

**INTELLIGENT FLANGE**

0.0001



**STRÖTER**  
Magnetic pulse generator

# MIG – Incremental magnetic pulse generator



**STRÖTER** has developed an „intelligent“ intermediate flange which considerably simplifies the measurement of speed and sense of rotation as well as the connection with coordinating control systems. What was previously only possible with time-consuming assembly and

addons to drive systems is now possible in an easy and economical way both in new and existing installations.

This MIG magnetic incremental rotary transmitter is designed as an intermediate flange which is simply installed between the motor and the machine flange. This makes the integration of incremental position encoders in drive systems much easier – no matter whether you use it for speed measurement, for positioning control, dosage control or for synchronisation control.

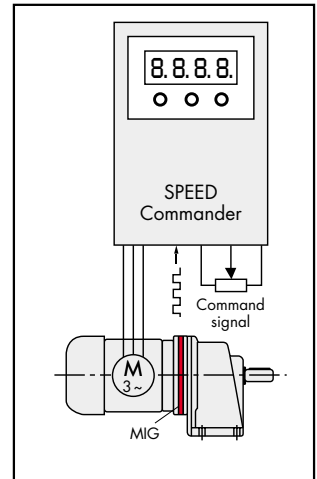
## The Task

When adapting gear motor units to meet the specific needs of customers for use in areas such as conveying technology, the engineers at Ströter Antriebstechnik GmbH frequently came across the same problem: the installation of incremental rotary transmitters which are used for determining the angle and direction of rotation requires mechanical modifications to the motor. In addition to this, the encoder was frequently positioned on exposed points which left it prone to damage.

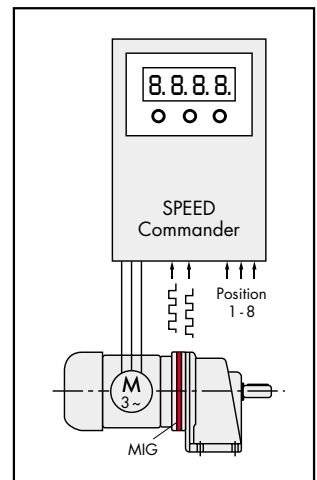


1. Compact design: depending on the size, only 7, 10 or 12 mm flange thicknesses are needed for installation.
2. Simple installation: the flange and sensors are directly fastened to the motor and the magnetic ring is placed directly on the motorshaft.
3. Suitable for all IEC flange motors with sizes between 56 and 180.
4. Also suitable for other flange connections such as d.c. motors, hydraulic/compressed air motors, pumps etc.
5. No mechanical modifications required for assembly.
6. Tried and tested measurement principle: two Hall-sensors receive the signals for speed and direction of rotation. This allows precise measurements without wear and tear or maintenance requirements.
7. Installation: Between the motor and the machine flange; this provides mechanical protection, sealed between the motor and machine flange; protection type IP 67
8. Universal HTL Signal for all standard evaluations (PNP, NPN, RS 422).
9. Cost effective solution which is also suitable for the economic retro-fitting of drives.
10. Short-circuit proof, polarized and over-voltage protected transmitter electronics, in SMD technology; fully integrated into the flange.
11. The monitoring system can be positioned up to 1000 m away from the transmitter.
12. The pulse number can be doubled or quadruplicated by means of subsequent electronic systems.

