BECKER
AVIONIC SYSTEMS

Remote Electronic Unit

REU 5100-(x)-(xxx)

Installation and Operation

Manual DV 64430.03
Issue 3 February 2004

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DV 64430.03 / Article Number 0545.678-071

SAFETY INFORMATION

For the safe operation of Remote Electronic Unit REU 5100 the following notes have to followed :

- Do not connect the unit to an a.c. voltage or voltage source of more than 30.3 V d.c.
- Do not connect the unit to a power source with the polarities incorrect.
- The unit should be protected from the aircraft system by its own 5 A circuit braker.
- A speech test is to be performed before startup.
- Use a loud voice for speech communication and hold the microphone close to the lips. Otherwise cabin noise can be intrusive and make understanding difficult.
- Use only microphone or headsets which are suitable for use in the aircraft.

Additional instructions :

- Additional safety instructions in this manual shall also be complied with.

Certified Quality System

The Becker quality management system is certified according to:

DIN EN ISO 9001 CERT Reg. - Nr. 70 100 M 2082

Licenses and Approvals:

BWB-1921Y-B07/9701	Manufactures license for aviation equipment to the German armed forces
LBA.G.0075	Production Organization Approval, JAR-21, Subpart G
LBA.0166	Maintenance Organization Approval, JAR-145

Certificate of qualitiy

Dear Customer,

you have decided to buy a Becker product. You are assured of receiving a product that is manufactured using the most modern methods available. This product was developed, manufactured and tested in compliance with our quality management system standards.

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Section 1 GENERAL INFORMATION

1.1 Introduction

The Becker REU 5100-(x)-(xxx) Remote Electronic Unit is described in the"Installation and Operation" DV 64430.03 and "Maintenance and Repair" DV 64430.04 manuals.

The manuals contain the following sections :

Section		DV 64430.03	DV 64430.04
1	General Information	X	X
2	Installation	X	X
3	Operation	Not relevant	Not relevant
4	Theory of Operation		X
5	Maintenance and Repair		X
6	Ilustrated Parts List		X
7	Modification and Changes		X
8	Circuit Diagrams		X
9	List of the used Abbreviations		X

1.2 Application

The REU 5100-(x)-(xxx) remote electronic unit is part of the Digital Voice Communication System DVCS 5100 and provided for installation in an aircraft. Together with the ACU 5100-(x)-(xxx) audio control unit forms the REU 5100-(x)-(xxx) the audio selector and intercom system in the aircraft. Maximum six audio control units can be connected to the REU 5100-(x)-(xxx).

1.3 General description

1.3.1 Mechanical description

The REU 5100-(x)-(xxx) remote electronic unit is designed for installation in the avionics compartment of aircraft. The remote electronic unit is a monoblock device in standard ¼ ATR short case.

The four unit connectors are fitted on the front and one unit connector on the back. The remote electronic unit consists of the following electrical assemblies respectively circuit boards :

- Dual-Headset Amplifier Board (max. 3 ea. for 6 user),
- Analog Board,
- DSP Board,
- CPU Board,
- Bus Board,
- Connector Board.

1.3.2 Electrical description

The Remote Electronic Unit receives the commands from the Audio Control Units and accordingly influences and processes all incoming and outgoing audio signals, performs the logical functions necessary for keying the transceivers and for aircraft intercommunication and provides generation of ten different aural warning signals which may be activated through discrete control lines.

The REU 5100-(x)-(xxx) provides the following features :

- 22 balanced audio inputs, of which are
  - 8 transceivers or 7 transceivers and PA sidetone
  - 8 receivers
  - 6 fixed inputs

- 8 warning inputs (active low)

- 8 PTT outputs (switched to ground)

- 4 control outputs for any logical external activations (i.e.direction finder blanking)

- 7 control inputs for any logical DVCS-action (i.e.winchman vox level change)

- The input sensitivity for each transceiver is in the range of 2.5 V..... 20 V. The input sensitivity is programmable in the factory or system integrator.

- Control of monitoring volume of the TX and RX devices connected in the range of 0...-54 dB to adapt to the different RX signals.

- When activated on ACU, insertion of 1020 Hz notch filter attenuating at least 26 dB for listening to the NAV voice modulation without disturbance. The filter function can be assigned to each of the eight receiver buttons individually during factory or system integration setup.

- Combination of all selected and preset audio signals.

- Insertion of a 400 Hz notch filter to suppress aircraft power supply interferences. The notch filter can be enabled or disabled by factory or system integrator. When monitoring the Marker receiver or the ADF, the filter is disabled.

- Main Volume Control by 0…-40 dB for headphone and -if enabled- for speaker amplifier.

- Muting of receiver audio during transmission.

- Amplification of summed audio signal to 250 mW into 300 Ω or 500 mW into 8 Ω.

- Switching on and off the cockpit and cabin speaker amplifiers and delivering an output of 12 W into 4 Ω.

- Muting of the loudspeakers during transmission and intercom operation to avoid acoustic feedback.

- Conditioning of mike audio to 100...250 mV into 150 Ω (standard carbon mike) or 0.5...4 mV into 20 Ω (dynamic mike) :

  - Providing a balanced output of ≥ 1.5 V into 150 Ω and distribution to 8 TX modulation lines.
  - Automatic Gain Control (AGC).
  - Providing the standard mike supply.

- Distribution of the PTT to eight 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.

- Generation of an artificial sidetone from the mike signal for radio transceivers which do not feature a built-in sidetone during x-mission (e.g. FM radios). The artificial sidetone can be individually programmed for every one of the 8 transceivers by factory or system integration setup.

- Conditioning of mike audio for intercom operation :
  - Enhancing to IC Audio Line level 0.775 V into 600 Ω .
  - Intercommunication VOX control. Attack threshold and hold time are factory or system integrator adjustable.

- 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 .... 40 dB.

- Interconnection and separation of the IC circuits depending on depressing the ISOL buttons on the ACU. Activation of an optical and acoustical alert when depressing the CALL button(s).

  Winchman connection facility in parallel to the copilot's headset. Individual VOX level and Volume adjust is to be performed via discrete control line VOL-adjust and VOX-level adjust.

  1. A single "click" of the VOX-level adjust line will increase the VOX-level by a defined amount. Activating the VOX-level adjust for a defined time, will reset the VOX-level to the start level as established before Winchman operation.

  2. A single "click" of the VOL-adjust line will increase the Volume- and IC-level of the same time by a defined amount. Activating the VOL-adjust line for a defined time, will reset the Volume- and 1C-level as established before Winchman operation.

3. Input definition for VOL-adjust line and VOX-level adjust line will be as following:

Single click:
active LO, Input voltage ≤ 1 V (min. LO time 0.3 s, max. LO-time ≤ 3 s)

Reset click:
active LO, Input voltage ≤ 1 V (LO-time >3 s)

Clearance of monitoring to third (or further) Audio control unit(s) by depressing the CLR button on pilot's or copilot's ACU. Optical indication of clearance.

Generation of 10 different warning signals (2 ea. continuous, 4 ea. pulsed, 4 ea. intermittent) in the frequency spectrum of 700 … 4500 Hz.

These warning tones are activated via 8 discrete control lines (active LO ≤ 1 V) and addition of

those signals to the summed audio signal.

Via configuration software it can be determined which of the alert signals are:

muted during transmission

set at the priority level

set at cancellation possibility

Interface facility for data transfer between REU and ACU and to configurate the Audio Control Unit by means of appropriate equipment.

- Initialization of a CPU selftest upon power-on and a test of controls and indications as to the extent of the BITE routine activated by the Audio Control Unit.

- Provision of internal operation voltage(s) redundantly from either of the airframe power supply buses. The REU also deliver the supply voltage required by the Audio Control Units (except for the illumination supply which is taken directly from the dimmable aircraft lighting bus).

- Relay controlled initiation of SLAVE operation to connect one operator's headset just in parallel to the other's (this function with pilot's and copilot's ACU only)

- Relay controlled fall-back in case of Backup : Assignment of radios and receivers to their operators. Headset 1 (normally the pilot) is connected to COM2 and Fix 2 , headset 2 (copilot) to COM 1 and Fix 1. Back-up operation is initiated either manually using the separately hard-wired BACK-UP switches on the Audio Control Units (if provided) or automatically upon power supply failure to the REU, or if the internal power supply of the Remote Electronic Unit itself is defective.

The audio processing circuits are realized in a modular design. Each Audio Control Unit is assigned to an individual processing module. From the electrical and mechanical point of view thr modules are identical for upgrading and interchangeability. Configuration of special TX / NAV assignments for Back-up operation is realized by means of jumpers.

