

# **FALL-BACK SWITCH FBS KU13.1**

Technical Reference

29.10.1996

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**DOCUMENT**

**FBS\_ENG.DOC**

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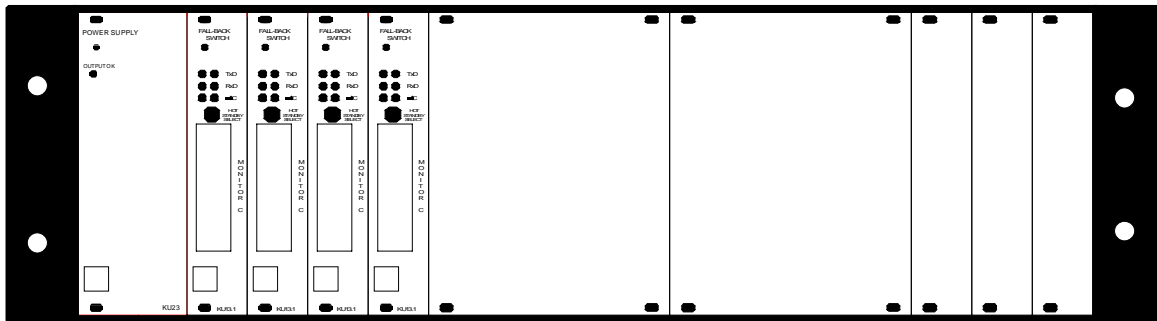
**APPENDIX**

**KU13\_1.DS4**

# 1. INTRODUCTION

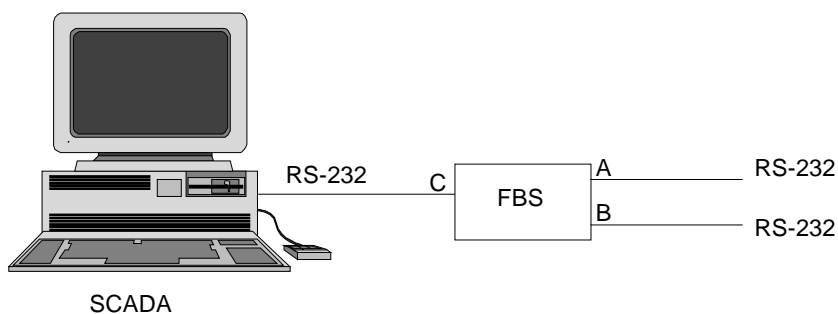
The KU13.1 FBS (Fall Back Switch) is an Euro1-size unit for connecting RS-232 communication links between modems and host computers and providing backup lines for them. The FBS boards are installed in a 19" subrack: **KU20 communication center** which can also hold Euro1-size modems KU18 and power supply unit. RS-232 and power supply cables are connected via KU20 backplanes.

