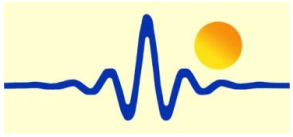

Catalogue

Closed Loop Hall Effect AC/DC Current Sensors

Transducers with Rectangle Windows

Contact Address:

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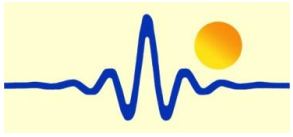

Contents

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Hall Effect AC/DC Current Sensor CYHCS-DS3

This Hall Effect current sensor is based on closed loop compensating principle and can be used for measurement of DC and AC current, pulse currents etc. The output of the transducer reflects the real wave of the current carrying conductor.

Product Characteristics	Applications
• Excellent accuracy • Very good linearity • Small size and encapsulated • Less power consumption • Current overload capability	• **Photovoltaic equipment** • General Purpose Inverters • AC/DC Variable Speed Drivers • Battery Supplied Applications • Uninterruptible Power Supplies (UPS) • Switched Mode Power Supplies

ELECTRICAL CHARACTERISTIC

	CYHCS-DS3-6A	CYHCS-DS3-15A	CYHCS-DS3-25A	CYHCS-DS3-50A
Nominal current	6A	15A	25A	50A
Measuring range	12A	30A	50A	84A
Measuring resistance	100 Ω	50 Ω	50 Ω	25Ω
Number of secondary turns	960±1	1200±1	2000±2	2000±2
Nominal analogue output voltage	+1.65VDC ± (0.625V±0.5%)			
Supply voltage	+3.3VDC ±5%			
Galvanic isolation	50Hz, 1min, 3kV			
Impulse withstand voltage	1.2/50μs, >8kV			

ACCURACY DYNAMIC PERFORMANCE

Zero offset voltage at +25°C	1.65±0.5%	V
Thermal drift of offset voltage	≤±0.5	mV/°C
Linearity	≤0.1	%FS
Accuracy	±0.7	%
di/dt accuracy followed	>50	A/μs
Response time	<1.0	μs
Bandwidth (-1db)	DC ~ 150	kHz

GENERAL CHARACTERISTIC

Operating temperature	-25 ~ +85	°C
Storage temperature	-40 ~ +100	°C
Current consumption	20 + Is	mA

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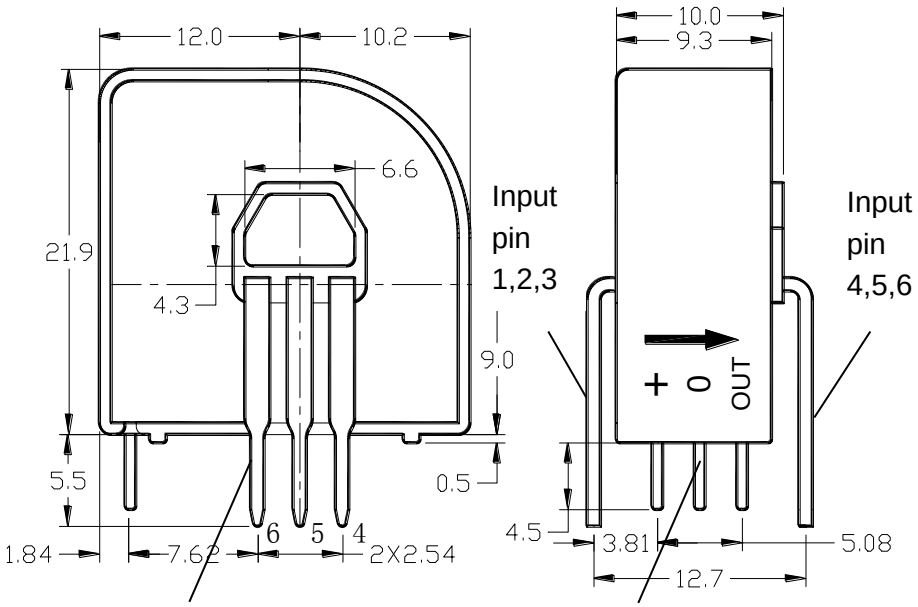
Dimensions (mm)

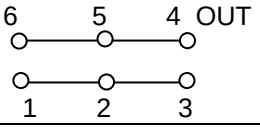
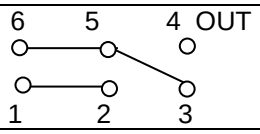
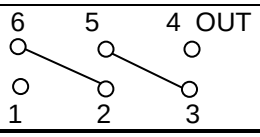
+	+3.3V
0	0V
OUT:	Output



Pin size: 1x0.8mm

Pin size: 0.5x0.25mm

Wiring diagram

Number of Primary turns	Nominal current (A)	Output voltage (V)	Primary resistance (mΩ)	Primary inductance (μH)	Pin connection
1	±6 (±15,±25,±50)	1.65±0.625	0.18	0.013	
2	±3 (±7.5,±12.5,±25)	1.65±0.625	0.81	0.05	
3	±2(±5,±8.3, ±16.6)	1.65±0.625	1.62	0.12	

Application Notes

There are two inputs methods: 1) Cable Input using the sensor hole; 2) PCB Input using the input pins. You should only use one of these input models.

For the cable input model the current cable should be passed through the hole of the sensor. Taking the sensor CYHCS-DS3-6A as example, the nominal current is 6A if the cable is passed through the hole one time. The nominal current is 3A or 2A if the cable is wired through the hole 2 or 3 times. In this input model please don't use the input pins.

For PCB input model one should wire the sensor according to the input pin connection shown in the above table. The 3 wiring diagrams correspond to the number of primary turns 1, 2 and 3. In this input model please don't use the hole of sensor as input.

Relation between Input Current and Output Voltage

Take the sensor CYHCS-DS3-25A as sample, the relation between the input current and output voltage is shown in the table 1, Fig.1 and Fig. 2

Table 1. Relation between the input current and output voltage

Input current (A)	-50	-37.5	-25	-12.5	0	12.5	25	37.5	50
Output voltage (V)	0.4	0.7125	1.025	1.3375	1.65	1.9625	2.275	2.5875	2.9

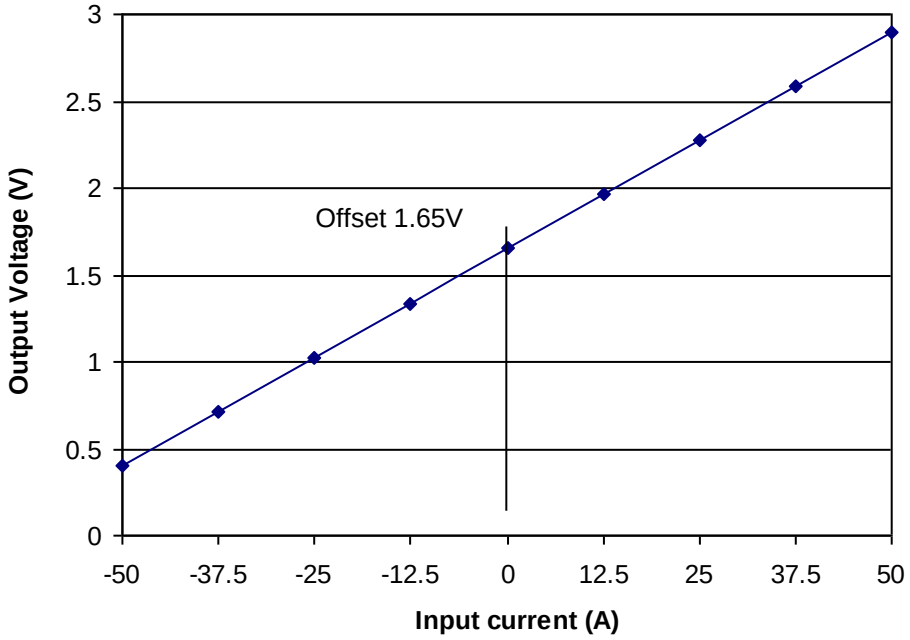


Fig. 1 Relation between the input current (DC) and output voltage (DC)

