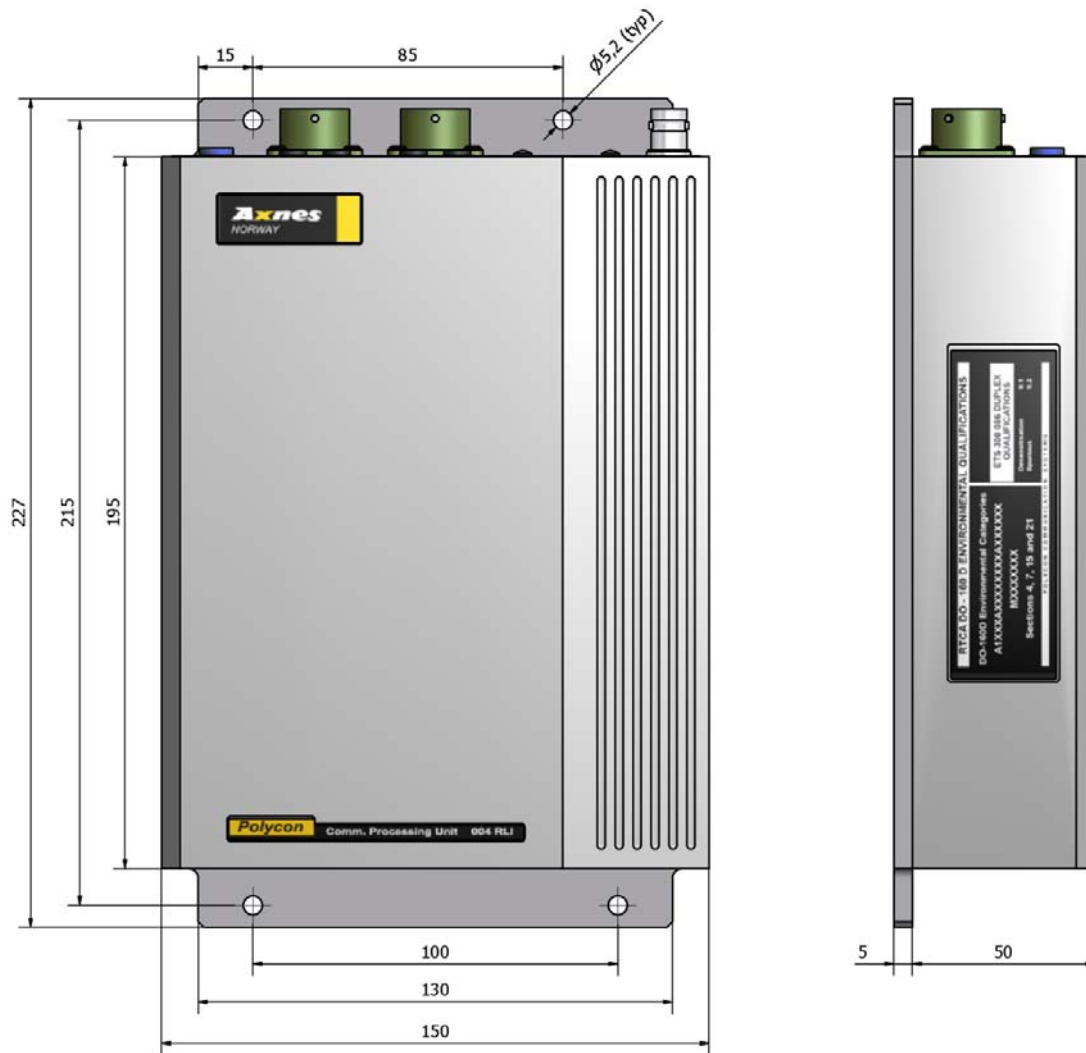


**Figure 1-1: 004RLI-00U Series and 004RLI-11U Series outline**
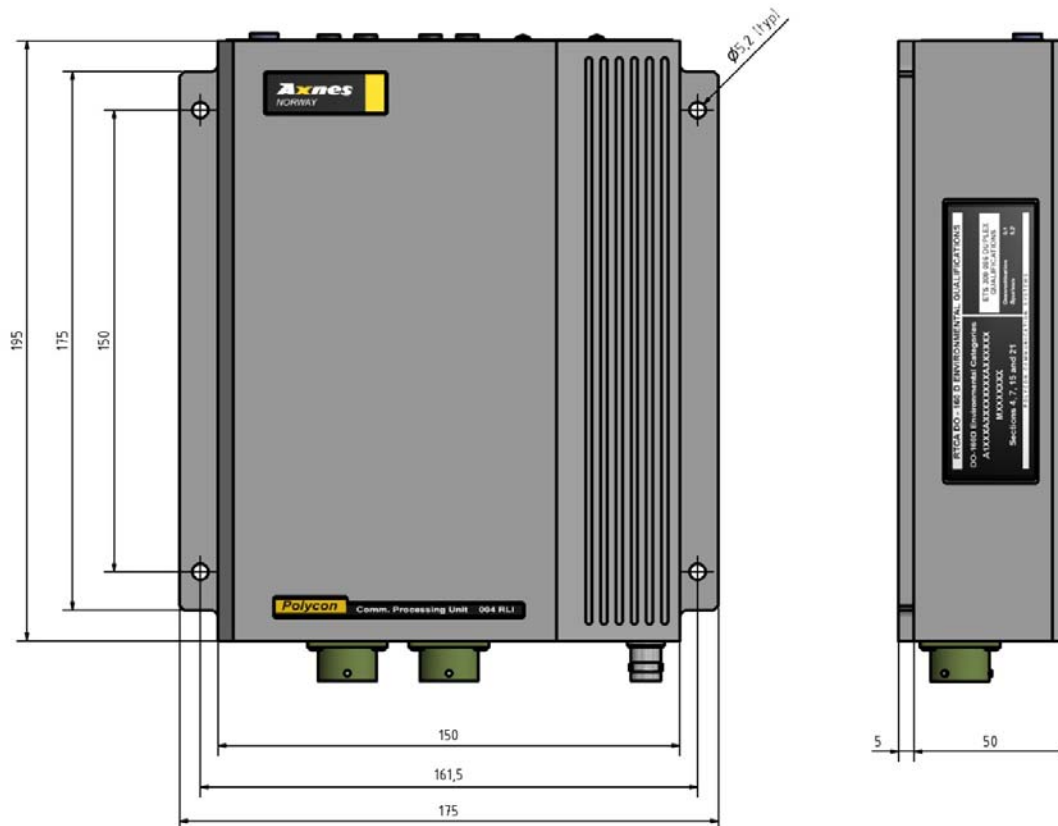
**Figure 1-2: 004RLI-21U Series outline**

## 1.3  Connectors and Control Functions

All electrical connections to the base station are located on the front facia or at the rear of the base station. The electrical connections consist of:

- 3 pin MIL spec connector for power supply and remote TX ON/OFF control.
- 10 pin MIL spec connector for intercom interface and programming
- BNC female connector for antenna connection.

The front panel has the following user interaction and status indicators:

- Display for channel indication, and configuration menu.
- Indicator light Power.
- Indicator light TX off.
- Power ON/OFF and Store button.
- Base station transmit ON/OFF button
- Menu and menu navigation buttons

## 1.4  Electrical and functional description

The base station relays communication between wireless users operating a MP20 series handheld radio and users connected by wire to the aircraft intercom system. The base station integrates with the ICS and will relay all communication between the wired and the wireless part of the system, and will perform mixing of audio as needed to give the crew the experience as if the wireless users are connected to the wired intercom system.

The base station may be connected to the central intercom system, or to a station box, depending on preferred operational mode.

The base station provides the following features:

- Wireless extension of aircraft intercom system with significant range and robustness.
- Typically range around 10 nm line of sight over water, and good ability to penetrate structures.
- Operating in duplex mode and utilizes the UHF band.
- System can be adapted to any frequency in the frequency band 406-470 MHz with a recommended 10MHz distance between Tx and Rx
- Up to 16 programmable communication channel pairs.
- Flexible intercom interface. Polycon Base Station may be connected to keyed, hot-mic, or VOX operated intercom inputs. The base station features a built-in relay output for keyed intercom inputs.