## KU20 COMMUNICATION CENTER

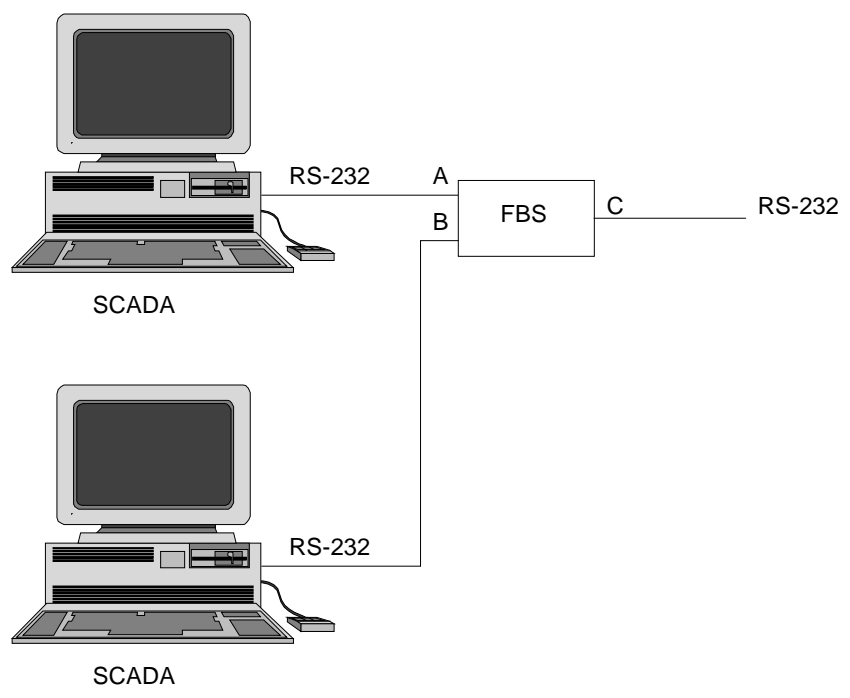


Several parts of the communication system can be duplicated with the KU13.1 FBS

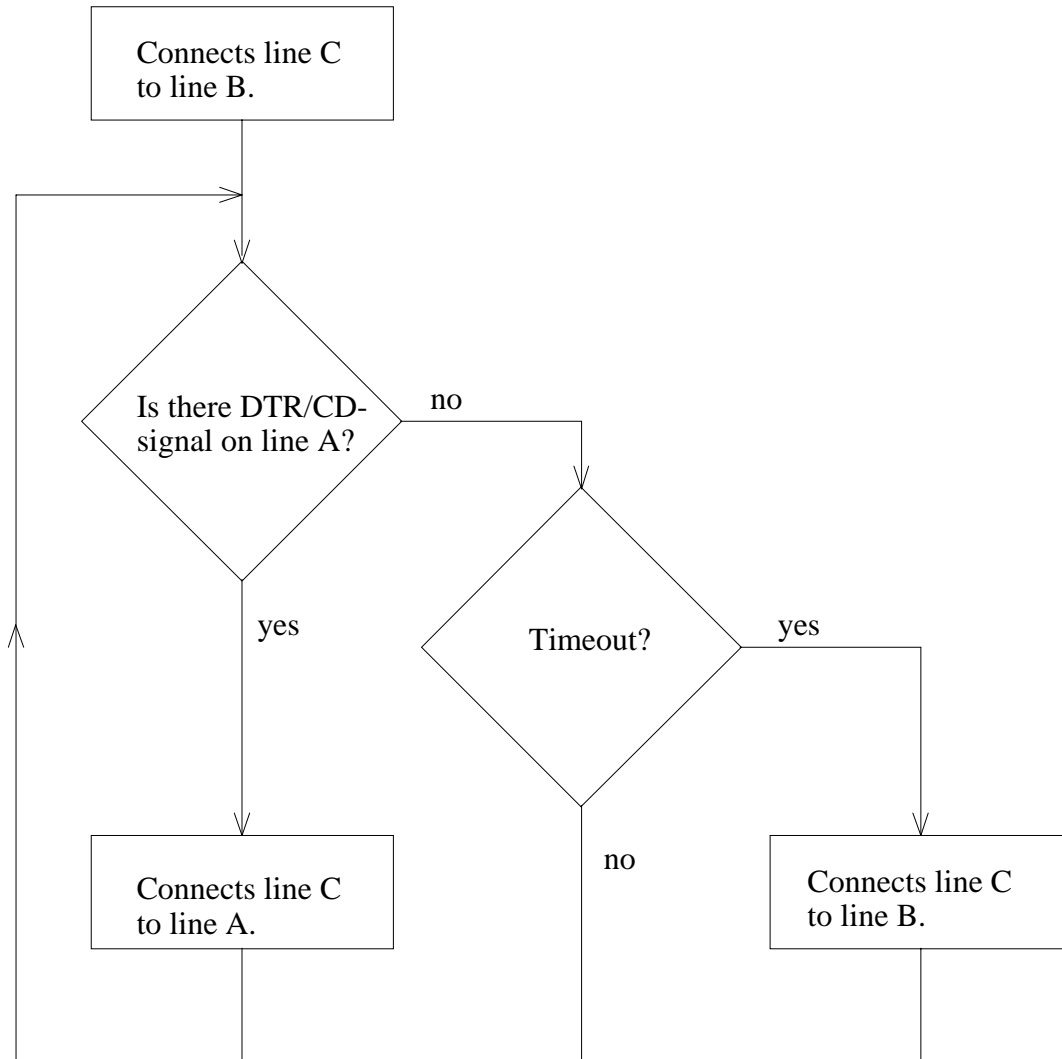
### SINGLE HOST - DUPLICATED LINES



DUPLICATED HOSTS - ONE LINE



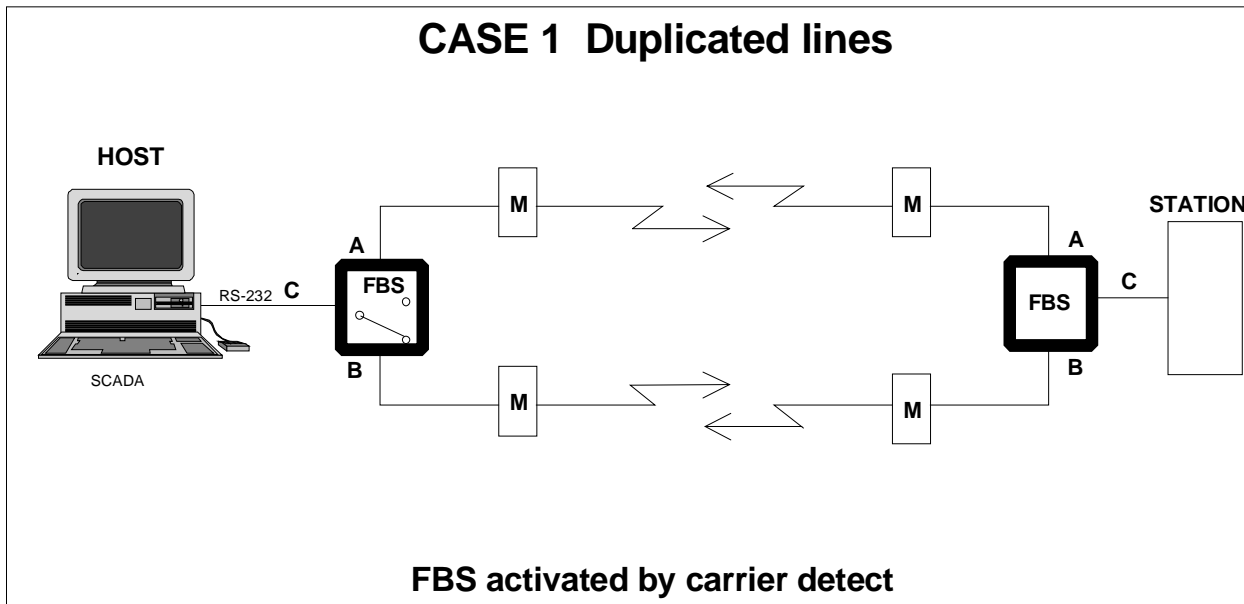
