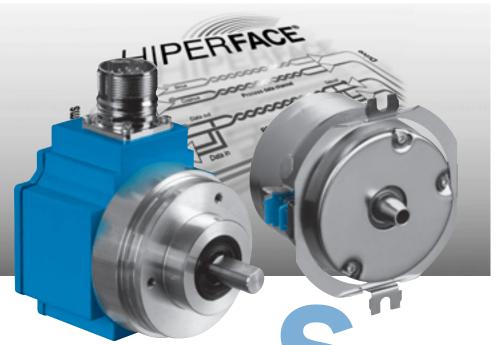
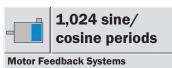
SinCos® SRS50, SRM50, SRS60, SRM60 SRS50 Standalone, SRM50 Standalone: Motor Feedback Systems with HIPERFACE®-Interface for Servo Motors



Writing motor-specific data to the electronic type label and programming are important features of these series.

Select the motor feedback system to suit your individual requirements. Possible product variations:

- Plug-in shaft or tapered shaft with different stator supports
- · 6 mm or 10 mm shaft with connector or cable exit
- Versions for integration, attachment, or standalone versions

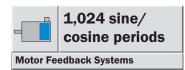




SRS/SRM series of motor feedback systems are used worldwide in many different applications and environments.

Absolute positioning with 32,768 steps per revolution and a maximum of 4,096 revolutions give a total resolution of 134,217,728 steps.



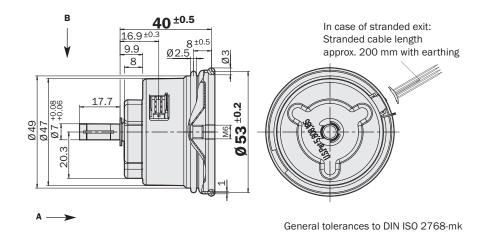


- 1,024 sine/cosine periods per revolution
- Absolute position with a resolution of 32,768 steps per revolution
- 4,096 revolutions can be measured (Multiturn)
- Programming of the positional value
- Electronic type label

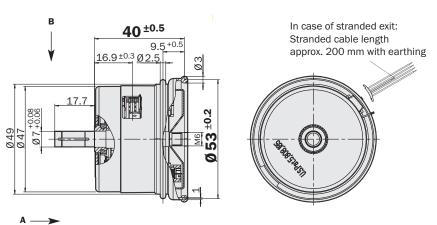


Accessories						
Connection technology						
Fixing technology						
Programming tool						

Dimensional drawing SRS50, rubber support Ø 50



Dimensional drawing SRM50, rubber support Ø 50

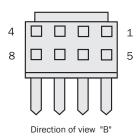


General tolerances to DIN ISO 2768-mk

PIN and wire allocation								
PIN	Signal	Colour of Wires	Explanation					
1	U _s	red	Supply voltage 7 12 V					
2	GND	blue	Ground connection					
3	REFSIN	brown	Process data channel					
4	REFCOS	black	Process data channel					
5	Data +	grey or yellow	RS-485-parameter channel					
6	Data -	green or purple	RS-485-parameter channel					
7	+ SIN	white	Process data channel					
8	+ COS	pink	Process data channel					

Caution: To ensure proper function, the screen connection strand (200 mm) MUST be connected. It is included in the supply.

 $\mbox{U}_{\mbox{\scriptsize S}}$ and GND are internally connected to the screen by capacitors of 2.2 nF.



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Technical Data acc. to DIN	32878	Plug-in Shaft SRS/SRM50	SRS	SRM
Data acc. to DIN		riug in chart cho/ chivico		JINIVI
Number of sine/cosine perio	ods per revolution	1,024		
Dimensions		mm (see dimensional drawing)		
Mass		0.2 kg		
Inertial rotor moment		10 gcm ²		
Type of code for the absolute	e value	Binary		
Code sequence for clockwis	se shaft rotation, lo	ooking in		
direction "A" (see dimensional	drawing)	Increasing		
Measurement step after ger	nerating arctan			
with 12 bit resolution		0.3 angular seconds		
Total number of steps	Single SRS	32,768		
	Multi SRM	134,217,728 = 32,768 x 4,096		
Error limits for the digital ab	solute value			
via RS 485		± 90 angular seconds		
Error limits for evaluating th	e "1,024" signals,			
integral non-linearity		± 45 angular seconds		
Non-linearity within a sine/o	cosine period			
differential non-linearity		± 7 angular seconds		
Output frequency for sine/c	osine signals	0 200 kHz		
Working speed up to which	the absolute position	on		
can be reliably produced		6,000 min ⁻¹		
Max. operating speed		12,000 min ⁻¹		
Max. angular acceleration		0.2 x 10 ⁶ rad/s ²		
Operating torque		0.2 Ncm		
Starting torque		0.4 Ncm		
Permissible shaft movemen	t			
static	radial/axial	± 0.5 mm/± 0.75 mm		
dynamic	radial/axial	± 0.1 mm/± 0.2 mm		
Angular motion, perpendicu		·		
static		± 0.005 mm/mm		
dynamic		± 0.0025 mm/mm		
Life of ball bearings		3.6 x 10 ⁹ rotations		
Working temperature range		- 20 + 115 °C		
Storage temperature range		- 40 + 125 °C		
Permissible relative humidit		90 %		
Resistance		/-		
to shocks ²⁾		100/10 g/ms		
to vibration 3)		20/10 2000 g/Hz		
Protection to IEC 60529 4)		IP 40		
EMC 5)		II -T∪		
Operating voltage range		7 12 V		
Recommended supply voltage	Øe.	8 V		
Max. operating current, no I		80 mA		
Available memory area	vuu	OU IIIA		
within EEPROM 512 ⁶⁾		128 bytes		
within EEPROM 2048 6)		-		
		1,792 bytes		
Interface signals	ECINI COC DEFOCO	Analogue differential		
Process data channel = SIN, RE		Analogue, differential		
Parameter channel = RS 485)	Digital		

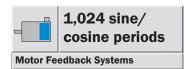
- 1) Condensation not permissible
- 2) To EN 60068-2-27
- 3) To EN 60068-2-6
- $^{
 m 4)}$ With mating connector inserted
- $^{5)}$ To EN 61000-6-2 and 61000-6-3

The EMC according to the standards quoted is achieved when the motor feedback system is mounted in an electrically conductive housing, which is connected to the $% \left(1\right) =\left(1\right) \left(1\right$ central earthing point of the motor controller via a cable screen. This is also where the $\,$ $\ensuremath{\mathsf{GND}}$ (0 V) connection of the supply voltage is linked to earth.

Users must perform their own tests when other screen designs are used.

 $^{\rm 6)}\,$ If applying the electronic type label, in connection with numeric controllers, attention should be paid to Patent EP 425 912 B 2; Application of the electronic type label in connection with speed regulation is exempt.

Ordering information							
SRS/SRM50; plug-in shaft Ø 7mm; rubber support							
Туре	Part no.	Description					
SRS50-HAA0-K01	1034170	Single, 512 EEprom, connector					
SRS50-HAV0-K01	1034174	Single, 512 EEprom, stranded cable					
SRS50-HAA0-K02	1034171	Single, 2048 EEprom, connector					
SRS50-HAV0-K02	1034175	Single, 2048 EEprom,stranded cable					
SRM50-HAA0-K01	1034104	Multi, 512 EEprom, connector					
SRM50-HAV0-K01	1034109	Multi, 512 EEprom, stranded cable					
SRM50-HAA0-K02	1034105	Multi, 2048 EEprom, connector					
SRM50-HAV0-K02	1034110	Multi, 2048 EEprom, stranded cable					

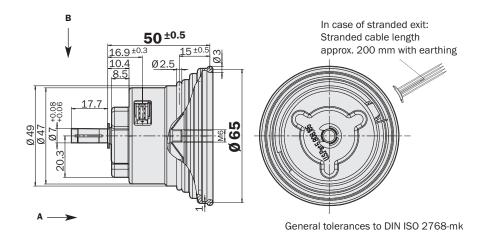


- 1,024 sine/cosine periods per revolution
- Absolute position with a resolution of 32,768 steps per revolution
- 4,096 revolutions can be measured (Multiturn)
- Programming of the positional value
- Electronic type label

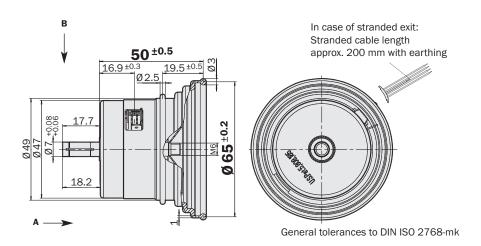


Accessories					
Connection technology					
Fixing technology					
Programming tool					

Dimensional drawing SRS60, rubber support Ø 60



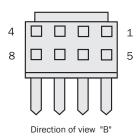
Dimensional drawing SRM60, rubber support Ø 60



PIN and wire allocation									
PIN	Signal	Colour of Wires	Explanation						
1	U _s	red	Supply voltage 7 12 V						
2	GND	blue	Ground connection						
3	REFSIN	brown	Process data channel						
4	REFCOS	black	Process data channel						
5	Data +	grey or yellow	RS-485-parameter channel						
6	Data -	green or purple	RS-485-parameter channel						
7	+ SIN	white	Process data channel						
8	+ COS	pink	Process data channel						

Caution: To ensure proper function, the screen connection strand (200 mm) MUST be connected. It is included in the supply.

