Technical Description

Interface Board

6841H1 / H2 / H3

Safety information

The Safety Instructions and Technical Data serve to ensure trouble-free operation and protection of operating personnel and equipment. Strict compliance with these instructions is therefore necessary.

Failure to comply with these Safety Instructions will VOID the Warranty and any claims made under its terms.

Further no liability will be assumed by ***hopf*** Elektronik GmbH, for ensuing consequential damages, resulting from non-compliance.

Safety of the Devices

This instrument has been manufactured in accordance with the latest technological standards and acknowledged safety regulations.

The instrument should only be operated and maintained by properly trained and qualified technical personnel.

Please ensure that all cable connections are laid and fixed in position correctly. The instrument should only be operated with the supply voltage indicated on the identification plate. Note that multiple input power options exist (factory installed).

If an instrument must be opened for repair, this should only be carried out by technicians or engineers with corresponding qualifications or by ***hopf*** Elektronik GmbH company, or its representatives.

If the maintenance work requires the opening of a device or if a fuse needs changing, the device must first be disconnected from all power supplies.

If there are reasons to believe that the operational safety can no longer be guaranteed the device must be taken out of service and labeled accordingly.

The safety may be impaired when the device does not operate properly or if it is obviously damaged. Contact your local ***hopf*** Elektronik GmbH representative for required action.

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1 General

The board contains several functional modules for different potential adaptations and also for the output of individual information like second pulses, DCF77-pulse signal etc.

2 Hardware

2.1 Extension levels

Three different extension levels are available.

2.1.1 Board 6841H1

On this level the board contains the following functional modules.

- one conversion step from RS422 signals to a TTY interface
- one conversion step from RS422 signals to RS232 signals
- two optical coupler outputs for customer specific signals
- two relay outputs for customer specific signals
- one 24V DC/DC transformer for the voltage supply for the output of active signals

All the signals are led to a 25-pole SUB-D female connector.

2.1.2 Board 6841H2

This extension level contains all the functional modules of the board 6841H1. Additionally the board contains a conversion step from RS422 signals to optical fibre for synthetic cables.

2.1.3 Board 6841H3

This extension level contains all the functional modules of the board 6841H1. Additionally the board contains a conversion step from RS422 signals to optical fibre for glass fibre cables.

2.2 Functional Modules

2.2.1 RS422 / TTY-Converter

This functional module can be used to move an RS422 interface to TTY-level. The TTY-signals lie on the 25-pole connector at the following pins when the interface operates passively.

Transmit TxD

TTY-OUT + = Pin 14
TTY-OUT – = Pin 15

Receive RxD

TTY-IN + = Pin 19
TTY-IN – = Pin 18

There are limiting resistors of 680 Ω in the reception and transmission current loops. When operating with 24 V levels a current of about 20 mA flows there.

It is also possible to operate the transmission and reception interface actively by including the internally insulated voltage supply at the pins

Pin 1	+ 24 V
Pin 20	+ 24 V
Pin 16	0 V
Pin 17	0 V

(see example in the appendix)

The TTY interface outputs can also be used for other customer specific signals. In this case a special description of this special use is added to the manual.

An optical coupler causes the potential separation. If used for customer specific signals the maximum loads are

TTY-OUT	24V / 25mA
TTY-IN	24V / 25mA

Both current loops have a built-in limiting resistor of 680 Ω on the board. These resistors can be bridged by solder straps on the board.

BR1 closed resistor bridged in TTY-OUT
BR2 closed resistor bridged in TTY-IN

2.2.2 RS422 / RS232 Converter

This converter serves to change from an internal RS422-interface to an RS232-interface without handshake lines. The signals are at the following pins:

TxD = Pin 2
RxD = Pin 3
GND = Pin 7

2.2.3 Optical Coupler

Two optical couplers (OC3 and OC4) serve to put out customer specific signals potential free.

In the 25-pole connector the optical coupler connections are at the following pins:

OC3 +	Pin 22	OC4 +	Pin 12
OC3 –	Pin 23	OC4 –	Pin 13

The signals can be switched either passive or active (see: Examples for Connection).

2.2.4 Relay Output

Two relays are available for the output of error messages.

The relay contacts are led to the connector as follows.

