

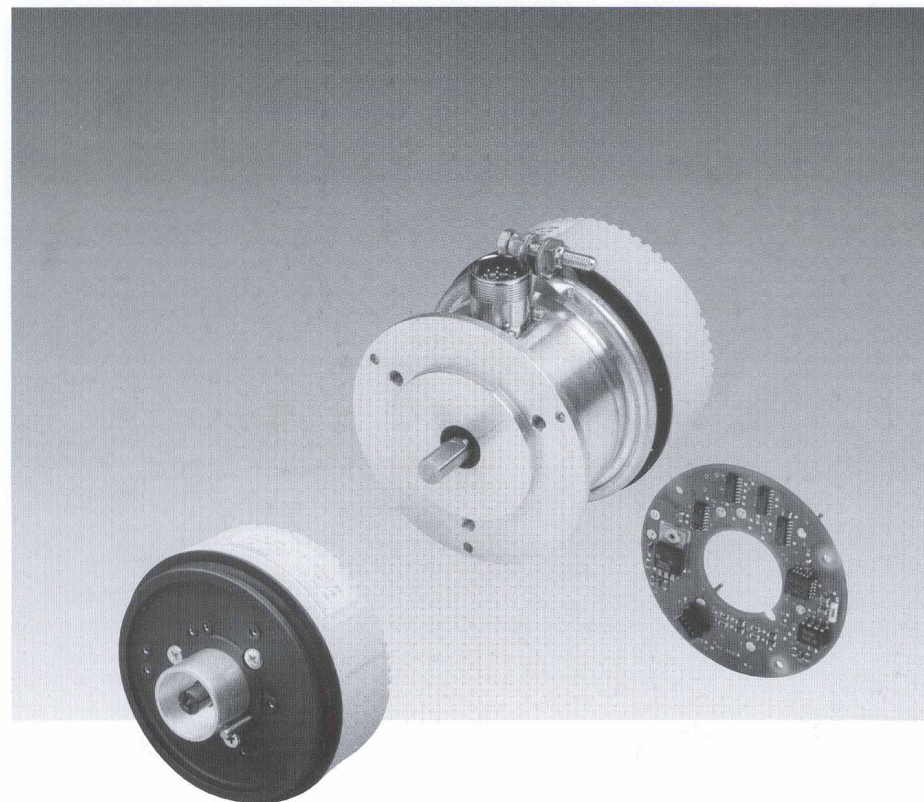
ag100

SICK | STEGMANN

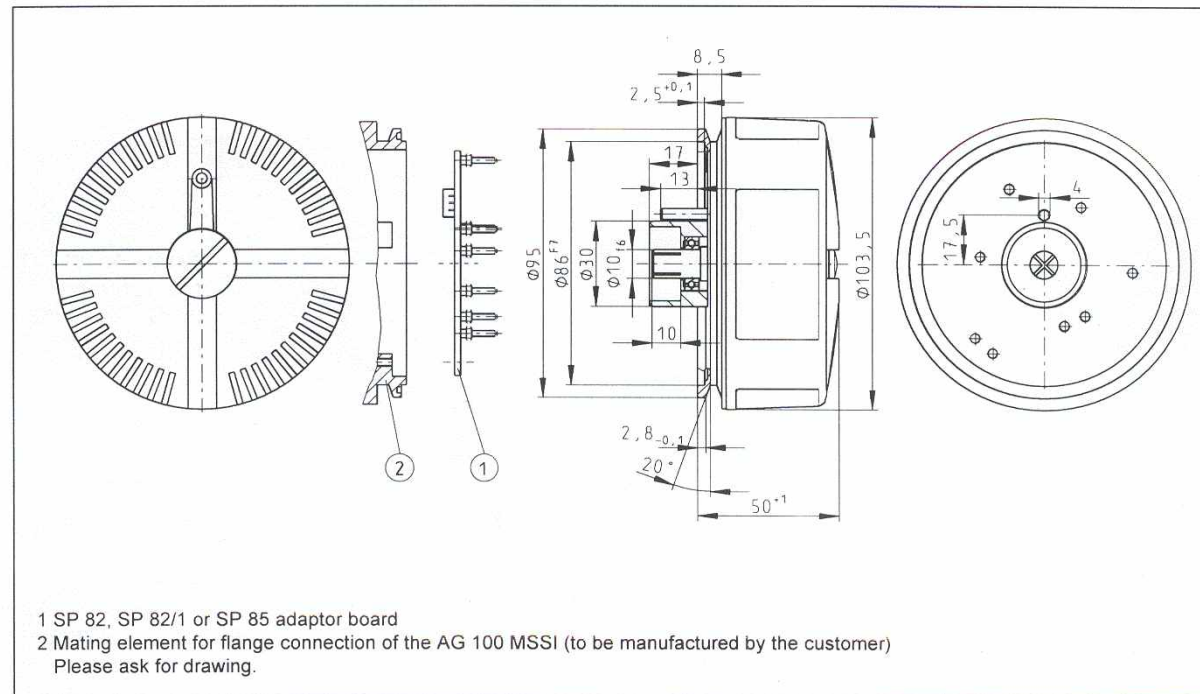
Absolute Angle Encoder

AG 100 MSSI

Multiturn



AG 100 MSSI



In 1984, Stegmann developed the AG 100 MSS absolute angle encoder for use on industrial robots. Its mechanical and electrical interface is still unchanged.

This fact and its incomparable performance, coupled with continuous detailed improvements, have led to a maturity level which is the basis of worldwide success. The AG 100 MSSl can now be supplied by a number of manufacturers, Stegmann has already successfully sold more than 30.000 of them.

Until 1991, Stegmann built this product with 21 bit resolution, but since then it has been marketed only as a 24 bit version. Nevertheless, complete compatibility is guaranteed.

If a 21 bit AG 100 MSSl in an installation is exchanged for a 24 bit encoder, then the 24 bit encoder automatically becomes a 21 bit encoder. In addition, the „exterior“ has been optimized:

The AG 100 MSSI with a proven spreading shaft is now available with a robust plastic housing.

You benefit from:

- World wide availability
- Tried and tested product in mass production with a high quality standard guarantees reliability
- The AG 100 MSS1 is approved in all European car factories.
- Very good price/ performance ratio



