

## ISD Hall-Effect Current Transducer

For the electronic measurement of AC, DC and harmonic signals with galvanic isolation between the primary circuit and the secondary circuit.

### Features

- ◆ Closed-Loop Hall-Effect Transducer
- ◆ Printed Circuit Board Mounting
- ◆ Insulated Plastic Case Recognized

### Advantages

- ◆ Excellent Accuracy
- ◆ Very Good Linearity
- ◆ Low Temperature Drift
- ◆ Optimized Response Time
- ◆ Wide Frequency Bandwidth
- ◆ No Insertion Losses
- ◆ High External Interference Immunity
- ◆ Current Overload Capability

### Applications

- ◆ DC/AC Converters
- ◆ DC/DC Converters
- ◆ Battery Management
- ◆ Power Supplies (UPS and SPMS)
- ◆ AC and DC Variable Motor Drives
- ◆ Welding Applications

Part Number		ISD-025-P15	ISD-050-P15	ISD-100-P15	
<b>Electrical Data</b>					
(I <sub>PN</sub> )	Nominal Primary RMS Current	25 A	50 A	100 A	
(I <sub>PM</sub> )	Measurable Current Range <sup>1)</sup>	0 ~ ± 55 A	0 ~ ± 90 A	0 ~ ± 160 A	
(R <sub>M</sub> )	Measuring Resistance				
	@ V <sub>C</sub> = ± 12 V	@ T <sub>A</sub>			
	I <sub>PN</sub> [± A <sub>DC</sub> ]	70	0~273 Ω	0~95 Ω	0~63 Ω
		85	0~269 Ω	17~91 Ω	0~57 Ω
	I <sub>PN</sub> [A <sub>RMS</sub> ] <sup>2)</sup>	70	0~171 Ω	0~42 Ω	0~11 Ω
		85	0~167 Ω	17~38 Ω	0~5 Ω
	@ V <sub>C</sub> = ± 15 V	@ T <sub>A</sub>			
	I <sub>PN</sub> [± A <sub>DC</sub> ]	70	67~387 Ω	52~152 Ω	20~120 Ω
		85	71~383 Ω	80~148 Ω	45~114 Ω
	I <sub>PN</sub> [A <sub>RMS</sub> ] <sup>2)</sup>	70	67~253 Ω	52~82 Ω	20~51 Ω
		85	71~249 Ω	80~80 Ω	45~45 Ω
(I <sub>SN</sub> )	Nominal Secondary RMS Current	25 mA	50 mA		
(K <sub>N</sub> )	Conversion Ratio	1:1000/2:1000/3:1000	1:1000	1:2000	
(V <sub>C</sub> )	Supply Voltage (±5%)	±12V ~ ±15V			
(I <sub>C</sub> )	Current Consumption (±15V)	≤10 + I <sub>S</sub> mA			
<b>Accuracy - Dynamic Performance Data</b>					
(X)	Accuracy <sup>3)</sup>	T <sub>A</sub> = 25°C	< ± 0.30 %	< ± 0.25 %	
(ε <sub>L</sub> )	Linearity Error	T <sub>A</sub> = 25°C	< ± 0.20 %	< ± 0.15 %	
(I <sub>O</sub> )	Offset Current	T <sub>A</sub> = 25°C	< ± 0.15 mA	< ± 0.30 mA	< ± 0.15 mA
(I <sub>OM</sub> )	Magnetic Offset Current <sup>4)</sup>	T <sub>A</sub> = 25°C	±0.20 ~ ±0.25 mA	±0.20 ~ ±0.30 mA	±0.10 ~ ±0.15 mA
(I <sub>OT</sub> )	Thermal Drift of I <sub>O</sub>	0°C..+70°C	±0.10 ~ ±0.60 mA	±0.20 ~ ±0.60 mA	±0.10 ~ ±0.40 mA
	Thermal Drift of I <sub>O</sub> @ Severe Temp Condition	-25°C..+85°C	±0.10 ~ ±0.70 mA	±0.20 ~ ±0.80 mA	±0.10 ~ ±0.50 mA
(t <sub>R</sub> )	Response Time <sup>5)</sup>		< 1 μs		
	di/dt Accurately Followed		> 100 A/μs		
(f)	Freq. Bandwidth (-1 dB)		DC ~ 100 kHz		

