



LABOR – ASTER

INDUSTRIAL AUTOMATION



Frequency divider of the input pulses type IF-S2B

- **Division of pulses string frequency e.g.:**
 - bistate pulses 0/24V,
 - NAMUR standard pulses NAMUR e.g. from proximity sensors
- **Pulses output type OC:**
 - NPN, PNP
- **Possibility of supplying input pulses transmitter**
- **Output frequency division set with switchers accessible after opening the housing: 4 bits**
- **Galvanic separation between input and output, power supply**

APPLICATION :

Divider IF-S2B is designed to convert voltage or current pulses to pulses string in standard type OC (NPN or PNP).

Galvanically separated output generates voltage pulses in OC standard with a frequency divided in relation to the input frequency. Division N is set with switchers – 4 bits according to Table 1 or Table 2 given at the end of this document. The switchers are accessible after opening the housing. Division can be different but the it is constant and cannot be changed. Different division should be specified in the order.

Examples of pulses source which can operate with IF-S2B:

- screw water meters;
- proximity sensors type NAMUR;
- flow meters.

BASIC TECHNICAL PARAMETERS:

Input:

current pulses	- 10µA...1A
voltage pulses	- 20mV...100V
NAMUR pulses transmitter	- $I_{min} \leq 1.2\text{mA}$, $I_{max} \geq 2.1\text{mA}$

Internal hysteresis

- typically 50% of signal value

Input resistance:

current input	- $<50\Omega$
voltage input	- $>250\text{k}\Omega$

NAMUR pulses converter

- $1\text{k}\Omega$

Additional power supply for pulse transmitter Us

- 8.2V or other as ordered

Frequency band

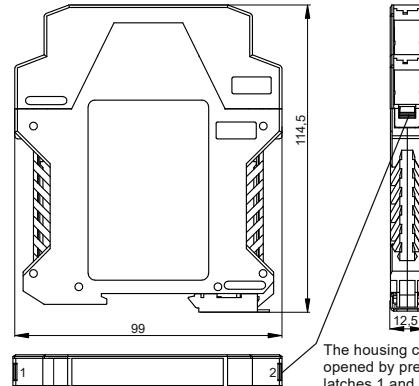
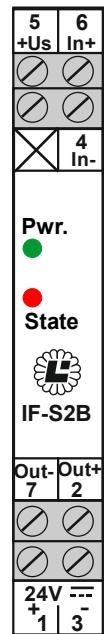
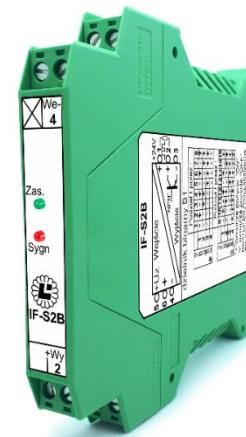
- 0...10kHz acc to order

Output signal

- OC "NPN" or "PNP"
- 45V / 90mA

Working conditions:

- Ambient temperature - storing: -30°C...+60°C
- Ambient temperature - working: -25°C...+60°C
- Relative humidity: max 90%, no water vapor condensation
- Ambient atmosphere: free from dust and aggressive fumes



Shape of the output signal

$$\left\{ \begin{array}{l} 50\% - \text{no division and division by even numbers} \\ 50\% \cdot \left(\frac{p-1}{p} \right) - \text{division by odd numbers (p - division)} \end{array} \right.$$

Output pulse duration

- square wave with duty:

Output frequency division

- 0.05ms, 0.1ms, 1ms, 10ms as ordered

Accuracy of switching levels in entire temperature range

- settable with switchers according to Table 1 or Table 2 or constant if ordered so