Not all variants are available!

AG 100 MSSI Technical Data and Characteristics

AG 100 MSSI		
Dimensions	see drawing	mm
Mass	* 0.5	kg
Moment of inertia of the rotor	50	gcm ²
Code profile under defined conditions see SP 85 programming	programmable on the SP 82/ SP 85 adaptor board	
Measurement range	4096	revolutions
Measurement step	360/4096	degrees
Number of steps per revolution	4096	
Total number of steps Steps/ revolution x revolution	4096 x 4096	
Error limits G	0.1	degrees
Measurement step error	0.025	degrees
Reproducibility	0.001	degrees
Measurement backlash	0.001	degrees
Max. step frequency of the optical sampling	100	kHz
Max. operating speed	6000	rpm
Max. angular acceleration	10 ⁵	rad/s ²
Operating torque	* 0.2	Ncm
Starting torque	* 0.5	Ncm
Max. permissible shaft load of the rotation system	axial radial	N N
when the point at which the force acts is stated		
Bearing life	3.6 x 10 ¹⁰	revolutions
Working temperature range	0 ... +70	°C
Operating temperature range	-20 ... +80	°C
Storage temperature range	-30 ... +80	°C
Max. permissible relative air humidity; condensation not permissible	95	%
Resistance to shocks in accordance with DIN IEC 68 Part 2-27	30/10	g/ms
Resistance to vibration in accordance with DIN IEC 68 Part 2-6	10/10 ... 150	g/Hz

*) The data change for the appropriate kit

Not all variants are available!

