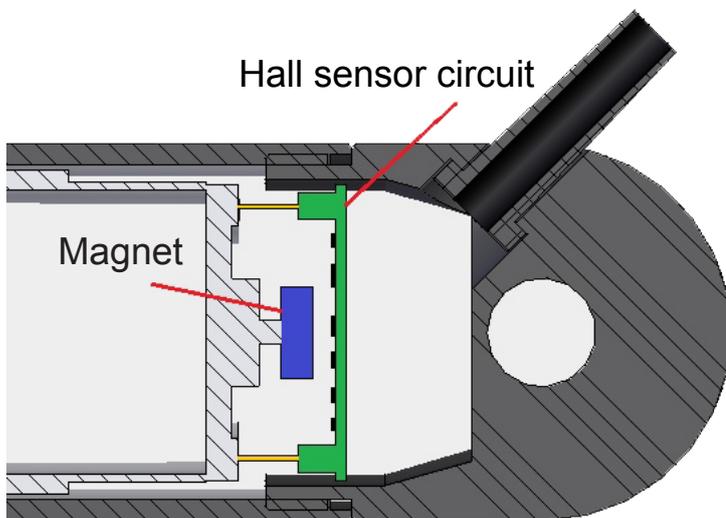


# Hall Sensor



**Bansbach**  
easylift



The hall sensor option is available for all three Bansbach actuator models. The hall sensor enables control of the position of the piston rod very precisely. Furthermore, the hall option allows driving of two or more actuators synchronously, depending on the choice of controller. A combination of the above features is of course, also possible. The PCBA is fully backwards compatible with earlier versions. Previous versions have a limited supply voltage range.

## Electrical data:

**Supply voltage:** 5-24VDC ( $\pm 10\%$ )

**Current consumption:** 5-20mA depending on supply voltage (Current consumption when using Bansbach controllers with 5VDC power supply for hall circuit is approx. 5mA).

**Output:** 5-24V amplitude depending on supply voltage,  $90^\circ$  or  $\frac{1}{4}$  cycle delay between output A and B. Output is "open collector"-type with internal 10k $\Omega$  pull-up resistors. Bansbach controllers are equipped with pull-up resistors also (4,7k $\Omega$ -10k $\Omega$ ).

## Built in dimension BID:

easyE-35 – BID increased by 10mm

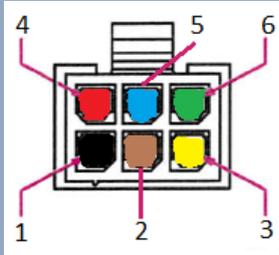
easyE-50/60 – BID increased by 15mm

## Electrical Wiring *Fig.1*

Yellow	Green	Brown	Blue	Red	Black
Hall A output	Hall B output	5-24V DC supply for hall	0V GND for hall	Actuator +	Actuator -

The table above shows the standard Bansbach cable for all three models. If other color combinations are experienced, please ask for advice before connecting to the controller.

*Fig.2*



- Pin 1: Actuator - black
- Pin 2: Hall supply brown
- Pin 3: Hall output ch A yellow
- Pin 4: Actuator + red
- Pin 5: Hall GND blue
- Pin 6: Hall output ch B green

## Hall resolution

In the tables below hall resolution is calculated for easyE35/50/60.

### easyE-35/100mm

Gear Ratio	S1 - S3 - S4			S2-2 - S2-3		
	Pulses	Pulses/mm	mm/pulse	Pulses	Pulses/mm	mm/pulse
C	250	2,5	0,4000	1000	10,0	0,1000
D	700	7,0	0,1429	2800	28,0	0,0357
E	950	9,5	0,1053	3800	38,0	0,0263
F	1350	13,5	0,0741	5400	54,0	0,0185
G	2550	25,5	0,0392	10200	102,0	0,0098
H	3550	35,5	0,0282	14200	142,0	0,0070

