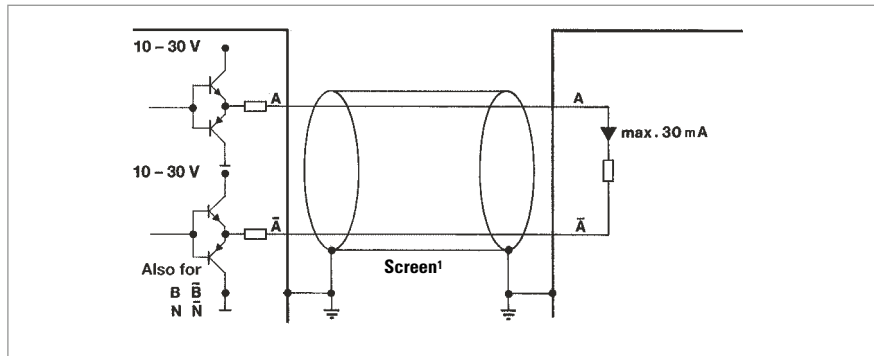


Basics of Incremental Encoders

Outputs - push-pull complementary

OUTPUT CIRCUIT



¹ cable screen connected with encoder housing

TECHNICAL DATA

Code letter	I = push-pull complementary (with $U_B = 10 - 30 \text{ V}$)
Output signals shaft turning clockwise (cw) seen from front of encoder	<p>Square wave pulses (HTL) for channels A, B, N and their inverted signals \bar{A}, \bar{B}, \bar{N}</p>
Delay times at 1,5 m cable	<p>$\leq 250 \text{ ns}$ $\leq 250 \text{ ns}$</p>
Pulse shape	
Pulse duty factor	1:1
Phasing	$90^\circ \pm 25^\circ$ electrical
Symmetry	$180^\circ \pm 25^\circ$ electrical
Nax. output frequency	200 kHz (see cable length)
Output voltage	$0 \dots + U_B$
Output level	$H \geq U_B - 3 \text{ V} / L \leq 2 \text{ V}$
Output load max.	$\pm 30 \text{ mA}$
Short circuit protection	short circuit proof for all channels due to integrated controller
Pole protection of U_B	yes

¹ Distance from A to B is at least $0,7 \mu\text{s}$ (at 200 kHz)

CABLE LENGTH

depending on voltage and frequency (at 25° C) ¹ :	
Length	push-pull complementary
10 m	DC 12 V, 200 kHz
	DC 24 V, 200 kHz
	DC 30 V, 200 kHz
50 m	DC 12 V, 200 kHz
	DC 24 V, 50 kHz
	DC 30 V, 25 kHz
100 m	DC 12 V, 150 kHz
	DC 24 V, 25 kHz
	DC 30 V, 12 kHz

¹ with Hengstler accessory cables