AG 100 MSSl Technical Data and Characteristics

Degree of protection in the assembled state in accordance with DIN VDE 0470 Part 1	IP 65	
Operating voltage range	11 ... 32	VDC
Max. power consumption	4.3	W
Monoflop time t_m	15 ... 25	μs
Max. delay time between the clock and the data, measured on the encoder	0.3	μs
EMC in accordance with IEC 1000-4-2 (IEC 801-2) contact discharge IEC 1000-4-4 (IEC 801-4) burst	AG 100 MSSl 8 5	KV
EMC in accordance with IEC 1000-4-2 (IEC 801-2) contact discharge IEC 1000-4-4 (IEC 801-4) burst	AG 100 PSSl 2 1.7	KV

Technical Data and Characteristics for the EG 3400

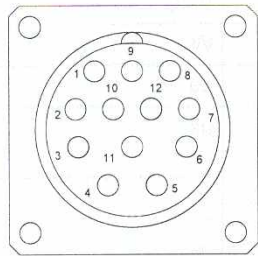
Number of switching contacts (break contacts) which can be set independently of one another	2	
Dimensions	see dimensional drawing	
Required roundness accuracy of the drive shaft	0.1	mm
Overall step-down ratio	4580/1	
Max. operating range	3400	revolutions
Reproducibility of the switching points	20	degrees
Max. switching hysteresis	150	degrees
Switching cam length	1150	revolutions
Positive opening after	1	revolution
Contact separation when positively opened	2.8	mm
Insulation	VDE 0110 Group B	
Rated voltage/ continuous current	24/4	VDC/A
Switching operations (min.)	10×10^6	

Technical Data and Characteristics for the CPS 9/2 S610

Max. External diameter	25.4	mm
Length	28.5	mm
Terminal screw	M 2.5	
Max. rated torque	2	Nm
Max. permissible shaft offset	lateral	± 0.5 mm
	axial	± 0.3 mm
Max. permissible angular offset	± 1	degree
Max. permissible rotation speed	10 000	rpm

Not all variants are available!

AG 100 MSSI Pin allocations



Allocation for AG 100 MSSI F... and B...

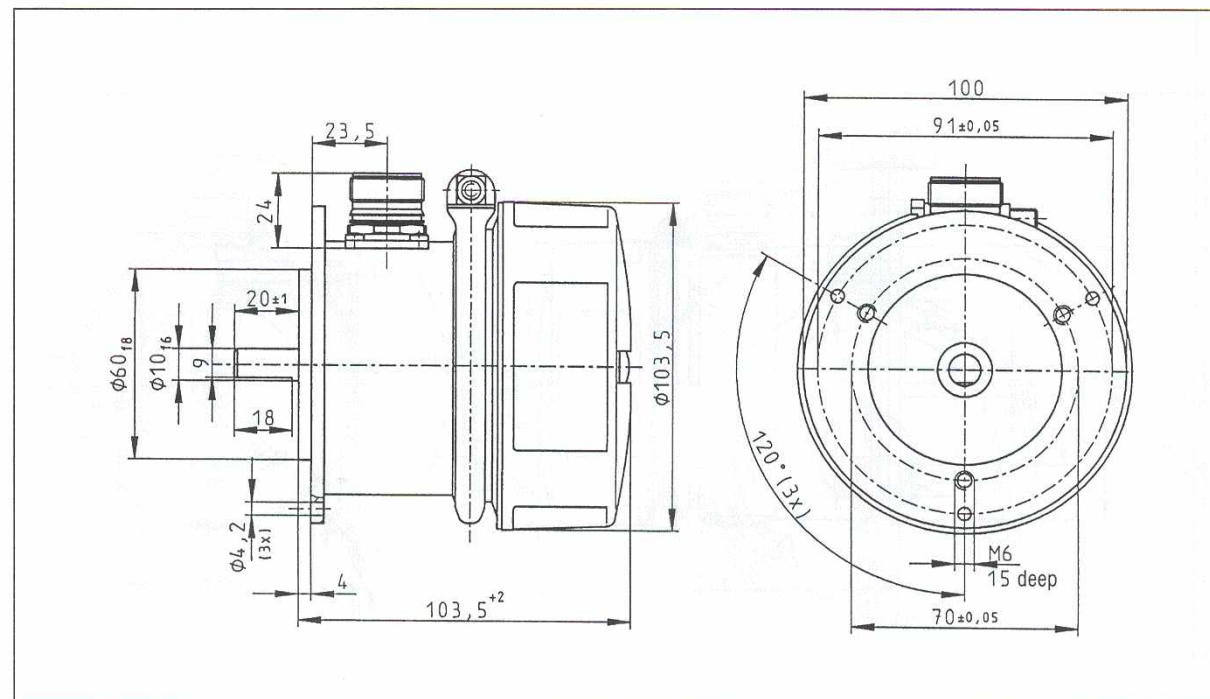
12pole Round connector pin	11-core cable colour	Signal	Explanation
8	red	+ Us	Encoder supply voltage
11	lilac	Clock (-)	Negative clock input
3	yellow	Clock (+)	Positive clock input
1	blue	GND	Sensor earth connection. DC-isolated from the housing.
10	brown	Data (-)	Negative, serial data output
2	white	Data (+)	Positive, serial data output
4*	black	Switch 1 and 2	Common connection of the break contacts
5*	grey	Switch 1 break contact	Right-hand limit switch
9*	green	Switch 2 break contacts	Left-hand limit switch
6, 7		N. C.	Not connected
12**	pink	SET	Electronic adjustment

