Remote Electronic Unit

REU6100

Installation and Operation

Manual DV64460.03
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WARNING - USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Becker Avionics provide product or system options for further investigation by users who have technical knowledge.

The user is responsible for making the final selection of the system and components. The user has to assure that all performance, endurance, maintenance and safety requirements of the application are met and warnings be obeyed.
For this the user has to include all aspects of the application to be compliant with the applicable industry standards and the requirements of the responsible aviation authority. The product documentations from Becker Avionics have to be obeyed.

To the extent that Becker Avionics provides component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

Term definition: User in the sense of user, installer, installation company.

Preface

Dear Customer,

Thank you for purchasing a Becker Avionics product. We are pleased that you have chosen our product and we are confident that it will meet your expectations.

For development and manufacturing of our product, the guidelines for highest quality and reliability have been borne in mind, supplemented by selection of high-quality material, responsible production and testing in accordance to the standards.

Our competent customer support department will respond on any technical question you may have.

Please do not hesitate to contact us at any time.

Remote Electronic Unit*

Remote Control Unit REU6100
(front- rear view)

* design depends on variant.

* Some figures in this manual are for basic understanding and can be different to the actual design.

List of Effective Pages and Changes

Only technical relevant modifications are described in this table.

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List of Abbreviations

List of Abbreviations	
ACU	Audio Control Unit
ATR	Air Transport Rack
CBIT	Continuous Build-In Test
CSW	Configuration Software
CVR	Cockpit Voice Recorder
EASA	European Aviation Safety Agency
FAA	Federal Aviation Administration
HS	Headset
IBIT	Initiated Build-In Test
IC	Intercom
PAX	Passenger
PBIT	Power-on Build-In Test
PTT	Push-To-Talk
REU	Remote Electronic Unit
SPKR	Speaker
TF	TufLok®, self-locking screws and threads
VOX	Voice Operated Switch

Units

Units	
A	Ampere
mA	Milliampere
°C	Degree Celsius
dBm	Power Ratio In Decibel referenced to 1 mW
dB	Decibel
g	Gram
kg	Kilogram
kHz	Kilohertz
MHz	Megahertz
mm	Millimeter
Ohm (Ω)	Resistance
s	Second
V	Volt
mV	Millivolt
W	Watt
mW	Milliwatt
"	Inch

General Safety Definitions

⚠DANGER	Indicates a hazardous situation which, if not prevented, will result in death or serious injury.
⚠WARNING	Indicates a hazardous situation which, if not prevented, could result in death or serious injury.
⚠CAUTION	Indicates a hazardous situation which, if not prevented, could result in minor or moderate injury.
NOTICE	Is used to address practices not related to physical injury.
SAFETY INSTRUCTIONS	Safety instructions (or equivalent) signs indicate specified safety-related instructions or procedures.

Disposal

⚠CAUTION The packaging material is inflammable, by burning toxic fumes may develop.

This product contains materials that fall under the special disposal regulation. We recommend the disposal of such materials in accordance with the current environmental laws.

- Dispose circuit boards by a technical waste dump which is approved to take on e.g. electrolytic aluminum capacitors. Do under no circumstances dump the circuit boards with normal waste dump.

Warranty Conditions

⚠CAUTION The device(s) may be installed on an aircraft only by an approved aeronautical company (e.g. Part 145) which shall also examine the installation.

Any change made by the user excludes any liability on our part (excluding the work described in this manual).

- The device must not be opened.
- Do not make any modifications to the device, except for those described in the manual.
- Make connections to the inputs, outputs and interfaces only in the manner described in the manual.
- Install the devices according to the instructions.
  We cannot give any guarantee for other methods.

Conditions of Utilization

With this device you bought a product which was manufactured and tested before delivery with the utmost care.

Please take your time to read the instructions which you ought to follow closely during installation and operation.

Otherwise, all claims under the warranty will become void and a decreased service life or even damages must be expected.

⚠CAUTION The user is responsible for protective covers and/or additional safety measures in order to prevent damages to persons and electric accidents.

Additional Conditions of Utilization

Please refer to "Safety-Conscious Utilization", page 22.

Non-Warranty Clause

We checked the contents of this publication for compliance with the associated hard and software. We can, however, not exclude discrepancies and do therefore not accept any liability for the exact compliance. The information in this publication is regularly checked, necessary corrections will be part of the subsequent publications.

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1 General Description

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This manual describes the Becker Remote Electronic Unit REU6100. The type plate on your device shows the part number for identification purposes (see "Type Plate", page 38).

Before starting operation of the device(s) please read this manual carefully, with particular attention to the description referring to your device(s).

1.1 Introduction

The technical information in this document applies to the product REU6100 and variants of it.

The Remote Electronic Unit REU6100 is part of the Digital Voice Communication System DVCS6100 and is for installation in aircraft.

- We use also the term REU6100 for descriptions instead writing the complete model number.
- If a description refers to only one of the product variants it is specified accordingly.

The manuals "Maintenance and Repair" (**M&R**) and "Installation and Operation (**I&O**) contain the sections:

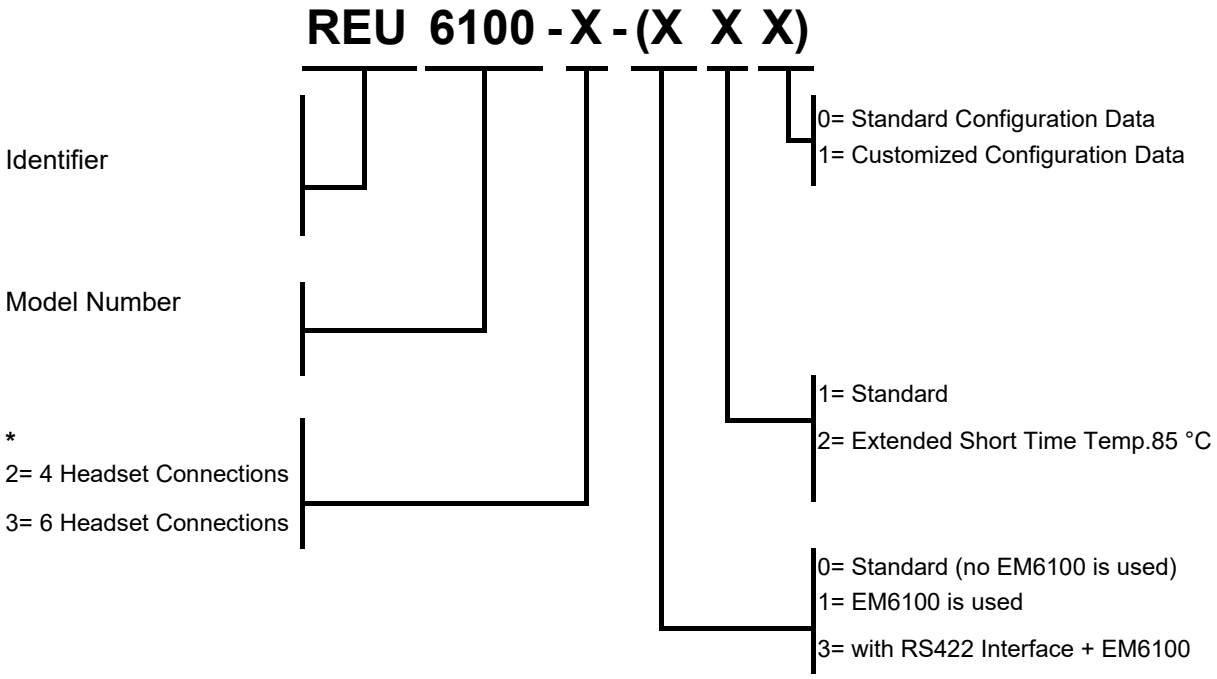
Section	**DV64460.04 M&R**	**DV64460.03 I&O**
General	X	X
Installation	X	X
Operation	X	X
Theory of Operation	X	N/A
Maintenance and Repair	X	N/A
Illustrated Parts List	X	N/A
Modification and Changes	X	N/A
Circuit Diagrams	X	N/A
Certifications	X	N/A
Attachments	X	N/A

1.2 Purpose of Equipment

The Remote Electronic Unit REU6100 is part of the Digital Voice Communication System DVCS6100 and it is for installation in aircraft. Together with audio control devices (ACU6100, ACU6101 or Glass cockpit) the Remote Electronic Unit REU6100 is the intercom system of the aircraft.

- For variant REU6100-3-(XXX):
  - A maximum of six audio control devices (6x ACU610X) can be connected to the Remote Electronic Unit.
- For variant REU6100-2-(XXX):
  - A maximum of four audio control devices (4x ACU610X) can be connected to the Remote Electronic Unit.
- For variant REU6100-3-(3XX):
  - A maximum of six audio control devices (2x Glass cockpit and 4x ACU610X) can be connected to the Remote Electronic Unit.
  - This variant is also applicable for Multi-REU installations.

1.3 Variants Overview



* max. number of operators per REU6100.

1.3.1 Software Status

Descriptions see "Software/Firmware Status - Functionality", page 38.

1.4 Associated Devices

These devices can operate together with REU6100:

Device	Function
ACU6100	Becker Avionics Audio Control Unit
ACU6101	Becker Avionics Audio Control Unit
Glass cockpit	Audio Control Device via Serial Interface

This manual describes the REU6100 with ACU610X from Becker Avionics. For other devices please refer to the related manuals.

1.4.1 Examples of System Block Diagram

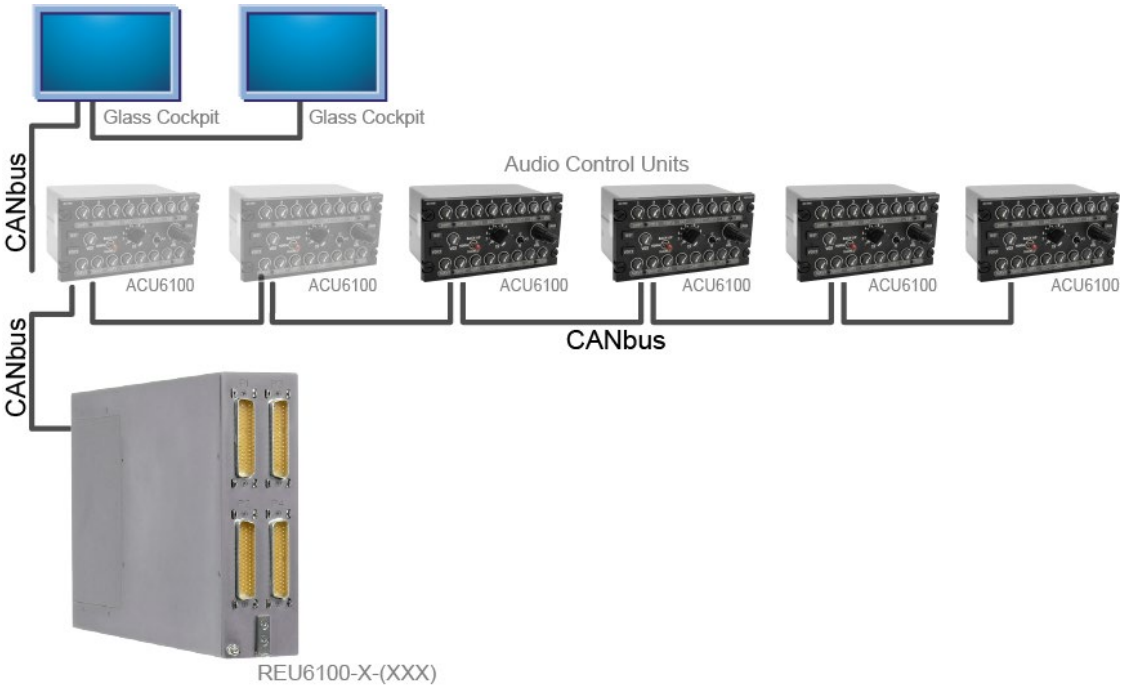


Figure 1: REU6100 with CANbus Interface (Glass Cockpit possible)

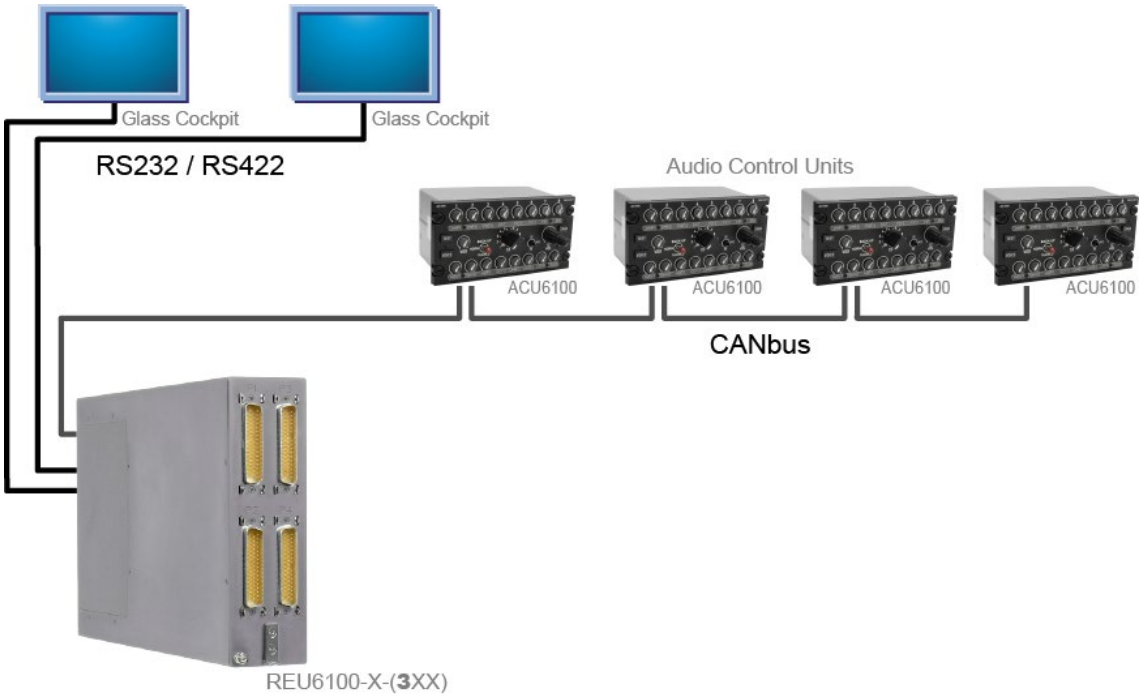


Figure 2: REU6100-X-(3XX) with CANbus and RS232 / RS422 Interface

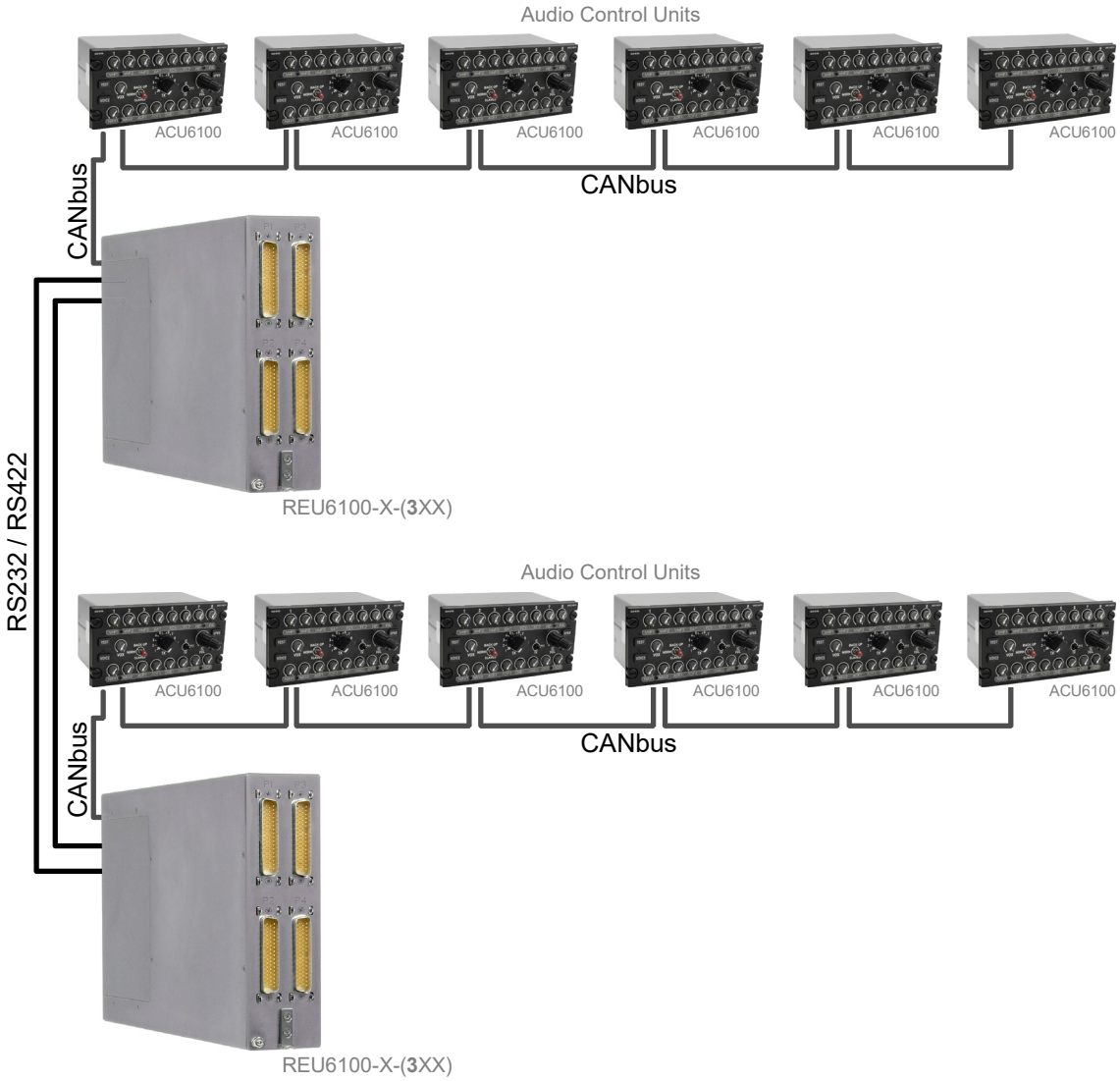


Figure 3: Multi-REU6100-X-(3XX) with CANbus and RS232 / RS422 Interface

NOTICE

- You can also use ACU6101 as control devices.
- A REU6100-X-(3XX) is not interchangeable with other REU6100 variants.
- The variant REU6100-X-(3XX) has a different pin assignment on connector P5 (see table 2.6.5 and 2.6.6).

1.5 Scope of Functionality

The REU6100 is for installation in the avionics compartment of an aircraft.

- It is a device in a standard ATR ¼ short case.
- The device connectors are on the front and back side of the REU6100.
  - The connectors are coded to prevent misconnection.
- The REU6100 receives the commands from the audio control devices and accordingly influences and processes all incoming and outgoing audio signals.
- The REU6100 supplies the logical functions necessary to operate the transceivers and for aircraft intercommunication.
- The REU6100 supplies up to 10 different tone signals.
  - The tone signals can be managed through discrete control lines.
- The audio processing circuits are in a modular design.
  - Each external control device (e.g. ACU610X) is connected to an individual processing module inside the REU6100.
  - From electrical and mechanical points of view the modules are identical for easy upgrade and interchange work.

1.5.1 Audio Channel In/Outputs

- The device has 22 balanced audio inputs, as follows:
  - 8 transceivers or 7 transceivers and PA amplifier.
  - 8 receivers.
  - 6 fixed inputs.
- The input sensitivity for each transceiver and receiver is in the range of 2.5…20 V. The input sensitivity is programmable with the configuration software.
- The input sensitivity for the fixed input 1…3 is in the range of 5…40 V. The input sensitivity is programmable with the configuration software.
- The input sensitivity for the fixed input 4…6 is in the range of 2.5…20 V and under main-volume control. The input sensitivity is programmable with the configuration software.
- Control of monitoring volume of the TX and RX channels connected in the range of 0...-48 dB.
- Main volume control by 0…-48 dB for headphone and, if enabled, for speaker amplifier.
- Supply of mike audio to 100…250 mV into 150 Ω (standard carbon mike) or 0.5…4 mV into 20 Ω (dynamic mike):
  - Automatic Gain Control (AGC).
  - Providing the standard mike supply.
- Supply of a balanced audio output of 0.07…1.5 V into 150 Ω and distribution to 8 TX modulation lines (configurable).
- Distribution of the PTT to 8 key lines. Keying logic to ensure transmission priority over IC operation and to mute speaker outputs as well as non-desired RX and fixed inputs during transmission.
- Supply of forced monitoring for all TX-channels with mike line selection.
- PTT priority for each operator (configurable high / low).
- PTT stuck detection.
- Generation of an artificial sidetone from the mike signal for radio transceivers which do not feature a built-in sidetone during transmission (e.g. FM radios).
  - Natural sidetone.
  - Duplex sidetone.
  - The sidetone can be individually programmed for every of the 8 transceivers by configuration software from system integrator.
- Muting of receiver audio during transmission.
- Phone amplification of summed audio signal to 250 mW into 300 Ω or 500 mW into 8 Ω.

1.5.2 Intercom Function

- Supply of mike audio for intercom operation:
  - Interconnection and separation of 3 IC circuits.
  - Intercommunication VOX control.
  - HOT MIKE activation.
  - Addition of an incoming IC audio signal to the summed-up monitor audio; adjustment of the IC audio via the ACU panel control by 0…-48 dB.
  - Enhancing to IC-ring line level 0.775 V into 600 Ω.
  - Extension of intercommunication by the IC-ring line audio in/out for external devices like EB3100 (Ground Crew) or IC3100 (Intercom Amplifier).
  - IC-ring line can be connected to the cockpit or cabin intercom circuit.

1.5.3 Signal Tones

- The REU6100 supplies up to 10 different tone signals in the frequency spectrum of 800…4800 Hz.
  - 1x signal "Intercom request" (1600 Hz / 1200 Hz intermitted).
  - 1x signal "E-call" (2400 Hz / 800 Hz / 1200 Hz intermitted).
  - 8x alert signals (1x continuous, 3x pulsed, 4x intermittent) in the frequency spectrum of 1200…4800 Hz.
- The signal tones are connected through 8 discrete control lines (active LO ≤ 1 V).
- It is possible to give different states to the signal tones:
  - Muted during transmission.
  - Set at the priority level (high, low, medium).
  - Set at cancellation possibility.

1.5.4 Discrete In/Outputs

- 4 control outputs for specific logical external activations (all active low).
  - DF-blanking (when a PTT is pushed).
  - Cockpit call activation (if call is on).
  - Cabin call activation (if cabin is isolated).
  - Third intercom circuit status.
- 6 control inputs for specific logical DVCS-action (all active low).
  - Winchman VOX-level selection.
  - Winchman volume-level selection.
  - Intercom request call input.
  - E-call activation.
  - Selective call activation.
  - Warning tone cancellation.

1.5.5 Special Features

- The winchman connection facility in parallel to the related headset (ACU610X).
  - Individual VOX level and volume level adjustment is possible through discrete control lines.
- Turn on and off the speaker amplifiers and supply of an output of 12 W into 4 Ω.
- Muting of the cockpit speakers during transmission and intercom operation to avoid acoustic feedback (configurable).
- By a "VOICE-filter", an incoming 1020 Hz tone can be attenuated at least 26 dB for listening to the NAV voice modulation without disturbance. The filter function can be connected to each of the eight receiver channels during factory or system integration setup.
- Detection of a selective call signal by a discrete input from one of the 8 com radios (configurable).
  - Supply of a visual indication on the audio control device.
- Forced monitoring of the audio signal (configurable).

1.5.5.1 Built-in Tests

- The REU6100 device has different built-in tests.
- The tests monitor the system equipment and some internal circuits.
  - PBIT: A system self-test starts after power-on.
  - CBIT: A background test routine runs continuously during normal operation.
  - IBIT: An additional test can be manually started.

1.5.5.2 Marker Mute Function

- If set by the operator the marker channel is muted for 30 seconds.
- The marker mute function can be enabled for each receiver channel and operator in the configuration setup.

1.5.5.3 Emergency Operation (Back-Up Operation)

- Relay controlled fall back in case of emergency operation (back-up): Assignment of radios and receivers to their operators.
  - Headset 1 (normally the pilot) is connected to TX1 and FIX1,
  - Headset 2 (copilot) to TX2 and FIX2.
- Back-up operation is started either manually through the hard-wired BACK-UP switches on the ACU610Xs (if connected), or automatically upon power supply failure to the REU6100, or if the internal power supply of the REU6100 itself is defective (this function with pilot’s and copilot’s audio control devices only).

1.5.5.4 Slave Operation

- Relay controlled activation of slave operation to connect one operator headset in parallel to others (this function with pilot’s and copilot’s audio control devices only).

1.5.6 Features for Special Mission Operation

- **Dual transmit and multi transmit (simulcast):**
  Is for the selection of two predefined radios, or individual more than two radio for simultaneous transmission.
- **Guard radio:**
  Is for the selection of a radio by a separate PTT control (external discrete input). Two radios can be configured for this function.
- **Headset only operation:**
  Operator without a control device participate always intercommunication and can be configured for monitoring TX/RX or FIX input-channels. By the discrete input lines an IC-key and PTT-key can be connected. On one predefined TX-channel transmission is possible. The connection to another operator with ACU is possible by the configuration setup.
- **Relay mode:**
  The REU6100 can operate in relay mode operation alternative to dual TX and multi TX mode.