- Wide intercom level support. Signal levels delivered by the base station to the intercom system are controlled by settings in the base station and an optional line amplifier. Signal levels delivered from the intercom system to the base station may have a wide dynamic range as the input is controlled by an Automatic Gain Control (AGC) function. This allows the base station to operate flexibly from volume settings in the station box or master gain in the ICS.
- NIVOX – Polycon patented VOX operation. Conventional Voice Operated transmission (VOX) operates by opening transmission when input has reached a certain level over a given period of time. This will normally cause 'clipping' of the first word in the transmission, and may cause difficulty in differentiating between words such as 'No' and 'Go'. Polycon features a Non Interrupted Voice Activated transmission (NIVOX). Polycon NIVOX will ensure non-clipped transmission of all input, and full words are transmitted, without the drawback of traditional VOX.
- Adaptive NIVOX trigger level. The NIVOX will monitor the ambient noise, and thus avoid triggering transmission based on high background noise levels. A given voice overlay to the noise is needed to trigger transmission. This functionality prevents background noise from unintentionally introduced to the intercom when the background noise rises.
- Output Power. The base station will have a factory preset transmit power of approximately 300mW.
- One touch transmit disable. The transmission from the base station can be disabled by a button press. This may be used if multiple base stations with same channel configuration are within range of each other, or for other reasons when the transmission form the base station needs to be disabled. This function can also be remotely operated by connecting an external switch.
- NVG friendly (004RLI-21U series).

For further details please refer to technical data and installation sections.

## 1.5  Identification of article

The base station is labelled with a part number. A standard Polycon Base Stations label will read 004RLI-00U and will be operating on the 419/409 MHz frequency MHz configuration. Units configured for other frequency bands will be labelled with part number 004RLI-11U-TxRx, were Tx and Rx denotes the two last digits of the Tx and Rx frequency in MHz.

Note: Some models may deviate from the number scheme, and use 004RLI-00U-xxxx, were represent a alphanumeric customer id. For those units the combination of Tx and Rx is found in the datasheet supplied with the unit.