* In the types without limit-switch, (FSR, BSR) the pins or strands are not connected.

** Us must be applied for a minimum of 1 s for the electrical adjustment!

The C12 FUR mating connector (socket part) is not included in the items supplied. Please order separately.

AG 100 MSSI FSR

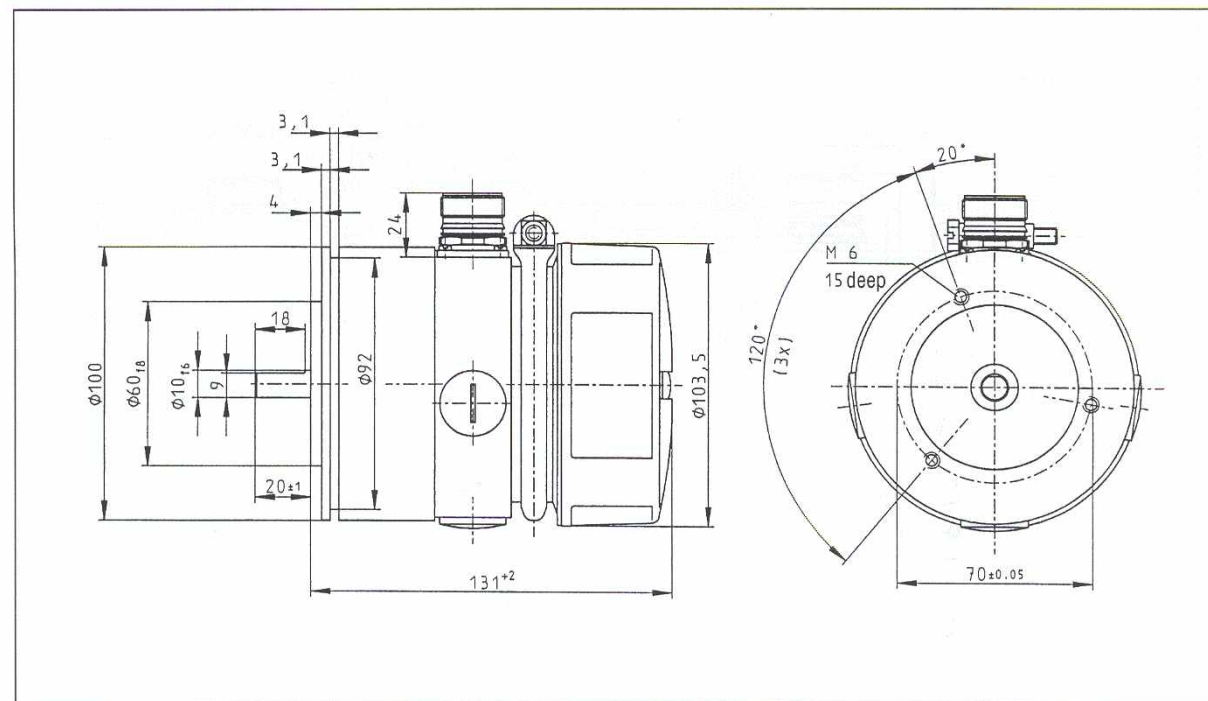


Provided with a robust aluminium flange and a 10 mm shaft which can be highly stressed, these absolute encoders can be used for applications with gear wheels or belts.