1.5.7 Communication Interfaces

- CANbus
  - Control data interface between REU6100 and ACU610X.
- RS232/RS422
  - Control data interface between REU6100-X-(3XX) and glass cockpit or between two REU6100-X-(3XX) as multi-REU application.

1.5.8 Memory Device EM6100

EM6100 is a memory device.

- It is a small device connected to the REU6100 used to store all system configuration parameters.
- It allows a quick field replacement of the REU6100 without reconfiguration of the replacing REU6100 on the bench.

Figure 4: External Memory Module - EM6100

1.6 Safety-Conscious Utilization

⚠CAUTION

The device(s) may be installed on an aircraft only by an approved aeronautical company (e.g. Part 145) which shall also examine and examine the installation.

SAFETY INSTRUCTIONS

- The installation of the device into an aircraft may be carried out only by an authorized installation company. The country regulations always have to be obeyed.
- Use the product only within the specified conditions, see "Technical Data", page 23.
- Power supply:
  - Do not connect the device to AC sources.
  - Make sure that the device is connected to the mandatory DC source, see "Technical Data", page 23.
  - Do not connect the device with reversed polarity to the DC source.
- Circuit breaker:
  - Use the recommended fuses in the power supply line for the protection of the application, see "Technical Data", page 23.

NOTICE

Cleaning:

- Do not use aggressive cleaning agents e.g. Acetone.
  - These cleaning agents can cause damages.

NOTICE

Excessive pulses on the DC bus of the aircraft may cause damage on REU6100.

1.7 Restriction for Use

SAFETY INSTRUCTIONS

The product is to be used inside the declared limits.

1.8 Technical Data

1.8.1 Power Supply

REU6100	Specifications (Power Supply)
Supply voltage (Bus) I	27.5 V DC nominal, 18.0 V DC emergency
Supply voltage (Bus) II	27.5 V DC nominal, 18.0 V DC emergency
Back-up voltage (Bus)	27.5 V DC nominal, 18.0 V DC emergency
Current consumption (with 6 ACU's)	4.5 A peak, 1.5 A average
Recommended external fuse protection	5 A

1.8.2 Monitoring

REU6100	Specifications (Monitoring)
Transceiver Inputs Number	 8
Sensitivity	2.5…20 V adjustable
Impedance	600 Ω balanced / floating
Switch-off attenuation	≥ 80 dB
Crosstalk attenuation between inputs	≥ 70 dB
Individual volume control range	0…-48 dB
Forced monitoring	0…-48 dB
Navigation Receiver Inputs Number	 8
Sensitivity	2.5…20 V adjustable
Impedance	600 Ω balanced / floating
Switch-off attenuation	≥ 80 dB
Crosstalk attenuation between inputs	≥ 70 dB
Individual volume control range	0…-48 dB
Muting during transmission	≥ 80 dB
Identification filter attenuation (1020 Hz)	≥ 26 dB can be connected to any RX channel

1.8.3 Fixed Inputs

REU6100	Specifications (Fixed Inputs)
Number	6
Sensitivity channel 1…3	5…40 V adjustable
Sensitivity channel 4…6	2.5…20 V adjustable (under control of main volume)
Impedance	600 Ω balanced / floating
Crosstalk attenuation between inputs	≥ 70 dB
Muting during transmission	≥ 80 dB

1.8.4 Tone Generator

REU6100	Specifications (Tone Generator)
Continuous tone	2400 Hz
Pulsed tones	1600 Hz, 2400 Hz, 3840 Hz
Intermittent tones	1200 Hz, 2133 Hz, 3200 Hz, 4800 Hz
Service tone 1 (Intercom request)	1600 Hz / 1200 Hz intermittent
Service tone 2 (Emergency call)	2400 Hz / 800 Hz / 1200 Hz intermittent
Alert tones	**Input No.** **Alert Tone** 1 2400 Hz continuous 2 1600 Hz pulsed 3 2400 Hz pulsed 4 3840 Hz pulsed 5 1200 intermittent 6 2133 intermittent 7 3200 intermittent 8 4800 intermittent
Pulsed means	$T_{ON} = T_{OFF} = 0.5$ s
Intermitted means	3 pulses 0.17 s, repetition rate 2.5 s
Activation (alert tone control lines)	active LO, ≤ 1.5 V
Input current	≤ 1 mA

1.8.5 Speaker Amplifier

REU6100	Specifications (Speaker Amplifier)
Number	2
Output power	12 W (6.93 V) into 4 Ω (-0.5 / +1.0 dB) at normal supply voltage
Overload protection	thermally output
Type	unbalanced
Distortion	≤ 2.5% @1 kHz
Frequency response	300 Hz…6 kHz (0/- 3 dB)
Switch-off attenuation	≥ 80 dB
Signal-to-noise ratio	≥ 70 dB
Main volume control range	0…-48 dB
Muting during transmission	≥ 80 dB
Muting during intercom operation	≥ 80 dB

1.8.6 Headphone Amplifier

REU6100	Specifications (Headphone Amplifier)
Number	4 or 6 (depends on variant)
Output power	250 mW (8.66 V) into 300 Ω or 500 mW (typical) into 8 Ω or 2x 250 mW into 2x 8 Ω balanced transformer output, ungrounded
Distortion	≤ 2.5% @1 kHz
Frequency response	300 Hz…6 kHz (0/- 3 dB)
Signal-to-noise ratio	≥ 70 dB
Main volume control range	0…-48 dB

1.8.7 Mike Amplifier

REU6100	Specifications (Mike Amplifier)
Number	4 or 6 (depends on variant)
Mike Input (Standard Carbon Mike) Sensitivity	 100…800 mV nominal
Impedance	150 Ω
Excitation voltage (idle mode)	12 VDC
Feed resistance	390 Ω
Mike Input (Dynamic Mike) Sensitivity	 0.5…4 mV nominal
Impedance	20 Ω balanced / floating
Automatic Gain Control (AGC) AGC threshold (adjustable)	 80…800 mV (standard mike) 0.2…1 mV (dynamic mike)
Output regulation (∆Ue = +20 dB)	≤ +2 dB

1.8.8 Transceiver Modulation

REU6100	Specifications (Transceiver Modulation)
Mike Line Amplifier Number of mike lines	 8
Output voltage	70 mV…1.5 V adjustable
Load impedance	150 Ω nominal distortion ≤ 2.5% @1 kHz
Frequency response	300 Hz…6 kHz (0/-3 dB)
Signal-to-noise ratio	≥ 65 dB
Natural / Artificial and Duplex Sidetone Sidetone level	**-individually selectable for each mike line-** 0…-15 dB selectable step 3 dB, standard - 6 dB
Key Lines (PTT Out) Number	 8
Switch action	active LO
Switch capability	27.5 VDC for OFF condition; max. 500 mA in LO condition

1.8.9 Cockpit Voice Recorder (CVR)

REU6100	Specifications (CRV Outputs)
Number	2
Channel 1 (pilot)	**natural mike + headphone**
Output voltage	Mike signal: 800 mV -1 dB / +3 dB headphone signal: -3 dB referred to mike
Impedance	5 kΩ
Channel 2 (copilot)	**natural mike + headphone**
Output voltage	Mike signal: 800 mV -1 dB / +3 dB headphone signal: -3 dB referred to mike
Impedance	5 kΩ

1.8.10 Control In/Outputs

REU6100	Specifications (Discrete In/Outputs)
Control Inputs (Discrete)	
Number	6
	Input No. — **Default Function** 1 — Winchman VOX-level selection 2 — Intercom request activation (1600 Hz / 1200 Hz intermitted) 3 — Winchman volume level selection 4 — Alert tone cancellation 5 — SELCALL / 3rd-IC-circuit activation 6 — Emergency call activation (2400 Hz / 800 Hz / 1200 Hz intermitted
Activation	active LO, ≤ 1.5 V
Input current	1 mA
Control Outputs (Discrete)	
Number	4
	Output No. — **Default Function** 1 — DF- blanking 2 — Cockpit CALL indication 3 — Cabin CALL indication 4 — 3rd-IC-circuit activation (status indication)
Switch action	active LO
Switch capability	27.5 VDC for OFF condition; max. 500 mA in LO condition
Back-up Monitor Number	1
Switch action	open contact
Norm Mode Output	27.5 VDC for OFF condition; max. 500 mA in LO condition
DC-Output DC output	27.5 VDC / 500 mA

1.8.11 Intercom Operation

REU6100	Specifications (Intercom Operation)
Number of participants	up to 6 clients directly connected plus clients connected to IC line
VOX threshold (adjustable)	10…100 mV (standard mike) 50…500 µV (dynamic mike)
VOX hold time	0.5…3 s, adjustable
Distortion	≤ 2.5% @1 kHz
Frequency response	300 Hz…6 kHz (0/-3 dB)
Signal-to-noise ratio	≥ 60 dB
Input/output voltage on IC-ring audio lines	775 mV / 0 dBm
Input/output impedance of IC-ring audio lines	600 Ω (must be terminated)
Priority muting during transmission	≥ 80 dB
Intercom switch-off attenuation	≥ 80 dB
Intercom circuits	cockpit / cabin / 3rd-IC-circuit
Call activation or discrete input	CALL button (selectable)
Quit function connection/separation of IC-circuits	ISOL button (selectable)

1.8.12 Build In Test Equipment (BITE)

REU6100	Specifications (Build In Test Equipment (BITE)
Power On Build-In Test (PBIT) Activation	Start automatically with power on
Test scope for REU, all ACUs and EM6100 if connected	Controllers and memories, tone generator, headphone and speaker amps., power supply
Indication system under test	Test LED lights up on ACU610X
Duration	max. 5 s
Test result output	GO: After test is finished, the test LED is off (The system operates in normal mode after successful test) NOGO: The test LED flashes
Continuous Build-In Test (CBIT) Activation	Permanently active coverage, controllers and data transfer
Failure indication	Optical; TEST LED flashes and can be reset on ACU610X, if no fatal error
Initiated Build-In Test (IBIT) Activation	Push the TEST button on ACU610X
Build-In Test Representation Test running indicator	Test LED lights up
Test result output	GO: The test LED is off NOGO: The test LED flashes

- A short push of the test button acknowledges the failure indication.
- The last 10 IBIT results are stored in a non-volatile memory and can be read out with the configuration software.
- For REU6100-X-(3XX) variant with glass cockpit, please see related glass cockpit manual for test activations and indications.

1.8.13 Back-up Operation

REU6100	Specifications (Back-up Operation)
Manual activation	Use the back-up switch at ACU1 or ACU2
Automatic activation	Upon supply busses failure or defection of internal power supply or processor failure
Transceiver (radio) assignment	ACU1 - TX1, ACU2- TX2
Fixed input	ACU1 - FIX1, ACU2- FIX2
Intercom level pilot/copilot	Fixed at 50%
CVR 1and 2 level	Fixed at 50%
For REU6100-X-(3XX) variant with glass cockpit, please see related glass cockpit manual for back-up activations and indications.	

1.8.14 Control Data Interface REU - ACU

REU6100	Specifications (Control Data Interface REU - ACU)
Interface	CANbus
Protocol	Becker specific (Becker Bus Protocol proprietary)

1.8.15 Control Data Interface REU - Glass Cockpit

REU6100-X-(3XX)	Specifications (Control Data Interface REU - Glass)
Interface	RS232/422, baud rate 38400 b/s, 8 data, no parity, 1 stop bit
Protocol	Becker specific (Becker Bus Protocol proprietary)

1.8.16 Control Data Interface REU - REU

REU6100-X-(3XX)	Specifications (Control Data Interface REU - REU)
Interface	RS232/422, baud rate 38400 b/s, 8 data, no parity, 1 stop bit
Protocol	Becker specific (Becker Bus Protocol proprietary)

1.8.17 Dimensions & Weight

REU6100	Specifications
Dimensions HxWxD	195 x 57 x 338.50 mm
Dimensions depth with EM6100	379.00 mm
Weight	
REU6100	≤ 3 kg
Mounting tray MT519	< 0.5 kg
Case size	ATR fixture
Case material (REU6100)	AlMg

1.8.18 Device Connectors

The connectors are coded to prevent misconnection.

REU6100	Specifications
D-Sub 50-pin male shift lock	4x with locking devices
19pol male	1x bayonet, Souriau, Type 851-02 E14-19 P50, shell 14
Sub miniature 5-pole female	1x for memory module EM6100

1.8.19 Software

In accordance with EUROCAE / RTCA document ED-12B/DO-178B the software is specified as:

LEVEL C

1.8.19.1 Configuration Software

Detailed information please see "Configuration Software" page 69.

1.8.20 Hardware

Complex Electronic Hardware (CEH) is used inside REU6100-X-(XXX).

In accordance with system development assurance level of the DVCS6100 the Hardware Design Assurance Level is:

LEVEL C

The DVCS6100 has been certified in year 2005 and has been qualified in accordance with all standards which have been required by the authorities EASA and FAA at that time.

To apply RTCA DO-254 has not been required by the authorities and has therefore not been applied.

1.8.21 Continued Airworthiness

- Maintenance of the REU6100 is "on condition" only.
- Periodic maintenance of this product is not required.

1.8.22 Environmental Conditions

The test was done in accordance with EUROCAE/RTCA ED-14E/DO-160E under consideration of the recorded environmental categories and conditions:

Characteristics	Section	Cat.	Condition
Temperature and Altitude	4	D1	
Ground Survival Low Temperature	4.5.1	D1	-55 °C
Short-Time Operating Low Temperature	4.5.1	D1	-40 °C
Operating Low Temperature	4.5.2	D1	-40 °C
Ground Survival High Temperature	4.5.3	D1	+85 °C
Short-Time Operating High Temperature	4.5.3	D1	+70 °C
Operating High Temperature	4.5.4	D1	+70 °C
In-Flight Loss of Cooling	4.5.5	X	no auxiliary cooling required
Altitude	4.6	D1	50 000 ft
Temperature Variation	5	B	5 °C per minute
Humidity	6	B	48 h at 65 °C at 95% relative humidity
Shock	7.2	B	6 g in all directions
Crash Safety	7.3	B	20 g shock; 20 g acceleration
Vibration	8	S; U	M; G
Explosion Proofness	9	X	-
Waterproofness	10	X	-
Fluids Susceptibilities	11	X	-
Sand and Dust	12	X	-
Fungus Resistance	13	X	-
Salt Spray	14	X	-
Magnetic Effect	15	Z	less than 0.3 m
Power Input	16	B	-
Voltage Spike	17	A	-
Audio Freq. Conducted Susceptibility	18	B	-
Induced Signal Susceptibility	19.0	AC	-
Radio Frequency Susceptibility	20	WR	-
Emission of Radio Frequency Energy	21	M	-
Lightning Induced Transients Susceptibility	22	A3E3X	-
Lightning Direct Effects	23	X	-
Icing	24	X	-
Electrostatic Discharge (ESD)	25	A	-
Fire, Flammability	26	X	-

1.8.23 Certifications

REU6100-X-(XXX) meets the requirements of:

	Specifications
ETSO	ETSO C50c EASA.21O.443
FAA	TSO-C139

1.9 Order Code

1.9.1 Remote Electronic Unit - REU6100

Qty	Device	
1	REU6100-2-(010), max. 4 user	Article No. 0586.471-921
1	REU6100-2-(011), max. 4 user, XAC configuration data	Article No. 0606.944-921
1	REU6100-2-(110), max. 4 user, with EM6100	Article No. 0608.254-921
1	REU6100-3-(010), max. 6 user	Article No. 0588.946-921
1	REU6100-3-(110), max. 6 user, with EM6100	Article No. 0608.262-921
1	REU6100-3-(120), max. 6 user, with EM6100, extended short time temperature	Article No. 0643.505-921
1	REU6100-3-(310), max. 6 user, with EM6100, RS232/RS422	Article No. on request

1.9.2 Accessories

Qty	Mounting	
1	MT519-1 Mounting	Article-No. 0890.790-261

Qty	External Memory	
1	EM6100-(000) External Memory	Article-No. 0608.270-921

Qty	Loudspeaker	
1	HP3100-(3) Loudspeaker 50 Ohm, 5 W, 100…10 000 Hz	Article-No. 0886.874-951
1	HP6500-(0) Loudspeaker 8 Ohm, 20 W, 100…13 000 Hz	Article-No. 0689.394-951

Qty	Cables	
1	1K6100 Service cable	Article-No. 0608.750-276
1	SCK6100-1 Service cable kit	Article-No. 0615.889-954

Qty	Connector	
1	Service connector, 9-pol. D-Sub connector, crimp	Article-No. 0774.413-277

Qty	Connector Kit	
1	CK5101-C (crimp version) • 1x 19-pol. cable connector, crimp • 4x 50-pol. cable connector, crimp • 4x Coding pins • 4x Connector housing • 4x Resistor metal film 121 Ohm	Article-No. 0586.870-954
1	CK5103-C (crimp version) Manufacturer Commital • 1x 19-pol. cable connector, crimp • 4x 50-pol. cable connector, crimp • 4x Coding pins • 4x Connector housing • 4x Resistor metal film 121 Ohm	Article-No. 0614.981-954

Qty	Configuration Software Set	
1	CSW6100-2 configuration software set • 1x CAN USB adapter • 1x CodeMeter© stick • 1x CSW6100-2 manual (on CodeMeter© stick)	Article-No. 0608.602-919

Qty	Termination Resistor	
1	Termination resistor 604 Ω, 0.25 W	Article-No. 0780.413-323

1.9.3 Documentation

Qty	Documentation	
1	REU6100 Installation and Operation Manual, English	Article-No. 0589.829-071
1	REU6100 Maintenance and Repair Manual, English	Article-No. 0589.837-071
1	Serial Protocol RS232/RS422/CANbus - User Manual, English	Article-No. 0654.760-071

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2 Installation

The installation of the device(s) depends on the type of aircraft and its equipment and therefore only general information can be given in this section.

Any deviations from the installation instructions prescribed in this document are under own responsibility.

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2.1 Packaging, Transport, Storage

Visually inspect the package contents for signs of transport damage.

⚠CAUTION The packaging material is inflammable, by burning, toxic fumes may develop.

Keep the packaging material and use it in the case of a return shipment. Improper or faulty packaging may lead to transport damages.

Make sure to transport the device always in a safe manner and with the aid of suitable lifting equipment if necessary. Do never use the electric connections for lifting. Before the transport, a clean, level surface should be prepared to put the device on. The electric connections may not be damaged when placing the device.

First Device Checkup

- Check the device for signs of transport damages.
- Please make sure that the indications on the type plate correspond to your purchase order.
- Make sure that the equipment is complete ("Scope of Delivery", page 37).

Storage

If you do not install the device immediately, make sure to store it in a dry and clean environment. Make sure that the device is not stored near strong heat sources and that no metal chippings can get into the device.

2.2 Device Assignment

This manual is valid for the following devices:

- REU6100-2-(XXX) + accessories
- REU6100-3-(XXX) + accessories

2.2.1 Scope of Delivery

- Manuals.
  - Installation and Operation manual.
- The device(s) in accordance with your order.
- Documents of Certifications.
  - Authorized Release Certificate (EASA Form 1).

2.2.2 State of Delivery

- The device(s) are ready for use with factory default adjustments.
- The REU6100-2-(011) variant has a special configuration.

2.2.3 Additional Required Equipment

- EM6100 External Memory module (depends on variant).
- Mounting MT519-1.
- Connectors + cables.
- Audio control device(s).
- Headset.

Details see "Accessories", page 32.

2.2.4 Type Plate

The device type is specified by the type plate (on the housing):

Example:

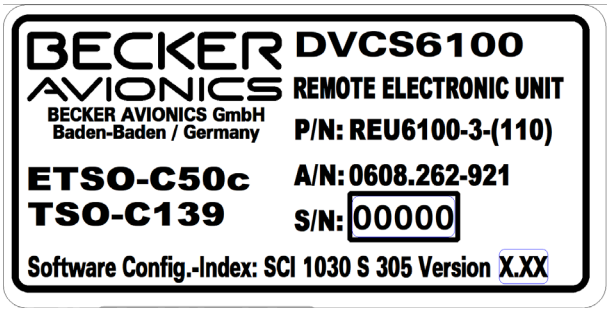


Figure 5: Type Plate (Example)

Explanation:

PN:	**Type designation:** **REU** = Remote Electronic Unit **6100** = Model number (family) **Options:** **-2-:** 4 headset connections (max. 4 audio control devices) **-3-:** 6 headset connections (max. 6 audio control devices) **(0XX):** Standard, no memory module EM6100 **(1XX):** With memory module EM6100 **(3XX):** RS422 interface + memory module EM6100 **(X1X):** Standard **(X2X):** Extended Short Time Temperature 85 °C **(X6X):** Intercom Amplifier only **(XX0):** Standard Configuration Data **(XX1):** Customized Configuration Data
SN:	Unique number of the particular device
AN:	Article number
DoM:	Date of Manufacturing
	Software: Refer to the version device type plate
	Compliance and Certifications: Refer to the text and logos on the device type plate

2.2.5 Software/Firmware Status - Functionality

The implemented firmware version can be checked with the configuration software CSW6100.

2.3 Serial Interface Description

For the adaption of a glass cockpit device or a multi-REU installation a detailed description for the serial data communication is published by the manual: "Serial Protocol RS232/RS422/CANbus". The manual is available on special request and necessary agreements.

2.4 Installation Requirements

The installation of the device(s) depends on the type of aircraft and its equipment and therefore only general information can be given in this section.

SAFETY INSTRUCTIONS

The installation of REU6100 into an aircraft may be carried out by an authorized installation company. The country regulations always have to be obeyed.

- The device must not be opened.
- Keep an efficient distance of the devices with integrated ventilator fans in order to ensure free circulation of the cooling air.
- The installation area must have a minimum distance of 30 cm from the magnetic aircraft compass, to prevent any interference to the magnetic compass.
- Forced cooling is not required.

SAFETY INSTRUCTIONS

REU6100 is made for installation in cockpit environment of fixed and rotary wing aircraft.

These limitations apply for the installation:

- Installations must be in accordance with appropriate EASA or FAA approved guidelines.
- The personnel installing this device must ensure that the aircraft installation conditions are within the ETSO/TSO standards applicable for the specific type or class of aircraft.
- The conditions and tests for ETSO/TSO approval of this article are minimum performance standards.
- The equipment is not qualified for installation in areas with fluid contamination.
- Changes or modifications made to this equipment not expressly approved in written form by Becker may void the authorization to operate this equipment.

2.5 Dimensions

2.5.1 REU6100

Dimensions mm (inch)

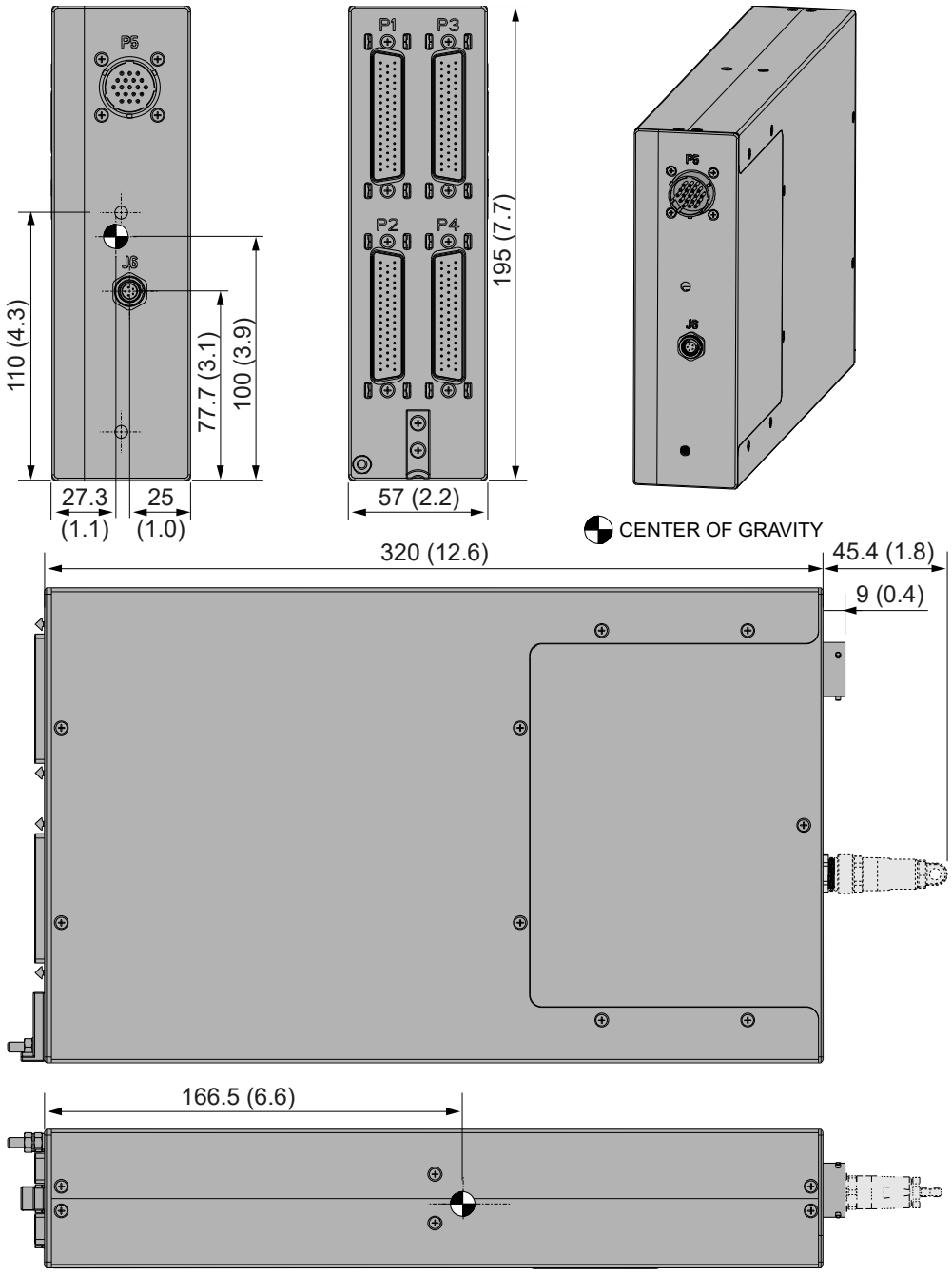


Figure 6: Dimensions REU6100

NOTICE "Center of Gravity" for REU6100 with EM6100.
Tolerances: ± 5 mm.