## 2. OPERATION LOGIC



Picture ku13l.drw

### 3. OPERATION MODES

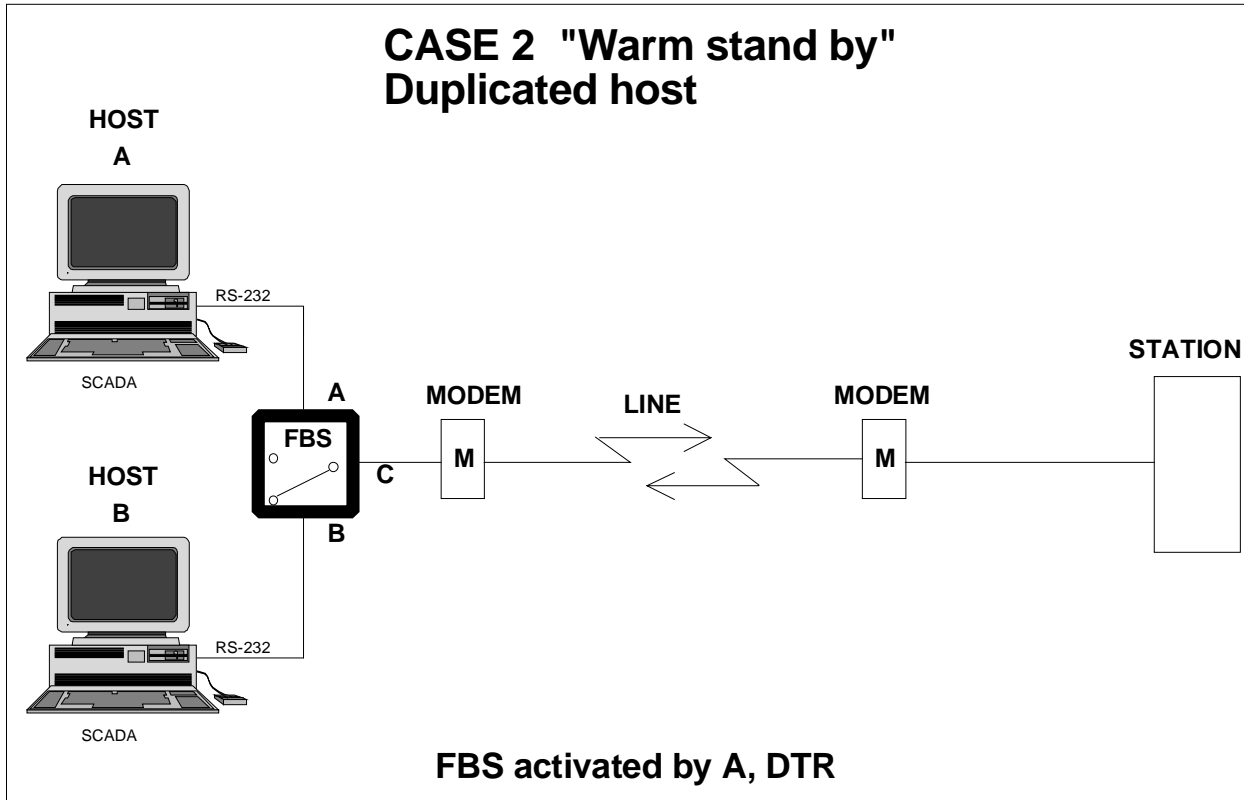
#### 3.1. Duplicated Lines



A computer is connected to the connector C. The configuration switches S2-24 are set to DTE. The switch S25 is closed. These settings apply for both FBC's.

As long as the CD signal is active on side A, the communication path is connected to that side. When the CD signal is not detected on side A as the timeout delay expires, the communication path is switched to side B. The timeout delay is adjustable by trimmer R7.