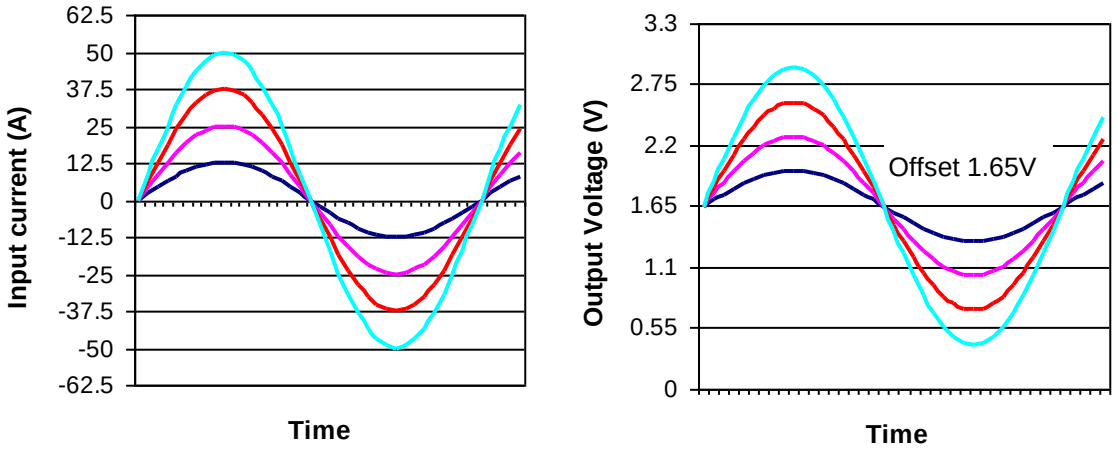


Fig. 2 Relation between the input current (AC) and output voltage (AC)

Hall Effect AC/DC Current Sensor CYHCS-B100

This Hall Effect current sensor is based on closed loop compensating principle and can be used for measurement of DC and AC current, pulse currents etc. The output of the transducer reflects the real wave of the current carrying conductor.

Product Characteristics	Applications
• Excellent accuracy • Very good linearity • Small size and encapsulated • Less power consumption • Current overload capability	• Photovoltaic equipment • General Purpose Inverters • AC/DC Variable Speed Drivers • Battery Supplied Applications • Uninterruptible Power Supplies (UPS) • Switched Mode Power Supplies

ELECTRICAL CHARACTERISTIC

	CYHCS-B100-6A	CYHCS-B100-15A	CYHCS-B100-25A	CYHCS-B100-50A
Nominal current	6A	15A	25A	50A
Measuring range	18A	45A	75A	150A
Measuring resistance	100Ω	50Ω	50Ω	25Ω
Number of secondary turns	960±1	1200±1	2000±2	2000±2
Nominal analogue output voltage	+2.5VDC ± (0.625V±0.5%)			
Supply voltage	+5VDC ±5%			
Galvanic isolation	50Hz, 1min, >3kV			
Impulse withstand voltage	1.2/50μs, >8kV			
Creepage distance	>15.5mm			

ACCURACY DYNAMIC PERFORMANCE

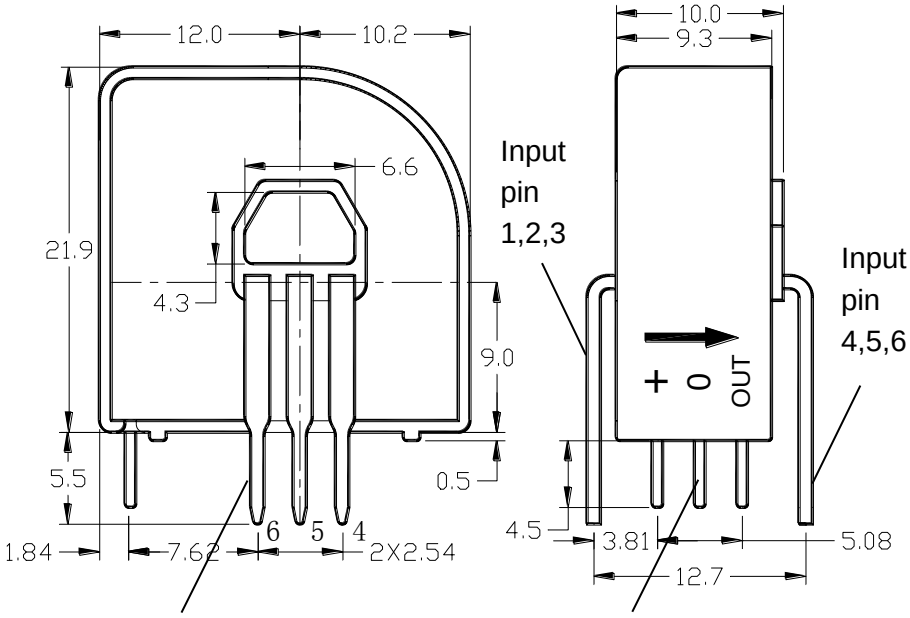
Zero offset voltage at +25°C	2.5±0.5%	V DC
Thermal drift of offset voltage (-40°C ~ +85°C)	Typ.: ±0.08, Max.: ±0.20	mV/°C
Linearity	≤0.1	%FS
Accuracy	±0.7	%
di/dt accuracy followed	>50	A/μs
Response time	<500	ns
Bandwidth (-1db)	DC ~ 200	kHz

GENERAL CHARACTERISTIC

Operating temperature	-25 ~ +85	°C
Storage temperature	-40 ~ +100	°C
Current consumption	<45	mA

Dimensions (mm)

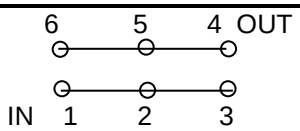
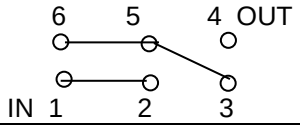
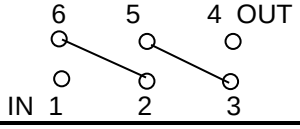
+	+5V
0	0V
OUT:	Output



Pin size: 1x0.8mm

Pin size: 0.5x0.25mm

Wiring diagram

Number of Primary turns	Nominal current (A)	Output voltage (V)	Primary resistance (mΩ)	Primary inductance (μH)	Input Pin Connection
1	±6 (±15,±25,±50)	2.5±0.625	0.18	0.013	
2	±3 (±7.5,±12.5,±25)	2.5±0.625	0.81	0.05	
3	±2(±5,±8.3, ±16.6)	2.5±0.625	1.62	0.12	

Application Notes

There are two inputs methods: 1) Cable Input using the sensor hole; 2) PCB Input using the input pins. You should only use one of these input models.