Allowable deviation for dimensions without tolerances: DIN ISO 2768 T1 C (dimensions in mm)		
≤ 6 (±0.3)	> 30...120 (±0.8)	> 400...1000 (±2.0)
> 6...30 (±0.5)	> 120...400 (±1.2)	> 1000...2000 (±3.0)

2.5.2 Mounting Tray MT519-1

Dimensions mm (inch)

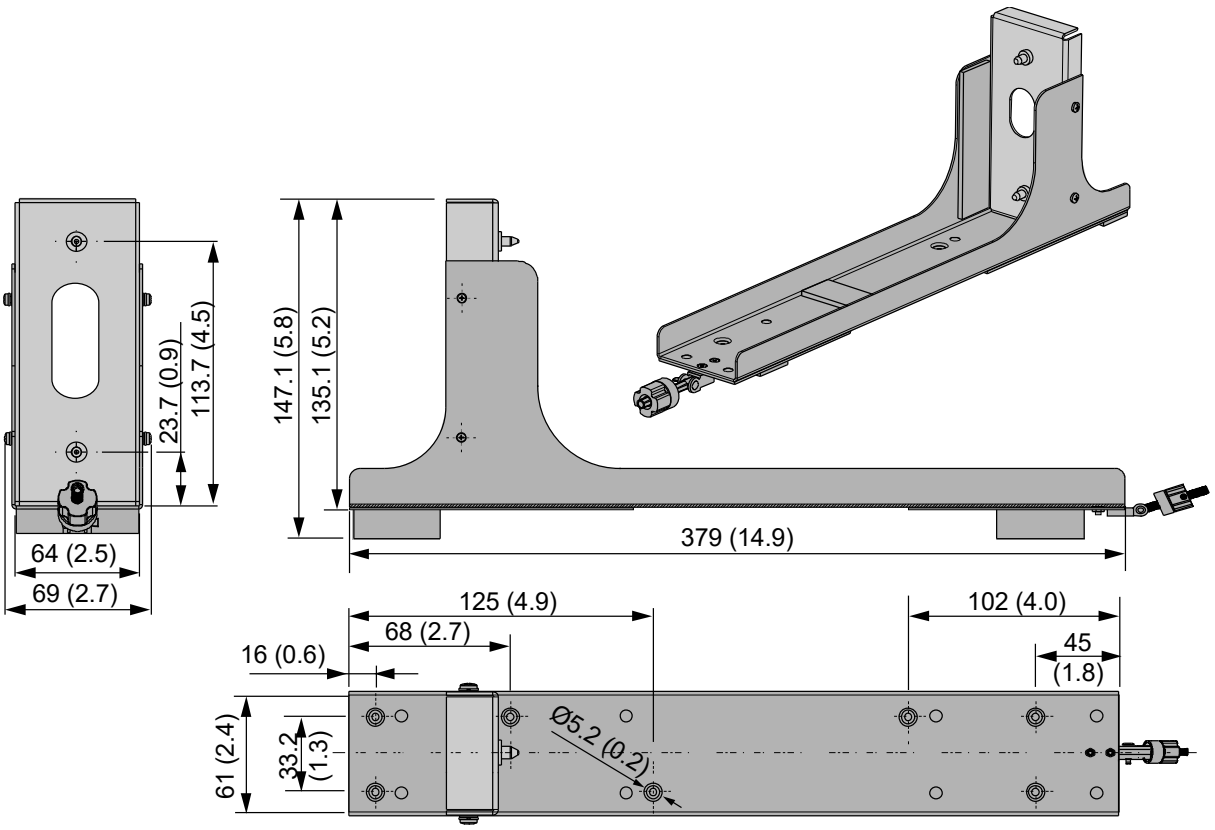


Figure 7: Dimensions Mounting Tray MT519-1

Allowable deviation for dimensions without tolerances: DIN ISO 2768 T1 C (dimensions in mm)		
≤ 6 (±0.3)	> 30...120 (±0.8)	> 400...1000 (±2.0)
> 6...30 (±0.5)	> 120...400 (±1.2)	> 1000...2000 (±3.0)

NOTICE:

We recommend the use of additional, applicable shock absorbers (shock mounts) which correspond to the installation.

2.5.3 REU6100 with Mounting MT519-1 and Connectors

Dimensions mm (inch)

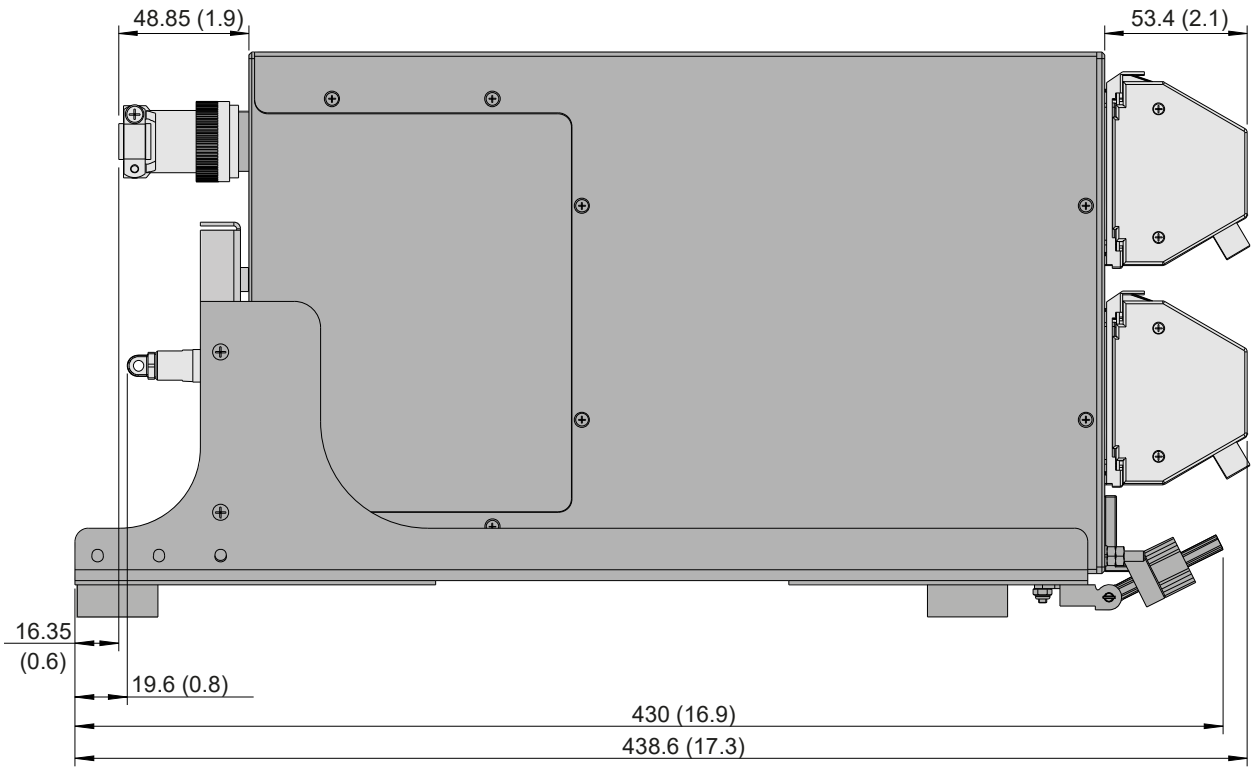
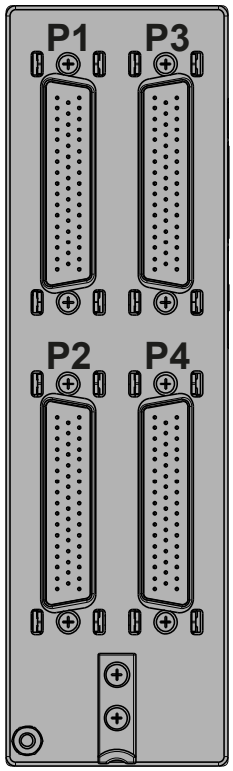
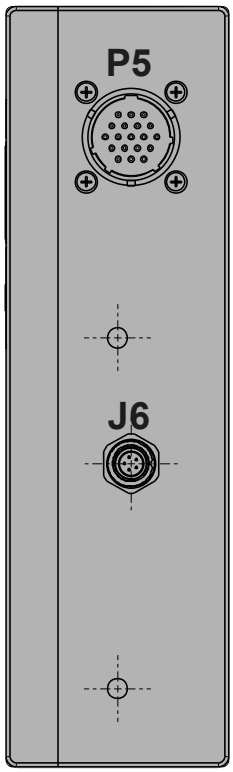


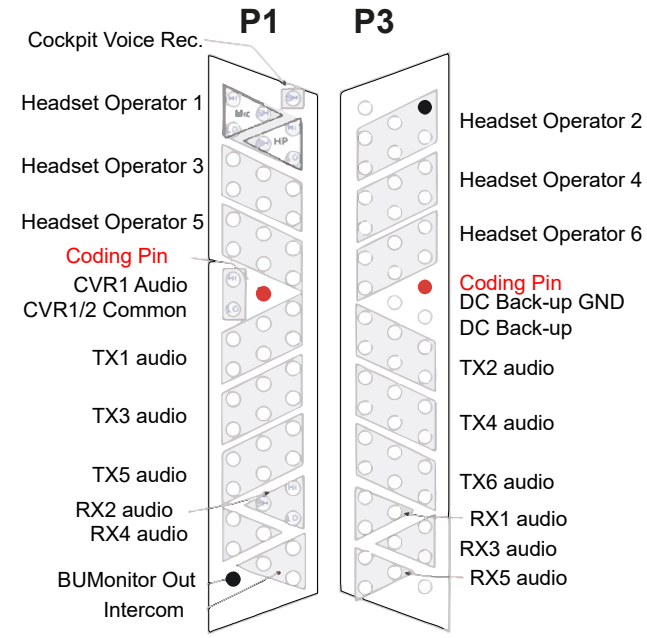
Figure 8: Dimensions REU6100 with Mounting MT519-1 and Connectors

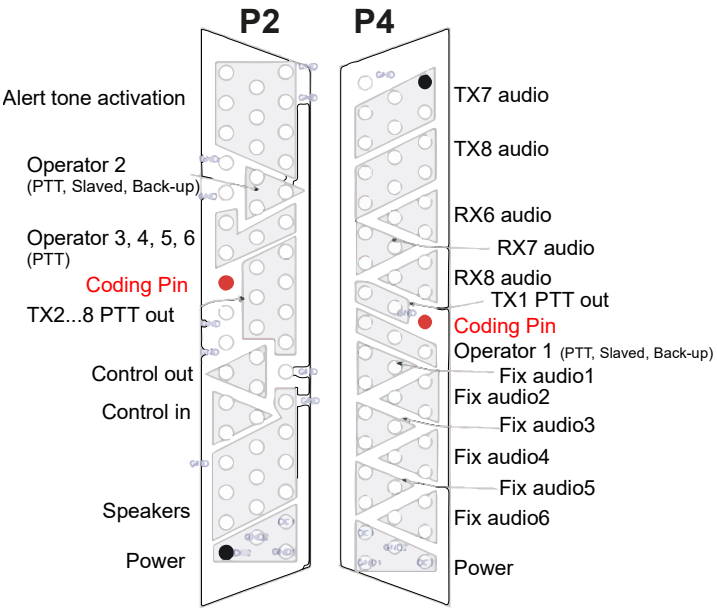
Allowable deviation for dimensions without tolerances: DIN ISO 2768 T1 C (dimensions in mm)		
≤ 6 (±0.3)	> 30...120 (±0.8)	> 400...1000 (±2.0)
> 6...30 (±0.5)	> 120...400 (±1.2)	> 1000...2000 (±3.0)

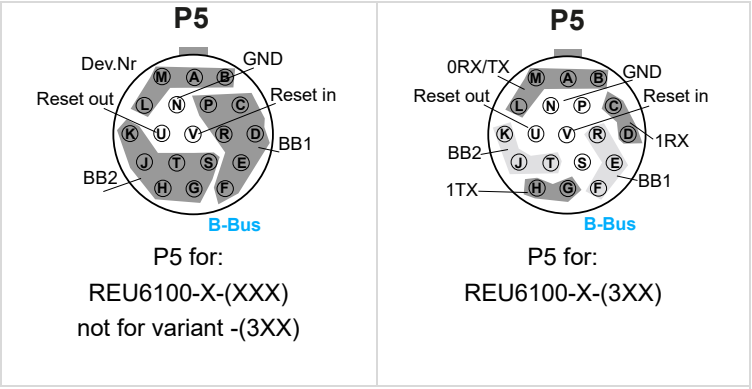
2.6 Connector Pin Assignments











The connectors are coded to prevent misconnection.

Figure 9: REU6100: Connector Pin Assignment – Overview

2.6.1 Connector P1

P1/Pin	Signal name / Function	Remarks
17	HS1 Mic in HI	Operator 1
16	HS1 Mic in LO	Operator 1
33	HS1 Mic in SH	Operator 1
49	HS1 Phone out HI	Operator 1
48	HS1 Phone out LO	Operator 1
32	HS1 Phone out SH	Operator 1
15	HS3 Mic in HI	Operator 3
14	HS3 Mic in LO	Operator 3
31	HS3 Mic in SH	Operator 3
47	HS3 Phone out HI	Operator 3
46	HS3 Phone out LO	Operator 3
30	HS3 Phone out SH	Operator 3
13	HS5 Mic in HI	Operator 5
12	HS5 Mic in LO	Operator 5
29	HS5 Mic in SH	Operator 5
45	HS5 Phone out HI	Operator 5
44	HS5 Phone out LO	Operator 5
28	HS5 Phone out SH	Operator 5
11	CVR1- Audio out HI	Operator 1 (Pilot)
18	CVR2- Audio out HI	Operator 2 (Copilot)
10	CVR1/2 Common LO	CVR Signal ground
50	CVR Audio out SH	Shield
9	TX1 Mic audio out HI	
8	TX1 Mic audio out LO	
25	TX1 Mic audio out SH	
43	TX1 Audio in HI	
42	TX1 Audio in LO	
26	TX1 Audio in SH	
7	TX3 Mic audio out HI	
6	TX3 Mic audio out LO	
23	TX3 Mic audio out SH	
41	TX3 Audio in HI	
40	TX3 Audio in LO	
24	TX3 Audio in SH	
39	TX5 Mic audio out HI	
38	TX5 Mic audio out LO	
22	TX5 Mic audio out SH	
5	TX5 Audio in HI	
4	TX5 Audio in LO	
21	TX5 Audio in SH	

P1/Pin	Signal name / Function	Remarks
37	RX2 Audio in HI	
36	RX2 Audio in LO	
20	RX2 Audio in SH	
3	RX4 Audio in HI	
2	RX4 Audio in LO	
19	RX4 Audio in SH	
35	IC ring audio in/out	Connect a 600 Ω resistor when no other device is connected.
34	IC ring audio GND	
1	Backup mode control out	
27	Coding pin	

2.6.2 Connector P2

P2/Pin		Remarks
15	Alert Tone 1	Guard radio PTT activation / or a relay mode / or external TX indication
16	Alert Tone 2	3rd Circuit isolation activation / or a relay mode / or external TX indication
17	Alert Tone 3	IC-PTT/HS1, TX-PTT/HS6 activation / or a relay mode / or external TX indication
31	Alert Tone 4	IC-PTT/HS2, TX-PTT/HS5 activation / or a relay mode / or external TX indication
32	Alert Tone 5	IC-PTT/HS3, TX-PTT/HS4 activation / or a relay mode / or external TX indication
33	Alert Tone 6	IC-PTT/HS4, TX-PTT/HS3 activation / or a relay mode / or external TX indication
47	Alert Tone 7	IC-PTT/HS5, TX-PTT/HS2 activation / or a relay mode / or external TX indication
48	Alert Tone 8	IC-PTT/HS6, TX-PTT/HS1 activation / or a relay mode / or external TX indication
49	Alert Tone GND	
50	Alert Tone GND	
29	Operator 2 PTT in	only for back-up mode
30	Operator 2 Slaved in	
46	Operator 2 Back-up in	
5	Control in 1	Winchman VOX level selection
6	Control in 2	Intercom request call input
22	Control in 3	Winchman volume level selection
11	Control in 4	Alert tone cancellation
12	Control in 5	Selective call / Guard radio PTT activation / 3rd-IC-circuit activation
28	Control in 6	E-Call activation

P2/Pin		Remarks
25	TX2 PTT out	
26	TX3 PTT out	
27	TX4 PTT out	
41	TX5 PTT out	
42	TX6 PTT out	
43	TX7 PTT out	
44	TX8 PTT out	
40	TX2...8 Out GND	
7	Control Out 1	DF blanking, "active LO" when any PTT is pushed
23	Control Out 2	Cockpit CALL indication: "active LO" if CALL is on
24	Control Out 3	Cabin CALL indication: "active LO" if cabin is isolated, flashing if CALL is on, off if Cabin is connected
45	Control Out 4	"active LO" when 3rd-IC-circuit is isolated
38,21	Speaker 1 out (HI)	
37,20	Speaker 1 out (LO)	
39	Speaker 1 SH	
3,2	Speaker 2 out (HI)	
36,19	Speaker 2 out (LO)	
4	Speaker 2 SH	
35	DC1	
34	GND1	
1	DC2	
18	GND2	
13,14	GND	
8, 9	GND	
10	Coding Pin	

Details about alert tones 1...8 see "Alert Tones" page 71.

2.6.3 Connector P3

P3/Pin	Signal name / Function	Remarks
1	HS2 Mic in HI	Operator 2
2	HS2 Mic in LO	Operator 2
18	HS2 Mic in SH	Operator 2
35	HS2 Phone out HI	Operator 2
36	HS2 Phone out LO	Operator 2
19	HS2 Phone out SH	Operator 2

P3/Pin	Signal name / Function	Remarks
3	HS4 Mic in HI	Operator 4
4	HS4 Mic in LO	Operator 4
20	HS4 Mic in SH	Operator 4
37	HS4 Phone out HI	Operator 4
38	HS4 Phone out LO	Operator 4
21	HS4 Phone out SH	Operator 4
5	HS6 Mic in HI	Operator 6
6	HS6 Mic in LO	Operator 6
22	HS6 Mic in SH	Operator 6
39	HS6 Phone out HI	Operator 6
40	HS6 Phone out LO	Operator 6
23	HS6 Phone out SH	Operator 6
41	TX2 Mic audio out HI	
42	TX2 Mic audio out LO	
25	TX2 Mic audio out SH	
9	TX2 Audio in HI	
10	TX2 Audio in LO	
26	TX2 Audio in SH	
43	TX4 Mic audio out HI	
44	TX4 Mic audio out LO	
27	TX4 Mic audio out SH	
11	TX4 Audio in HI	
12	TX4 Audio in LO	
28	TX4 Audio in SH	
45	TX6 Mic audio out HI	
46	TX6 Mic audio out LO	
29	TX6 Mic audio out SH	
13	TX6 Audio in HI	
14	TX6 Audio in LO	
30	TX6 Audio in SH	
47	RX1 Audio in HI	
48	RX1 Audio in LO	
31	RX1 Audio in SH	
15	RX3 Audio in HI	
16	RX3 Audio in LO	
32	RX3 Audio in SH	
49	RX5 Audio in HI	
50	RX5 Audio in LO	
33	RX5 Audio in SH	

P3/Pin	Signal name / Function	Remarks
8	DC Bu +27.5 V	
24	DC Bu GND	
17	DC Out +27.5 V	
34	DC Out +27.5 V	
7	Coding Pin	

2.6.4 Connector P4

P4/Pin	Signal name / Function	Remarks
1	TX7 Mic audio out HI	
2	TX7 Mic audio out LO	
18	TX7 Mic audio out SH	
35	TX7 Audio in HI	
36	TX7 Audio in LO	
19	TX7 Audio in SH	
3	TX8 / PA Mic audio out HI	
4	TX8 / PA Mic audio out LO	
20	TX8 Mic audio out SH	
37	TX8 Audio / PA Sidetone in HI	
38	TX8 Audio / PA Sidetone in LO	
21	TX8 Audio in SH	
5	RX6 Audio in HI	
6	RX6 Audio in LO	
22	RX6 Audio in SH	
39	RX7 Audio in HI	
40	RX7 Audio in LO	
23	RX7 Audio in SH	
7	RX8 Audio in HI	
8	RX8 Audio in LO	
24	RX8 Audio in SH	
41	TX1 PTT out	
25	TX1 PTT GND	
42	Operator 1 PTT in	only for back-up mode
26	Operator 1 Slaved in	
10	Operator 1 Back-up in	
43	FIX1 Audio in HI	
44	FIX1 Audio in LO	
27	FIX1 Audio in SH	
11	FIX2 Audio in HI	
12	FIX2 Audio in LO	
28	FIX2 Audio in SH	

P4/Pin	Signal name / Function	Remarks
45	FIX3 Audio in HI	
46	FIX3 Audio in LO	
29	FIX3 Audio in SH	
13	FIX4 Audio in HI	
14	FIX4 Audio in LO	
30	FIX4 Audio in SH	
47	FIX5 Audio in HI	
48	FIX5 Audio in LO	
31	FIX5 Audio in SH	
15	FIX6 Audio in HI	
16	FIX6 Audio in LO	
32	FIX6 Audio in SH	
49	DC1	
50	GND1	
17	DC2	
33	GND2	
34	GND	
9	Coding Pin	

2.6.5 Connector P5 - not for variant -(3XX)

P5/Pin	Signal name / Function	Remarks
L	Dev Address Bit 0	
M	Dev Address Bit 1	
A	Dev Address Bit 2	
B	Dev Address Bit 3	
N	Address GND	
U	Reset out	
V	Reset in	
C	BB1-HI-in	
D	BB1-LOW-in	
P	BB1-SH-in	
E	BB1-HI-out	
F	BB1-LO-out	
R	BB1-SH-out	
G	BB2-HI-in	
H	BB2-LO-in	
S	BB2-SH-in	
J	BB2-HI-out	
K	BB2-LO-out	
T	BB2-SH-out	

2.6.6 Connector P5 - REU6100-X-(3XX)

P5/Pin	Signal name / Function	Remarks
L	0TX+	RS422
M	0TX- / 0TX	RS422 / RS232
A	0RX+ / 0RX	RS422 / RS232
B	0RX-	RS422
N	CH0 Shield	
U	Reset out	
V	Reset in	
C	1RX-	RS422
D	1RX+ / 1RX	RS422 / RS232
G	1TX- / 1TX	RS422 / RS232
H	1TX+	RS422
P	CH1 Shield	
S	Serial IF Ground	
E	BB1-HI-out	CAN1
F	BB1-LO-out	CAN1
R	BB1-SH-out	CAN1
J	BB2-HI-out	CAN2
K	BB2-LO-out	CAN2
T	BB2-SH-out	CAN2

2.6.7 Connector J6

J6/Pin	Signal name / Function	Remarks
1	VCC	Power supply
2	I^2C CLK	Clock
3	Not connected	Reserved
4	I^2C DAT	Data
5	GND	Power supply return

2.6.8 Address Coding

- Set the address coding for the control panels (ACU, glass cockpit, ...) on the CANbus by pin strapping of pins L, M, A, B.
- For each control panel on the CANbus a unique address is necessary:

Address	Device	Bit 0 (Pin L)	Bit 1 (Pin M)	Bit 3 (Pin A)	Bit 3 (Pin B)
0000	ACU1	GND	GND	GND	GND
0001	ACU2	open	GND	GND	GND
0010	ACU3	GND	open	GND	GND
0011	ACU4	open	open	GND	GND
0100	ACU5	GND	GND	open	GND
0101	ACU6	open	GND	open	GND

2.7 Aircraft Wiring

SAFETY INSTRUCTIONS

The Installation of the device(s) depends on the type of aircraft and its equipment. It is therefore only possible to give general guidelines in this section.