1.4 Technical data

1.4.1 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 3 ACU's)	peak 4.5 A average 1.5 A

1.4.2 Monitoring

1.4.2.1 Transceiver inputs

Number	8 or 7 + PA sidetone
Sensitivity	2.5 … 20 V adjustable
Impedance	600 Ω balanced / floating
Switch-off attenuation	≥ 80 dB
Crosstalk between inputs	≥ 70 dB
Individual volume control range	0 … -54 dB
Forced monitoring	0 dB / -6 dB selectable

1.4.2.2 Navigation receiver inputs

Number	8
Sensitivity	2.5 … 20 V adjustable
Impedance	600 Ω balanced / floating
Switch-off attenuation	≥ 80 dB
Crosstalk between inputs	≥ 70 dB
Individual volume control range	0 … -54 dB
Muting during transmission	≥ 80 dB
Ident filter attenuation (1020 Hz)	≥ 26 dB switchable , may be assigned to any NAV
Clearance for cabin ACU(s)	CLEAR key (selectable)

1.4.2.3 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 between inputs	≥ 70 dB
Muting during transmission	0 dB / ≥ 80 dB selectable

1.4.2.4 Warning inputs

Number	8
Function	active Low, ≤ 1.5 V
Input Current	max. 1 mA

Input No.	Warning tone
1	2400 Hz continued
2	1600 Hz pulsed
3	2400 Hz pulsed
4	3840 Hz pulsed
5	1200 intermittent
6	2133 intermittent
7	3200 intermittent
8	4800 intermittent

1.4.3 Headphone amplifier

– one ea. per ACU –

Output power	250 mW (8.66 V) into 300 Ω or 500 mW into 8 Ω or 2 x 250 mW into 2 x 8 Ω balanced transformer output, ungrounded
Distortion	≤ 2.5 % at 1 kHz

Frequency response	300 Hz … 6 kHz (0/–3 dB)
Signal-to-noise ratio	≥ 70 dB
Main volume control range	0 … -40 dB

1.4.4 Speaker amplifier

Output power (1sec on, 4secs off)	12 W (6.93 V) into 4 Ω (-0.5 / + 1.0 dB) at normal supply voltage
Longtime overload protection	thermally
Output Type	unbalanced
Distortion	≤ 2.5 % at 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 … -40 dB
Muting during transmission	≥ 80 dB
Muting during intercom operation	≥ 80 dB

1.4.5 Aural warning generator

Continuous tones	2400 Hz
Pulsed tones	1600 Hz , 2400 Hz, 3840 Hz,
Intermittent tones	1200 Hz, 2133 Hz, 3200 Hz, 4800 Hz,
Service tone 1	800 Hz intermittent
Service tone 2<	spare
Pulsed means	$T_{ON} = T_{OFF} = 0{,}5$ sec.
Intermitted means	3 pulses 0.17 sec, repetition rate 4 sec
Activation (warning control lines)	active LO, ≤ 1.5 V
Input current	max. 1 mA

1.4.6 Transceiver modulation

-one mike input per ACU-

1.4.6.1 Mike input (standard carbon mike)

Sensitivity	100 … 250 mV nominal
Impedance	150 Ω
Excitation voltage (idle mode)	12 V DC
Feed resistance	390 Ω

1.4.6.2 Mike input (dynamic mike)

Sensitivity	0.5 … 4 mV nominal
Impedance	20 Ω balanced / floating

1.4.6.3 Automatic gain control

AGC threshold (adjustable)	80 … 150 mV (standard mike) 0.2 … 1 mV (dynamic mike)
Output regulation (Δu_e = +20 dB)	≤ +2 dB

1.4.6.4 Mike line amplifier

Number of mike lines	8
Output voltage	70 mV … 1.5 V adjustable
Load impedance	150 Ω nominal
Distortion	≤ 2.5 % at 1 kHz
Frequency response	300 Hz … 6 kHz (0/-3 dB)
Signal-to-noise ratio	≥ 70 dB

1.4.6.5 Artificial sidetone

-individually selectable for each mike line-

Sidetone level	0 / -10 dB selectable step 3 dB, standard - 6 dB

1.4.6.6 Key lines (PTT Out)

Number	8
Switch action	active LO
Switch capability	27,5 V DC / 500 mA

1.4.6.7 TX indications

Number	8 LED's

1.4.6.8 CVR connection

Channel 1 (pilot)	natural Mike + Headphone
Output voltage	Mike signal: 800 mV Headphone signal: -3 dB ref. Mike
Impedance	5 kΩ
Channel 2 (copilot)	natural Mike + Headphone
Output voltage	Mike signal: 800 mV Headphone signal: -3 dB ref. Mike
Impedance	5 kΩ

1.4.6.9 Control inputs (discretes)

Numbers	6
Activation	active LO, ≤ 1.5 V
Input current	max. 1 mA

Input No.	Function
1	Winchmann VOX- level select
2	Intercom request CALL
3	Winchmann Volume level select
4	Warning tone cancellation
5	Reserved
6	Reserved

1.4.6.10 Control outputs (discretes)

Numbers	4
Switch action	active LO
Switch capability	27.5 V DC / 500 mA

Input No.	Function
1	DF- blanking
2	Cockpit CALL indication
3	Cabin CALL indication
4	spare

1.4.6.11 Back-up monitor

Number	1
Switch action	closed contact
Switch capability	active LO, ≤ 1 V / 500 mA

1.4.7 Intercom operation

Number of participants	up of ACUs (max 6) and clients connected with the IC line
VOX threshold (adjustable)	10 … 100 mV (standard mike) 50 … 500 µV (dynamic mike
VOX hold time	0.5 … 5 sec, adjustable
Distortion	≤ 2.5 % at 1 kHz
Frequency response	300 Hz … 6 kHz (0/-3 dB)
Signal-to-noise ratio	≥ 60 dB
Input / output voltage on IC audio lines	775 mV / 0 dBm
Input / output impedance of IC audio lines	600 Ω
Priority muting during transmission	≥ 80 dB
IC switch-off attenuation	≥ 80 dB

Intercom circuits	cockpit / passenger or operator area
Call activation	CALL button (selectable)
Call indication	optical (CALL LED) and acoustical (800Hz pulsed)
Quit function connection / separation of IC circuits	ISOL button (selectable)

1.4.8 Build In Test Equipment (BITE)

1.4.8.1 Power On Build In Test (PBIT)

Activation	automatically after Power On
Coverage (REU + all ACU5)	Controllers and memories Aural warning generator Headphone and speaker Amps. Power supply
Indication system under test	Test LED lights up
Duration	max. 5 sec.
Test result output	GO: after Test is finished, the TEST-LED lights for 5 sec. Afterwards system starts to work. NO GO: TEST LED flashes for 5 sec. Afterwards system starts to work, if no fatal error.

1.4.8.2 Continuous Build In Test (CBIT)

Activation	permanently
Coverage	controllers and data transfer
Failure indication	optical; TEST LED flashes and can be resetted, if no fatal error

1.4.8.3 Initiated Build In Test (IBIT)

Activation	pressing the TEST button
Coverage	up to 95 % of all safety relevant faults up to 80% of all safety relevant faults

1.4.8.4 Build In Test Representation

Test running indicator	Test LED lights up during test is running (5 sec.), all switch buttons and lights can be tested for the individual ACU‘s. Optical and acoustical: lighting of resp. LED according to the pressed pushbutton; also a Beep tone 800 Hz by activation of rotary switch or increment sensor.
Test result output	GO: After Test is finished, the TEST-LED lights for 5 sec. Afterwards system starts to work. NOGO: Test LED flashes

Diagnostic: A short press of the TEST key resets the NOGO indication; the TEST-LED goes off. Holding the TEST key >2 sec., displays an error code on the TX/RX-LED‘s. Pressing the TEST key once more resets the displayed LED‘s and the system continues working.

The last 10 I-Bit results will be stored in a non volatile memory and can be read out.

