AIR Control Display 57

Installation Manual

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Document Information

Document Revision History

Rev.	*Date*	*Status*	*Author*	*Changes*	*Approved*
1.0	2017/04/06	Release	M. Förderer	Initial release	J. Garrecht
1.1	2017/06/19	Release	H. Hoeth	Fixed CAN node ID range	J. Garrecht
1.2	2017/06/26	Release	H. Hoeth	Fixed lists of deviations and limitations Specify wire gauge for installation List non-ETSO functions DO-160 environmental conditions DO-178C and DO-254 DAL	J. Garrecht
1.3	2017/07/19	Release	H. Hoeth	Part numbers of compatible devices	J. Garrecht
1.4	2017/08/16	Release	H. Hoeth	Clarify configuration options for connected COMM systems Added part numbers for compatible KRT-2 COMM devices Typos and grammar fixes	J. Garrecht
1.5	2017/10/10	Release	H. Hoeth	Fixed cabling diagram image orientation	J. Garrecht
1.6	2017/11/16	Release	H. Hoeth	Fixed typos in cabling diagrams and example configurations	J. Garrecht
1.7	2017/11/30	Release	H. Hoeth	Added VT-01 Ultracompact to the list of compatible devices	J. Garrecht
1.8	2018/01/20	–	H. Hoeth	Updated manual for ACD-57-SW-(0.41): Added serial control interface specification Updated configuration menu structure	
1.9	2018/03/09	–	H. Hoeth	Fixed typo regarding CAN bus termination	
2.0	2018/03/29	Release	H. Hoeth	Updated manual for ACD-57-SW-(0.42): Fixed error in serial control interface specification Added VT-01 software versions to the list of compatible devices	J. Garrecht
2.1	2018/07/12	Release	H. Hoeth	Added trouble shooting chapter Clarify "channel spacing" setting	J. Garrecht
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3.0	2021/06/30	Release	H. Hoeth	Updated manual for ACD-57-SW-(0.44): Added AIR COM related information Added TRIG TT2x and TY9x to the list of compatible devices	J. Garrecht
3.1	2021/09/10	Release	M. Förderer	Fixed minor typographical errors, added details regarding TRIG compatibility	J. Garrecht
4.0	2024/01/30	Release	M. Förderer	Added details to configuration Code, F.U.N.K.E. compatibility, ICA, and other details.	J. Garrecht
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4.2	2024/11/05	Release	M. Förderer	Minor corrections	J. Garrecht
4.3	2025/08/25	Release	M. Förderer	Changes to reflect software version 46	J. Garrecht

Covered Articles

Article Name	*Product P/N*	*FW Version*
AIR Control Display	ACD-57	46

From software version **46**, the ACD-57 introduces a dynamic and updated configuration menu. This change improves modularity and adaptability of the menu structure, which now depends on the system's configuration. In this manual, only the latest **Version 46** structure is referenced in the main documentation.

Recommendation: It is strongly recommended to update your ACD-57 software to the latest version to ensure compatibility and benefit from improved configuration logic and integration features.

Product Support

If you have questions, our product support team will be happy to help you. Contact us via support@air-avionics.com or by phone. Please find details about our hotlines and availability online at *https://www.air-avionics.com*

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General Description 1

1.1 Introduction

This manual is intended to provide mechanical and electrical information for use in the planning and design of an installation of the Air Control Display 57 (ACD-57) into an aircraft. This manual is not a substitute for an approved airframe-specific maintenance manual, installation design drawing, or complete installation data package. Attempting to install equipment by reference to this manual alone and without first planning or designing an installation specific to your aircraft may compromise your safety and is not recommended. The content of this manual assumes use by competent and qualified avionics engineering personnel and/or avionics installation specialists using standard aviation maintenance practices in accordance with relevant accepted practices. This manual is not intended for use by individuals who do not possess the competencies and abilities set forth above. Refer to section "Limitations" for additional information and other considerations.

> Please read this manual carefully before installing the device. Carefully observe the limitations and safety instructions. This manual must be kept in a safe place, for example, with the aircraft's maintenance documents.

> All screen shots used in this document are current at the time of publication. Screen shots are intended to provide visual reference only. All information depicted in screen shots, including software file names, versions, and part numbers, is subject to change and may not be up to date.

1.2 Equipment Description

Model	*Part number*	*Description*
AIR Control Display 57	ACD-57-()	Multi Function Display for 57mm (2.25 in) standard panel cutout

ACD-57 marks the heart of the AIR Avionics COMM and XPDR platform. The small outline and multifunctional software of the device allow for better system integration in space constrained environments. The pilot-centered user interface aims at reducing crew workload, increasing crew efficiency, and improving flight safety.

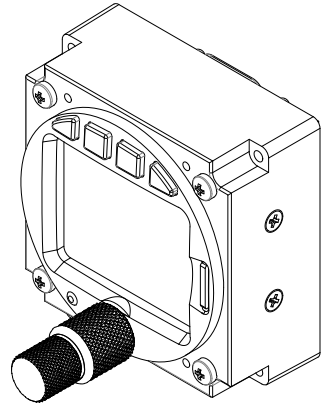


Figure 1.1.: Isometric view of the AIR Control Display 57

1.3 System Capabilities and Functions

The AIR Avionics ACD-57 is a compact multi-function display unit that integrates altimeter, VHF COMM radio control, and Mode-S/ADS-B transponder control into a single, panel-mounted device certified as an altimeter, encoding altimeter, and radio/transponder controller.

It provides large, clear altitude readouts and outputs encoded pressure altitude for transponders to use. The system supports 8.33 kHz and 25 kHz channel spacing, interfacing with a wide range of remote-mounted radios and transponders via various data protocols.

Using a data bus, multiple ACD-57 units and peripherals can be synchronized across cockpit positions. ACD-57 can be controlled by third party-systems such as EFIS via multiple command/response protocols for control of COMM, XPDR, and altimeter settings.

The device supports microSD-based station databases for “NEAREST” and station name display, with GPS integration.

A high-resolution, sunlight-readable color display with ambient-light-controlled backlighting ensures optimal readability, and user interaction is streamlined through a concentric push-turn knob, and four push button softkeys.

1.4 Optional Functions

1.4.1 Add-on Functions

Certain functions are subject to a software licensing model. To unlock these functions, an add-on has to be purchased and an installation code has to be entered in the configuration menu.

A model with add-on functions ensures that ACD-57 can be offered at favorable prices to standard users while users with special function requirements can purchase add-ons separately. Without add-ons, all users were to pay for the development costs of functions they may not need. The functionality of ACD-57 can be extended through add-ons at any time, also after the installation and while already being in service.

Please consult the section “Add-on Functions” on page 28 for details on add-on installation.

> Unlocking of required add-on functionality has to be done during installation and before the device is used.

1.4.2 Station Database

ACD-57 provides optional database-driven functions like station identification and the nearest station list. A database can be obtained from AIR Avionics and loaded onto a microSD card that is inserted into the unit’s microSD card reader.

The station database may contain errors

> The flight crew is ultimately responsible for channel selection. The station database is used for reference only.

> We request that the flight crew report any observed discrepancies related to database information. These discrepancies could come in the form of an incorrect channel, incorrectly identified station, or any other displayed item used for communication in the air or on the ground.

1.5 Technical Specifications

1.5.1 Characteristics

Parameter	*Data*	*Unit*
Mechanical		
Dimensions	61.5x61.5x26.3	mm
Dimensions	2.42x2.42x1.04	in
Mounting	Panel cut out, 57	mm
Mounting	Panel cut out, 2.25	in
Mass	0.143	kg
Mass	0.32	lbs
Depth behind panel without connectors	27	mm
Depth behind panel without connectors	1.06	in
Depth in front of panel	1.14	in
Electrical		
Voltage (nom.)	13.8	V DC
Voltage (operational)	9 to 32	V DC
Low voltage shutdown	8	V DC
Current (nom.)	0.07	A
Optical		
Brightness	0.2 – 1350	cd/m^2
Viewing Angle	45	°
Contrast (darkness)	28:1	
Contrast (max. ambient)	6:1	
LCD Viewing Area	40.5 x 32.2	mm
LCD Viewing Envelope	45 / 45 / 45 / 45	°

Please find a dimensional drawing in appendix 15

1.5.2 Environmental Specifications

The ETSO approval is only valid if the device is installed within an environment matching the qualification environment. The ACD-57 has been tested in accordance with RTCA DO-160D Chg. 3:

Description	*Section*	*Category*	*Conditions*
Temperature / Altitude D1	4.0	D1	
Low Ground Survival Temperature	4.5.1	D1	-55°C
Low Operating Temperature	4.5.1	D1	-20°C
High Ground Survival Temperature	4.5.2	D1	+85°C
High short Time Operating Temperature	4.5.2	D1	+70°C
High Operating Temperature	4.5.3	D1	+55°C
In Flight Loss of Cooling	4.5.4	Z	No auxiliary cooling required
Altitude	4.6.1	D1	50,000 ft (alticoder / altimeter limited to 40,000ft)
Temperature Variation	5.0	B	5°C / minute
Humidity	6.0	A	
Shock	7.0	B	6 G operational, 20 G crash safety
Vibration	8.0	U	Vibration curve F/F1
		S	Vibration curve M
Explosion Proofness	9.0	X	not tested
Water Proofness	10.0	X	not tested
Fluids Susceptibilities	11.0	X	not tested
Sand and Dust	12.0	X	not tested
Fungus Resistance	13.0	X	not tested
Salt Spray	14.0	X	not tested
Magnetic Effect	15.0	Z	Less than 0.3m
Power Input (DC)	16.0	B	
Voltage Spike Conducted	17.0	B	
Audio Frequency Conducted Susceptibility	18.0	B	
Induced Signal Susceptibility	19.0	A	
Radio Frequency Susceptibility	20.0	S	Radiated Susceptibility
		T	Conducted Susceptibility
Emission of RF	21.0	B	
Lightning Induced Transient Susceptibility	22.0	A2XXX	
Lightning Direct Effects	23.0	X	not tested
Icing	24.0	X	not tested
Electrostatic Discharge (ESD)	25.0	A	
Fire, Flammability*	26.0	C	Acc. to RTC DO-160G

* Flammability Test in accordance with RTCA DO-160G instead of FAR 25.853/1359 and appendix F hereto as this is a more recent standard. DO-160D Chg. 3 does not address any aspects for fire, flammability tests.

Cat X: Not tested as no test is required explicitly by the MPS or no use in such environment is intended.

1.5.3 Housing and Human Machine Interface

ACD-57 has an all-metal housing with anti-reflective blackout finish on all parts visible to the flight crew.

ACD-57 is controlled by a dual-shaft rotary encoder with push button (not illuminated) and four softkey pushbuttons (illuminated).

ACD-57 has a backlit TFT color display. The display is sunlight readable and features a dimmable backlight.

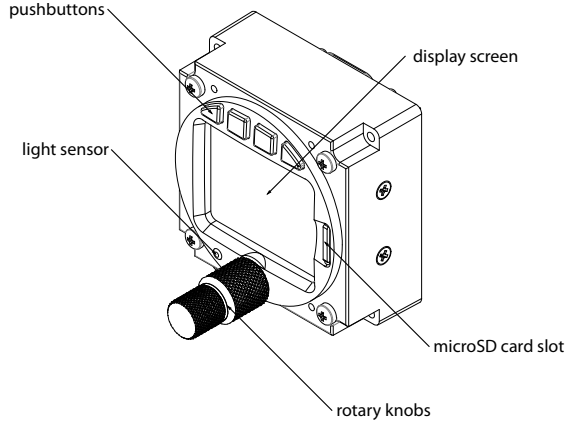


Figure 1.2.: Housing and human-machine-interface overview

1.6 Regulatory Compliance

ACD-57 has been developed in accordance with DO-178C and DO-254 level D.

1.6.1 ETSO Functions

ACD-57 is providing the following ETSO functions:

- Type III Multifunction Display (ETSO-C113), Control of VHF-COM and Mode-S SSR transponder
- Digital output of altitude for alticoding in ATC Radar Beacon Systems (ETSO-C88a)
- Indication of measured altitude numerically and with small tape style indicator (ETSO-C10b)

1.6.2 Deviations

The following existing deviations, which have been approved by the authority are used:

1. ETSO-C10b#2/2a, Viewing envelope as per definition of ETSO-C113 and SAE 8034

2. ETSO-C10b#9, Using SAE AS8009B instead of AS392C.
3. ETSO-C10b#10, Do not display ALTITUDE or ALT next to the tape style indicator.
4. ETSO-C88a#1, Using ED-26 instead of SAE AS8003.
5. ETSO-C113#1, Using SAE AS8034A instead of AS8034.

1.6.3 Non-ETSO Functions

Non-ETSO functions provided by the ACD-57 are:

- Control of a VHF COM (e.g. channel tuning, volume control, control of specific features like “say again”).
- Control of a transponder (e.g. squawk, mode, flight ID, etc.).
- Station database
- Channel memory and history
- “Nearest station” function

1.6.4 Limitations

1. Using the alticoder of ACD-57 is limited to 40,000ft (FL400).
2. Using the altimeter of ACD-57 is limited to 40,000ft (FL400).
3. Use of the device is limited to class II aircraft (MRE, MTE and STE), which includes class I aircraft (SRE), both with MTOW of 6000 pounds or less as per definition of AC23.1309-1E.
4. Use of ACD-57 as primary and only altitude measurement device of the aircraft is excluded, if loss of functions or misleading information is assessed higher than Minor.
5. The operator must verify that the installation meets the airspace requirements where the flights are intended.
6. The device does not provide static error correction. Therefore installation is limited to aircraft where static error correction is not required.

Please be aware that not all functions supported by ACD-57 may be supported by connected COMM and transponder devices. Carefully observe limitations and functions of connected devices in order to assess system limitations that apply to your aircraft. Please consult the section “COMM and Transponder Compatibility Considerations” on page 21 for details on supported connected COMM an transponder devices.

1.6.5 Installation

Conditions and tests required for TSO approval of this article are minimum performance standards. It is the responsibility of those installing this article either on or within a specific type or class of aircraft to determine that the aircraft installation conditions are within the TSO standards. TSO articles must have separate approval for installation in an aircraft. The article may be installed only if performed under applicable airworthiness requirements.

To mitigate against the loss of communication, altimetry, transponder functionality or control thereof, installation of a second ACD-57 system may be required.

1.7 Liability

IN NO EVENT WILL AIR AVIONICS BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE OR INABILITY TO USE THE PRODUCT OR FROM DEFECTS IN THE PRODUCT.

1.8 Unpacking and Inspecting Equipment

Before installation into an aircraft, the equipment should be visually inspected for shipping damages and completeness. If the unit is damaged, notify the carrier. Do not return the unit to AIR Avionics before the carrier has authorized a claim.

The following parts are normally included with ACD-57:

Part	*Part number*	*Description*
1 x ACD-57 main unit	ACD-57-()	ACD-57 main unit
4 x panel screws	–	M3 panel screws
1 x pressure connector	–	Removable static pressure connector (installed)
1 x microSD card	–	Memory card for optional database-driven
functions		functions and software updates
1 x 2 year database coupon	–	Coupon for two years of free station database downloads.

> Should there be missing parts or spare parts required, please contact AIR Avionics, your dealer, or visit *https://www.air-store.eu*

1.9 Installation Materials

1.9.1 Tools required but not supplied

Standard Tools

Tool	*Specification*	*Description*
Phillips screwdriver	PH 0	Screwdriver for supplied M3 phillips screws

Special Tools

Using crimp contacts for all connectors is recommended. The table below identifies crimp tools required to ensure consistent, reliable crimp contact connections for the rear D-Sub connectors.

Hand Crimping Tool	*Positioner*	*Insertion Extraction Tool*
M22520/2-01	M22520-2-06	M81969/14-01

The socket contact (in the crimping area) complies with MIL contact M39029/57-354. The diameters correspond to a 22D barrel, which determines the setting on positioner 2-06.

> Supplied part numbers are military part numbers. Please contact AIR Avionics support or visit *https://www.air-store.eu* for procurement.

1.9.2 Parts required but not supplied

ACD-57 is intended for use with standard aviation accessories. The following items are required for installation, but not supplied.

- Wire (MIL-W-22759/16 or equivalent)
- Shielded wire (MIL-C-27500 or equivalent)
- D-SUB 15HD FEMALE connector, crimp type preferred, and crimp inserts
- D-SUB 15HD connector backshell, all metal type preferred, quicklock type preferred
- Push/Pull (manually resettable) circuit breakers
- Tie wraps or lacing cord

1.9.3 Optional Standard Kit Accessories

Part number	*Description*
B443	D-SUB15HD connection kit with receptacle, backshell, crimp terminals, and wire
B394	AIR Control Display to RJ45 Cable (FLARM/IGC Standard)
B427	AIR data bus Cable (D-SUB 15HD) - 1m
B428	AIR data bus Cable (D-SUB 15HD) - 3m
B429	AIR data bus Cable (D-SUB 15HD) - 5m
B430	ACD-57 (D-SUB 15HD) to VT-01 (D-SUB 9) cable - 1m
B431	ACD-57 (D-SUB 15HD) to VT-01 (D-SUB 9) cable - 3m
B489	ACD-57 (D-SUB 15HD) to Becker AVIONICS RT/AR-6201 (D-SUB 25) cable - 1m
B490	ACD-57 (D-SUB 15HD) to Becker AVIONICS RT/AR-6201 (D-SUB 25) cable - 3m
B494	ACD-57 (D-SUB 15HD) to ATR-833 / KRT-2 (open ends) cable - 3m
B641	ACD-57 (D-SUB 15HD) to TRIG TT/TY (open ends) cable - 3m

> For procurement, please contact your dealer or visit *https://www.air-store.eu*

2 System Interconnects and Interfaces

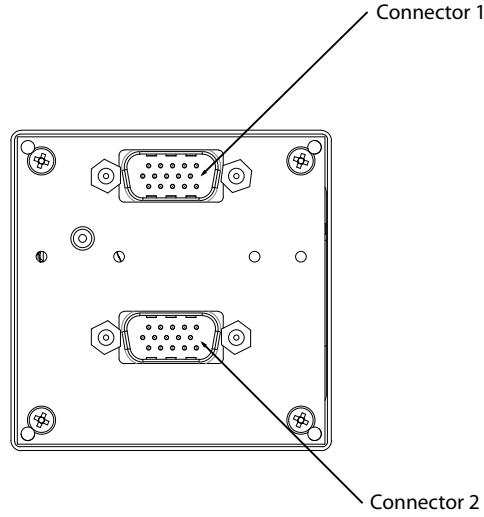


Figure 2.1.: System interconnects overview. View from the back.