### easyE-50/100mm

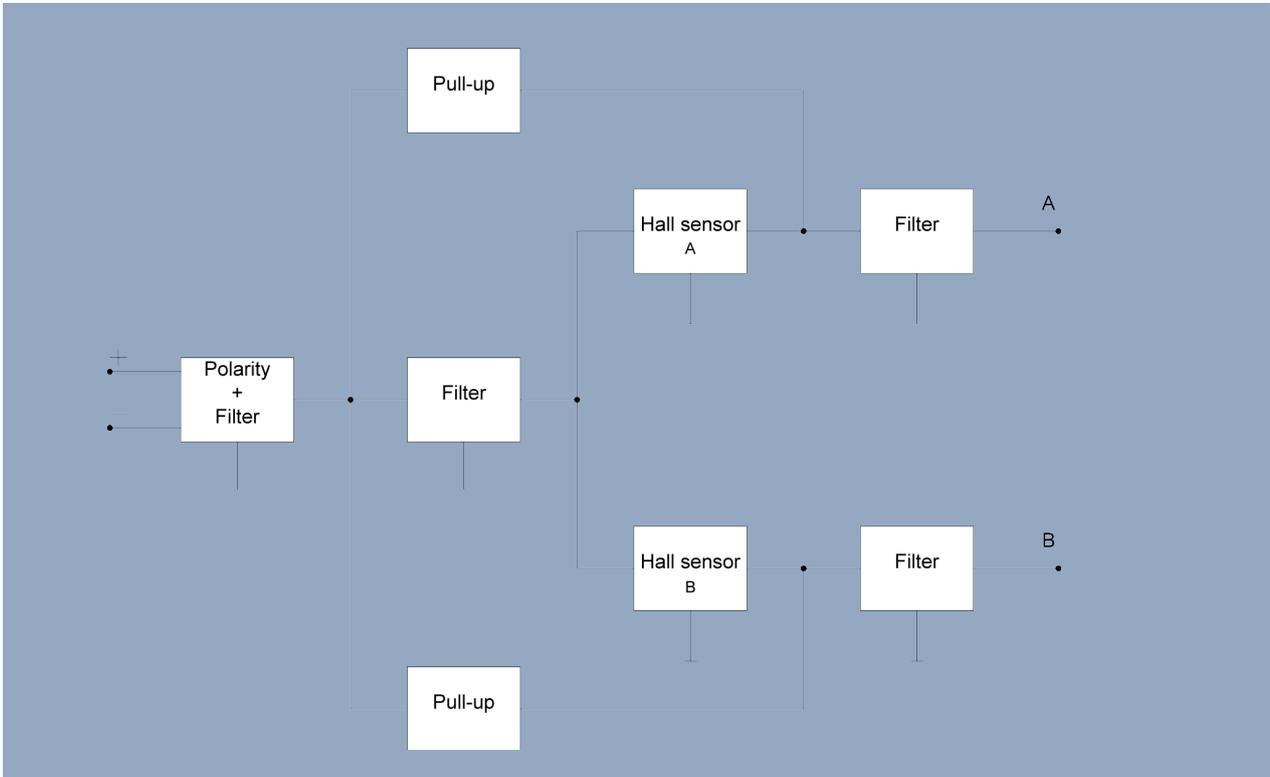
Gear Ratio	S1 - S3 - S4			S2-2 - S2-3		
	Pulses	Pulses/mm	mm/pulse	Pulses	Pulses/mm	mm/pulse
C	133	1,3	0,7500	533	5,3	0,1887
D	467	4,7	0,2143	1867	18,7	0,0535
E	567	5,7	0,1765	2267	22,7	0,0441
F	800	8,0	0,1256	3200	32,0	0,0313
G	1633	16,3	0,0612	6533	65,3	0,0153
H	2800	28,0	0,0357	11200	112,0	0,0089

### easyE-60/100mm

Gear Ratio	S1 - S3 - S4			S2-2 - S2-3		
	Pulses	Pulses/mm	mm/pulse	Pulses	Pulses/mm	mm/pulse
D	475	4,75	0,2105	1900	19,0	0,0526
E	1075	10,75	0,0930	4300	43,0	0,0233
F	1650	16,50	0,0606	6600	66,0	0,0152
G	2025	20,25	0,0494	8100	81,0	0,0123
H	2500	25,00	0,0400	10000	100,0	0,0100