 $\mbox{U}_{\mbox{\scriptsize S}}$ and GND are internally connected to the screen by capacitors of 2.2 nF.



SICK-STEGMANN 12-2007

Tochnical Data and to Dibi	22070	Dlug in Chaft CDC (CDMCC)	SRS	SRM		l			
Technical Data acc. to DIN 3	02010	Plug-in Shaft SRS/SRM60	242	SKIVI					
Number of sine/cosine perio	ds per revolution	1,024			ı				
Dimensions		mm (see dimensional drawing)							
Mass		0.2 kg							
Inertial rotor moment		10 gcm ²							
Type of code for the absolute	value	Binary							
Code sequence for clockwis	e shaft rotation, lo	oking in							
direction "A" (see dimensional drawing)		Increasing			1				
Measurement step after gen	erating arctan								
with 12 bit resolution		0.3 angular seconds			1				
Total number of steps	Single SRS	32,768							
	Multi SRM	134,217,728 = 32,768 x 4,096							
Error limits for the digital ab	solute value								
via RS 485		± 90 angular seconds							
Error limits for evaluating the	e "1,024" signals,								
integral non-linearity		± 45 angular seconds							
Non-linearity within a sine/c	osine period								
differential non-linearity		± 7 angular seconds							
Output frequency for sine/co	sine signals	0 200 kHz							
Working speed up to which t	he absolute position	on					_		
can be reliably produced		6,000 min ⁻¹						 	
Max. operating speed		12,000 min ⁻¹							
Max. angular acceleration		0.2 x 10 ⁶ rad/s ²							
Operating torque		0.2 Ncm							
Starting torque		0.4 Ncm							
Permissible shaft movement									
static	radial/axial	± 0.5 mm/± 0.75 mm							
dynamic	radial/axial	± 0.1 mm/± 0.2 mm							
Angular motion, perpendicul	ar to the rotationa	l axis							
static		± 0.005 mm/mm							
dynamic		± 0.0025 mm/mm							
Life of ball bearings		3.6 x 10 ⁹ rotations							
Working temperature range		- 20 + 115 °C							
Storage temperature range (without packaging)	- 40 + 125 °C							
Permissible relative humidity	/ ¹⁾	90 %							
Resistance									
to shocks 2)		100/10 g/ms							
to vibration 3)		20/10 2000 g/Hz							
Protection to IEC 60529 4)		IP 40							
EMC ⁵⁾									
Operating voltage range		7 12 V							
Recommended supply voltage	(e	8 V							
Max. operating current, no lo		80 mA							
Available memory area									
within EEPROM 512 6)		128 bytes							
within EEPROM 2048 6)		1,792 bytes			i				
Interface signals		-							
Process data channel = SIN, REI	FSIN, COS, REFCOS	Analogue, differential							
Parameter channel = RS 485		Digital							

- 1) Condensation not permissible
- 2) To EN 60068-2-27
- 3) To EN 60068-2-6
- $^{
 m 4)}$ With mating connector inserted
- $^{5)}$ To EN 61000-6-2 and 61000-6-3

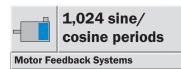
The EMC according to the standards quoted is achieved when the motor feedback system is mounted in an electrically conductive housing, which is connected to the $% \left(1\right) =\left(1\right) \left(1\right$ central earthing point of the motor controller via a cable screen. This is also where the $\,$ $\ensuremath{\mathsf{GND}}$ (0 V) connection of the supply voltage is linked to earth.

Users must perform their own tests when other screen designs are used.

 $^{\rm 6)}\,$ If applying the electronic type label, in connection with numeric controllers, attention should be paid to Patent EP 425 912 B 2; Application of the electronic type label in connection with speed regulation is exempt.

Ordering information								
SRS/SRM60; plug-in shaft Ø 7mm; rubber support								
Туре	Part no.	Description						
SRS60-HAA0-K01	1034213	Single, 512 EEprom, connector						
SRS60-HAV0-K01	1034215	Single, 512 EEprom, stranded cable						
SRS60-HAA0-K02	1034214	Single, 2048 EEprom, connector						
SRS60-HAV0-K02	1034216	Single, 2048 EEprom,stranded cable						
SRM60-HAA0-K01	1034153	Multi, 512 EEprom, connector						
SRM60-HAV0-K01	1034155	Multi, 512 EEprom, stranded cable						
SRM60-HAA0-K02	1034154	Multi, 2048 EEprom, connector						
SRM60-HAV0-K02	1034156	Multi, 2048 EEprom, stranded cable						

Motor Feedback System SRS50, SRM50, Tapered Shaft

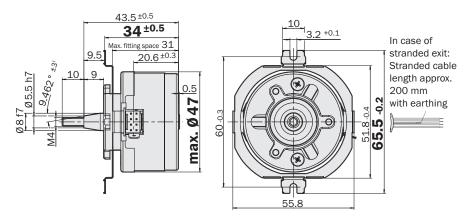


- 1,024 sine/cosine periods per revolution
- Absolute position with a resolution of 32,768 steps per revolution
- 4,096 revolutions can be measured (Multiturn)
- Programming of the positional value
- Electronic type label



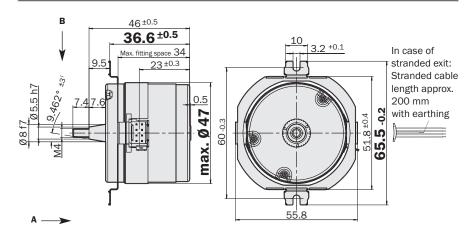
Accessories					
Connection technology					
Fixing technology					
Programming tool					

Dimensional drawing SRS50, spring mounting plate Ø 66



General tolerances to DIN ISO 2768-mk

Dimensional drawing SRM50, spring mounting plate Ø 66

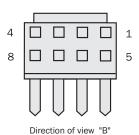


General tolerances to DIN ISO 2768-mk

PIN and wire allocation								
PIN	Signal	Colour of Wires	Explanation					
1	U _s	red	Supply voltage 7 12 V					
2	GND	blue	Ground connection					
3	REFSIN	brown	Process data channel					
4	REFCOS	black	Process data channel					
5	Data +	grey or yellow	RS-485-parameter channel					
6	Data -	green or purple	RS-485-parameter channel					
7	+ SIN	white	Process data channel					
8	+ COS	pink	Process data channel					

Caution: To ensure proper function, the screen connection strand (200 mm) MUST be connected. It is included in the supply.

 $\ensuremath{\text{U}_{\text{S}}}$ and GND are internally connected to the screen by capacitors of 2.2 nF.



Screening:

The encoder housing for the integrated encoder is connected to the motor, via the torque support. The connection space is thus screened via the motor housing such that, within the connection space, unscreened connection strands can be used.

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Technical Data acc. to DIN 3	32878	Tapered Shaft SRS/SRM50	SRS	SRM				
		rapered chare of to/ of two	0110	CITIVI			1	
Number of sine/cosine perio	ds per revolution	1,024						
Dimensions		mm (see dimensional drawing)						
Mass		0.2 kg						
nertial rotor moment		10 gcm ²						
Type of code for the absolute	value	Binary						
Code sequence for clockwis	e shaft rotation, lo	ooking in			=			
direction "A" (see dimensional	drawing)	Increasing						
Measurement step after gen	erating arctan				_			
with 12 bit resolution		0.3 angular seconds						
Total number of steps	Single SRS	32,768						_
	Multi SRM	134,217,728 = 32,768 x 4,096						
Error limits for the digital ab	solute value							
via RS 485		± 90 angular seconds						
Error limits for evaluating the	e "1,024" signals,							
ntegral non-linearity		± 45 angular seconds						
Non-linearity within a sine/c	osine period							
differential non-linearity		± 7 angular seconds						
Output frequency for sine/co	sine signals	0 200 kHz						
Working speed up to which t	he absolute positi	on						
can be reliably produced	•	6,000 min ⁻¹			Ī			
Max. operating speed		12,000 min ⁻¹						
Max. angular acceleration		0.2 x 10 ⁶ rad/s ²						
Operating torque		0.2 Ncm						
Starting torque		0.4 Ncm			1			
Permissible shaft movement								_
static	radial/axial	± 0.5 mm/± 0.75 mm			1			_
dynamic	radial/axial	± 0.1 mm/± 0.2 mm			i			
Angular motion, perpendicula	· · · · · · · · · · · · · · · · · · ·	,						_
static	15 1.76 154415114	± 0.005 mm/mm						
dynamic		± 0.0025 mm/mm			i			
Life of ball bearings		3.6 x 10 ⁹ rotations						_
Working temperature range		- 20 + 115 °C						
Storage temperature range (without packaging)	- 40 + 125 °C			1			
Permissible relative humidity		90 %			1			
Resistance	1 ·	JU 70						
to shocks ²⁾		100/10 g/ms			1			
to vibration 3)		20/10 2000 g/Hz			1			_
Protection to IEC 60529 4)		IP 40			-			
EMC 5)		II +U			-			_
Operating voltage range		7 12 V			-			_
Operating voltage range Recommended supply voltag	(a	8 V			-			
								_
Max. operating current, no lo	au	80 mA						_
Available memory area		100 huton						_
within EEPROM 3048 6		128 bytes			-			
within EEPROM 2048 6)		1,792 bytes						_
Interface signals	-O.N. 000 5==055	A 1 - 120 - 111						_
Process data channel = SIN, REF	-SIN, COS, REFCOS	Analogue, differential			-			
Parameter channel = RS 485		Digital						

