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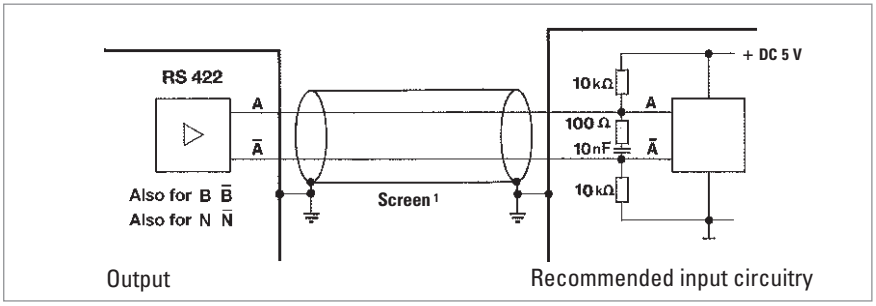
Basics of Incremental Encoders

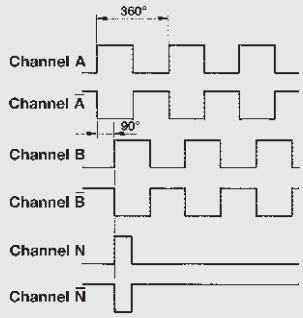
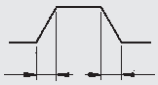
Outputs - RS 422 - TTL

OUTPUT CIRCUIT



1 Cable screen:
- not existing for RI 32, 38, 42,
- connected to encoder housing for RI 30, 36, 58, 59, 76 and RA 70

TECHNICAL DATA

Code letter	R = RS 422 + Alarm[3] (with U_B = DC 5/10 - 30 V) T = RS 422 + Sense[4] (only with U_B = DC 5 V)
Output signals shaft turning clockwise (cw) seen from front of encoder	 Square wave pulses (TTL) for channels A, B, N and their inverted signals Ā, B̄, N̄
Delay times at 1,5 m cable	 ≤100 ns ≤100 ns
Pulse shape	
Pulse duty factor	1:1
Phasing	90° ±25° electrical
Symmetry	180° ±25° electrical
Max. Output frequency	300 kHz
Output voltage	DC 0 ... +5 V [2]
Output level	H ≥ DC 2,5 V / L ≤ DC 0,5 V (TTL-level)
Output load max.	±30 mA
Short circuit protection	with U_B = DC 5 V: only 1 channel at a time for max. 1 s (Standard RS 422-driver) with U_B = DC 10 - 30 V: short circuit proof for all channels due to integrated controller
Pole protection of U_B	with U_B = DC 5 V: no with bei U_B = DC 10 - 30 V: yes

1 Distance A to B is at least 0,45 µs (at 300 kHz)
2 also for U_B = DC 10 - 30 V
3 Description - see Outputs Alarm
4 Description - see Outputs Sense

CABLE LENGTH

depending on voltage and fequency (at 25 °C) [1]:	
Length	RS 422
10 m	DC 5 V, 300 kHz
50 m	DC 5 V, 300 kHz
100 m	DC 5 V, 300 kHz

1 with Hengstler accessory cables