For the cable input model the current cable should be passed through the hole of the sensor. Taking the sensor CYHCS-B100-6A as example, the nominal current is 6A if the cable is passed through the hole one time. The nominal current is 3A or 2A if the cable is wired through the hole 2 or 3 times. In this input model please don't use the input pins.

For PCB input model one should wire the sensor according to the input pin connection shown in the above table. The 3 wiring diagrams correspond to the number of primary turns 1, 2 and 3. In this input model please don't use the hole of sensor as input.

Relation between Input Current and Output Voltage

Take the sensor CYHCS-B100-25A as sample, the relation between the input current and output voltage is shown in the table 1, Fig.1 and Fig. 2

Table 1. Relation between the input current and output voltage

Input current (A)	-75	-50	-25	-12.5	0	12.5	25	50	75
Output voltage (V)	0.625	1.25	1.875	2.188	2.5	2.813	3.125	3.75	4.375

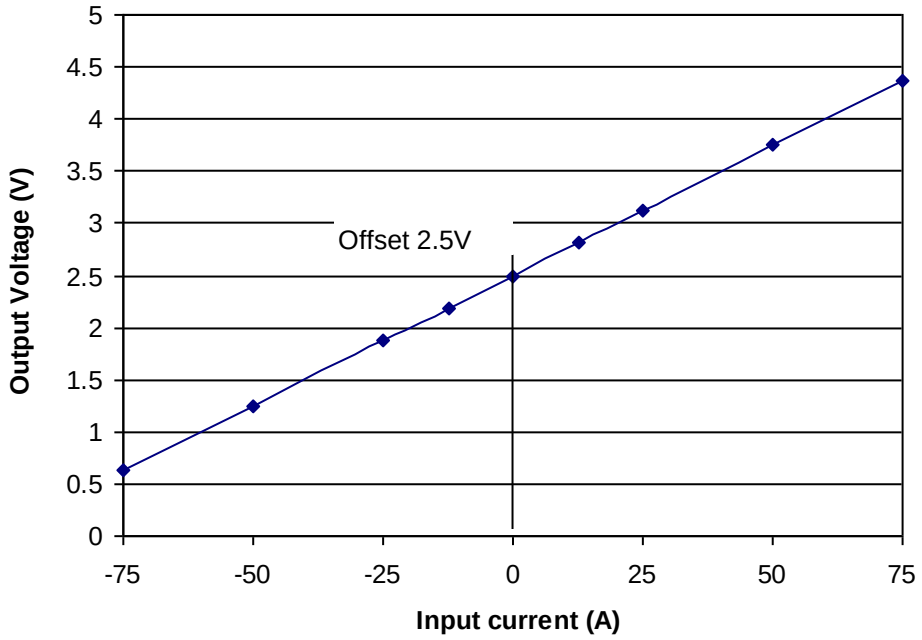


Fig. 1 Relation between the input current (DC) and output voltage (DC)

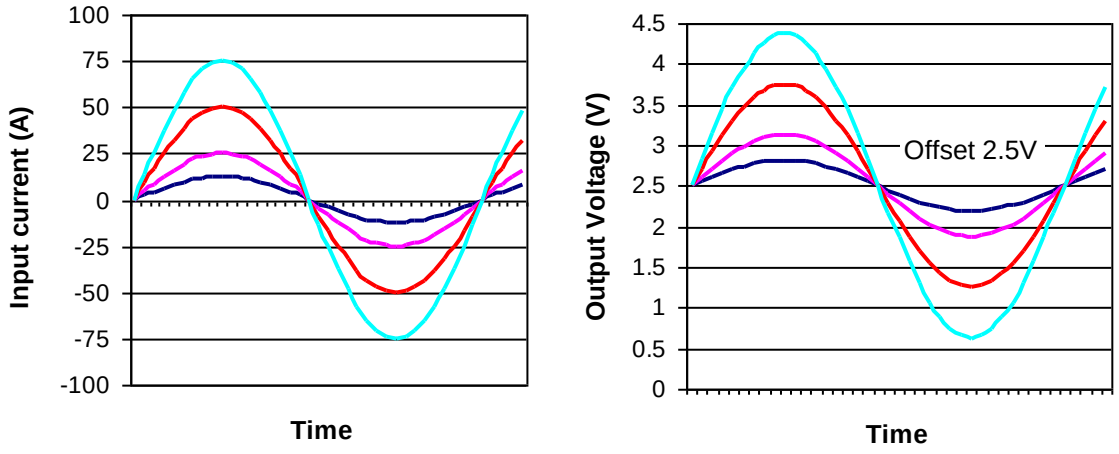


Fig. 2 Relation between the input current (AC) and output voltage (AC)

Hall Effect AC/DC Current Sensor CYHCS-B101

This Hall Effect current sensor is based on closed loop compensating principle and can be used for measurement of DC and AC current, pulse currents etc. The output of the transducer reflects the real wave of the current carrying conductor.

Product Characteristics	Applications
• Excellent accuracy • Very good linearity • Small size and encapsulated • Less power consumption • Current overload capability	• Photovoltaic equipment • General Purpose Inverters • AC/DC Variable Speed Drivers • Battery Supplied Applications • Uninterruptible Power Supplies (UPS) • Switched Mode Power Supplies

ELECTRICAL CHARACTERISTIC

	CYHCS-B101-15A	CYHCS-B101-25A	CYHCS-B101-50A	
Nominal current	15	25	50	A
Measuring range	30	50	100	A
Number of secondary turns	1200±1	1000±1	2000±2	
Measuring resistance	40	40	40	Ω
Nominal analogue output current	12.5±0.5%	25±0.5%	25±0.5%	mA
Supply voltage	±15±5%			V
Accuracy at +25°C	0.1			%
Galvanic isolation	50Hz, 1min, 2.5kV			kV

ACCURACY DYNAMIC PERFORMANCE

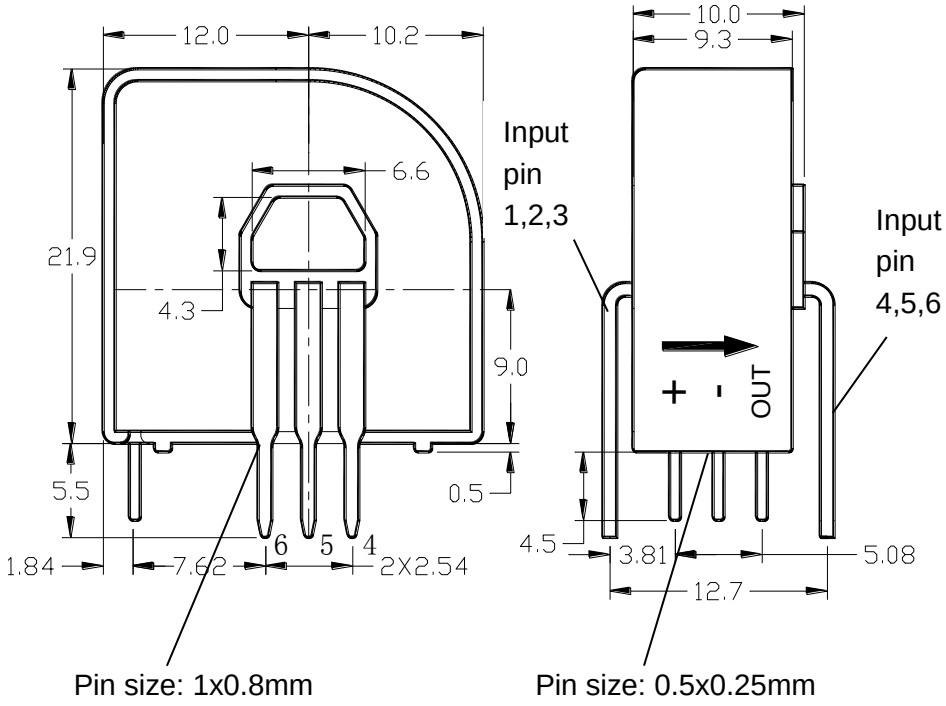
Zero offset voltage at +25°C	±0.2	mA
Thermal drift of offset current	-25°C ~ +85°C, ±0.6	mA
Linearity	≤0.1	%FS
di/dt accuracy followed	>50	A/µs
Response time	<1	µs
Bandwidth (-1db)	DC ~ 100	kHz