Both connectors are D-SUB 15 high density male types. Small pin numbers are molded into the connectors for easier pin identification. Pin numbers of mating (female) connectors are identical, therefore mating pins have identical numbers.

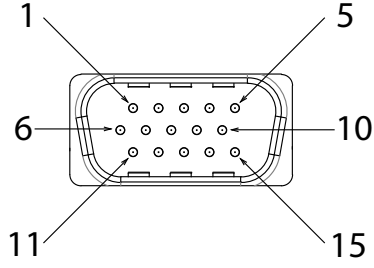


Figure 2.2.: Connector Pin Map

2.1 Pin Function List

2.1.1 Connector 1

Pin Name	*Pin number*	*I/O*
Aircraft Power (VIN)	1.1	In
RS-232 Port 1 receive data (RXD1)	1.2	In
RS-232 Port 1 transmit data (TXD1)	1.3	Out
Enable (EN)	1.4	Out
Aircraft Ground (GND)	1.5	-
Aircraft Power (VIN)	1.6	In
Data Bus Low Signal (CANLO)	1.7	In/Out
Data Bus High Signal (CANHI)	1.8	In/Out
Discrete Output 1 (OUT1)	1.9	Out
Discrete Output 2 (OUT2)	1.10	Out
Voltage Sensor Input 1 (USENS1)	1.11	In
Data Bus Termination 120R (CANTERM)	1.12	In
Discrete Input 1 ($\overline{\text{IN1}}$)	1.13	In
Aircraft Ground (GND)	1.14	In
Buzzer Output 1 (BZZOUT1)	1.15	Out

2.1.2 Connector 2

Pin Name	*Pin number*	*I/O*
Aircraft Power (VIN)	2.1	In
RS-232 Port 2 receive data (RXD2)	2.2	In
RS-232 Port 2 transmit data (TXD2)	2.3	Out
Enable (EN)	2.4	Out
Aircraft Ground (GND)	2.5	-
Aircraft Power (VIN)	2.6	In
Data Bus Low Signal (CANLO)	2.7	In/Out
Data Bus High Signal (CANHI)	2.8	In/Out
Discrete Output 3 (OUT3)	2.9	Out
Discrete Output 4 (OUT4)	2.10	Out
Voltage Sensor Input 2 (USENS2)	2.11	In
Data Bus Termination 120R (CANTERM)	2.12	In
Discrete Input 2 ($\overline{\text{IN2}}$)	2.13	In
Aircraft Ground (GND)	2.14	In
Buzzer Output 2 (BZZOUT2)	2.15	Out

2.2 Data Interfaces

2.2.1 Data Bus Interface

ACD-57 uses a data bus interface to connect to other AIR Avionics devices such as other ACD-57 units, aircraft radios, or transponders. The data bus uses CANaerospace as the data protocol and CAN bus as the physical layer.

Only AIR Avionics articles intended for use with ACD-57 may be connected to the data bus.

Pin Name	*Pin number*	*I/O*
CAN Hi	1.8/2.8	In/Out
CAN Lo	1.7/2.7	In/Out
CANTERM	1.12/2.12	In/Out

Participating systems on a data bus are frequently referred to as “nodes”.

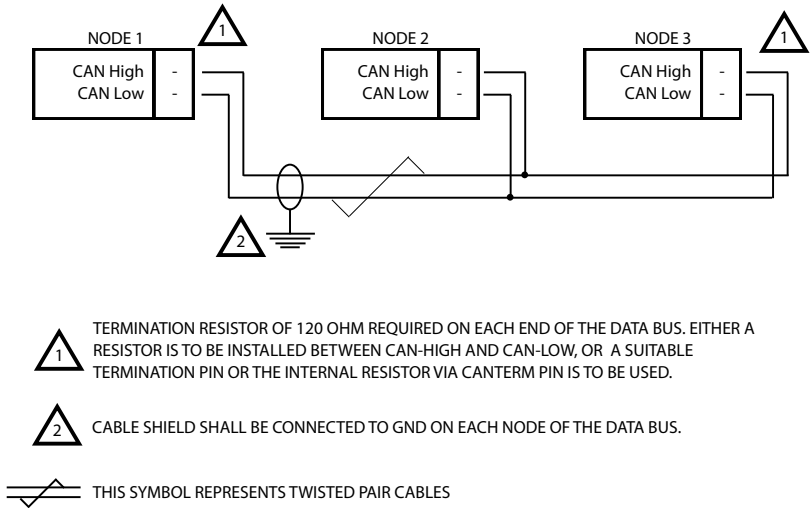


Figure 2.3.: Generic CANaerospace data bus wiring recommendation between bus nodes

The maximum recommended cable length between data bus nodes is 10 m.

The data bus interface (CANaerospace) works with two data wires. The differential high-speed signal requires impedance controlled shielded cables or at least twisted pair shielded cables. It requires termination resistors (120 Ohm) on each end of the bus .

On each connector of the ACD-57, pin 12 is internally connected to the CANHI pin via a built-in 120 Ohm resistor. To terminate the bus, pin 12 can be connected to pin 7. In this case, external termination resistors are not required and shall not be installed.

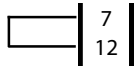


Figure 2.4.: Example for the use of the internal termination resistors. Pins 7 and 12 are connected to terminate the data bus.

ACD-57 sends and receives data in the CANaerospace[1] protocol. For a detailed description of supported datasets, please contact AIR Avionics support.

2.2.2 Serial Data Interface

ACD-57 is capable of interfacing with other aviation instruments by sending and/or receiving serial data on its serial ports.

Pin Name	*Pin number*	*I/O*
RS-232 Port 1 data out (TXD1)	1.3	Out
RS-232 Port 1 data in (RXD1)	1.2	In
RS-232 Port 2 data out (TXD2)	2.3	Out
RS-232 Port 2 data in (RXD2)	2.2	In

The serial outputs conform to RS-232C (EIA Standard) with a positive and negative output voltage of at least 5V when driving a standard RS-232 load.

The serial data interface (RS-232) consists of one or two data transfer wires and a ground connection. As shown in the example below, there shall always be a direct ground connection between all RS-232 clients.

> It is not sufficient that power supply ground in both devices is connected to aircraft ground, an additional direct ground connection is mandatory.

The use of a twisted pair shielded cable, for example MIL-C-27500-22TG 2T14[2], is highly recommended.

With this cable both data wires and the GND reference can be connected using a single cable.

[1] To obtain the required specification, please contact "Stock Flight Systems" via *https://www.stockflightsystems.com*
[2] for procurement, please visit *https://www.air-store.eu*

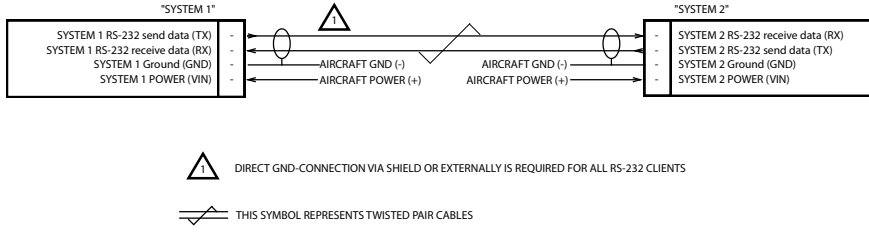


Figure 2.5.: Generic RS-232 wiring recommendation between “System 1” and “System 2”

The table below contains maximum recommended cable lengths using shielded data cables for an RS-232 data interface. Exceeding these cable lengths may reduce signal integrity and therefore the reliability of the data interface.

Data Rate	*Recommended Cable Length (meter)*	*Comment*
4800 Bd	30	Standard NMEA 0183 data rate
9600 Bd	15	Commonly used with GTR225 Protocol
19,200 Bd	7.6	–
38,400 Bd	3.7	–
57,600 Bd	2.6	–

Serial Position Data Protocol

ACD-57 accepts position data in the NMEA-0183 protocol[3] on its serial inputs. While it is tolerant towards other datasets – which it discards if not required – it requires the following datasets as a minimum:

- $GPRMC - Recommended minimum sentence C.
- $GPGSA - GPS satellite data.
- $GPGGA - GPS fix data.

ACD-57 accepts different data rates. ACD-57 automatically adjusts to the current data rate present on its serial inputs, if one of the following:

- 4800 baud
- 9600 baud
- 19,200 baud
- 28,800 baud
- 38,400 baud
- 57,600 baud

[3]To obtain the required specification, please contact “National Marine Electronics Association” via *https://www.nmea.org*

Serial Control Interface

ACD-57 accepts control commands in several formats on its serial inputs. The control interface can be used to externally control radio, transponder, and altimeter functions. For example, an EFIS system can be used to tune-in COMM frequencies.

While it is tolerant towards other datasets – which it discards if not required. Position and control data may be shared on the same serial input.

If the data protocol supports this, ACD-57 communicates bi-directionally with its control host.

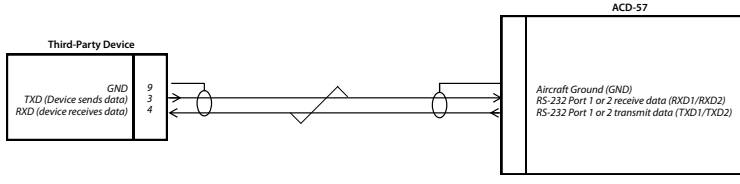


Figure 2.6.: RS-232 wiring recommendation for the serial control interface

2.3 Power Supply

Inputs on connector 1 and connector 2 provide power. All pins of one connector should be connected. If required, pins on both connectors may be connected.

Connector 1 and connector 2 power pins are internally decoupled. Therefore different supply voltages on the two connectors are acceptable, e.g. if a backup battery is connected to one of the two connectors.

> For reasons of simplicity, some wiring diagrams in this manual only show one power input in use. For redundancy it is recommended to connect independent power sources to power inputs on each of the two connectors (one source per connector). In some aircraft, redundant power supply is required for using the altimeter as a primary altimeter.

Pin Name	*Pin number*	*I/O*
Aircraft Power	1.1/1.6 or 2.1/2.6	In
Aircraft Ground	1.5 or 2.5	–

Connection of input power to incorrect pins can cause damage to the unit that will require return to the factory for repair. Ensure that the power supply is connected to the correct pins and does not short to any adjacent pins prior to applying power to the unit.

2.4 Illumination of Display and Keyboard

The display backlight and keyboard illumination can be controlled to suit the ambient lighting conditions. In direct sunlight, the display backlight is tuned to a very high intensity, whereas when flying at night or in low light conditions, the display backlight is dimmed down to a low level.

To control the illumination level of the display backlight and keyboard, three different methods are available:

- Manual dimming (this is the factory default setup)
- Automatic dimming with an integrated ambient lighting sensor
- Dimming over a lighting bus input (if the aircraft has a lighting bus available, this is recommended).

2.4.1 Lighting Bus

ACD-57 has a lighting bus input that can be used to externally dimm the display backlight and keyboard illumination. Connection of this input is optional.

Pin Name	*Pin number*	*I/O*
Lighting Bus	1.11 or 2.11	In

Connection of the lighting bus to incorrect pins can cause damage to the unit that will require return to the factory for repair. Ensure that the lighting bus is connected to the correct pins and does not short to any adjacent pins prior to applying power to the unit, including the lighting bus.

In some aircraft certified for VFR night operations, the use of the lighting bus interface may be mandatory.

2.5 Altitude Functions

If the altimeter or encoding altimeter functions shall be used in the installation, the aircraft static pressure port must be connected to the pressure connector.

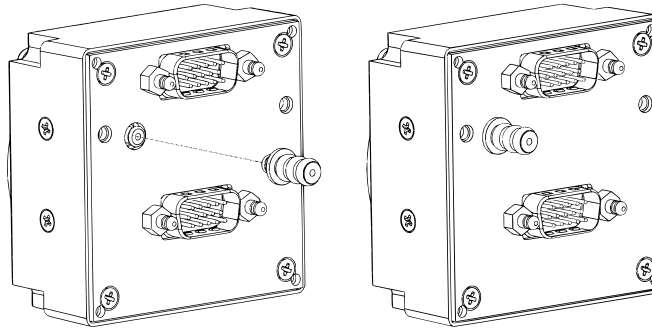


Figure 2.7.: Mounting of the pressure connector. When coming from the factory, the connector will already be mounted

3 Installation Overview

3.1 Handling Recommendations

3.1.1 General Handling Recommendations

Please handle with care. Take special precautions not to drop the unit.

3.1.2 ESD Handling Recommendations

To avoid damage to ACD-57, take precautions to prevent Electrostatic Discharge (ESD) when handling the unit, connectors, and associated wiring. ESD damage can be prevented by touching an object that is of the same electrical potential as the unit before handling the unit itself.

3.2 Workmanship

Installation of avionics equipment into an aircraft is a complex task that requires expert skills and know-how. While some installation practices may lead to quicker results, only practices that provide for excellent durability and reliability are acceptable. As many avionics systems have a life cycle of several decades, a durable and reliable installation in compliance to strict workmanship standards is of utmost importance.

3.2.1 Workmanship

"Workmanship is defined as the control of design features, materials and assembly processes to achieve the desired durability and reliability for subassembly interconnections, specifically those in printed wiring assemblies and cable harnesses, and the use of inspection techniques and criteria to assure interconnect quality. Workmanship promotes standardized designs and fabrication practices to enhance assembly durability and reliability and restricts the use of designs and manufacturing processes known to reduce those qualities."[1]

3.3 Standards

> Always follow acceptable avionics installation practices. Installation must always follow regulatory requirements.

Many military or civil standards for avionics installations are acceptable.

[1] Source: *https://nepp.nasa.gov/workmanship*

3.3.1 FAA Advisory Circulars

FAA AC43.13 holds acceptable avionics installation practices.

FAA advisory circulars are are publicly available on this website: *https://www.faa.gov/regulations_-policies/advisory_circulars/*

3.3.2 NASA Workmanship Standards

As an addition to regulatory requirements we recommend installation in accordance to NASA WORKMANSHIP STANDARDS. These standards provide for an excellent overview and in-detail knowledge on acceptable practices including explanations and a pictorial reference. NASA WORKMANSHIP STANDARDS are publicly available on this website: *https://nepp.nasa.gov/workmanship*

3.4 Cabling and Wiring Considerations

3.4.1 General Wiring Considerations

Wiring should be installed in accordance with applicable regulations.

- It should not be possible for a cable harness to be exposed to wire chafing.
- Route the wiring bundle as appropriate. Avoid sharp bends.
- Secure all wires in order to minimize vibration damage.
- Preferably use shielded wire.
- Use 22 AWG wire for all connections unless otherwise specified.
- The cable harness should not be located near flight control cables and controls, high voltage lines or fuel lines.
- The cable harness should be located in a protected area of the aircraft.
- Do not route cable near high voltage sources.

> For dual ACD-57 installations, care should be taken to ensure separation between wires of redundant systems to reduce the possibility of failure due to a single event.

> For the D-SUB connectors, crimp terminals and mating receptacles are recommended because these are more reliable than soldered connections, and are easier to assemble in-situ in an aircraft, where soldering is impractical. They also allow individual wires to be removed and replaced in a receptacle without replacing the whole connector.

> For power supply, manually resettable circuit breakers are strongly recommended. These circuit breakers allow for individual devices to be switched off without compromising other systems on the same power bus.

3.4.2 Special Wiring Requirements for Data Bus

- Shielded wire should be used for differential data bus signals as specified in the interconnect drawing.
- Termination is required on each end of the data bus installation.

If data bus wiring requirements are not met, equipment performance may be compromised.

3.5 Pressure Tubing Considerations

The pressure tubing shall be installed in accordance with applicable regulations.

- Route the tubing as appropriate. Avoid sharp bends.
- Make sure the aircraft static pressure port is plumbed directly to the unit static pressure input port.
- Secure all tubes in order to minimize vibration.
- Ensure that no deformations of the airframe surface have been made that would affect the relationship between static air pressure and true ambient static air pressure for any flight condition.
- The pressure tubing should not be located near flight control cables and controls.
- ACD-57 should not be at the low point of the static plumbing lines in order to avoid moisture or debris collecting at or near the unit.
- Use care to avoid getting fluids or particles into the pneumatic port.

3.6 ACD-57 Mounting Considerations

ACD-57 is designed to be mounted in the aircraft instrument panel within the view and reach of the flight crew. The unit's location should minimize the head movement of the flight crew when transitioning between looking outside of the cockpit and viewing/operating the ACD-57. The location should be such that the ACD-57 is not blocked by the glare shield on top, or by the throttles, control yoke, etc. on the bottom.

Try to mount the ACD-57 in a location that is protected from sunlight focussed by the canopy and where the control knobs are protected from accidental tripping or getting caught on clothing or similar.

Be sure that the installation does in no case interfere with any controls or emergency features of the aircraft

3.7 COMM and Transponder Compatibility Considerations

ACD-57 is designed to interface with VHF Transceivers (COMM) and transponders. If such a system is interfaced in an installation, care must be taken as to ensure that all connected devices are compatible with the ACD-57.

3.7.1 Compatible VHF Transceivers

The following VHF transceivers (COMM) have been tested to be compatible with ACD-57.