Part Number		ISD-025-P15	ISD-050-P15	ISD-100-P15	
<b>General Data</b>					
(T <sub>A</sub> )	Ambient Operating Temperature	-25°C ~ +85°C			
(T <sub>S</sub> )	Ambient Storage Temperature	-40°C ~ +85°C			
(R <sub>S</sub> )	Secondary Coil Resistance	@T <sub>A</sub> = 70°C	83 Ω	83 Ω	110 Ω
		@T <sub>A</sub> = 85°C	87 Ω	87 Ω	115 Ω
(m)	Mass	20 g	22 g	22 g	
---	Safety Standard	EN50178			
<b>Mechanical Characteristics</b>					
General Tolerance		± 0.2 mm			
Fastening & Connection of Primary		6 pins, ∅1.0 mm	6 pins, 1.4 x 1.0 mm		
Recommended PCB Hole		1.5 mm	2.0 mm		
Fastening & Connection of Secondary		3 pins, 0.7 x 0.6 mm			
Recommended PCB Hole		1.2 mm			
* Please see pages 3 and 4 for more details					

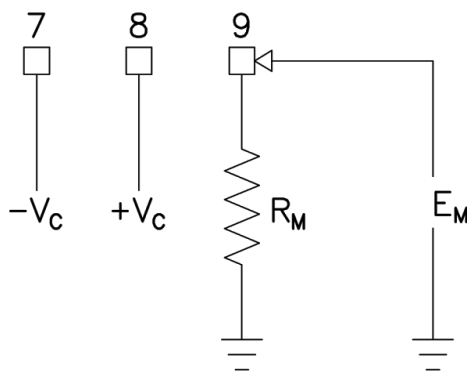
### Isolation Characteristics

(V <sub>w</sub> )	Impulse Withstanding Voltage	12 kV, 400J
(V <sub>d</sub> )	RMS Voltage for AC Isolation Test, 50/60Hz, 1min	5 kV
(dCp)	Creepage Distance	11.75 mm
(dCl)	Clearance Distance	11.75 mm
(CTI)	Comparative Tracking Index	175

### Notes

- 1) For 10 s, with R<sub>M</sub> ≤ 109 Ω (V<sub>C</sub>=±15V)
- 2) 50/60 Hz Sinusoidal
- 3) @ IPN without IO and IOM
- 4) @ IP after an overload of 3 x IPN
- 5) @ 90% of IPN, di/dt = 100 A/μs

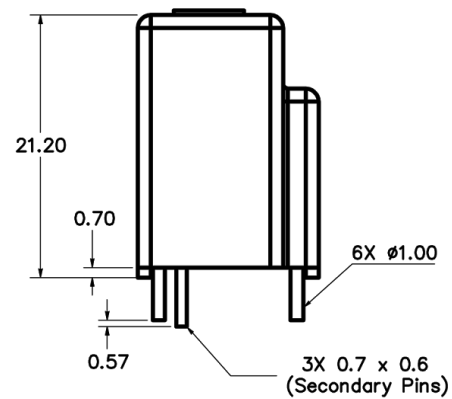
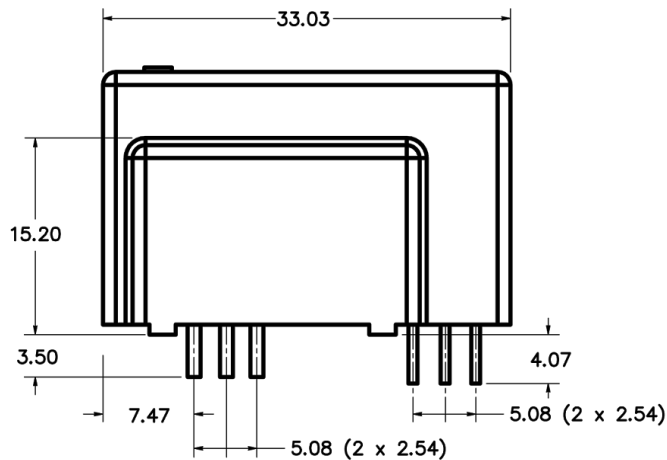
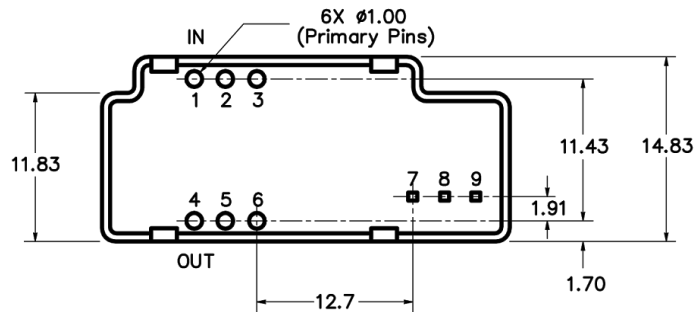
### Schematic



$$R_M = \frac{E_M}{I_P \times K_N}$$

Dimensions for ISD-025-P15: (in mm, 1mm = 0.0394 inch)