GENERAL CHARACTERISTIC

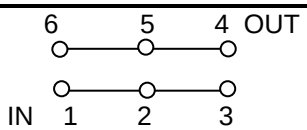
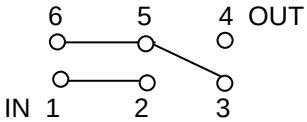
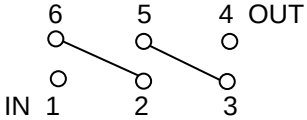
Operating temperature	-25 ~ +85	°C
Storage temperature	-40 ~ +100	°C
Current consumption	< Output current + 20mA	mA

Dimensions (mm)

+	+15V
-	-15V
OUT:	Output



Wiring diagram

Number of Primary turns	Nominal current (A)	Output current (mA)	Primary resistance (mΩ)	Primary inductance (μH)	Pin connection
1	±15 (±25, ±50)	±12.5 (±25, ±25)	0.18	0.013	
2	±7.5 (±12.5, ±25)	±12.5 (±25, ±25)	0.81	0.05	
3	±5 (±8.3, ±16.6)	±12.5 (±25, ±25)	1.62	0.12	

Application Notes

There are two inputs methods: 1) Cable Input using the sensor hole; 2) PCB Input using the input pins. You should only use one of these input models.

For the cable input model the current cable should be passed through the hole of the sensor. Taking the sensor CYHCS-B101-15A as example, the nominal current is 6A if the cable is passed through the hole one time. The nominal current is 7.5A or 5A if the cable is wired throgh the hole 2 or 3 times. In this input model please don't use the input pins.

For PCB input model one should wire the sensor according to the input pin connection shown in the above table. The 3 wiring diagrams correspond to the number of primary turns 1, 2 and 3. In this input model please don't use the hole of sensor as input.

Hall Effect AC/DC Current Sensor CYHCS-B6

This Hall Effect current sensor is based on closed loop compensating principle and can be used for measurement of DC and AC current, pulse currents etc. The output of the transducer reflects the real wave of the current carrying conductor.

Product Characteristics	Applications
• Excellent accuracy • Very good linearity • Small size and encapsulated • Less power consumption • Current overload capability	• **Photovoltaic equipment** • General Purpose Inverters • AC/DC Variable Speed Drivers • Battery Supplied Applications • Uninterruptible Power Supplies • Switched Mode Power Supplies

.

ELECTRICAL CHARACTERISTICS

Part number	**CYHCS-B6-50A (CYHCS-B6-25A)**	**CYHCS-B6-100A**	**Unit**
Nominal current	50 (25A)	100	A
Measuring range	±75 (±55)	±150	A
Turns ratio	1:1000	1:2000	
Measuring resistance (T_A=85°C)	with±12V @±50Amax 60(min) 95(max)	with±12V @±100Amax 0(min) 42(max)	Ω
	@±70Amax 60(min) 60(max)	@±120Amax 0(min) 14(max)	Ω
	with±15V @±50Amax 135(min) 155(max)	with±15V @±100Amax 20(min) 102(max)	Ω
	@±70Amax,135(min) 135(max)	@±150Amax,20(min) 25(max)	Ω
Supply voltage	±12 ~ ±15±5%		V
Nominal RMS output current	50±0.5% (25±0.5%)	50±0.5%	mA
Accuracy at +25°C	0.1		%
Galvanic isolation	50(60)HZ,1min, 2.5		kV
Current consumption	10 + output current		mA

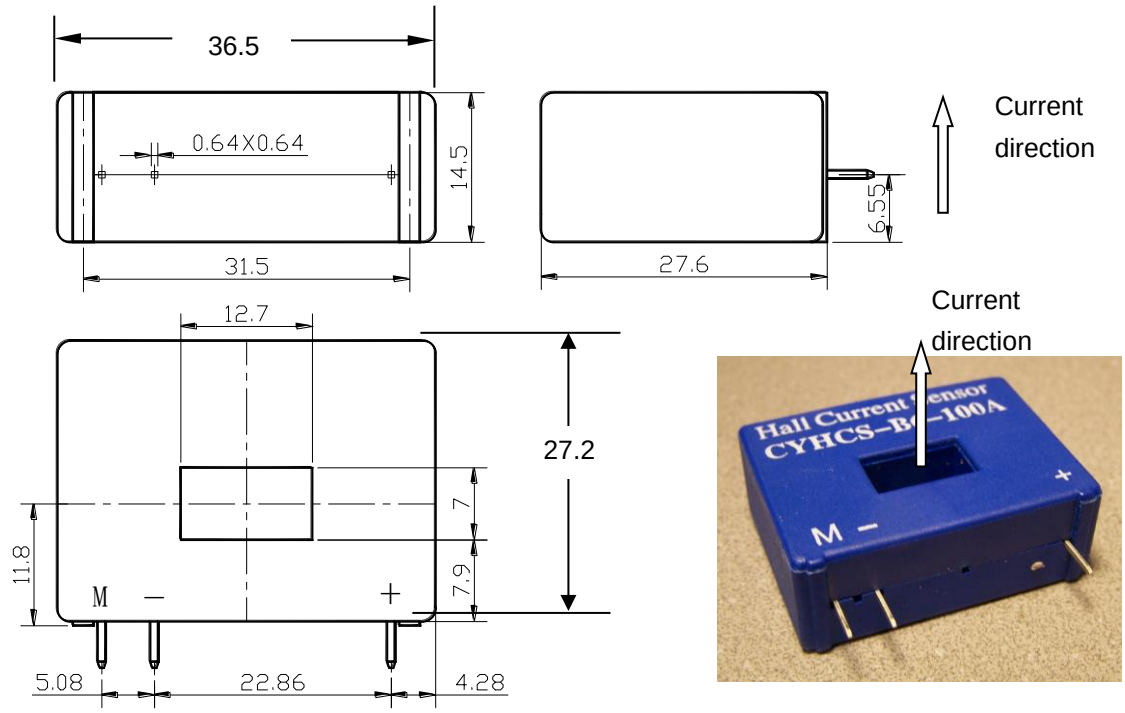
ACCURACY DYNAMIC PERFORMANCE

Part number	CYHCS-B6-50A (CYHCS-B6-25A)	CYHCS-B6-100A	Unit
Zero offset current	±0.1	±0.2	mA
Thermal drift of offset current	-25°C~+85°C, ±0.25 ~ ±0.5		mA
Response time	<1.0		µs
Linearity	≤0.1		%FS
Bandwidth(-3dB)	DC…200		kHz
di/dt	>200		A/µs

