

General Purpose – Isolation Buffer TR 1702

HTL-,TTL- input and output free programmable

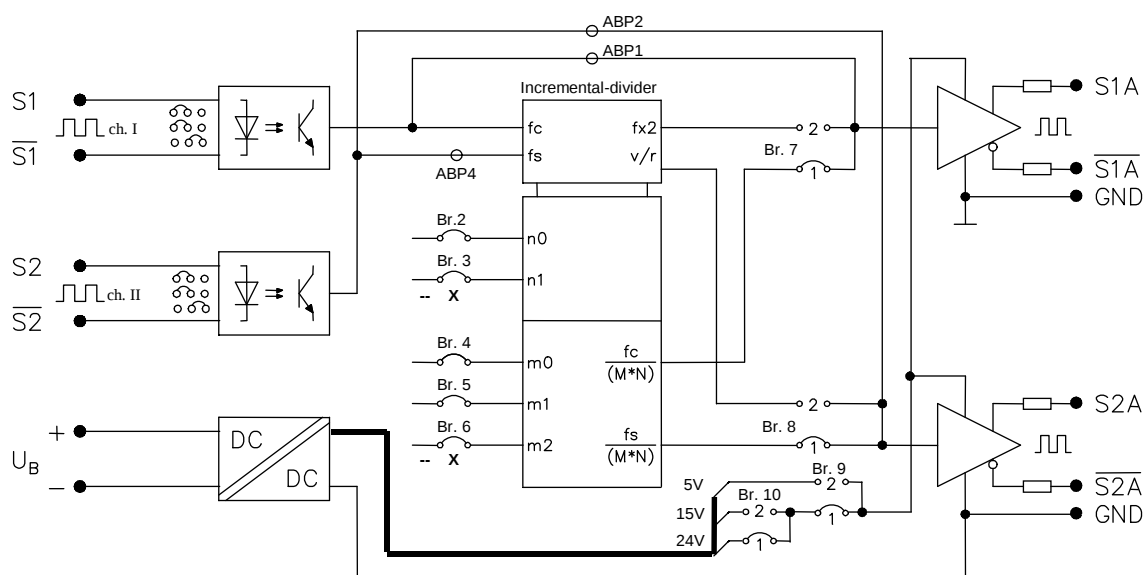
Frequency divider for incremental signals

Isolation buffer TR 1702 is galvanic isolating incremental rectangular pulse signals up to 200 kHz

1. Applications

- One- and multiple quadrant operation
- Connection of several speed-control- and measurement-circuits to one speed pulse encoder, e.g. OPTI or HTPI
- Distribution of one speed pulse encoder signal to various applications
- Converter TTL- to HTL-level
- Converter HTL- to TTL-level
- Pulse divider for adapting too high frequent signals to the required job

Block diagram



fc = Incremental signal (cosinus phase)

fs = Incremental signal (sinus phase)

fx2 = Double frequency signal

v/r = Speed direction signal

$N = 2^n$ $n0, n1$ = binary coded

$M = m+1$ $m0, m1, m2$ = binary coded

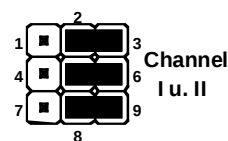
2. Technical Data

Input signals:

TTL complementary RS 422

Level $|(S..+) - (S..-)| > 0,5 \text{ V}$

Impedance approx. 10 k Ω

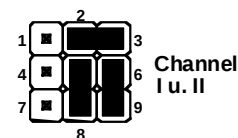


TTL unipolar (S..- = Gnd)

Hi-level > 1,9 V

Lo-level < 1,3 V

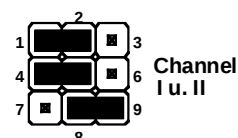
Impedance approx. 5 k Ω



HTL complementary *

Level $|(S..+) - (S..-)| > 2 \text{ V}$

Impedance approx. 94 k Ω

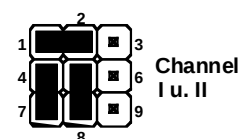


HTL unipolar (S..- = Gnd)

