

Current to Current Converter

CYCCC Series

User's Manual

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The signal converter is specifically designed to expand the application range and improve the measuring accuracy of closed loop Hall and fluxgate current sensors. It proportionally transforms the output current of closed-loop Hall and fluxgate current sensors into a standard current signal as the input signal required by downstream application systems. By adjusting the component parameters inside the converter and offset and gain potentiometers, the conversion ratio can be flexibly configured to meet the varying current range and high accuracy requirements of different backend acquisition devices.

1. Characteristics

- DC/AC current scaling conversion
- High measuring accuracy and linearity
- Analog current output signal (0-20mA, 0-40mA or custom-made)
- Improvement of measuring accuracy of closed loop current sensors
- Protection against overvoltage
- Protection against reversed polarity
- Output protection against electrical disturbances

2. Technical Data

Rated input current	0-600mA (max)
Rated output current	0-20mA, 0-40mA or custom-made
Load Resistance	20-120 Ω (with default 40mA output)
Power supply	$\pm 15V \sim \pm 24V$ DC
Measuring accuracy	$\pm 0.05\%$ (converter together with current sensor)
Linearity (10% -100%), 25°C	$\pm 0.005\%$ (converter together with current sensor)
Isolation	between input, output and power supply
Isolation withstanding voltage	2.5 kV DC, 1min, leakage current 1mA
Response time	$\leq 3 \mu s$
Frequency Bandwidth (-3dB)	DC – 200kHz

Thermal drift of offset current	$\pm 0.1\text{mA}$ ($-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$)
Power consumption	$V_c = \pm 15\text{VDC}, \leq 36\text{mA} + \text{Output Current} + \text{consumption of the connected sensor}$ $V_c = \pm 24\text{VDC}, \leq 40\text{mA} + \text{Output Current} + \text{consumption of the connected sensor}$

General Data:

Operating temperature	$-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$
Storage temperature	$-25^{\circ}\text{C} \sim +85^{\circ}\text{C}$
MTBF	$\geq 100\text{k hours}$

3. Definition of Part number

CYCCC		xxx	-	xxx
(1)		(2)		(3)

(1)	(2)	(3)
Series name	Rated input current	Output current
CYCCC	0-600mA	0-20mA 0-40mA Custom-made

Example 1:

Sensor Name:	CYCCC400mA-20mA
Rated Input Current:	400mA
Rated Output Current:	20mA
Power supply:	$\pm 15\text{V} \sim \pm 24\text{V DC}$

Relation between Input and Output:

Input Current (mA)	Analog Output Current (mA)
0	0
100	5
200	10
300	15
400	20

4. Case Style and Connection



Fig.1 Converter Case

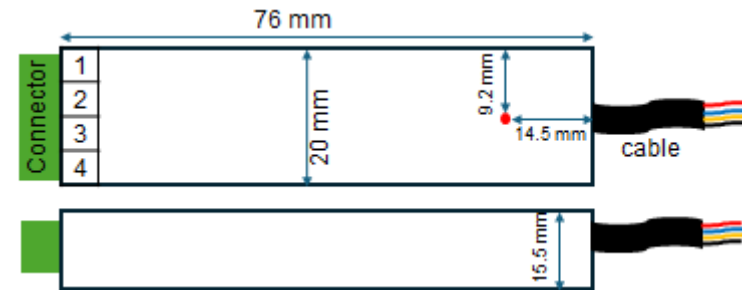


Fig.2 Case Dimensions

Pin Definition

Phoenix Connector

4 cores cable

Pin1:	V+
Pin2:	V-
Pin3:	Output
Pin4:	GND

Red:	V+
Blue:	V-
Yellow:	Input
Black:	GND

5. Measuring Procedure

Current sensor CYHCS-LF2000A will be used as an example.



Fig.3 Connection between converter and sensor

- 1) Install the sensor.
- 2) Connect the converter with the sensor under test using the 4-core cable supplied and make sure that the cores of different colors are connected correctly.
- 3) Connect the power supply and the output of the converter. The required measuring resistor R_m must be connected in parallel with output.
- 4) Switch on the power supply. The red indicator on the converter will light up to indicate that the converter is powered on.
- 5) For a given measured current to the sensor, the converter outputs a proportional current.

Example:

CYHCS-LF2000A and converter with default output 40mA

Sensor Input Current (A)	Sensor Output Current (mA)	Current Converter Output (mA)
0	0	0
1000	20	20
2000	400	40

To ensure linearity and measuring accuracy in accordance with the specified technical parameters given the data sheet, this current measuring system must be calibrated using high-precision current sources and measuring instruments.

The converter can be used together with the following current sensors:

Compatible current sensors for use with the CYCCC converter

Closed Loop Hall Current Sensors	Closed Loop Fluxgate current Sensors
CYHCS-LTF (1000A, 2000A, 3000A)	CYFGCS3000AIT (Custom-made)
CYHCS-LF (1000A, 2000A)	CYFGCS1000LFAH
CYHCS-SH (500A, 1000A)	CYFGCS1000HIT
CYHCS-LFA1000A	CYFGCS600HIT
CYHCS-D8 (500A, 1000A)	CYFGCS500HIT
CYHCS-D6 (300A, 500A)	CYFGCS300HIT
CYHCS-LTHB (300A, 500A)	CYFGCS300LDGH
CYHCS-D5 (100A, 300A)	CYFGCS200EIH
CYHCS-LTHA (100A, 300A)	CYFGCS100LRCH

Applications

- Power Electronics Equipment Testing
- Inverter and Variable Frequency Drive (VFD) Monitoring
- Switched-Mode Power Supply (SMPS) Development and Testing
- Photovoltaic Systems
- Energy Storage Systems
- EV Charging Equipment
- High-Dynamic Current Measurement Systems