Control interface A, B, C and D

Hardware Option   236 035/036/037/038

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Operating Instructions

Doc. Version: 9807-100-B

Introduction

☞ Control interfaces B and C are no longer available.

Technical data

Relays   bistable (switched state is maintained even when deener-
                    gized).
                    Control interface A: 8 relays
                    (contacts brought out on socket Bu 19)
                    Control interface B: 24 relays
                    (contacts brought out on sockets Bu 19/Bu 18)
                    Control interface C: 24 relays
                    (contacts brought out on sockets Bu 19/Bu 18)
                    Control interface D: 24 relays
                    (contacts brought out on sockets Bu 19/Bu 18)

                    Contact rating:
                    continuous current 1 A, max. switching voltage 30 V

TTL inputs $V \geq +1.5 \text{ V} = \text{H}$
(socket Bu 22) $V \leq +0.5 \text{ V} = \text{L}$
                    approx. 4 kΩ input impedance
                    ± 30 V dielectric strength

                    The TTL inputs are only available if the socket concerned
                    (Bu 22) is not occupied by the optional ASCII keyboard.

TTL outputs   (only for interface C and D) Open-collector (pullup resistor
                    1 kΩ); fanout = 1 (standard TTL) The outputs are brought
                    out on sockets Bu 19 + Bu 18.

Power supply   (only Control interface D) -15 V and +15 V on Bu 19.
                    Continuous current: I_{max} = 50 mA

Application

Remote control of radio sets (RX/TX switchover, channel selection, squelch
on/off, etc). In conjunction with the AUTORUN function of the STABILOCK it is
possible to test radio sets fully automatically for example.

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Operation

The control interface can be operated manually or by program (see Chapter 8). The declarations necessary for this require callup of the CONTROL INTERFACE mask.

Callup of CONTROL INTERFACE mask

AUX + CONTROL

The mask can only be called up if a control interface is actually installed.

Meaning of mask fields

The following details apply fully to control interface C and D. They also apply to a large extent to the other control interfaces as long as you remember that these have no TTL outputs or less relays. The appropriate mask fields will then be missing in the CONTROL INTERFACE mask.

As usual, HELP briefly brightens up all entry fields in the CONTROL INTERFACE mask. Each entry field can be moved to with the cursor keys.

Automatic setting of relays 1 through 4

Depending on the operating mode, relays 1 through 4 are set or reset automatically if the scroll variable X is entered in the AUTO 1..4 scroll field:

Relay 1   TX/RX switchover: As soon as the TX mask is called up, relay 1 is set (Bu 19, pins 18 and 2 connected). With the call-up of the RX mask relay 1 is reset (pins 18 and 34 connected).

Relay 2   UB/LB switchover (upper band/lower band): Relay 2 is set (Bu 19, pins 19 and 3 connected) if an upper-band channel (NoU) is set in the RF Frequency field of a basic mask. The setting of a lower-band channel (NoL) produces resetting of the relay (pins 19 and 35 connected).

Relay 3   TONES (call tone sequence): If an incoming tone sequence is decoded in the testing of selective-call sets, relay 3 will be set for the duration of the decoding (Bu 19, pins 20 and 4 connected). Following decoding the relay is reset (pins 20 and 36 connected).

Relay 4   SQUELCH (Special): Relay 4 is set for the duration of the RX Special SQUELCH (Bu 19, pins 21 and 5 connected). The RX Specials BANDW. and SENS always reset relay 4. As long as the relay is reset, pins 21 and 37 are connected.

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Fig. 9.1: Mask CONTROL INTERFACE C/D: The relays 9 to 24 can represent the current channel number, eg BCD encoded (here: channel number 0324).

```
┌─────────── CTRL INTERFACE  C/D ───────────┐
│                                            │
│  AUTO    NO Status   NO Status   NO Status │
│                                            │
│  TX/RX    1   RX      9           17       │
│  UB/LB    2   LB     10           18   ON  │
│  TONES    3          11           19       │
│  SQUELCH  4          12           20       │
│           5          13   ON      21       │
│           6          14   ON      22       │
│           7          15           23   ON  │
│           8          16           24       │
│                                            │
│                                            │
│  AUTO 1..4        CH NO --> BCD             │
│                                            │
│                                            │
└────────────────────────────────────────────┘

   SET   RESET   CLRALL   UPDATE   TTL I/O   RETURN
```

Relay-coded output of channel number

For remotely controlled channel selection on radio sets, the STABILOCK offers the possibility of relay-coded output of the channel number. Here the relays 9 through 24 are set or reset according to the selected coding of the channel number (BCD, BCD inverted or hexadecimal).