- 1) Condensation not permissible
- 2) To EN 60068-2-27
- 3) To EN 60068-2-6
- $^{
 m 4)}$ With mating connector inserted
- $^{5)}$ To EN 61000-6-2 and 61000-6-3

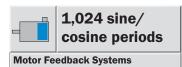
The EMC according to the standards quoted is achieved when the motor feedback system is mounted in an electrically conductive housing, which is connected to the $% \left(1\right) =\left(1\right) \left(1\right$ central earthing point of the motor controller via a cable screen. This is also where the $\,$ $\ensuremath{\mathsf{GND}}$ (0 V) connection of the supply voltage is linked to earth.

Users must perform their own tests when other screen designs are used.

 $^{\rm 6)}\,$ If applying the eletronic type label, in connection with numeric controllers, attention should be paid to Patent EP 425 912 B 2; Application of the electronic type label in connection with speed regulation is exempt.

Ordering information								
SRS/SRM50; tapered shaft; spring mounting plate								
Туре	Part no.	Description						
SRS50-HFA0-K01	1034222	Single, 512 EEprom, connector						
SRS50-HFV0-K01	1034185	Single, 512 EEprom, stranded cable						
SRS50-HFA0-K02	1034182	Single, 2048 EEprom, connector						
SRS50-HFV0-K02	1034186	Single, 2048 EEprom,stranded cable						
SRM50-HFA0-K01	1034118	Multi, 512 EEprom, connector						
SRM50-HFV0-K01	1034122	Multi, 512 EEprom, stranded cable						
SRM50-HFA0-K02	1034119	Multi, 2048 EEprom, connector						
SRM50-HFV0-K02	1034123	Multi, 2048 EEprom, stranded cable						

Motor Feedback System SRS50, SRM50, Tapered Shaft

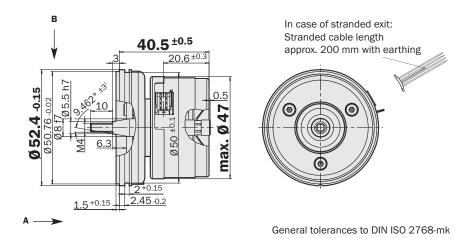


- 1,024 sine/cosine periods per revolution
- Absolute position with a resolution of 32,768 steps per revolution
- 4,096 revolutions can be measured (Multiturn)
- Programming of the positional value
- Electronic type label

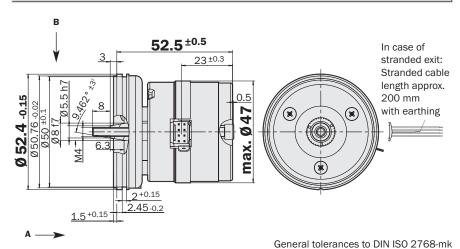


Accessories						
Connection technology						
Fixing technology						
Programming tool						

Dimensional drawing SRS50, resolver support Ø 52



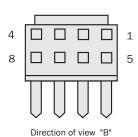
Dimensional drawing SRM50, resolver support Ø 52



PIN and wire allocation							
PIN	Signal	Colour of Wires	Explanation				
1	U _s	red	Supply voltage 7 12 V				
2	GND	blue	Ground connection				
3	REFSIN	brown	Process data channel				
4	REFCOS	black	Process data channel				
5	Data +	grey or yellow	RS-485-parameter channel				
6	Data -	green or purple	RS-485-parameter channel				
7	+ SIN	white	Process data channel				
8	+ COS	pink	Process data channel				

Caution: To ensure proper function, the screen connection strand (200 mm) MUST be connected. It is included in the supply.

 $\mbox{U}_{\mbox{\scriptsize S}}$ and GND are internally connected to the screen by capacitors of 2.2 nF.



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Technical Data acc. to DIN	32878	Tapered Shaft SRS/SRM50	SRS	SRM			
			0.10	OTTIVI			
Number of sine/cosine period	ods per revolution	1,024					
Dimensions		mm (see dimensional drawing)					
Mass		0.2 kg					
Inertial rotor moment		10 gcm ²					
Type of code for the absolute	e value	Binary					
Code sequence for clockwis	se shaft rotation, lo	ooking in					
direction "A" (see dimensional	l drawing)	Increasing					
Measurement step after ger	nerating arctan						
with 12 bit resolution		0.3 angular seconds					
Total number of steps	Single SRS	32,768					
	Multi SRM	134,217,728 = 32,768 x 4,096					
Error limits for the digital ab	osolute value						
via RS 485		± 90 angular seconds					
Error limits for evaluating th	ne "1,024" signals,						
integral non-linearity		± 45 angular seconds					
Non-linearity within a sine/o	cosine period						
differential non-linearity		± 7 angular seconds					
Output frequency for sine/c	osine signals	0 200 kHz					
Working speed up to which	the absolute positi	on					
can be reliably produced		6,000 min ⁻¹					
Max. operating speed		12,000 min ⁻¹					
Max. angular acceleration		0.2 x 10 ⁶ rad/s ²					
Operating torque		0.2 Ncm					
Starting torque		0.4 Ncm					
Permissible shaft movemen	t						
static	radial/axial	± 0.25 mm/± 0.75 mm					
dynamic	radial/axial	± 0.1 mm/± 0.2 mm					
Angular motion, perpendicu	lar to the rotationa	l axis					
static		± 0.005 mm/mm					
dynamic		± 0.0025 mm/mm					
Life of ball bearings		3.6 x 10 ⁹ rotations					
Working temperature range		- 20 + 115 °C					
Storage temperature range	(without packaging)	- 40 + 125 °C					
Permissible relative humidit	ty 1)	90 %					
Resistance							
to shocks 2)		100/10 g/ms					
to vibration 3)		20/10 2000 g/Hz					
Protection to IEC 60529 4)		IP 40					
EMC ⁵⁾							
Operating voltage range		7 12 V					
Recommended supply voltage	ge	8 V					
Max. operating current, no I	load	80 mA					
Available memory area							
within EEPROM 512 ⁶⁾		128 bytes					
within EEPROM 2048 6)		1,792 bytes					
Interface signals							
Process data channel = SIN, RE	FSIN, COS, REFCOS	Analogue, differential					
Parameter channel = RS 485	5	Digital					

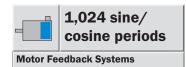
- 1) Condensation not permissible
- 2) To EN 60068-2-27
- 3) To EN 60068-2-6
- $^{
 m 4)}$ With mating connector inserted
- $^{5)}$ To EN 61000-6-2 and 61000-6-3

The EMC according to the standards quoted is achieved when the motor feedback system is mounted in an electrically conductive housing, which is connected to the $% \left(1\right) =\left(1\right) \left(1\right$ central earthing point of the motor controller via a cable screen. This is also where the $\,$ $\ensuremath{\mathsf{GND}}$ (0 V) connection of the supply voltage is linked to earth.

Users must perform their own tests when other screen designs are used.

 $^{\rm 6)}\,$ If applying the electronic type label, in connection with numeric controllers, attention should be paid to Patent EP 425 912 B 2; Application of the electronic type label in connection with speed regulation is exempt.