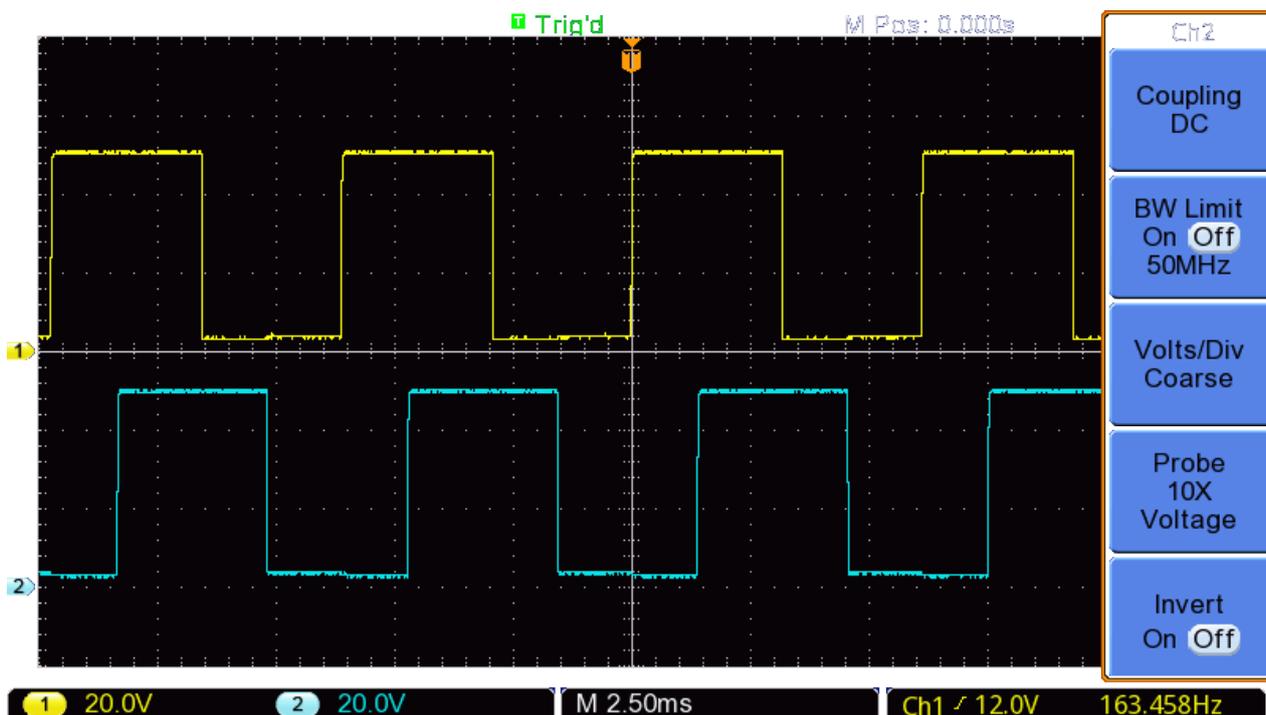
## Hall Sensor Circuit Block Diagram

The hall circuit inside the actuator has four connections. Two connections for power supply and two for output signal. The hall sensor works with supply voltage from 5-24VDC (+/- 10%). The outputs, A and B, each provide a square wave signal with  $\frac{1}{4}$  cycle or  $90^\circ$  delay between them. The amplitude of the output corresponds to the supply voltage (power supply 5VDC => output is 5Vpp/power supply 24VDC => output is 24Vpp). The output are "open collector"- type with internal pull-up resistors(10k $\Omega$ ).