The following table shows the part numbers in use:

| Part no: | Description |
|---|---|
| 004RLI-00U | Polycon Base station with front connectors. TxRx denotes customised frequency combinations for Tx and Rx. |
| 004RLI-11U-TxRx | |
| 004RLI-21U-TxRx | Polycon Base station with rear connectors. TxRx denotes customised frequency combinations for Tx and Rx. NVG friendly. |

**Table 1-1: Polycon 004RLI Part numbers**

## 1.6 Technical data

### 1.6.1 Operation

| | |
|---|---|
| Radio: | Duplex, dual frequency Rx/Tx |
| Frequency: | Rx:409±0.5 MHz Tx:419±0.5 MHz |
| Repeater function: | Relay between wireless and wired ICS crew |
| VOX operation: | Axnes Aviation patented NIVOX, ensures no loss and operation in high noise environment |
| Number of wireless users: | Unlimited |
| Number of Radio channels: | Up to 16 |
| Encryption: | None |
| Operating temperature: | -25°C to 55°C |
| Storage temperature: | -40°C to 77°C |

### 1.6.2 Power supply

| | |
|---|---|
| Supply voltage: | 9 – 35 V |
| Current consumption: | RX operation 100mA (@28V) |
| | TX operation 270mA (@ 300mW Tx and 28V) |
| Protection: | 2A internal fuse |
| | Reverse voltage protection |

### 1.6.3 Intercom interface

| | |
|---|---|
| Line output impedance (to ICS): | 1280Ω |
| Line output level: | Adjustable: 3,5 – 565mV rms (10mV - 1,6Vpp) unloaded 2-90mV rms (5 - 250 mVp-p) 600 Ω output load, 1KHz test signal |
| Line input impedance (from ICS): | 750 Ω |
| Line input level: | 25mV-3,5V rms (70mV-10 Vp-p), depending on the ICS AGC setting, ref. 2.8. |
| PTT control: | Built in to enable automatic keying of ICS PTT where desirable |

### 1.6.4 Mating Connectors

| | |
|---|---|
| Power: | MIL-C-26482-MS3 |
| ICS Interface: | MIL-C-26482-MS10 |
| Antenna: | BNC |

### 1.6.5   Radio characteristics

| | |
|---|---|
| Rx frequency: | 409 MHz (other frequencies as customer configurations) |
| Tx frequency: | 419 MHz (other frequencies as customer configurations) |
| Duplex separation: | 10 MHz |
| Channels: | 16 |
| Channel separation: | 25 KHz |
| Modulation: | FM |
| Frequency stability: | 25 KHz +/- 5 ppm |
| Receiver sensitivity | <1,5µV at 12 dB SINAD (@10 MHz duplex separation and 400mw output power) |
| Output power: | 30-400 mW |
| Deviation: | 5 KHz |
| Antenna impedance | 50 Ω |

### 1.6.6   Dimensions

| | |
|---|---|
| Physical dimensions: | 227x150x55mm (004RLI-00U and 004RLI-11U series)<br>195x175x55mm (004RLI-21U series) |
| Weight: | Approx. 1700g for 004RLI-00U and 004RLI-11U series<br>Approx. 1800g for 004RLI-21U series |
| Mounting: | Predrilled mounting flanges |

### 1.6.7   Material

| | |
|---|---|
| Material: | Aluminium 5052/6082  (Salt Water Resistant) |
| Paint: | Layer1: 2 comp. Wash primer CR, Sikkens/Akzo Nobel<br>Layer2: 2 comp. Auto Nova – None Sanding. Sikkens / Akzo Nobel<br>Layer3: 2 comp. Cooler Polyurethane Sikkens BT |
| Colour: | BT499G3 (DAF7482) |

## 1.7 Type approvals and records

### 1.7.1 Type approvals

The Polycon 004RLI Base Station has obtained general aviation type approval.

The Communication Processing Unit/Base Station complies with the following environmental tests as defined in Specification:

- RTCA/DO-160D: Environmental Conditions and Test Procedures for Airborne Equipment - July 29, 1997.

| RTCA DO-160 D test | Section | Category |
|---|---|---|
| Temperature and Altitude | 4 | A1 |
| Operational shocks and crash safety | 7 | - |
| Magnetic effect | 15 | A |
| Emission of radio frequency energy | 21 | M |

The Communication Processing Unit/Base Station also complies with the following duplex measurement tests as defined in Specification ETS 300 086 Radio Equipment and Systems; Land mobile service – Technical characteristics and test conditions for radio equipment with an internal or external RF connector intended primarily for analogue speech – January 1991. Report No. 98/13802/2 refers.

- Clause 9.1     Receiver desensitisation with simultaneous transmission and reception
- Clause 9.2     Receiver spurious response rejection

### 1.7.2 Type Records

The Design Authority will submit a Declaration of Design Performance (DDP).

The DDP will reference the following:

- Design Specification.
- Equipment Specification Number and Issue Number.
- General Assembly Drawings and Aircraft Equipment installation information.
- Master Record Index.
- List of Type Test Reports.