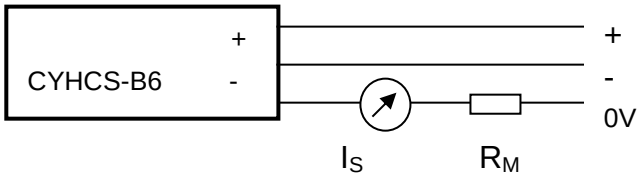
GENERAL CHARACTERISTICS

Part number	CYHCS-B6-50A (CYHCS-B6-25A)	CYHCS-B6-100A	Unit
Secondary coil resistance	80	120	Ω
Operating temperature	-25~+85		°C
Storage temperature	-40~+100		°C

Dimensions (mm)



Terminal +: +12V~ 15V, Terminal -: -12V~ -15V, Terminal M: Output



Operating instructions

1. To guarantee the high performance of the sensor, please use the low temperature soldering tin and shorten the welding time.
2. The temperature of primary conductor should be lower than 100°C.
3. When the mother arranges fills completely the primary perforation, the dynamic performance (di/dt and the response time) of sensor is best.
4. In order to achieve the best magnetic coupling, primary turns should circle in the sensor crown.

Hall Effect AC/DC Current Sensor CYHCS-AP

This Hall Effect current sensor is based on closed loop compensating principle and designed with a high galvanic isolation between primary and secondary circuits. It can be used for measurement of DC and AC current, pulse currents etc. The output of the transducer reflects the real wave of the current carrying conductor.

Product Characteristics	Applications
• Excellent accuracy • Very good linearity • Less power consumption • Current overload capability • Goods temperature properties	• Photovoltaic equipment • General Purpose Inverters • AC/DC Variable Speed Drivers • Battery Supplied Applications • Uninterruptible Power Supplies (UPS) • Switched Mode Power Supplies

ELECTRICAL CHARACTERISTICS

Part number	CYHCS-AP50A	CYHCS-AP100A	
Rated current	50	100A	A
Measuring range	±150 (±18V, 100Ω)	±300 (±18V, 68Ω)	A
Turns ratio	1:1000	1:2000	
Secondary Internal Resistance	30	45	Ω
Rated output current	50±0.5%	50±0.5%	mA
Measuring resistance	50Ω ~ 100	10 ~ 100	Ω
Supply voltage	±12V ~ ±18VDC		
Galvanic isolation	3kV RMS/50Hz/1min,		
Current consumption	20mA + output current		

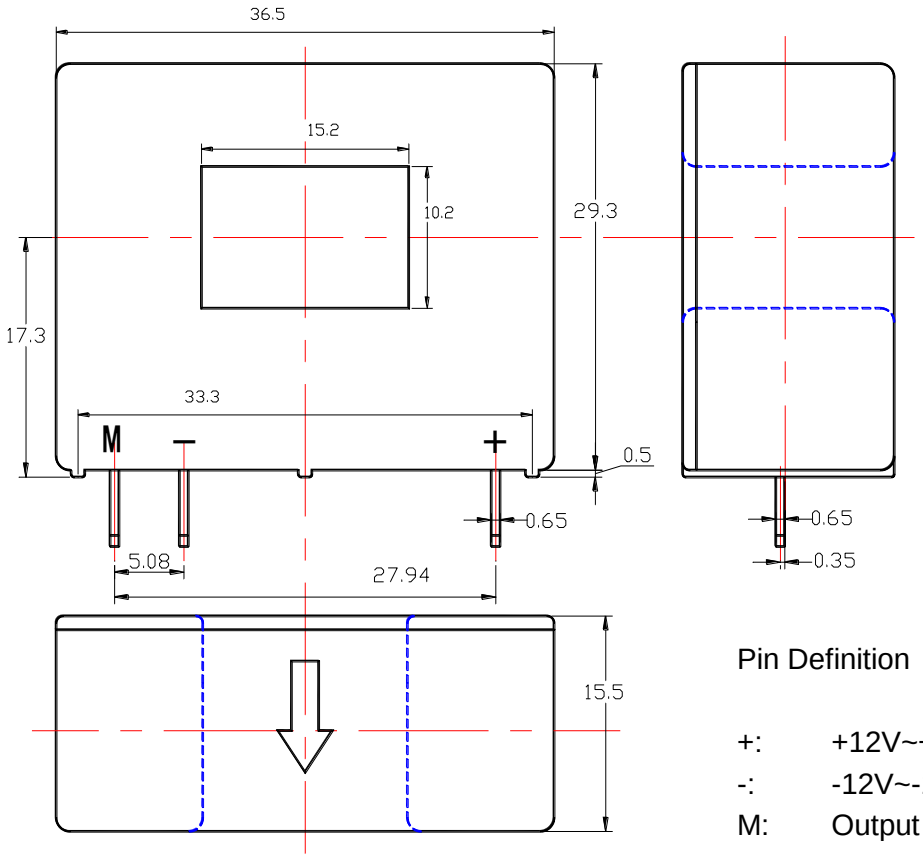
ACCURACY DYNAMIC PERFORMANCE

Zero offset current	±0.2mA
Thermal drift of offset current	±0.005mA/°C (-25°C ~ +85°C)
Response time	<1.0μs
Accuracy	±0.5%
Linearity	≤0.1% FS
di/dt following accuracy	200A/μs
Bandwidth(-3dB)	DC ~ 200kHz

GENERAL CHARACTERISTIC

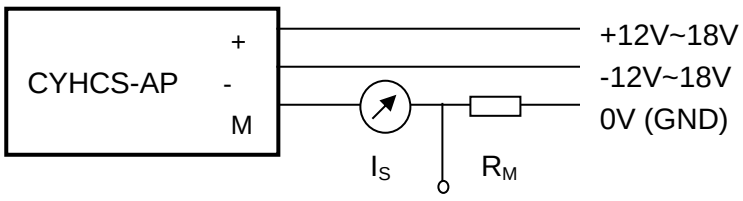
Operating temperature	-25°C~+85°C
Storage temperature	-40°C~+100°C

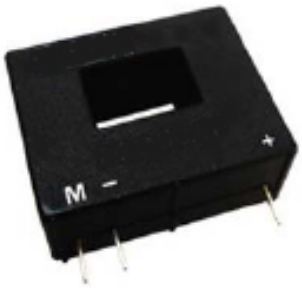
Dimensions (mm)



Pin Definition

+:	+12V~+15V
-:	-12V~-15V
M:	Output





Notes:

1. Connect the terminals of power source, outputs respectively and correctly, never make wrong connection.
2. Two potentiometers can be adjusted, only if necessary, by turning slowly to the required accuracy with a small screwdriver.
3. The best accuracy can be achieved when the window is fully filled with bus-bar (current carrying conductor).
4. The in-phase output can be obtained when the direction of current of current carrying conductor is the same as the direction of arrow marked on the transducer

Hall Effect AC/DC Current Sensor CYHCS-B9

This Hall Effect current sensor is based on closed loop compensating principle and can be used for measurement of DC and AC current, pulse currents etc. The output of the transducer reflects the real wave of the current carrying conductor.