Relays 9 through 24 are assigned to channel-number output if the scroll variable X is entered in the CH NO scroll field. The HEX scroll field permits selection of the coding with the scroll variables HEX, BCD and BCD INV.

As soon as the RF Frequency field is switched to channel-number entry in one of the basic masks, the relays concerned are switched appropriately when the entered channel number is acknowledged.

Coding of maximally 4-digit channel number

1st place	2nd place	3rd place	4th place	
1 2 4 8	1 2 4 8	1 2 4 8	1 2 4 8	Weighting factor
9 10 11 12	13 14 15 16	17 18 19 20	21 22 23 24	Relays

Example: channel number 124 BCD-coded; 4th place = 4, 3rd place = 2, 2nd place = 1, 1st place = 0; ie relays 13, 18 and 23 are set. In inverted BCD coding these relays would be reset and all others set; hexadecimal coding is identical to BCD coding.

Manually setting or resetting all relays

All relays can be operated manually if the scroll variable X is entered in neither of the scroll fields AUTO 1..4 and CH NO. To set a relay, move to the entry field next to the corresponding relay identification and strike the SET softkey.

(RESET) produces resetting of the particular relay. (CLRALL) resets all relays. A total reset will also cause all relays to be reset.

(UPDATE) sets or resets all relays according to the entry that is made. The entries may not be made by (SET) or (RESET) but instead by turning the spinwheel. These entries are not effective to begin with however, they are only produced with (UPDATE).

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With relays 5 through 24 the ON entry in the entry field confirms that the relay concerned is set. The entry fields of relays 1 through 4, on the other hand, show the following entries, offering better association with the particular function:

	(SET)	(RESET)
Relay1	TX	RX
Relay 2	UB	LB
Relay 3	active	
Relay 4	active	

Operative and normal position of relays

	Operative	Normal	Socket			Operative	Normal	Socket
Relay 1	18/2	18/34	19		Relay 13	18/2	18/34	18
Relay 2	19/3	19/35	19		Relay 14	19/3	19/35	18
Relay 3	20/4	20/36	19		Relay 15	20/4	20/36	18
Relay 4	21/5	21/37	19		Relay 16	21/5	21/37	18
Relay 5	22/6	22/38	19		Relay 17	22/6	22/38	18
Relay 6	23/7	23/39	19		Relay 18	23/7	23/39	18
Relay 7	24/8	24/40	19		Relay 19	24/8	24/40	18
Relay 8	25/9	25/41	19		Relay 20	25/9	25/41	18
Relay 9	26/10	26/42	19		Relay 21	26/10	26/42	18
Relay 10	27/11	27/43	19		Relay 22	27/11	27/43	18
Relay 11	28/12	28/44	19		Relay 23	28/12	28/44	18
Relay 12	29/13	29/45	19		Relay 24	29/13	29/45	18

Example: relay 3 set = pins 20 and 4 are connected; relay 3 not set = pins 20 and 36 are connected; active socket = Bu 19 (control interface).

TTL outputs/inputs

Control interface C offers 20 TTL outputs, which can be set and reset just like the relays. For this purpose call up the appropriate submask with (TTL I/O). The functions AUTO 1..4 and CH NO have the same effect as in the basic mask.

If socket Bu 22 is not occupied by the optional ASCII keyboard, eight TTL signals can be applied here and sampled by an IEEE-bus command. In addition, each socket of the control interface offers a further "TTL trigger input" (see pin assignments in Chapter 2). The TTL INPUTS mask field in the OPTION CARD mask shows the logic levels on the different TTL inputs.

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Meaning of sockets

Note: CONTROL INTERFACE B and C no longer available.