Device	*P/N*	*Make*	*Interface*	*Required Add-On*	*Tested SW Version*
AIR COM	AC-1-(xxxx)	AIR Avionics	Data bus	none	AC-1-SW-(6)
AR 6201	AR6201-(022)	Becker	RS-422 via RS-232	Becker	CM: 4.06, CH: 2.06
RT 6201	RT6201-(020)	Becker	RS-422 via RS-232	Becker	1.51
KRT-2 (SLP)	100-(0001)-(617) 100-(0004)-(800) 100-(1106)-(850) 100-(2106)-(905)	TQ/Dittel	RS-232	KRT2	0.14, 0.18
TY91/TY92 ATR833-II-BOX	008xx-00-(xx) 833-II-()-()	TRIG F.U.N.K.E.	RS-485 via RS-232 RS-232	TRIG TY ATR	1.12 N/A

If VHF transceivers are connected with other than the tested software/hardware versions, the compatibility must be assessed on a per-installation level.

The use of transceivers from third-party manufacturers requires the purchase of an add-on function. Please consult the section “Add-on Functions” on page 28 for details on the function licenses.

3.7.2 VHF Transceiver Functional Limitations

Not all functions that are supported by the ACD-57 are supported by all compatible VHF transceivers. For example, not all configuration parameters required for an installation may be set using the ACD-57.

The following table gives an overview of the functions that are not supported:

Function	*AIR COM (AC-1) VHF Transceiver*	*Becker 620X VHF Transceiver*	*Dittel/TQ KRT2 VHF Transceiver*	*TRIG TY91/TY92 VHF Transceiver*	*F.U.N.K.E ATR-833 VHF Transceiver*
Say Again Function	●	–	–	–	–
Standby COMM channel independent volume level possible	●	–	–	–	–
VHF transceiver system configuration during installation	●	●	–	●	–
Interface speed from ACD-57 to VHF transceiver	fast (nearly in real time)	normal (sometimes delays are recognizable)	slow (up to half a second delay)	normal (sometimes delays recognizable)	normal (sometimes delays are recognizeable)

If the user interface of a Dittel/TQ KRT2 is used simultaneously to ACD-57 (e.g. in aircraft with a tandem seating configuration), please ensure that ACD-57 is always switched on while the KRT-2 is switched on. The KRT-2 must not be switched on while the ACD-57 is switched off.

3.7.3 Compatible Transponders

The following transponders have been tested to be compatible with ACD-57:

Device	*P/N*	*Make*	*Interface*	*Required License*	*Tested SW Version*
VT-01	VT-0102	AIR Avionics	Data bus	none required	1.60 and newer
VT-01	VT-0104	AIR Avionics	Data bus	none required	1.60 and newer
TT21/TT22 Tailbeacon X	006xx-00-(xx) UAV-1003648-001	TRIG uAvionix	RS-485 via RS-232 RS-232	TRIG TT uAvionix TBX	2.13 3.4.0 and newer

If a VT-01 transponder is running with software version 1.60, the status of the on-the-ground mode is not shown on the ACD-57.

If MODE-S transponders are connected with other than the tested software/hardware versions, the compatibility must be assessed on a per-installation level.

Special precautions when connecting a VT-01 Ultracompact

If a VT-01 Ultracompact, i.e. a VT-01 with integrated control head (part numbers VT-0104-070 and VT-0104-125) is used, special precautions must be taken. Please ensure that:

1. The VT-01 Ultracompact is installed remotely without access to its controls. The control head of the VT-01 must never be used and must remain switched off.
2. The *Power-up Mode* in the VT-01 Ultracompact must be set to OFF.

The VT-01 Ultracompact (VT-0104) may never be used if the VT-01 *Power-up Mode* is switched to ON or if the VT-01 controls are active. The installer must ensure that the VT-01 controls cannot be accessed by the flight crew.

To switch the *Power-up Mode* OFF in the VT-01 Ultracompact, please perform the following steps:

1. Simultaneously push key 1 (the leftmost key on the VT-01 bezel) and the inner knob pushbutton of the VT-01.
2. Enter the password *10795C*.
3. Rotate the outer knob of the VT-01 to navigate to the menu *Power-up Mode*
4. Push the inner knob pushbutton of the VT-01 to access the *Power-up Mode* setup page and rotate the inner knob of the VT-01 to switch *Power-up Mode* to OFF. Execute your selection by pushing the inner knob pushbutton of the VT-01.

3.8 Air Circulation and Cooling

The ACD-57 does not require external cooling. However lower operating temperatures extend equipment life. Reducing the operating temperature increases the mean time between failures (MTBF).

Units tightly installed heat each other through radiation, convection, and sometimes by direct conduction. Even a single unit operates at a much higher temperature in still air than in moving air. Fans or some other means of moving the air around electronic equipment are usually a worthwhile investment.

3.9 Compass Safe Distance

After reconfiguring the avionics in the cockpit panel, if ACD-57 is mounted less than 30 cm from the compass, recalibrate the compass, make the necessary changes and record new correction data in the aircraft documentation.

4 Installation Procedures

We recommend installing ACD-57 according to the following process:

1. Equipment mounting
2. Wiring: Manufacturing and testing of wiring harnesses or selection of standard accessories
3. Wiring harness and interconnect installation
4. Post installation configuration, checkout, and documentation

4.1 Equipment Mounting

1. Use the dimensions shown in appendix 15 to prepare the mounting holes for the ACD-57 unit. Also standard templates for 2.25 in / 57mm panel cutouts can be used.
2. Install the device in the aircraft panel using the supplied M3 (metric) screws.

> Using other screws than those supplied may cause damage to the device

4.2 Wiring

Wiring depends on many factors such as the number of installed ACD-57, chosen installation options, number and type of connected devices, and aircraft-specific requirements.

In most cases an individual wiring harness is manufactured. In appendix 15, wiring diagrams for the most common installation cases are provided.

In some cases, standard accessories may be used. Appendix A.0.1 holds a list of example installations using standard accessories as well as recommended configuration parameters for these installations.

4.3 Interconnect Installation

ACD-57 comes equipped with quicklock lock nuts on the D-Sub connectors. It is possible to exchange the provided lock nuts on the back of the unit with any other types of D-Sub UNC-4-40 lock nuts.

We recommend using Provertha “Quicklock” or Conec “SnapLock” D-Sub backshells (standard configuration).

1. Install all electrical connectors and ensure that they are appropriately secured.

2. Install the pressure tubing connector and ensure that the tubing is leak-proof.

4.4 Post Installation Configuration, Checkout, and Documentation

A summary of the steps required for checkout, configuration, and installation documentation is as follows:

- Perform the installation checks. Instructions can be found in chapter 5.
- Configure the unit for the specific installation. Work though every configuration item according to instructions in chapter 6.
- Perform ground checks. Instructions can be found in chapter 12.
- Update the aircraft documentation. Instructions can be found in chapter 13.

5 Post Installation Checkout

This chapter contains instructions for checking out an ACD-57 installation. Checks shall ensure the system is properly installed and functioning correctly.

5.1 Wiring Checks

Verify that all cables are properly secured. Check the movement of aircraft controls to verify there is no interference between the wiring and controls. Ensure that all wiring is installed as described.

Prior to powering up ACD-57, the wiring harness must be checked for proper connections to the aircraft systems and other avionics equipment. Point to point continuity must be checked to expose any faults such as shorting to ground.

After accomplishing a continuity check, perform power and ground checks to verify proper power and GND levels are present. Any faults or discrepancies should be corrected at this time.

> Any faults or discrepancies must be corrected before proceeding

> Make sure shielding and data bus termination are installed where appropriate

ACD-57 may be connected after completion of the continuity and power checks. All connections must be made before the unit is powered up.

5.2 Connector Engagement Checks

Prior to powering up ACD-57, a connector engagement check should be performed.

1. Optically inspect all interconnects.
2. Check if all connectors are locked properly, verify by gently pulling on the connectors.
3. Ensure that the pressure tubing sits tightly and completely covers the pressure connector.

Before an ACD-57 unit can operate as intended, it is essential that the device undergoes a proper configuration process. The initial setup is not optional; it ensures that all functions are calibrated and that the system will perform consistently and reliably in real-world use. Attempting to run the ACD-57 without completing this step may lead to errors or sub-optimal performance.

To simplify the system configuration process, we strongly recommend following the standard configuration recommendations provided in appendix 15. These examples have been prepared to serve as practical references, giving users clear and proven instructions for common deployment scenarios. By adopting these tested configurations rather than improvising settings, users save time during setup, reduce the risk of errors, and ensure that their system is aligned with best practices established by prior field use.

6.1 Configuration Operations

6.1.1 Configuration Menu

ACD-57 is configured in the configuration menu. To enter the configuration menu, push the inner knob pushbutton for at least 2 seconds (long push). The menu contains several configuration options and status information about ACD-57 as well as connected systems.

Please find a menu diagram in appendix 15

6.1.2 Unlocking Setup Parameters

Due to safety reasons and regulatory requirements, not all configuration parameters are readily accessible to the flight crew. To unlock some configuration menu levels, a code must be entered in *CONFIGURATIO MENU* → *ACD SYSTEM* → *ACD SETUP* → *UNLOCK SETUP*.

Before configuration, to unlock access to all configuration menu levels required for installation, please enter this code:

Code: 3000

After a correct code has been entered, the protected menu levels are accessible. After a restart of the ACD-57, the code has to be entered again to unlock the protected menus. If configuration changes are made that require a restart of the device, the ACD-57 is restarted automatically.

6.1.3 Standard Configuration Recommendations

In appendix 15, a list of standard installation cases and recommended configuration parameters are given for reference.

6.1.4 Configuration Reset to Defaults

To reset the entire configuration to factory defaults, please perform the following steps:

1. Disconnect the device from power.
2. Press and hold Softkey 3 and Softkey 4 while connecting the device to power. Keep holding the softkeys until the device has booted.
3. All settings are now reset to the factory defaults.

> All settings will be reset and all licenses will be deleted. This process can not be undone. After factory defaults have been applied the device is no longer in an airworthy configuration state. All configuration operations have to be performed again.

6.2 Add-on Functions

ACD-57 requires the installation of add-ons for some of its functions to work.

> Before proceeding with the system configuration, all required add-ons should be installed first

> In previous software versions, add-ons were named "licenses". This manual only covers the very latest software version. Therefore, the word "licenses" is no longer used. We recommend always keeping your ACD-57 up-to-date with the latest software updates. AIR Avionics provides these updates for free as a download from www.air-avionics.com

6.2.1 Add-On Functions

Add-ons are required for the following functions:

- Display and use of the integrated altitude indicator (altimeter)
- Control of BECKER 620X VHF Transceivers
- Control of DITTEL/TQ KRT2 VHF Transceivers
- Control of TRIG VHF Transceivers and Transponders
- Control of uAvionix Transponders
- Control of F.U.N.K.E. VHF Transceivers

These functions are only available if a valid add-on installation code has been entered once. Installed add-ons never expire. If none of these functions are used, no add-on has to be installed. In this case, skip this section.

A list of already installed add-ons can be viewed in *CONFIGURATION MENU* → *ACD SETUP* → *ADD-ON FUNCTIONS* → *INSTALLED FUNCTNS*.

6.2.2 Purchasing Add-Ons

Add-ons can be purchased online in the *AIR Store* or through distribution. Please visit *https://www.air-store.eu* for details.

After purchase, you will receive a coupon code by e-mail. To activate it, enter the coupon code together with the serial number of your ACD unit on the designated website linked in the eMail.

> Please ensure to enter the serial number of your AIR Control Display (ACD-57) unit. You can find the serial number on the unit's label or in the *CONFIGURATION MENU*. Go to *CONFIGURATION MENU* → *ACD SYSTEM* → *ABOUT* → *SERIAL*

Once submitted, you will receive an installation code by e-mail. This installation code must then be entered in the *CONFIGURATION MENU*.

6.2.3 Add-On Function Installation

To install an add-on, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *CONFIGURATION MENU* → *ACD SETUP* → *ADD-ON FUNCTIONS* → *ADD NEW*.
3. Enter a valid installation code: Use the inner knob to select a character. Use the outer knob to select a digit.
4. Push the inner knob pushbutton to execute your selection.
5. After the installation code has been successfully validated, the add-on is installed.
6. Push the ESC softkey to leave the menu.

6.3 Configuration Codes

The current configuration of an ACD-57 can be documented by reading out its configuration codes and recording them externally, for example by writing them down or by taking a photograph. The device itself does not provide internal storage for these codes.

A new configuration can be applied to the ACD-57 at any time by manually entering the corresponding configuration codes.

This functionality is particularly valuable when a validated configuration must be retained—for instance, when multiple ACD-57 units are to be installed with identical settings, or when a specific configuration is to be preserved for later use. The configuration code function is only available for AIR Avionics systems like ACD, AIR Com, or VT-01.

Three different configuration codes can be read out and entered:

1. ACD Configuration Code: Contains all ACD-specific configuration parameters, including Altimeter parameters.
2. AC-1 Configuration Code: Contains all AC-1-specific configuration parameters.
3. VT-01 Configuration Code: Contains all VT-01-specific configuration parameters.

Configuration Code Readout

To read the device configuration code of your current configuration state, please perform the following steps:

1. Open the menu with a long push on the (inner knob pushbutton).
2. Use the (inner knob) to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD CFG CODE* → *READ CONFIG CODE*.
3. Write down the 20-digit code or take a photgraph.

To read the AC-1 configuration code of your current configuration state, please perform the following steps:

1. Open the menu with a long push on the (inner knob pushbutton).
2. Use the (inner knob) to navigate to *AIR COM (AC-1)* → *AC-1 SETUP* → *AC-1 CFG CODE* → *READ CONFIG CODE*.
3. Write down the 20-digit code.

To read the XPDR configuration code of your current configuration state, please perform the following steps:

1. Open the menu with a long push on the (inner knob pushbutton).
2. Use the (inner knob) to navigate to *VT-01 XPDR* → *VT-01 SETUP* → *VT-1 CFG CODE* → *READ CONFIG CODE*.
3. Write down the 20-digit code.

Configuration Code Entry

The ACD configuration code holds parameters required for some COM and XPDR submodules to operate correctly. Therefore, it is recommended to enter the ACD configuration code first before entering AC-1 or VT-01 configuration codes. Some ACD Setups require add-on functions to be installed. Please install all desired add-ons before entering configuration codes.

> Be careful. Entering of a configuration code overrides the entire existing configuration. This step cannot be undone.

To enter a configuration code, please perform the following steps:

1. Open the menu with a long push on the (inner knob pushbutton).
2. Use the (inner knob) to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD CFG CODE* → *WRITE CONFIG CODE*.

3. Enter a 20-digit configuration code.

To enter a COM configuration code, please perform the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *AIR COM (AC-1)* → *AC-1 SETUP* → *AC-1 CFG CODE* → *WRITE CONFIG CODE*.
3. Enter a 20-digit configuration code.

To enter a XPDR configuration code, please perform the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *VT-01 XPDR* → *VT-01 SETUP* → *VT-1 CFG CODE* → *WRITE CONFIG CODE*.
3. Enter a 20-digit configuration code.

7 Selecting and Enabling Intended Functions

This chapter holds information on how to configure the functions you wish to use on your ACD-57. It is selected which subsystems like radios, transponders, and altimeter are used and what shall be displayed. These parameters are essential and should be carefully set up. In its default configuration, without changing these parameters, ACD-57 will not work as intended.

7.1 Altimeter Functions

The *ACD SYSTEM* → *ACD SETUP* → *ALTIMETER SETUP* holds configuration parameters for the integrated altimeter.

7.1.1 Activating the Altimeter

The altimeter display is activated if the paramter *ALT DISPLAY* is switched to *ON*. Before this is possible, the altimeter add-on function needs to be installed. If you have not done this yet, please go back to "Add-on Functions" on page 28 for details on add-on installation.

To enable the altimeter function, please carry out the following steps:

1. Open the menu with a long push on the (inner knob pushbutton).
2. Use the (inner knob) to navigate to *ACD SYSTEM* → *ACD SETUP* → *ALTIMETER SETUP* → *ALT DISPLAY*. If the setup is not unlocked yet, please enter the code '3000' to unlock the setup when prompted.
3. Push the (inner knob pushbutton) to toggle between ON and OFF.
4. Push the (ESC softkey) to leave the menu.

7.2 COMM Functions

The *ACD SYSTEM* → *ACD SETUP* → *ACD COMM SETUP* holds configuration parameters for the COMM control functions.

7.2.1 Activating the COMM Controls

The COMM controls are activated when a connected COMM type is selected. If you use a different COMM system brand than AIR Avionics, an add-on function needs to be installed. If you have not done this yet, please go back to "Add-on Functions" on page 28 for details on add-on installation.

To select and activate a COMM unit, please perform the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD COMM SETUP* → *COMM TYPE*. If the setup is not unlocked yet, please enter the code '3000' to unlock the setup when prompted.
3. Use the inner knob to to select a desired type (*AIR COM*, *BECKER*, *KRT2*, *TRIG TY* or *ATR833S*).
4. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD COMM SETUP* →*COMM CONNECTOR*.
5. Use the inner knob to to select the ACD-57 connector your COMM unit is connected to (*UPPER CONNECTOR*, *LOWER CONNECTOR* or *OTHER ACD*).
6. Push the ESC softkey to leave the menu.

Recommended settings with more than one ACD-57

In an installation with two or more ACD-57, if a COMM unit is connected to the lower connector on an ACD-57, the *COM CONNECTOR* parameter on this ACD-57 is set to *LOWER CONNECTOR*. On all other ACD-57 (where the COMM unit is not directly connected) the *COMM CONNECTOR* parameter is set to *OTHER ACD*.

COMM TYPE	*COMM CONNECTOR first ACD-57 COM directly connected*	*COMM CONNECTOR second and subsequent ACD-57 Connected to first ACD-57 via data bus*
AIR COM	Upper Connector or Lower Connector	DATA BUS
BECKER	Upper Connector or Lower Connector	DATA BUS
KRT2	Upper Connector or Lower Connector	DATA BUS
TRIG TY	Upper Connector or Lower Connector	DATA BUS
ATR833S	Upper Connector or Lower Connector	DATA BUS

7.3 Transponder Functions

The *ACD SYSTEM* → *ACD SETUP* → *ACD XPDR SETUP* holds configuration parameters for the XPDR control functions.

