



- High Accuracy
- Broad Bandwidth
- Low Zero-drift

Shenzhen Aerospace Precision Electronics Co., Ltd.

DIT Series

High-precision digital current transducer

User manual

V1.5



Founded in 2017, Shenzhen Aerospace Precision Electronics Co., Ltd. is a technology-leading enterprise dedicated to the development, production, sales and customization of high-precision current transducers and measuring instruments. We will strive to build a well-known brand of precision current transducers and precision instruments in the DC field, and become a leading international leader in precision electronics in the field of DC systems.

Based on multi-faceted technology integration and innovation, Shenzhen Aerospace Precision Electronics Co., Ltd. has developed the industry's first high-precision digital current transducer and an analog current transducer featuring high precision, low costs, low zero drift and low temperature drift. This series of products reduces industry costs, improves industry efficiency, enhances user experience, and creates value for customers. The company's products have won many achievements in the national innovation and entrepreneurial competition, and won wide attention and support from all walks of life.

As a company with strong sense of responsibility and mission, we adhere to multi-point zero-flux technology-led approach, with client-oriented service and customized products, and improve the operating quality by successfully capital financing. We are making our efforts to build an innovative sharing enterprise.



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1 Preface


Thank you for choosing SAPE "DIT series high-precision digital current transducer". In order to make full and lasting use of this product, please keep the manual properly. The DIT series high-precision digital current transducer is referred as "this instrument" below.

1.1 Packing Checklist

When this instrument is delivered to you, please check if any abnormalities or damages occur during transportation before using it. In particular, please pay attention to accessories, panel, keys and other items. In case of damage or failure to work, please contact the agent or SAPE service center.

Please keep the packaging material for delivery properly for future transportation.

Please make sure that the contents of the packing are correct.

Packing checklist			
Description	Product photo	Specifications	Description
<input type="checkbox"/> This instrument		See Part 3	High-precision digital current transducer
<input type="checkbox"/> User manual (This manual)		Soft copy or hard copy	To describe the operational method, specifications, etc.

Remarks:

- 1) This instrument has been programmed when it was manufactured, and the latest version can be downloaded from the homepage of our company
- 2) Instructions for use in other languages are available at our website : <http://www.hangzhicn.cn/>

1.2 Accessories

This instrument has the following options (to be sold separately) . Please contact the agent or sales center if you need purchase.



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Option list			
Item	Product photo	Specifications	Description
<input type="checkbox"/> DB9 connection line		5 m/6*0.3mm ² DB9 Male to female	It can be used to connect between DB9 power supply interface and SAPE power box.
<input type="checkbox"/> USB to RS232 connection line		1.8 m/USB2.0/RS232	It can be used to transfer PC interface from USB2.0 to RS232.
<input type="checkbox"/> RS232 connection line		1 m/3*0.3mm ² DB9 to Phoenix terminal	It can be used to connect between RS232 and communication interface of this device.
<input type="checkbox"/> USB to RS485 connection line		1.5 m/USB2.0/RS485	It can be used to transfer PC interface from USB2.0 to RS485.
<input type="checkbox"/> RS485 connection line		1 m/2*0.3mm ² DB9 to Phoenix terminal	It can be used to connect between RS485 and communication interface of this device.



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2 Summary

2.1 Product summary

As a new generation digital transducer, the products use a brand-new software and hardware design, which can simultaneously measure single-phase AC and DC current, frequency and so on. The products can be widely used in metrology institutes, government inspection agencies and other metering areas.

The multi-point zero-flux technology system combines closed-loop excitation flux control technology, self-excited flux gate technology, and multiple closed loop control technology. The combination of technologies enables zero-flux closed-loop control of excitation flux, DC flux and AC flux, and can detect high-frequency ripple by constructing a high-frequency ripple sensing channel, so that the transducer can achieve high gains and measuring accuracy over the full bandwidth.

2.2 Key technologies

- Self-excited fluxgate technology
- Excitation closed-loop control technology
- Self-exciting demagnetization technology
- Multi-point zero-flux technology
- Temperature control compensation technology
- Multi-range automatic switching technology

2.3 Features

- Advanced zero-flux closed-loop transducer
- Insulation measurement at primary and secondary side
- Excellent linearity and accuracy
- Extremely low temperature drift
- Extremely low zero drift
- Broad band and low response time
- Strong anti-electromagnetic interference

2.4 Application Domain

- Industry Control
- Medical Equipment
- Railway
- Power and power grid
- Test instrumentation
- New Energy



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3 Product selection guide and technical parameters