SAFETY INSTRUCTIONS

- Use only cables which are qualified for aircraft use (self-extinguishing).
- Use minimum AWG 20 for power supply and AWG 24 for other cables.
- The interface lines are each to be laid as 2-core twisted and shielded (AWG 24) cables.
- Each single cable harness of a device connector must have separate shielding.
- Rubber sleeves are to be fitted over the soldering points on the device connector.
- A fuse or circuit breaker should be fitted in the power supply of the REU6100 (see "Technical Data" page 23).
- RF cable should not be included in the cable harnesses.
- Check the wiring carefully before power up the device(s) and check particularly correct connection of the power supply lines.

NOTICE

- A REU6100-X-(3XX) is not interchangeable with other REU6100 variants.
- The variant REU6100-X-(3XX) has a different pin assignment on connector P5 (see table 2.6.5 and 2.6.6).

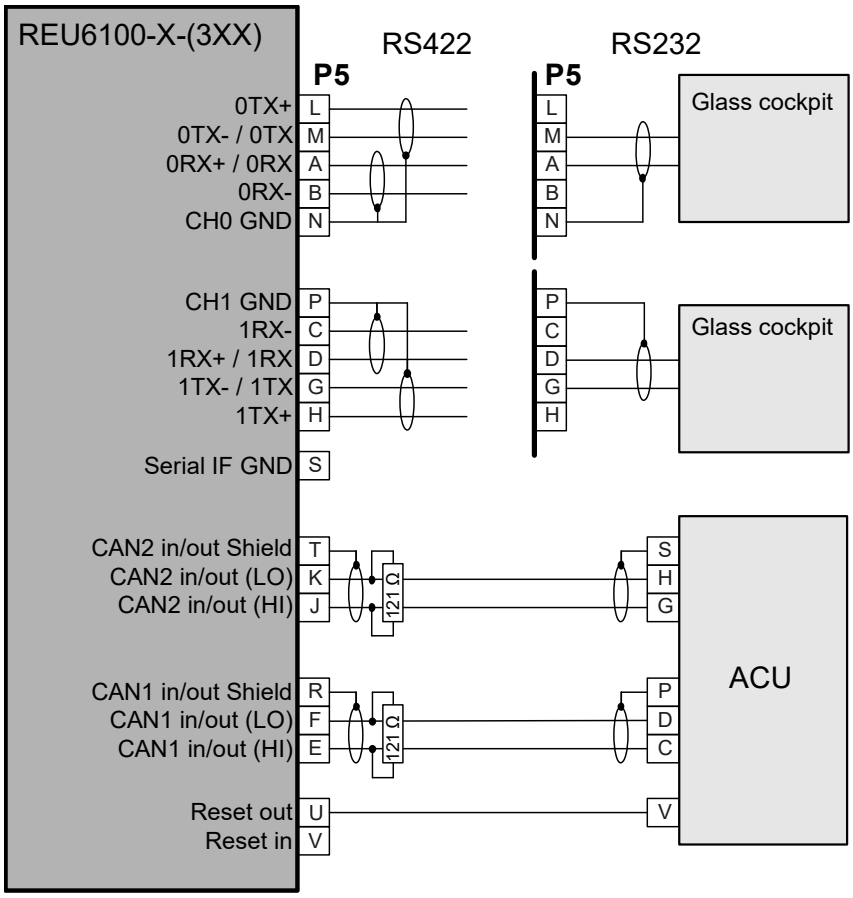
2.7.1 Electrical Bonding and Grounding

The REU6100 has a threaded grounding bolt at the housing. Use this point as grounding contact.

SAFETY INSTRUCTIONS

- Make sure that the device is correctly connected to aircraft ground (structure).
- Make sure that the resistance between the component which ensure equipment bonding and any point of this item of equipment do not exceed 2.5 mΩ.

2.7.2 REU6100-X-(3XX) - RS422 / RS232 / CAN Connections



NOTICE: The pin assignment of connector P5 is different with the variant REU6100-X-(3XX).
For other REU variants please see "Connector P5 - not for variant -(3XX)" page 49.