7.3.1 Activating the XPDR Controls

The transponder controls are activated when a connected transponder type is selected. If you use a different transponder system brand than AIR Avionics, an add-on function needs to be installed. If you have not done this yet, please go back to "Add-on Functions" on page 28 for details on add-on installation.

To select and activate a XPDR unit, please perform the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD XPDR SETUP*

→ *XPDR TYPE*. If the setup is not unlocked yet, please enter the code '3000' to unlock the setup when prompted.

3. Use the inner knob to to select a desired type (*VT-01*, *TRIG TT* or *UAVIONIX*).
4. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD XPDR SETUP* → *XPDR CONNECTOR*.
5. Use the inner knob to to select the ACD-57 connector your XPDR unit is connected to (*UPPER CONNECTOR*, *LOWER CONNECTOR* or *OTHER ACD*).
6. Push the ESC softkey to leave the menu.

Recommended settings with more than one ACD-57

In an installation with two or more ACD-57, if a transponder is connected to the upper connector on an ACD-57, the *CONNECTOR* parameter on this ACD-57 is set to *UPPER CONNECTOR*. On all other ACD-57 (where the XPDR unit is not directly connected) the *CONNECTOR* parameter is set to *OTHER ACD*.

XPDR TYPE	*XPDR CONNECTOR first ACD-57 transponder directly connected*	*XPDR CONNECTOR second and subsequent ACD-57 Connected to first ACD-57 via data bus*
VT-01	Upper Connector or Lower Connector	DATA BUS
TRIG TY	Upper Connector or Lower Connector	DATA BUS
UAVIONIX	Upper Connector or Lower Connector	DATA BUS

Setup of Data Interfaces 8

This chapter holds information on how to configure interfaces to external systems such as other ACD-57 in the data bus, external position sources (if the optional position-based functions shall be used), or external devices like EFIS that control ACD-57 (for example to tune frequencies from your navigation system to the ACD-57 and connected COMM systems). The settings for multiple ACD-57 in a data bus are madatory, all other settings are optional.

8.1 Multiple ACD-57 in a data bus

If more than one ACD-57 is used, the data bus node ID, which is a unique identifier for every system in the data bus, needs to be changed so that every ACD has a different ID.

The value range from 100 to 109 is reserved for ACD-57 in a data bus installation. The default node ID entered in the factory is *100*. We recommend to enter the folowing IDs in multi-ACD-57 installations:

- first ACD-57: Node ID *100* (factory default)
- second ACD-57: Node ID *101*
- third ACD-57: Node ID *102*
- fourth ACD-57: Node ID *103*

To change the data bus node-id, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD SYSTEM SETUP* → *INTERFACES* → *DATA BUS NODE-ID*.
3. Use the inner knob to Select the desired value.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

8.2 Position Sources

If you wish to use position-based functions in your ACD, like displaying station names or using the NRST function for easy frequency selection, an external position source needs to be connected. ACD-57 can either connect to any NMEA-0183 compliant position source (any data rate) via RS-232, or a transponder or another ACD-57, which have position information available.

ACD-57 has two independent RS-232 data ports and a data bus interface. Both RS-232 data

ports can be used to accept data from an RS-232 NMEA GPS source, and the data bus can accept GPS information from another ACD-57.

To select and activate a position source, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD SYSTEM SETUP* → *INTERFACES* → *POSITION SOURCE*.
3. Use the inner knob to select a source: *UPPER CONNECTOR* (uses the RS-232 port on the upper connector), *LOWER CONNECTOR* (uses the RS-232 port on lower connector), *OTHER ACD* (if other ACD-57 in the data bus have a position available) or *TRANSPONDER* (if a connected transponder has a position available).
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

8.3 Serial Control Interface

The ACD-57 can be remotely controlled by third party devices over a serial connection.

> If you want to control your ACD-57 with a non-certified device, you have to make sure your installation fulfills all regulatory requirements (see e.g. EASA Certification Memorandum CM-AS-007).

Different data protocols can be selected. These protocols are supported:

Protocol Name	*Protocol Functions*	*Interface*
AIR Avionics Serial Control Interface	COM, XPDR, ALT	RS-232 Port 1 or Port 2
GARMIN GTR-225 protocol	COM	RS-232 Port 1 or Port 2

The protocol specification for the AIR Avionics Serial Control Interface is public and can be found in appendix A.0.6.

To enable the serial control interface, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD SYSTEM SETUP* → *INTERFACES* → *CONTROL INTERFACE* → *PROTOCOL*.
3. Use the inner knob to Select a protocol: *GTR225* or *AAV*. If you select AAV, select the fuctions (ALT, COM, XPDR) that shall be controlled.
4. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD SYSTEM SETUP* → *INTERFACES* → *CONTROL INTERFACE* → *CONNECTOR*.
5. Use the inner knob to Select a connector: *UPPER CONNECTOR* (uses RS-232 port on upper connector), *LOWER CONNECTOR* (uses RS-232 port on the lower connector), or *NOT CONNECTED* (to disable).

6. Push the ESC softkey to leave the menu.

The data rate is set automatically. You can manually set the data rate in *ACD SYSTEM* → *ACD SETUP* → *ACD SYSTEM SETUP* → *INTERFACES* → *CONTROL INTERFACE* → *BAUDRATE*. If you set the baud rate to *AUTO*, the ACD-57 will not send any data on this port before it has received some data to determine the connection speed.

It is possible to use the same RS-232 data port in your POSITION SOURCE setting, if the controlling external device also provides position data).

9 Adapting the ACD-57 Hardware Setup

In this chapter, details about adapting the ACD-57 Display to your installation-specific needs are given. How will the backlight be controlled, will the ACD-57 power on directly if supply power is present, how are the controls set up. Most of these parameters are optional as ACD will work on its default parameters.

9.1 Auto Boot

"Auto Boot" is typically active (set to ON) to always automatically switch ACD-57 on if sufficient supply power is present. By setting the AUTO BOOT paramter to OFF, ACD-57 i gnores supply power and is switched on by pushing [softkey 1].

To change the Auto Boot configuration, please carry out the following steps:

1. Open the menu with a long push on the [inner knob pushbutton].
2. Use the [inner knob] to navigate to *ACD SYSTEM* → *ACD SYSTEM SETUP* → *AUTO BOOT*.
3. Push the [inner knob pushbutton] to toggle between ON and OFF.
4. Push the [ESC softkey] to leave the menu.

9.2 Sounder Volume

ACD-57 features an integrated alert sounder (buzzer) for failure and warning annunciation. Alert sounder volume can be adjusted to meet individual installation requirements. The default for this value is 3.

To change the alert sounder volume, please carry out the following steps:

1. Open the menu with a long push on the [inner knob pushbutton].
2. Use the [inner knob] to navigate to *ACD System* → *ACD Setup* → *SOUNDER VOLUME*
3. Use the [inner knob] to select a desired volume.
4. Push the [inner knob pushbutton] to execute your selection.
5. Push the [ESC softkey] to leave the menu.

9.3 Illumination and Backlight

The buman machine interface (HMI) illumination brightness (screen and buttons) can be controlled using independent methods, only one brightness control method can be used at a time.

- Manual brightness control - Brightness at a set value (user adjustable).
- Automatic brightness control - Automatic adjustment using the ambient light sensor
- Brightness control over aircraft lighting bus - using one of the lighting bus inputs

> For aircraft operating at night, the aircraft lighting bus input should be used.

The value for manual, minimum, and maximum illumination levels can be configured individually. Aircraft lighting bus source and minimum/maximum voltage values can as well be configured.

> Please note that some changes like minimum and maximum illumination level require a system restart before they take effect.

9.3.1 Manual Brightness Control

To change the backlight to manual brightness control, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD SYSTEM SETUP* → *BACKLIGHT* → *MODE*.
3. Use the inner knob to select *MANUAL*.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

Now the brightness level as configured in *MANUAL INTENSITY* is used.

9.3.2 Automatic Brightness Control

To change the backlight mode to automatic brightness control, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD SYSTEM SETUP* → *BACKLIGHT* → *MODE*.
3. Use the inner knob to select *AUTO*.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

Now the brightness level is adjusted using the ambient light sensor in the front bezel of the device. Restrictions to minimum and maximum brightness levels are configured in *AUTO MINIMUM* and *AUTO MAXIMUM*.

9.3.3 Brightness Control over the Aircraft Lighting Bus

In order to use the aircraft lighting bus, the following configuration actions have to be taken:

1. change HMI illumination mode
2. configure the input pin used
3. configure input voltage levels

To change the HMI illumination mode to aircraft lighting bus, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD SYSTEM SETUP* → *BACKLIGHT* → *MODE*.
3. Use the inner knob to select *LIGHTINGBUS*.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

To configure the correct input pin for the lighting bus, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD SYSTEM SETUP* → *BACKLIGHT* → *LIGHTING BUS* → *LIGHT. BUS SRC*.
3. Use the inner knob to select *select the connector, the aircraft lighting bus is connected to (UPPER CONNECTOR or LOWER CONNECTOR)*.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

Now the brightness level is adjusted using the confirgured lighting bus input pin. To configure desired voltage levels for minimum and maximum brightness, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD SYSTEM SETUP* → *BACKLIGHT* → *LIGHTING BUS* → *LIGHT. BUS MIN*.
3. set the aircraft lighting bus to the minimum level using the lighting bus control in your aircraft.
4. Push the inner knob pushbutton to execute your selection.
5. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD SYSTEM SETUP* → *BACKLIGHT* → *LIGHTING BUS* → *LIGHT. BUS MAX*.
6. set the aircraft lighting bus to the maximum level using the lighting bus control in your aircraft.
7. Push the inner knob pushbutton to execute your selection.
8. Push the ESC softkey to leave the menu.

This chapter holds paramters that help to adjust functions to better suit your way of flying. You can adjust altimeter units, radio controls, and many small details. These parameters are optional.

10.1 Altimeter Units

Units for altitude and pressure are user configurable.

- Altitude units configurable to meters or feet
- Pressure units configurable to hectopascals (millibars) or inches of mercury

The default settings are *meters* and *hectopascals*. To change the altimeter units configuration, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ALTIMETER SETUP* → *UNITS*.
3. Use the inner knob to navigate to a unit category, use the inner knob pushbutton to enter the menu.
4. Use the inner knob to select the desired unit.
5. Push the inner knob pushbutton to execute your selection.
6. Push the ESC softkey to leave the menu.

10.2 COM Control Parameters

10.2.1 Station Names

This parameter can be switched to *ON* to show station names on the main page of the COMM user interface. If set to *OFF*, station names are not shown on the main page, but are still shown and used on other pages. The default setting for this parameter is *ON*.

> The display of station names in the ACD-57 requires position data and an installed station database (microSD card). If no GPS position data or no station database is available, station names are not shown.

Station names are only shown for stations within a distance of approx. 20 miles from the aircraft's current position.

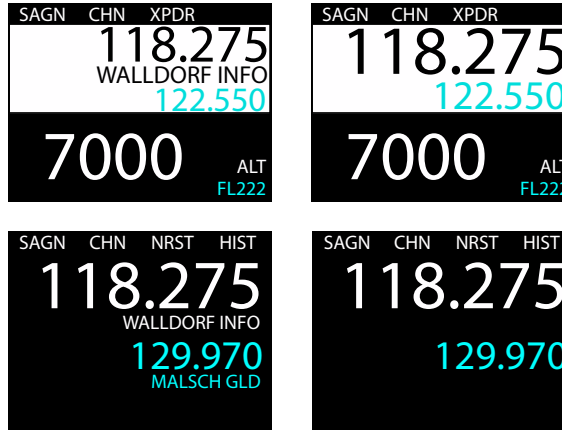


Figure 10.1.: COM main page with *STATION NAMES* parameter set to *ON* on the left and to *OFF* on the right. Please note that in COM only configuration, station names for both standby and active channel are shown. In all other configurations, only the active channel station name is shown.

To change this configuration, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD COMM SETUP* → *COMM CONTROL* → *STATION NAMES*.
3. Push the inner knob pushbutton to toggle between YES and NO.
4. Push the ESC softkey to leave the menu.

10.2.2 Knob Use

With this parameter, the primary use of the inner knob and outer knob on the main page can be selected. The inner knob pushbutton function remains unaffected of this setting (always flip flops active/standby channels). The default setting for this parameter is *CHANNEL*.

It can be set to *VOLUME* to open the volume control page when turning the inner knob or the outer knob. In this case softkey 2 will have the function to open the channel selection page. If set to *CHANNEL* (default) to open the channel selection page when turning the inner knob or the outer knob. In this case softkey 2 will have the function to open the volume control page.

It can also be set to *VOL+CHN* to open the channel selection page when turning the

inner knob and the volume page when turning the outer knob. In this case softkey 2 will have the function to open the volume control page.

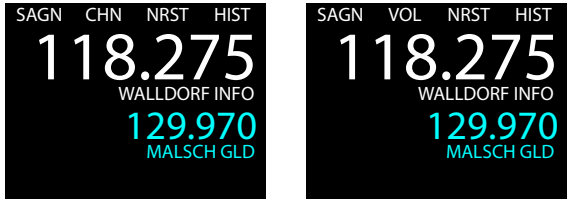


Figure 10.2.: COM main page with *KNOB USE* parameter set to *VOLUME* on the left and to *CHANNEL* on the right.

> In aircraft with an audio panel or intercom, we recommend to use the default setting (*KNOB USE* set to *CHANNEL*).

To change the knob use configuration, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD COMM SETUP* → *COMM CONTROL* → *KNOB USE*.
3. Use the inner knob to to select a desired option (*VOLUME* or *CHANNEL*).
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

10.2.3 Channel Spacing

The "channel spacing" setting selects which frequencies / channels can be tuned in by the ACD-57. With the default setting (*25kHz AND 8.33kHz*) all 25 kHz frequencies and 8.33 kHz channels can be selected by either rotating the inner knob or simultaneously pushing the inner knob pushbutton and rotating the inner knob (25 kHz increments for faster adjustment).

If the "channel spacing" is set to *25KHZ ONLY*, only the 25kHz frequencies can be dialed in.

To change the channel spacing configuration, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD COMM SETUP* → *COMM CONTROL* → *CHN SPACING*.
3. Use the inner knob to select a desired spacing (*BOTH*, *25KHZ*, or *8.3kHz*).
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

10.3 Transponder Control Parameters

10.3.1 VFR Preset

Here a preset value for the VFR squawk code can be entered. This value is used when the *VFR Softkey* is pressed on the XPDR page.

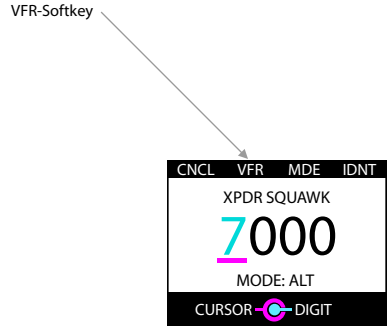


Figure 10.3.: VFR softkey on the XPDR page. The squawk code entered in the *VFR PRESET* parameter is set if the softkey is pushed.

To change the VFR squawk code preset, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *ACD SYSTEM* → *ACD SETUP* → *ACD XPDR SETUP* → *VFR PRESET*.
3. Use the outer knob to select a position/digit and the inner knob to change the value at this position.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

Setup of Connected COM and Transponder Systems

11

ACD-57 can configure connected systems such as COMM radios and transponders. It holds the same menu structure, parameter names and values as control heads made by the respective manufactuerers of the connected units. Therefore, the configuration can and shall always happen according to manufactuerers documentation and manuals. This chapter holds only basic information about where to access the specific paramters of conencted systems.

11.1 Connected System Parameters

Whenever a connected system is installed, the *Configuration Menu* will hold a menu sections on the highest level with the name of the connected system. Depending on the type of connected system, different parameters are available.

> In some installations with multiple ACD-57, the menu section is only available on the ACD-57 where the connected system is physically connected to.

Please consult the connected system's documentation for details on parameters and recommended values.

11.2 Special Information if using an AIR Avionics VT-01 Transponder

> Note that for the VT-01 transponder, the system state, software versions, and configuration are not known to the ACD-57 unless the VT-01 has been set to ALT mode for 15 seconds at least once during the runtime of the ACD-57.

> This section contains setup parameters of a connected VT-01 transponder. It only shows parameters supported by the ACD-57 and how they are changed. For details on recommended settings and all available parameters of the connected XPDR systems, please consult the XPDR system's documentation.

11.2.1 Flight ID

In this menu, a flight ID can be entered. The flight ID must correspond to the aircraft identification specified in item 7 of the ICAO flight plan, or, when no flight plan has been filed, the aircraft registration.

To enter a flight ID, please carry out the following steps:

1. Open the menu with a long push on the (inner knob pushbutton).

2. Use the inner knob to navigate to *VT-01 XPDR → FLIGHT ID*.
3. Use the outer knob to select a position/digit and the inner knob to change the value at this position.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

11.2.2 ICAO24 Address

Mode-S relies on a unique ICAO 24-bit aircraft address for selective interrogation of an individual aircraft.

In order to use Mode-S, the ICAO 24-bit aircraft address (also called ICAO-Address or HEX-CODE) has to be entered in hexadecimal notation. Without the address being entered, the connected XPDR system will only reply to MODE-C requests.

> The correct address is either stored in the aircraft's maintenance log, or, if not available yet, can be obtained from local aviation authorities.

To enter an ICAO24 address, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *VT-01 XPDR → INSTALLATION → VT-01 SETUP → ICAO ADDRESS*. If the setup is not unlocked yet, please enter the code '3000' to unlock the setup when prompted.
3. Use the outer knob to to select a position/digit and the inner knob to change the value at this position.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

Maximum Speed Category

In this menu, the maximum speed category of the aircraft shall be entered. The default value is *0*. To enter a maximum speed category, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *VT-01 XPDR → INSTALLATION → VT-01 SETUP → MAX SPD CAT*.
3. Use the inner knob to select a category. Choose *0* if the category is unknown.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

11.2.3 ADS-B Configuration

In this menu, the following ADS-B related parameters are configured:

1. ADS-B In availability
2. ADS-B aircraft category

3. ADS-B L/W code
4. ADS-B Inhibit

ADS-B In availability

This parameter shall be set to *YES* if the aircraft is ADS-B IN capable, i.e. if an ADS-B receiver (for example in a collision avoidance device) is installed in the aircraft. Default value of this parameter is *NO*.