Product Characteristics	Applications
• Excellent accuracy • Very good linearity • Small size and encapsulated • Less power consumption • Current overload capability	• **Photovoltaic equipment** • General Purpose Inverters • AC/DC Variable Speed Drivers • Battery Supplied Applications • Uninterruptible Power Supplies • Switched Mode Power Supplies

ELECTRICAL CHARACTERISTICS

Part number	CYHCS-B9-125A	CYHCS-B9-200A	Unit
Rated input current	125	200	A
Measuring range	375	600	A
Rated output current	125±0.5%	100±0.5%	mA
Turns ratio	1:1000	1:2000	
Measuring resistance	with±12V @±200Amax 14(min) 30(max)	with±12V @±200Amax 10(min) 75(max)	Ω
	with±12V,@±250Amax 14(min) 20(max)	with±12V,@±250Amax 10(min) 50(max)	Ω
	with±15V @±200Amax 25(min) 47(max)	with±15V @±200Amax 10(min) 100(max)	Ω
	with±15V,@±300Amax 10(min) 22(max)	with±15V,@±300Amax 10(min) 56(max)	Ω
Supply voltage	±15±5%		V
Secondary internal resistance	30		Ω
Accuracy at +25°C	±0.1		%
Galvanic isolation	3, Conditions 50(60)Hz,1min		KV

ACCURACY DYNAMIC PERFORMANCE

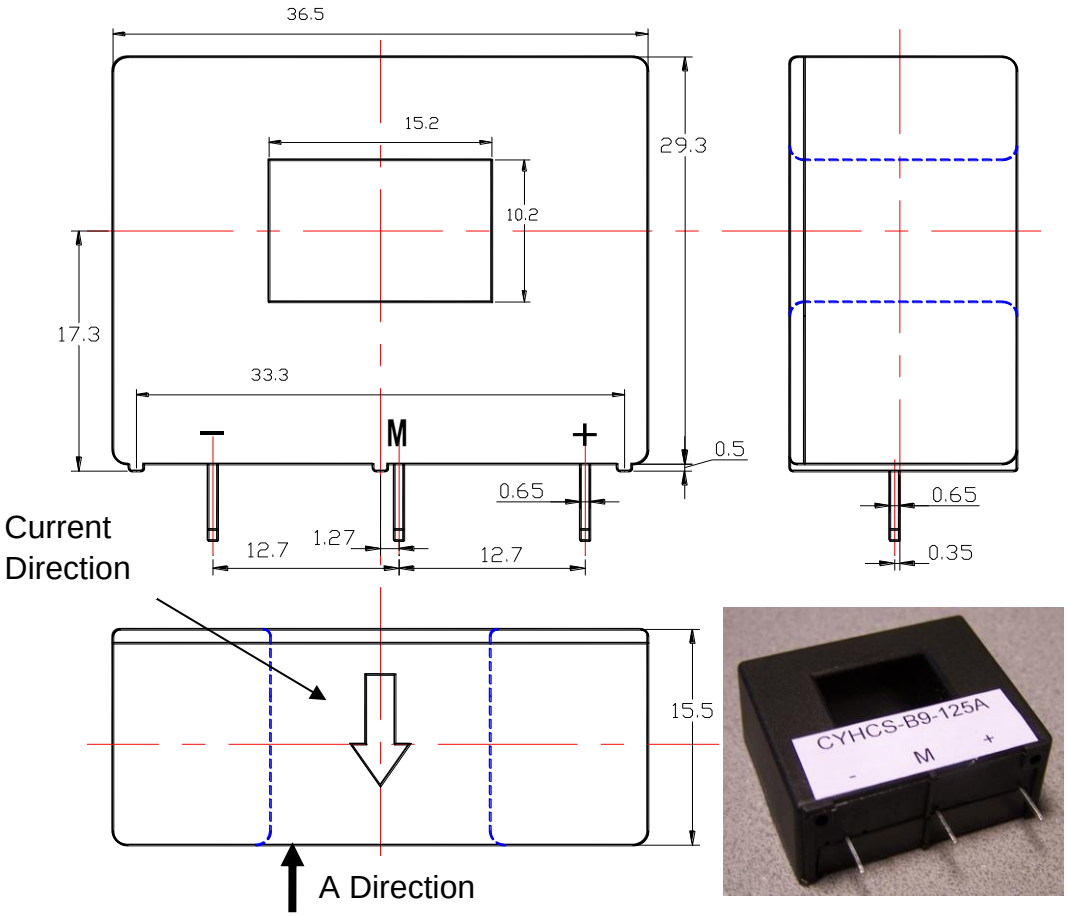
Zero offset current	±0.2	mA
Thermal drift of offset current	-25°C ~ +85°C, ±0.5	mA
Response time	<1	μs
Linearity	≤0.1	%FS
Bandwidth(-3dB)	DC…100	KHz
di/dt	>100	A/μs

GENERAL CHARACTERISTIC

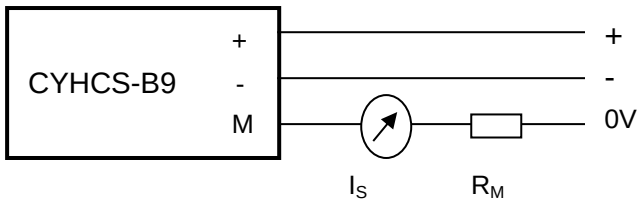
Operating temperature	-25 ~ +85	°C
Storage temperature	-40 ~ +100	°C

Dimensions (mm)

View of A Direction



Terminal +: +12V~ 15V, Terminal -: -12V~ -15V, Terminal M: Output



Operating instructions

1. To guarantee the high performance of the sensor, please use the low temperature soldering tin and shorten the welding time.
2. The output current I_S is positive when primary current I_p flows in the direction of the arrow
3. The temperature of primary conductor should be lower than 100°C.
4. The dynamic performance (di/dt and the response time) of sensor is best When the the primary hole is filled with single busbar completely,
5. In order to achieve the best magnetic coupling, the primary windings have to be wound over the top edge of the device.

Hall Effect AC/DC Current Sensor CYHCS-B3C

This Hall Effect current sensor is based on closed loop compensating principle and designed with a high galvanic isolation between primary and secondary circuits. It can be used for measurement of DC and AC current, pulse currents etc. The output of the transducer reflects the real wave of the current carrying conductor.

Product Characteristics	Applications
• Excellent accuracy • Very good linearity • Less power consumption • Current overload capability • Goods temperature properties	• **Photovoltaic equipment** • General Purpose Inverters • AC/DC Variable Speed Drivers • Battery Supplied Applications • Uninterruptible Power Supplies (UPS) • Switched Mode Power Supplies

ELECTRICAL CHARACTERISTICS

Part number	CYHCS-B3A/C-050A	CYHCS-B3A/C-100A	CYHCS-B3A/C-200A	CYHCS-B3A/C-300A
Rated current	50A	100A	200A	300A
Measuring range	±150A (±18V, 91 Ω)	±300A (±18V, 20Ω)	±600A (±18V, 30 Ω)	±900A (±18V, 20 Ω)
Turns ratio	1:1000	1:2000	1:2000	1:3000
Secondary Internal Resistance	25Ω	25Ω	25Ω	35Ω
Rated output current	50mA±0.5%	50mA±0.5%	100mA±0.5%	100mA±0.5%
Measuring resistance	50Ω ~ 100Ω	10Ω ~ 100Ω	10Ω ~ 50Ω	10Ω ~ 50Ω
Supply voltage	±12V ~ ±18VDC			
Galvanic isolation	6kV RMS/50Hz/1min,			
Current consumption	20mA + output current			