Figure 10: Wiring REU6100-X-(3XX) - RS422 / RS232 / CAN

2.7.3 REU6100 - Power Supply Connections

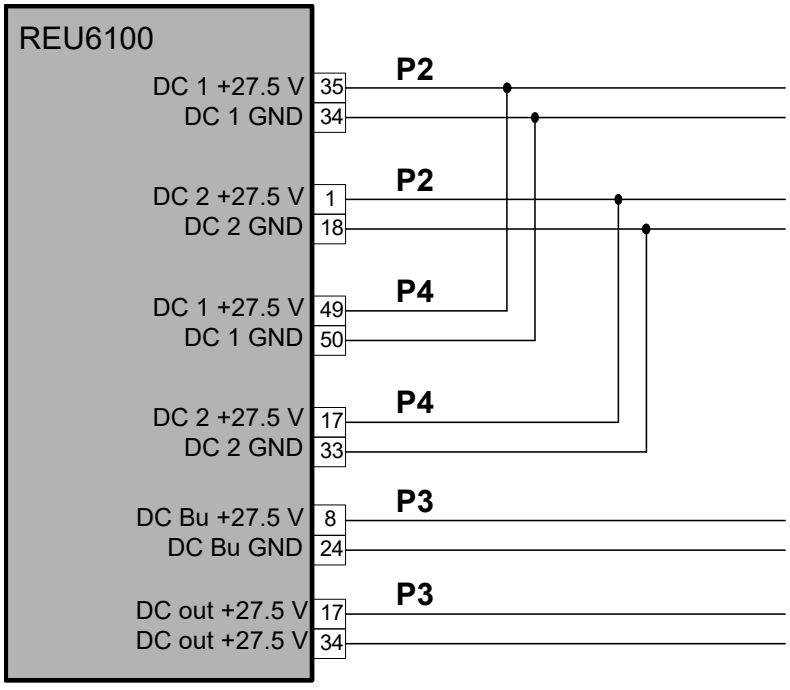


Figure 11: Wiring - Power Supply

2.7.4 REU6100 - Headset Audio and PTT Connections

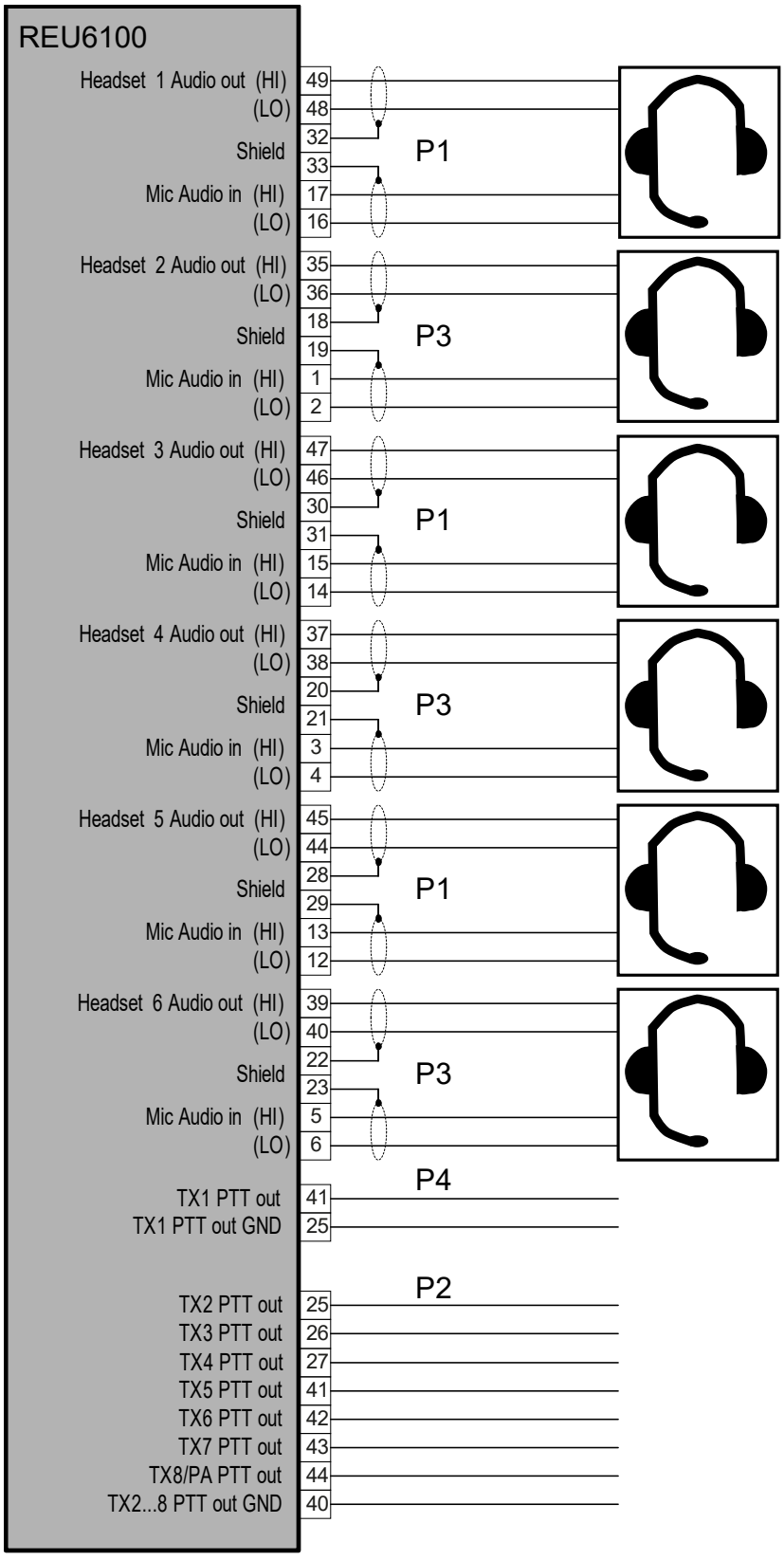


Figure 12: Wiring - Headset Audio and PTT

2.7.5 REU6100 - Transceiver Connections

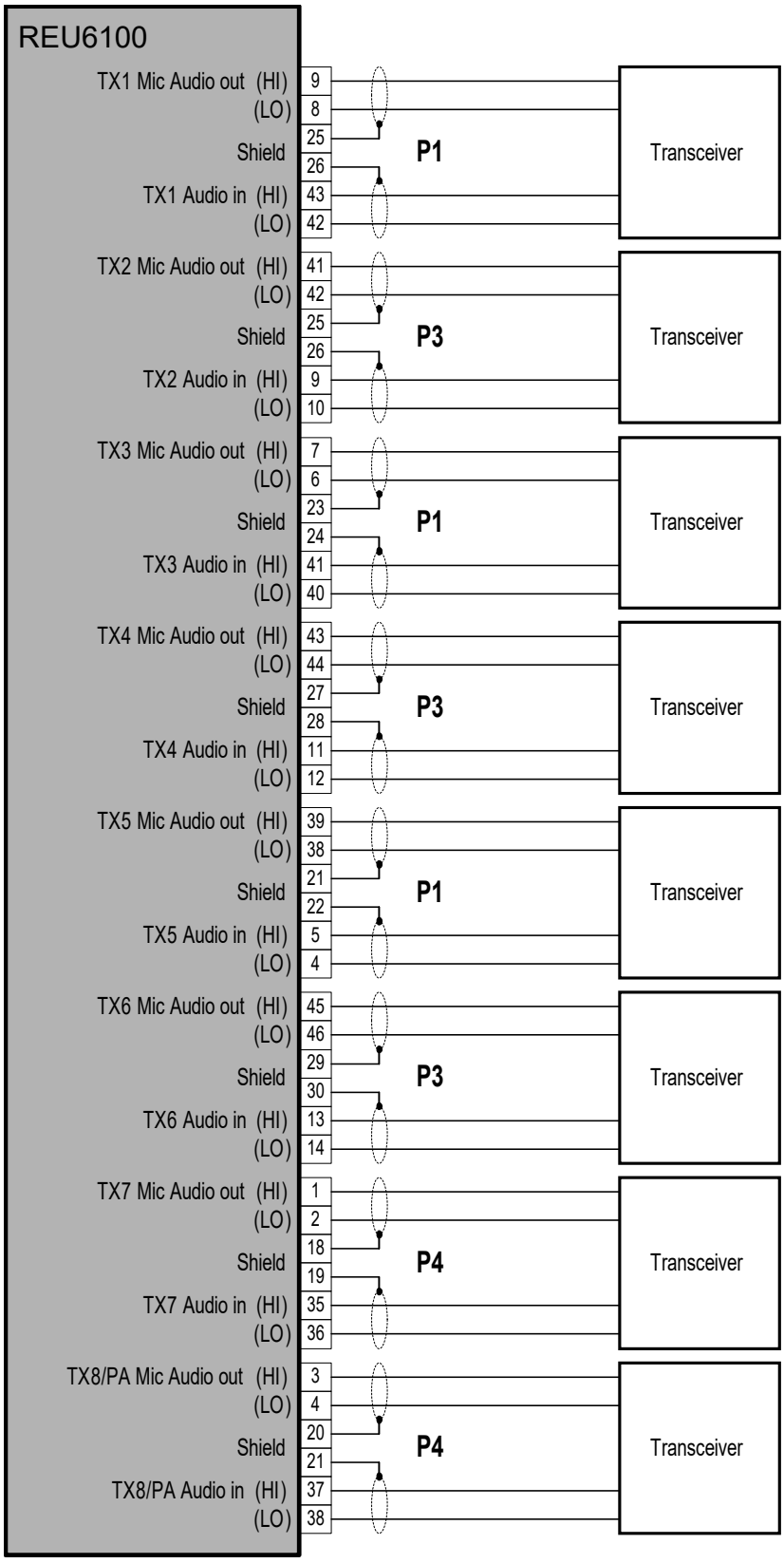


Figure 13: Wiring - Transceiver

2.7.6 REU6100 - Receiver and CVR Connections

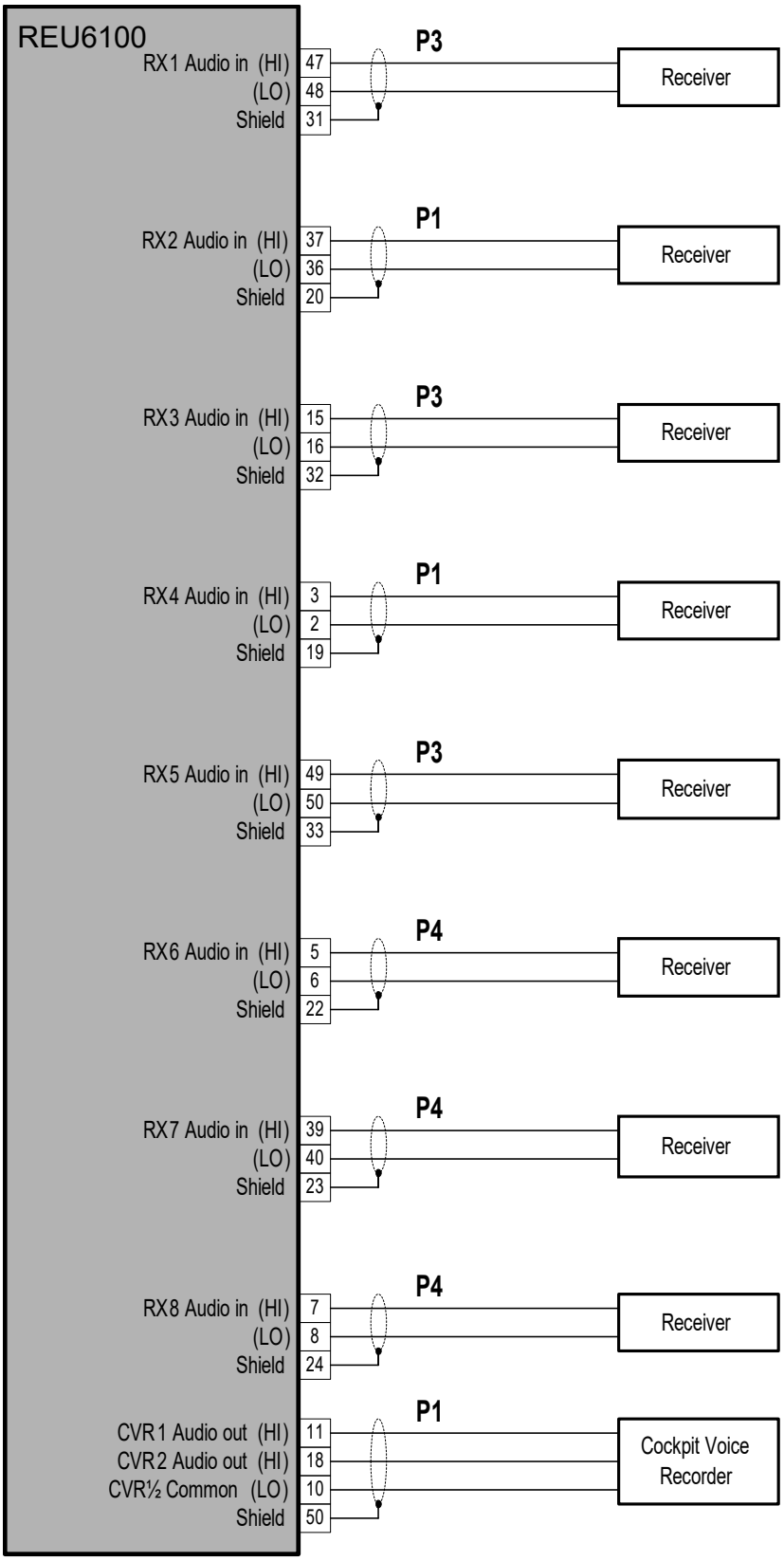


Figure 14: Wiring - Receiver and CVR

2.7.7 REU6100 - FIX Audio, Alert Tones and IC Ring Connections

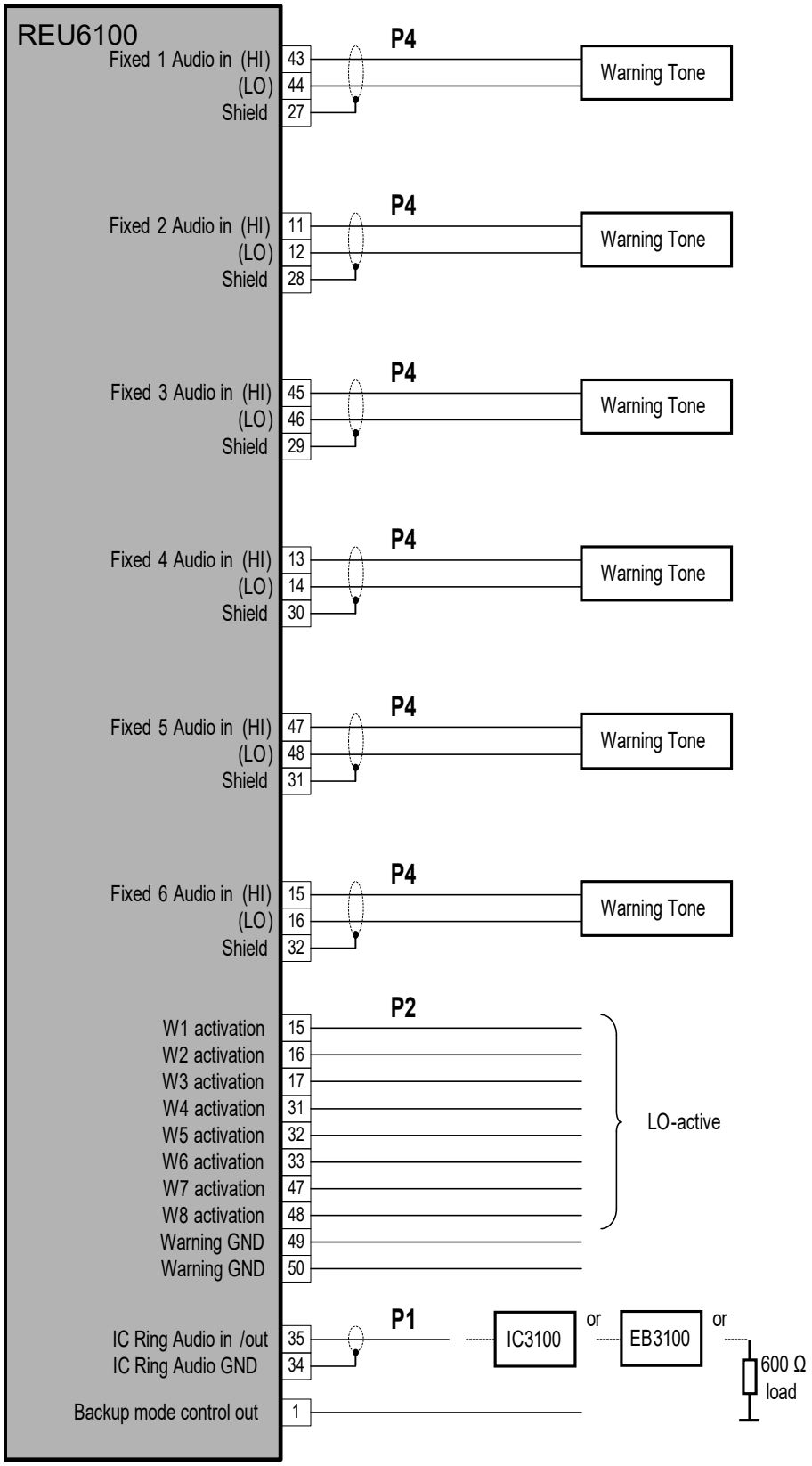


Figure 15: Wiring - FIX Audio, Alert Tones and IC Ring

2.7.8 REU6100 - Speaker, Back-up Act., Control and other Connections

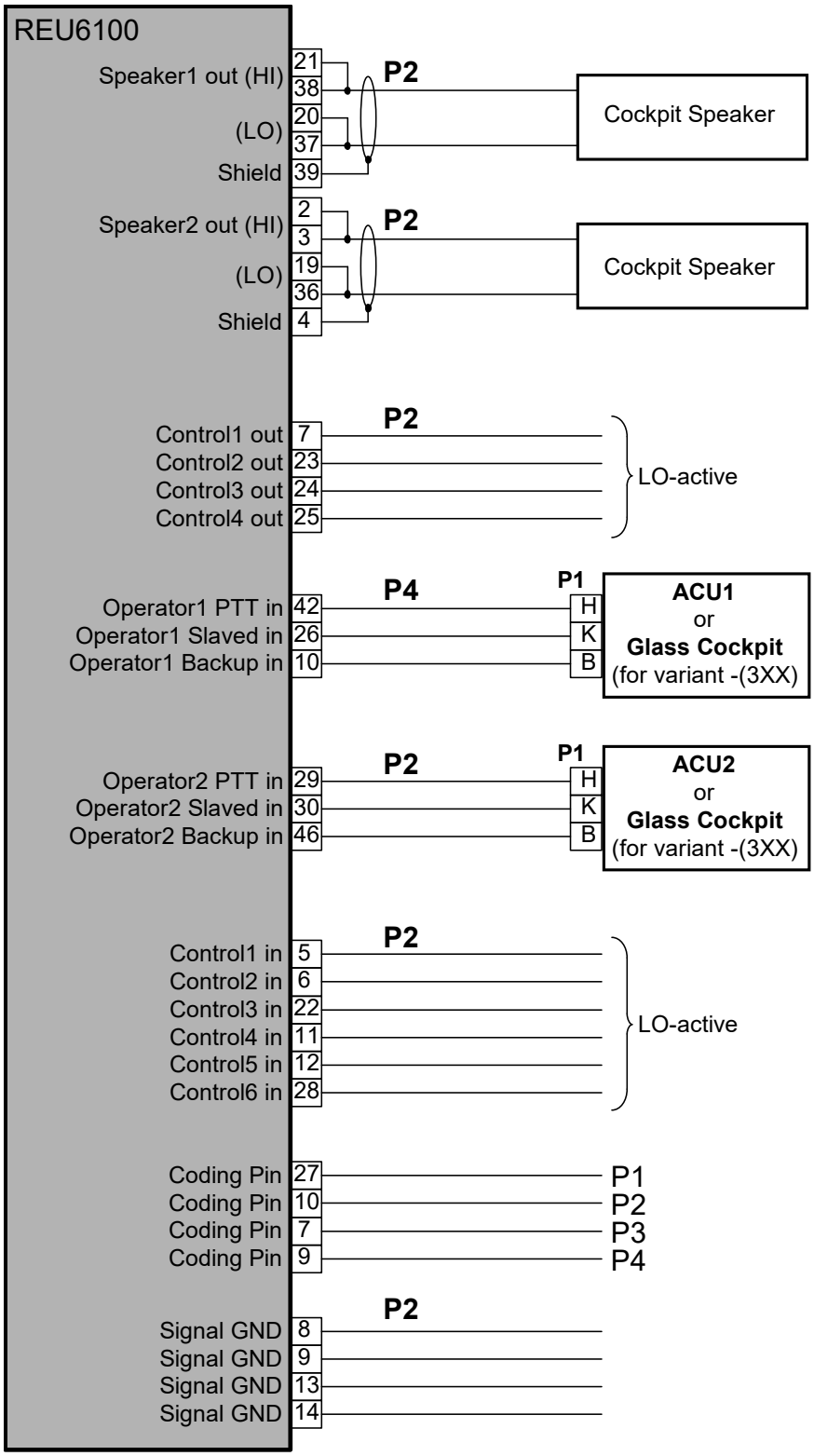
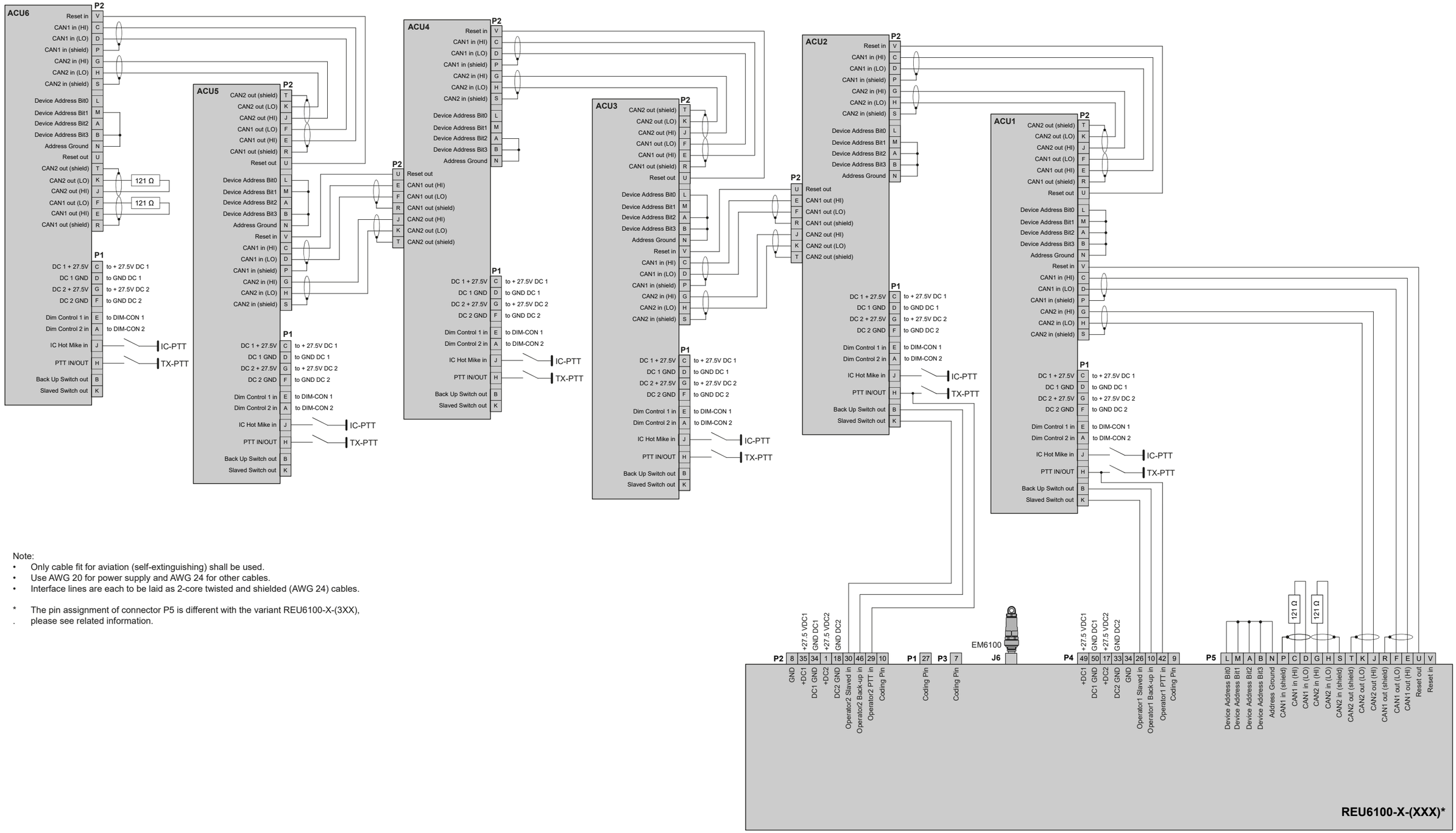


Figure 16: Wiring - Speaker, Back-up Act., Control and other

2.7.9 CANbus Connector

The control panels (ACUs, glass cockpit, ...) are connected via two CANbus links (CAN1, CAN2). When one CANbus fails, the devices automatically switch to the remaining connection.

2.7.10 Wiring - REU6100 & ACU610X



Note:

- Only cable fit for aviation (self-extinguishing) shall be used.
- Use AWG 20 for power supply and AWG 24 for other cables.
- Interface lines are each to be laid as 2-core twisted and shielded (AWG 24) cables.

* The pin assignment of connector P5 is different with the variant REU6100-X-(3XX), please see related information.

NOTICE*: The pin assignment of connector P5 is different with the variant REU6100-X-(3XX). Please refer to related wirings.

Figure 17: Wiring - REU6100 & ACU610X

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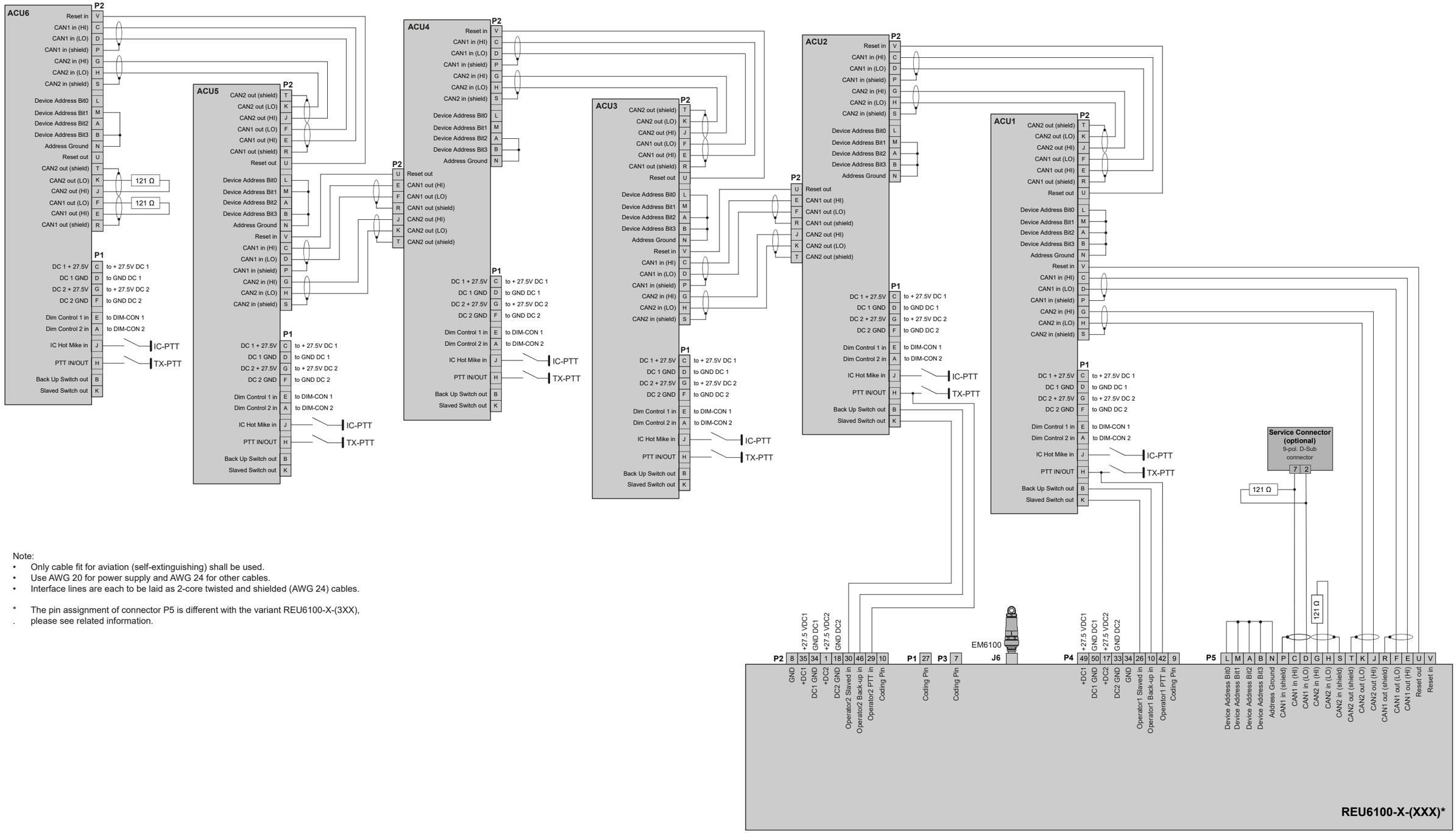
2.7.11 Wiring - REU6100 & ACU610X with Service Connector (Option)



Note:
- Only cable fit for aviation (self-extinguishing) shall be used.
- Use AWG 20 for power supply and AWG 24 for other cables.
- Interface lines are each to be laid as 2-core twisted and shielded (AWG 24) cables.

* The pin assignment of connector P5 is different with the variant REU6100-X-(3XX), please see related information.

NOTICE*: The pin assignment of connector P5 is different with the variant REU6100-X-(3XX). Please refer to related wirings.

Figure 18: Wiring - REU6100 & ACU610X with Service Connector (Option)

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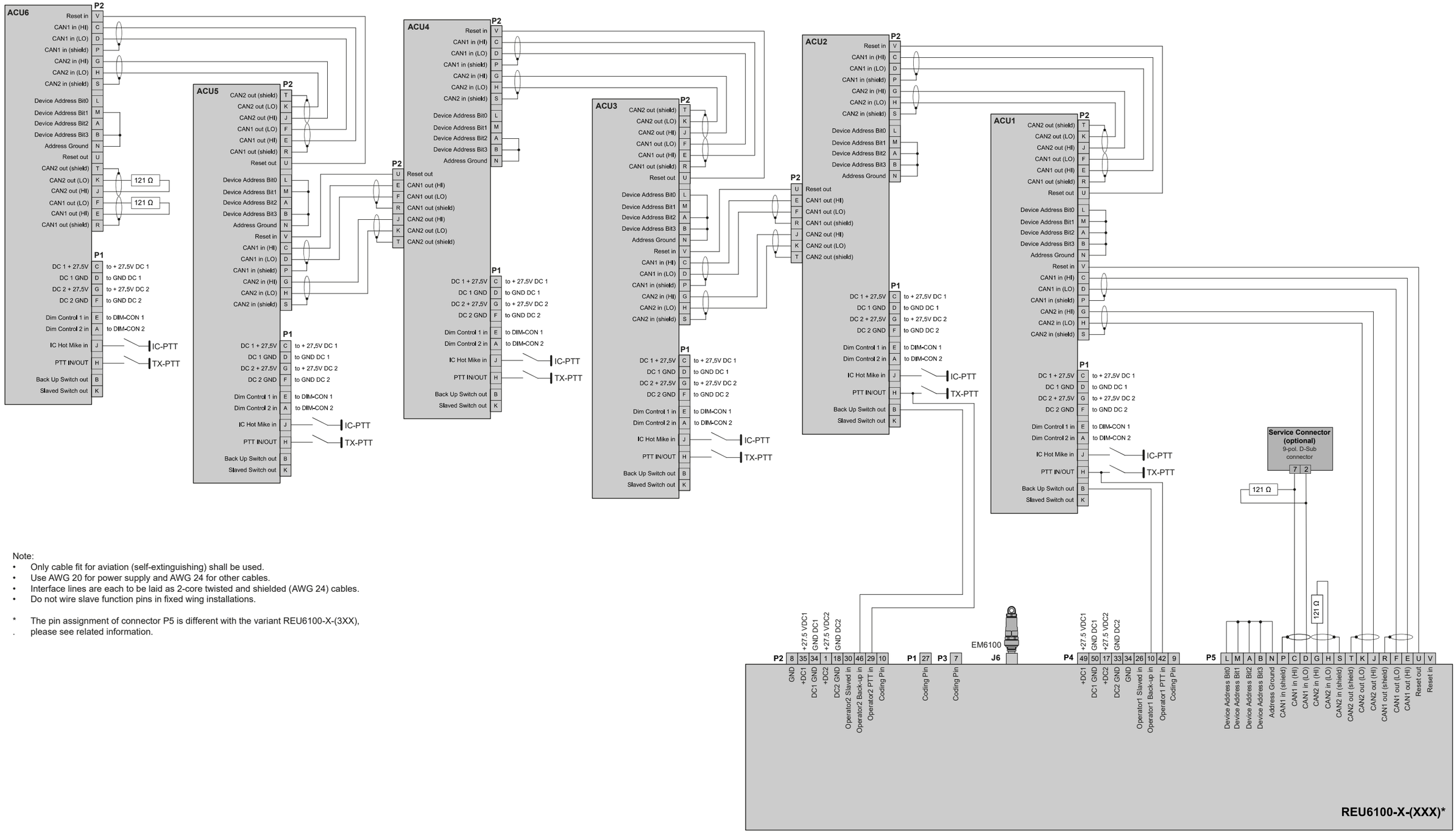
2.7.12 Wiring - REU6100 & ACU6100 (Fixed-Wing Version) with Service Connector (Option)



Note:

- Only cable fit for aviation (self-extinguishing) shall be used.
- Use AWG 20 for power supply and AWG 24 for other cables.
- Interface lines are each to be laid as 2-core twisted and shielded (AWG 24) cables.
- Do not wire slave function pins in fixed wing installations.

* The pin assignment of connector P5 is different with the variant REU6100-X-(3XX), please see related information.

NOTICE*: The pin assignment of connector P5 is different with the variant REU6100-X-(3XX). Please refer to related wirings.

Figure 19: Wiring - REU6100 & ACU6100 (Fixed-Wing Version) with Service Connector (Option)

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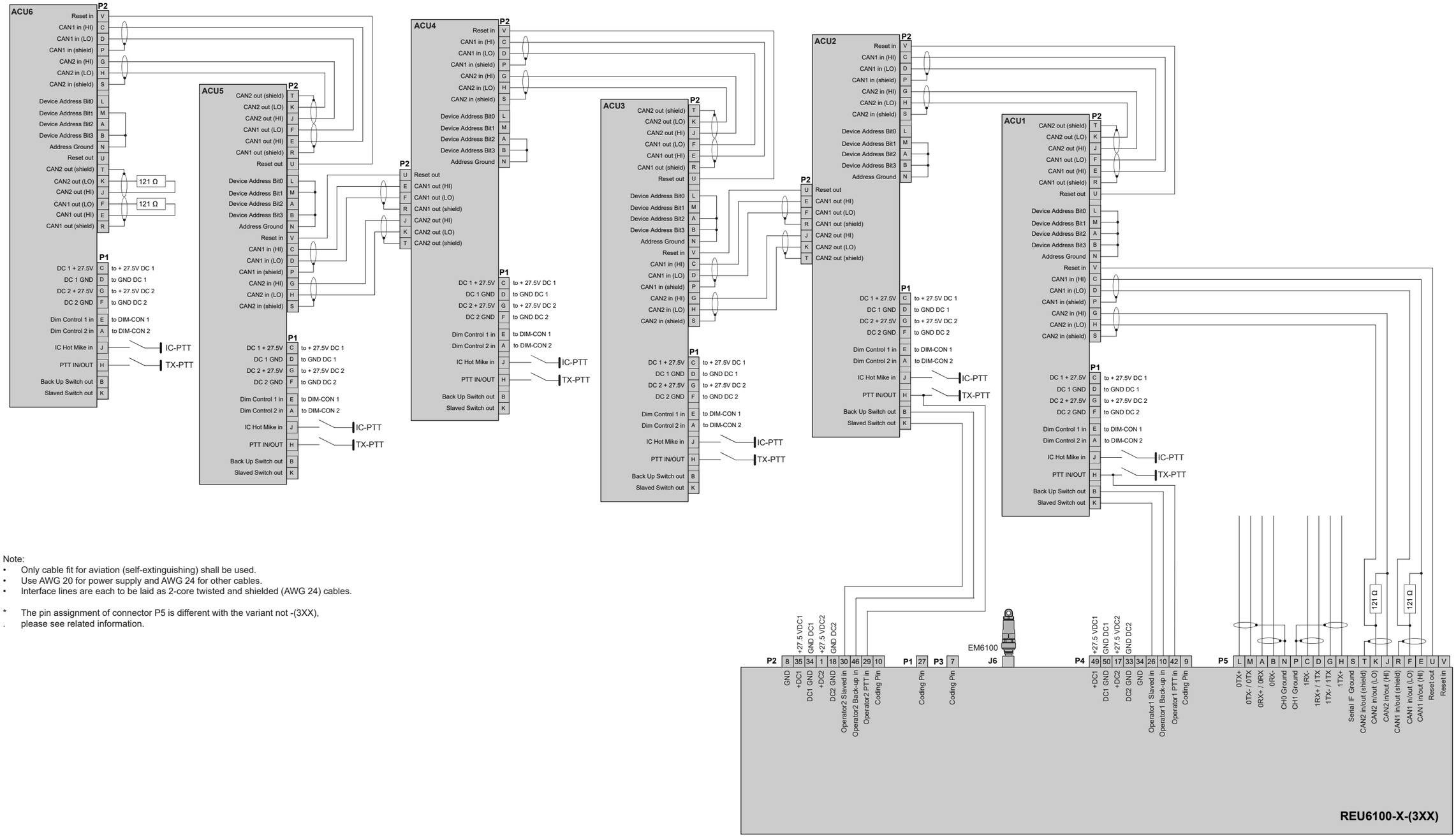
2.7.13 Wiring - REU6100-X-(3XX) & ACU610X



Note:
- Only cable fit for aviation (self-extinguishing) shall be used.
- Use AWG 20 for power supply and AWG 24 for other cables.
- Interface lines are each to be laid as 2-core twisted and shielded (AWG 24) cables.

* The pin assignment of connector P5 is different with the variant not -(3XX),
. please see related information.

NOTICE: The pin assignment of connector P5 is different with the variant not -(3XX). Please refer to related wirings.

Figure 20: Wiring - REU6100-X-(3XX) & ACU610X

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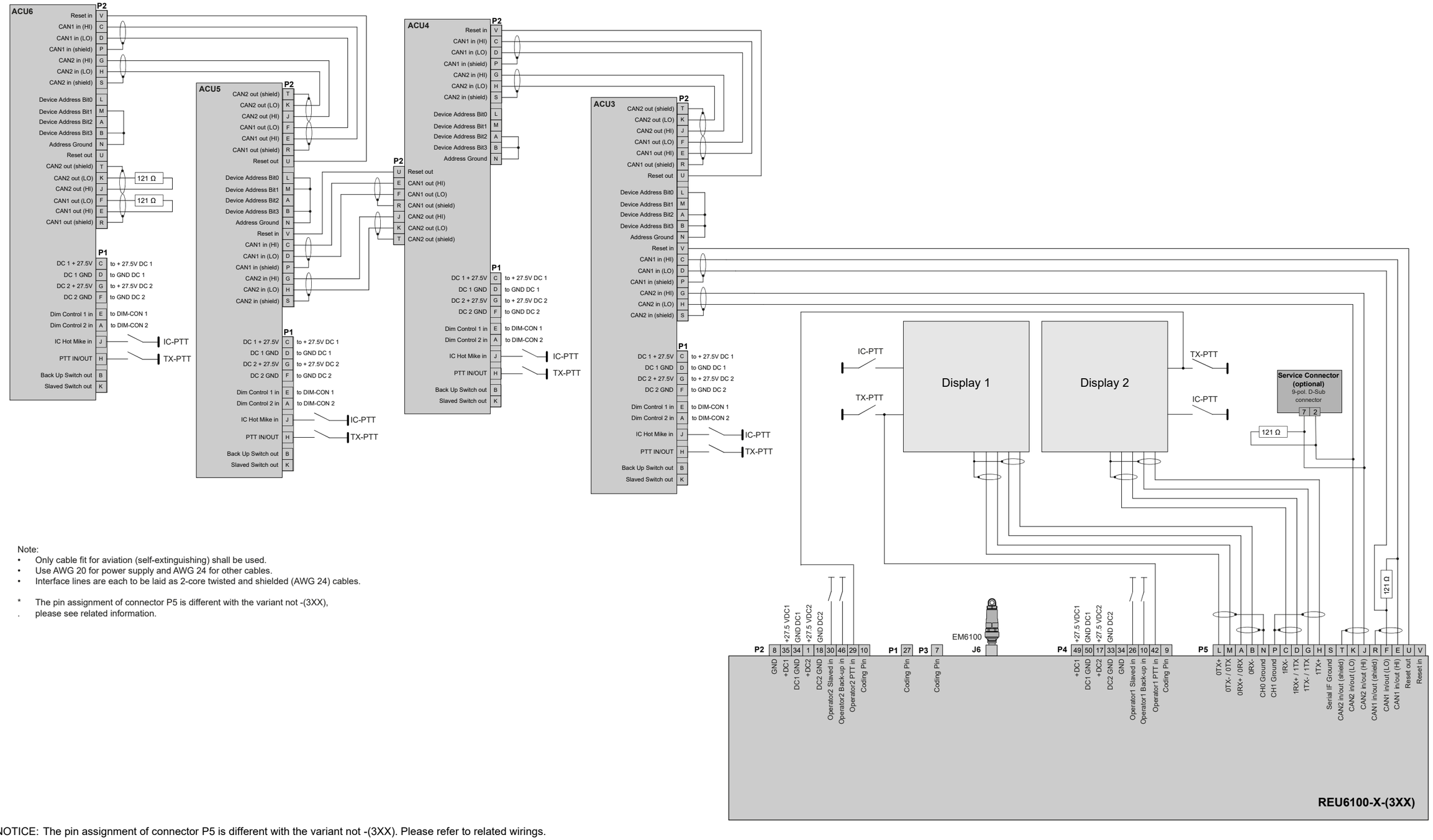
2.7.14 Wiring - REU6100-X-(3XX) & ACU610X & Glass Cockpit with Service Connector



Note:
- Only cable fit for aviation (self-extinguishing) shall be used.
- Use AWG 20 for power supply and AWG 24 for other cables.
- Interface lines are each to be laid as 2-core twisted and shielded (AWG 24) cables.

* The pin assignment of connector P5 is different with the variant not -(3XX),
. please see related information.

NOTICE: The pin assignment of connector P5 is different with the variant not -(3XX). Please refer to related wirings.

Figure 21: Wiring - REU6100-X-(3XX) & ACU610X & Glass Cockpit with Service Connector

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2.8 Configuration

The configuration of the DVCS6100 can be changed and edited by using a personal computer or laptop with the related software CSW6100.

2.8.1 Configuration Software (CSW6100)

- The configuration software CSW6100 and the related user manual is part of the configuration software set.
  - Details see "Accessories", page 32 - Configuration Software Set.
- All data for REU6100 are stored in the REU6100 and the EM6100 if connected.

2.8.2 EM6100

NOTICE

With the power-on of the REU6100 all data from a connected external memory module (EM6100) overwrites the existing data from the REU6100 internal memory.

Before a replacement of a memory module (EM6100):

- Save the already existing configuration data from REU6100 for security reasons and for reuse with other devices.

2.8.2.1 Programming of the EM6100

For detailed information please read manual "CSW6100 ...".

(www.becker-avionics.com/downloads/ → Intercom).

2.9 Communication Interfaces

2.9.1 CANbus Protocol for REU6100

- Use the CANbus protocol for control data interchange between REU6100 and ACU610X.

2.9.2 RS232/RS422 Protocol for REU6100

- Use the RS232/RS422 protocol for data interchange between REU6100-X-(3XX) and glass cockpit or between two REU6100-X-(3XX) as multi-REU application.

Details on request.
For relevant department and addresses, please see contact info page 2.

2.10 REU6100 Functions

2.10.1 Headset

The REU6100 can operate up to six headsets with dynamic or standard microphones.

- The sensitivity of the microphone input and the level of the phone output can be configured.

2.10.2 PTT Key

The standard input for the PTT activation is the ACU610X (user interface).

- The REU6100 receives the PTT command via CANbus and can control eight transmitters.
- By the configuration setup all users can be configured for high or low PTT priority.
- If some users have the same priority level, the priority is given to the user who first push the Transmit-PTT (TX-PTT).
  - Transmit-PTT has always priority over Intercom-PTT (IC-PTT).
- The permission to use Transmit-PTT can be individual configured for all ACU610X. Only back-up mode PTT of the pilot and copilot are directly connected to the REU6100.

2.10.2.1 PTT Stuck Detection

The REU6100 has a stuck PTT timer.

- The PTT activation to a radio stops automatically after 180 s of continuous transmission.
- The PTT stuck detection can be enabled or disabled by the configuration setup*.

*For more information refer to the software manual "CSW6100... "
(www.becker-avionics.com/downloads/ → Intercom).

2.10.3 Output Level TX-Devices

- The REU6100 has a variable output level from 0.07…1.5 V/150 Ω (adjustable with the configuration software CSW6100).

2.10.4 Input Level TX-Devices

- The REU6100 has a variable input level from the TX-devices 2.5…20 V/600 Ω balanced.

2.10.5 Input Level RX-Devices

The REU6100 has a variable input level from the RX-devices 2.5…20 V/600 Ω balanced.