3.1 Product selection

DIT series product selection				
	AC current	DC current	AC accuracy	DC accuracy
DIT1SG	707mA	±1A	0.05%	0.02%
DIT1SI			0.05%	0.05%
DIT5SG	3.5A	±5A	0.05%	0.02%
DIT5SI			0.05%	0.05%
DIT60SG	42A	±60A	0.05%	0.02%
DIT60SI			0.05%	0.05%
DIT200SG	141A	±200A	0.05%	0.02%
DIT200SI			0.05%	0.05%
DIT300SG	212A	±300A	0.05%	0.02%
DIT300SI			0.05%	0.05%
DIT400SG	282A	±400A	0.05%	0.02%
DIT400SI			0.05%	0.05%
DIT600SG	424A	±600A	0.05%	0.02%
DIT600SI			0.05%	0.05%
DIT1000SG	707A	±1000A	0.05%	0.02%
DIT1000SI			0.05%	0.05%

3.2 Technical parameters (RG-Measuring range)

DIT series product technical parameters									
		DIT1	DIT5	DIT60	DIT200	DIT300	DIT400	DIT600	DIT1000
AC current measurement	Measuring limit	707mA	3.5A	42A	141A	212A	282A	424A	707A
	Measuring range	(0~110%)RG							
	Accuracy	±0.05%RG							
	Resolution	0.01%RG							
DC current	Measuring limit	±1A	±5A	±60A	±200A	±300A	±400A	±600A	±1000A



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measur ement	Measuring range	(0~110%)RG
	Accuracy	±0.02%RG(SG model)) ±0.05%RG(SI model))
	Resolution	0.005%RG
Frequen cy measur ement	Measuring range	40Hz~70Hz
	Accuracy	±0.01Hz
	Resolution	0.001Hz
Other paramet ers	Working power voltage range	±15VDC
	Working temperatur e	10°C~35°C
	Relative humidity	≤85%, Non-corrosive gas



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4 Connector information

4.1 DB9 terminal definition (DB9 male)

Pin	Definition	Description	Connector picture
1	N.C	Not connected	
2	N.C	Not connected	
3	N.C	Not connected	
4	GND	Ground	
5	-15V Supply	Power supply -15V	
6	N.C	Not connected	
7	N.C	Not connected	
8	N.C	Not connected	
9	+15V Supply	Power supply +15V	

4.2 Phoenix terminal definition

Pin No.	Definition	Description	Connector picture
1	+5V Output	Power supply 5V	
2	RS232_TX	RS232 transmission	
3	RS232_RX	RS232 reception	
4	GND	Signal isolation	
5	RS485_A	RS485A	
6	RS485_B	RS485B	

Remarks: +5V power is for the module to provide power to external devices.

4.3 Running lights

Running lights	Description
Running lights	When the transducer is running normally, the green indicator light is on. When the transducer is working abnormally, the green indicator is off.
Running lights	The green indicator is blinking while the device is running normally.
Communication lights	When the device is communicating normally, the yellow indicator is blinking.



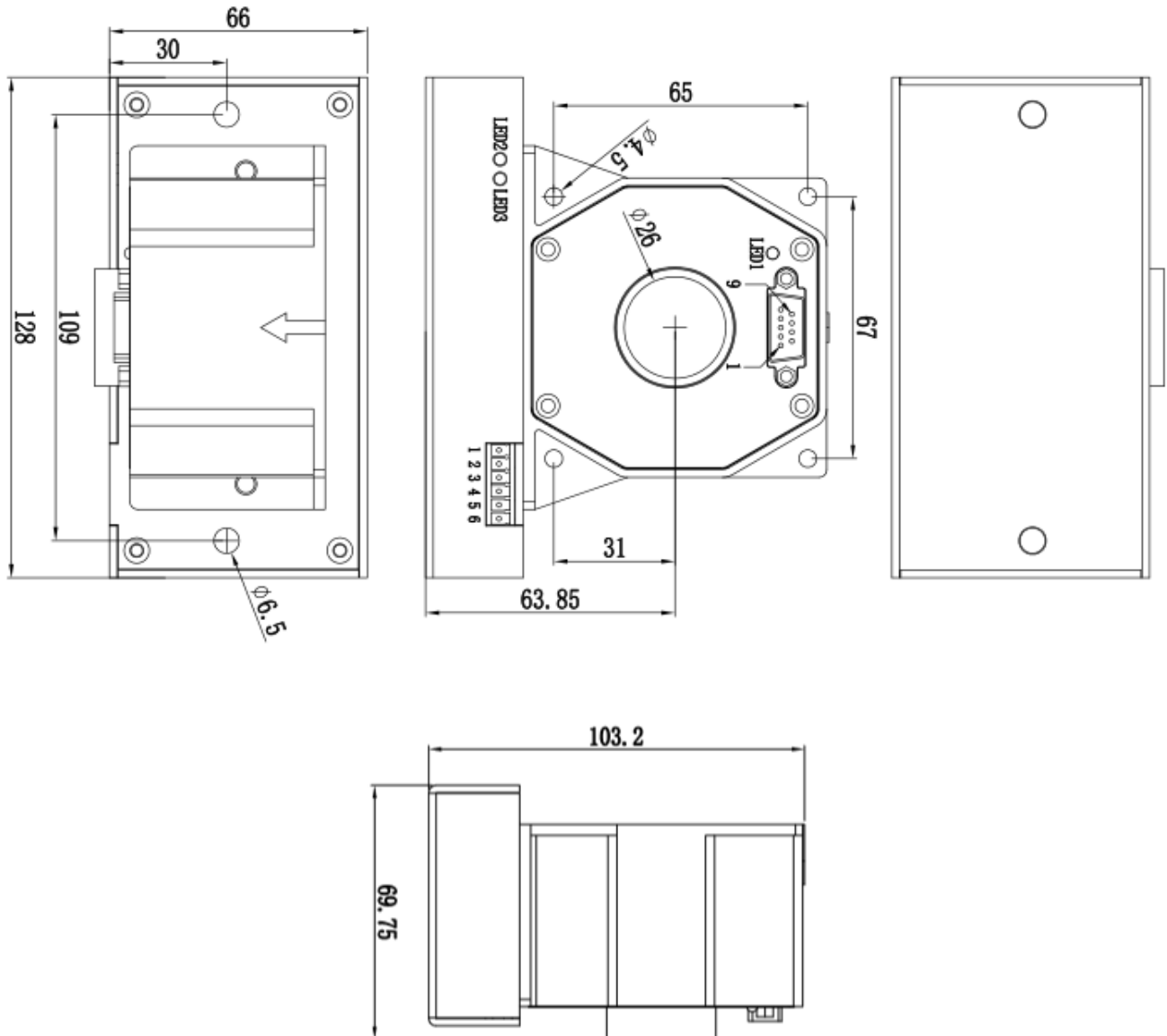
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5 Dimensions