1.4.8.5 Back-up operation

manually activated	using Back-up switch
automatically activated	upon supply buses failure or defection of internal power supply or processor failure
Transceiver (radio) assignment	ACU 1 - COM 1, ACU 2- COM 2
Fixed input	ACU 1 - FIX 1, ACU 2- FIX 2
Intercom level pilot/copilot	fixed at 50%

1.4.9 Control Data transfer ACU - REU

Interface	BBI, Becker Bus Interface
Protocol	BBP, Becker Bus Protocol

1.4.10 Programming mode

Interface	BBI, Becker Bus Interface

1.4.11 Mechanical data

Length	338.95 mm
Width	57 mm
Height	195 mm
Standard	¼ ATR short
Weight	≤ 2.0 kg
Mounting	ATR 404

1.4.12 Unit connectors

Input	D-Sub 50-pin P
Output	D-Sub 50-pin P
Control	D-Sub 50-pin P
Power Supply , data	D-Sub 50-pin P
B-Bus	19pol series 851
Locking devices	shift lock / bajonet

-- Connectors to be coded against inadvertent misconnecting --

1.4.13 Environmental qualification (EUROCAE/RTCA ED-14D/DO-160D)

Environmental qualification for Remote Electronics Unit REU 5100-(x)-(xxxx)

Characteristic ED-14/DO-160D	Section	Category	DESCRIPTION OF TESTS CONDICTED
Temperature/Altitude	4.0	D1	Equipment tested to Category D1
Low Temperature	4.5.1	D1	Low operating temperature -40° C Low ground survial temperature -55° C (storage temperature
High Temperature	4.5.2 4.5.3	D1 D1	High short time operating temperature +70° C High operating temperature +55° C High ground survial temperature +85° C (storage temperature
In-Flight Loss of Cooling	4.5.4	-	No auxiliary cooling required
Altitude	4.6.1	D1	50,000 ft
Temperature Variation	5.0	B	5° C/minute
Humidity	6.0	B	48 h at 65°C at 95% RH
Operational Shock	7.0	B	6 g in any direction
Crash safety	7.3	B	20 g shocks; 20 g acceleration
Vibration	8.0	S U	M F/F1 Eurocopter Specification SPX902A0002 E01, chapter 5
Explosion Proofness	9.0	X	Equipment identified as Category X, no test required
Waterproofness	10.0	X	Equipment identified as Category X, no test required
Fluids Susceptibility	11.0	X	Equipment identified as Category X, no test required
Sand and Dust	12.0	X	Equipment identified as Category X, no test required
Fungus Resistance	13.0	X	Equipment identified as Category X, no test required
Salt Spray	14.0	X	Equipment identified as Category X, no test required
Magnetic Effect	15.0	Z	less than 0.3 m
Power Input	16.0	B	Equipment tested to Category B
Voltage Spike	17.0	A	Equipment tested to Category A
Audio Frequency Conducted Susceptibility	18.0	A	Equipment tested to Category A
Induced Signal Susceptibility	19.0	A	Equipment tested to Category A
Radio-Frequency Susceptibility	20.0	WWR	Equipment tested for conducted and radiated susceptibility to Category
Radio Frequency Emission	21.0	M	Equipment tested to Category M
Lightning Induced Transients Susceptibility	22.0	A3 E3	
Lightning Direct Effects	23.0	X	Equipment identified as Category X, no test performed
Icing	24.0	X	Equipment identified as Category X, no test performed
ESD	25.0	A	Equipment tested to Category A

NVG According SPL 330 M901 E01 Issue D 3.8.99

1.4.13.1 Environmental categories :

EUROCAE/RTCA ED-14D/DO-160D
Env.Cat. [D1-]BB[(BR)][(SM)(UF/F1)]XXXXXXZBAAA[WVVR]M[A3E3]XXA

1.5 Software

All data for REU 5100-(x)-(xxx) are stored in the microcontroller. If the control elements are altered, a data transmission immediately takes place to the remote electronic unit. The software was classed as level C in accordance with the EUROCAE / RTCA document ED-12B / DO-178B.

1.6 Approvals

LBA-No.:	TBD
EASA	ETSO - C50c Audio Selector Panels and Amplifiers
Software	EUROCAE/RTCA DO-178B/ ED-12B Level C

1.7 Scope of delivery

REU 5100-(2)-(010) remote electronic unit (for max. 4 user)	Article-No.: 0527.017-921
REU 5100-(3)-(010) remote electronic unit (for max. 6 user)	Article-No.: 0543.659-921

1.8 Accessories (not contained in the scope of delivey)

Connector Kit CK 5101-C	**Article-No.: 0586.870-954**
consist of	
19-pol. cable connector, crimp	Article-No.: 0794.279-277
50-pol. cable connector (4 ea. required), crimp	Article-No.: 0774.421-277
Connector housing	Article-No.: 0575.933-277
Coding pins (4 ea. required)	Article-No.: 0782.211-277
Mounting for REU 5100-(x)-(xxx)	Article.No.: 0890.790-261
CSW 5100 configuration software	Article-No.: 0543.195-909

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Section 2 INSTALLATION

2.1 General

The installation of the remote electronic unit depends on the type of aircraft and its equipment and therefore only general information can be given in this section.

2.2 Inspection before installation

Before installing the remote electronic unit in an aircraft, carry out a visual inspection for any transport damage, paying particular attention to the following:

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

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

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

- Missing screws.

2.3 Mechanical installation

The remote electronic unit is designed for installation in the avionics compartment of an aircraftt. The necessary dimensional details are given in Fig. 2-1.

2.4 Aircraft wiring

2.4.1 General

The aircraft interwiring diagrams can be see Fig. 2-5 to Fig. 2-10. The following points are to be observed for the wiring :

a. Only cable fit for aviation (self-extinguishing) may be used. AWG 20 for power supply and AWG 24 for other cables.

b. The interface lines are each to be laid as 2-core twisted and screened (AWG 24) cables.

c. Every single cable harness of a unit connector must get a separate screening.

d. Rubber sleeves are to be fitted over the soldering points on the unit connector.

e. A fuse or circuit breaker should be fitted in the power supply of the remote electronic unit.

f. No HF cable should be included in the cable harnesses. Laying connecting cables together with cables which cary AF power or impulses is also be avoided.

g. Check the wiring carefully before switching on the units, particularly that (UB+) and (GND) have not been mixed up.

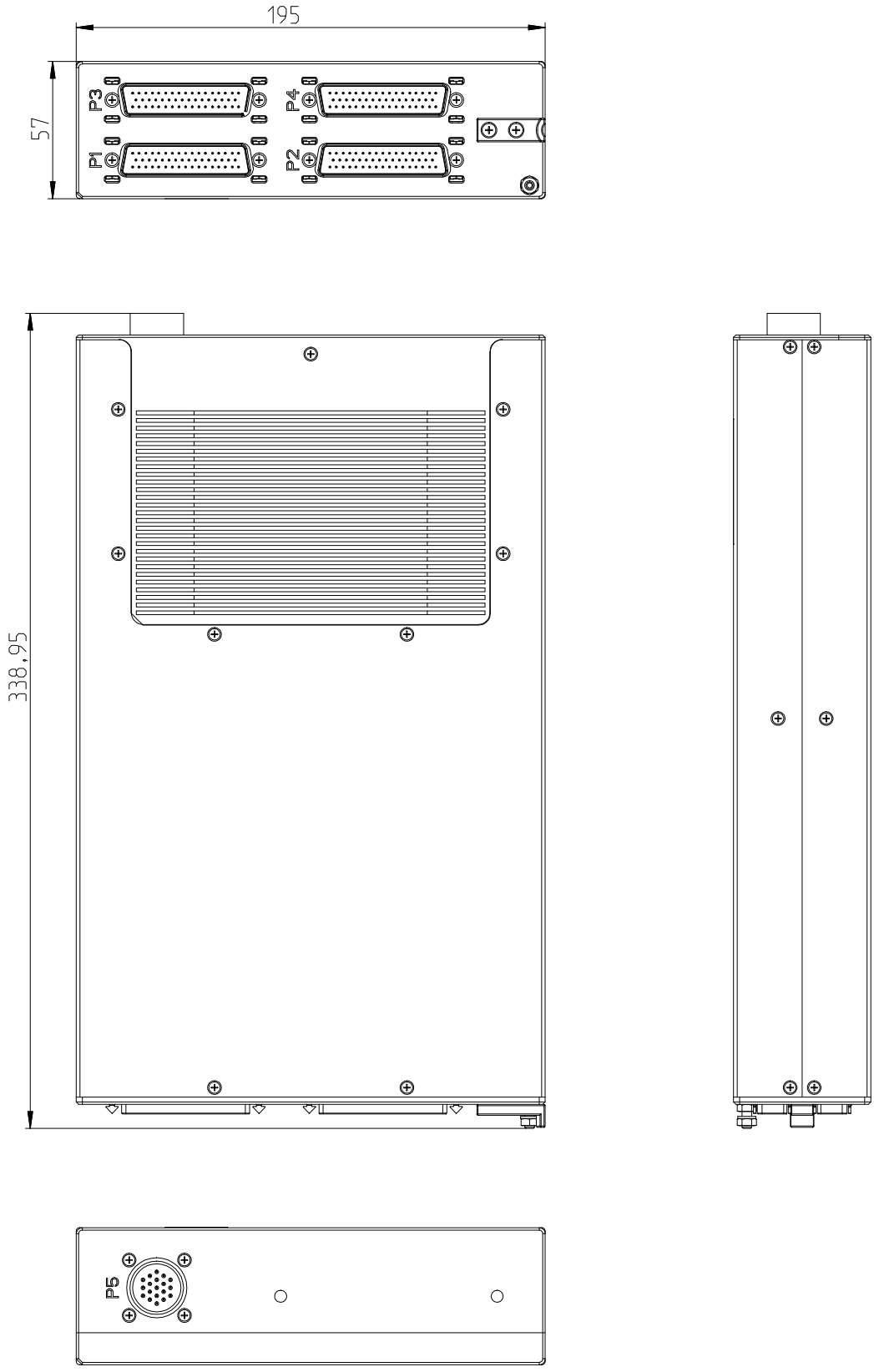

Fig. 2-1 Installation dimensions REU 5100-(x)-(xxx) (measures in mm)