- All eight receiver channels can be configured to be under VOICE filter control.
- All eight receiver channels can be configured to be under Marker Mute filter control.

2.10.6 Sidetone

- The REU6100 can be configured individually on all eight transmitter channels for natural, artificial and duplex sidetone.
- The sidetone level can be adjusted in 3 dB steps from 0 …- 15 dB.

2.10.7 Forced Monitoring

- Forced monitoring of transceivers can be individual enabled and the output level can be adjusted with the configuration software CSW6100 for all operators with ACU610X.

2.10.8 Audio Muting

The REU6100 can operate with unmuted intercom and transmitter audio during transmit mode.

- Monitoring of selected transmitter radios and the intercom audio during transmit mode can be enabled or disabled by the configuration setup* of REU6100 for any operator with ACU610X.
- RX-channels are always muted during transmit mode.

2.10.9 FIX Input Channels (Warning Audio Tones)

The REU6100 has six direct input channels:

- Three direct input channels with input sensitivity adjustable from 5…40 V with the configuration software. No volume control during operation possible.
- Three direct input channels with input sensitivity adjustable from 2.5…20 V with the configuration software. Control with main volume control during operation possible.

NOTICE TX, RX, FIX input-channels and alert tones are selectable by the configuration setup*.

*For more information refer to the software manual "CSW6100... "
(www.becker-avionics.com/downloads/ → Intercom).

2.10.10 Speaker

The REU6100 has two adjustable speaker outputs.

- One can be controlled from the pilot audio control device.
- One can be controlled from the copilot audio control device.

2.10.11 Cockpit Voice Recorder (CVR)

The REU6100 has two cockpit voice recorder outputs for the combined mike and phone signal.

- One for pilot.
- One for copilot.

2.10.12 Alert Tones

The REU6100 has eight predefined alert tones.

- Each tone can be started by a discrete input signal (low active).
- All types of tones are listed (see "Tone Generator" page 24).
- A separate discrete input can be used to cancel the warning tones by an external switch.

NOTICE

For special mission configuration some of the discrete inputs can be configured for other functions e.g.:

- The input alert tone 1 to Guard Radio PTT
- The input alert tone 2 to 3rd-IC-circuit control input.
  This input disconnects all users connected to the 3rd-IC-circuit configured with the configuration software.
- The input alert tone 3…8 to 6 IC-PTT keys (headset without ACU configuration).
- The input alert tone 3…8 to 6 TX-PTT keys (headset without ACU configuration).
- The alert tones 1...8 are not available if relay mode is configured.
- The alert tones 1...8 are not available if external TX indication is configured (only in multi-REU applications).

2.10.13 Signal Tones

- The REU6100 has two signal tones:
  - The intercom request signal.
  - The E-call signal.
- Both signals can be enabled or disabled by the configuration setup*.

*For more information refer to the software manual "CSW6100... "
(www.becker-avionics.com/downloads/ → Intercom).

2.10.14 Activation Signal Tones

- The REU6100 can operate with external switches for the signal tones intercom request and E-call.

2.10.15 Activation - Selective Call

- The REU6100 has a selective call activation input.
- This input can be enabled or disabled by the configuration setup*.
  Detailed information see ACU610X manuals
  (www.becker-avionics.com/downloads/ → Intercom).

*For more information refer to the software manual "CSW6100... "
(www.becker-avionics.com/downloads/ → Intercom).

NOTICE

For special mission configuration some of the discrete inputs can be used for other functions e.g.:

- The input selective call to Guard Radio PTT.

2.10.16 Winchman Operation

The winchman function includes VOX-level and volume-level adjustments without access to a control device.

- The winchman functionality can be given to any ACU610X or headset (without installed ACU610X) by the configuration setup.
- With two external push buttons the VOX-level and volume-level can be remotely controlled by the winchman operator.
  - Push one of the two external push buttons and the winchman function will be started.
  - This enables the winchman to increase the VOX-level and the volume-level for his headset.
- VOX-level adjustment:
  - Push the VOX-level button for a short time (0.3 ...≤ 3 s),
    the VOX-level is increased until the maximum value is reached.
  - Push the button ≥ 3 s,
    the VOX-level is reset to the value selected on the related ACU panel.
  - The VOX-level is reset too,
    when the volume control or VOX control on the ACU is changed
- Volume level adjustment:
  - Push the volume level button for a short time (0.3 ...≤ 3 s),
    the volume level is increased until the maximum value is reached.
  - Push the button ≥ 3 s,
    the volume level is reset to the value selected on the related ACU panel.
  - The volume level is reset too,
    when the main volume control or VOX control on the related ACU is changed.

2.10.17 Intercom Circuits

The REU6100 can operate in different intercom circuits:

- Cockpit crew.
- Cabin crew.
- IC-ring line
  (connected to the cabin, cockpit or 3rd-IC-circuit; configurable by the configuration setup*).
- 3rd-IC-circuit (has to be controlled by an external switch).
- Cockpit and cabin intercom circuits can be directly controlled by the ACU610X.

*For more information refer to the software manual "CSW6100... "
(www.becker-avionics.com/downloads/ → Intercom).

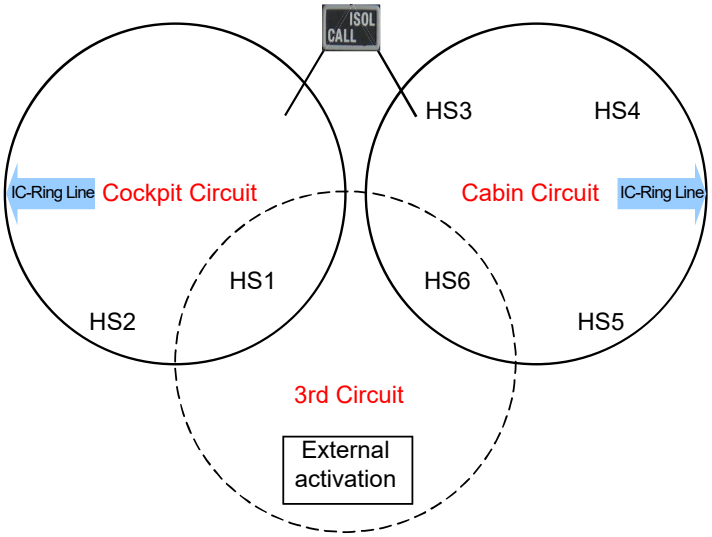

Figure 22: Example - Intercom Configuration

2.10.18 IC-Indications - Cockpit Call, Cabin Call, 3rd-IC-Circuit

The REU6100 supplies output for the "Cockpit Call", "Cabin Call" and the 3rd-IC-circuit disconnect indication.

- "Cabin call": on, if cabin is isolated from the cockpit.
- "Cockpit call": on, if isolated cabin user calls the cockpit.
- "3rd-IC-circuit": on, if the 3rd-IC-circuit is on.
  Details see "Figure 25: Intercom Circuits - 3rd-IC-Circuit for Special Mission Operation" page 75.

2.10.18.1 IC-Ring Line connected to the Cabin (Standard Configuration)

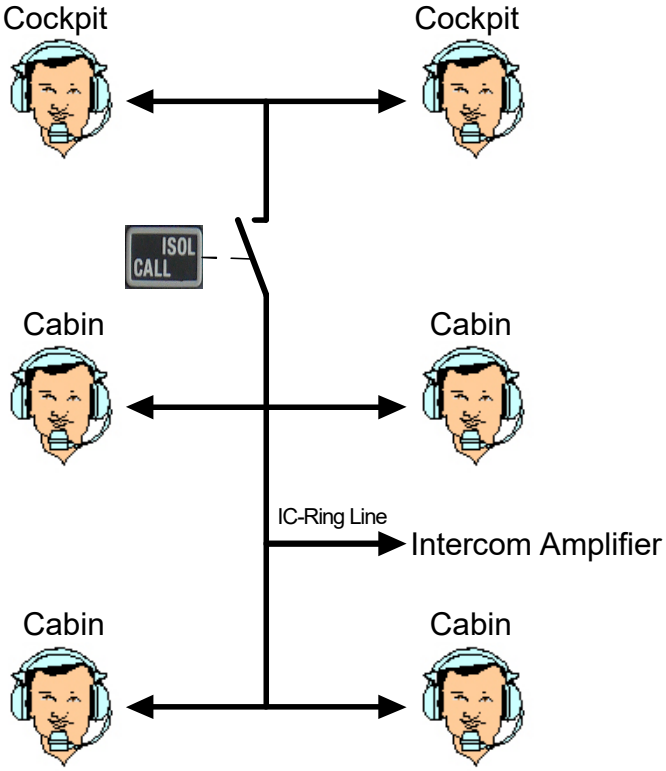

Figure 23: Intercom Circuits - Standard Configuration

2.10.18.2 IC-Ring Line connected to the Cockpit

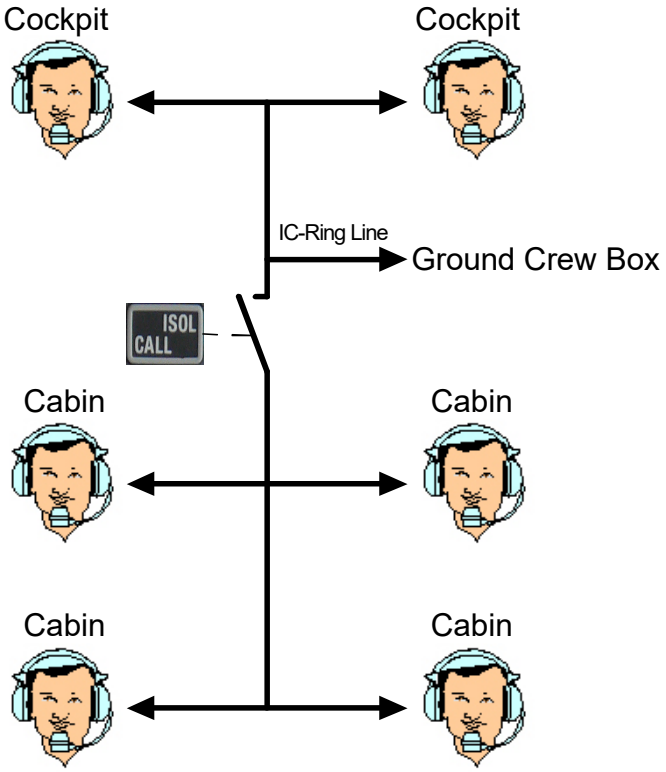

Figure 24: Intercom Circuits - IC-Ring Line connected to the Cockpit

2.10.18.3 3rd-IC-Circuit for Special Mission Operation

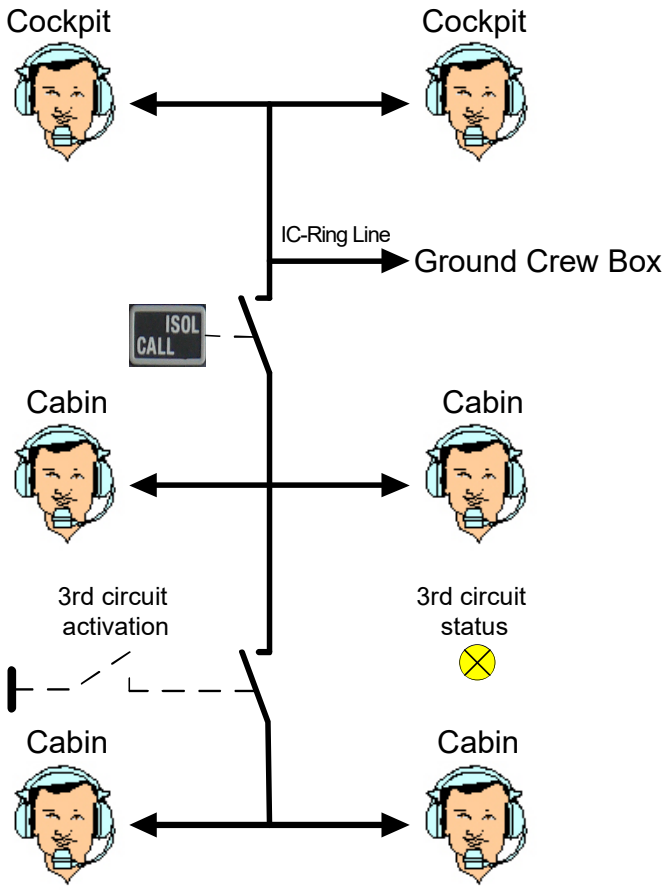

Figure 25: Intercom Circuits - 3rd-IC-Circuit for Special Mission Operation

2.10.19 Muting Signal

The REU6100 has a muting output signal for a direction finder system (low active).

2.10.20 Marker Mute Function

The REU6100 has a marker mute function.

- If selected by the operator the marker channel is muted for 30 seconds.
- The marker mute can be individual enabled for each operator in the configuration setup.

2.10.21 Back-up Mode and Slave Mode

The REU6100 can operate in back-up and slave mode.

- Connect the first and the second ACU610X as shown in "Wiring - REU6100 & ACU610X" page 59.
- Connect the REU6100 to an emergency power source for the function "Back-up Mode".
  - Use the emergency battery or an emergency power bus.
  - Supply voltage connections are shown in "Connector P3" page 46.

2.11 Special Functions

2.11.1 Double Transmit and Multi Transmit (Simulcast) Mode

The REU6100 can operate in double transmit or multi transmit (simulcast) mode.

- In double transmit mode the REU6100 can transmit on two predefined radios at the same time.
- In multi transmit mode the operator can select on which radios he wants to transmit at the same time from his ACU610X.
- The radios for transmit operation at the same time are predefined by the configuration setup.
- The operator can still listen to radios which are not configured for multi transmit operation.

2.11.2 Guard Radio PTT Function

The REU6100 has a guard radio PTT function for 2 guard radios.

- The transmission of the guard radio is started by guard radio PTT (discrete inputs alert tone 1 and Selective Call input).
- Two guard radio PTTs can be configured to TX-channel 1...8 and to 2 of 6 ACU610X or headset operators.
- Only one guard radio PTT (discrete input) can be configured to one ACU610X - or one headset operator.
- If a guard radio PTT (discrete input) is started, the related radio status LED blinks.
- The guard radio PTT has a higher priority than any other PTT for this radio.
  - If two operators are configured for the same guard radio, the priority is given to the user who starts his guard radio PTT first.

2.11.3 Relay Mode

The REU6100 can operate in relay mode alternative to dual TX- and multi TX-mode. The channels must be enabled for this function in the configuration*.

The function is used to:

- Increase the communication range.
- Connect operators of different radio areas/services.

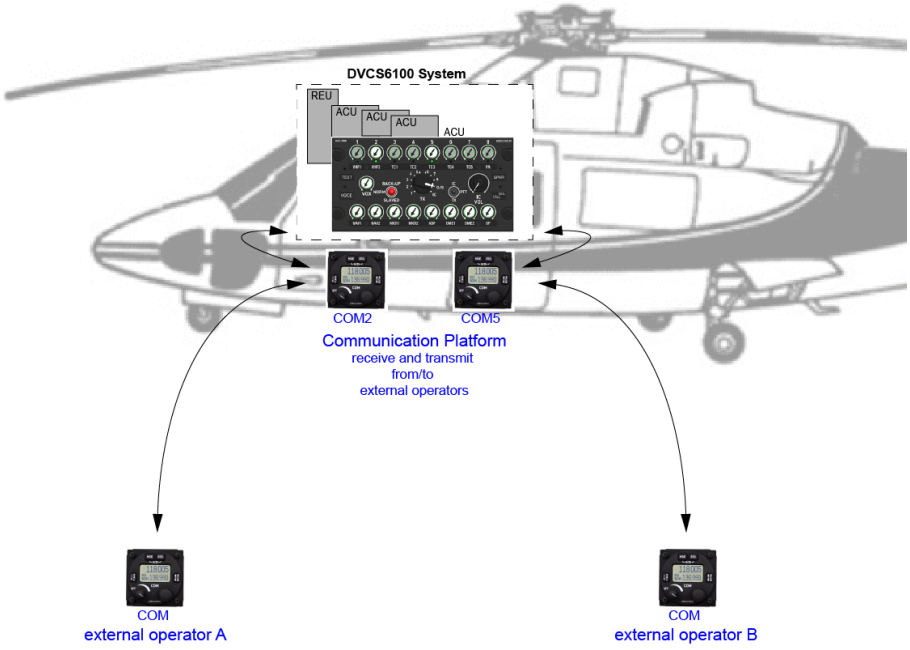

Figure 26: Relay Mode - Communication Flow

Notice:

- Only one control device (ACU) can be selected as a relay operator (configuration*).
- Only two TX-channels can be in relay mode.
  - When on one TX-channel a signal is received automatically the other TX-channel is in transmit mode.
- The selection of the TX channels for relay operation must be configured in the configuration setup* (for information about the operation in relay mode refer to the ACU610X manuals (www.becker-avionics.com/downloads/ → Intercom).
- In the relay mode the number of independent operators (control devices ACU) decreases around 2. For example: REU6100-3-(XXX) from max.6 to max. 4 independent operators.

*For information about configuration refer to the manual "CSW6100... "(www.becker-avionics.com/downloads/ → Intercom).

NOTICE

- For relay mode operation the transceiver must have a discrete output (low active) for call identification.
- The headset in/output of number HS5 and HS6 must be connected for internal use.
- The alert tones 1...8 are not available if relay mode is configured.

For detailed information please read ACU610X manuals (www.becker-avionics.com/downloads/ → Intercom).

Example: Control device 4 and TX-channels 2+5 are configured for relay operation.

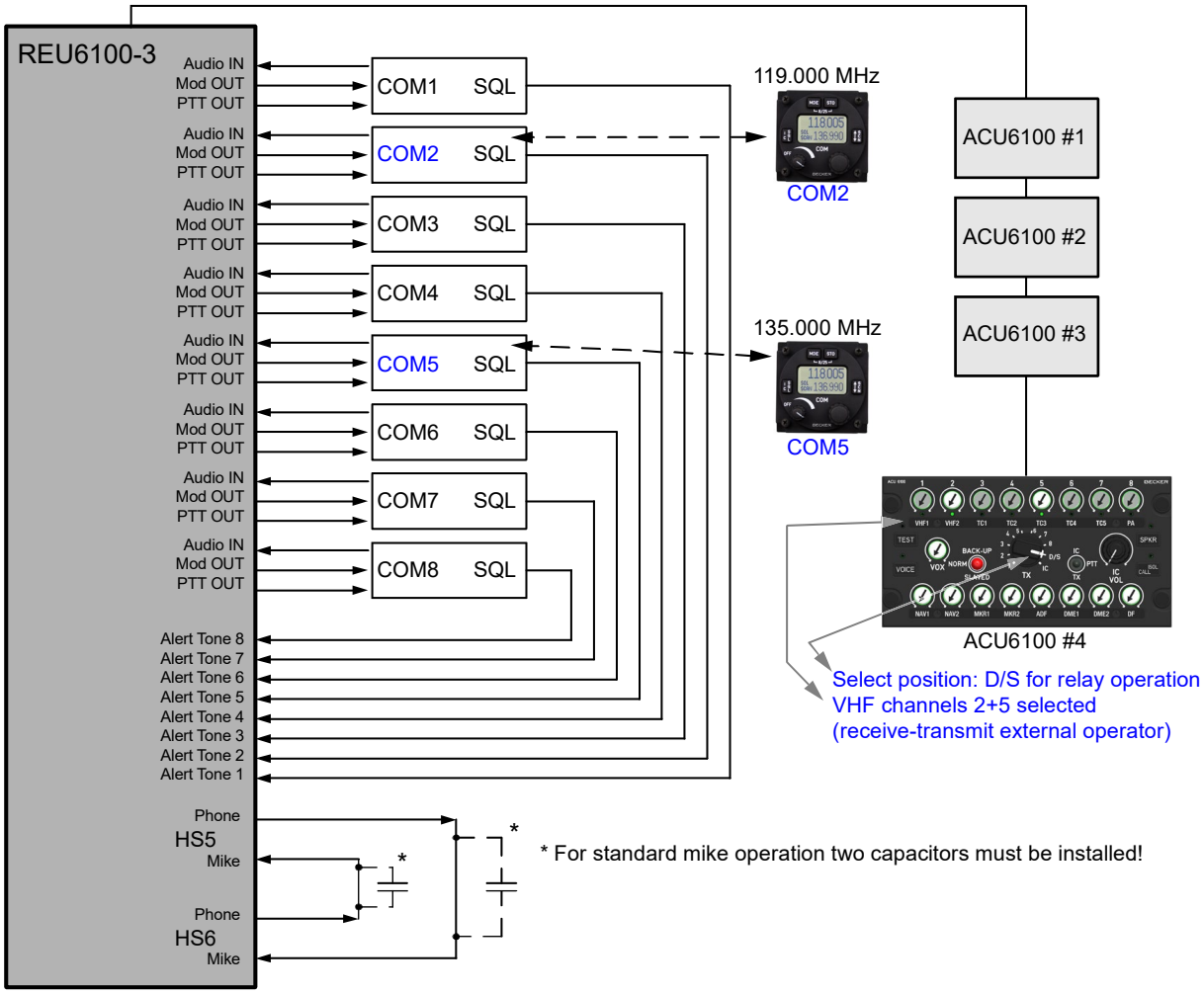

Figure 27: Relay Mode - Configuration

2.11.4 Operation "Headset without ACU610X"

- The operators can use headsets without ACU610X.
- The adjustment is done by the configuration setup* for:
  - IC-volume control.
  - Main volume control.
  - Individual channel-volume.
  - VOX.
  - Monitoring of radios.
  - Transmit on one predefined TX-channel.
- For all the navigation radios (RX1-RX8) the voice filter is always inactive.

NOTICE

- If a headset operator without ACU needs for intercom operation IC-PTT or for transmit mode TX-PTT, alert tone activation inputs have to be used.
- Therefore the previous alert tone is no longer available.

2.11.5 Operation "Headset connected to ACU"

- A headset only operator can be connected to one ACU from any other operator.
- All control functions of the ACU are parallel valid for this headset operator, except VOX-functions, mike sensitivity and phone output.

NOTICE

If transmit is enabled for the operator, his headset function will be isolated from the connected ACU operator while transmit mode is selected.

- If a headset operator without ACU is connected to another ACU and needs transmit-PTT, one alert tone activation input has to be used.

Therefore, the previous alert tone is no longer available.

2.11.6 Operation "3rd-IC-circuit"

- Any ACU610X and headset in the cockpit, cabin circuit and the IC-ring line can be connected to the 3rd-IC-circuit.
- The function must be enabled by the configuration setup*.

*For more information refer to the software manual "CSW6100... "
(www.becker-avionics.com/downloads/ → Intercom).

NOTICE

- If the function 3rd-IC-circuit is active the alternative alert tone (tone 2) is no longer available.

2.11.7 Alternative Use of Alert Tones Activation Inputs

Alert Tone Input	Standard Alert Tones	Alternative IC-KEY **	Alternative PTT-KEY **	Special Functions **	Relay Mode **	External TX detection **
1	Alert Tone 1	N/A	N/A	Guard Radio PTT	Call COM 1	TX1
2	Alert Tone 2	N/A	N/A	3rd-IC-circuit isolation	Call COM 2	TX2
3	Alert Tone 3	*IC-PTT/ Headset 1	TX-PTT/ Headset 6	N/A	Call COM 3	TX3
4	Alert Tone 4	*IC-PTT/ Headset 2	TX-PTT/ Headset 5	N/A	Call COM 4	TX4
5	Alert Tone 5	*IC-PTT/ Headset 3	TX-PTT/ Headset 4	N/A	Call COM 5	TX5
6	Alert Tone 6	IC-PTT/ Headset 4	*TX-PTT/ Headset 3	N/A	Call COM 6	TX6
7	Alert Tone 7	IC-PTT/ Headset 5	*TX-PTT/ Headset 2	N/A	Call COM 7	TX7
8	Alert Tone 8	IC-PTT/ Headset 6	*TX-PTT/ Headset 1	N/A	Call COM 8	TX8

- *
  - If a "Headset without ACU" is enabled in configuration setup and the IC/TX-PTT-key feature is enabled.
  - Maximum 3 headsets can use IC-PTT and TX-PTT key for operation at the same time.
- **
  - If the IC-key feature is enabled, the table shows the assignment.
  - If the PTT-key feature is enabled, the table shows the assignment.
  - If the 3rd-IC-circuit is enabled in configuration setup, the table shows the assignment for isolation.
  - If the Alert Tone 1 is enabled for Guard Radio PTT, the table shows the assignment.
  - If relay mode is configured in the configuration setup, all 8 alert tone inputs have to be used for relay mode operation.
  - If external TX detection is enabled in the configuration setup, all 8 alert tone inputs have to be used for external TX operation (two REU6100 in parallel).