Ordering information										
SRS/SRM50; tapered shaft; resolver support										
Туре		Part no.		Description						
SRS50-HGA0-K01		1034187		Single, 512 EEprom, connector						
SRS50-HGV0-K01		1034189		Single, 512 EEprom, stranded cable						
SRS50-HGA0-K02		1034188		Single, 2048 EEprom, connector						
SRS50-HGV0-K02		1034190		Single, 2048 EEprom, stranded cable						
SRM50-HGA0-K01		1034124		Multi, 512 EEprom, connector						
SRM50-HGV0-K01		1034127		Multi, 512 EEprom, stranded cable						
SRM50-HGA0-K02		1034125		Multi, 2048 EEprom, connector						
SRM50-HGV0-K02		1034128		Multi, 2048 EEprom, stranded cable						

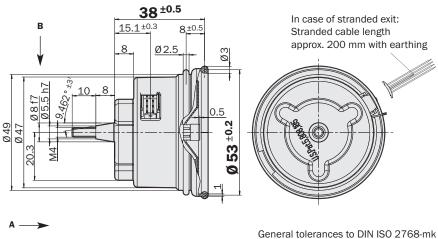


- 1,024 sine/cosine periods per revolution
- Absolute position with a resolution of 32,768 steps per revolution
- 4,096 revolutions can be measured (Multiturn)
- Programming of the positional value
- Electronic type label

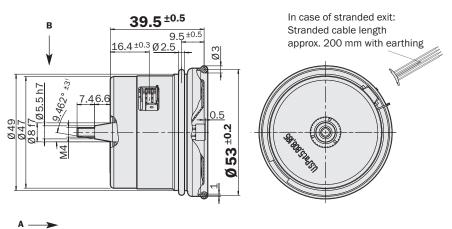


Accessories					
Connection technology					
Fixing technology					
Programming tool					

Dimensional drawing SRS50, rubber support Ø 50



Dimensional drawing SRM50, rubber support Ø 50

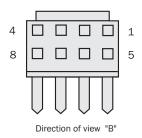


General tolerances to DIN ISO 2768-mk

PIN and wi	PIN and wire allocation									
PIN	Signal	Colour of Wires	Explanation							
1	U _s	red	Supply voltage 7 12 V							
2	GND	blue	Ground connection							
3	REFSIN	brown	Process data channel							
4	REFCOS	black	Process data channel							
5	Data +	grey or yellow	RS-485-parameter channel							
6	Data -	green or purple	RS-485-parameter channel							
7	+ SIN	white	Process data channel							
8	+ COS	pink	Process data channel							

Caution: To ensure proper function, the screen connection strand (200 mm) MUST be connected. It is included in the supply.

 $\ensuremath{\text{U}_{\text{S}}}$ and GND are internally connected to the screen by capacitors of 2.2 nF.



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Technical Data acc. to DIN 328	378	Tapered Shaft SRS/SRM50	SRS	SRM				
			0.10	O. C. VIVI				
Number of sine/cosine periods	per revolution	1,024						
Dimensions		mm (see dimensional drawing)						
Mass		0.2 kg						
Inertial rotor moment		10 gcm ²						
Type of code for the absolute va	alue	Binary						
Code sequence for clockwise s	shaft rotation, lo	ooking in			_			
direction "A" (see dimensional dra	wing)	Increasing						
Measurement step after genera	ating arctan				_			
with 12 bit resolution		0.3 angular seconds						
Total number of steps	Single SRS	32,768						
	Multi SRM	134,217,728 = 32,768 x 4,096						
Error limits for the digital absol	ute value							
via RS 485		± 90 angular seconds						
Error limits for evaluating the "1	1,024" signals,							Т
integral non-linearity		± 45 angular seconds						Т
Non-linearity within a sine/cosi	ne period							
differential non-linearity		± 7 angular seconds						
Output frequency for sine/cosir	ne signals	0 200 kHz						_
Working speed up to which the	absolute positi	on						_
can be reliably produced	•	6,000 min ⁻¹			Ī			
Max. operating speed		12,000 min ⁻¹			i			_
Max. angular acceleration		0.2 x 10 ⁶ rad/s ²						_
Operating torque		0.2 Ncm						-
Starting torque		0.4 Ncm						-
Permissible shaft movement								_
static	radial/axial	± 0.5 mm/± 0.75 mm						_
dynamic	radial/axial	± 0.1 mm/± 0.2 mm			i			-
Angular motion, perpendicular t		· · · · · · · · · · · · · · · · · · ·						-
static		± 0.005 mm/mm						-
dynamic		± 0.0025 mm/mm			i			_
Life of ball bearings		3.6 x 10 ⁹ rotations			i			-
Working temperature range		- 20 + 115 °C			i			_
Storage temperature range (with	hout packaging)	- 40 + 125 °C			i —			_
Permissible relative humidity 1)		90 %			i			_
Resistance								_
to shocks ²⁾		100/10 g/ms			I			_
to vibration ³⁾		20/10 2000 g/Hz			1			_
Protection to IEC 60529 4)		IP 40						_
EMC ⁵⁾					i			_
Operating voltage range		7 12 V			1			_
Recommended supply voltage		8 V			i			_
Max. operating current, no load	I	80 mA						_
Available memory area	•	55 HIV			-			_
within EEPROM 512 ⁶⁾		128 bytes			1			
within EEPROM 2048 6)		1,792 bytes			-			
Interface signals		I, I DZ DYLES						_
Process data channel = SIN, REFSII	N COS DEECOS	Analogue differential						_
· · · · · · · · · · · · · · · · · · ·	iv, 605, KEF605	Analogue, differential			-			
Parameter channel = RS 485		Digital						

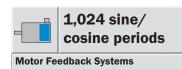
- 1) Condensation not permissible
- 2) To EN 60068-2-27
- 3) To EN 60068-2-6
- $^{
 m 4)}$ With mating connector inserted
- $^{5)}$ To EN 61000-6-2 and 61000-6-3

The EMC according to the standards quoted is achieved when the motor feedback system is mounted in an electrically conductive housing, which is connected to the $% \left\{ 1,2,...,n\right\}$ central earthing point of the motor controller via a cable screen. This is also where the $\,$ $\ensuremath{\mathsf{GND}}$ (0 V) connection of the supply voltage is linked to earth.

Users must perform their own tests when other screen designs are used.

 $^{\rm 6)}\,$ If applying the electronic type label, in connection with numeric controllers, attention should be paid to Patent EP 425 912 B 2; Application of the electronic type label in connection with speed regulation is exempt.

Ordering information									
SRS/SRM50; tapered shaft; rubber support Ø 50 mm									
Туре	Part no.	Description							
SRS50-HEA0-K01	1034176	Single, 512 EEprom, connector							
SRS50-HEV0-K01	1034178	Single, 512 EEprom, stranded cable							
SRS50-HEA0-K02	1034177	Single, 2048 EEprom, connector							
SRS50-HEV0-K02	1034179	Single, 2048 EEprom, stranded cable							
SRM50-HEA0-K01	1034111	Multi, 512 EEprom, connector							
SRM50-HEV0-K01	1034114	Multi, 512 EEprom, stranded cable							
SRM50-HEA0-K02	1034112	Multi, 2048 EEprom, connector							
SRM50-HEV0-K02	1034115	Multi, 2048 EEprom, stranded cable							

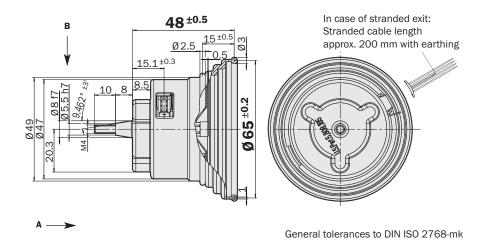


- 1,024 sine/cosine periods per revolution
- Absolute position with a resolution of 32,768 steps per revolution
- 4,096 revolutions can be measured (Multiturn)
- Programming of the positional value
- Electronic type label

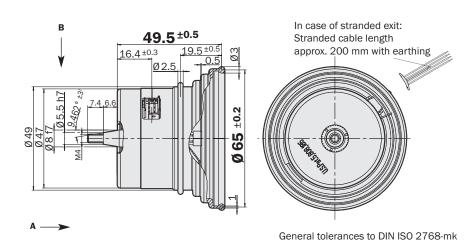


Accessories					
Connection technology					
Fixing technology					
Programming tool					

Dimensional drawing SRS60, rubber support Ø 60



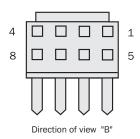
Dimensional drawing SRM60, rubber support Ø 60



PIN and wire allocation							
PIN	Signal	Colour of Wires	Explanation				
1	U _s	red	Supply voltage 7 12 V				
2	GND	blue	Ground connection				
3	REFSIN	brown	Process data channel				
4	REFCOS	black	Process data channel				
5	Data +	grey or yellow	RS-485-parameter channel				
6	Data -	green or purple	RS-485-parameter channel				
7	+ SIN	white	Process data channel				
8	+ COS	pink	Process data channel				

Caution: To ensure proper function, the screen connection strand (200 mm) MUST be connected. It is included in the supply.

 $\mbox{U}_{\mbox{\scriptsize S}}$ and GND are internally connected to the screen by capacitors of 2.2 nF.