Socket 19 (Bu 19):   Bu 19 is present with all three interfaces but differently pinned:

Control interface A:	relay contacts of switchover relays 1 to 8
Control interface B:	relay contacts of switchover relays 1 to 12
Control interface C:	relay contacts of switchover relays 1 to 12 + TTL control outputs 1 to 10
Control interface D:	relay contacts of switchover relays 1 to 12 + TTL control outputs 1 to 10 +15 V and –15 V (I_{max}=50 mA)

Pin 49 (Bu 19) = trigger input (all interfaces)

Socket 18 (Bu 18):   Bu 18 is only present on interfaces B, C and D:

Control interface B:	relay contacts of switchover relays 13 to 24
Control interface C and D:	relay contacts of switchover relays 13 to 24 + TTL control outputs 11 to 20

Pin 49 (Bu 18) = trigger input (interface B , C and D)

Socket 22 (Bu 22):   Bu 22 (connector for ASCII keyboard) is present on all interfaces. If the ASCII keyboard is not connected, Bu 22 can be used as an input for 8 TTL control signals.
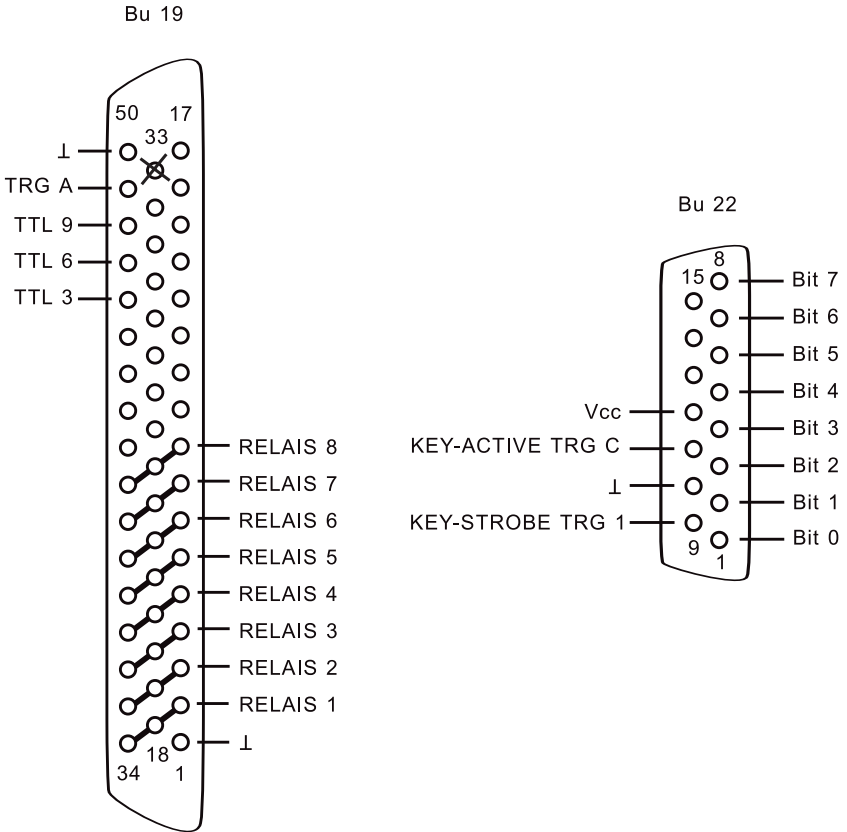
Bu 19