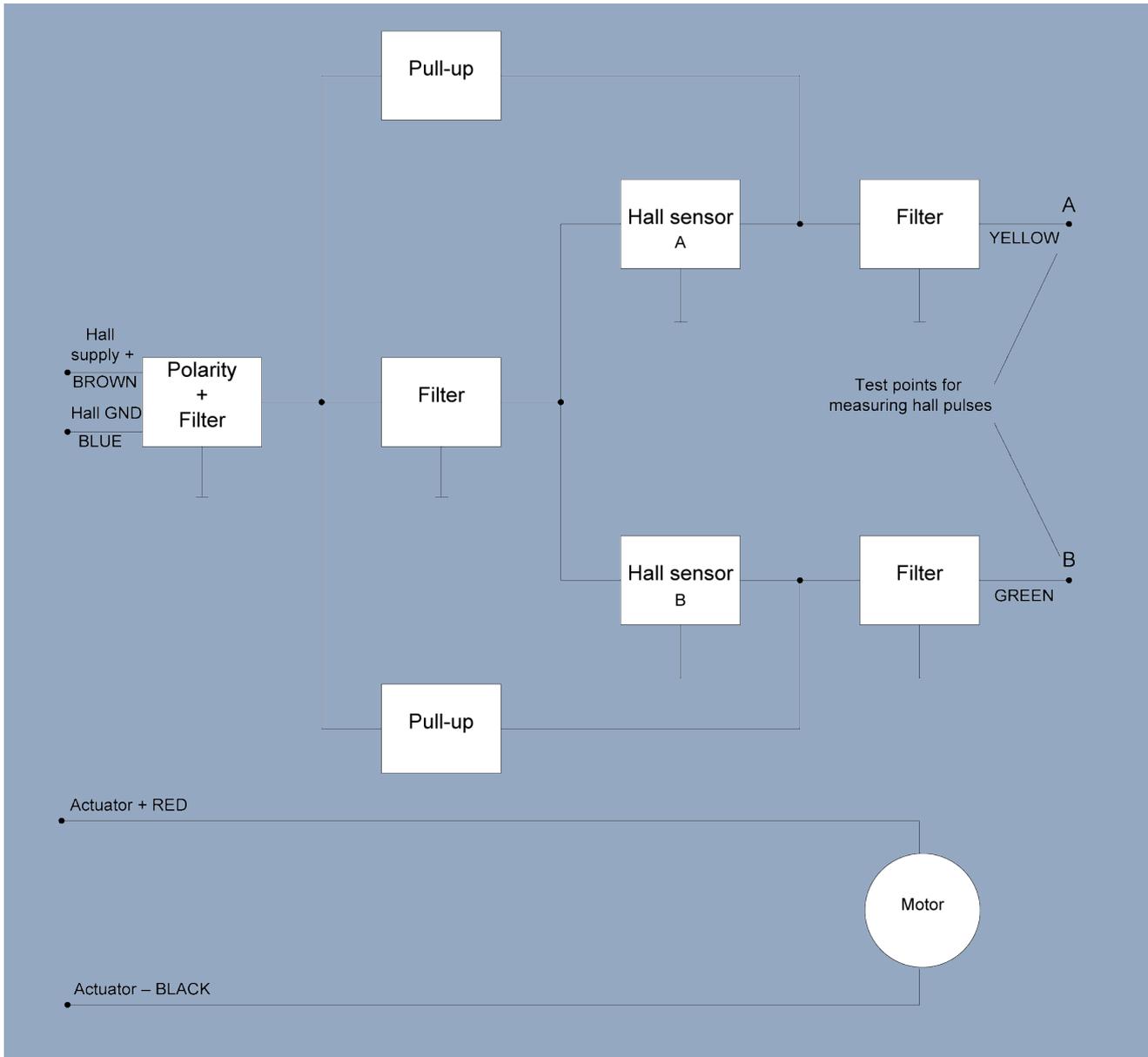
## Hall Pulse Waveform

This screen print of the output of the hall circuit shows the square wave with  $\frac{1}{4}$  cycle or  $90^\circ$  delay between them.



## Hall Test

Supply motor with 24VDC to the motor wires (red and black)  
Supply hall with +5VDC to the brown wire and 0V (GND) to the blue wire  
Now measure the signal from each hall output  
It should be a square signal with 5Vpp amplitude as shown in fig.6



## Please Note

When using actuators with hall sensor option, calibration or learning cycle must be performed before system is ready for use.

Electrical noise from the environment where the actuators are used may disturb the hall signal. These disturbances are usually increased by longer cable lengths.

The flyer is subject to technical alterations and printing

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