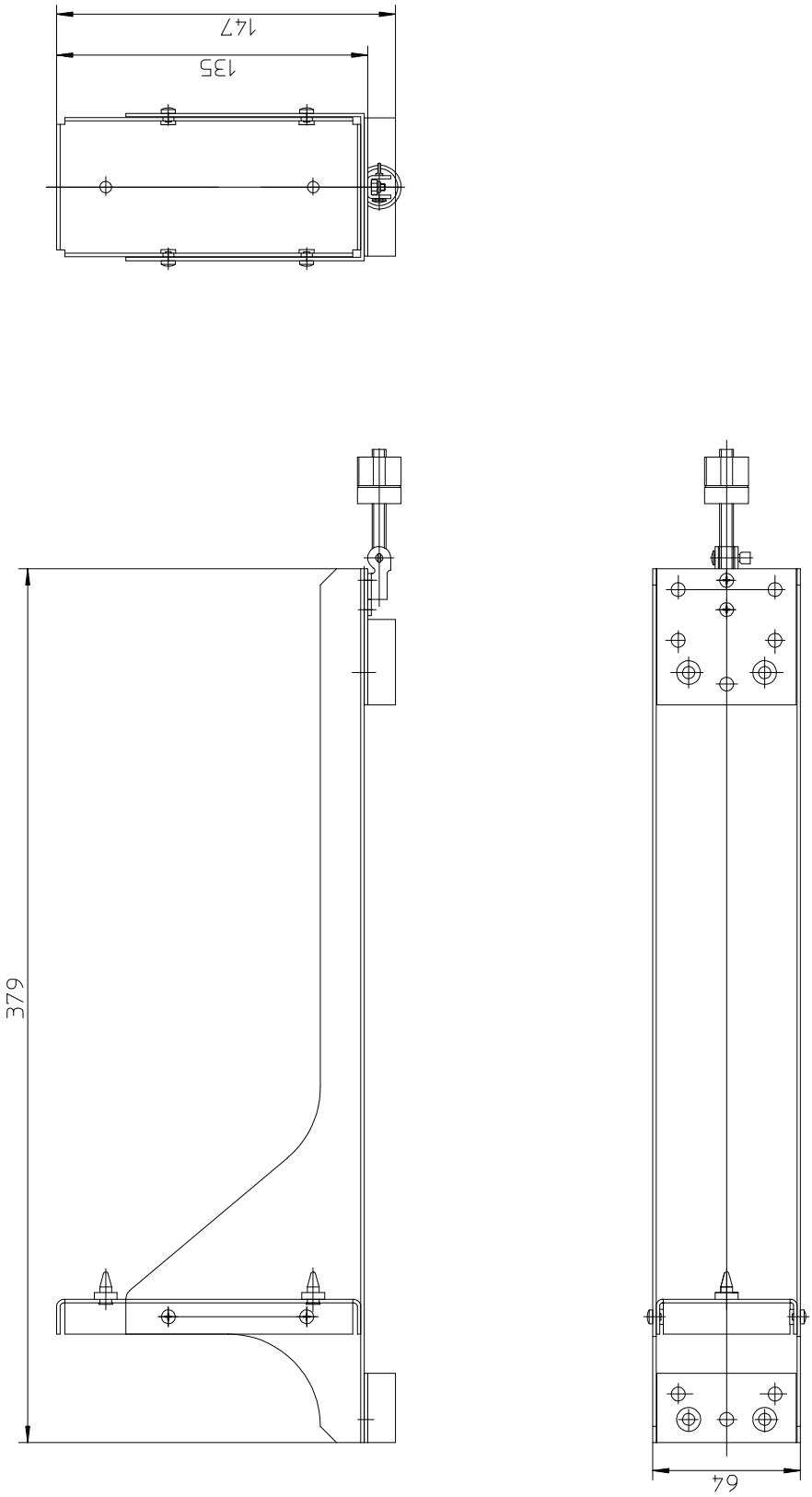

Fig. 2-2 Mounting REU 5100-(x)-(xxx)