Bu 22

⊥ — Vcc

KEY-ACTIVE TRG C

⊥

KEY-STROBE TRG 1

50   17
33
⊥ —
TRG A —
TTL 9 —
TTL 6 —
TTL 3 —

RELAIS 8
RELAIS 7
RELAIS 6
RELAIS 5
RELAIS 4
RELAIS 3
RELAIS 2
RELAIS 1
⊥
18
34   1

8
15   Bit 7
Bit 6
Bit 5
Bit 4
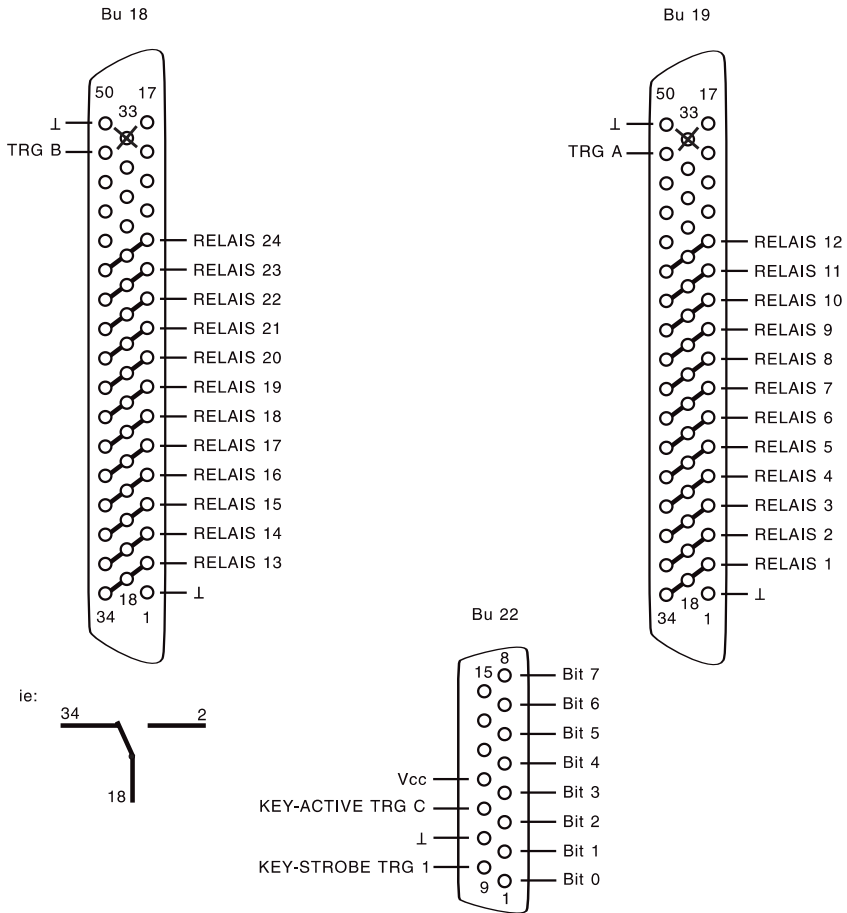Bit 3
Bit 2
Bit 1
Bit 0
9
1

Fig. 9.2: Socket Bu19 to 22 of Control interface A: pinning.

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☞ Pin 33 is not used.

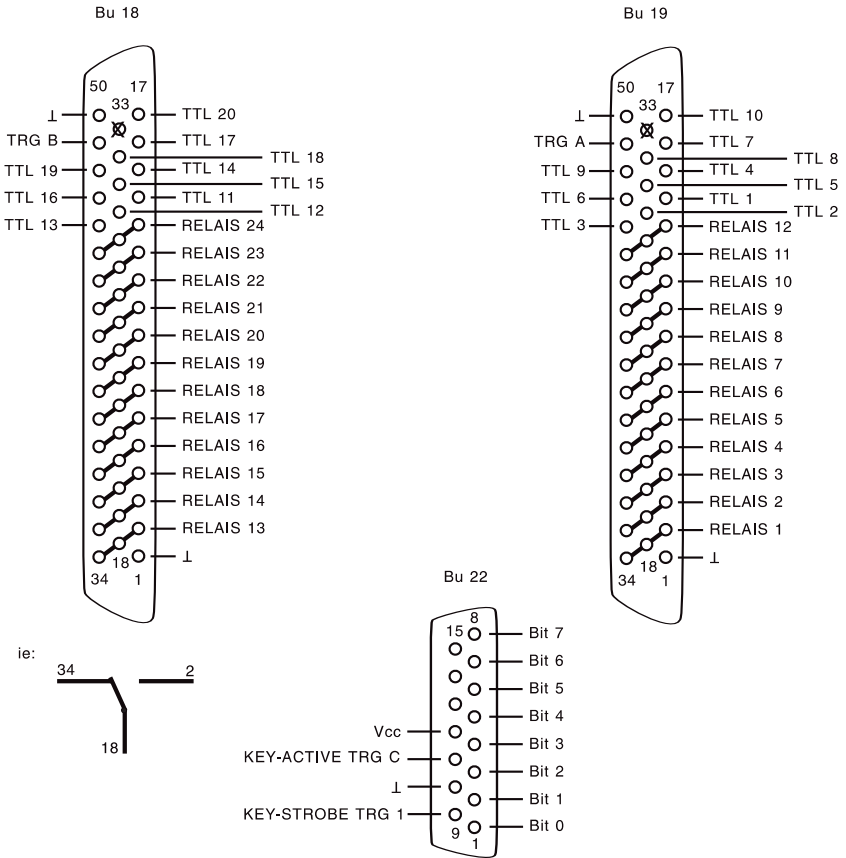**Fig. 9.3:** Socket Bu18 to 22 of Control interface B: pinning.

☞ Pin 33 is not used.

