IG xx

SSD DRIVES

Incremental Encoder

Further descriptions, that relate to this document:

UL: 12-01	Plugs

UL: 12-02	Cable

CONTENTS

The most important thing first

Thanks for your confidence choosing our product.

These operating instructions present themselves as an overview of the technical data and features.

Please read the operating instructions before operating the product.

If you have any questions, please contact your nearest SSD Drives representative.
Improper application of the product in combination with dangerous voltage can lead to injuries.
In addition, damage can also occur to motors or other products.
Therefore please observe our safety precautions strictly.

Safety precautions

We assume that, as an expert, you are familiar with the relevant safety regulations, especially in accordance with VDE 0100, VDE 0113, VDE 0160, EN 50178, the accident prevention regulations of the employers liability insurance company and the DIN regulations and that you are able to use and apply them.
As well, relevant European Directives must be observed.

Depending on the kind of application, additional regulations e.g. UL, DIN are subject to be observed.
If our products are operated in connection with components from other manufacturers, their operating instructions are also subject to be observed strictly.

General

The incremental encoder is used for the recording of position values in incremental form.
Furthermore it can be employed also for "indirect" speed sensing.
The information is lost at power loos.
The "electrical" positioning accuracy is all the more higher, the higher the incremental resolution of the encoder is chosen.

1 Type code

	Standard						optional	
Marking	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**
Model:	IG	XX	XXXX	XX	XX	/XX	-XX	X

Marking	Description		
a	IG	=	incremental encoder
b	XX		delivery code
	ST	=	standard
			(further codes TH, HO, TW, FR, HG, FR, HG, HH, SI)
c	XXXX	=	incremental resolution (per revolution)
			64, 100, 256, 500, 512, 1000, 1024, 2048, 4096
d	XX		supply voltage
	05	=	5 VDC (4...6V) ≙ standard
	24	=	24 VDC (10...30V)
e	XX		electric connection
	FR	=	flange radial
	FA	=	Flanschdose axial
	KR	=	cable exit radial
	KA	=	cable exit axial
f	/XX	=	shaft design
	/06	=	diameter = 6mm, length = 10mm
	/10	=	diameter = 10mm, length = 18mm
g	-XX	=	cable length, at design KR, KA
	15	=	1,5m (standard length)
			other cable lengths' possible
h	X		flange design (standard = SERVO)
	K	=	face mounting flange

1.1 Typical example

A typical example of an order corresponding to the model key would be:

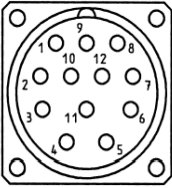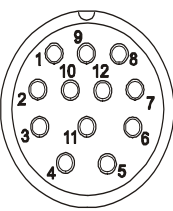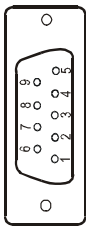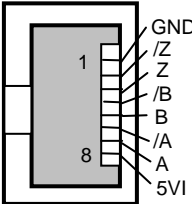**Model: IG ST 1024 05 FR /06**
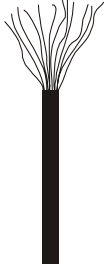
IG	=	incremental encoder
ST	=	delivery code
1024	=	incremental resolution (per revolution)
05	=	5 VDC
FR	=	flange radial
/06	=	diameter 6mm, length 10mm

2 Technical data

Increment resolution	64, 100, 256, 500, 512, 1000, 1024, 2048, 4096	Increments/ revolution
Output signal	A, AN, B, BN, Z, ZN	
Interface	RS 422 short circuit-proof push-pull output	
Mass	ca. 0,3	kg
Inertia of the rotor FR, FA KR, KA	13 25	gcm^2 gcm^2
Measurement step	90 / increments	Degrees
Reference signal – Number – Position	1 90° electrically & logically interlocked with A a. B	
Error limits $100 \leq Z < 1250$ $1250 < Z \leq 4096$	45 / Z + 0,054 45 / Z + 0,015	Degrees Degrees
Measurement step deviation	45 / Z	Degrees
Max. Output frequency – RS 422 – Gegentaktausgang	300 200	KHz kHz
Max. operating speed with shaft seal without shaft seal	6.000 10.000	min^{-1} min^{-1}
Max. angular acceleration	5 x 10^5	rad / s^2
Friction torque with shaft seal without shaft seal	1 0,1	Ncm Ncm
Starting torque with shaft seal without shaft seal	1,5 0,2	Ncm Ncm

Permissible shaft loading	Radial	Axial	
FR, FA	20	10	N
KR, KA	40	20	N

Service life of bearings	3,6 x 10^{10}	Revolutions
Working temperature range	0 … +85	°C
Operating temperature range	-20 … +85	°C
Storage temperature range	-30 … +85	°C
Perm. relative humidity (Condensation not permissible)	90	%
Shock resistance to DIN IEC 68 part 2 - 27	30 / 11	g / ms
Vibration resistance to DIN IEC 68 part 2 - 6	20 / 10… 150	g / Hz

Degree of protection to IEC 60529 With connector exit	Housing side IP 67	Flange side IP 65	

Working voltage range – RS 422 – Gegentakt	4 … 6 10 … 30	VDC VDC
Working current at no load at 5 V at 24 V	120 100	mA mA
Signal cable (power supply is at no potential to housing, screen is at housing potential) – Diameter – Min. bending radius	 8 40	 mm mm

3 Dimensions

3.1 Encoder with <u>servo</u> flange ≙ standard
IG ST ...

design – axial (FA)   design – radial (FR)

3.2 Encoder with face mounting flange
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design – axial (KA)   design – radial (KR)

4 Terminal assignment
IG ST ...

plug side Incremental encoder PIN	SIR solder side plug cable	SUB D 09 solder side Servodrive 635/637/637+ PIN	modular - jack Servodrive 631 PIN	function drive	marking	cable end color core
1	1	2	4	channel B inverted	/B	black
2 (internal connect)	2 (not connected)					grey
3	3	8	3	channel Z; zero impulse	Z	lilac
4	4	7	2	channel Z inverted zero impulse	/Z	yellow
5	5	4	7	channel A	A	white
6	6	5	6	channel A inverted	/A	brown
7 (not connected)	7 (not connected)					orange
8	8	1	5	channel B	B	pink
9	9	3	-	shield connector	shield	blue
10/11	10/11	6	1	reference potential to Pin 9		blue/green
12	12	9	8	supply voltage output max.150 mA	+ 5 VDC	red

5 Notes

6   Modification Record

Version	Modification	Chapter	Date	Name	Comment
V0102	new	-	03.03.2002	N.Dreilich	
V0204	SSD Drives	-	11.11.2004	N. Dreilich	Logos