Supplementary technical data and characteristics

Max. shaft load	axial	400 N
	radial	2000 N
Operating torque		1.5 Ncm
Starting torque		3 Ncm
Mass		1.3 kg

AG 100 MSSI FESR with EG 3400 limit switch



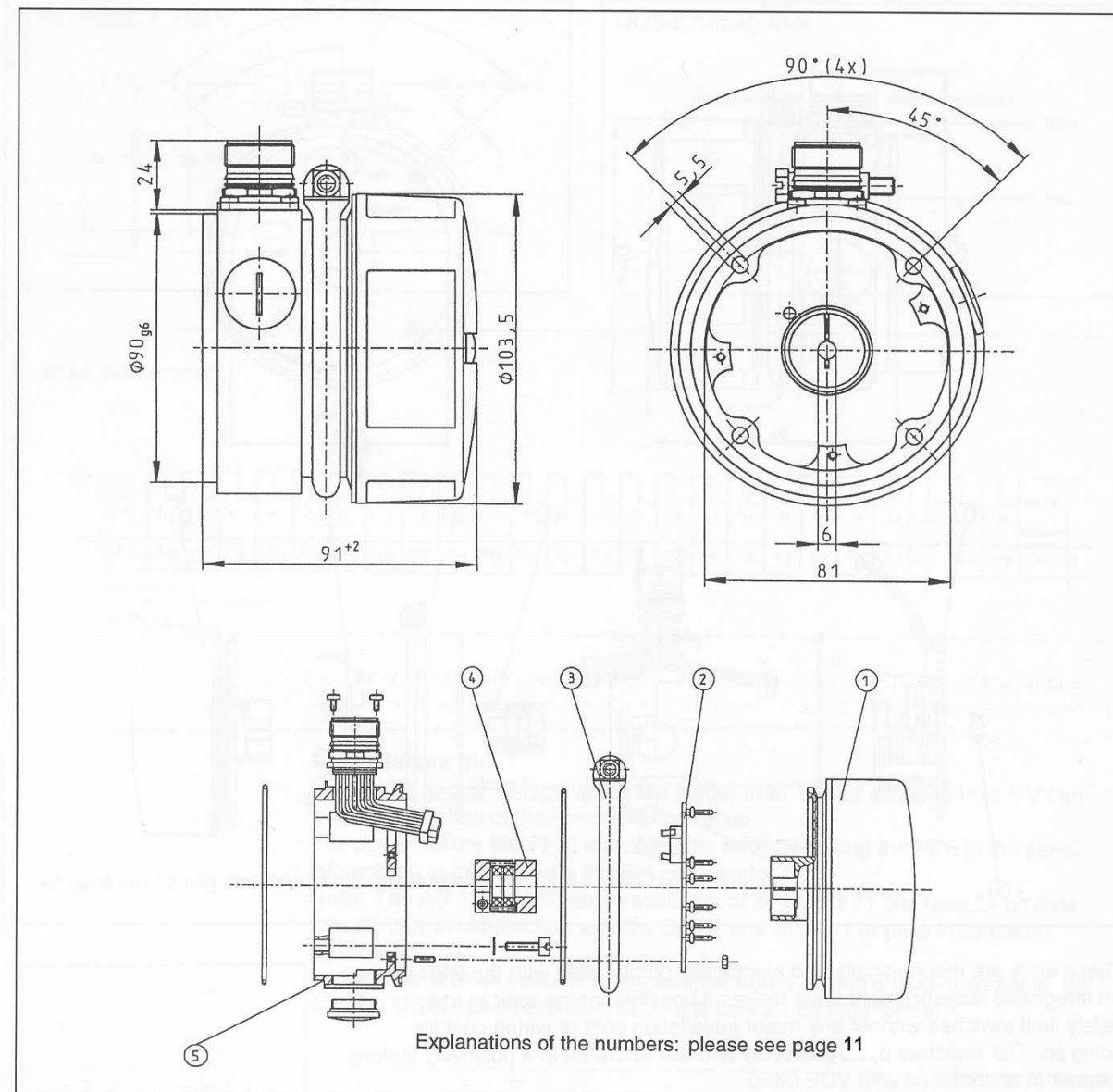
These units are mechanically and electrically comparable with the FSR types.