## 1.8  Accessories

| Article | Part no: |
|---|---|
| Line amplifier, Standard | AX-AMP-0030 |
| Line amplifier, Standard with PTT/squelch relay | AX-AMP-0080 |
| Fuselage mounted antenna | AX-ANT-0060 |
| Base station mounted antenna (for test use) | AX-ANT-0010 |
| 90˚ BNC antenna adapter | AX-CON-0310 |
| Connector kit, mating Polycon base, MS10, MS3, BNC for RG58 | AX-ADL-0120 |

**Table 1-2: Accessories**

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Document number
AX-PSB-UMAN-0022

Revision
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Date
2015-03-05

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# Section 2: Installation

## 2.1 General

The installation of the Polycon 004RLI Base station depends on the type of aircraft and the equipment installed and therefore only general information can be given in this section.

## 2.2 Inspection before installation

Before installing the Polycon 004RLI Base Station in an aircraft, carry out visual inspection for any transport damage, paying particular attention to the following:

- Dirt, dents, scratches, corrosion, broken attaching parts on the housing and housing parts.

- Dirt and scratches on the identification plate, front panel and marking.

- Dirt, bent or broken pins, cracked connector inserts.

- Missing screws.

## 2.3 Recommended maintenance

The Polycon 004RLI Base Station should be serviced by an Axnes Aviation certified service centre on a regular basis. Periodic maintenance of the Polycon 004RLI Base Station is recommended according to service letter published at Axnes resource website:

http://www.axnes.com/resource-center/service-letters/

Axnes Aviation certified service centres are found at:

http:\\www.axnes.com\support

or contact Axnes Aviation A/S at:

Phone: +47 37 04 08 00

FAX: +47 37 04 07 99

E-mail: service@axnes.com

It is recommended to keep the unit clean with a moist cloth. Clean electrical contacts, and cover with silicone grease Type "NOVA G624" or similar.

If the base station is not operating normally, check indicator lights and channel settings. Check also connectors for proper attachments, and external antenna connection with cabling.

A malfunction might also be corrected by rebooting the system by switching the system OFF for a few seconds and then ON again.

It is also recommended to go through the reset procedure found in AX-SVS-PRC-0002 Reset Procedure, to restore factory defaults, and perhaps clearing any accidental setting miss-adjustment before declaring the unit unserviceable. The reset document can be downloaded from:

http:\\www.axnes.com\support

Any repairs are to be undertaken by Axnes Aviation AS or approved partners only.

## 2.4  Mechanical installation

The Polycon 004RLI Base Station is designed for installation in the ceiling or on the bulkhead of the aircraft cabin, or in a suitable compartment. The necessary dimensional details are shown in 1.2 Mechanical description.

The radio is capable of immediate use following storage in its shipping packaging for up to 2 years at temperatures within the range -40°C to +50°C.  However, the equipment should be allowed to acclimatize within the operational temperature range (-25°C to +55°C) before being powered up.

## 2.5  Installation wiring considerations

The connection pin assignment is shown in section 2.7 Location of connectors and pin assignment.  The following points are to be observed for the wiring:

- Only cable fit for aviation (self-extinguishing) shall be used.
- Power supply cable shall be SWG 20.
- ICS interface shall be SWG 22.
- The ICS lines are each to be laid as 2-core twisted and screened (SWG 22) cables.
- Every single cable harness of a unit connector must have separate screening.
- Rubber sleeves are to be fitted over the soldering points on the unit connector.
- A fuse (1A) and circuit breaker should be fitted in the power supply of the Polycon 004RLI Base Station.
- 004RLI connecting cables must not be placed in close proximity to RF power cables or cables carrying impulse type signals.
- Check the wiring carefully before powering the unit. Particularly check correct polarity, (+28V) and (GND).

The actual installation and wiring of the Polycon system is depending on the aircraft type intercom system and other installed equipment. The information in this section should be regarded as recommendations only. Final wiring solution for any given aircraft must be determined by a qualified avionics professional only.
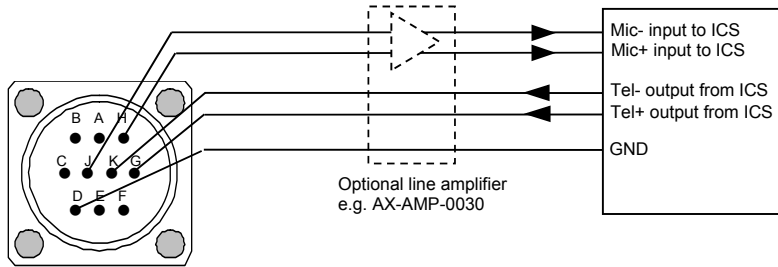
Power alternative 1:
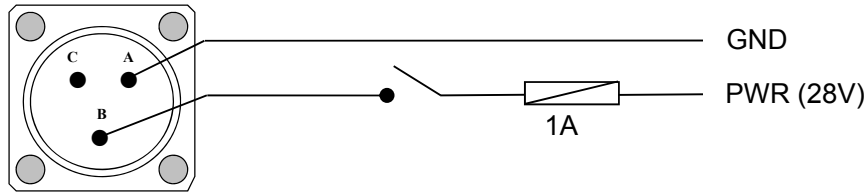