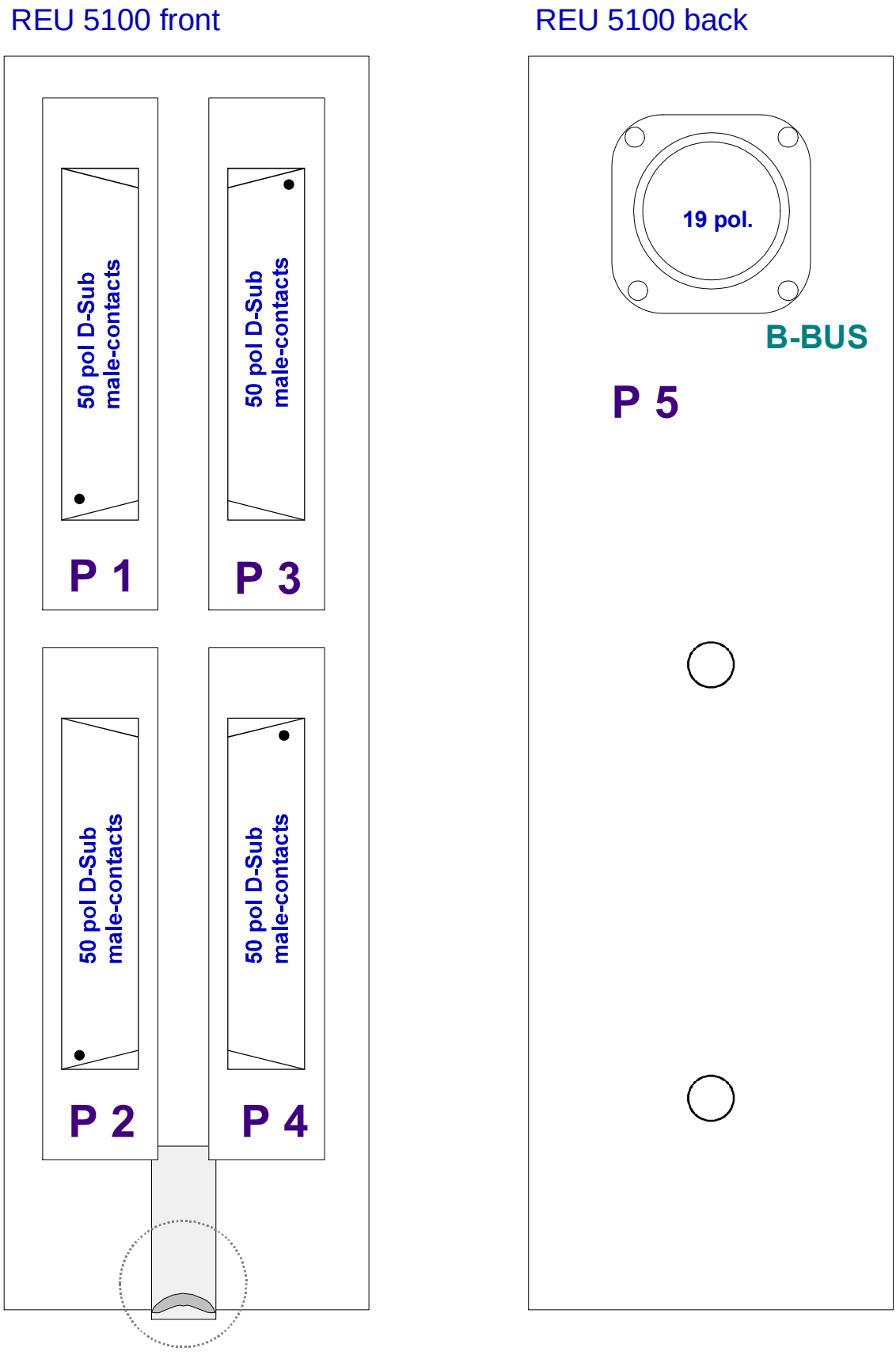

Fig. 2-3 Physical location of REU 5100-(x)-(xxx) connectors

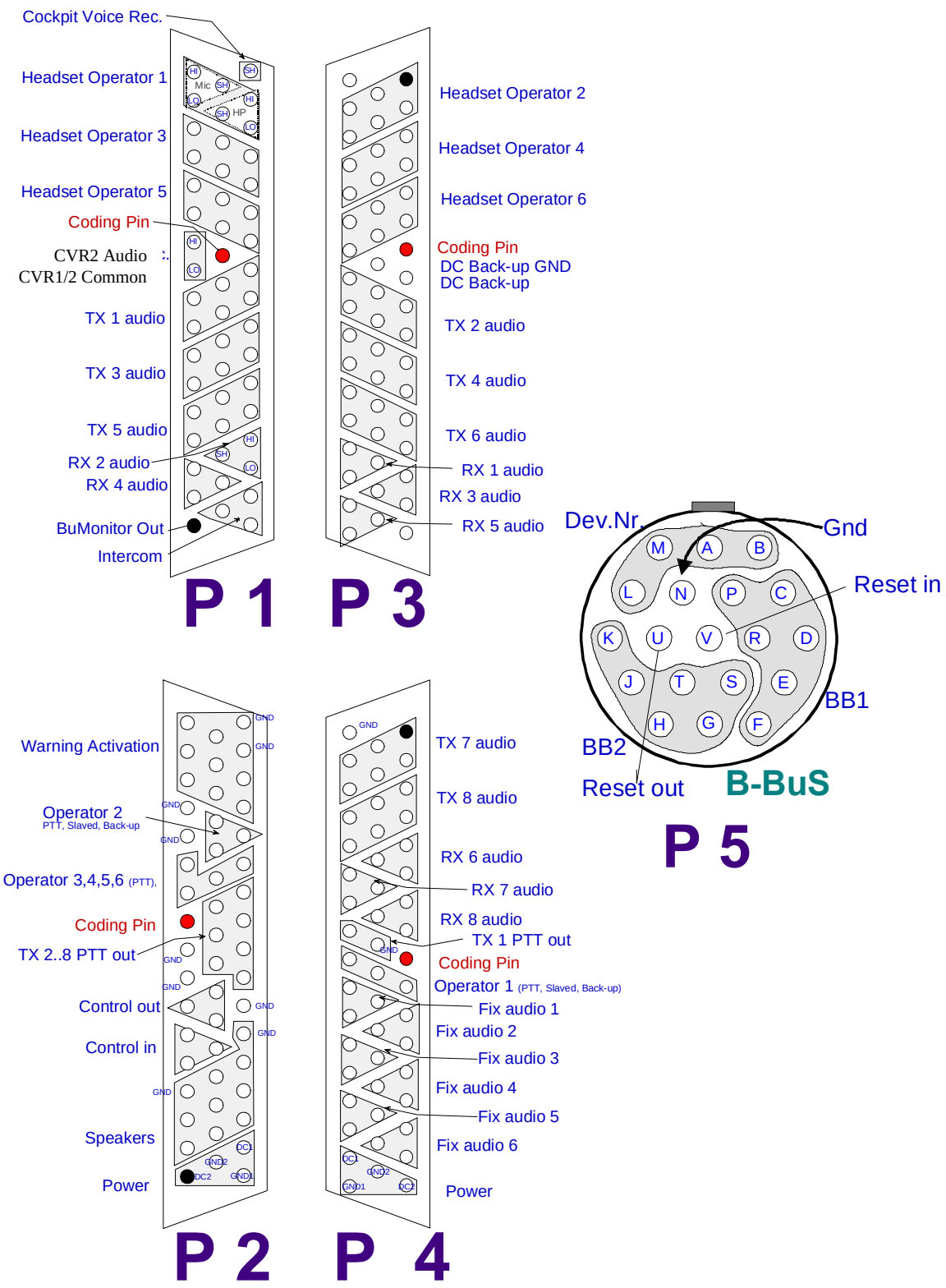

Fig. 2-4 Logical pin assignment REU 5100-(x)-(xxx)

2.4.2 Connector Pin assignments

P1 D-Sub 50-pol. male, shift-lock connector

Pin	*Signal name*	*Remark*
17	HS 1 Mic in HI	Operator 1
16	HS 1 Mic in LO	Operator 1
33	HS 1 Mic in SH	Operator 1
49	HS 1 Phone out HI	Operator 1
48	HS 1 Phone out LO	Operator 1
32	HS 1 Phone out SH	Operator 1
15	HS 3 Mic in HI	Operator 3
14	HS 3 Mic in LO	Operator 3
31	HS 3 Mic in SH	Operator 3
47	HS 3 Phone out HI	Operator 3
46	HS 3 Phone out LO	Operator 3
30	HS 3 Phone out SH	Operator 3
13	HS 5 Mic in HI	Operator 5
12	HS 5 Mic in LO	Operator 5
29	HS 5 Mic in SH	Operator 5
45	HS 5 Phone out HI	Operator 5
44	HS 5 Phone out LO	Operator 5
28	HS 5 Phone out SH	Operator 5
11	CVR2- Audio out HI	Operator 2
18	CVR1- Audio out HI	Operator 1
10	CVR1/2 Common LO	CVR Signal ground
50	CVR Audio out SH	Shield
9	TX 1 Mic audio out HI	VHF 1
8	TX 1 Mic audio out LO	VHF 1
25	TX 1 Mic audio out SH	VHF 1
43	TX 1 Audio in HI	VHF 1
42	TX 1 Audio in LO	VHF 1
26	TX 1 Audio in SH	VHF 1
7	TX 3 Mic audio out HI	TC 1
6	TX 3 Mic audio out LO	TC 1
23	TX 3 Mic audio out SH	TC 1
41	TX 3 Audio in HI	TC 1
40	TX 3 Audio in LO	TC 1
24	TX 3 Audio in SH	TC 1
39	TX 5 Mic audio out HI	TC 3
38	TX 5 Mic audio out LO	TC 3
22	TX 5 Mic audio out SH	TC 3
5	TX 5 Audio in HI	TC 3
4	TX 5 Audio in LO	TC 3
21	TX 5 Audio in SH	TC 3
37	RX 2 Audio in HI	V/L 2
36	RX 2 Audio in LO	V/L 2
20	RX 2 Audio in SH	V/L 2
3	RX 4 Audio in HI	MKR 2
2	RX 4 Audio in LO	MKR 2
19	RX 4 Audio in SH	MKR 2
35	IC Ring audio in/out	
34	IC Ring audio gnd	
1	Backup mode control out	
27	Coding Pin	

P2 D-Sub 50-pol. male, shift-lock connector

Pin	***Signal name***	***Remark***
15	W 1 activation	
16	W 2 activation	
17	W 3 activation	
31	W 4 activation	
32	W 5 activation	
33	W 6 activation	
47	W 7 activation	
48	W 8 activation	
49	Warning Gnd	
50	Warning Gnd	
29	Operator 2 PTT in	
30	Operator 2 Slaved in	
46	Operator 2 Back-up in	
5	Control in 1	Winchman VOX level select
6	Control in 2	Intercom request call input
22	Control in 3	Winchman volume level select
11	Control in 4	Warning tone cancellation
12	Control in 5	Reserved
28	Control in 6	Reserved
25	TX 2 PTT out	VHF 2
26	TX 3 PTT out	TC 1
27	TX 4 PTT out	TC 2
41	TX 5 PTT out	TC 3
42	TX 6 PTT out	spare
43	TX 7 PTT out	spare
44	TX 8 / PA PTT out	PA
40	TX2...8 Out Gnd	
7	Control out 1	DF blanking, ”active LOW” when any PTT is pressed
23	Control out 2	Cockpit Call indication: “active LO” when CALL is activated
24	Control out 3	Cabin Call indication: ”active LO” if cabin is isolated, flashing if CALL is active, deactivated if Cabin is connected
45	Control out 4	Reserved
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	

P3 D-Sub 50-pol. Male, shift-lock connector

Pin	*Signal name*	*Remark*
1	HS 2 Mic in HI	Operator 2
2	HS 2 Mic in LO	Operator 2
18	HS 2 Mic in SH	Operator 2
35	HS 2 Phone out HI	Operator 2
36	HS 2 Phone out LO	Operator 2
19	HS 2 Phone out SH	Operator 2
3	HS 4 Mic in HI	Operator 4
4	HS 4 Mic in LO	Operator 4
20	HS 4 Mic in SH	Operator 4
37	HS 4 Phone out HI	Operator 4
38	HS 4 Phone out LO	Operator 4
21	HS 4 Phone out SH	Operator 4
5	HS 6 Mic in HI	Operator 6
6	HS 6 Mic in LO	Operator 6
22	HS 6 Mic in SH	Operator 6
39	HS 6 Phone out HI	Operator 6
40	HS 6 Phone out LO	Operator 6
23	HS 6 Phone out SH	Operator 6
41	TX 2 Mic audio out HI	VHF 2
42	TX 2 Mic audio out LO	VHF 2
25	TX 2 Mic audio out SH	VHF 2
9	TX 2 Audio in HI	VHF 2
10	TX 2 Audio in LO	VHF 2
26	TX 2 Audio in SH	VHF 2
43	TX 4 Mic audio out HI	TC 2
44	TX 4 Mic audio out LO	TC 2
27	TX 4 Mic audio out SH	TC 2
11	TX 4 Audio in HI	TC 2
12	TX 4 Audio in LO	TC 2
28	TX 4 Audio in SH	TC 2
45	TX 6 Mic audio out HI	spare
46	TX 6 Mic audio out LO	spare
29	TX 6 Mic audio out SH	spare
13	TX 6 Audio in HI	spare
14	TX 6 Audio in LO	spare
30	TX 6 Audio in SH	spare
47	RX 1 Audio in HI	V/L 1
48	RX 1 Audio in LO	V/L 1
31	RX 1 Audio in SH	V/L 1
15	RX 3 Audio in HI	MKR 1
16	RX 3 Audio in LO	MKR 1
32	RX 3 Audio in SH	MKR 1
49	RX 5 Audio in HI	ADF
50	RX 5 Audio in LO	ADF
33	RX 5 Audio in SH	ADF
8	DCBu +28V	
24	DCBu GND	
17	DC Out +28V	not used (only for test equipment)
34	DC Out +28V	not used (only for test equipment)
7	Coding Pin	