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Imperior of sine/cosine periods per revolution at the provided perior of sine/cosine periods per revolution at the provided perior of sine/cosine periods per revolution at the provided perior of sine/cosine periods per revolution at the provided perior of sine/cosine periods per revolution at the provided perior of sine/cosine periods per revolution at the provided perior of sine/cosine periods per revolution at the provided perior of sine/cosine perior of sine/cosine perior of sine/cosine perior of sine/cosine signals of sine/cosine perior of sine/cosine signals of sine/cosine perior of sine/cosine signals of sine/cosine signals of sine/cosine perior of sine/cosine signals of sin
Image mm mm mm mm mm mm mm
10 gcm² 10 g
lettial rotor moment 10 gcm² Binary Binar
pre of code for the absolute value blinary ode sequence for clockwise shaft rotation, looking in frection "A" (see dimensional drawing) leasurement step after generating arctan with 12 bit resolution otal number of steps Single SRS 32,768 Multi SRM 134,217,728 = 32,768 × 4,096 pror limits for the digital absolute value a RS 485 \$\frac{\pmathbf{5}}{\pmathbf{9}}\$ on angular seconds arror limits for evaluating the "1,024" signals, stegral non-linearity \$\frac{\pmathbf{4}}{\pmathbf{5}}\$ tangular seconds on-linearity within a sine/cosine period ifferential non-linearity \$\frac{\pmathbf{7}}{\pmathbf{7}}\$ angular seconds on-linearity within a sine/cosine signals on-200 kHz forking speed up to which the absolute position an be reliably produced flax. operating speed 12,000 min ⁻¹ flax. angular acceleration 0.2 x 106 rad/s ² perating torque 0.4 Ncm emissible shaft movement tatic radial/axial \$\frac{\pmathbf{7}}{\pmathbf{7}}\$ and \$\frac{\pmathbf{7}}{\pmathbf{7}}\$ mm/\pmathbf{1} 0.75 mm you min c radial/axial \$\frac{\pmathbf{7}{\pmathbf{7}}\$ mm/\pmathbf{2} 0.2 mm}{\pmathbf{7}}\$ mm/\pmathbf{1} 0.2 mm
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Increasing Increa
leasurement step after generating arctan with 12 bit resolution otal number of steps Single SRS 32,768 Multi SRM 134,217,728 = 32,768 x 4,096 rror limits for the digital absolute value a RS 485 ± 90 angular seconds rror limits for evaluating the "1,024" signals, attegral non-linearity ± 45 angular seconds on-linearity within a sine/cosine period ifferential non-linearity ± 7 angular seconds on-linearity on-linearity ± 8 angular seconds on-linearity on-linearity ± 90 angular seconds on-linearity ± 10
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tegral non-linearity
on-linearity within a sine/cosine period ifferential non-linearity ± 7 angular seconds utput frequency for sine/cosine signals 0 200 kHz /orking speed up to which the absolute position an be reliably produced 6,000 min-1 lax. operating speed 12,000 min-1 lax. angular acceleration 0.2 x 106 rad/s² perating torque 0.2 Ncm tarting torque 0.4 Ncm ermissible shaft movement tatic radial/axial ± 0.5 mm/± 0.75 mm ynamic radial/axial ± 0.1 mm/± 0.2 mm
ifferential non-linearity ± 7 angular seconds utput frequency for sine/cosine signals 0 200 kHz /orking speed up to which the absolute position an be reliably produced 6,000 min-1 lax. operating speed 12,000 min-1 lax. angular acceleration 0.2 x 106 rad/s² perating torque 0.2 Ncm tarting torque 0.4 Ncm ermissible shaft movement tatic radial/axial ± 0.5 mm/± 0.75 mm ynamic radial/axial ± 0.1 mm/± 0.2 mm
utput frequency for sine/cosine signals 0 200 kHz Vorking speed up to which the absolute position an be reliably produced 6,000 min-1 lax. operating speed 12,000 min-1 lax. angular acceleration 0.2 x 106 rad/s2 perating torque 0.2 Ncm tarting torque 0.4 Ncm ermissible shaft movement tatic radial/axial ± 0.5 mm/± 0.75 mm ynamic radial/axial ± 0.1 mm/± 0.2 mm
Vorking speed up to which the absolute position an be reliably produced 6,000 min-1 lax. operating speed 12,000 min-1 lax. angular acceleration 0.2 x 106 rad/s² perating torque 0.2 Ncm tarting torque 0.4 Ncm ermissible shaft movement tatic radial/axial ± 0.5 mm/± 0.75 mm ynamic radial/axial ± 0.1 mm/± 0.2 mm
An be reliably produced 6,000 min-1
An be reliably produced 6,000 min-1
lax. angular acceleration 0.2 x 10 ⁶ rad/s ² perating torque 0.2 Ncm tarting torque 0.4 Ncm ermissible shaft movement tatic radial/axial ± 0.5 mm/± 0.75 mm ynamic radial/axial ± 0.1 mm/± 0.2 mm
lax. angular acceleration 0.2 x 10 ⁶ rad/s ² perating torque 0.2 Ncm tarting torque 0.4 Ncm ermissible shaft movement tatic radial/axial ± 0.5 mm/± 0.75 mm ynamic radial/axial ± 0.1 mm/± 0.2 mm
perating torque 0.2 Ncm 0.4 Ncm tarting torque 0.4 Ncm ermissible shaft movement tatic radial/axial ± 0.5 mm/± 0.75 mm ynamic radial/axial ± 0.1 mm/± 0.2 mm
tarting torque 0.4 Ncm ermissible shaft movement tatic radial/axial ± 0.5 mm/± 0.75 mm ynamic radial/axial ± 0.1 mm/± 0.2 mm
ermissible shaft movement tatic radial/axial ± 0.5 mm/± 0.75 mm
tatic radial/axial ± 0.5 mm/± 0.75 mm ynamic radial/axial ± 0.1 mm/± 0.2 mm
ynamic radial/axial ± 0.1 mm/± 0.2 mm
ingular motion, perpendicular to the rotational axis
tatic ± 0.005 mm/mm
ynamic ± 0.0025 mm/mm
ife of ball bearings 3.6 x 10 ⁹ rotations
torage temperature range (without packaging) - 40 + 125 °C
ermissible relative humidity 1) 90 %
esistance
9 shocks ²⁾ 100/10 g/ms
20/10 2000 g/Hz
rotection to IEC 60529 4) IP 40
MC ⁵⁾
perating voltage range 7 12 V
ecommended supply voltage 8 V
lax. operating current, no load 80 mA
vailable memory area
ithin EEPROM 512 ⁶⁾ 128 bytes
ithin EEPROM 2048 ⁶⁾ 1,792 bytes
nterface signals
rocess data channel = SIN, REFSIN, COS, REFCOS Analogue, differential
arameter channel = RS 485 Digital

- 1) Condensation not permissible
- 2) To EN 60068-2-27
- 3) To EN 60068-2-6
- $^{
 m 4)}$ With mating connector inserted
- $^{5)}$ To EN 61000-6-2 and 61000-6-3

The EMC according to the standards quoted is achieved when the motor feedback system is mounted in an electrically conductive housing, which is connected to the $% \left\{ 1,2,...,n\right\}$ central earthing point of the motor controller via a cable screen. This is also where the $\,$ $\ensuremath{\mathsf{GND}}$ (0 V) connection of the supply voltage is linked to earth. Users must perform their own tests when other screen designs are used.

 $^{\rm 6)}\,$ If applying the eletronic type label, in connection with numeric controllers, attention should be paid to Patent EP 425 912 B 2; Application of the electronic type label in connection with speed regulation is exempt.

Ordering information									
SRS/SRM60; tapered shaft; rubber support Ø 60 mm									
Туре	Part no.	Description							
SRS60-HEA0-K01	1034217	Single, 512 EEprom, connector							
SRS60-HEV0-K01	1034220	Single, 512 EEprom, stranded cable							
SRS60-HEA0-K02	1034218	Single, 2048 EEprom, connector							
SRS60-HEV0-K02	1034221	Single, 2048 EEprom,stranded cable							
SRM60-HEA0-K01	1034157	Multi, 512 EEprom, connector							
SRM60-HEV0-K01	1034160	Multi, 512 EEprom, stranded cable							
SRM60-HEA0-K02	1034158	Multi, 2048 EEprom, connector							
SRM60-HEV0-K02	1034161	Multi, 2048 EEprom, stranded cable							



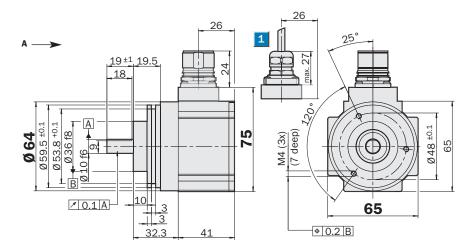
- 1,024 sine/cosine periods per revolution
- Absolute position with a resolution of 32,768 steps per revolution
- 4,096 revolutions can be measured (Multiturn)
- Programming of the positional value
- Electronic type label



((

Accessories Connection technology Fixing technology Programming tool

Dimensional drawing SRS50 standalone, rectangular housing, face mount flange



1 R = min. bending radius 40 mm

General tolerances to DIN ISO 2768-mk

PIN and wire allocation

PIN	Signal	Colour of Wires	Explanation
1	REFCOS	black	Process data channel
2	Data +	grey or yellow	RS-485-parameter channel
3	N. C.	_	N. C.
4	N. C.	-	N. C.
5	SIN	white	Process data channel
6	REFSIN	brown	Process data channel
7	Data -	green or purple	RS-485-parameter channel
8	COS	pink	Process data channel
9	N. C.	-	N. C.
10	GND	blue	Ground connection
11	N. C.	-	N. C.
12	U _s	red	7 12 V Supply voltage



View of the plug-in face

Screen connection on connector housing

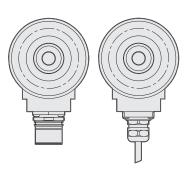
N. C. = Not connected

U_S and GND are internally connected to the screen by capacitors of 2.2 nF.