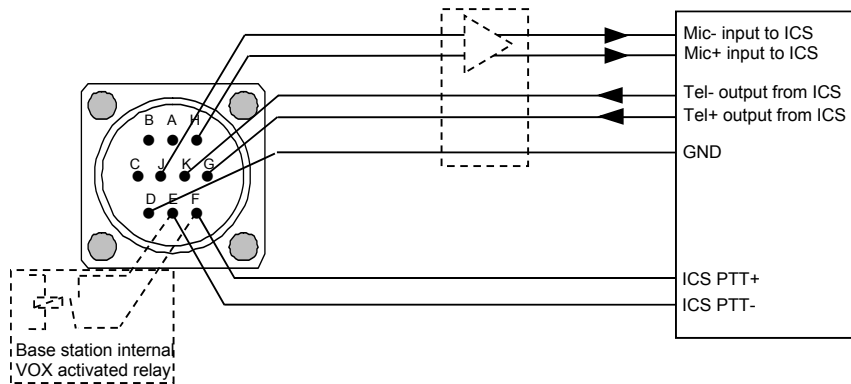Power alternative 2 (remote Tx Off):
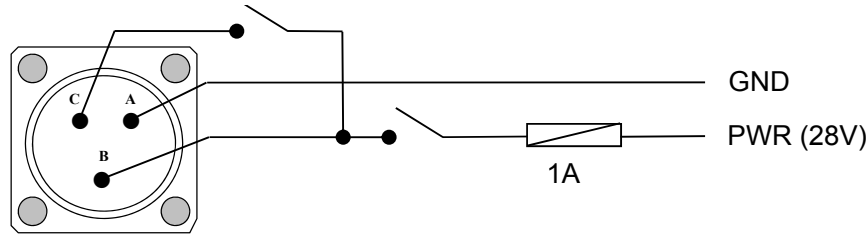


**Figure 2-1: Power connector**

Alternative 1, hotmic/VOX ICS input (no PTT):



Alternativ 2, PTT:



**Figure 2-2: ICS connector**

## 2.6  Dimensions Polycon Base Station

Refer to 1.2 Mechanical description

## 2.7  Location of connectors and pin assignment

All connectors are located in the front of the Polycon base station. There are three connectors:

- Power (MS3)
- ICS interfaces and programming (MS10)
- Antenna (ANT)

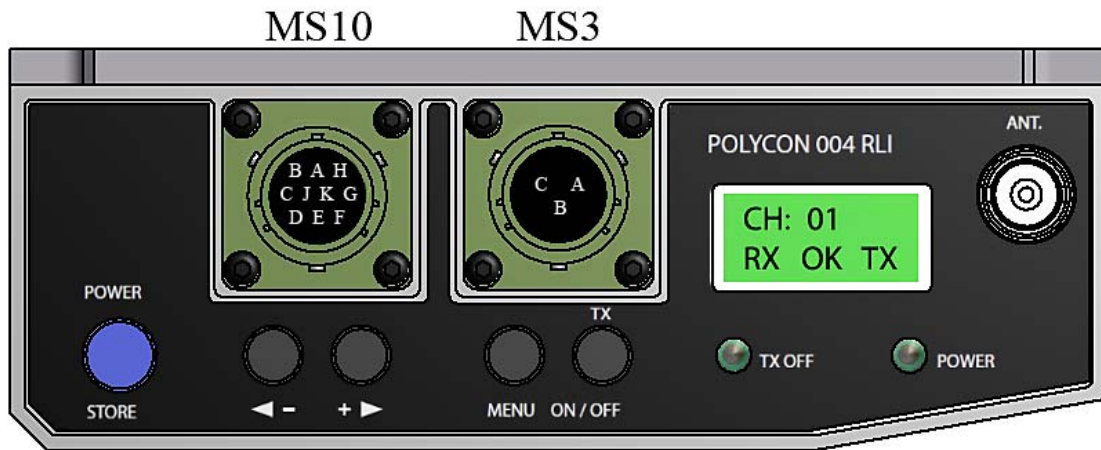Location of connectors is according to illustration below.



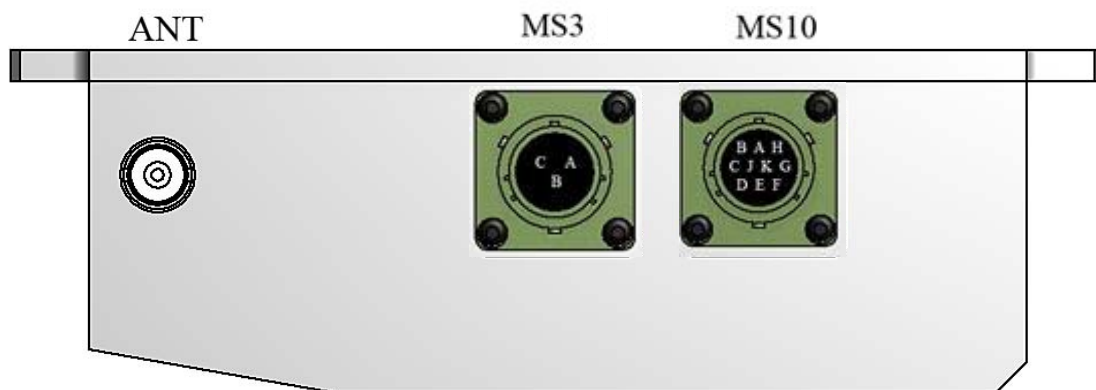**Figure 2-3: ICS connectors 004RLI-00U series and 004RLI-11U series**



**Figure 2-4: ICS connectors 004RLI-21U series**

Pin assignment and connector types are listed below.