ACCURACY DYNAMIC PERFORMANCE

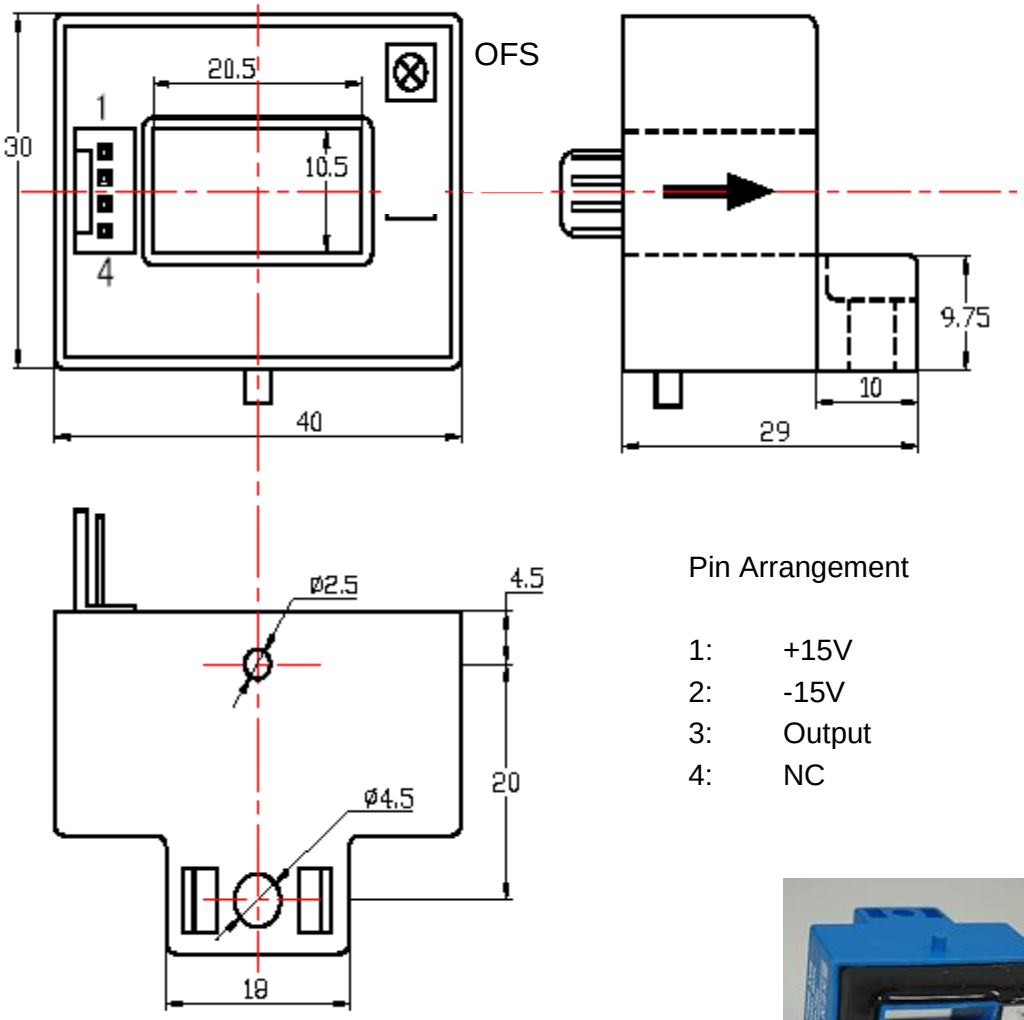
Zero offset current	±0.2mA
Thermal drift of offset current	±0.5mA (-25°C ~ +85°C)
Response time	<1.0μs
Accuracy	±0.5%
Linearity	≤0.1% FS
di/dt following accuracy	200A/μs
Bandwidth(-3dB)	DC ~ 100kHz

GENERAL CHARACTERISTIC

Operating temperature	-25°C~+85°C
Storage temperature	-25°C~+100°C

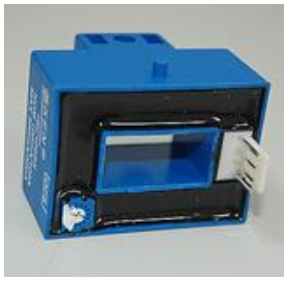
Dimensions (mm)

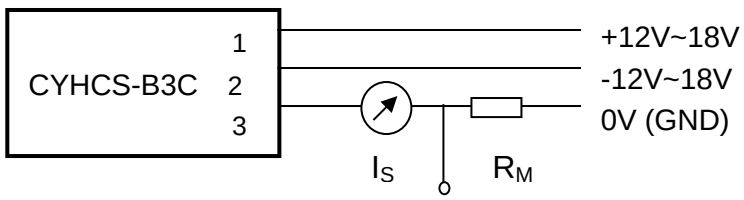
Case Style C (P/N: CYHCS-B3C-xxxx)