To change the ADS-B In availability parameter, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *VT-01 XPDR* → *INSTALLATION* → *VT-01 SETUP* → *ADS-B CONFIG* → *ADS-B IN AVAIL*.
3. Use the inner knob to select a value.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

ADS-B aircraft category

In this menu, the ADS-B aircraft category shall be entered. The default value is *24*. To enter an aircraft category, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *VT-01 XPDR* → *INSTALLATION* → *VT-01 SETUP* → *ADS-B CONFIG* → *ADS-B ACFT CAT*.
3. Use the inner knob to select a category. Choose *24* if the category is unknown.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

ADS-B L/W code

In this menu, the ADS-B length/width code shall be entered. The default value is *0*. To enter an L/W code, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *VT-01 XPDR* → *INSTALLATION* → *VT-01 SETUP* → *ADS-B CONFIG* → *ADS-B L/W CODE*.
3. Use the inner knob to select a code. Choose *0* if the code is unknown.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

11.2.4 ADS-B Inhibit

Here the ADS-B Out feature of a connected XPDR system can be inhibited (i.e. switched off). The default value for this parameter is *OFF*. If the parameter is set to *ON*, no ADS-B data is transmitted by the XPDR.

To change the ADS-B active state of the XPDR, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *VT-01 XPDR* → *INSTALLATION* → *VT-01 SETUP* → *ADS-B CONFIG* → *ADS-B INHIBIT*.
3. Use the inner knob to select a state.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

11.2.5 XPDR Configuration

On-Ground-Switch

This parameter shall be configured to the value *ON* if an On-Ground-Switch is installed in the aircraft and connected to the XPDR. Default value for this parameter is *OFF*.

To change the On-Ground-Switch configuration of the XPDR, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *VT-01 XPDR* → *INSTALLATION* → *VT-01 SETUP* → *XPDR CONFIG* → *ON GND SWITCH*.
3. Use the inner knob to select a state.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

XPDR System Altitude Source

Here the altitude data source for a connected XPDR system can be selected to either be RS-232 or data bus. The default value for this parameter is *DATA BUS*.

> For VT-01 Mode-S transponders, the parameter has to be set to *DATA BUS*.

To change the altitude source of a connected XPDR system, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *VT-01 XPDR* → *INSTALLATION* → *VT-01 SETUP* → *XPDR CONFIG* → *ALT SOURCE*.
3. Use the inner knob to select a source. We recommend the value *OTHER ACD*.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

XPDR System Altitude Resolution

Here the resolution of transmitted altitude data to/from a connected XPDR system can be selected to either be 25ft or 100ft. The default value for this parameter is *25ft*.

> For VT-01 Mode-S transponders, the parameter has to be set to *25ft*.

To change the altitude resolution of the XPDR, please carry out the following steps:

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *VT-01 XPDR* → *INSTALLATION* → *VT-01 SETUP* → *XPDR CONFIG* → *ALT RESOLUTION*.
3. Use the inner knob to select a value.
4. Push the inner knob pushbutton to execute your selection.
5. Push the ESC softkey to leave the menu.

12 Ground Checks

12.1 Data Interface Check

If the data bus or a serial interface is used, to test the interface integrity, a pragmatic function test of the ACD-57 can be performed. After at least 10 minutes of continuous operation, check data validity and correct function by checking and verifying that no errors are detected.

Verify that all connected devices can control the ACD-57 and/or that the ACD-57 can control the connected devices as expected.

> If available, we recommend the use of professional CAN BUS / CANaerospace / RS-232 analysis tools to check the interface integrity.

12.2 COMM Check

To check for correct COMM functionality, use the checkout procedures of the connected VHF transceiver.

12.3 Transponder Check

To check for correct transponder functionality, use the ccheckout procedures of the connected MODE-S transponder.

12.4 Altimeter Check

For altimeter checkout, use aircraft manufacturer approved checkout procedures.

12.5 Lighting Check

12.5.1 Ambient Light Sensor Check

The light sensor can sense ambient lighting conditions and adjust the backlight of the display and keyboard accordingly. If the ambient lighting sensor is used, this check verifies that the sensor is working correctly.

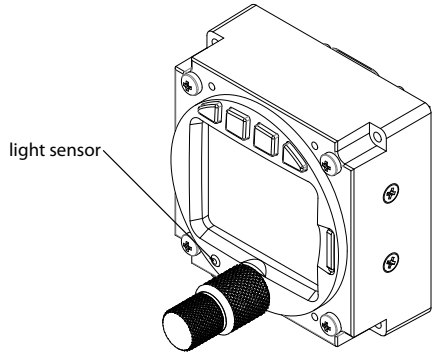


Figure 12.1.: Ambient light sensor on the front bezel

1. Ensure that the backlight is set to *AUTO*.
2. Cover the light sensor with your finger and see if display illumination changes within a time of some seconds.

12.5.2 Lighting Bus Check

The display backlight and keyboard illumination can be controlled over the aircraft's lighting bus. If the lighting bus is used, this check ensures the lighting bus interface works correctly.

> Connection of the aircraft lighting bus to the incorrect input pins can cause damage. Verify that the wiring is correct before proceeding.

1. Ensure that the backlight is set to *LIGHTING BUS*.
2. Ensure the lighting bus is set to its minimum setting.
3. Slowly increase the lighting bus level. Verify that the display brightness tracks the lighting bus setting. Continue to maximum brightness and verify proper operation.

12.6 Controls Check

This check verifies that all controls operate correctly.

1. Manipulate all pilot controls (buttons 1,2,3,and 4 , the concentric rotary knob , and the rotary knob pushbutton). Please consult the ACD-57 Pilot's Manual [1] for details on pilot controls.
2. Check if the manipulation results in control inputs on the display as expected.

> Depending on the unit's configuration and software status not all controls may be active all the time.

12.7 Alert Sounder Check

This check verifies that the integrated alert sounder is working.

1. Set the alert sounder volume. Test beeps shall be put out according to the volume settings.

12.8 Version / Revision Check

Verify that the currently installed software version/revision is approved and suitable for your device, aircraft, and configuration. Verify compatibility to all connected systems by cross-checking compatibility lists of all involved systems.

Software and hardware identification and version information can be reviewed directly on the display in *CONFIGURATION MENU* → *ACD SYSTEM* → *ABOUT*.

12.9 Add-On Functions Check

Check Add-on Functions in *CONFIGURATION MENU* → *ACD SYSTEM* → *ADD-ON FUNCTIONS* → *INSTALLED*. Verify that the currently installed add-ons are suitable for your device, aircraft, and configuration.Ensure that all required functions are available.

12.10 Failure Message Check

Check failure messages in *CONFIGURATION MENU* → *ACD SYSTEM* → *ABOUT* → *STATUS* → *FAILURES*. Verify that no functions have failed and that no failure messages are visible.

Configuration and Checkout Documentation 13

13.1 Configuration Documentation

> It is mandatory for each configuration that the configuration is logged in a document that is added to the aircraft records.

A configuration log form is provided in appendix A.0.12

13.2 Checkout Documentation

> It is mandatory for each installation that the checkout is logged in a document that is added to the aircraft records.

A checkout log form is provided in appendix A.0.12

13.3 Configuration Codes

> It is recommended that the configuration codes are read out and logged in a document that is added to the aircraft records.

A configuration code log form is provided in appendix A.0.18

13.4 Add-On Functions Documentation

> It is mandatory for each installation where add-ons are installed that installed add-ons are logged in a document that is added to the aircraft records.

It is required that all installation codes are carefully noted in this log. If the device is repaired or reset to factory defaults, the code has to be re-entered. Customer add-on purchase history data is not saved. Therefore, if the installation code gets lost, the add-on has to be purchased again at full cost to restore the desired functionality.

A license log form is provided in appendix A.0.18

14 Maintenance

14.1 Continued Airworthiness

To remain airworthy, no periodic checks or maintenance of the ACD-57 unit are required. The unit can be operated “on condition”.

> Even though the ACD-57 unit itself does not require periodic checks or maintenance to remain airworthy, it might still be required to periodically check or maintain the unit due to the requirements of the airframe or its certification base. Always make sure that any requirements applicable in your jurisdiction are met.

14.2 microSD Card

Software upgrades and station databases are loaded using the integrated microSD card slot and a microSD memory card.

While the software is actually loaded onto the device, the station database remains on the microSD card. Therefore, database information is only accessible if the microSD card remains inserted.

> If the microSD card is not installed, not all functions will be available.

> Never remove the microSD card while the device is in operation. If the microSD card is removed from the device during runtime, the device’s software may stop working. In this case a system restart would be required.

The microSD card slot is located on the right side of the unit’s front panel. A microSD memory card can be inserted and removed from the device.

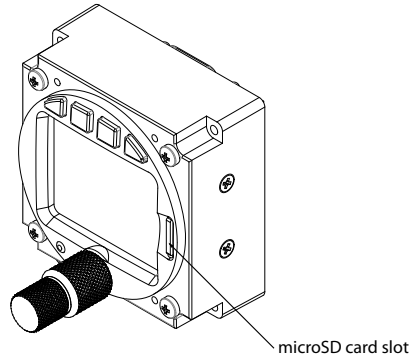


Figure 14.1.: microSD Card Slot

To insert a microSD card, insert the card into the slot, print facing to the display, little nose facing upwards and gently push the card until it clicks in.

> Inserting the microSD card in the wrong orientation may damage the slot.

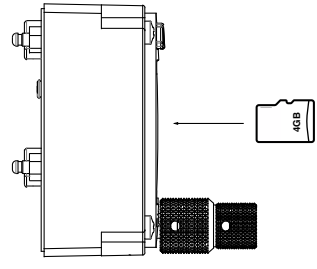


Figure 14.2.: microSD card in correct orientation

To remove an inserted microSD card, use your fingernail to gently push on the card until a click is audible. The card will be released following the click. Use your fingernail to remove the card.

> Be careful. Application of too much force may damage the slot.

ACD-57 is compatible with FAT or FAT32 formatted microSD cards. It has been successfully tested with microSD cards with a storage size of 2 to 64 gigabytes.

14.3 Database Loading

14.3.1 Using a Database

To use a database, please carry out the following steps:

1. Download a valid station database file from *https://www.air-avionics.com*
2. Load the station database file onto a microSD card.
3. Insert the microSD card into the ACD-57.
4. Power the unit on.
5. Open the menu with a long push on the inner knob pushbutton.
6. Use the inner knob to navigate to *CONFIGURATION MENU* → *ACD SYSTEM* → *ABOUT* → *DATABASES*.
7. Verify correct installation in the databases list.
8. Push the ESC softkey to leave the menu.

For safety reasons, databases expire one year after the download. When the database expires, the database can no longer be used and database functions are no longer available.

The station database and related functions are only available while the microSD card holding the station database file is inserted. If the microSD card is removed, the database and all related functions are unavailable.

14.4 Software Updates

A software update requires you to verify the correct software version and function by reperforming all configuration, checkout, and documentation steps described in chapter 6, chapter 12, and chapter 13.

To perform a software update, please carry out the following steps:

1. Load a valid ACD-57 firmware file onto a microSD card (file ending .air).
2. Insert the microSD card into the slot.
3. Power the unit on. An update dialog will appear.
4. Once the update process has been completed, verify the correct software version and function by reperforming all configuration, checkout, and documentation steps.
5. Update all required documentation.

14.5 Cleaning

ACD-57 has a display that is coated with a special anti-reflective coating that is very sensitive to waxes and abrasive cleaners. It is very important to clean the display using a clean, lint-free cloth and an eyeglass lens cleaner that is specified as safe for anti-reflective coatings.

15 Troubleshooting

For more detailed troubleshooting articles, please open the AIR Avionics Support knowledge base on *https://support.air-avionics.com*

My unit shows “Unit Not Configured”

As long as the device is not configured for a specific installation (factory default), the screen below appears.

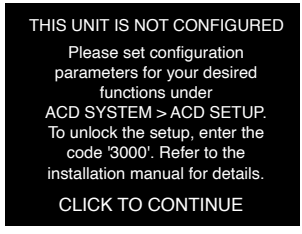


Figure 15.1.: Screen indicating factory state without configuration

To use ACD-57 the system has to be configured to its specific use case. It needs to know what it shall display (altimeter, XPDR, COMM or any combination thereof) and it needs to know about the chosen installation options like type of COMM/XPDR modules and their wiring.

Please complete all the steps described in chapter 6 of this manual and try again.

Transponder shows error “0002000 CONNECTION” when switching to ALT mode

The connection between the Transponder and the ACD-57 is not working. This can be due to the following reasons:

- Cable not connected properly or transponder control settings not configured correctly: Please check wiring and verify that all parameters in *ACD SETUP → ACD XPDR SETUP* are correctly set.
- Transponder not supplied with power. Verify transponder power supply.
- CAN termination resistor not installed. Check if all termination resistors on both sides, i.e. on the transponder side and the other end of the databus are installed.

Bibliography A

[1] AIR Avionics, *ACD-57: Pilot's Manual*, rev 5.0, August 2025.

Assembly and Installation Drawings

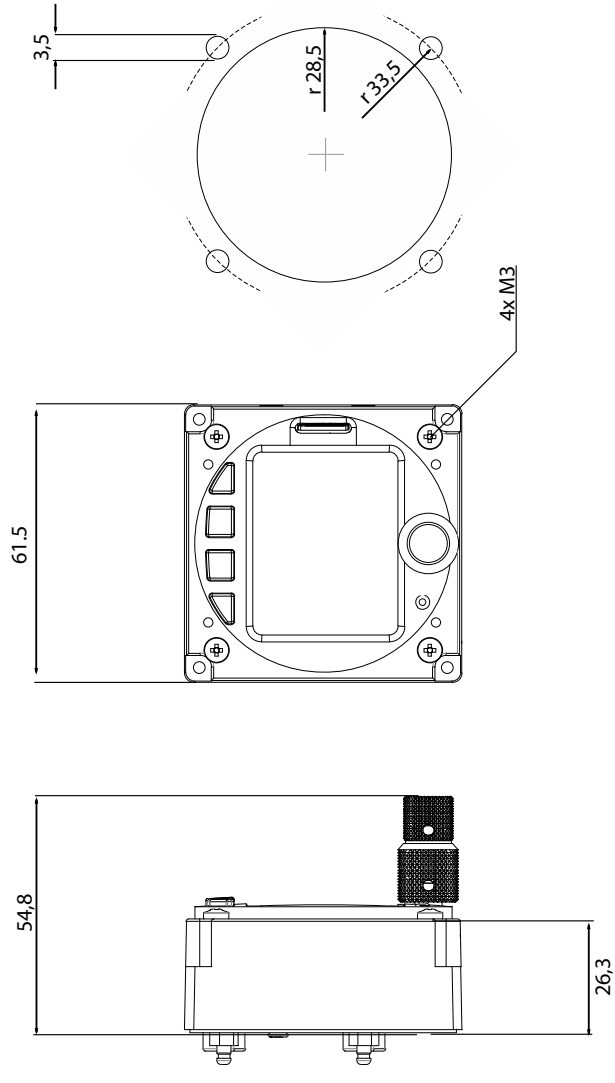


Figure A.1.: Dimensional drawing, all dimensions in millimeters

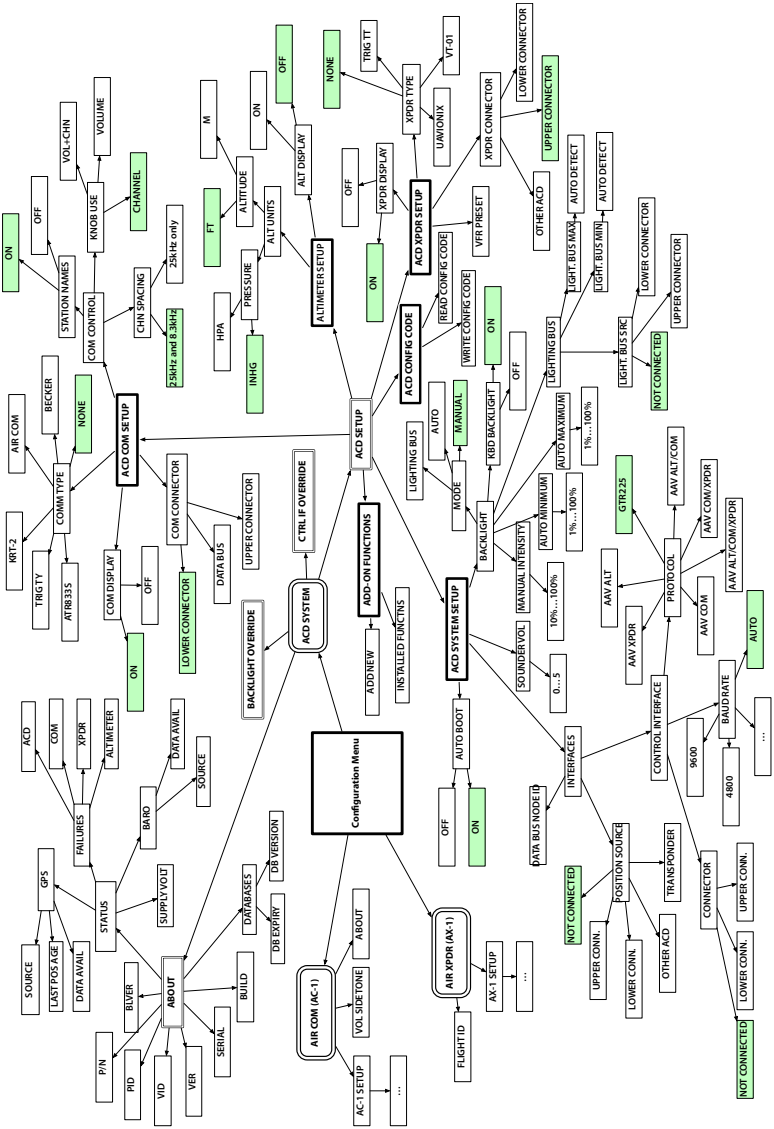


Figure A.2.: Configuration Menu Diagram. Green fields are default values.