Contact	Relay 1	Relay 2
common (c)	Pin 4	Pin 8
normally open (no)	Pin 6	Pin 10
normally close (nc)	Pin 5	Pin 9

The load of the contacts is max. 60 V, 30 VA.

2.2.5 Option Optical Fibre Version FG6841H2 and FG6841H3

In the versions FG6841H2 and H3 the boards contain the fibre optic module for the conversion to an RS422 interface.

In the H2-model the modules are designed for 1 mm synthetic cables:

- transmitter: HFBR-1523
- receiver: HFBR-2523

The max. length of the optical connection is 80 m at 9600 baud. The technical data are listed in the appendix.

In the H3-version the board contains the modules for fibre optic cables:

- transmitter: HFBR-1404
- receiver: HFBR-2402

of 50/125 µm, 62.5/125 µm, 100/140 µm and 200 µm. The length of the optical connection depends on the size of the fibre and may be up to 500 m.

Please Note: THE TECHNICAL DATA OF THE MODULES ARE LISTED IN THE APPENDIX.

2.2.6 Addressing the Interfaces

As the board has three interfaces, one interface must be addressed physically via the jumper row ST2.

Jumper 1	TTY-IN on RS422-input
Jumper 2	RS232-IN on RS422-input
Jumper 3	LWL-IN on RS422-input

2.3 Supplementary installation of Board 6841Hx in System 7001

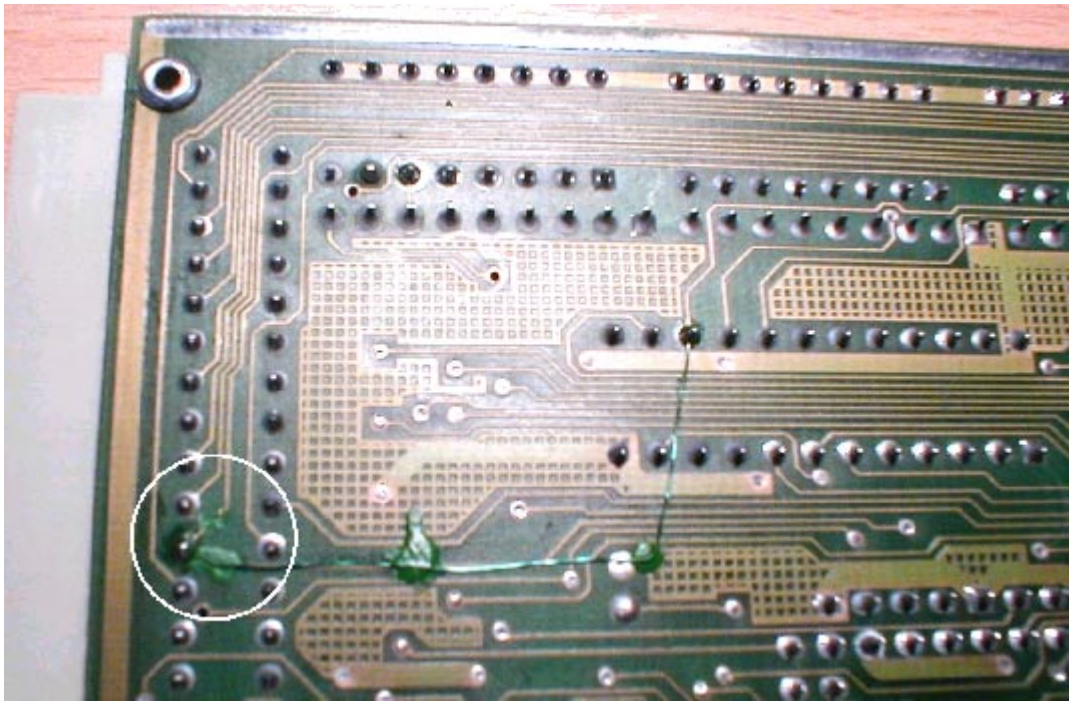
Required hardware modification for output of serial data strings from board 7201 via board 6841Hx

Via board 6841Hx the conversion and output of the serial output of an existing board 7201 can be realized. This requires a modification on board 7201 and an internal cable connection between 6841Hx and 7201 in system 7001.

Please Note: THE REMOVAL OF BOARD 7201 OUT OF SYSTEM 7001 AND THE DESCRIBED REMODELING MEASURES MUST BE REALIZED IN VOLTAGE-FREE CONDITION! THEREFORE TURN OFF SYSTEM 7001 AND DISCONNECT FROM POWER SUPPLY.