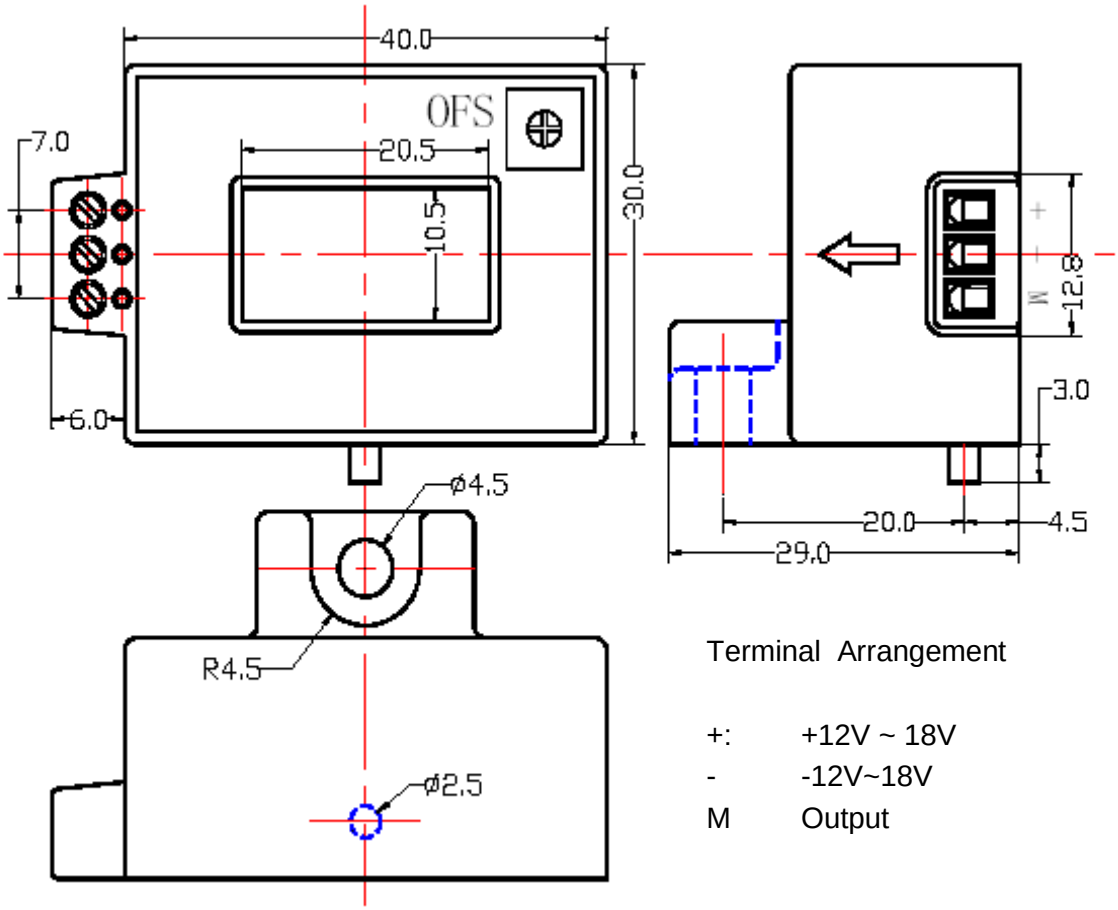
Pin Arrangement

1: +15V
2: -15V
3: Output
4: NC



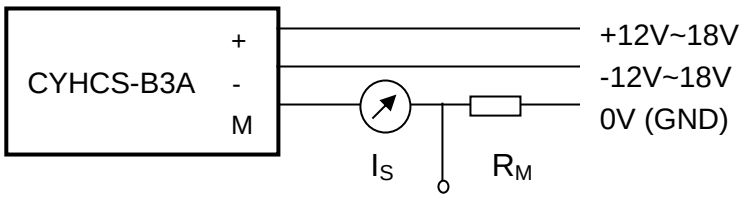


Case Style A (P/N: CYHCS-B3A-xxxx)



Terminal Arrangement

+:	+12V ~ 18V
-	-12V~18V
M	Output



Notes:

1. Connect the terminals of power source, outputs respectively and correctly, never make wrong connection.
2. Two potentiometers can be adjusted, only if necessary, by turning slowly to the required accuracy with a small screwdriver.
3. The best accuracy can be achieved when the window is fully filled with bus-bar (current carrying conductor).
4. The in-phase output can be obtained when the direction of current of current carrying conductor is the same as the direction of arrow marked on the transducer

Hall Effect AC/DC Current Sensor CYHCS-B3V

This Hall Effect current sensor is based on closed loop compensating principle and designed with a high galvanic isolation between primary and secondary circuits. It can be used for measurement of DC and AC current, pulse currents etc. The output of the transducer reflects the real wave of the current carrying conductor.

Product Characteristics	Applications
• Excellent accuracy • Very good linearity • Small size and encapsulated • Less power consumption • Current overload capability	• **Photovoltaic equipment** • General Purpose Inverters • AC/DC Variable Speed Drivers • Battery Supplied Applications • Uninterruptible Power Supplies (UPS) • Switched Mode Power Supplies

ELECTRICAL CHARACTERISTICS

Part number	CYHCS-B3V-50A	CYHCS-B3V-100A	CYHCS-B3V-200A	CYHCS-B3V-300A
Rated current (RMS)	±50A	±100A	±200A	±300A
Max. input current	±100A	±200A	±400A	±450A
Load resistance	>10kΩ			
Rated output voltage	±4V			
Supply voltage	±15 VDC ±5%			
Galvanic isolation	3kV RMS/50Hz/1min,			

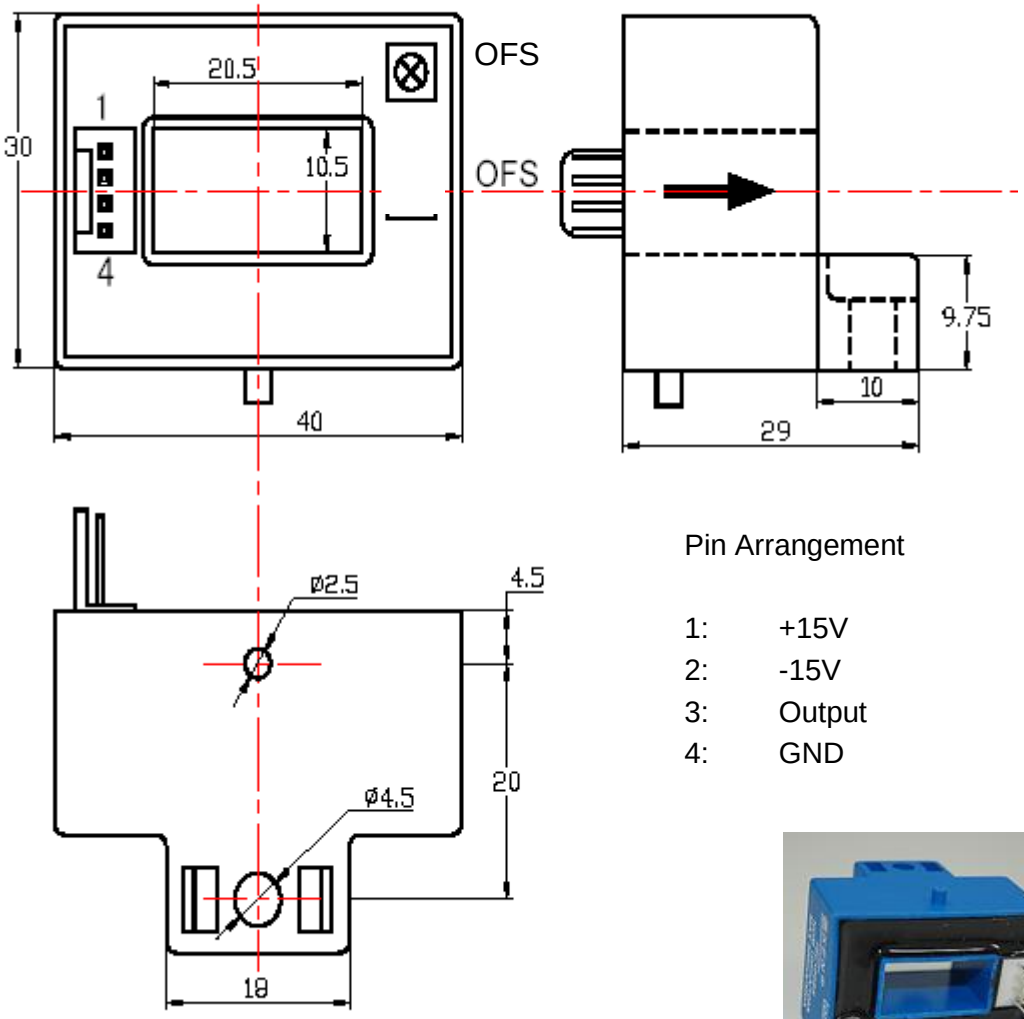
ACCURACY DYNAMIC PERFORMANCE

Zero offset voltage	<±20mV
Thermal drift of output voltage	±0.02%/°C
Thermal drift of zero offset voltage	±0.01%/°C
Response time	<1.0μs
Accuracy	±0.5%
Linearity	≤0.1% FS
Hysteresis error	<20mV
Bandwidth(-3dB)	DC ~ 150kHz

GENERAL CHARACTERISTIC

Operating temperature	-25°C~+85°C
Storage temperature	-25°C~+100°C
Current consumption	<70 ~120 mA

Dimensions (mm)



Pin Arrangement

1: +15V
2: -15V
3: Output
4: GND

Notes:

1. Connect the terminals of power source, outputs respectively and correctly, never make wrong connection.
2. Two potentiometers can be adjusted, only if necessary, by turning slowly to the required accuracy with a small screwdriver.
3. The best accuracy can be achieved when the window is fully filled with bus-bar (current carrying conductor).
4. The in-phase output can be obtained when the direction of current of current carrying conductor is the same as the direction of arrow marked on the transducer