P4 D-Sub 50-pol. Male, shift-lock connector

Pin	*Signal name*	*Remark*
1	TX 7 Mic audio out HI	spare
2	TX 7 Mic audio out LO	spare
18	TX 7 Mic audio out SH	spare
35	TX 7 Audio in HI	spare
36	TX 7 Audio in LO	spare
19	TX 7 Audio in SH	spare
3	TX 8 / PA Mic audio out HI	PA
4	TX 8 / PA Mic audio out LO	PA
20	TX 8 Mic audio out SH	PA
37	TX 8 Audio / PA Sidetone in HI	PA
38	TX 8 Audio / PA Sidetone in LO	PA
21	TX 8 Audio in SH	PA
5	RX 6 Audio in HI	DME 1
6	RX 6 Audio in LO	DME 1
22	RX 6 Audio in SH	DME 1
39	RX 7 Audio in HI	DME 2
40	RX 7 Audio in LO	DME 2
23	RX 7 Audio in SH	DME 2
7	RX 8 Audio in HI	DF
8	RX 8 Audio in LO	DF
24	RX 8 Audio in SH	DF
41	TX 1 PTT out	VHF 1
25	TX1 PTT Gnd	VHF 1
42	Operator 1 PTT in	Copilot
26	Operator 1 Slaved in	Copilot
10	Operator 1 Back-up in	Copilot
43	FIX 1 Audio in HI	Audio Warning Panel
44	FIX 1 Audio in LO	Audio Waarning Panel
27	FIX 1 Audio in SH	Audio Warning Panel
11	FIX 2 Audio in HI	Spare
12	FIX 2 Audio in LO	Spare
28	FIX 2 Audio in SH	Spare
45	FIX 3 Audio in HI	Spare
46	FIX 3 Audio in LO	Spare
29	FIX 3 Audio in SH	Spare
13	FIX 4 Audio in HI	Spare
14	FIX 4 Audio in LO	Spare
30	FIX 4 Audio in SH	Spare
47	FIX 5 Audio in HI	Spare
48	FIX 5 Audio in LO	Spare
31	FIX 5 Audio in SH	Spare
15	FIX 6 Audio in HI	Spare
16	FIX 6 Audio in LO	Spare
32	FIX 6 Audio in SH	Spare
49	DC1	
50	GND1	
17	DC2	
33	GND2	
34	Gnd	
9	Coding Pin	

Becker-Bus System, B-Bus connector

P5 Soriau, Typ 851-02 E14-19 P50, shell 14, 19-polig. Bayonet

Pin	*Signal name*	*Remark*
L	Dev Address Bit 0	
M	Dev Address Bit 1	
A	Dev Address Bit 2	
B	Dev Address Bit 3	
U	Reset out	
V	Reset in	
N	Address GND	
C	BB1-HI-in	
D	BB1-LO-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	

Address coding for J5 (REU) and J2 (ACU), (BK117-C2)

Address	Unit	Bit 0 (Pin L)	Bit 1 (Pin M)	Bit 2 (Pin A)	Bit 3 (Pin B)
0001	REU	open	connect to GND	connect to GND	connect to GND
0001	ACU#2 Pilot	open	connect to GND	connect to GND	connect to GND
0000	ACU#1 Copilot	connect to GND	connect to GND	connect to GND	connect to GND
0010	ACU#3 Cabin	connect to GND	open	connect to GND	connect to GND

The addresses for the devices (REU and ACU) are set by connecting the pins L, M, A, B to ground or let open. It has to be done in the cable-plug. The same type of device must be have different addresses (for example the ACU's). Different type of devices may be have the same address (for example REU and first ACU).

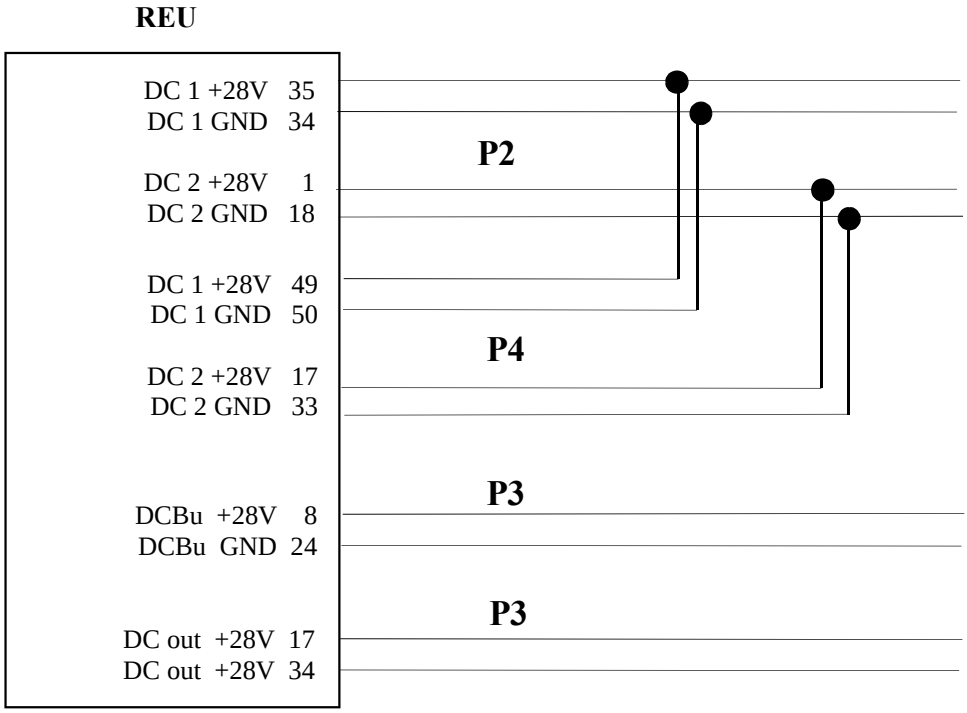

Fig. 2-5 REU 5100-(x)-(xxx) power connections

2.5 Configuration software

The factory configuration of the DVCS 5100 can be changed with aid of a Personal Computer or Laptop and the software CSW 5100 (Article-No. 0543.195-909).