3.2. Duplicated Hosts

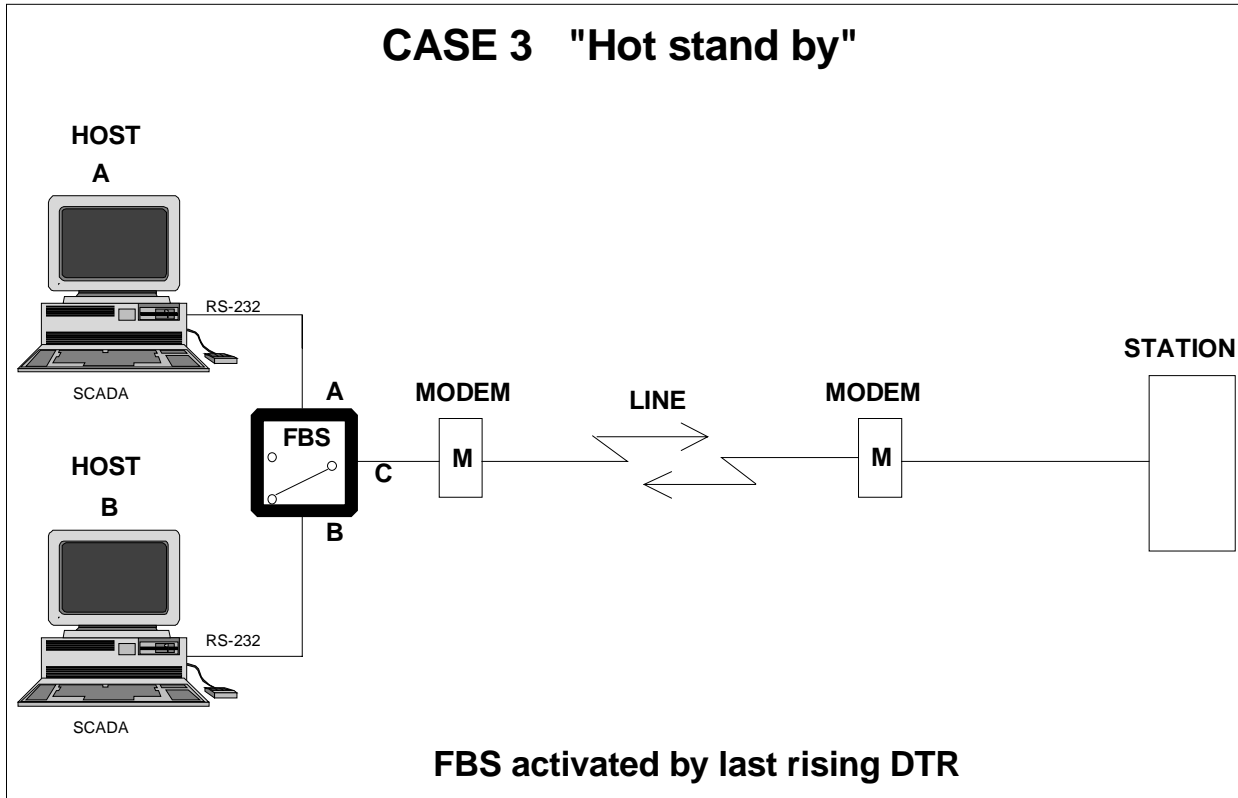


A modem is connected to the connector C. The switches S2-24 are set to DCE. The switch S25 is closed.

As long as the DTR signal is active on side A, the communication path is connected to that side. When the DTR signal is not detected on side A as the timeout delay expires, the communication path is switched to side B. The timeout delay is adjustable by trimmer R7.