Cabling and Configuration Examples

ACD-57 Display Only (Altimeter)

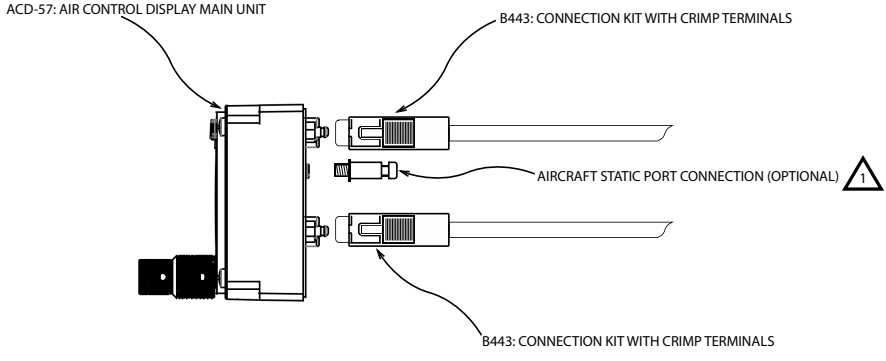


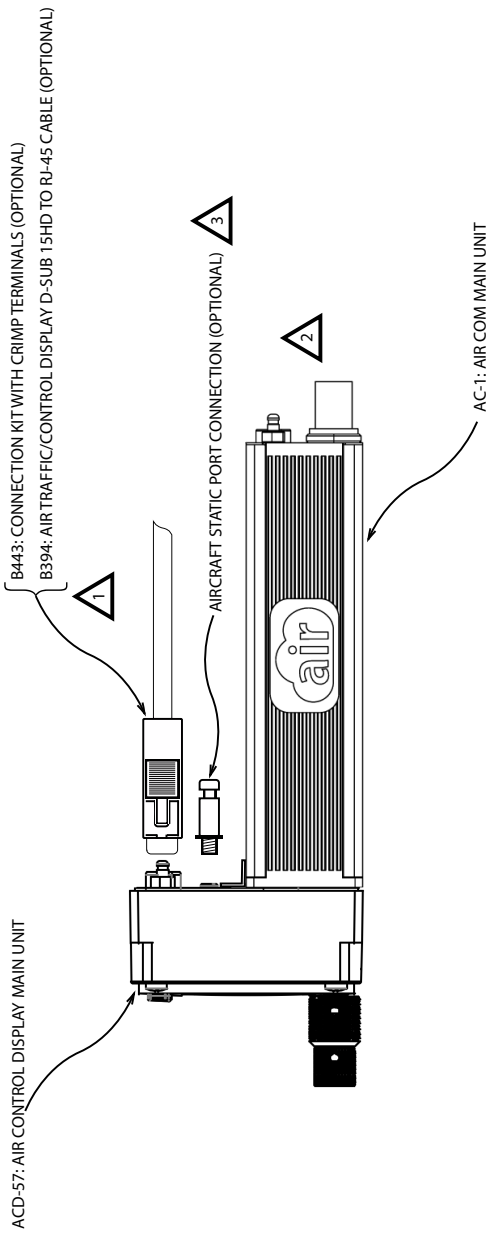
Figure A.3.: ACD-57 only (use as altimeter) with redundant power supply.

A.0.1 Recommended Parameters:

Configuration parameters recommended for ACD-57 in display only/altimeter configuration:

Parameter	*Recommended Value*
ACD SYSTEM → ACD SETUP → ADD-ON FUNCTIONS	Altimeter add-on must be installed!
ACD SYSTEM → ACD Setup → ALTIMETER SETUP → ALT DISPLAY	ON

ACD-57 and AIR COM VHF Transceiver



1 With these optional cables, an RS232 NMEA GPS data source, a lighting bus input and an auxiliary power supply can be optionally connected to ACD-57. B394 is pin-compatible to FLARM® RJ45 connectors. Both cables contain a databus termination.

2 As this manual does not cover AIR COM, no details on AIR COM specific wiring options are given. Please consult the AIR COM manual for details on AIR COM wiring.

3 If altimeter function is used, connection to aircraft static port is required.

Figure A.4.: ACD-57 and AIR COM directly connected

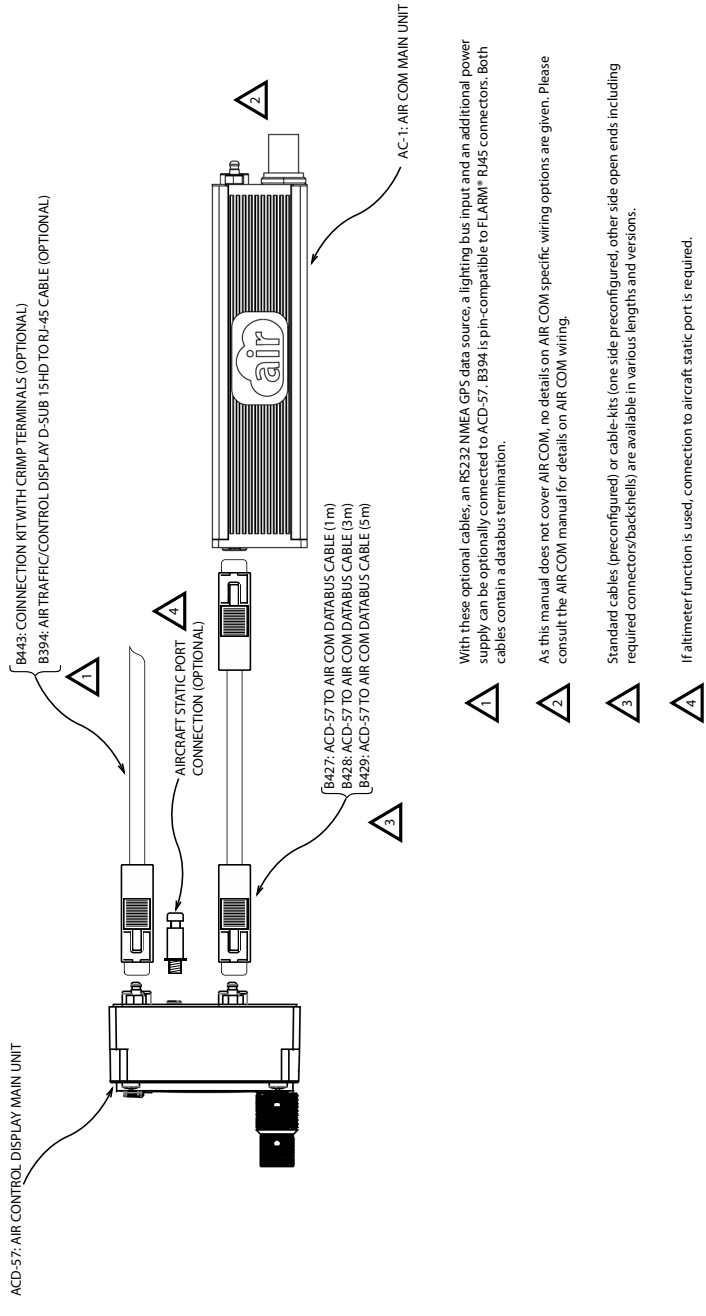


Figure A.5.: ACD-57 and AIR COM connected with cable

Configuration parameters recommended for ACD-57 and AIR COM:

Parameter	*Recommended Value*
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM TYPE	AIR COM
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM CONNECTOR	LOWER CONNECTOR
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM DISPLAY	ON

Please note: If you use a supported third-party VHF radio (BECKER, F.U.N.K.E, or TRIG), please use the same parameters as with the AIR COM but change the COMM TYPE accordingly.

Dual ACD-57 and AIR COM VHF Transceiver

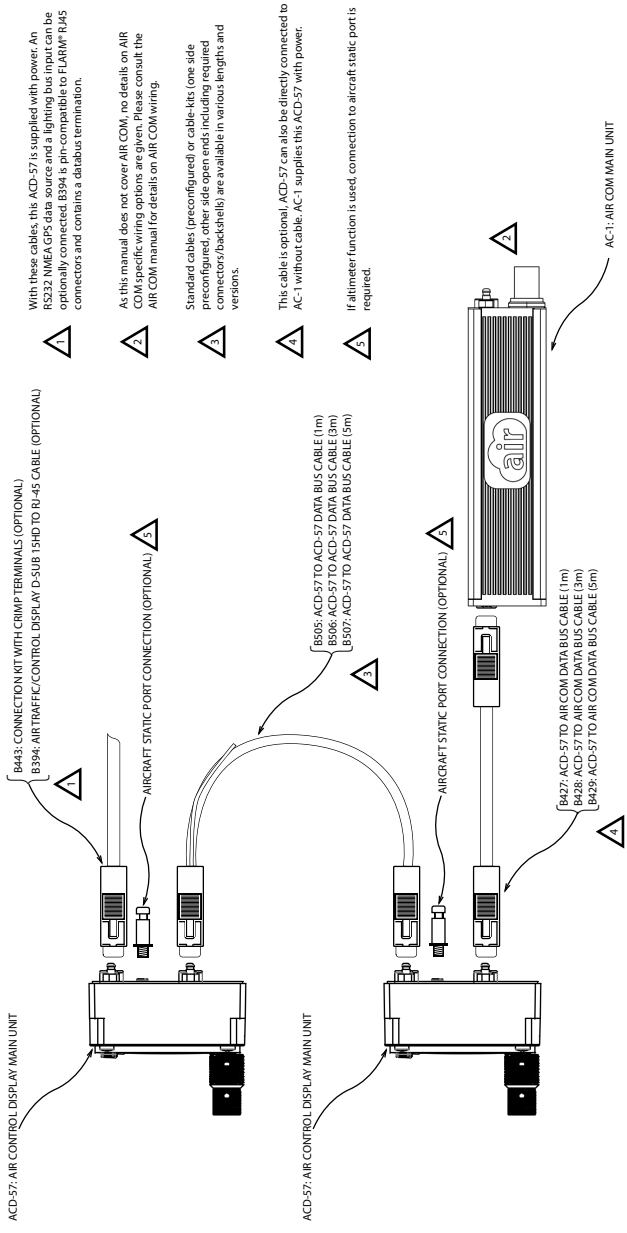


Figure A.6.: Dual ACD-57 and AIR COM connected with cable

Parameters for first ACD-57 (the left/upper one in the diagram):

Parameter	*Recommended Value*
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM TYPE	AIR COM
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM CONNECTOR	DATA BUS
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM DISPLAY	ON
ACD SYSTEM → ACD SETUP → ACD SYSTEM SETUP → INTERFACES → DATA BUS NODE ID	101

Parameters for second ACD-57 (the right/lower one in the diagram with the connected AIR COM):

Parameter	*Recommended Value*
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM TYPE	AIR COM
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM CONNECTOR	LOWER CONNECTOR
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM DISPLAY	ON
ACD SYSTEM → ACD SETUP → ACD SYSTEM SETUP → INTERFACES → DATA BUS NODE ID	100

> Please note: If you use a supported third-party VHF radio (BECKER, F.U.N.K.E, or TRIG), please use the same parameters as with the AIR COM but change the COMM TYPE accordingly.

ACD-57 and VT-01 Transponder

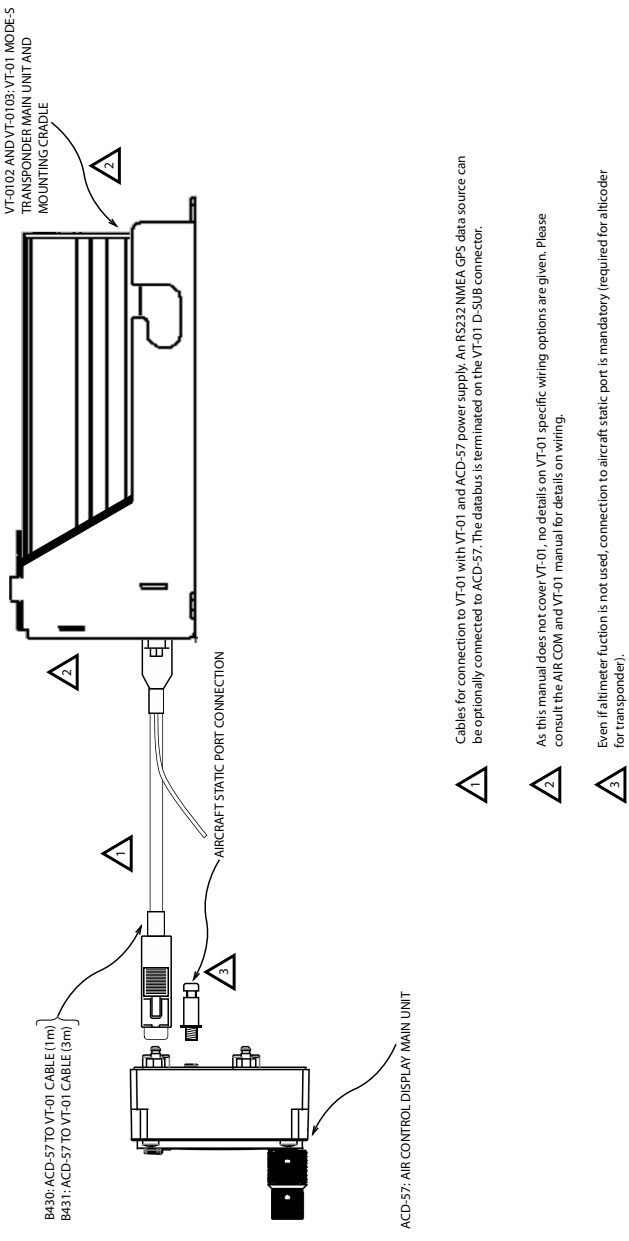


Figure A.7.: ACD-57 and VT-01 Mode-S transponder connected with cable

Configuration parameters recommended for ACD-57 and VT-01 transponder:

Parameter	*Recommended Value*
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR TYPE	VT-01
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR CONNECTOR	UPPER CONNECTOR
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR DISPLAY	ON

Please note: If you use a supported third-party transponders (uAvionix or TRIG), please use the same parameters as with the VT-01 but change the XPDR TYPE accordingly.

For the VT-01 Ultracompact, make sure to also follow the instructions in section “Compatible Transponders” on page 22.

Please note: If you use a supported third-party transponder (TRIG), please use the same parameters as with the VT-01 but change the XPDR TYPE accordingly.

Dual ACD-57 and VT-01 Transponder

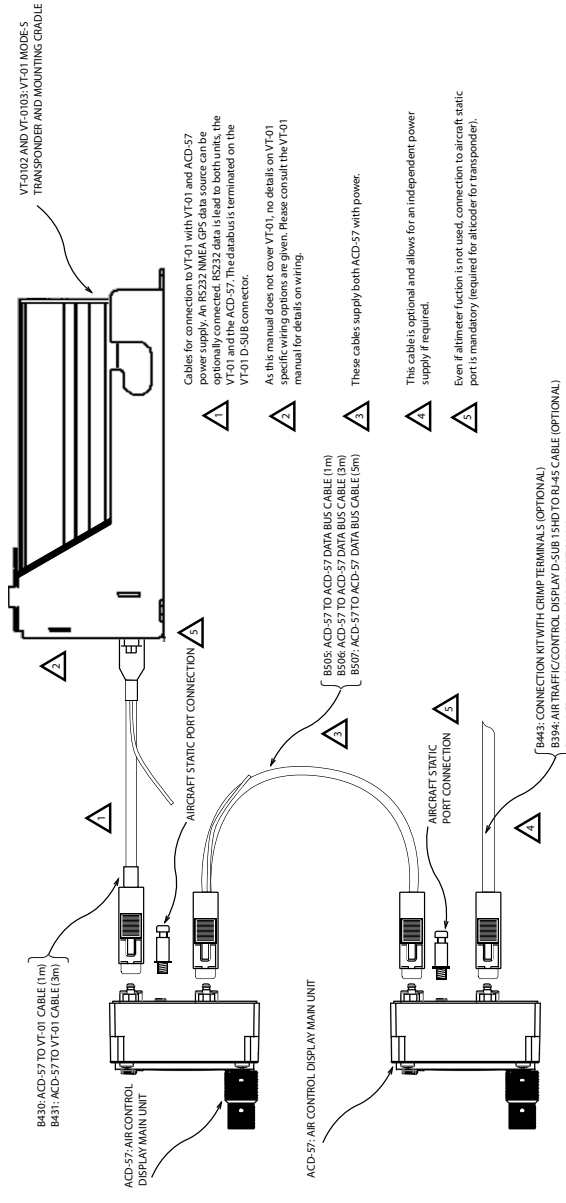


Figure A.8.: Dual ACD-57 and VT-01 Mode-S transponder

Parameters for first ACD-57 (the left/upper one in the diagram with the VT-01 transponder connected):

Parameter	*Recommended Value*
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR TYPE	VT-01
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR CONNECTOR	UPPER CONNECTOR
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR DISPLAY	ON
ACD SYSTEM → ACD SETUP → ACD SYSTEM SETUP → INTERFACES → DATA BUS NODE ID	100

For the VT-01 Ultracompact, make sure to also follow the instructions in section “Compatible Transponders” on page 22.

Please note: If you use a supported third-party transponder (TRIG), please use the same parameters as with the VT-01 but change the XPDR TYPE accordingly.

Parameters for second ACD-57 (the right/lower one in the diagram):

Parameter	*Recommended Value*
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR TYPE	VT-01
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR CONNECTOR	DATA BUS
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR DISPLAY	ON
ACD SYSTEM → ACD SETUP → ACD SYSTEM SETUP → INTERFACES → DATA BUS NODE ID	101

Please note: If you use a supported third-party transponder (TRIG), please use the same parameters as with the VT-01 but change the XPDR TYPE accordingly.