Type of connection

M23 Connector radial

Cable radial



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Technical Data and to DIN Of	2070 Ctandalar	o Foco Mount El CDC (CDMEO	CDC	SRM
Technical Data acc. to DIN 32	2010 Stanualon	e, Face Mount Fl. SRS/SRM50	SRS	SKIVI
Number of sine/cosine period	s per revolution	1,024		
Dimensions		mm (see dimensional drawing)		
Mass		0.550 kg		
Inertial rotor moment		25 gcm ²		
Type of code for the absolute v	value	Binary		
Code sequence for clockwise	shaft rotation, lo	oking in	-	
direction "A" (see dimensional	l drawing)	Increasing		
Measurement step after gene	rating arctan			
with 12 bit resolution		0.3 angular seconds		
Total number of steps	Single SRS	32,768		
	Multi SRM	134,217,728 = 32,768 x 4,096	-	
Error limits for the digital abso	olute value			
via RS 485		± 90 angular seconds		
Error limits for evaluating the	"1,024" signals,		•	
integral non-linearity		± 45 angular seconds		
Non-linearity within a sine/co	sine period			
differential non-linearity		± 7 angular seconds		
Output frequency for sine/cos	sine signals	0 200 kHz		
Working speed up to which th	e absolute positio	on		
can be reliably produced	•	6,000 min ⁻¹		
Max. operating speed		6,000 min ⁻¹		
Max. angular acceleration		0.2 x 10 ⁶ rad/s ²		
Operating torque with shaft se	ealing ring	1 Ncm		
Starting torque with shaft seal		1,5 Ncm		
Load capacity of shaft	radial/axial	40 N/20 N		
Life of ball bearings	,	3.6 x 10 ⁹ rotations		
Working temperature range		- 20 + 85 °C		
Storage temperature range		- 30 + 90 °C		
Permissible relative humidity	1)	90 %		
Resistance				
to shocks ²⁾		30/11 g/ms		
to vibration 3)		20/10 2000 g/Hz		
Protection to IEC 60529 4)		IP 65		
EMC 5)		55		
Operating voltage range		7 12 V		
Recommended supply voltage		7 12 V 8 V		
Max. operating current, no loa				
	au	80 mA		
Available memory area		100 byton		
within EEPROM 512 6)		128 bytes		
within EEPROM 2048 6)		1,792 bytes		
Interface signals	OIN 000 DEE000	Annalasia diff. C. I		
Process data channel = SIN, REFS	SIN, COS, REFCOS	Analogue, differential		
Parameter channel = RS 485		Digital		

¹⁾ Condensation not permissible

 $^{^{\}rm 6)}\,\,$ If applying the elctronic type label, in connection with numeric controllers, attention should be paid to Patent EP 425 912 B 2; Application of the electronic type label in connection with speed regulation is exempt.

Ordering information		
SRS/SRM50 standalone; solid shaft	Ø 10 mm; clamping	g flange
Туре	Part no.	Description
SRS50-HWA0-K01	1034192	Single, 512 EEprom, connector M23
SRS50-HWV0-K01	1034194	Single, 512 EEprom, cable 1.5 m
SRS50-HWA0-K02	1034193	Single, 2048 EEprom, connector M23
SRS50-HWV0-K02	1034195	Single, 2048 EEprom, cable 1.5 m
SRM50-HWA0-K01	1034130	Multi, 512 EEprom, connector M23
SRM50-HWV0-K01	1034133	Multi, 512 EEprom, cable 1.5 m
SRM50-HWA0-K02	1034131	Multi, 2048 EEprom, connector M23
SRM50-HWV0-K02	1034134	Multi, 2048 EEprom, cable 1.5 m

²⁾ To EN 60068-2-27

³⁾ To EN 60068-2-6

⁴⁾ With mating connector inserted

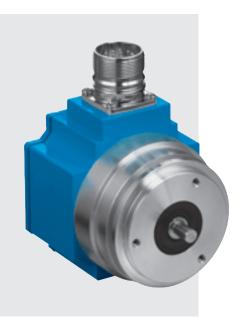
 $^{^{5)}}$ To EN 61000-6-2 and 61000-6-3



1,024 sine/cosine periods

Motor Feedback Systems

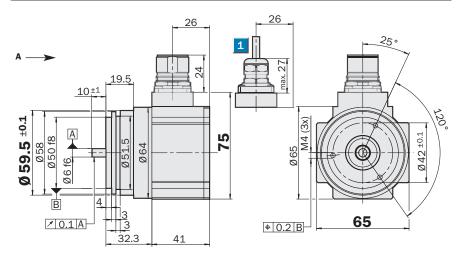
- 1,024 sine/cosine periods per revolution
- Absolute position with a resolution of 32,768 steps per revolution
- 4,096 revolutions can be measured (Multiturn)
- Programming of the positional value
- Electronic type label



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Accessories
Connection technology
Fixing technology
Programming tool

Dimensional drawing SRS50 standalone, rectangular housing, servo flange



1 R = min. bending radius 40 mm

General tolerances to DIN ISO 2768-mk

PIN and wire allocation

PIN	Signal	Colour of Wires	Explanation
1	REFCOS	black	Process data channel
2	Data +	grey or yellow	RS-485-parameter channel
3	N. C.	_	N. C.
4	N. C.	-	N. C.
5	SIN	white	Process data channel
6	REFSIN	brown	Process data channel
7	Data -	green or purple	RS-485-parameter channel
8	COS	pink	Process data channel
9	N. C.	-	N. C.
10	GND	blue	Ground connection
11	N. C.	-	N. C.
12	U _s	red	7 12 V Supply voltage



View of the plug-in face

Screen connection on connector housing

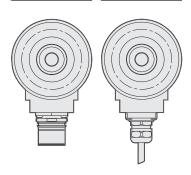
N. C. = Not connected

U_S and GND are internally connected to the screen by capacitors of 2.2 nF.

Type of connection

M23 Connector radial

Cable radial



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Technical Data acc. to DIN	32878 Stand	dalone, Servo Fl. SRS/SRM50	SRS	SRM				
Number of sine/cosine perio	ods per revolution	1,024			1			
Dimensions	· ·	mm (see dimensional drawing)			i			_
Mass		0.550 kg			i			_
Inertial rotor moment		25 gcm ²			i			_
Type of code for the absolute	e value	Binary			i			_
Code sequence for clockwis								_
direction "A" (see dimension	•	Increasing			Ī			
Measurement step after gen								_
with 12 bit resolution	J	0.3 angular seconds			Ī			
Total number of steps	Single SRS	32,768						_
	Multi SRM	134,217,728 = 32,768 x 4,096						_
Error limits for the digital ab	solute value	- , , , , , ,						_
via RS 485		± 90 angular seconds						_
Error limits for evaluating the	e "1,024" signals.	<u>_</u>						
integral non-linearity	<u>, </u>	± 45 angular seconds						
Non-linearity within a sine/c	osine period							_
differential non-linearity		± 7 angular seconds						_
Output frequency for sine/co	osine signals	0 200 kHz						_
Working speed up to which t		on						_
can be reliably produced	•	6,000 min ⁻¹			Ī			
Max. operating speed		6,000 min ⁻¹						_
Max. angular acceleration		0.2 x 10 ⁶ rad/s ²						_
Operating torque with shaft s	sealing ring	1 Ncm			İ			_
Starting torque with shaft se		1.5 Ncm			İ			_
Load capacity of shaft	radial/axial	40 N/20 N			İ			_
Life of ball bearings	,	3.6 x 10 ⁹ rotations						_
Working temperature range		- 20 + 85 °C			İ			_
Storage temperature range		- 30 + 90 °C			İ			_
Permissible relative humidity	v 1)	90 %			İ			_
Resistance	,							_
to shocks 2)		30/11 g/ms						_
to vibration ³⁾		20/10 2000 g/Hz			i			_
Protection to IEC 60529 4)		IP 65			İ			_
EMC ⁵⁾					i			_
Operating voltage range		7 12 V						_
Recommended supply voltage	 ge	8 V			i			_
Max. operating current, no lo		80 mA			i			_
Available memory area								_
within EEPROM 512 ⁶⁾		128 bytes						_
within EEPROM 2048 6)		1,792 bytes			i			
Interface signals		,,						_
Process data channel = SIN, REI	FSIN, COS. REFCOS	Analogue, differential			1			
Parameter channel = RS 485		Digital			i			
		0						

¹⁾ Condensation not permissible

⁶⁾ If applying the electronic type label, in connection with numeric controllers, attention should be paid to Patent EP 425 912 B 2; Application of the electronic type label in connection with speed regulation is exempt.