Hi-level > 7,5 V

Lo-level < 2,9 V

Impedance approx. 47 k Ω



TTL

$U_{CM \max} = S..+ \dots S..- = 30 \text{ V}$

$f_{\max} = 200 \text{ kHz}$

HTL

$U_{CM \max} = S..+ \dots S..- = 100 \text{ V}$

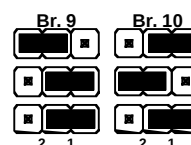
$f_{\max} = 200 \text{ kHz}$

Output signals:

Hi-level = 5 V (Br. 9/2)

15 V (Br. 9/1 u. Br. 10/2)

24 V (Br. 9/1 u. Br. 10/1) *



Lo-level = 0,6 V

short-circuit-proof

impedance approx. 75 Ω

max. current approx. 50 mA

Supply voltage:

U_B 12 ... 28 V DC

max. 8 Watts

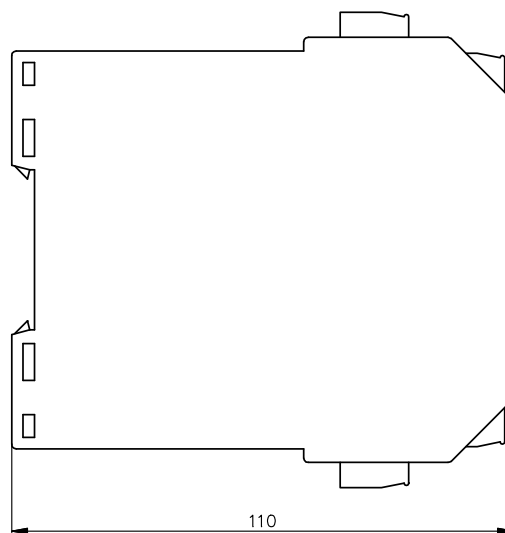
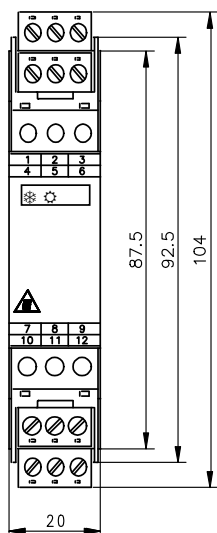
Ambient temperature:

max. 60 $^{\circ}\text{C}$

Protection class:

IP 20

Dimensions:



3. Options

Option P1: Pulse divider for incremental signals

For speed measurements requiring lower pulse frequencies, the input pulse frequency may be divided by a pulse divider in fixed ratios.

For this application jumpers Br.7/1 (channel S1) und Br.8/1 (channel S2) of the output amplifier have to be closed.

Programming of the divider ratio will be made by jumpers Br.2, Br.3, and Br.4, Br.5, Br.6.

All jumpers are located on the pc-board.

The following divider ratios are programmable:

1 - 2 - 3 - 4 - 5 - 6 - 8 - 10 - 12 - 16 - 20 - 24 - 32 - 40 - 48 - 64

Option P2: Pulse divider for single signals

A single signal may only be connected to input S1. The 2nd input will be simulated internally for the frequency divider, i.e. signal input S2 will not be available for external signals. Dividing ratios and jumpers are equivalent to option P1.

Option P3: Elimination of direction pulses

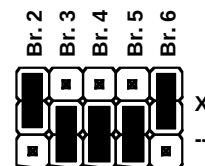
Only the output signal according to the speed direction will be transferred.

4. Programming of pulse divider ratios

The incremental divider is consisting of two serial dividers. The total dividing ratio is calculated by multiplication of dividing ratio N and M. Dividing ratio M = 7 is not implemented. In general all dividing ratios M * N are programmable.