An integrated measurement drive allows the user to use safety limit switches without having to accept a major installation and wiring cost for doing so. The switches open positively and are operated in a positively locking manner in accordance with VDE 0660. When this product is used in safety devices, it is necessary to ensure that the drive shaft is likewise coupled in a positively locking manner.

Supplementary technical data and characteristics. see limit switch drive (see page 7)

Max. shaft load	axial	400 N
	radial	2000 N
Operating torque		1.5 Ncm
Starting torque		3 Ncm
Mass		1.9 kg

AG 100 MSSI BSR



The BSR units contain all the parts which must be fitted to a drive unit to achieve a high degree of protection. The shaft coupling which is also supplied isolates the potential on the drive unit from the encoder potential and thus ensures good EMC. During assembly, it is necessary only to make sure that the drive shaft satisfies the requirements (shaft coupling) in terms of concentricity and inclination.

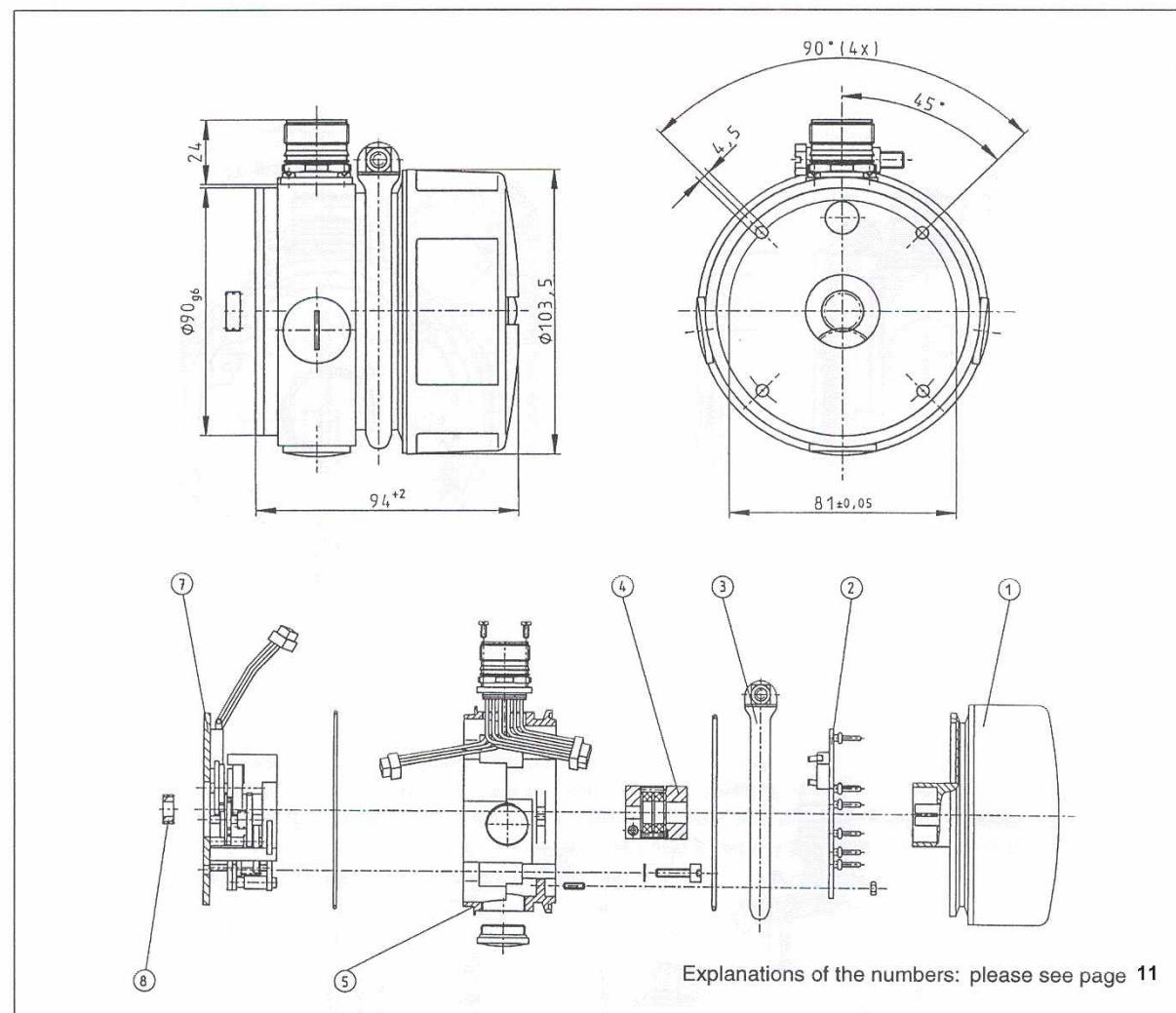
Recommended dimensions
for the drive unit (customer side)
see drawing on page 9