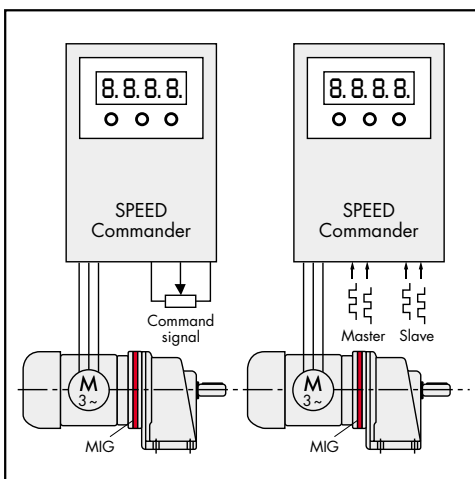
## Speed Control



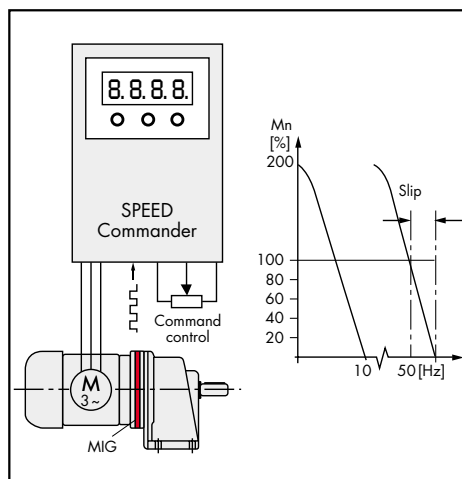
## Positioning Control



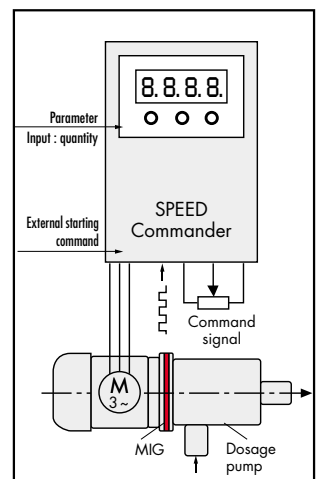
## Digital Synchronisation Control

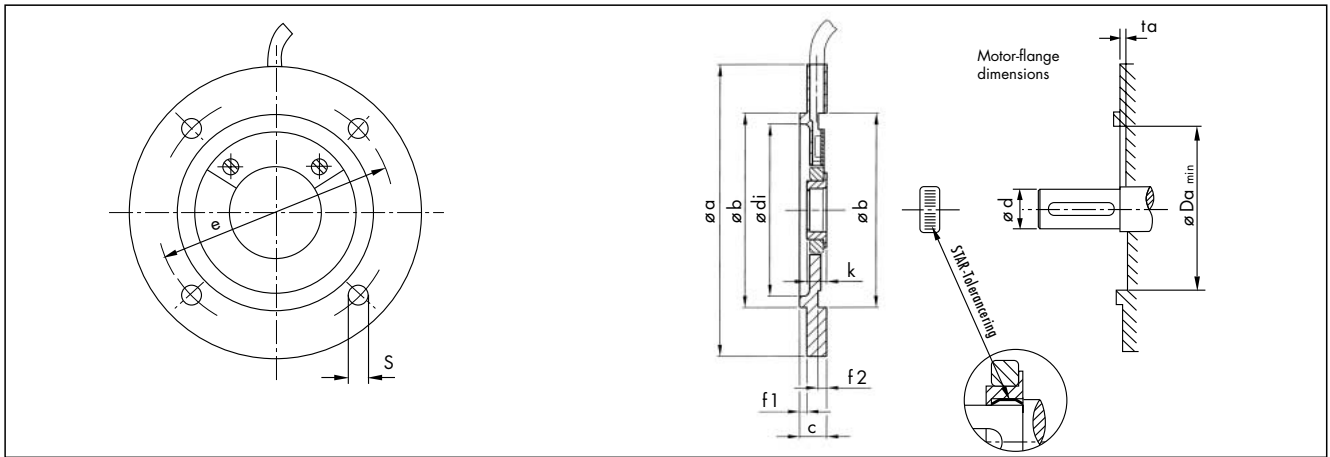


## Torque Control



## Dosage Control





a	b	c	di	e	f1	f2	k	s	BG	d	x	Length <sup>a</sup>	ta	Da
80	50	10	42	65	2,5	3	10	6	56	Ø 9	x	20	1	22
90	60	7	52	75	2,5	3	7	7	63	Ø 11	x	23	2	52
105	70	7	62	85	2,5	3	7	7	56	Ø 9	x	20	2	63
									71	Ø 14	x	30	2	63
120	80	7	70	100	3	3,5	7	7	56	Ø 9	x	20	2	63
									63	Ø 11	x	23	2	63
									80	Ø 19	x	40	2	63
140	95	7	85	115	3	3,5	7	9	63	Ø 11	x	23	2	85
									71	Ø 14	x	30	2	85
160	110	7	100	130	3,5	4	7	9	90	Ø 24	x	50	2	85
									71	Ø 14	x	30	2	90
200	130	10	120	165	3,5	4	10	11	71	Ø 14	x	30	2	90
									80	Ø 19	x	40	2	90
									100/112	Ø 28	x	60	2	90
250	180	12	170	215	4	5	12	13	100/112	Ø 28	x	60	2	90
300	230	12	220	265	4	5	12	13	132	Ø 38	x	80	2	120
350	250	12	240	300	5	6	12	17	160	Ø 42	x	110	2	120
									180	Ø 48	x	110	2	120

Flange	Shaft	Deliverable Pulse Numbers <sup>1</sup>																	
		1	2	4	5	6	8	9	10	11	15	16	20	25	30	40 <sup>2</sup>	50	100 <sup>2</sup>	200 <sup>3</sup>
Ø 80	Ø 9	X		X	X	X	X						X		X <sup>2</sup>				
Ø 90	Ø 11	X		X	X	X	X						X		X <sup>2</sup>				