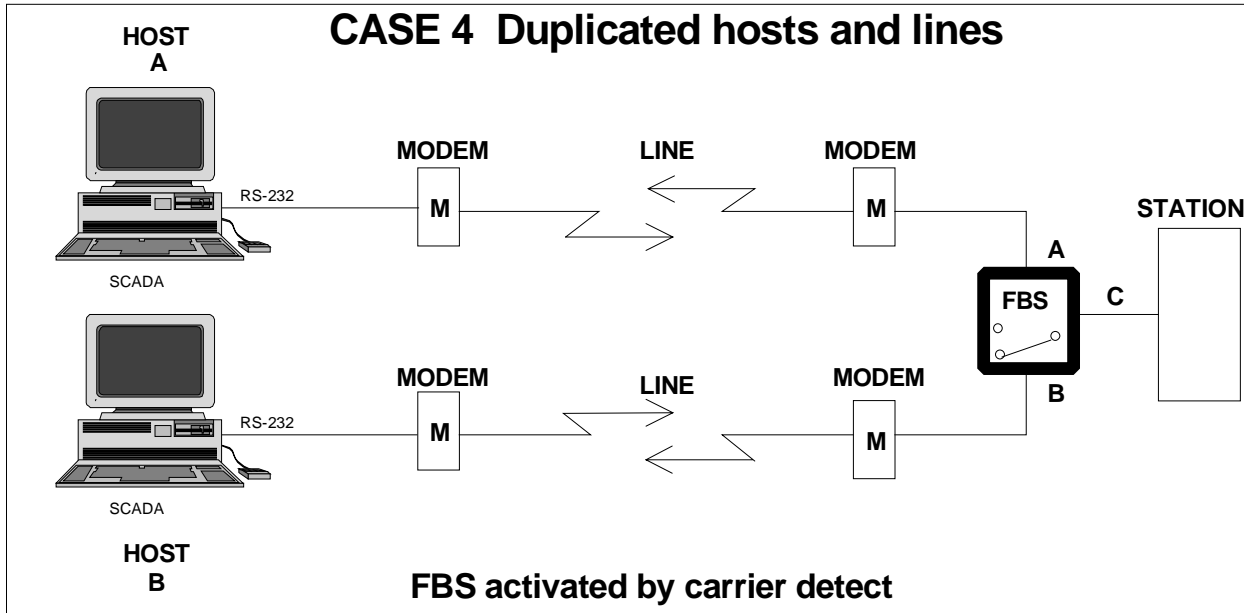
3.3. Hot Standby



A modem is connected to the connector C. The switches S2-24 are set to DCE. Since the Hot Standby mode is used, the switch S26 is closed.

The communication path is connected to the side, where the DTR signal is most recently detected. The initially active side (A or B) can be selected with switch S1.

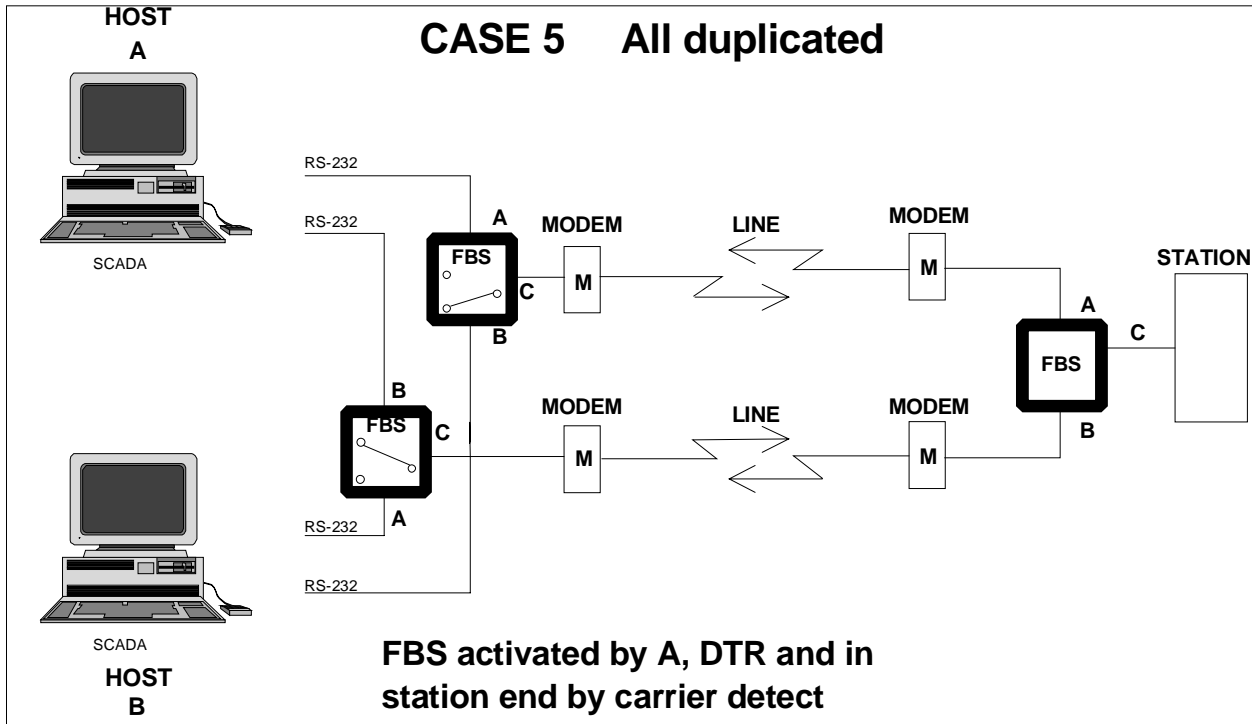
**3.4. Duplicated Hosts and Lines**



A computer is connected to the connector C. The switches S2-24 are set to DTE. The switch S25 is closed.