Divider „N“	Br.2	Br.3
1	--	--
2	X	--
4	--	X
8	X	X

Divider „M“	Br.4	Br.5	Br.6
1	--	--	--
2	X	--	--
3	--	X	--
4	X	X	--
5	--	--	X
6	X	--	X
8	X	X	X

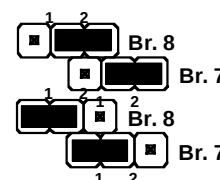


Alternatively the following functions may be used for incremental input signals:

- Speed direction signal V/R routed to output S2A (jumper Br. 8/2 closed)
- 2-fold measurement signal S1 routed to output S1A (jumper Br. 7/2 closed)

* Standard configuration ex works

Channel S2: Channel II HTL compl. Br. 8/1 closed
 Channel S1: Channel I HTL compl. Br. 7/1 closed
 Divider 10:1: Br. 2/X und Br. 6/X closed



Dismantling of housing

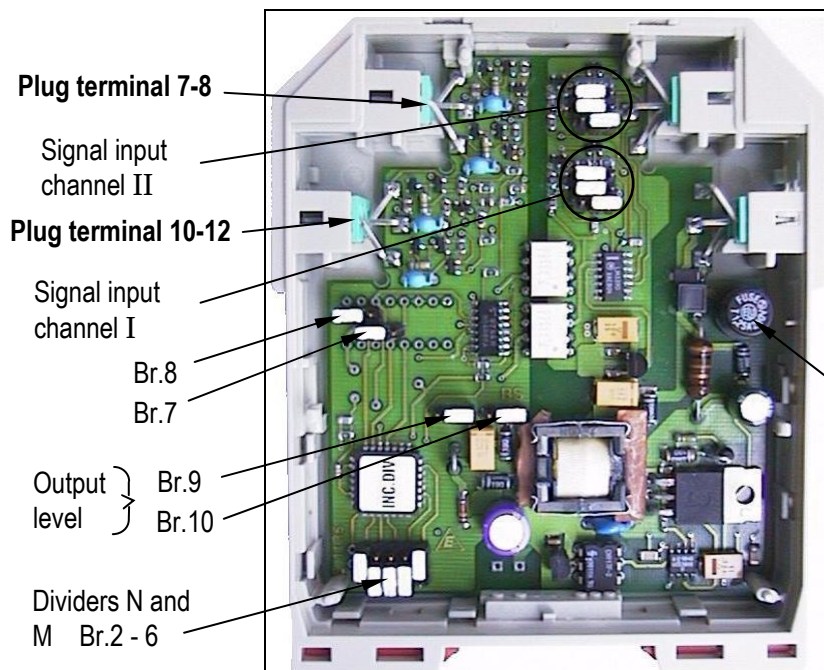


1. Lift and remove front cover carefully.



2. Remove side cover carefully

Position of jumpers



Attention:

Please take care at assembly that the side and front cover will be fitted in the same position and direction as before dismantling! (Risk of confusion of terminal connection and numbering).

Fuse 1,25A T

5. Connections of TR 1702 (3-fold terminal plugs)

Terminal 1	Power supply $U_B +$
Terminal 2	Power supply $U_B / 0V$
Terminal 3	S1 input signal 1
Terminal 4	S1 input signal 1 compl.
Terminal 5	S2 input signal 2
Terminal 6	S2 input signal 2 compl.

Terminal 7	Gnd	Output signals
Terminal 8	S1A	output signal 1 compl.
Terminal 9	S1A	output signal 1
Terminal 10	Gnd	Output signals
Terminal 11	S2A	output signal 2 compl.
Terminal 12	S2A	output signal 2

6. Connections of TR 1702 P1 / P2

Terminal 10	Gnd	Output signals
Terminal 11	S1A	output signal 1 compl.
Terminal 12	S1A	output signal 1
Terminal 7	Gnd	Output signals
Terminal 8	S2A	output signal 2 compl.
Terminal 9	S2A	output signal 2