## Bottom View



## Front View

## Left View

Number of primary turns	Primary current		Nominal output current $I_{SN}$ [mA]	Turns ratio $K_N$	Primary resistance $R_P$ [m $\Omega$ ]	Primary insertion inductance $L_P$ [ $\mu$ H]
	nominal $I_{PN}$ [A]	maximum $I_P$ [A]				
1	25	55	25	1 : 1000	0.18	0.012
2	12	27	24	2 : 1000	0.81	0.054
3	8	18	24	3 : 1000	1.62	0.110

### Pin Configuration

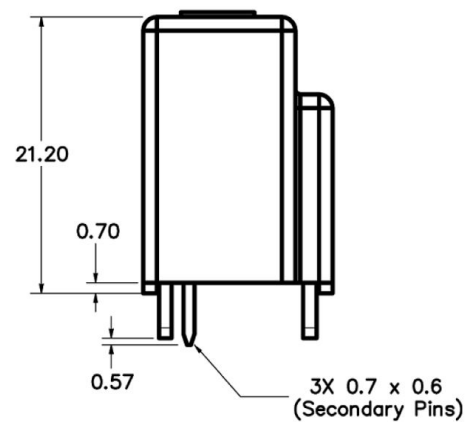
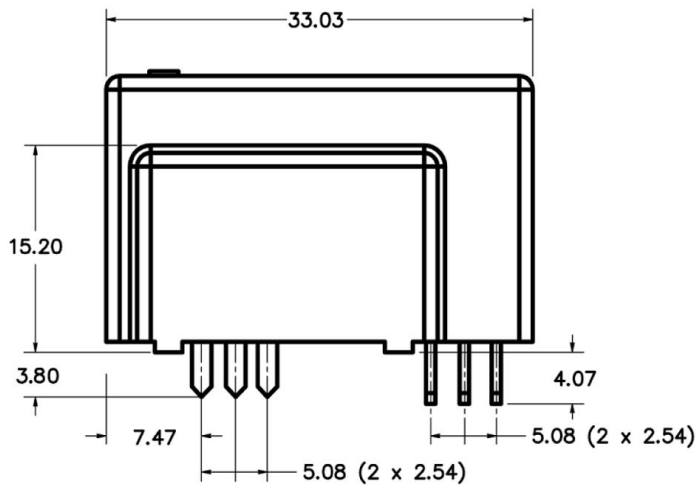
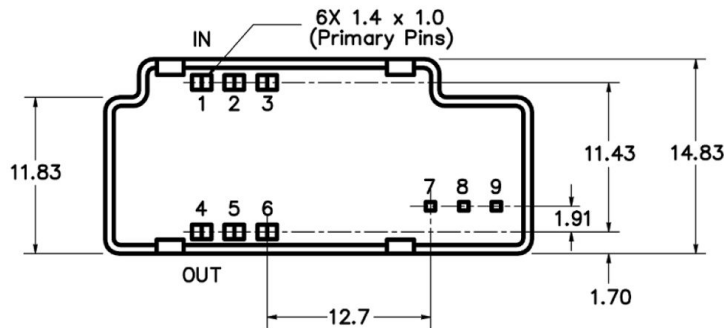
Pins 1, 2 and 3	Inputs, ( $I_{PIN}$ )
Pins 4, 5 and 6	Outputs, ( $I_{POUT}$ )
Pin 7	(- $V_C$ )
Pin 8	(+ $V_C$ )
Pin 9	0V

### Remarks

- ◆  $I_S$  is positive when  $I_p$  flows from terminals IN (1,2,3) to terminals OUT (4,5,6).
- ◆ The temperature of the jumper and PCB should not exceed 100 °C.
- ◆ This is a standard product. For modifications, please contact us.

Dimensions for ISD-050-P15 and ISD-100-P15: (in mm, 1mm = 0.0394 inch)

## Bottom View



## Front View

## Left View

Part Number	Number of primary turns	Primary current		Nominal output current $I_{SN}$ [mA]	Turns ratio $K_N$	Primary resistance $R_P$ [mΩ]	Primary insertion inductance $L_P$ [μH]
		nominal $I_{PN}$ [A]	maximum $I_P$ [A]				
ISD050-P15	1	50	90	50	1 : 1000	0.12	0.008
ISD100-P15	1	100	160	50	1 : 2000	0.08	0.007

### Pin Configuration

Pins 1, 2 and 3	Inputs, ( $I_{PIN}$ )
Pins 4, 5 and 6	Outputs, ( $I_{POUT}$ )
Pin 7	(- $V_C$ )
Pin 8	(+ $V_C$ )
Pin 9	0V

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