2.3.1 Remodelling on board 7201 for maintenance of potential separation

- On the soldering side of board 7201 cut track conductor at Pin 11 of VG-bar at marked position (see photo) by means of a sharp knife
- After that connect Pin 14 of IC U14 and Pin 11a of the VG-bar with thread wire
- Fasten thread wire with lacquer or appropriate glue



2.3.2 Creating a cable connection between 6841Hx and 7201 in system 7001

- Unfix screws of front panel and remove display carefully
- By use of insulated wire make the following connection. Therefore sold the wire end to the according Pin of the VG-bar.

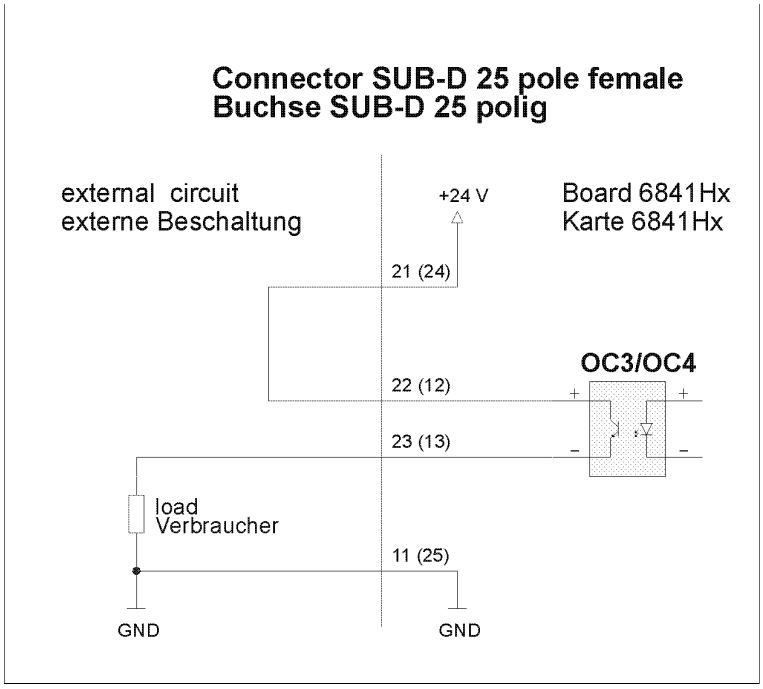
  Pin 11a, plug-in slot board 7201 --------- Pin 11a, plug-in slot board 6841Hx

- Screw display on
- Set the required output parameter on board 7201 via Dip Switch and mount boards 7201 and 6841Hx into the appropriate slots.

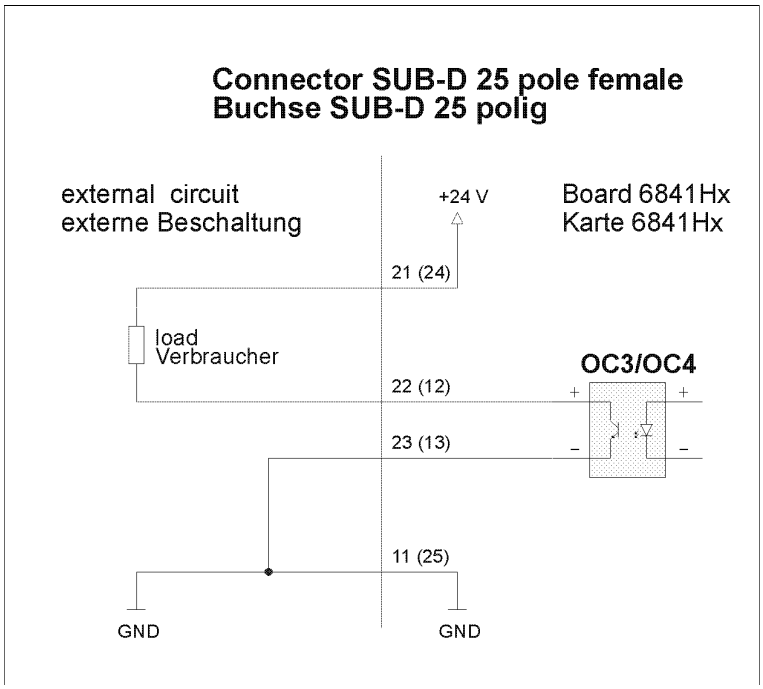
Now the board 6841Hx gives out the serial output set on board 7201. The Board 7201 can be externally occupied as serial interface further on.