Power supply

- $\pm 1\%$ of amplitude specified in the order

Input galvanic separation

- 18...28V / 60mA

Power supply indication

- 2kV, 50Hz

State indication

- LED „Pwr.” is ON

State indication according to the output state or to the input pulses

Operation temperature

- (-20...+70)°C

Dimensions

- 12.5 x 90 x 114.5mm

mounting

- on TS35 rail

Housing protection level

- IP20

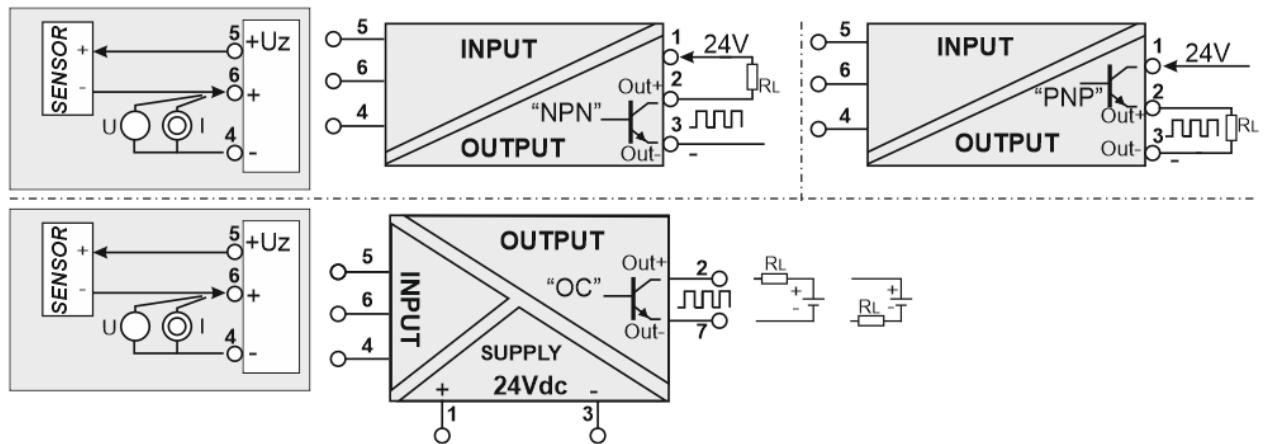
Safety requirements

- PN-EN 61010-1:2002

EMC requirements

- PN-EN 61000-6-1

- PN-EN 61000-6-3



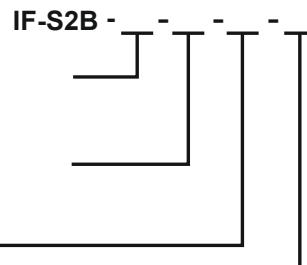
Way of connecting input and output signals

NOTE 1. Normally when there is no input pulse, the output key is opened. It is closed for a duration of the input pulse. There is an option to change the phase (no pulse->key closed, pulse->key opened) after agreement. It is recommended to specify the phase in the order.

NOTE 2: With division other than 1:1 and loss of the input signal the output switch state is random depending on the moment of losing the signal. The processor waits for subsequent edges of the input signal to change the output state.

HOW TO ORDER: describe the input signal (shape, amplitude changes, duty cycle changes etc.)

input signal amplitude **Vd / Vg**
Vd - minimal input signal amplitude
Vg - maximal input signal amplitude
 input signal frequency **fd / fg**
fd - lower input signal frequency
fg - upper input signal frequency
 output pulse duration
50% - square wave duty cycle 50%
... - other in [ms] (specify)



division
B1 - standard binary divider (acc to Table 1)
B2 - optional binary divider (acc to Table 2)
x - constant division (specify)
output **NPN / PNP / OC**
NPN - load to "+" (not separated from power supply)
PNP - load to "-" (not separated from power supply)
OC - potential-free transistor (separated from power supply)
LED indication **WE / WY**
WE - LED "State" flashes with input pulses
WY - LED "State" flashes with output pulses

ORDER EXAMPLE: type **IF-S2B - 0,02V/1V - 0/2kHz - 50% - WY - NPN - B1**

Frequency divider type **IF-S2B**: square wave input signal with duty cycle 50%, lower voltage level 0V, upper voltage level changes in range 0,02...1V, frequency changes 0...2kHz; output signal duty cycle 50%; LED "State" flashes with output pulses; output type OC NPN; binary divider acc to Table 1

Table 1 – Standard settings of the division switchers (B1)				
Division	Switcher number			
	4	3	2	1
1	OFF	OFF	OFF	OFF
2	OFF	OFF	OFF	ON
3	OFF	OFF	ON	OFF
4	OFF	OFF	ON	ON
5	OFF	ON	OFF	OFF
6	OFF	ON	OFF	ON
7	OFF	ON	ON	OFF
8	OFF	ON	ON	ON
9	ON	OFF	OFF	OFF
10	ON	OFF	OFF	ON
11	ON	OFF	ON	OFF
12	ON	OFF	ON	ON
13	ON	ON	OFF	OFF
14	ON	ON	OFF	ON
15	ON	ON	ON	OFF
16	ON	ON	ON	ON

Division	Switcher number			
	4	3	2	1
1	OFF	OFF	OFF	OFF
2	OFF	OFF	OFF	ON
4	OFF	OFF	ON	OFF
8	OFF	OFF	ON	ON
16	OFF	ON	OFF	OFF
32	OFF	ON	OFF	ON
64	OFF	ON	ON	OFF
128	OFF	ON	ON	ON
256	ON	OFF	OFF	OFF
512	ON	OFF	OFF	ON
1024	ON	OFF	ON	OFF
2048	ON	OFF	ON	ON
4096	ON	ON	OFF	OFF
8192	ON	ON	OFF	ON
16384	ON	ON	ON	OFF
32768	ON	ON	ON	ON

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The manufacturer reserves the right to make changes to the product.

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