Figure 28: Table - Alert Tone Inputs

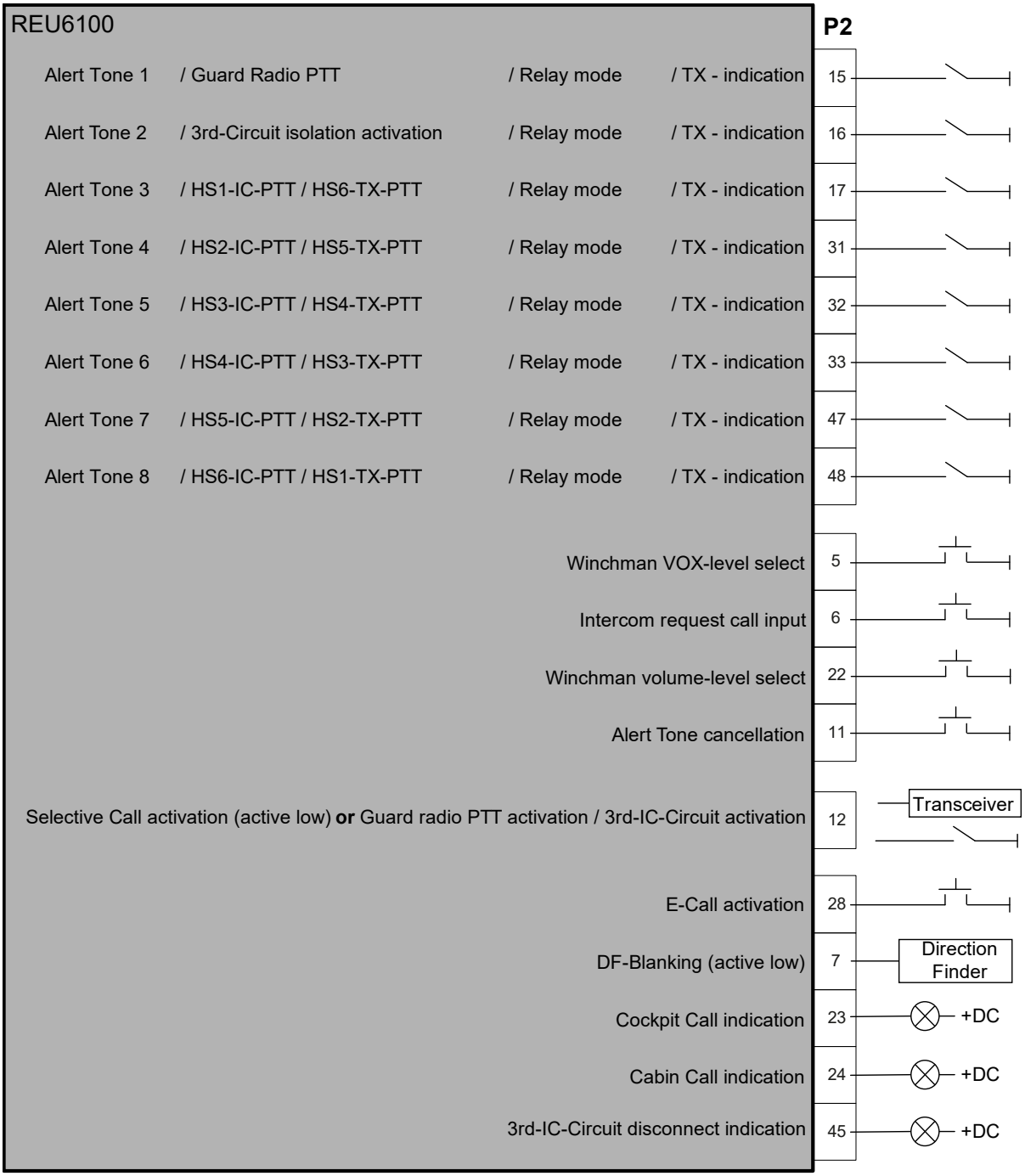

Figure 29: Discrete In-/Outputs

2.11.8 Data Interchange in Multi-REU Applications (RS232/RS422)

The data interchange between two REU6100-X-(3XX) contains:

- The PTT indication for TX for all users of both REU6100.
- The blocking of PTT control for users of both REU6100 (depends on priority setting).
- The indication of the intercom ring status.
- The isolation or connection commands of cockpit and cabin ring.
- CALL control for all cabin users.
- CALL indication for all cockpit users.

NOTICE

- The IC-ring line can be configured to one intercom circuit only.
- Therefore this ring-line can interchange intercom audio only which is given to this configured intercom ring.

For details refer to
"Block Diagrams - DVCS6100 with Multi-REU Application" page 91.
"Block Diagram - DVCS6100 with Multi-REU & Glass Cockpit Application" page 92.

2.12 Service Connector

Becker Avionics recommend the installation of a service connector. This allows the configuration of the REU6100 after installation inside the aircraft and the readout of maintenance data without removal of the REU6100 from aircraft.

Details please see "Accessories" page 32.

2.12.1 Service Connector inside the Aircraft

Pinout service connector (D-Sub, 9pol.) see:

"Wiring - REU6100 & ACU610X with Service Connector (Option)" page 61.
"Wiring - REU6100-X-(3XX) & ACU610X & Glass Cockpit with Service Connector" page 67.

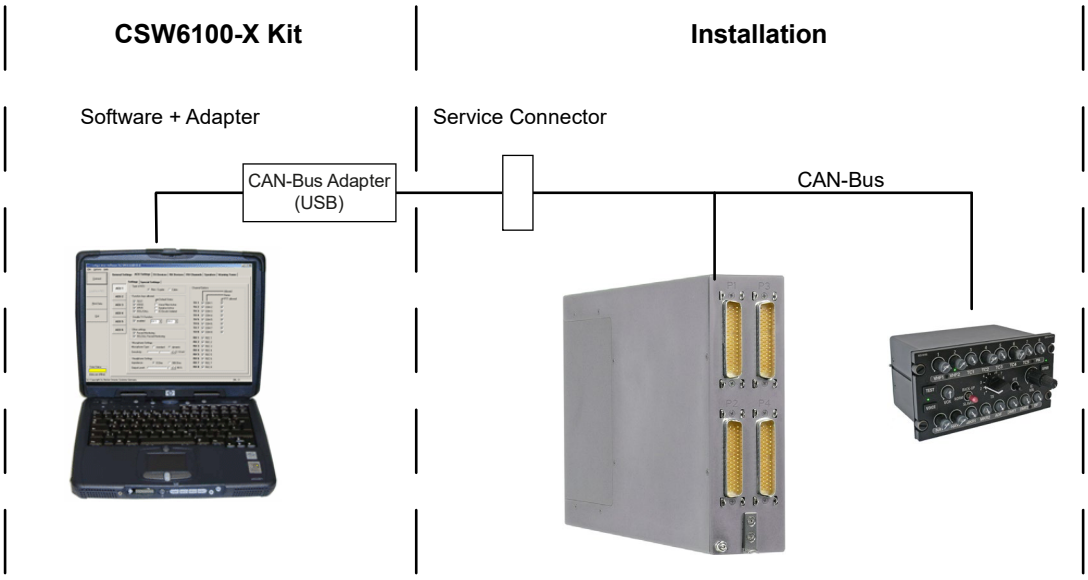

Figure 30: Service Connector inside the Aircraft

2.12.2 Service Cable Kit

With the service cable kit SCK6100-1 the configuration of the REU6100 can be done on test bench.

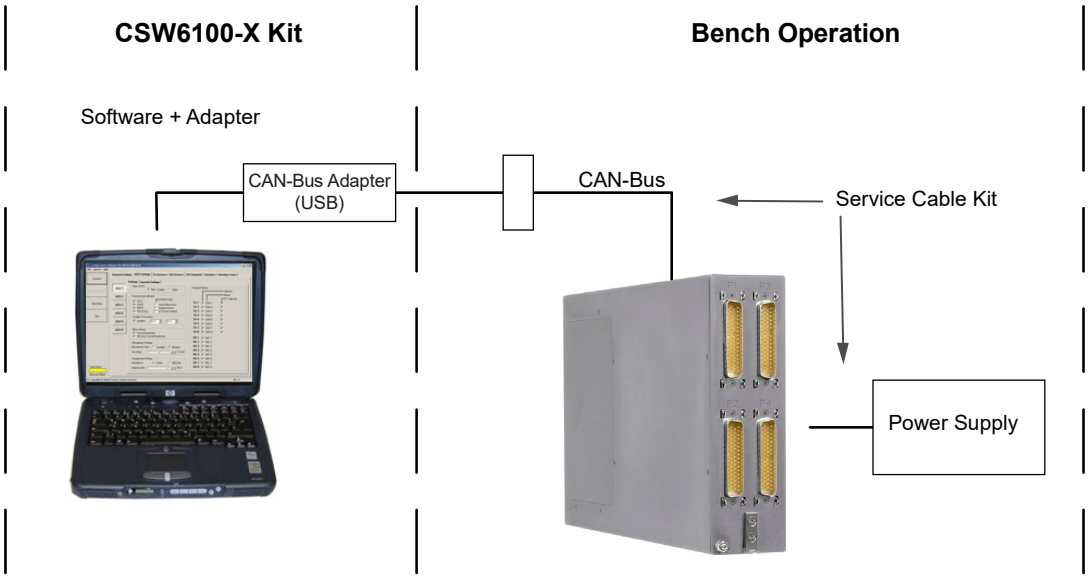

Figure 31: Service Connector with Service Cable Kit SCK6100-1

2.13 Block Diagram - DVCS6100 with Ground Crew

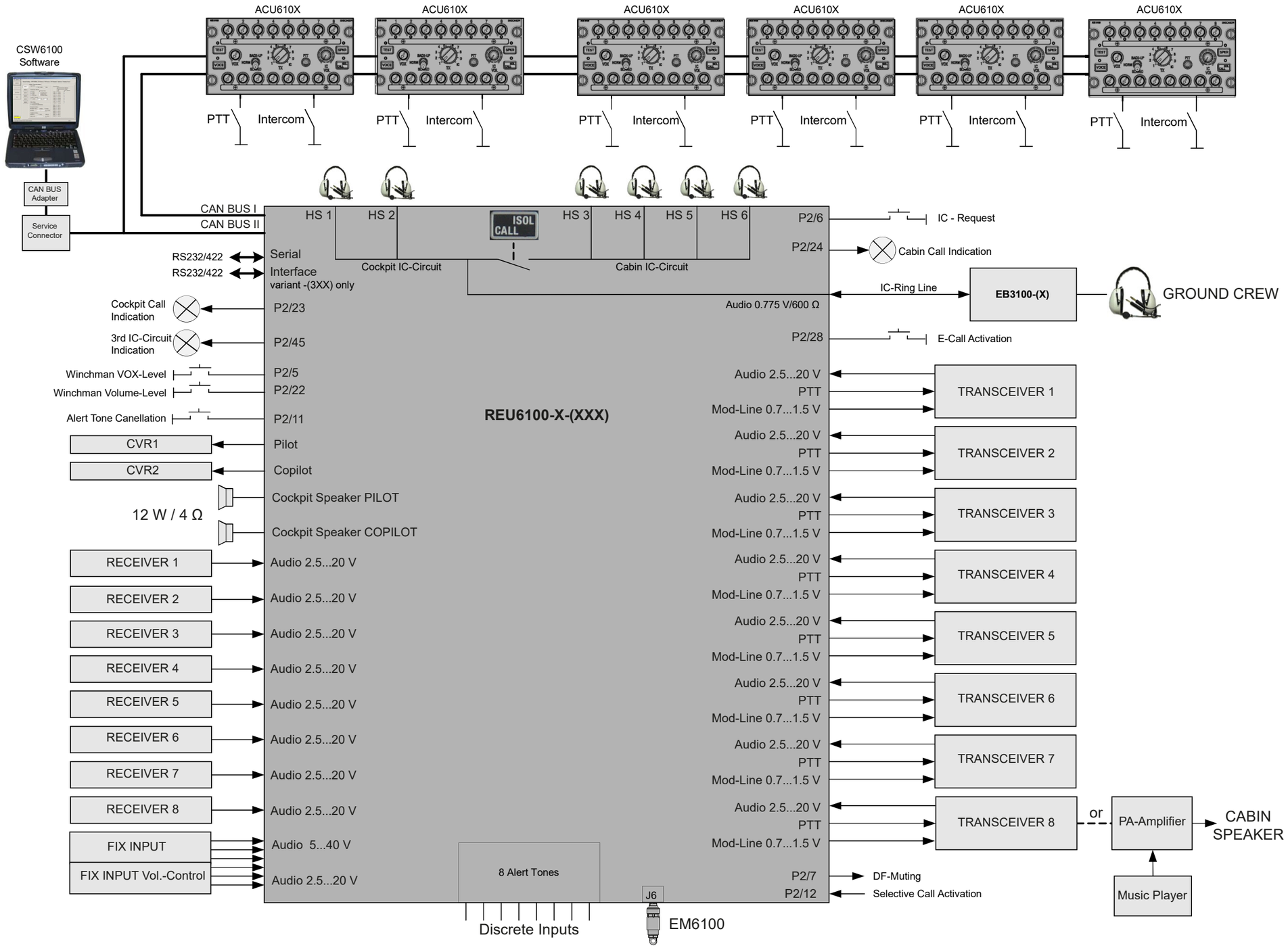

Figure 32: Block Diagram - DVCS6100 with Ground Crew

Block Diagram - DVCS6100 with Ground Crew

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2.14 Block Diagram - DVCS6100 with Intercom Amplifier

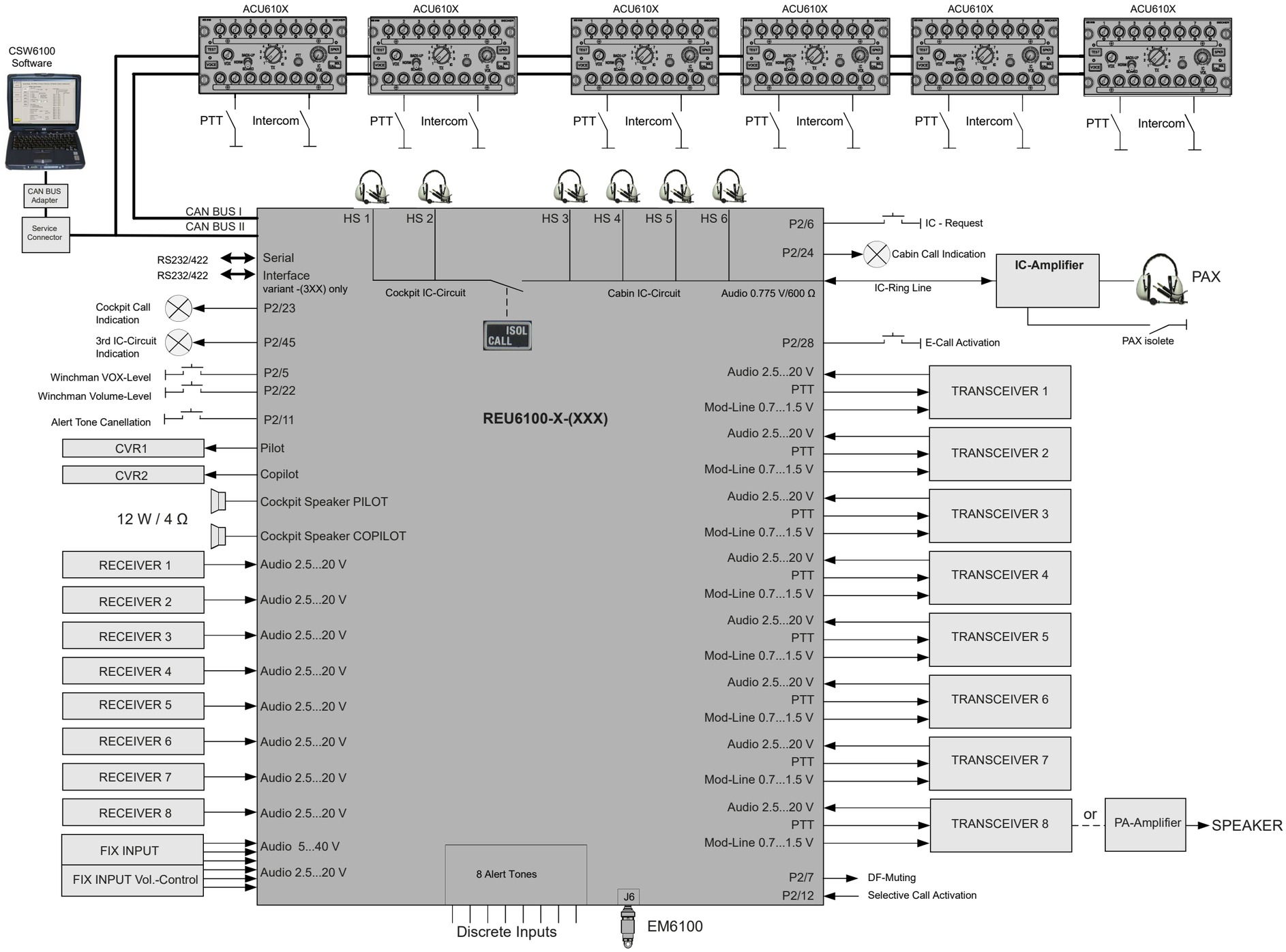

Figure 33: Block Diagram - DVCS6100 with Intercom Amplifier

Block Diagram - DVCS6100 with Intercom Amplifier

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2.15 Block Diagram - DVCS6100 with Glass Cockpit Application

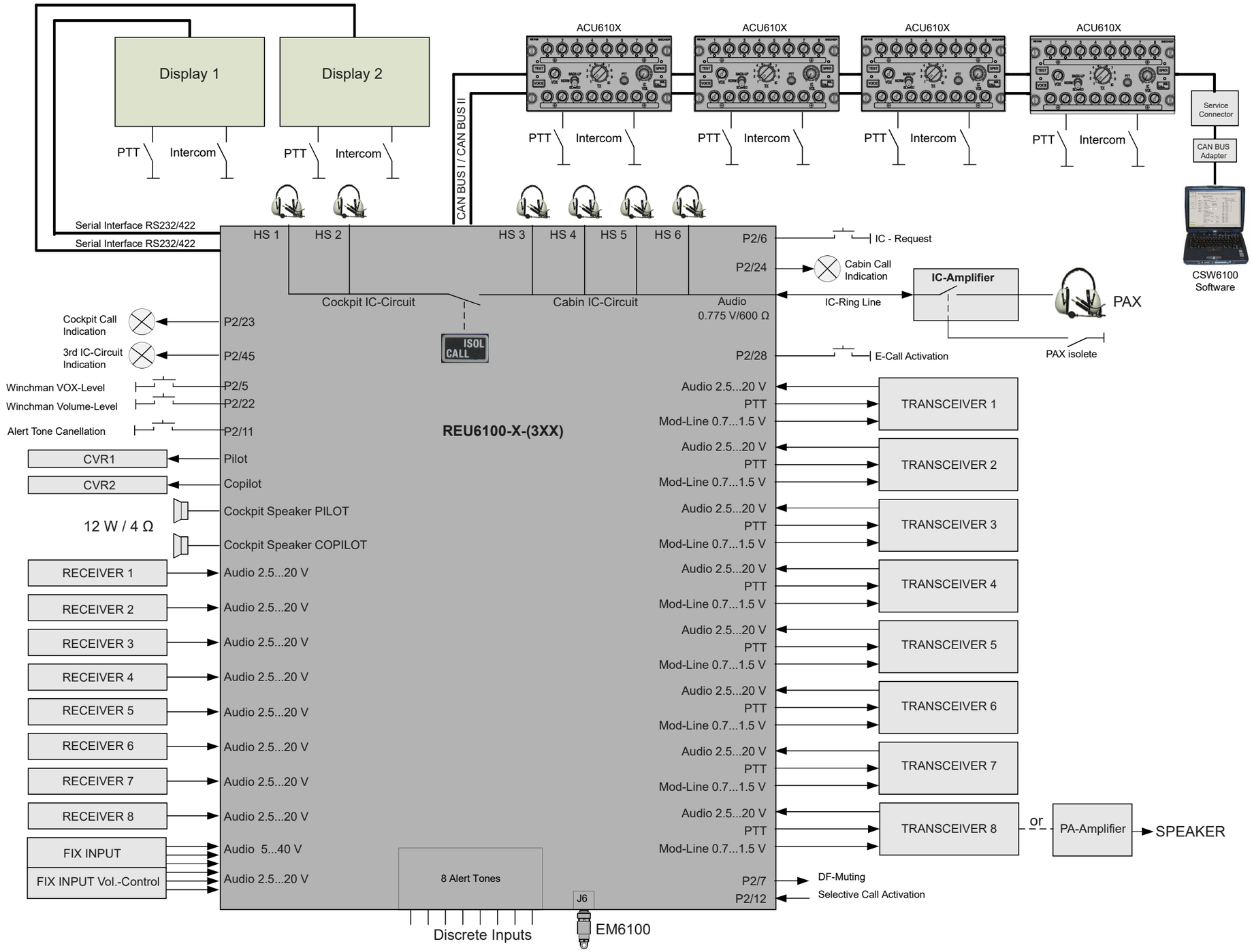

Figure 34: Block Diagram - DVCS6100 with Glass Cockpit Application

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2.16 Block Diagram - DVCS6100 with Electronic Display Application

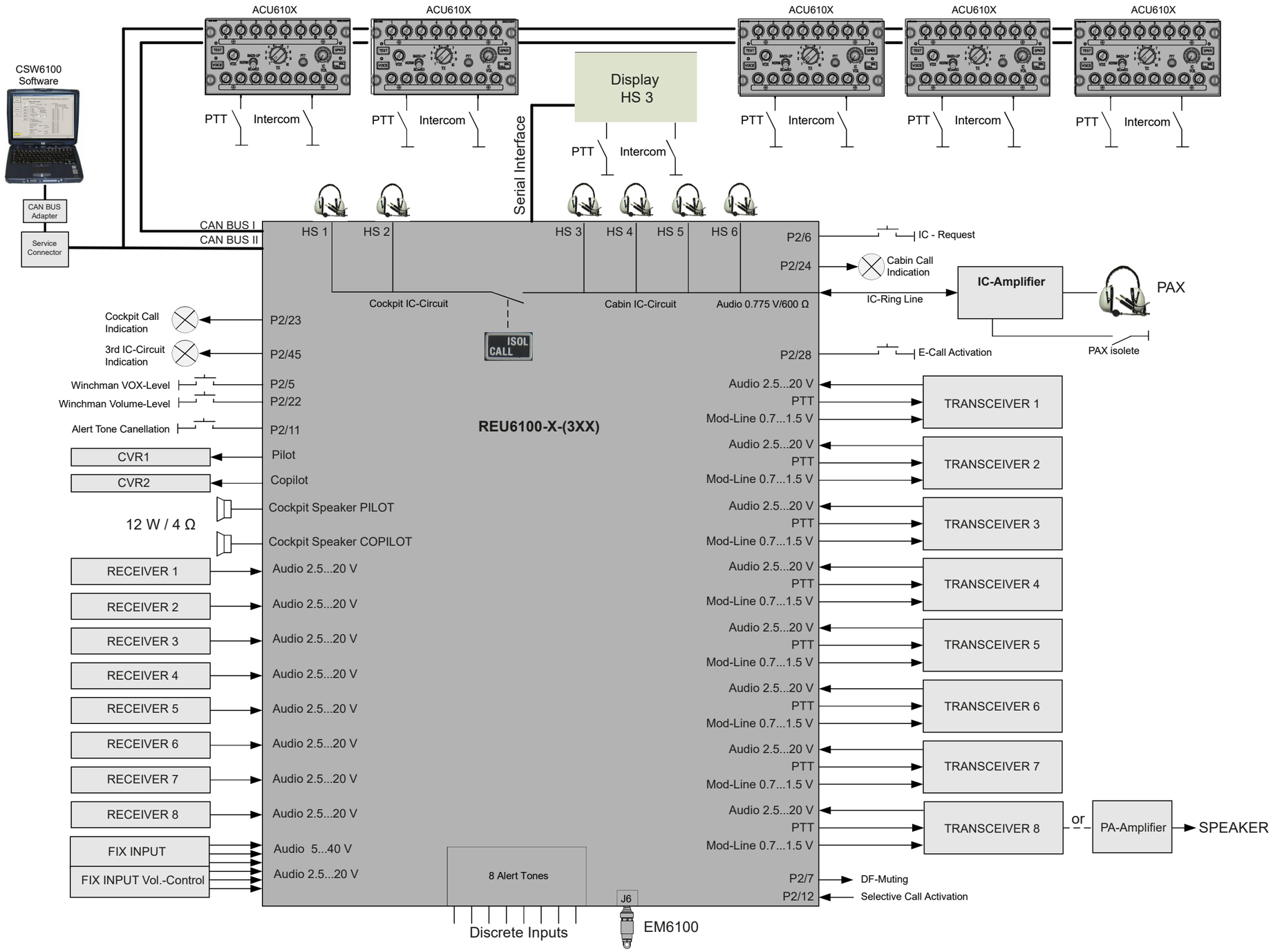

Figure 35: Block Diagram - DVCS6100 with Electronic Display Application

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2.17 Block Diagrams - DVCS6100 with Multi-REU Application

Cable Types for Multi-REU Application

Interface	Cable length (max.)	Cable type	Termination resistor
RS422	25 m	AWG 24 twisted and shielded	120 Ω on RX side between RX+ and RX-
RS232	3 m	AWG 24 twisted and shielded	not necessary