### 2.7.1 MS10 Pin assignment

| Pin | Function | Levels |
|-----|----------|--------|
| A | Not used for aircraft wiring, for factory use only | NA |
| B | Not used for aircraft wiring, for factory use only | NA |
| C | Power output | 8V |
| D | Ground (0V DC) | Aircraft ground |
| E | PTT A | Connected to PTT B when communication over squelch level is received |
| F | PTT B | Connected to PTT A when communication over squelch level is received |
| H | Mic+ signal (to ICS) | Signals adjustable between 10mV - 1,6V unloaded, 5mV - 250 mV p-p 600 Ω output load |
| J | Mic – signal (to ICS) | |
| G | Tel+ signal (from ICS) | 70mv to 10 Vp-p, depending ICS AGC level setting, ref 2.8 |
| K | Tel- signal (from ICS) | |

**Table 2-1: MS10 Pin assignment**

Connector on the Polycon base station is:

Male bayonet, electrical socket (female), 10 pin, MIL spec. Part no.: AX-CON-0010 (alt. part no.: MS3112E-12-10S).

Compatible connector for aircraft wiring connection:

Female bayonet, electrical pin (male), 10 pin, MIL spec. Part no.: AX-CON-0050 (alt. part no.: MS3116F-12-10P).

### 2.7.2 MS3 Pin assignment

| Pin | Function |
|-----|----------|
| A | GND 0V DC |
| B | PWR +, 12-35V, typical 28V DC |
| C | TX off when connected to PWR + , TX on when open |

**Table 2-2: MS3 pin assignment**

Connector on the Polycon base station is:

Male bayonet, electrical pin (male), 3 pin, MIL spec. Part no.: AX-CON-0020 (alt. part no.: MS3112E-12-3P).

Compatible connector for aircraft wiring connection:

Female bayonet, electrical socket (female), MIL spec. Part no.: AX-CON-0070 (alt. part no.: MS3116F-12-3S).

### 2.7.3 Ant Pinout

Antenna connection on base station is BNC socket.

Antenna wire shall be fitted with BNC plug (90degree adaptor recommended) and should be connected to the aircraft mounted antenna through 50 ohm coaxial cable.

## 2.8  Post installation calibration

When the Polycon base station is installed with the aircraft ICS, normally no adjustments are needed and factory settings can be used. In some cases adjustments might be needed as listed below. For your own records, we suggest you use the calibration parameters found in Appendix A of this document to record any alternative settings you decide to use.

NOTE: The factory setting values listed below may vary due to individual variations for each unit.

**Polycon 004RLI audio levels to high or to low on aircraft ICS.** Set ICS volume – To adapt the audio from the Polycon 004RLI system to the level from other audio sources on the ICS, the volume level from the Polycon base station may need adjustment. To adjust the Polycon audio output level press ''Menu'' button on the front of the base until the display shows ''ICS Vol''. Adjust the volume from the Polycon base station by pressing +/- buttons until optimal level is found, and press STORE button. Please record the optimal level for future reference in the calibration parameters found in Appendix A.

Factory setting ICS level: Typical 6.

Note: In some systems an optional line amplifier might be needed reach optimal level.

**White noise coming from Polycon system.** Adjust the squelch – To adapt the squelch on the Polycon base station press the menu button until "LEVEL II" is displayed. Press and hold ◄- and +► buttons simultaneously to enter level two menu. **NOTE: When entering the level II menu by pressing + and – simultaneously care must be taken when releasing the buttons not to alter the value of AGC on/off (first entry in level II menu). AGC value is normally ON.** Press menu button until "Squelch" is displayed, and adjust the squelch in the Polycon base station by pressing +/- buttons until optimal level is found, and press STORE button. Please record the optimal level for future reference in the calibration parameters found in Appendix A.

Factory setting squelch level: Typical 18-22.

**Transmission from Polycon not triggered by audio on ICS (not sensitive enough) or triggered by noise (too sensitive).** Adjust ICS AGC level – If transmission to the handheld Polycon radios are triggered by static noise that might be present in some aircraft ICS, or conversations on the ICS does not trigger transmission to the handheld radios, ICS AGC can be adjusted. ICS AGC will adjust the sensitivity for the signals coming from the ICS to the Polycon base station. To adjust the Polycon ICS AGC press ''Menu'' button on the front of the base repeatedly until the display shows ''ICS AGC''. The level shall be between 75 and 256, and a typical level will be around 120. Low value will give high sensitivity and increase the noise pickup from the ICS (and may trigger continuous transmit), and high value will require higher levels on the signal coming from the ICS and increase the resistance to ICS noise.