As long as the CD signal is active on side A, the communication path is connected to that side. When the CD signal is not detected on side A as the timeout delay expires, the communication path is switched to side B. The timeout delay is adjustable by trimmer R7.

3.5. Fully Duplicated



A modem is connected to the connector C on both FBS's. The configuration switches are set to DCE and the switch S25 is closed. A station is connected to connector C. The switches S2-24 are set to DTE. The switch S25 is closed.

The upper FBS selects the connection line according to the DTR signal on Host A. When there is no signal detected during the timeout delay, the FBS connects the communication to host B. This FBS connects the communication path according to the modem CD signal. When there is no signal detected on side A during the timeout delay, the FBS connects the communication path to side B.

The lower FBS works in the same way as the upper one, except that the first selection is Host B.

## 4. HARDWARE DESIGN

The KU13.1 FBS is a solid state switch used to backup and connect communication lines. The hardware is a single Eurosize card. The card has a built-in switching regulator. It accepts a power supply with a range of 7 - 33 VDC.

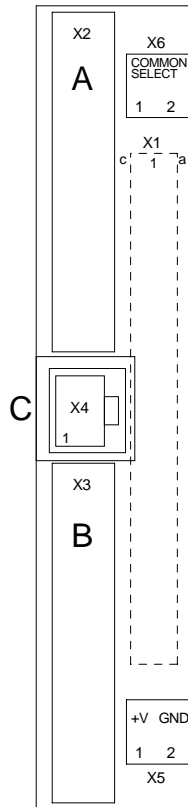
The receiver interface transforms the RS-levels to the TTL-levels and transmitter interface converts the TTL-signals to the RS-levels. The switching is made by the TTL- levels.

The Hot Standby mode is based on a Schmitt-trigger latch circuit. It can be preset with the switch located on the front panel.

The timeout period is generated by a one shot timer chip. The timeout delay can be adjusted with a trimmer R7.

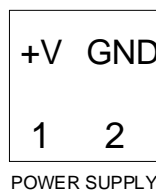
## 5. CONFIGURATION

There are two D-connectors (D25S) for the selectable lines A and B, and RJ-45 connector for the common line C. The common line C can also be connected to an on-board D-connector (D25S).



### 5.1. Power Supply

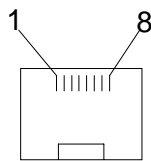
The power line is connected to the backplane connector X5. The GND level is connected to the pin 2 and positive voltage to the pin 1. The power supply input voltage range is 7-33VDC.



**5.2. Common Line C**

The common line C is connected to the backplane board as follows:

RJ45 FRONT VIEW



RJ45	Signal	D-25P
1	RI	22
2	CD	8
3	DTR	20
4	GND	7
5	RxD	3
6	TxD	2
7	CTS	5
8	RTS	4

The common line can be alternatively connected to the on-board D-connector. In that case, C = DTE.

- pin 1 = PG
- pin 2 = TxD
- pin 3 = RxD
- pin 4 = RTS
- pin 5 = CTS
- pin 6 = DSR
- pin 7 = GND
- pin 8 = CD
- pin 20 = DTR
- pin 22 = RI

**5.3. Selectable Line**

The selectable line is on the backplane board with the connector A or B. They are both D25-female connectors.

- pin 1 = PG
- pin 2 = TxD
- pin 3 = RxD
- pin 4 = RTS
- pin 5 = CTS
- pin 6 = DSR
- pin 7 = GND
- pin 8 = CD
- pin 20 = DTR
- pin 22 = RI

**5.4. Settings**

S1	LEFT	on the Hot Standby mode triggers the connection to line A
	RIGHT	on the Hot Standby mode triggers the connection to line B

S2-24 are always set to the same position depending on the C = DCE or DTE

	C = DCE	a modem is connected to the connector C
	C = DTE	a computer is connected to the connector C
S25-27	case A:	S25 is closed, the timeout delay is active
	case B:	S26 is closed, Hot Standby mode
	case C:	S27 is closed, Common Select mode

The Common Select mode slave boards change their selections at the same time commanded by the master board.