Ø 105	Ø 9	X	X	X	X	X	X		X				X			X	X <sup>2</sup>		
	Ø 14	X	X	X	X	X	X		X				X		X	X	X <sup>2</sup>		
Ø 120	Ø 9	X	X	X	X	X	X	X <sup>4</sup>	X	X <sup>4</sup>	X <sup>4</sup>		X	X <sup>4</sup>	X <sup>4</sup>	X	X <sup>2</sup>	X <sup>4</sup>	X <sup>4</sup>
	Ø 11	X	X	X	X	X	X	X <sup>4</sup>	X	X <sup>4</sup>	X <sup>4</sup>		X	X <sup>4</sup>	X <sup>4</sup>	X	X <sup>2</sup>	X <sup>4</sup>	X <sup>4</sup>
	Ø 19	X	X	X	X	X	X	X <sup>4</sup>	X	X <sup>4</sup>	X <sup>4</sup>		X	X <sup>4</sup>	X <sup>4</sup>	X	X <sup>2</sup>	X <sup>4</sup>	X <sup>4</sup>
Ø 140	Ø 11	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X
	Ø 14	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X
	Ø 24	X	X	X	X		X	X		X	X			X	X		X	X	X
Ø 160	Ø 14	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X
	Ø 19	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X
	Ø 24	X	X	X	X		X	X		X	X			X	X		X	X	X
	Ø 28	X	X	X	X		X	X		X	X			X	X		X	X	X
Ø 200	Ø 19	X	X	X	X		X	X		X	X			X	X		X	X	X
	Ø 24	X	X	X	X		X	X		X	X			X	X		X	X	X
	Ø 28	X	X	X	X		X	X		X	X			X	X		X	X	X
Ø 250	Ø 28	X	X	X	X		X	X		X	X			X	X		X	X	X
Ø 300	Ø 38	X	X	X			X		X				X	X	X		X	X	X
Ø 350	Ø 42	X	X	X			X		X				X	X	X		X	X	X
	Ø 48	X	X	X			X		X				X	X	X		X	X	X

<sup>1</sup>extra on request <sup>2+3+4</sup>Additional Cost <sup>4</sup>Flange 10 mm wide Mass c u. k = 10

Order Example:

MIG

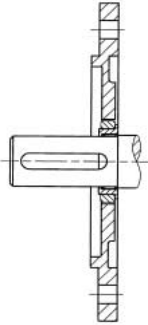
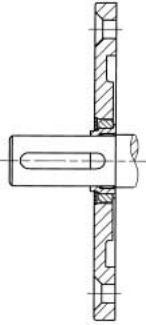
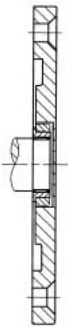
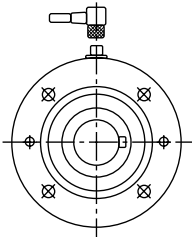
105 - 14 - 20

Flange Diameter

Shaft Diameter

Pulse Number

# Special designs available upon request

<p><b>1. Standard Design</b> Type: MIG ...-...-... e.g. flange motor</p>  <p>Motor Type B5 and B14</p>	<p><b>2. Cover Design</b> Type: MIGD ...-...-... e.g. conventional motor</p>  <p>Motor Type B3/B5 or B3/B14</p>	<p><b>3. Design with base</b> Type: MIGB ...-...-... e.g. Motor without fan</p>  <p>Motor with flange on fan side</p>	<p><b>Design with plug-in connection</b> 4 pin plug (NOT for TTL design)</p>  <p>View of motor shaft (cable connection left)</p> <p>Available cable length 5 m or 10 m</p>
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**Connection:** Standard 2 m cable, 4 x 0.25 shielded, special lengths available on request.

## SPEED-Commander

- Speed Adjustment
- Speed Control
- Dosage
- PI-Control

### General:

The Speed-Commander is a static frequency inverter with variable voltage-link for continuous speed adjustment in three-phase a.c. motors.

- Vector modulation and 16 bit microprocessor
- Display panel for:
  - Motor frequency, motor current, intermediate circuit voltage
  - parameter values, error messages
- Galvanized, separate control inputs for:
  - frequency setpoints
  - Right-hand rotation
  - Left-hand rotation
  - STOP (controlled braking)
  - OFF (potential free motor clamps)
  - STOP/HALT (d.c. brake)
- Programmable relay and transistor output (NPN)
- Special U/f characteristic curve for fan and pump operation
- Performance range:
  - up to 1.5 kW - 1 x 230 VAC
  - 1.1 to 22 kW - 3 x 400 VAC
- Integrated software for:
  - PI Control (pressure, temperature etc.)
  - Dosage control
  - Digital synchronisation
  - Torque control
  - Gate control
- Serial communication with PC or programmable controller
- special software with PLC-functions according to customers' requirements

- Positioning
- Synchro control
- Torque control
- Tailor-made products

### Characteristics:

- Future-safe, flexible software design for control boards
- Easy operation due to menu-assisted digital parameter setting
- High starting torque
- Low-noise motor operation as a result of high pulse frequency
- IxR-Compensation (Boost)
- Programmable voltage/frequency ratio
- d.c. braking with static torque
- Potential free, PLC-compatible control inputs
- Protection against over/under-voltage, excessive current, short circuits on output or to earth, overheating (inverter and motor)
- Optimum design with small installation space requirements
- Multiple motor operation possible
- Options:
  - RS232/RS485 serial interface
  - Brake-chopper and braking resistor
  - External display etc.

### Vector Modulation:

- Sinusoidal motor current
- Loop for magnetic flux
- Optimum motor magnetization at all speeds and loads
- IGBT's as circuit breaker for low-loss operation

The ideal supplement for all kinds of control systems



## Incremental magnetic pulse generator MIG type



### Mechanical Data

max. speed	6,000 RPM
Temperature Range: Electronics	-40 °C to 100 °C at loads ≤ 20 mA (120 °C at loads ≤ 15 mA)
Cable	-40 °C bis 80 °C
Flange/Hub materials	Aluminium / Steel
Connection Cable	PUR sheath / 4 x 0.25/ Ø 5 mm (TTL 6 x 0.14)
Cable Length/Plug	Standard 2 m or other lengths on request
Design with plug-in connection	4 pin plug / length of cable 5 m or 10 m (NOT for TTL design)
Protection	depending on the sealing between motor and machine flange (max. IP 67 e.g. where sealed with silicon)
Permissible Vibration	100 m/s <sup>2</sup>
Permissible Shock	1000 m/s <sup>2</sup>