Bu 18

Bu 19

Bu 22

⊥	33	TTL 20
TRG B		TTL 17
TTL 19		TTL 14 — TTL 18
TTL 16		TTL 11 — TTL 15
TTL 13		RELAIS 24 — TTL 12

Bu 18 pinning:
- ⊥ — TTL 20
- TRG B — TTL 17
- TTL 19 — TTL 14 / TTL 18
- TTL 16 — TTL 11 / TTL 15
- TTL 13 — RELAIS 24 / TTL 12
- RELAIS 23
- RELAIS 22
- RELAIS 21
- RELAIS 20
- RELAIS 19
- RELAIS 18
- RELAIS 17
- RELAIS 16
- RELAIS 15
- RELAIS 14
- RELAIS 13
- ⊥

50 17
33
34 1
18

ie:
34   2
18

Bu 19 pinning:
- ⊥ — TTL 10
- TRG A — TTL 7
- TTL 9 — TTL 4 / TTL 8
- TTL 6 — TTL 1 / TTL 5
- TTL 3 — RELAIS 12 / TTL 2
- RELAIS 11
- RELAIS 10
- RELAIS 9
- RELAIS 8
- RELAIS 7
- RELAIS 6
- RELAIS 5
- RELAIS 4
- RELAIS 3
- RELAIS 2
- RELAIS 1
- ⊥

50 17
33
34 1
18

Bu 22 pinning:
- Bit 7
- Bit 6
- Bit 5
- Bit 4
- Vcc — Bit 3
- KEY-ACTIVE TRG C — Bit 2
- ⊥ — Bit 1
- KEY-STROBE TRG 1 — Bit 0

8
15
9
1

Fig. 9.4: Socket Bu18 to 22 of Control interface C: pinning.

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☞ Pin 33 is not used.
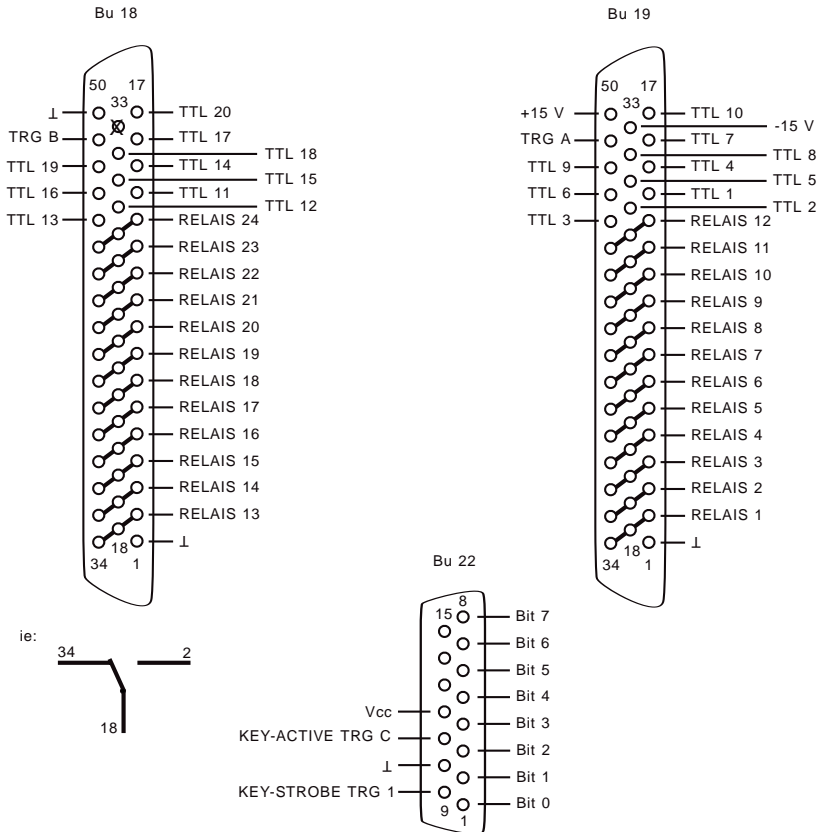
Bu 18

Bu 19

Bu 22

Fig. 9.5: Socket Bu18 to 22 of Control interface D: pinning.

☞ Pin 33 is not used on Bu 18.

Installation

1. Switch off the Communication Test Set and withdraw the power cable.
2. Unscrew the cover plate at location 6 on the back panel.
3. Slide the control interface along the guide as far as it will go into the slot that is provided.
4. Screw the control interface firmly to the chassis.
5. Reconnect the power cable.

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