Adjust the ICS AGC level until optimal sensitivity for signals on the ICS is found for Polycon base station and aircraft ICS by pressing +/- buttons. Press STORE button to store the value. Please record the optimal level for future reference in the calibration parameters found in Appendix A.

Factory setting ICS AGC: Typical 120.

Another parameter affecting the noise resistance and VOX operation of the Polycon base station is VOX sense; If transmission to the handheld Polycon radios are triggered by static noise that might be present in some aircraft ICS, or conversations on the ICS does not trigger transmission to the handheld radios, VOX sense can be adjusted. VOX sense is the level of the voice overlaid on the background noise needed to trigger VOX. To adjust the Polycon VOX sense, press the ''Menu'' button on the front of the base repeatedly until the display shows ''VOX Sense'' and two figures below for example 76/70.

The figure on the right is the level sensed by the Polycon Base Station from the ICS with the current level of activity on the wired ICS. The left hand number is the trigger level for the VOX (VOX Sense). VOX Sense may be adjusted – any number LESS than the units sensed level indicated on the right, will result in continuous NIVOX operation or transmission. Any figure set above the right hand sensed figure will trigger the NIVOX transmission – the higher the number the more powerful the signal will need to be to trigger the NIVOX.

Adjust the VOX sense level by pressing +/- buttons until the optimal trigger point for transmission is found, and press STORE button. Please record the optimal level for future reference in the calibration parameters found in Appendix A.

Factory setting VOX Sense level: Typical 85.

**NOTE** – any adjustments done to the Polycon 004RLI Base Station settings whilst it is powered up will be used for the duration of that power session. If the unit is switched off it will lose all adjustments and go back to the original stored setting.

To make any of your adjustments permanent you MUST press the blue button ''Store'' to store the adjustments / settings you have made. It is recommended to check after storing the settings by turning the unit on / off to see that your settings have been saved.

**Noise received in the MP20 after transmission.** Adjust the TX hang – After transmission from the base station, the base station will keep the TX open for a configured period of time. This hang time will reduce the experience of the transmitter going up and down and the experience of clipping transmissions.  To adjust the TX hang time on the Polycon base station press the menu button until "LEVEL II" is displayed. Press and hold ◄- and +► buttons simultaneously to enter level two menu. **NOTE: When entering the level II menu by pressing + and – simultaneously care must be taken when releasing the buttons not to alter the value of AGC on/off (first entry in level II menu). AGC value is normally ON.** Press menu button until "TX Hang" is displayed, and adjust the squelch in the Polycon base station by pressing +/- buttons until optimal level is found, and press STORE button. Please record the optimal level for future reference in the calibration parameters found in Appendix A.

Factory setting TX hang: Typical 40.

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# Section 3: Operation

## 3.1 General

The Polycon 004RLI Base Station is designed to interface with aircraft intercom systems, and extend the wired intercom to a long range wireless intercom, providing audible communication over ranges up to 10 nm. The system has been designed specifically with range and robustness to the typical harsh operating environment involving high ambient noise, humidity and physical stress as well as ease of use, as main design criteria.

The Polycon 004RLI Base Station will interface the aircraft intercom system and relay all communication on the wired part of the intercom system connected to the base station, to the wireless part and visa versa.

The Polycon System supports Axnes patented NIVOX solution giving high resistance to undesired noise in the surrounding operation environment.

The Polycon Base Station operates in duplex mode and will transmit and receive on separate frequencies.

Since the system is designed for ease of use, only a limited user interaction is needed during operation.

When the unit is installed in the aircraft the unit will be calibrated to the aircraft intercom system according to Section 2: Installation. During normal operation the user interaction should be limited to:

- Power up/down
- Channel selection
- TX – off

This section will be limited to the above listed items, and for advanced calibration refer to Section 2: Installation and Appendix A.

Note: Installation and calibration should be done by authorised personnel only.

## 3.2 Power up/down

When external DC power is connected/ disconnected, the base station will automatically be switched on/off. System-on/off can also be manually controlled by means of the 'POWER' button on the front panel. To turn on press and hold the button labelled 'POWER' shortly. To turn off press and hold the button labelled 'POWER' while display counts down and 'Good Bye' message is displayed.

## 3.3  Power Up Sequence

On power up the base station will conduct an internal system check in accordance to pre-programmed settings, and the green POWER light will illuminate. The POLYCON welcome message will be displayed for a brief period and revert to the "channel display" shown above, selecting the last used channel. The display will be lit when the unit is powered and switched on.

## 3.4  TX OFF

If required, onboard communications can be prevented from being transmitted out by pushing the TX OFF button once. The Red TX OFF light will illuminate and the transmitter is de-activated.

The Polycon 004RLI Base Station will still relay signals received from Polycon handheld radios to the wired intercom system.

To reactivate the transmit mode push the TX OFF button, and the TX OFF Light will be switched off.