The master board S27 and S25 (timeout) or S26 (Hot Standby) is selected.

There is one master FBS board in the datacommunication rack and one to four slave boards. The Common Select line is chained to every board. If more than one backplane board is used, the Common Select line is chained to the next backplane board (X6).

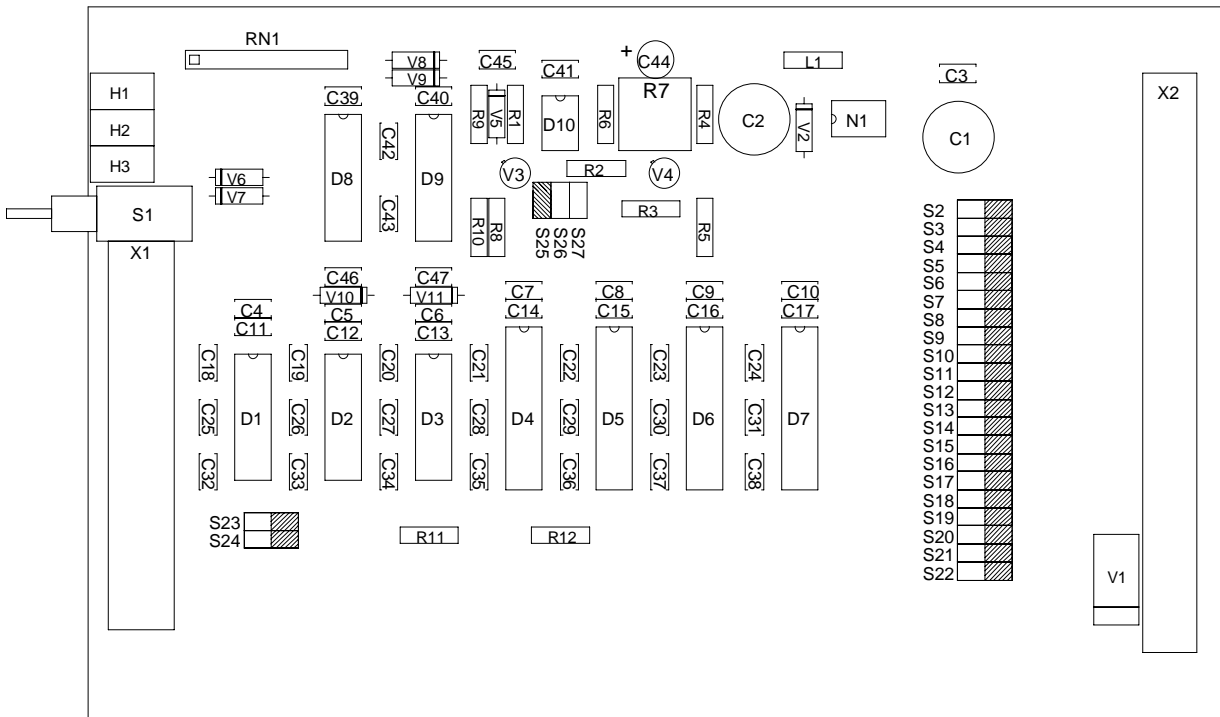
**5.5. Indicators**



H1 upper	line A TxD
H1 lower	line B TxD
H2 upper	line A RxD
H2 lower	line B RxD
H3 upper	line A DSR
H3 lower	line B DSR



6. APPENDIX

6.1. Layout



DIRECTION:	S2-S24	 C = DCE	 C = DTE
ACTIVATED BY:	S25	DTR	CD
	S26	HOT STAND BY	NC
	S27	COMMON SELECT	COMMON SELECT