Ordering information		
SRS/SRM50 standalone; so	olid shaft Ø 6 mm; servo f	lange
Туре	Part no.	Description
SRS50-HXA0-K01	1034197	Single, 512 EEprom, connector M23
SRS50-HXV0-K01	1034199	Single, 512 EEprom, cable 1.5 m
SRS50-HXA0-K02	1034198	Single, 2048 EEprom, connector M23
SRS50-HXV0-K02	1034200	Single, 2048 EEprom, cable 1.5 m
SRM50-HXA0-K01	1034136	Multi, 512 EEprom, connector M23
SRM50-HXV0-K01	1034138	Multi, 512 EEprom, cable 1.5 m
SRM50-HXA0-K02	1034137	Multi, 2048 EEprom, connector M23
SRM50-HXV0-K02	1034139	Multi, 2048 EEprom, cable 1.5 m

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²⁾ To EN 60068-2-27

³⁾ To EN 60068-2-6

⁴⁾ With mating connector inserted

 $^{^{5)}}$ To EN 61000-6-2 and 61000-6-3



1,024 sine/ cosine periods

Motor Feedback Systems

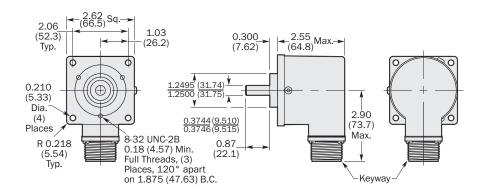
- 1,024 sine/cosine periods per revolution
- Absolute position with a resolution of 32,768 steps per revolution
- 4,096 revolutions can be measured (Multiturn)
- Programming of the positional value
- Electronic type label



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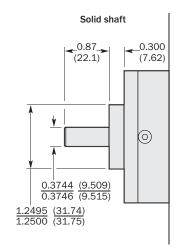
Accessories Connection technology Fixing technology Programming tool

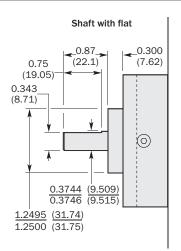
Dimensional drawing SRS/M50 Standalone, square flange mount



All dimensions in inch, dimensions within brackets in mm.

Dimensional Drawing Shaft Options





All dimensions in inch, dimensions within brackets in mm.

PIN and wire allocation

PIN	Wire colour	Signal	Explanation
A	Red	+ U _s	7 12 V Supply voltage
В	Blue	GND	Ground connection
С	Brown	Ref SIN	Process data channel
D	Black	Ref COS	Process data channel
E	Grey	Data +	RS 485 parameter channel
F	Green	Data -	RS 485 parameter channel
G	White	SIN	Process data channel
Н	Pink	COS	Process data channel
I	N. C.		
	Case	Case	



Pin side view MS/10 Screen connection on connector housing

N. C. = Not connected

 $\mbox{U}_{\mbox{S}}$ and GND are internally connected to the screen by capacitors of 2.2 nF.

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Technical Data acc. to DIN 3	2878 Standalone,	square mount fl. SRS/SRM50	SRS	SRM				
Number of sine/cosine perio	ods per revolution	1,024			ĺ			
Dimensions		mm (see dimensional drawing)			i			
Vlass		0.482 kg						
Inertial rotor moment		28.8 gcm ²			i –			
Type of code for the absolute	e value	Binary						
Code sequence for clockwis								
direction "A" (see dimension	,	Increasing						
Measurement step after gen								
with 12 bit resolution		0.3 angular seconds			Ī			
Total number of steps	Single SRS	32,768						
	Multi SRM	134,217,728 = 32,768 x 4,096				_		
Error limits for the digital ab						_		
via RS 485		± 90 angular seconds				_		
Error limits for evaluating the	e "1.024" signals.	_ = = = = = = = = = = = = = = = = = = =						
integral non-linearity	<u> </u>	± 45 angular seconds				_		
Non-linearity within a sine/c	osine neriod	I To difficult decented						
differential non-linearity	osine penou	± 7 angular seconds				-		
Output frequency for sine/co	neina eignale	0 200 kHz						
Working speed up to which t						_		
can be reliably produced	ine absolute positi	6,000 min ⁻¹			Ī			
Max. operating speed withou	ıt chaft coal	6,000 min ⁻¹		ļ				
Max. operating speed with sl		3,000 min ⁻¹						
	nart scar	5 x 10 ⁵ rad/s ²						
Max. angular acceleration		·						
Max. Operating torque	alian vian	1 Ncm				_		
Starting torque with shaft se		1.5 Ncm				_		
Load capacity of shaft	radial/axial	155 N/88 N				-		
Life of ball bearings		3.6 x 10 ⁹ rotations						
Working temperature range		- 20 + 85 °C				_		
Storage temperature range	40	- 30 + 90 °C				_		
Permissible relative humidity	y ¹⁾	90 %						
Resistance								
to shocks 2)		100/10 g/ms						
to vibration 3)		20/10 2000 g/Hz						
Protection to IEC 60529 4)		IP 66						
EMC ⁵⁾								
Operating voltage range		7 12 V						
Recommended supply voltage	ge	8 V						
Max. operating current, no lo	oad	80 mA						
Available memory area								
within EEPROM 512 6)		128 bytes						
Interface signals								
Process data channel = SIN, RE	FSIN, COS, REFCOS	Analogue, differential						
Parameter channel = RS 485		Digital						
		-						

¹⁾ Condensation not permissible

⁶⁾ If applying the electronic type label, in connection with numeric controllers, attention should be paid to Patent EP 425 912 B 2; Application of the electronic type label in connection with speed regulation is exempt.

Ordering informa	tion	
SRS/SRM50 star	ndalone; solid sh	aft Ø 3/8"; square flange 2.5"
Туре	Part no.	Description
SRS50-HTA0-K01	1035765	Single, solid shaft, connector MS/10
SRS50-HUA0-K01	1035766	Single, solid shaft with flat, connector MS/10
SRM50-HTA0-K01	1035762	Multi, solid shaft, connector MS/10
SRM50-HUA0-K01	1035763	Multi, solid shaft with flat, connector MS/10

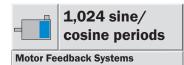
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²⁾ To EN 60068-2-27

³⁾ To EN 60068-2-6

⁴⁾ With mating connector inserted

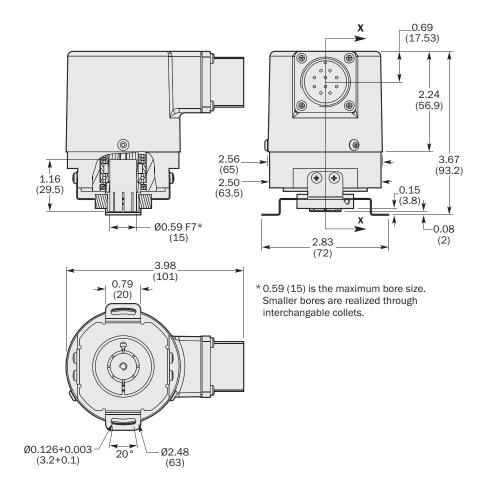
 $^{^{5)}\;}$ To EN 61000-6-2 and 61000-6-3



- 1,024 sine/cosine periods per revolution
- Absolute position with a resolution of 32,768 steps per revolution
- 4,096 revolutions can be measured (Multiturn)
- Programming of the positional value
- Electronic type label



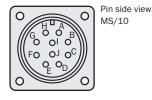
Dimensional drawing SRS/M50 Standalone, blind hollow shaft



All dimensions in inch, dimensions within brackets in mm.

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Accessories
Connection technology
Fixing technology
Programming tool



Screen connection on connector housing

N. C. = Not connected

 $\ensuremath{\mathsf{U}}_{\ensuremath{\mathsf{S}}}$ and GND are internally connected to the screen by capacitors of 2.2 nF.

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Technical Data acc. to DIN 32878 Standa	alone, blind hollow shaft, SRS/SRI	M50 SRS	SRM
Number of sine/cosine periods per revol	lution 1,024		
Dimensions	mm (see dimensional dra	awing)	
Mass	0.482 kg	344116)	
Inertial rotor moment	50 gcm ² max.		
Type of code for the absolute value	Binary		
Code sequence for clockwise shaft rota			
direction "A" (see dimensional drawing)	, •		
Measurement step after generating arc			
with 12 bit resolution	0.3 angular seconds		
Total number of steps Single S			
Multi S		4.006	_
		4,090	
Error limits for the digital absolute value			
via RS 485	± 90 angular seconds		
Error limits for evaluating the "1,024" si			
integral non-linearity	± 45 angular seconds		
Non-linearity within a sine/cosine perior			
differential non-linearity	± 7 angular seconds		_
Output frequency for sine/cosine signal			
Max. operating speed with shaft seal	3,000 min ⁻¹		_
Max. angular acceleration	5 x 10 ⁵ rad/s ²		
Max. Operating torque	1.8 Ncm		
Starting torque with shaft sealing ring	2.6 Ncm		
Allowable runout			
static/dynamic radial movement	± 0.3/± 0.1 mm		
static/dynamic axial movement	± 0.5/± 0.2 mm		
Life of ball bearings	3.6 x 109 rotations		
Working temperature range	- 20 + 85 °C		
Storage temperature range	- 30 + 90 °C		
Permissible relative humidity ¹⁾	90 %		
Resistance			
to shocks 2)	100/10 g/ms		
to vibration ³⁾	20/10 2000 g/Hz		
Protection to IEC 60529 4)	IP 66		
EMC ⁵⁾			
Operating voltage range	7 12 V		
Recommended supply voltage	8 V		
Max. operating current, no load	80 mA		
Available memory area	00 11.11		
within EEPROM 512 ⁶⁾	128 bytes		
Interface signals	120 09103		
Process data channel = SIN, REFSIN, COS, RE	EFCOS Analogue, differential		
Parameter channel = RS 485	Digital		

¹⁾ Condensation not permissible

⁶⁾ If applying the elctronic type label, in connection with numeric controllers, attention should be paid to Patent EP 425 912 B 2; Application of the electronic type label in connection with speed regulation is exempt.