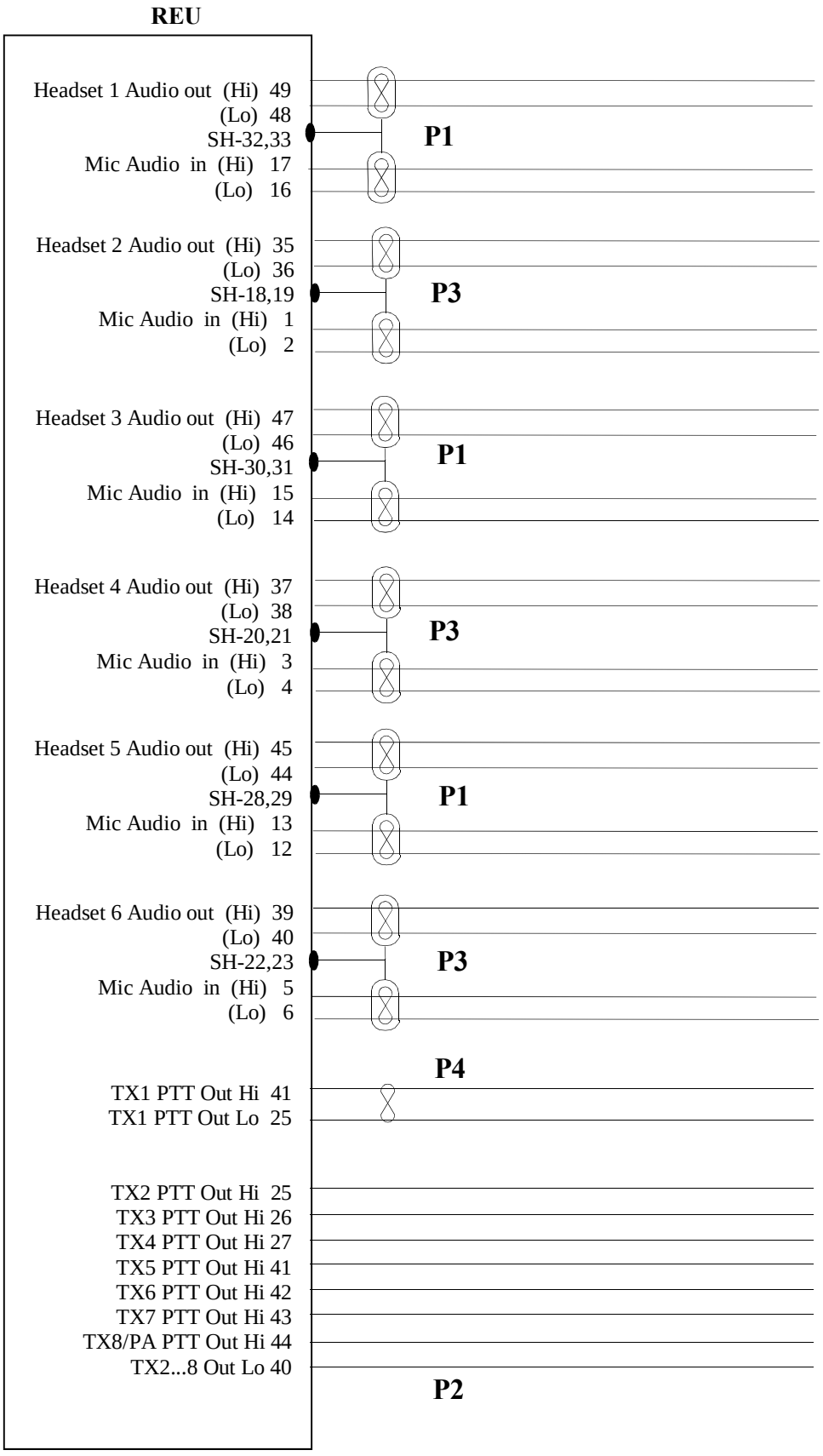

Fig. 2-6 REU 5100-(x)-(xxx) audio and PTT connections

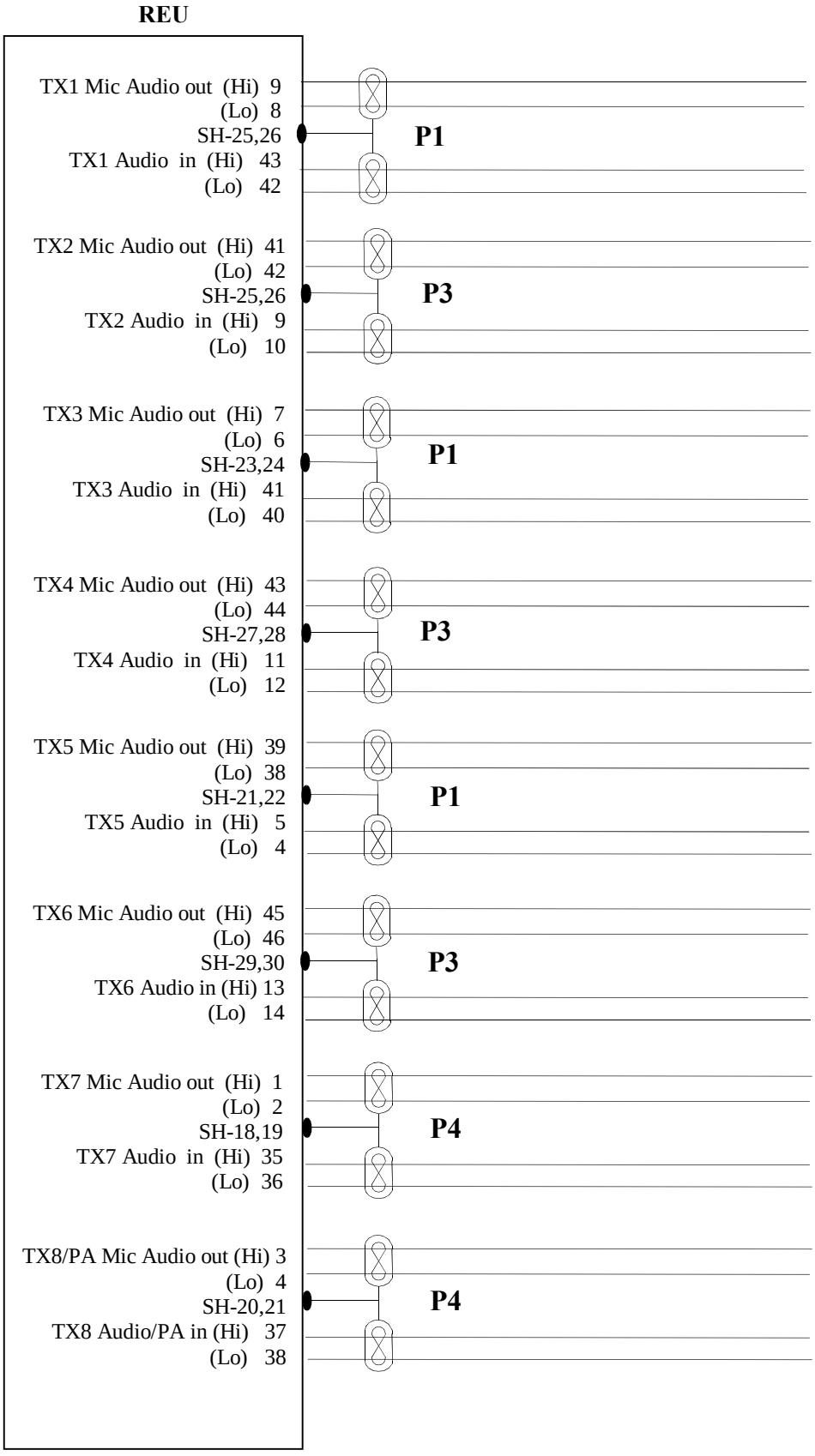

Fig. 2-7 REU 5100-(x)-(xxx) transceiver connections

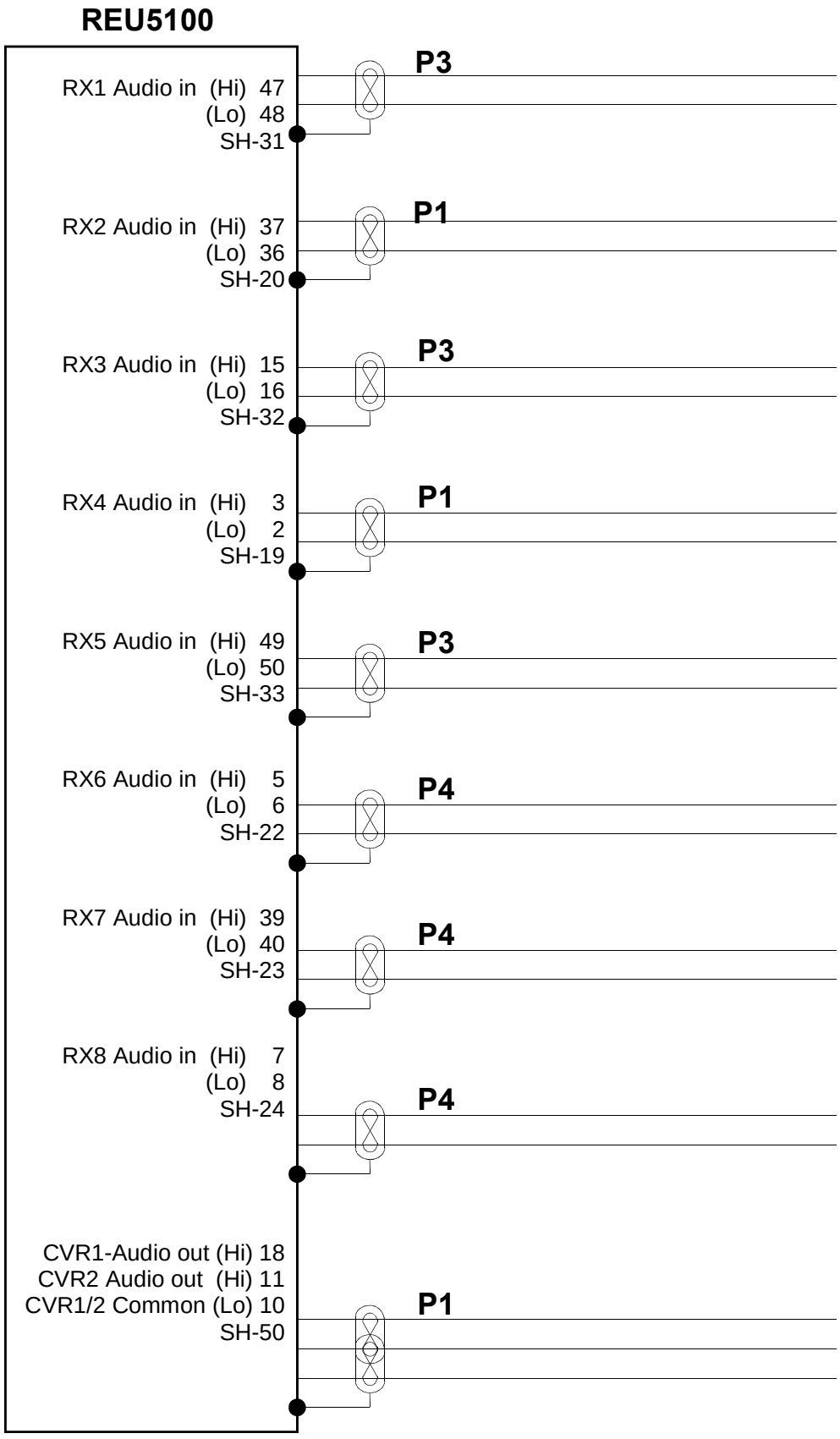