ACD-57, AIR COM, and VT-01 Transponder

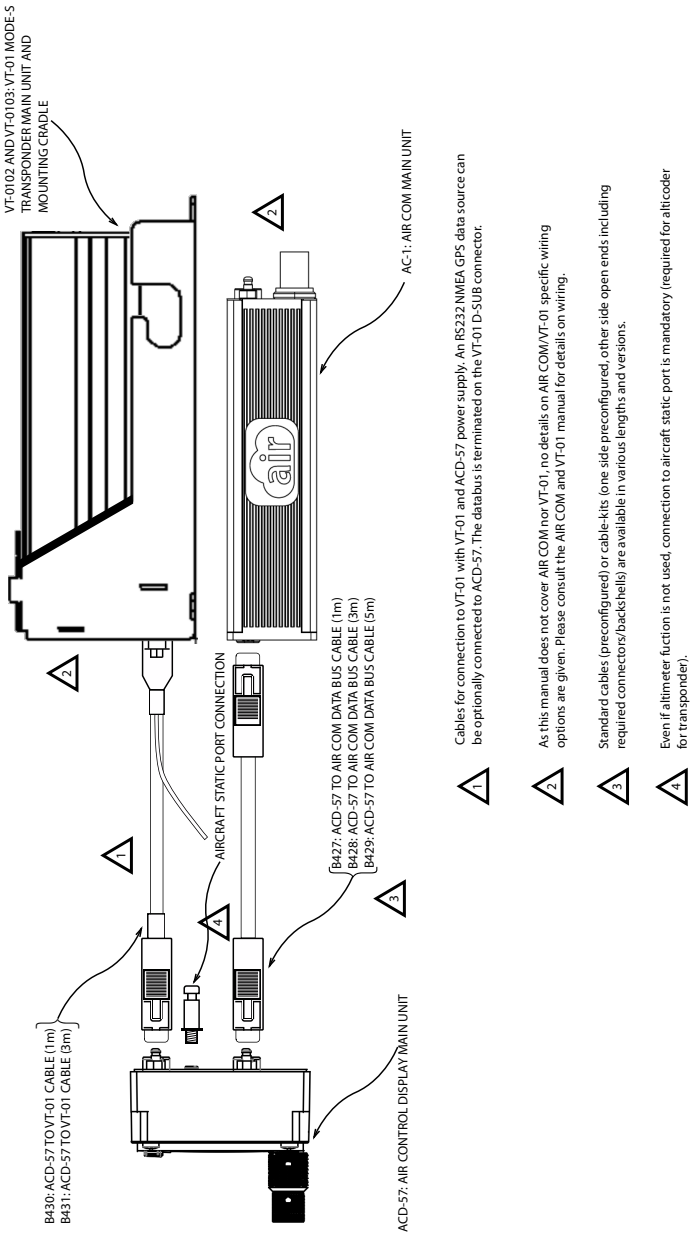


Figure A.9.: ACD-57, AIR COM, and VT-01 Mode-S transponder

Parameters for ACD-57 with VT-01 transponder and AIR COM VHF transceiver connected:

Parameter	*Recommended Value*
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR TYPE	VT-01
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR CONNECTOR	UPPER CONNECTOR
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR DISPLAY	ON
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM TYPE	AIR COM
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM CONNECTOR	LOWER CONNECTOR
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM DISPLAY	ON

For the VT-01 Ultracompact, make sure to also follow the instructions in section “Compatible Transponders” on page 22.

Please note: If you use a supported third-party VHF radio (BECKER, F.U.N.K.E, or TRIG) or Transponders (uAvionix, TRIG), please use the same parameters as with the AIR COM/VT-01 but change the COMM TYPE/XPDR Type accordingly.

Dual ACD-57, AIR COM, and VT-01 Transponder

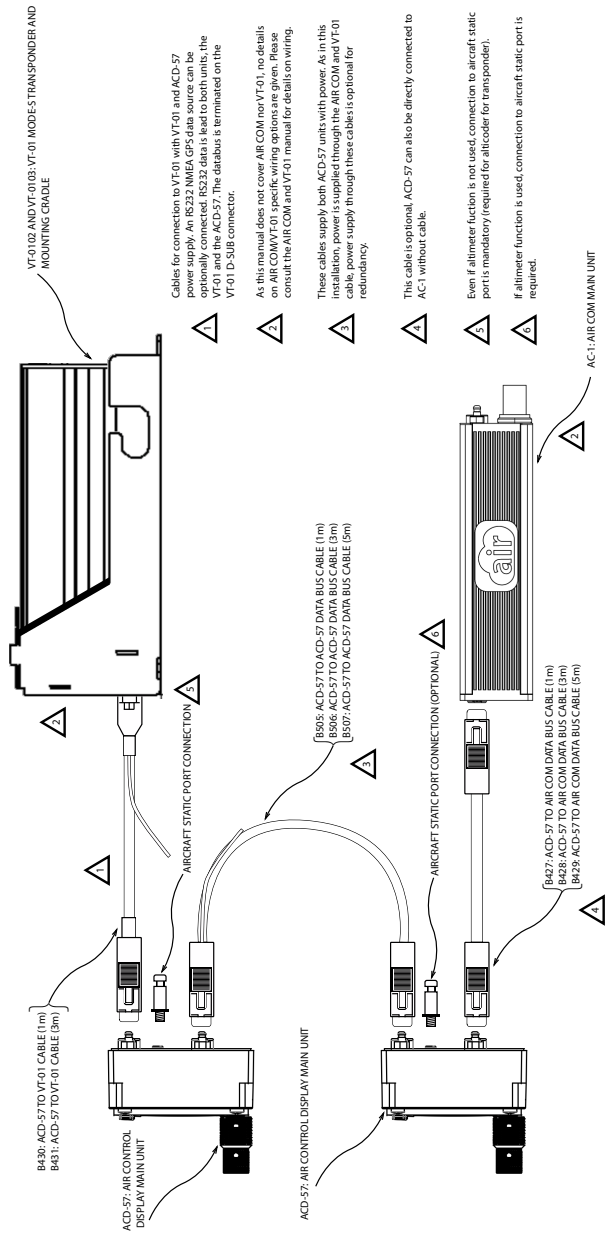


Figure A.10.: Dual ACD-57, AIR COM, and VT-01 Mode-S transponder

Parameters for first ACD-57 (the left/upper one in the diagram with the VT-01 transponder connected):

Parameter	*Recommended Value*
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR TYPE	VT-01
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR CONNECTOR	UPPER CONNECTOR
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR DISPLAY	ON
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM TYPE	AIR COM
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM CONNECTOR	DATA BUS
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM DISPLAY	ON
ACD SYSTEM → ACD SETUP → ACD SYSTEM SETUP → INTERFACES → DATA BUS NODE ID	101

For the VT-01 Ultracompact, make sure to also follow the instructions in section “Compatible Transponders” on page 22.

Please note: If you use a supported third-party transponder (TRIG, uAvionix), please use the same parameters as with the VT-01 but change the XPDR TYPE accordingly.

Parameters for second ACD-57 (the right/lower one in the diagram with the connected AIR COM):

Parameter	*Recommended Value*
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR TYPE	VT-01
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR CONNECTOR	DATA BUS
ACD SYSTEM → ACD SETUP → ACD XPDR SETUP → XPDR DISPLAY	ON
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM TYPE	AIR COM
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM CONNECTOR	LOWER CONNECTOR
ACD SYSTEM → ACD SETUP → ACD COMM SETUP → COMM DISPLAY	ON
ACD SYSTEM → ACD SETUP → ACD SYSTEM SETUP → INTERFACES → DATA BUS NODE ID	101

Please note: If you use a supported third-party VHF radio (BECKER, F.U.N.K.E, or TRIG), please use the same parameters as with the AIR COM but change the COMM TYPE accordingly.