Unit: mm, if not specified, the dimensional deviation is $\pm 2\text{mm}$ or 1%, whichever is greater.

5.1 DIT1、DIT5、DIT60、DIT200、DIT300、DIT400 model

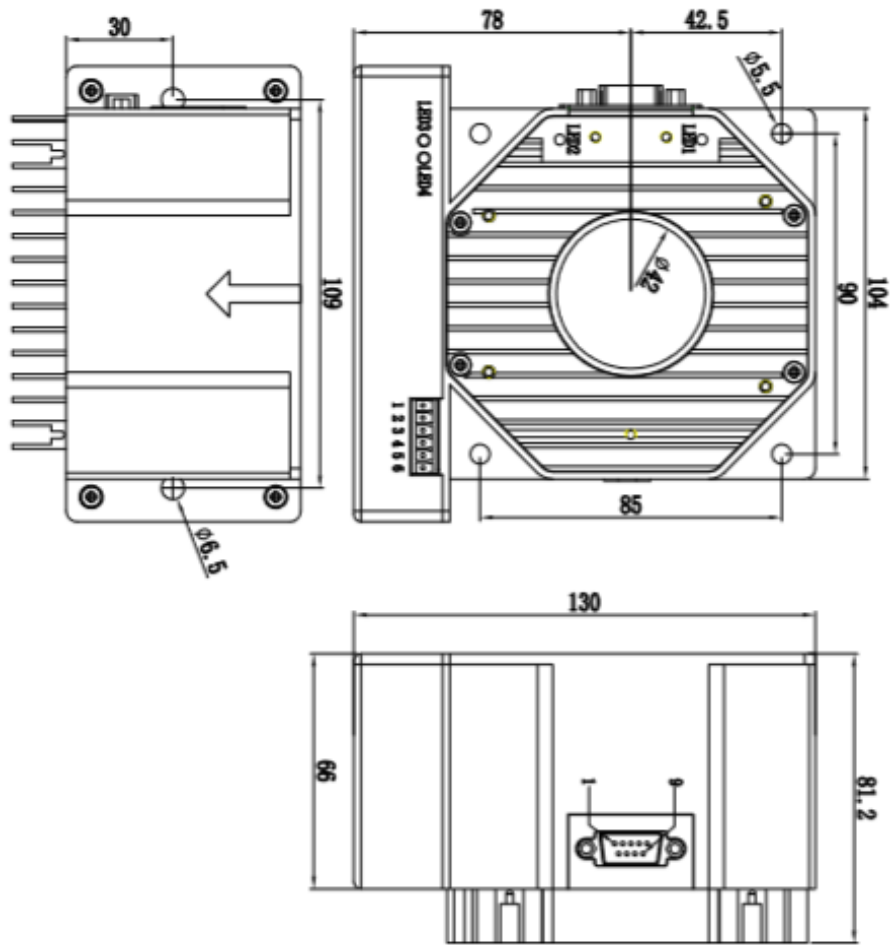




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5.2 DIT600、DIT1000 model





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Attachment1 Communication agreement

Please refer to 《HZP communication agreement》 .