Supplementary technical data and characteristics

Max. shaft load	axial	10 N
	radial	10 N
Operating torque		0.2 Ncm
Starting torque		0.5 Ncm
Mass		1.2 kg

Not all variants are available!

AG 100 MSSI BESR with EG 3400 limit switch



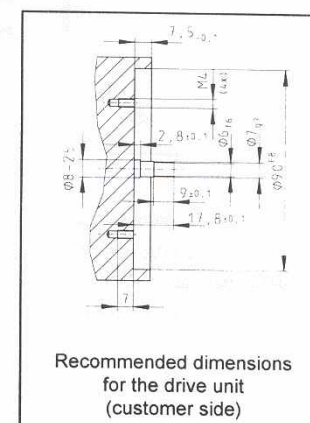
These units are mechanically and electrically comparable with the BSR types. An integrated measurement drive makes it possible for the user to use safety limit switches without any major installation cost or wiring cost for doing so. The switches open positively and are operated in a positively locking manner in accordance with VDE 0660.

The loose pinion (022 100 007 360) which is also supplied must be mounted on the drive shaft using an anaerobically curing adhesive (e.g. Loctite 603). The shaft coupling used is the same as that for BSR.

Supplementary technical data and characteristics

see limit switch (page 7)

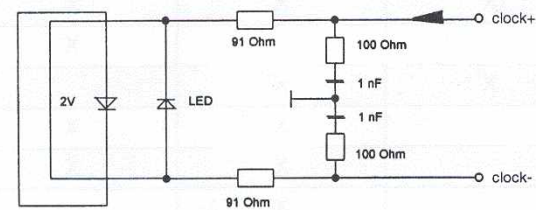
Max. shaft load	axial	10	N
	radial	10	N
Operating torque		0.2	Ncm
Starting torque		0.5	Ncm
Mass		1.3	kg



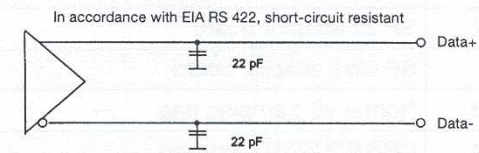
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AG 100 MSSI Interface data formats