2.4 Examples for Connection

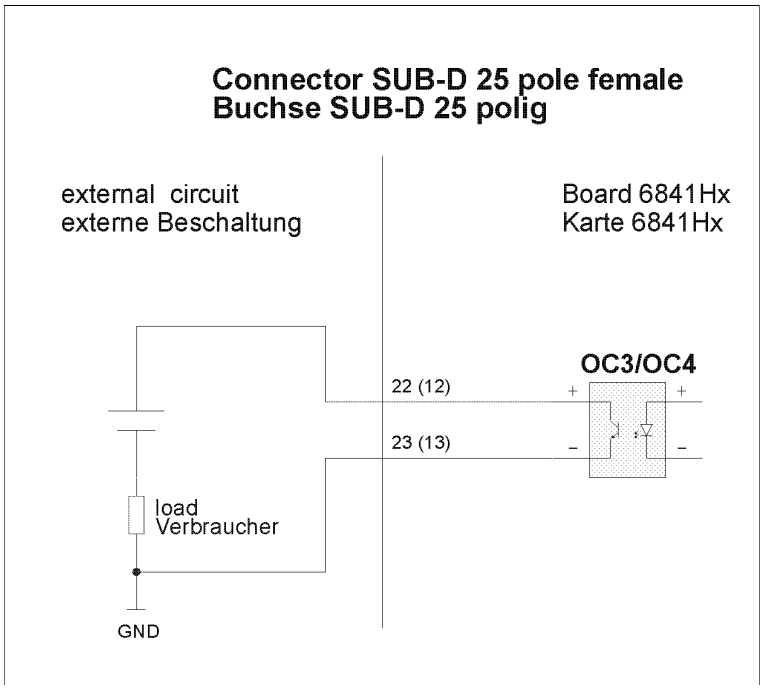
2.4.1 Active, positive pulse



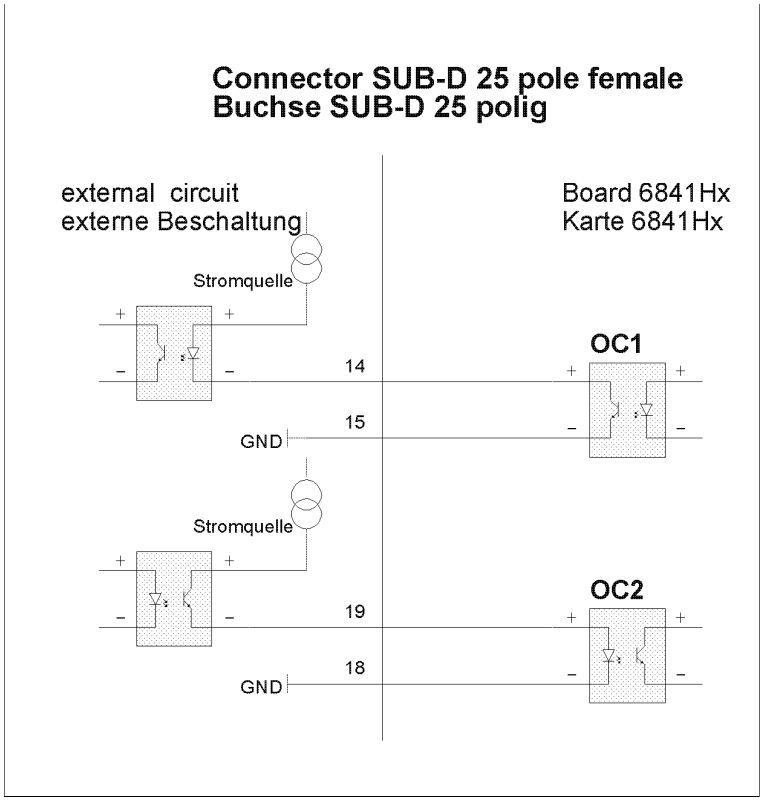
2.4.2 Active, negative pulse



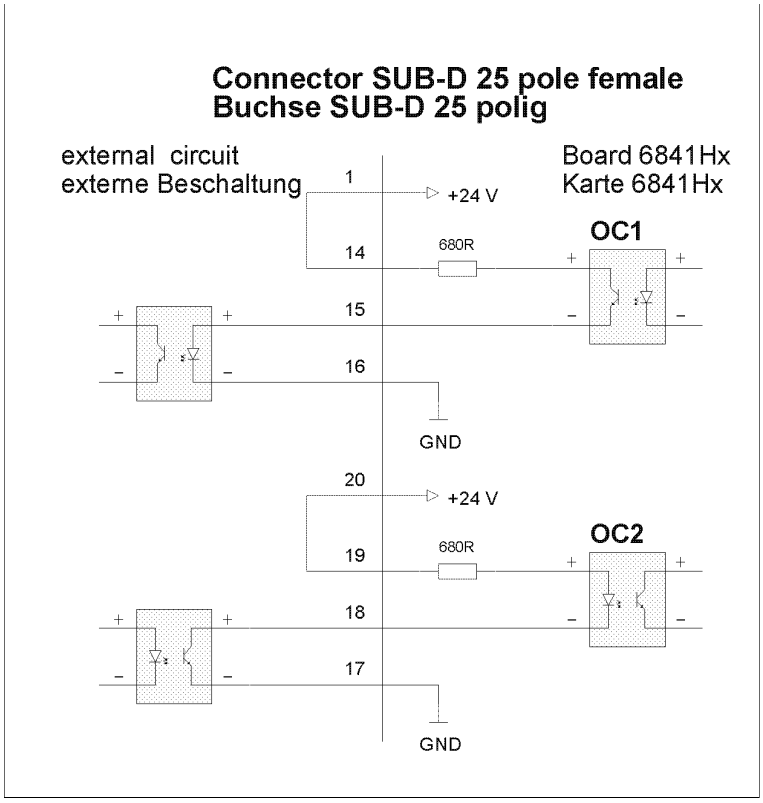
2.4.3 Passive, positive pulse



2.4.4 Pulse TTY passive



2.4.5 Pulse TTY active



2.5 Pin Assignment of the 25-pole SUB-D Connector

Pin	Signal	
1	+ 24 V	
2	TxD	RS232
3	RxD	RS232
4	common	
5	normally close	REL K1
6	normally open	
7	GND - RS232	RS232
8	common	
9	normally close	REL K2
10	normally open	
11	GND	

Pin	Signal	
12	+	OK4
13	–	
14	output +	TTY
15	output –	
16	GND	
17	GND	
18	input –	TTY
19	input +	
20	+ 24 V	
21	+ 24 V	
22	+	OK3
23	–	
24	+ 24 V	
25	GND	

2.6 Pin Assignment of the 64-pole VG-Ledge

	a	b	c	
1				1
2				2
3				3
4				4
5				5
6				6
7				7
8				8
9				9
10				10
11	RxD		pulse for K1	11
12	– TxD		pulse for K2	12
13	+ TxD			13
14				14
15				15
16			pulse for OK4	16
17			pulse for OK3	17
18				18
19				19
20				20
21				21
22				22
23				23
24				24
25	Bus-Request in		Bus-Request out	25
26				26
27	Auto-Reset in		Auto-Reset out	27
28				28
29				29
30				30
31	GND		GND	31
32	+ 5 V		+ 5 V	32

3 Technical Data

voltage supply :	5 V DC ± 5%
power consumption :	max. 0.5 A
temperature range :	0 - 70°C
output voltage:	24 V DC / 60 mA

TTY-interface

voltage difference :	max. 30 V DC
output current TTY-OUT :	max. 25 mA
input current TTY-IN :	min. 10 mA
	max. 25 mA
baudrate :	max. 9600 Baud

signal delay at I = 20 mA, 1 m cable length, 90% / 10% signal amplitude

contact closing time :	1 µs
contact opening time :	1 µs

optical coupler

voltage difference :	80 V DC
switching current :	50 mA

signal delay at I = 20 mA, 1 m cable length, 90% / 10% signal amplitude

contact closing time :	30 µs
contact opening time :	5 µs

relays

contact load :	max. 80 V, 30 VA.

fibre optic

baud rate :	max. 9600 Baud

optical transmission length

- plastic cable : max. 80 m
- glass fibre cable : max. 500 m