## 3.5  Channel Selection

Pressing either the plus or minus button (◄ -  + ►) will cycle through the available channels.
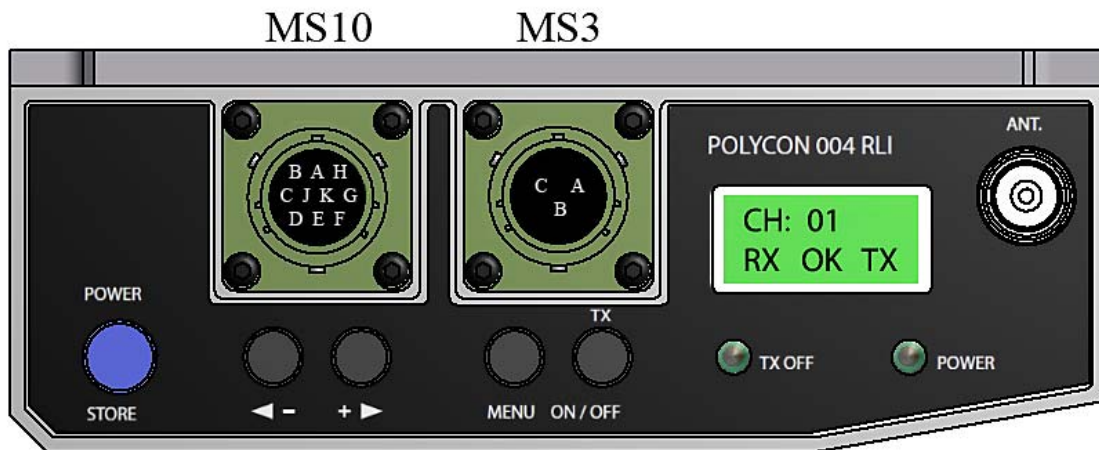


**Figure 3-1: Base station front panel**

# Appendix A    Calibration parameters

During production the Polycon 004RLI Base Station is calibrated and setup with customer specified channel set, as well as with a default parameter set. Some of those parameters are available in the Polycon 004RLI Base station menu, and further described in the table below.

All changes to these parameters should only be done by qualified personnel. Note that some parameters (marked calibration in table below) should never be changed, unless in instrumental calibration mode, and should always be done by Axnes approved service personnel.

To access the parameters for the Polycon 004RLI Base Station, press the 'MENU' button to browse through the parameters.  Some parameters are stored in what is referred to as 'Level II'. To enter level II press the menu button until "LEVEL II" is displayed. Press and hold ◄- and +► buttons simultaneously to enter level two menu. **NOTE: When entering the level II menu by pressing + and – simultaneously care must be taken when releasing the buttons not to alter the value of AGC on/off (first entry in level II menu). AGC value is normally ON.**

**NOTE** – any adjustments done to the base station settings whilst it is powered up will be used for the duration of that power session. If the unit is switched off it will lose all adjustments and go back to the original stored setting.

To make any of your adjustments permanent you MUST press the blue button ''Store'' to store the adjustments / settings you have made. It is recommended to check after storing the settings by turning the unit off and on to see that your settings have been saved.

Aircraft:_____

004RLI Base Station serial number:_____

| Parameter | Level | Description | Typical factory setting | Customer calibration |
|---|---|---|---|---|
| HS volume | I | Not used, should not be altered. | NA | NA |
| ICS Vol | I | Volume of sound delivered from Base Station to aircraft ICS [0-9] | 6 | |
| ICS AGC | I | Base Station sensitivity to sound from aircraft ICS [75-255] | 120 | |
| VOX Sense | I | Base Station sensitivity to voice overlaid background noise from aircraft ICS [0-255] | 85 | |
| ICS AGC | II | Automatic gain control on/off. AGC 'on' ensures optimal performance of interaction between wireless and wired ICS. [On/Off] | On | |
| AGC Stat | II | Not used, should not be altered. | NA | NA |
| Balance | II | Balance between aircraft wired ICS and wireless received audio, towards wireless transmit [0-255] | 121 | |
| LCD Crst | II | LCD Contrast [0-9] | 9 | |
| NV Delay | II | Delay of VOX operation to ensure transmit of full words in VOX mode. [0-255] step of 2,5 ms | 2 | |
| BackLigh | II | Display backlight intensity [On/off] | On | |
| BattWarn | II | Not used, should not be altered. | NA | NA |
| VOX Hang | II | Not used, should not be altered. | 25 | |
| TX Hang | II | Time interval to keep TX channel open after end of audio input (to avoid clipping). [0-255 in step of 100 ms] | 40 | |
| TX Mod[1] | II | Modulation level of transmitted radio signal. Should not be altered. | Calibration | NA |
| TX Lim[1] | II | Modulation limiter for transmitted radio signal. Should not be altered. | Calibration | NA |
| TX PWR[1] | II | Power level of transmitted radio signal. Should not be altered. | Calibration | NA |
| TX Freq[1] | II | Fine tuning of TX frequency of transmitted radio signal. Should not be altered. | Calibration | NA |
| RX Freq[1] | II | Fine tuning of RX frequency of received radio signal. Should not be altered. | Calibration | NA |
| Squelch | II | Squelch setting for receiver [0-99] | 19 | |

[1] Changing calibration parameters may leave the unit unserviceable.