Wiring Diagrams

Generic Wiring Diagram

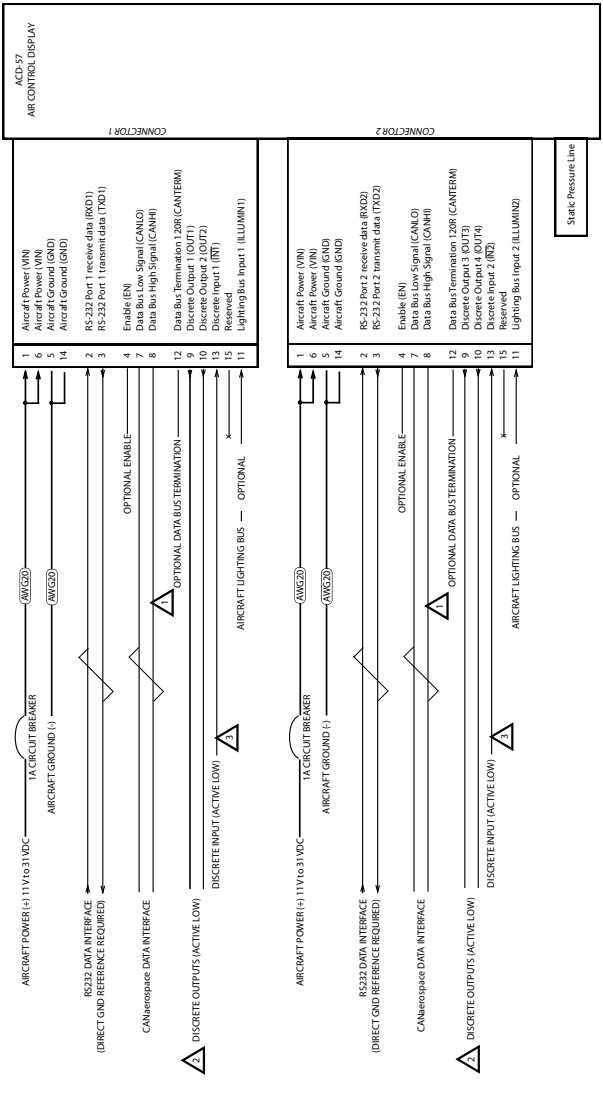


Figure A.11.: Generic wiring diagram

AIR COM Wiring Diagram

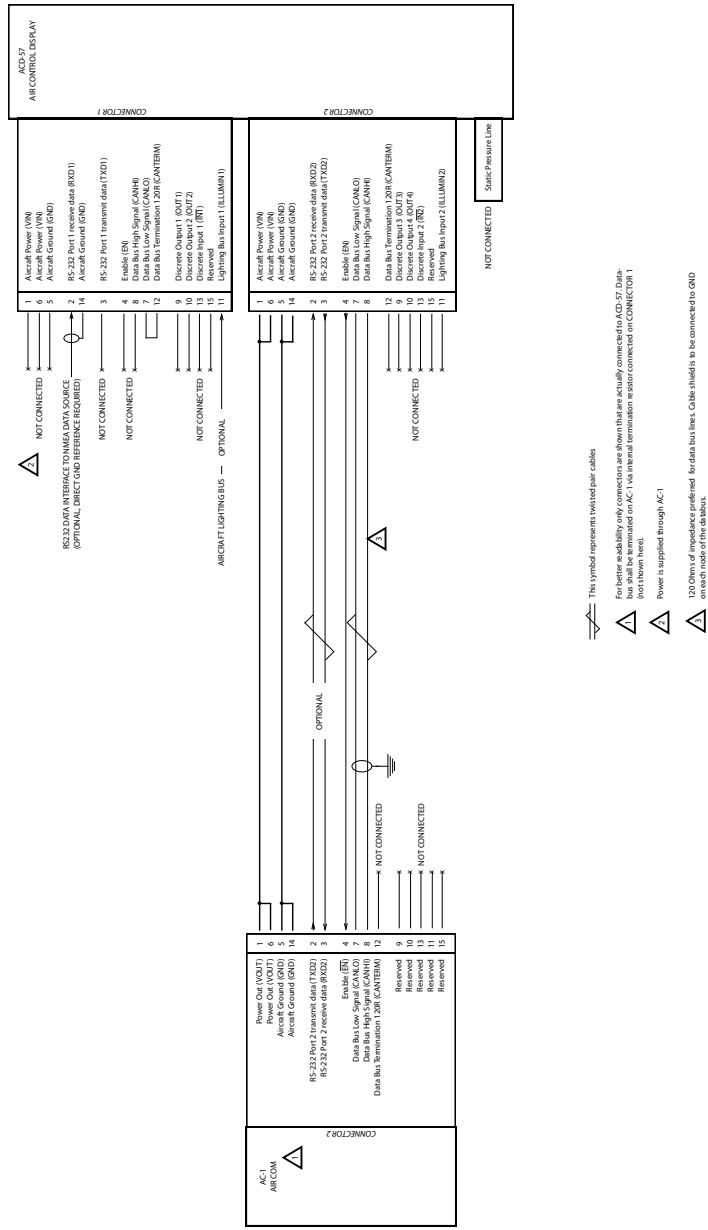


Figure A.12.: Connection to an AIR COM aircraft radio

VT-01 Transponder Wiring Diagrams

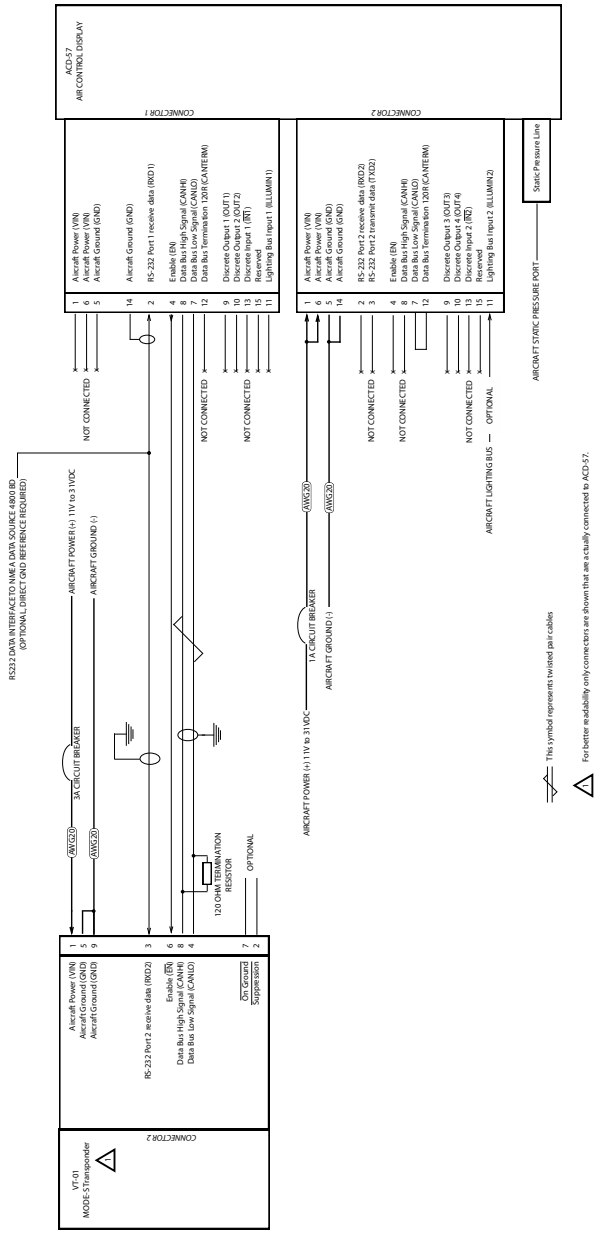


Figure A.13.: Connection to VT-01 Mode-S transponder

AIR COM and VT-01 Transponder Wiring Diagram

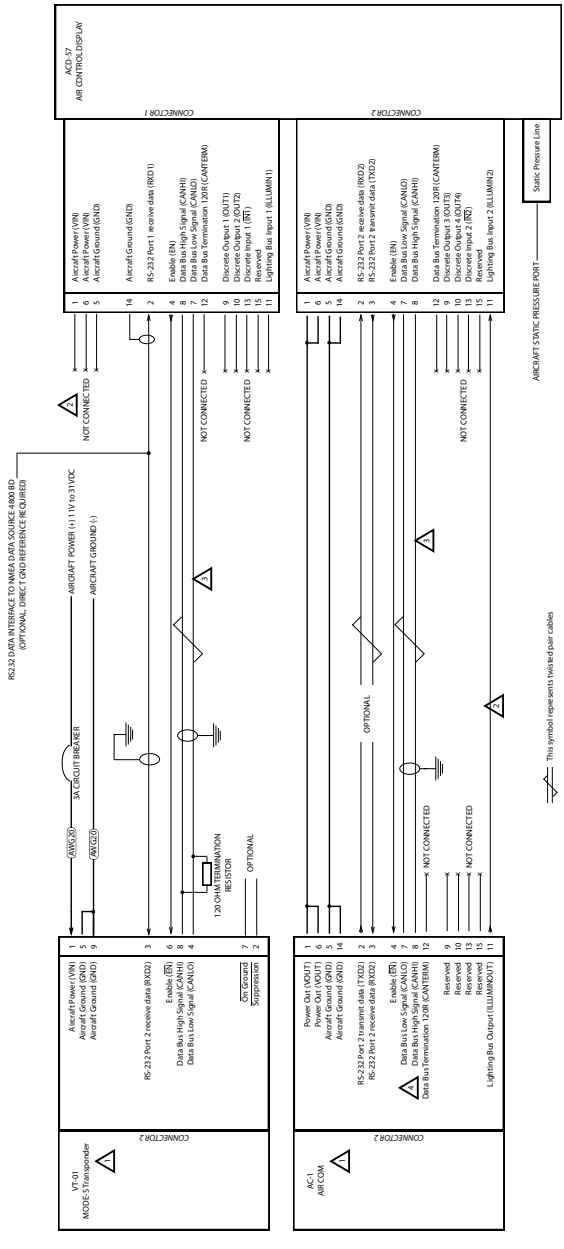


Figure A.14.: Connection to AIR COM aircraft radio and VT-01 Mode-S transponder

Third-Party Radio and Transponder Wiring Diagrams

A.0.2 Trig Avionics

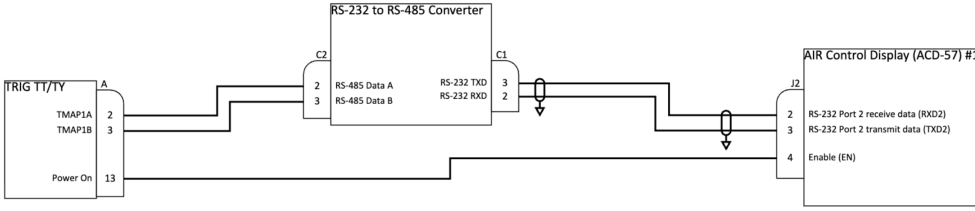


Figure A.15.: ACD-57 connected to TRIG TY Radio or TT transponder

A.0.3 uAvionix

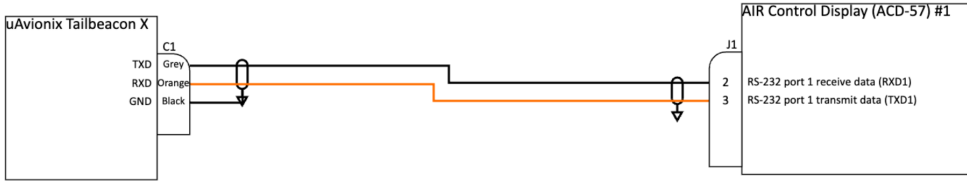


Figure A.16.: ACD-57 connected to uAvionix Tailbeacon X transponder

A.0.4 Becker Avionics

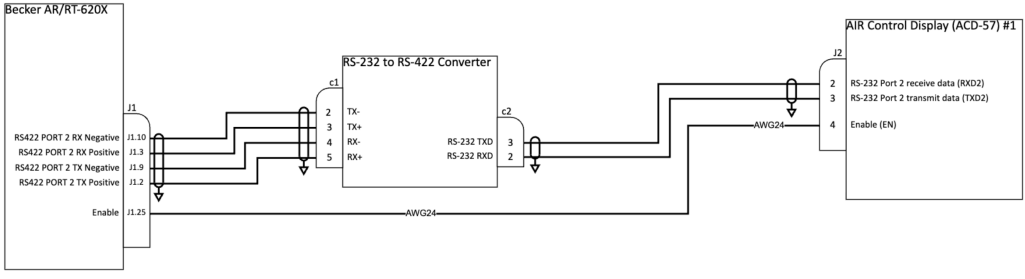


Figure A.17.: ACD-57 connected to Becker AR/RT-620X radio

A.0.5 F.U.N.K.E

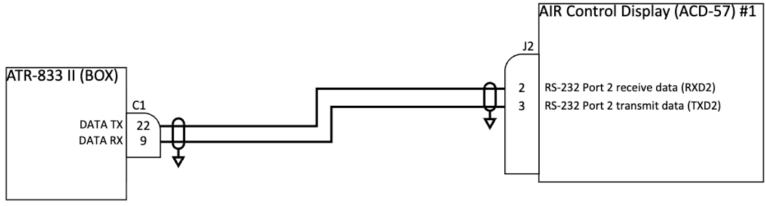


Figure A.18.: ACD-57 connected to F.U.N.K.E. ATR-833 II (BOX) radio

A.0.6 TQ Avionics

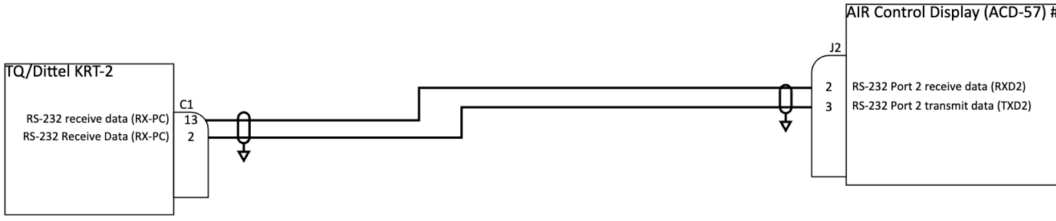


Figure A.19.: ACD-57 connected to TQ/Dittel KRT-2 radio

ACD-57 accepts configuration commands from third party devices and transmits status messages via one of its RS-232 interfaces. Currently it supports two different protocols:

- GARMIN GTR-225 protocol (COMM only)
- AIR Avionics Control Interface (COMM, Transponder, Altimeter)

The AIR Avionics Control Interface is described in this appendix.

AIR Avionics Control Interface

A.0.7 Message Structure

The general message structure, including checksum generation is same as standard NMEA-0183 message structure.

A.0.8 Multiple Device Support

The sentences, used in this protocol, are used for multiple device types. For better structuring <DeviceCode> fields are used in several sentence types.

A single physical device may support multiple <DeviceCodes> (e.g. an ACD-57 can support ACD, ALT, COMM and XPDR).

DeviceCode	*Description*
ACD	Air Control Display
ALT	Altimeter
COMM	COMM radio
XPDR	Transponder

A.0.9 Configuration Sentences

$PAAVC,<QueryType>,<DeviceCode>,<ConfigurationItem>(,<Value>)

Query Types

QueryType	*Description*
R	Request to send the value of a <ConfigurationItem>; parameter <Value> should be omitted.
S	Request to set <ConfigurationItem> to <Value>.
A	Device answers a request with current (or new) content of <ConfigurationItem>.

Errors

The device returns $PAAVC,A,ERROR* in case of an unknown or unsupported <DeviceCode>.

It returns $PAAVC,A,<DeviceCode>,ERROR* in case of an error or an unknown or unsupported <ConfigurationItem>.

Device Code

The target device for this configuration item.

ACD Configuration Items

Configuration Item	*Description*	*Values*
SWVER	Software Version	String value.

Altimeter Configuration Items

Configuration Item	*Description*	*Values*
QNH	QNH value in Pa.	Unsigned integer value (e.g. 101325).

> These items are only available if the altimeter functions are used on this particular ACD-57.

COMM Radio Configuration Items

Configuration Item	*Description*	*Values*
CHN1	Primary radio channel, read-only.	25KHZ frequencies and ALL CHANNELS channels as unsigned integer values between 118000 and 136990.
CHN2	Secondary radio channel.	25KHZ frequencies and ALL CHANNELS channels as unsigned integer values between 118000 and 136990.
RXVOL1	Primary radio channel volume.	Unsigned integer values, 0–100
RXVOL2	Secondary radio channel volume. Dependent on the connected radio type, this may implicitly change the value of Dual Watch Mode.	Unsigned integer values, 0–100
SQL	Squelch Level. Dependent on the connected radio type, this may implicitly change the value of SQLOFF.	Unsigned integer values, 0–100
SQLOFF	Squelch Off. Dependent on the connected radio type, this may implicitly change the value of SQL.	0: squelch on 1: squelch off
ICVOL1	Intercom 1 Volume	Unsigned integer values, 0–100
ICVOX1	Intercom 1 VOX	Unsigned integer values, 0–100
ICVOL2	Intercom 2 Volume	Unsigned integer values, 0–100
ICVOX2	Intercom 2 VOX	Unsigned integer values, 0–100
AUXVOL	Volume gain of aux input	Unsigned integer values, 0–100
DWATCH	Dual watch mode. Dependent on the connected radio type, this may implicitly change the value of RXVOL2.	0: dual watch off 1: dual watch on

These items are only available if a COMM radio is connected to the ACD-57. Dependent on the connected radio type, some values may not be available.

Transponder Configuration Items

Configuration Item	*Description*	*Values*
SQUAWK	Squawk code value.	Octal unsigned integer value between 0000 and 7777 (digits 0–7).
ACTIVE	Active flag.	0: standby (transponder is switched off / “SBY” mode) 1: active (transponder is switched on / “ALT” or “ON” mode, dependent of ALTINH)
ALTINH	Altitude inhibit flag.	0: transmit altitude (“ALT” mode if active) 1: do not transmit altitude (“ON” mode if active)

These items are only available if a transponder is connected to the ACD-57.

A.0.10 Command Sentences

$PAAVX,<DeviceCode>,<CommandCode>(,<Result>)

Device Code

The target device for this command.

Errors

The device returns $PAAVX,ERROR* in case of an unknown or unsupported <DeviceCode>.

A.0.11 Command Results

Result	*Description*
OK	Command was processed successfully.
ERROR	Command could not be processed successfully or <CommandCode> is unknown or unsupported.

COMM Radio Command Codes

CommandCode	*Description*
XCHN	Exchange primary and secondary channel.

These items are only available if a COMM radio is connected to the ACD-57.

Transponder Command Codes

CommandCode	*Description*
IDENT	Start SPI (Ident).

These items are only available if a transponder is connected to the ACD-57.

Status Sentences

$PAAVS,<DeviceCode>,<Value1>(,<Value2>,<Value3>,...)

Status sentences are sent every 2 seconds, or immediately if a value has changed.

Device Codes

The source device for this status sentence.

Altimeter Status

$PAAVS,ALT,<ALTQNE>,<ALTQNH>,<QNH>

Field	*Description*	*Values*
ALTQNE	Current QNE altitude in meters.	Decimal number with two decimal places.
ALTQNH	Current QNH altitude in meters.	Decimal number with two decimal places.
QNH	Current QNH setting in pascal.	Unsigned integer values (e.g. 101325).

Fields, for which no data is available (e.g. due to missing functionality or a failure), are left empty.

This sentence is only available if the altimeter functions are used on this particular ACD-57.

COMM Radio Status

$PAAVS,COM,<CHN1>,<CHN2>,<RXVOL1>,<RXVOL2>,<DWATCH>,<RX1>,<RX2>,<TX1>

Field	*Description*	*Values*
CHN1	Primary radio channel.	25KHZ frequencies and ALL CHANNELS channels as unsigned integer values between 118000 and 136990.
CHN2	Secondary radio channel.	25KHZ frequencies and ALL CHANNELS channels as unsigned integer values between 118000 and 136990.
RXVOL1	Primary radio channel volume.	Unsigned integer values, 0–100
RXVOL2	Secondary radio channel volume.	Unsigned integer values, 0–100
DWATCH	Dual watch mode.	0: dual watch off 1: dual watch on
RX1	Primary channel rx state.	0: no signal received 1: signal received
RX2	Secondary channel rx state.	0: no signal received 1: signal received
TX1	Transmit active	0: no transmission 1: transmitting signal

Fields, for which no data is available (e.g. due to missing functionality or a failure), are left empty.

e.g.: $PAAVS,COM,118275,122550,75,,1,1,0,0*1A

> This sentence is only available if a radio is connected to the ACD-57.

Transponder Status

$PAAVS,XPDR,<SQUAWK>,<ACTIVE>,<ALTINH>,<ALT>,<SPI>,<ALLCALLSINH>

Field	*Description*	*Values*
SQUAWK	Squawk value	Octal unsigned integer values between 0000 and 7777 (digits 0–7).
ACTIVE	Active flag	0: standby 1: active
ALTINH	Altitude inhibit flag.	0: not set (“ALT”, if active) 1: set (“ON”, if active)
ALT	Transmitted altitude in FL.	Integer value
SPI	Special Position Ident flag.	0: not set 1: set (“IDENT”)
ALLCALLSINH	Allcalls inhibit flag.	0: not set 1: set (“GND Mode”)

Fields, for which no data is available (e.g. due to missing functionality or a failure), are left empty.

> This sentence is only available if a transponder is connected to the ACD-57.

A.0.12 Error Sentences

$PAAVE,<DeviceCode>,<Severity>,<ErrorCode>(,<ErrorMessage>)

Device Codes
The source device for this error sentence.

Severity

Severity	*Description*
0	No error, information only.
1	Warning, but full functionality available.
2	Functionality reduced.
3	Fatal error, device does not work.

Error Code
Hexadecimal representation of a 32 bit error code.

Error Message
Optional error description.

Checkout Log

Installation

1. ☐ The installation has been performed in accordance with the instructions shown in this manual.
2. ☐ Wiring checks have been performed.
3. ☐ Connector engagement checks have been performed.

Ground Checks

1. ☐ Interface checks have been performed. / ☐ Check not required.
2. ☐ Serial Control Interface checks have been performed. / ☐ Check not required.
3. ☐ COMM check has been performed. / ☐ Check not required.
4. ☐ XPDR check has been performed. / ☐ Check not required.
5. ☐ Altimeter check has been performed. / ☐ Check not required.
6. ☐ Lighting, controls, and alert sounder have been checked.
7. ☐ Version check has been performed.
8. ☐ License check has been performed.

Interference Checks

1. ☐ EMI test and check for interference has been performed.

Documentation

1. ☐ Aircraft documentation updated.
2. ☐ All documentation, including this log, the configuration, and the license log has been filled out and stored in a safe place together with other aircraft documents.

I hereby confirm the above mentioned steps have been completed and that no issues, problems or failures have been found.

Name, date, signature _____

Configuration Log

ACD-57 Info

- PID: Product identification: _____
- VID: Vendor identification/manufacturer: _____
- VER: Software version: _____
- BUILD: Software build identification: _____
- SERIAL: Device serial number: _____
- Installed Databases Information (Version/Expiration Date): _____

A.0.13 Sounder Volume

- Sounder Volume: _____

A.0.14 Illumination

- MODE: ☐ MANUAL / ☐ AUTO / ☐ Lighting Bus
- Manual INTENSITY: _____
- Minimum INTENSITY: _____
- Maximum INTENSITY: _____
- If Lighting Bus selected, Lighting Bus source: _____
- If Lighting Bus selected, Lighting Bus minimum: _____
- If Lighting Bus selected, Lighting Bus maximum: _____

A.0.15 Auto Boot

- Auto Boot: ☐ ON / ☐ OFF

A.0.16 Data Intefaces

- Position source: ☐ NOT CONNECTED / ☐ Upper Connector / ☐ Lower Connector / ☐ DATA BUS / ☐ Transponder
- Data Bus Node ID: _____ (this ACD-57 device is number _____ of a total of _____ ACD-57 devices in this data bus installation)
- Serial Control Interface: ☐ NOT CONNECTED / ☐ Upper Connector / ☐ Lower Connector
- Baud Rate/Protocol: _____

Altimeter

A.0.17 Units

- Altitude units: ☐ meters / ☐ feet
- Pressure units: hPa / ☐ inHg

A.0.18 Installation

- Alt Display: ☐ ON / ☐ OFF

COMM Configuration

- KNOB USE: ☐ VOLUME / ☐ CHANNEL
- COMM DISPLAY: ☐ ON / ☐ OFF
- COMM TYPE: ☐ AIR COM / ☐ Becker / ☐ KRT2 / ☐ TRIG TY / ☐ ATR833S
- COMM SOURCE: ☐ Upper Connector / ☐ Lower Connector / ☐ DATA BUS

COMM System Configuration

Please note configuration data in the specific configuration log form of the connected COMM system.

XPDR Configuration

- VFR PRESET: _____
- XPDR DISPLAY: ☐ ON / ☐ OFF
- XPDR TYPE: ☐ VT01 / ☐ TRIG TT / ☐ uAvionix
- XPDR SOURCE: ☐ Upper Connector / ☐ Lower Connector / ☐ DATA BUS

XPDR System Configuration

Please note configuration data in the specific configuration log form of the connected XPDR system.

Name, date, signature _____

Configuration Codes Log

ACD Configuration Code

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *CONFIGURATION MENU* → *ACD System* → *ACD Setup* → *Configuration Code* → *Read*.
3. Push the inner knob pushbutton to execute your selection.
4. Write down the code below. Push the ESC softkey to leave the menu.

ACD Configuration Code: _____

AC-1 Configuration Code

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *CONFIGURATION MENU* → *Comm System* → *ACD Setup* → *Configuration Code* → *Read*.
3. Push the inner knob pushbutton to execute your selection.
4. Write down the code below. Push the ESC softkey to leave the menu.

COMM Configuration Code: _____

VT-01 Configuration Code

1. Open the menu with a long push on the inner knob pushbutton.
2. Use the inner knob to navigate to *CONFIGURATION MENU* → *XPDR System* → *ACD Setup* → *Configuration Code* → *Read*.
3. Push the inner knob pushbutton to execute your selection.
4. Write down the code below. Push the ESC softkey to leave the menu.

XPDR Configuration Code: _____

Add-On Functions Log

This log is used for documentation of installed add-ons. Installed add-ons can be found in *CONFIGURATION MENU → ACD SYSTEM → ADD-ON FUNCTIONS → INSTALLED*.

ACD-57 Serial Number: _____

Installed Add-On Functions

- Add->On Type: _____ Date: _____ Expires: _____

  Installation Code: _____

- Add-On Type: _____ Date: _____ Expires: _____

  Installation Code: _____

- Add-On Type: _____ Date: _____ Expires: _____

  Installation Code: _____

- Add-On Type: _____ Date: _____ Expires: _____

  Installation Code: _____

- Add-On Type: _____ Date: _____ Expires: _____

  Installation Code: _____

It is required that all Installation Codes are carefully noted in this log. If the device is repaired or reset to factory defaults, the code has to be re-entered. Customer license purchase history data is not saved. Therefore, if the code gets lost, the function license has to be purchased again at full cost to restore the functionality.

Software Versions and Changes

Version 45

A.0.19 Version Identification

- Version Name: ACD-57-SW-0.45
- Release Date: July 2024

A.0.20 Changes Since Previous Version

- Extensions of the RS-232 Control Interface. Introduction of the GTR225 Protocol the Control Interface Override function.
- Support for F.U.N.K.E. ATR-833-II-Box radios
- Integration of "Configuration Codes" functions.
- General software maintenance

Version 46

A.0.21 Version Identification

- Version Name: ACD-57-SW-0.46
- Release Date: August 2025

A.0.22 Changes Since Previous Version

- Simplification of the configuration menu, all dialogs have been reworked.
- User interface has been enhanced for consistency and ease of use.
- Support for the uAvionix Tailbeacon transponder has been introduced.
- General software maintenance.