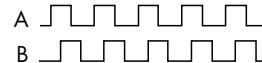
Electrical Data	Standard	TTL-Design
Voltage Supply $U_B$	10 to 24 VDC / + 20%	5 VDC / ± 5%
max. pulse frequency	20 kHz	20 kHz
Output Signals	Square-wave pulses (two-channel) A + B	Square-wave pulses (two-channel) A + B und A + B inv.
Pulse sequence	A 90° B tolerance ± 40° el	A 90° B tolerance ± 40° el A 90° B inv. tolerance ± 40° el
Mark-to-space ratio	180° : 180° tolerance ± 20° el	180° : 180° tolerance ± 20° el
Signal Level	$U_{high} \geq U_B - 4$ V at loads ≤ 10 mA $U_{low} \leq 1$ V	$U_{high} \geq 3,5$ V $U_{low} \leq 0,3$ V
Output Loading Capability	≤ 30 mA at $U_B = 10$ V bzw. ≤ 20 mA at $U_B = 24$ V	max. 30 mA
Insulation resistance	100 MΩ	100 MΩ
Insulation testing	4 kV	4 kV
Short-circuit-proof	yes	no
Polarized	yes	no

### Tests

EMC-Test	in accordance with EN 50081-1 (Emission) and EN 50082-2 (Immunity)
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### Output Signals

For determining the direction of rotation, the two rectangular pulse signals A and B are offset by 90°. Mark-to-space ratio 1:1

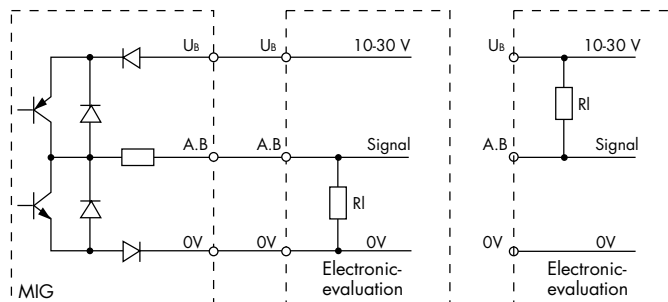


Signal evaluations

Circuit:  
Cable length:

PNP  
≤ 100 m

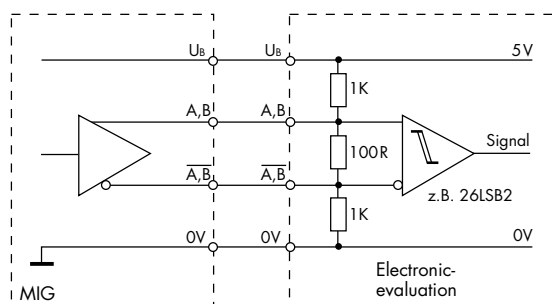
NPN  
≤ 100 m



Signal evaluations

Circuit:  
Cable length:

RS 422  
≤ 1000 m



# Our range...

„Service around  
the world...“

## adjustable variable speed drives

- range of adjustment 1:10
- IEC standard motors



## conveyor drives

- energy-saving drives
- IEC standard motors



## geared motors

- from 0.09 to 22 kW
- IEC standard motors



## frequency inverters

- ...and software:
- positioning, proportioning, synchro control
- door controls, torque limiting systems



## bevel-gear motors

- from 0.09 - 22 kW
- IEC standard motors



## bevel-gear variable speed drives

- range of adjustment: 1:10
- IEC standard motors



## MIG – incremental magnetic pulse generator

- ...for flanges and special structural shapes



## worm gears

## dc motors

## 3-phase motors

systems for power monitoring,  
positioning, pi-controllers



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