Ordering information				
SRS/SRM50 standalone; blind hollow shaft Ø 15 mm				
Туре	Part no. Description			
SRS50-HPA0-K01	1035764	Single, blind hollow shaft, connector MS/10		
SRM50-HPA0-K01	1035761	Multi, blind hollow shaft, connector MS/10		

Collets			
Туре	Part no.	Size	
SPZ-006-AD-A	2029174	6 mm	
SPZ-1E4-AD-A	2029175	1/4"	
SPZ-008-AD-A	2029176	8 mm	
SPZ-3E8-AD-A	2029177	3/8"	
SPZ-010-AD-A	2029178	10 mm	
SPZ-012-AD-A	2029179	12 mm	
SPZ-1E2-AD-A	2029180	1/2"	
Attention: Please	order the Collet w	ith required diamet	er separately

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²⁾ To EN 60068-2-27

³⁾ To EN 60068-2-6

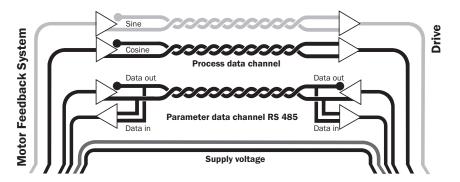
⁴⁾ With mating connector inserted

 $^{^{5)}\;}$ To EN 61000-6-2 and DIN 61000-6-3



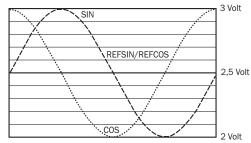
Electrical interface

- Safe data transmission
- High information content
- Electronic type label
- Only 8 leads
- Bus-enabled parameter channel
- Process data channel in real time



Signal specification of the process data channel

Signal diagram for clockwise rotation of the shaft, looking in direction "A"



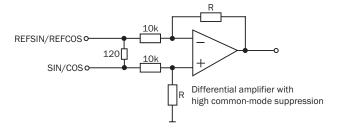
1 periode = 360°: 1024

Access to the process data used for speed control, i.e. to the sine and cosine signals, is practically always "online". When the supply voltage is applied, the speed controller has access to this information at any time.

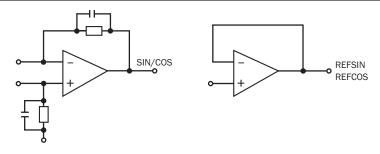
Sophisticated technology guarantees stable amplitudes of the analogue signals across all specified environmental conditions, with a maximum variation of only 20%.

Characteristics applicable to all permissible environmental conditions signal			
Signal	Values/Units		
Signal peak, peak V _{ss} of SIN, COS	0.9 1.1 V		
Signal offset REFSIN, REFCOS	2.2 2.8 V		

Recommended receiver circuit for sine and cosine signals



The output circuit of the process data channel within the SinCos encoder





Type-specific settings	SRS	SRM
Type ID (command 52h)	22h	27h
Free EEPROM [bytes]	128/1,792	128/1,792
Address	40h	40h
Mode_485	E4h	E4h
Codes 0 3	55h	55h
Counter	0	0

Overview of c	ommands supported	SRS	SRM	
Command byte	Function	Code 0 1)	Comments	Comments
42h	Read position			
43h	Set position	•		
44h	Read analogue value		Channel number 48h	Channel number 48h
			Temperature [°C]	Temperature [°C]
46h	Read counter			
47h	Increase counter			
49h	Reset counter	•		
4Ah	Read data			
4Bh	Save data			
4Ch	Determine status of a data field			
4Dh	Create data field			
4Eh	Determine available memory area			
4Fh	Change access code			
50h	Read encoder status			
52h	Read out name plate		Encoder type = 22h	Encoder type = 27h
53h	Encoder reset			
55h	Allocate encoder address	•		
56h	Read serial number and program version			
57h	Configure serial interface	•		

 $^{1)}\,$ The commands thus labelled include the parameter "Code 0". Code 0 is a byte inserted into the protocol, for additional safeguarding of vital system parameters against accidental overwriting.

When shipped, "Code 0" = 55h

Error type	Status code	Description	SRS	SRI
	00h	The encoder has recognised no error	•	•
Initialisation	01h	Faulty compensating data	•	•
	02h	Faulty internal angular offset	•	•
	03h	Data field partitioning table damaged	•	•
	04h	Analogue limit values not available	•	•
	05h	Internal I ² C bus not operational	•	•
	06h	Internal checksum error	•	•
Protocol	07h	Encoder reset occurred as a result of program monitoring	•	•
	09h	Parity error	•	•
	OAh	Checksum of the data transmitted is incorrect	•	•
	OBh	Unknown command code	•	•
	0Ch	Number of data transmitted is incorrect	•	•
	ODh	Command argument transmitted is not allowed	•	•
Data	0Eh	The selected data field must not be written to	•	•
	OFh	Incorrect access code	•	•
	10h	Size of data field stated cannot be changed	•	•
	11h	Word address stated, is outside data field	•	•
	12h	Access to non-existent data field	•	•
Position	01h	Analogue signals outside specification	•	•
	1Fh	Speed too high, no position formation possible	•	•
	20h	Singleturn position unreliable	•	•
	21h	Positional error Multiturn		•
	22h	Positional error Multiturn		•
	23h	Positional error Multiturn		•
Other	1Ch	Monitoring the value of the analogue signals (process data)		
	1Dh	Transmitter current critical (dirt, transmitter breakage)	•	•
	1Eh	Encoder temperature critical	•	•
	08h	Counter overflow	•	•

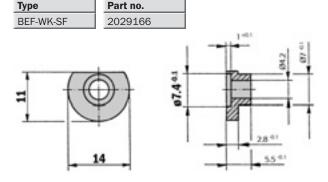
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Dimensional drawings and ordering information

Accessories for SRS/M 50 Standalone

Programming tool for HIPERFACE®-devices			
Type Part no. Motor Feedback System			
PGT-03-S	1034252	SRS/SRM50 standalone	

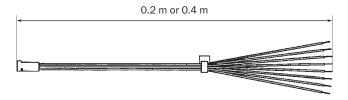
Servo clamp small, set (contents 3 off) for servo flanges



General tolerances to DIN ISO 2768-mk

Stranded cable/connector, straight, 8 wires, 8 x 0.24 mm²

Туре	Part no.	Contacts	Wire length
DOL-OB08-GOM2XB1	2031081	8	0.2 m
DOL-OBO8-GOM4XB1	2031083	8	0.4 m



HIPERFACE® cable, 8 wires, supplied by the metre 4 x 2 x 0.15 mm², screened, flexible

Туре	Part no.	Cores
LTG-2708-MW	6028361	8

|--|

Connector W23 Temale, 12 pin, Straight, Screened				
Туре	Part no.	Contacts		
DOS-2312-G	6027538	12		



SW 23 approx. 55 58

Туре

STE-2312-G

Connector M23 male, 12 pin, straight, screened

6027537

Contacts

Part no.

Dimensional drawings and ordering information

Cable connector M23, 12 pin, straight, cable 8 core, HIPERFACE®, screened

Туре	Part no.	Contacts	Cable length
DOL-2308-G1M5JB2	2031069	12	1.5 m
DOL-2308-G03MJB2	2031070	12	3.0 m
DOL-2308-G05MJB2	2031071	12	5.0 m
DOL-2308-G10MJB2	2031072	12	10.0 m
DOL-2308-G15MJB2	2031073	12	15.0 m

Connection Systems

Mating Connectors fit in for MS/10

Туре	Part no.	PIN
DOS-MS10-G	7102129	10 Pin

Cable and Connector Assembly MS/10, 10 pin, straight, cable 8 core

Туре	Part no.	Length
DOL-MS10-G1M5MA3	7102160	1.5 m
DOL-MS10-G03MMA3	7102161	3 m
DOL-MS10-G05MMA3	7102162	5 m
DOL-MS10-G10MMA3	7102163	10 m
DOL-MS10-G20MMA3	7102164	20 m
DOL-MS10-G30MMA3	7102165	30 m

Interchangeable Collets fpr Hub Shaft Mounting

Collets

Туре	Part no.	Size
SPZ-006-AD-A	2029174	6 mm
SPZ-1E4-AD-A	2029175	1/4"
SPZ-008-AD-A	2029176	8 mm
SPZ-3E8-AD-A	2029177	3/8"
SPZ-010-AD-A	2029178	10 mm
SPZ-012-AD-A	2029179	12 mm
SPZ-1E2-AD-A	2029180	1/2" mm

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