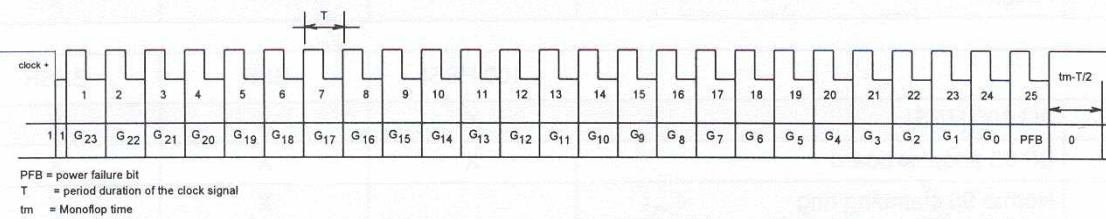
Input circuit - clock



Output circuit - data



24 bit data format



Power failure bit

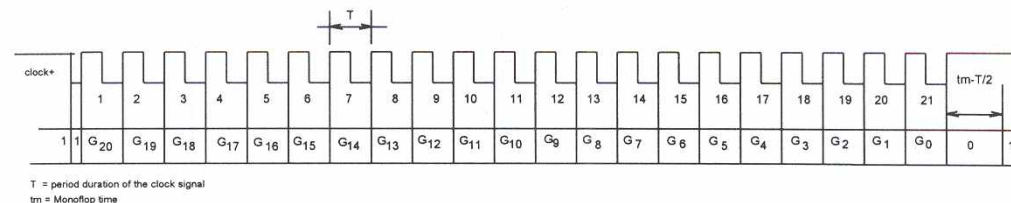
Dips in the supply voltage which are longer than 100 μ s and less than 5 V can lead to corruption of the encoder information.

The power failure bit (PFB) identifies this error by setting the PFB in the serial information to logic 1, via a voltage comparator.

Note: The AG 100 MSSI has a resolution of 24 bits or 21 bits (see 24 bit data format) only in conjunction with the SP 82 and SP 82/1 (8 plug-in contacts) adaptor boards.

In the case of older variants of the adaptor board having 6 plug-in contacts, the AG 100 MSSI has a resolution of 21 bits (see 21 bit data format)

21 bit data format



Not all variants are available!

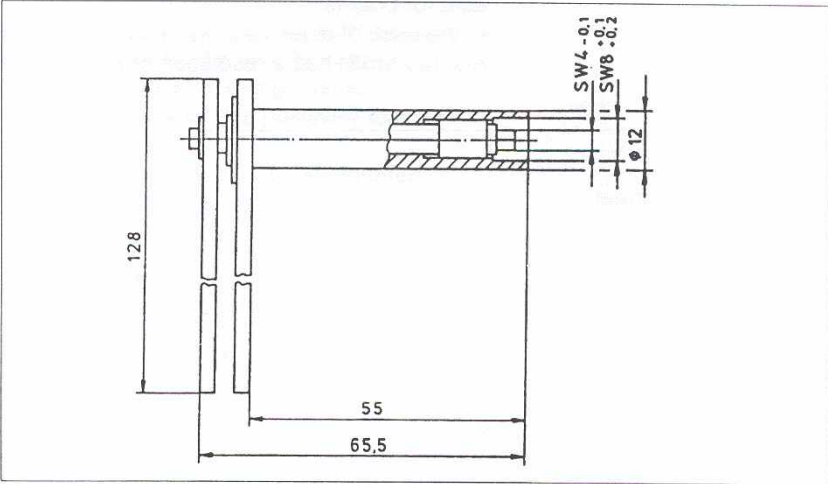
AG 100 MSSI Items supplied

Item numbers		Variant		
		100 MSSI	BSR	BESR
1	AG 100 MSSI	X	X	X
2	SP 82 adaptor board			X
	SP 82/1 adaptor board	X	X	
3	Norma 98 clamping ring		X	X
4	CPS 9/2 S/610 coupling		X	X
5	FLMAV 05 adaptor flange with 12pole round connector		X	
5	FLMAV 03 adaptor flange with 12pole round connector			X
7	EG 3400 limit switch drive			X
8	Pinion			X

The mating connector for variants having a connector outlet is not included in the items supplied.
Please order separately.

Accessory:

Adjustment tool EW1
(tightening torque 4 Nm)



Not all variants are available!