Fig. 2-8 REU 5100-(x)-(xxx) receiver and CVR connections

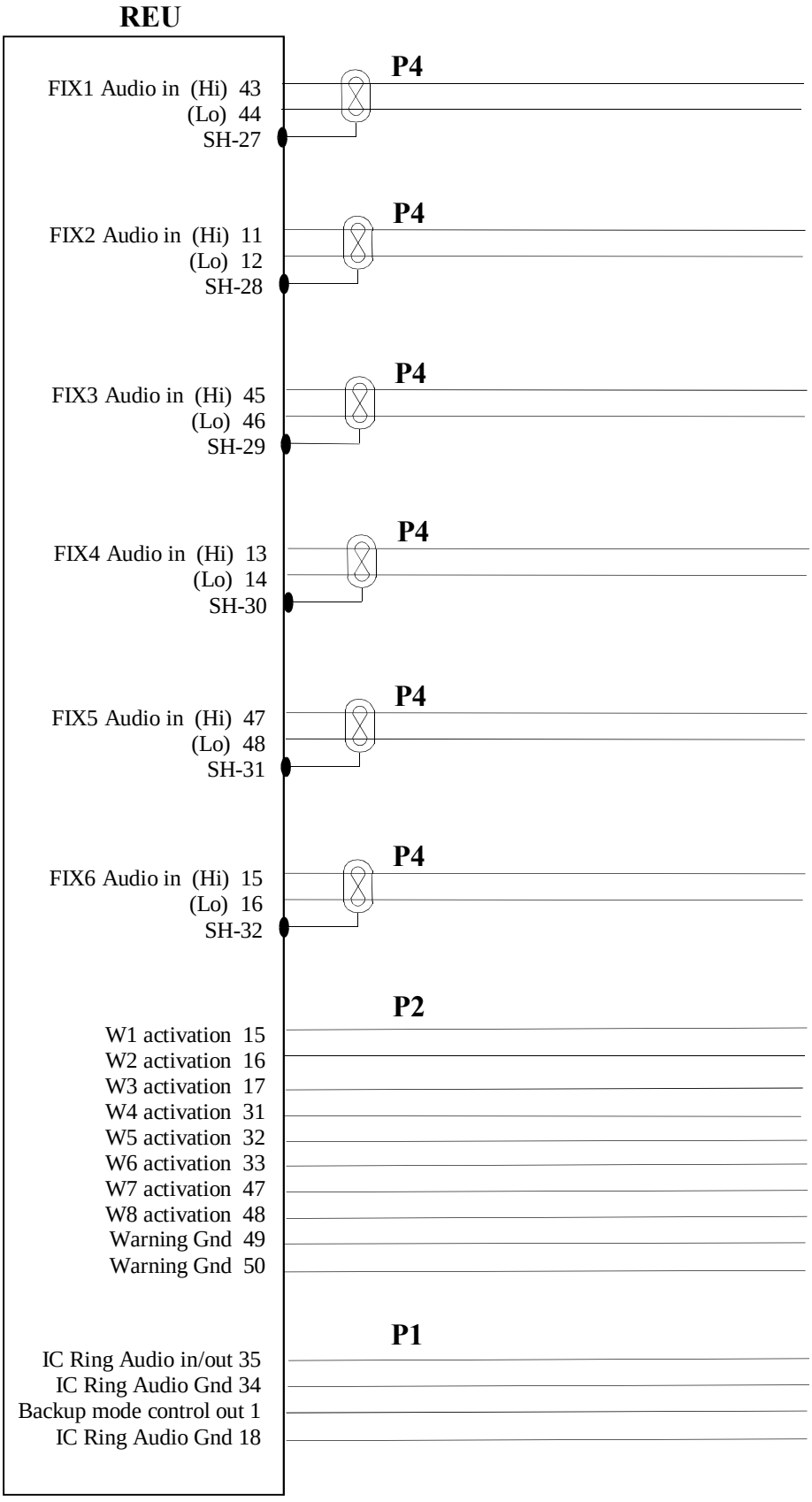

Fig. 2-9 REU 5100-(x)-(xxx) fix audio and IC ring connections

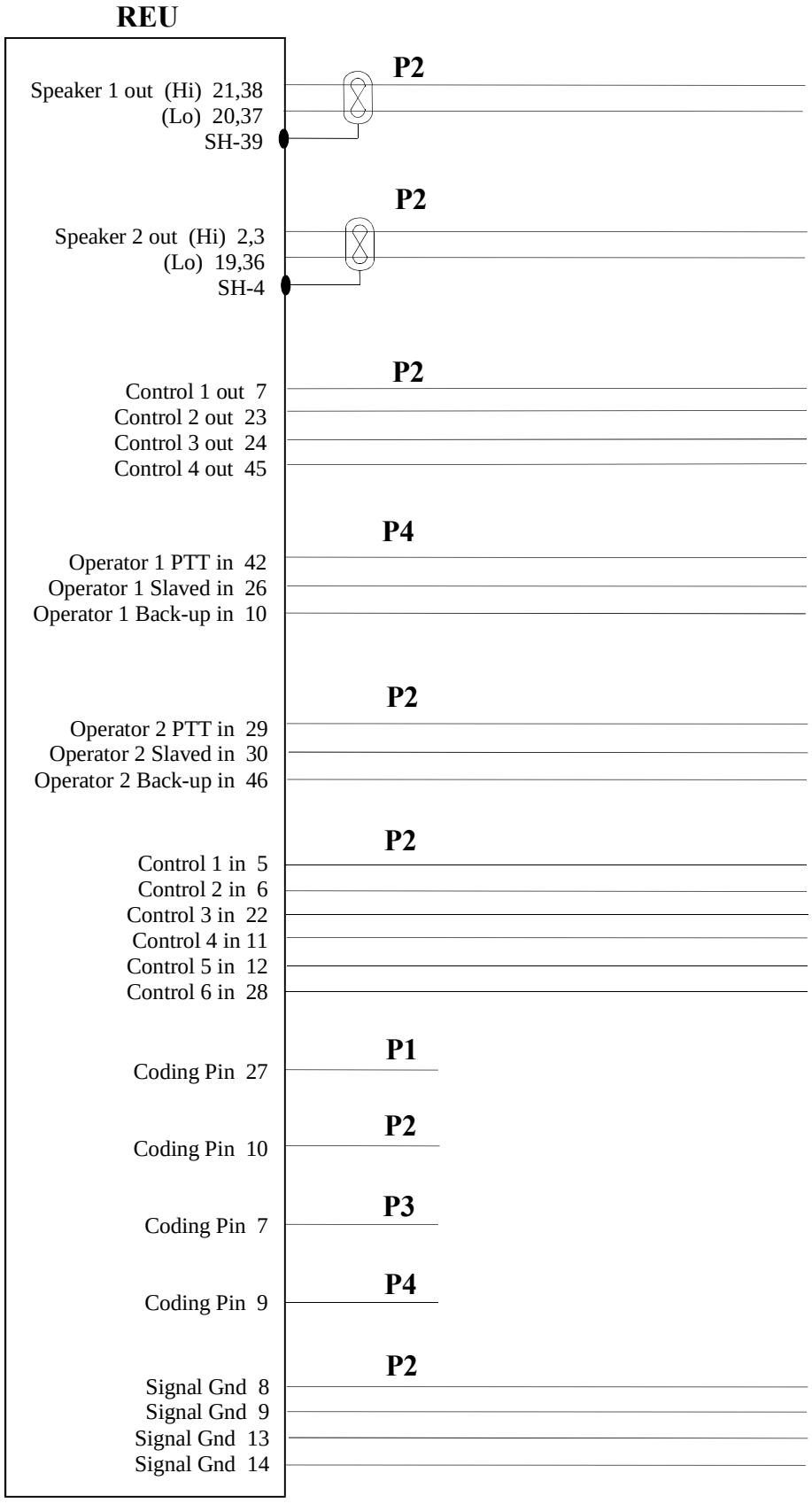

Fig. 2-10 REU 5100-(x)-(xxx) speaker, control and other connections