Figure 36: Table - Cable Types for Multi-REU Application

2.17.1 Block Diagrams - DVCS6100 with Multi-REU Application

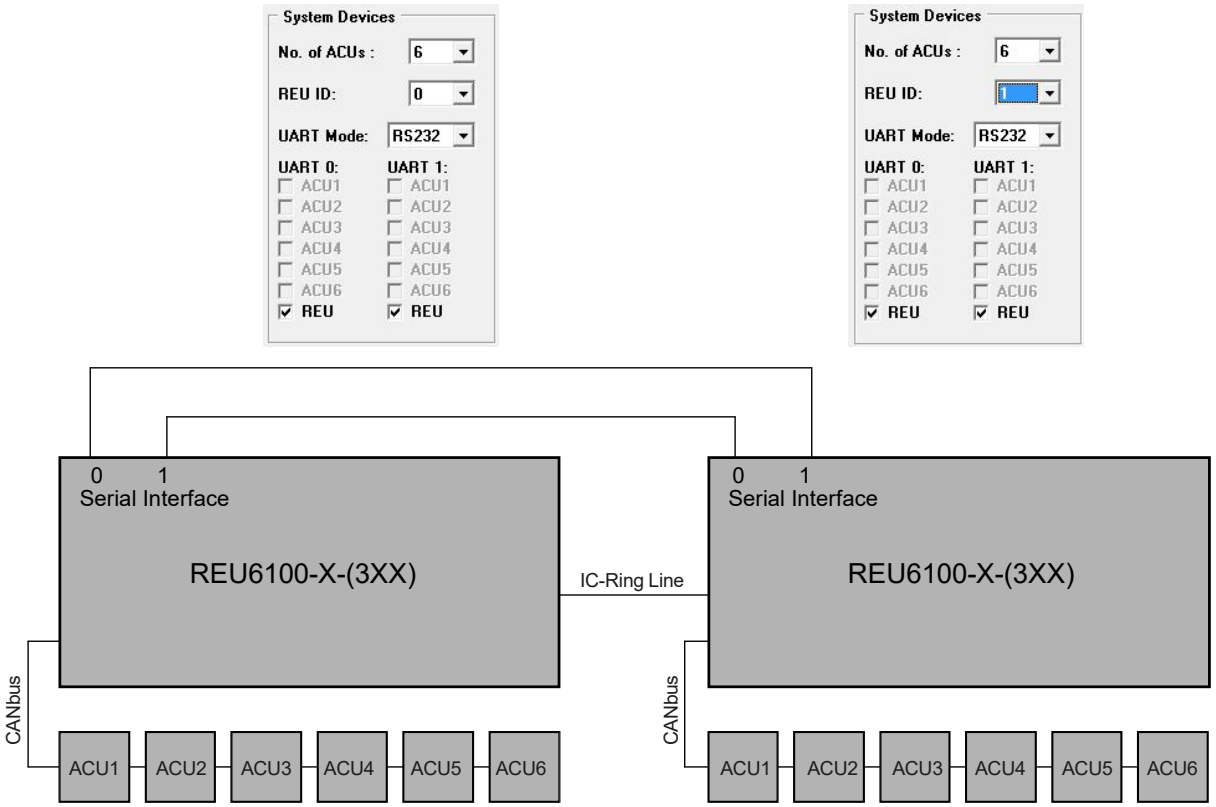

Figure 37: Block Diagram - DVCS6100 with Multi-REU Application

2.17.2 Block Diagram - DVCS6100 with Multi-REU & Glass Cockpit Application

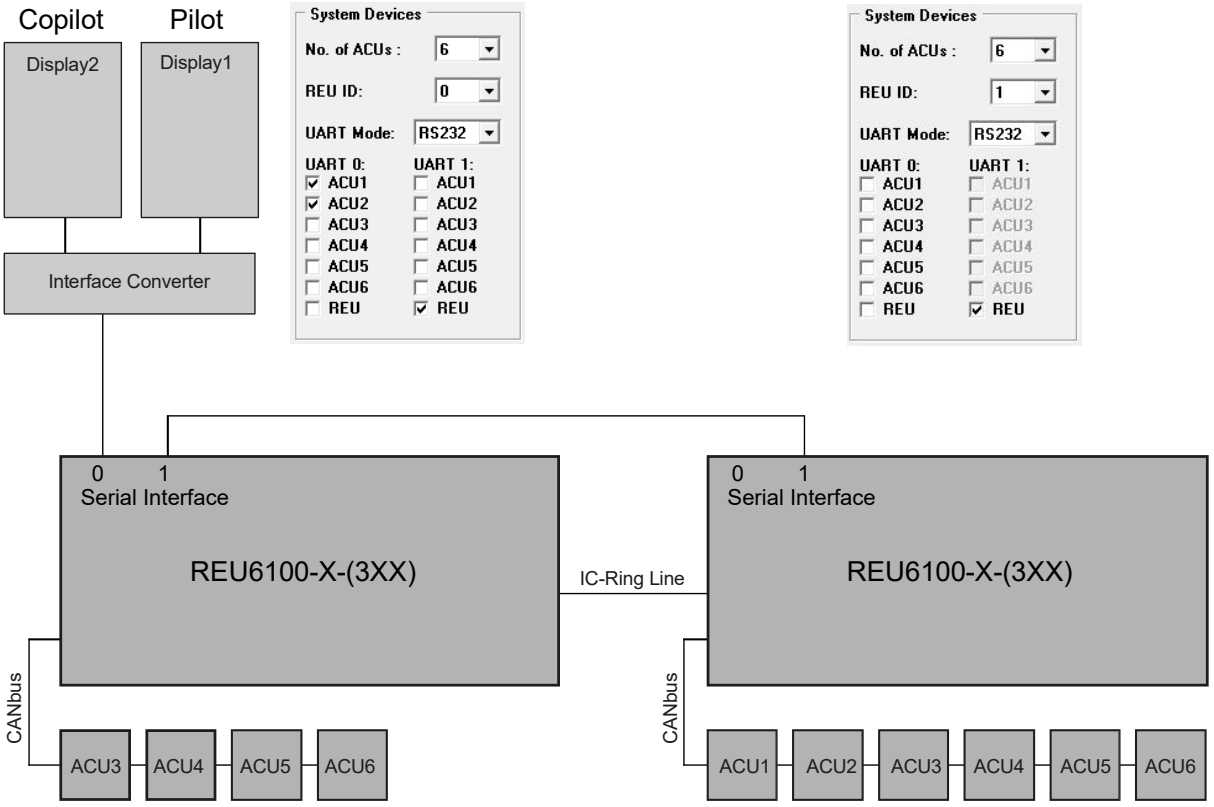

Figure 38: Block Diagram - DVCS6100 with Multi-REU & Glass Cockpit Application

2.18 Warning and Failure Indications

- It is possible to read out and reset error flags with the ACU61 or the connected glass cockpit.

For detailed information refer to the manuals:
ACU6100 I&O manual (Article No. 0589.845-071)
ACU6101 I&O manual (Article No. 0614.564-071)
CSW6100 I&O manual (Article No. 0608.939-071), Software manual
(www.becker-avionics.com/downloads/ → Intercom).
For detailed information about glass cockpit refer to the manual of the respective manufacturer product manual.

2.19 Post Installation Check

After the device/system is installed completely do a test to make sure the system functionality. Make sure that the compliance with the authority required procedures is obeyed.

The description that follows gives guidance for such tests.

2.19.1 Mechanical Installation and Wiring Check

- Make sure that all cables are attached and the shields are connected to ground.
- Check the movement of all controls to verify there is no interference.
- Make sure that all screws are tight and the connections are mechanically secured.

2.19.2 Power Supply

- Examine the power supply lines and confirm correct polarity. Don´t apply reverse voltage!
- Make sure that the power supply is within the specified limits, with and without a running engine.

2.19.3 Power On Check

- Power-up the aircraft systems and confirm normal operation of all functions of the REU6100.
- For ACU610X devices refer to the operation section of the ACU610X manual for specific operational details (www.becker-avionics.com/downloads/ → Intercom).

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3 Operation

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3.1 General

The chapter "Operation" contains information and instructions for safe operation of the device(s).

NOTICE

- The REU6100 does not have any operator controls.
- Some adjustments of the operating parameters are only available by the configuration setup*.

*For more information refer to the software manual "CSW6100... " (www.becker-avionics.com/downloads/ → Intercom).

3.2 Device Description

3.2.1 Device Assignment

This manual is valid for the following devices:

- See page 37.

3.2.2 Packing, Transport, Storage

- See page 36.

3.2.3 Scope of Delivery

- See page 37.

3.2.4 State of Delivery

- See page 37.

3.2.5 Additional Required Equipment

- See page 37.

3.2.6 Type Plate

- See page 38.

3.3 Operation

NOTICE

- The REU6100 does not have any operator controls.

3.3.1 Operating with Becker Avionics Controller ACU610X

For detailed information refer to the manuals:
ACU6100 I&O manual (Article No. 0589.845-071)
ACU6101 I&O manual (Article No. 0614.564-071)
CSW6100 I&O manual (Article No. 0608.939-071), Software manual
(www.becker-avionics.com/downloads/ → Intercom).

3.3.2 Operating with Glass Cockpit

For detailed information refer to the manual of the respective manufacturer product manual.

3.4 Start-Up

The system DVCS6100 starts with a "Power On Built in Test" (PBIT).

- For more details see "Build In Test Equipment (BITE)" page 27 and ACU6100/ACU6101 I&O manuals.

3.5 Headset

- The REU6100 can operate up to six headsets with dynamic or standard microphones.

3.6 PTT Key

The standard input for the PTT activation is the ACU610X (user interface).

- If some users have the same priority level, the priority is given to the user who first push the Transmit-PTT (TX-PTT).
  - The-Transmit PTT has always priority over Intercom-PTT (IC-PTT).
- The permission to use the Transmit-PTT can be individual configured for any ACU610X.

3.6.1 PTT Stuck Detection

- The PTT activation to a radio stops automatically after 180 s of continuous transmission.
- The PTT stuck detection can be enabled or disabled by the configuration setup*.

*Some adjustments of the operating parameters are only available by the configuration setup.
For more information refer to the software manual "CSW6100... " (www.becker-avionics.com/downloads/ → Intercom).

3.7 Audio Muting

The REU6100 can operate with unmuted intercom and transmitter reception audio during transmit mode.

- Monitoring of selected transmitter radios and the intercom audio during transmit mode can be enabled or disabled by the configuration of REU6100 for any operator with ACU610X.
- RX-channels are always muted during transmit mode.

3.8 Speaker

The REU6100 has two adjustable speaker outputs.

- One can be controlled from the pilot audio control device.
- One can be controlled from the copilot audio control device.

3.9 Cockpit Voice Recorder (CVR)

The REU6100 has two cockpit voice recorder outputs for the combined mike and phone signal.

- One for pilot.
- One for copilot.

3.10 Alert Tones

The REU6100 has eight predefined alert tones.

- Each tone can be started by a discrete input signal (low active).
- A separate discrete input can be used to cancel the warning tones by an external switch.

3.11 Signal Tones

- The REU6100 has two signal tones:
  - The intercom request signal.
  - The E-call signal.
- Both signals can be enabled or disabled by the configuration setup*.

*Some adjustments of the operating parameters are only available by the configuration setup.
For more information refer to the software manual "CSW6100... " (www.becker-avionics.com/downloads/ → Intercom).

3.12 Activation Signal Tones

- The REU6100 can operate with external switches for the signal tones intercom request and E-call.

3.13 Activation - Selective Call

- The REU6100 has a selective call activation input.
- This input can be enabled or disabled by the configuration setup*.
  Detailed information see ACU610X manuals
  (www.becker-avionics.com/downloads/ → Intercom).

*Some adjustments of the operating parameters are only available by the configuration setup.
For more information refer to the software manual "CSW6100... " (www.becker-avionics.com/downloads/ → Intercom).

3.14 Winchman Operation

The winchman function includes VOX-level and volume-level adjustments without access to a control device.

- The winchman functionality can be given to any ACU610X or headset (without installed ACU610X) by the configuration setup.
- With two external push buttons the VOX-level and volume-level can be remotely controlled by the winchman operator.
  - Push one of the two external push buttons and the winchman function will be started.
  - This enables the winchman to increase the VOX-level and the volume-level for his headset.
- VOX-level adjustment:
  - Push the VOX-level button for a short time (0.3 ...≤ 3 s),
    the VOX-level is increased until the maximum value is reached.
  - Push the button ≥ 3 s,
    the VOX-level is reset to the value selected on the related ACU panel.
  - The VOX-level is reset too,
    when the volume control or VOX control on the ACU is changed
- Volume level adjustment:
  - Push the volume level button for a short time (0.3 ...≤ 3 s),
    the volume level is increased until the maximum value is reached.
  - Push the button ≥ 3 s,
    the volume level is reset to the value selected on the related ACU panel.
  - The volume level is reset too,
    when the main volume control or VOX control on the related ACU is changed.

3.15 Intercom Circuits

The REU6100 can operate in different intercom circuits:

- Cockpit crew.
- Cabin crew.
- IC-ring line
  (connected to the cabin, cockpit or 3rd-IC-circuit; configurable by the configuration setup*).
- 3rd-IC-circuit (has to be controlled by an external switch).
- Cockpit and cabin intercom circuits can be directly controlled by the ACU610X.

*Some adjustments of the operating parameters are only available by the configuration setup.
For more information refer to the software manual "CSW6100... " (www.becker-avionics.com/downloads/ → Intercom).

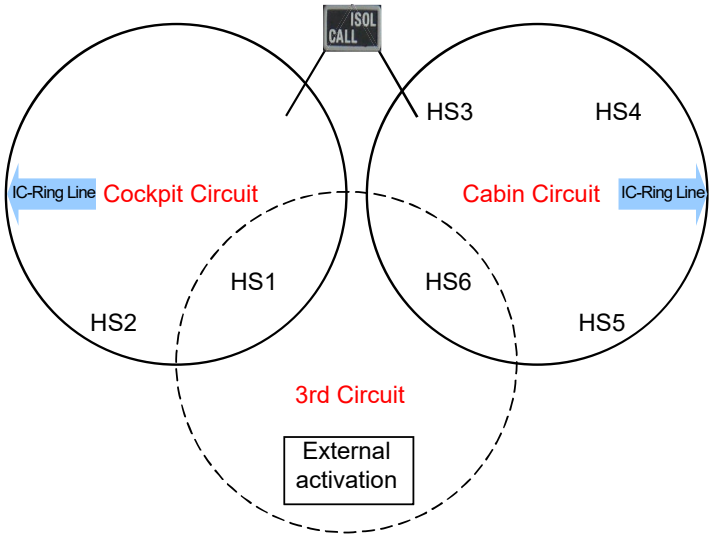

Figure 39: Example - Intercom Configuration

3.16 IC-Indications - Cockpit Call, Cabin Call, 3rd-IC-Circuit

The REU6100 supplies output for the "Cockpit Call", "Cabin Call" and the 3rd-IC-circuit disconnect indication.

- "Cabin call": on, if cabin is isolated from the cockpit.
- "Cockpit call": on, if isolated cabin user calls the cockpit.
- "3rd-IC-circuit": on, if the 3rd-IC-circuit is on.
  Details see "Figure 41: Intercom Circuits - 3rd-IC-Circuit for Special Mission Operation" page 101.

3.16.1 IC-Ring Line connected to the Cabin (Standard Configuration)

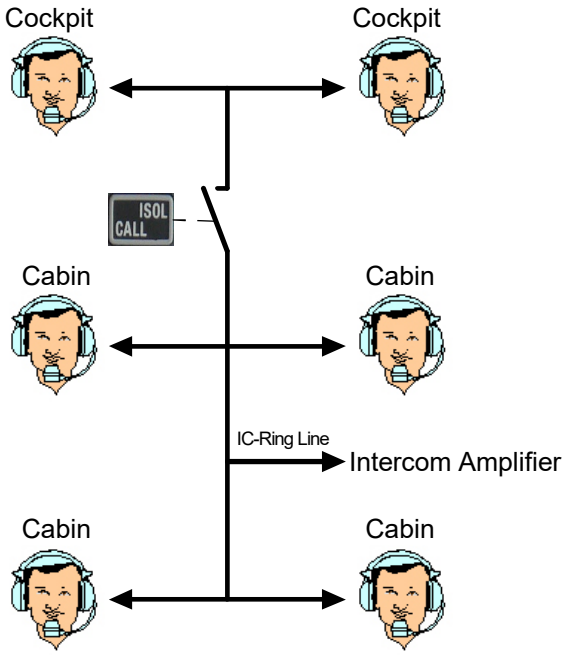

Figure 40: Intercom Circuits - Standard Configuration

3.16.2 IC-Ring Line connected to the Cockpit

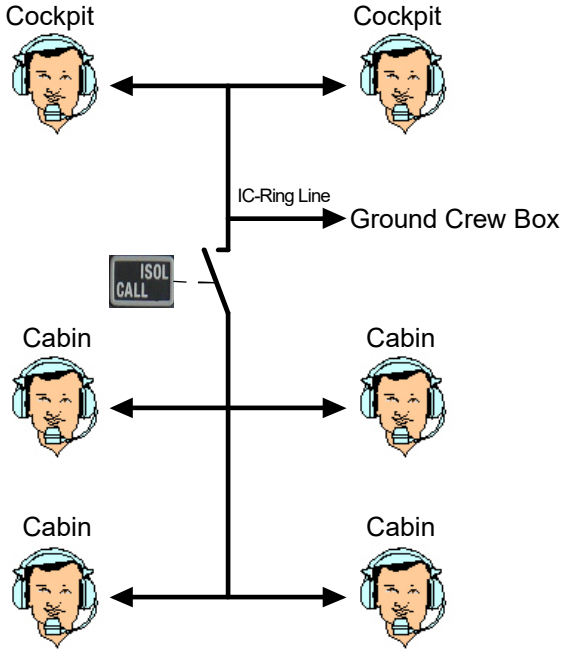

Figure 41: Intercom Circuits - IC-Ring Line connected to the Cockpit

3.16.3 **3rd-IC-Circuit** for Special Mission Operation

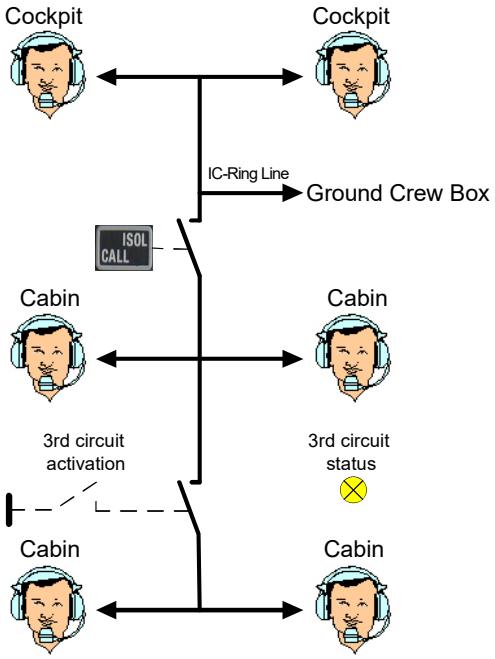

Figure 42: Intercom Circuits - 3rd-IC-Circuit for Special Mission Operation

3.17 Muting Signal

- The REU6100 has a muting output signal for a direction finder system (low active).

3.18 Operation "Headset without ACU610X"

- The operators can use headsets without ACU610X.
- The adjustment is done by the configuration setup* for:
  - IC-volume control.
  - Main volume control.
  - Individual channel-volume.
  - VOX.
  - Monitoring of radios.
  - Transmit on one predefined TX-channel.
- For all the navigation radios (RX1-RX8) the voice filter is always inactive.

*Some adjustments of the operating parameters are only available by the configuration setup.
For more information refer to the software manual "CSW6100... " (www.becker-avionics.com/downloads/ → Intercom).

3.19 Operation "Headset connected to ACU"

- A headset only operator can be connected to one ACU from any other operator.
- All control functions of the ACU are parallel valid for this headset operator, except VOX-functions, mike sensitivity and phone output.

NOTICE

- If transmit is enabled for the operator, his headset function will be isolated from the connected ACU operator while transmit mode is selected.

3.20 Operation "3rd-IC-Circuit"

- Any ACU610X and headset in the cockpit, cabin circuit and the IC-ring line can be connected to the 3rd-IC-circuit.
- The function must be enabled by the configuration setup*.

*Some adjustments of the operating parameters are only available by the configuration setup.
For more information refer to the software manual "CSW6100... " (www.becker-avionics.com/downloads/ → Intercom).

3.21 Marker Mute Function

The REU6100 has a marker mute function.

- If started by the operator the marker channel is muted for 30 seconds.
- The marker mute can be individual enabled for each operator by the configuration setup*.

*Some adjustments of the operating parameters are only available by the configuration setup.
For more information refer to the software manual "CSW6100... " (www.becker-avionics.com/downloads/ → Intercom).

3.22 Back-up Mode and Slave Mode

The REU6100 can operate in back-up and slave mode.

For detailed information refer to the manuals:
ACU6100 I&O manual (Article No. 0589.845-071)
ACU6101 I&O manual (Article No. 0614.564-071)
(www.becker-avionics.com/downloads/ → Intercom).

3.23 Double Transmit and Multi Transmit (Simulcast) Mode

The REU6100 can operate in double transmit or multi transmit (simulcast) mode at the same time.

- In double transmit mode the REU6100 can transmit on two predefined radios.
- In multi transmit mode the operator can select on which radios he wants to transmit at the same time from his ACU610X.
- The radios for transmit operation at the same time are predefined by the configuration setup.
- The operator can still listen to radios which are not configured for multi transmit operation.

3.24 Guard Radio PTT Function

The REU6100 has a guard radio PTT function for 2 guard radios.

- The transmission of the guard radio is started by guard radio PTT (discrete inputs alert tone 1 and Selective Call input).
- Two guard radio PTTs can be configured to TX-channel 1...8 and to 2 of 6 ACU610X or headset operators.
- Only one guard radio PTT (discrete input) can be configured to one ACU610X - or one headset operator.
- If a guard radio PTT (discrete input) is started, the related radio status LED blinks.
- The guard radio PTT has a higher priority than any other PTT for this radio.
    - If two operators are configured for the same guard radio, the priority is given to the user who starts his guard radio PTT first.

3.25 Relay Mode

The REU6100 can operate in relay mode alternative to dual TX- and multi TX-mode. The channels must be enabled for this function in the configuration*.

The function is used to:

- Increase the communication range.
- Connect operators of different radio areas/services.

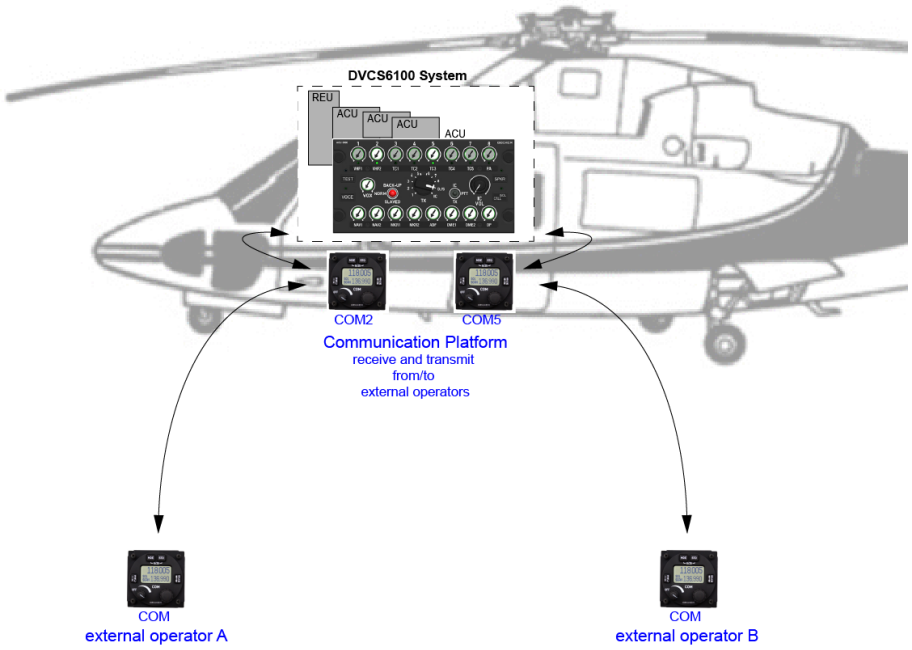

Figure 43: Relay Mode - Communication Flow

Notice:

- Only one control device (ACU) can be selected as a relay operator (configuration*).
- Only two TX-channels can be in relay mode.
  - When on one TX-channel a signal is received automatically the other TX-channel is in transmit mode.
- The selection of the TX channels for relay operation must be configured in the configuration setup* (for information about the operation in relay mode refer to the ACU610X manuals (www.becker-avionics.com/downloads/ → Intercom).
- In the relay mode the number of independent operators (control devices ACU) decreases around 2. For example: REU6100-3-(XXX) from max.6 to max. 4 independent operators.

*For information about configuration refer to the manual "CSW6100... "(www.becker-avionics.com/downloads/ → Intercom).

3.26 Contact Data

In case of additional questions contact your local Becker Avionics dealer or forward your request direct to Becker Avionics Customer Service.

In the event of damage or a defect, the entire device must be returned for repair. The repair must be done by trained Becker Avionics personnel.

For relevant department and addresses, please see contact info page 2.

Any change by the user excludes any liability on our part (excluding the work described in this manual).

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***** End of the Document *****