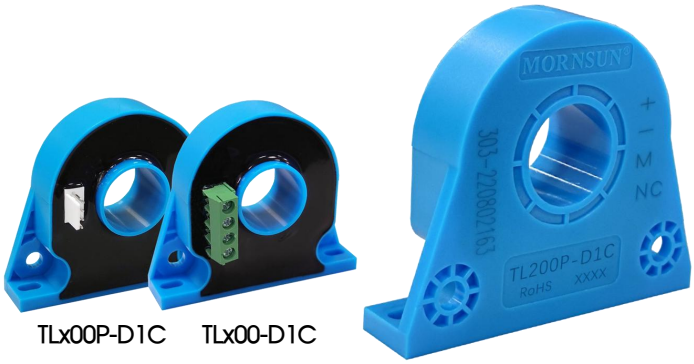
MORNSUN®

Current Transducer TLx00(P)-D1C



TLx00P-D1C TLx00-D1C

years 3 Warranty

RoHS

Features

- Accuracy up to 0.5%
- Linearity up to 0.1%
- Low temperature drift 40PPM/℃
- Wide frequency bandwidth 100kHz
- Low response time 1 μs
- No insertion losses
- High immunity to external interference
- Withstand symmetrical voltage change ±5%

TLx00(P)-D1C series products are used for DC, AC and pulse current measurement under the condition of primary and secondary side isolation. Hall effect and zero flux closed-loop control principle are adopted to achieve high measurement accuracy in the full bandwidth range of the sensor.
This series of products are circular perforation, the number of turns through the core (original edge) is one turn, its shell adopts closed structure, easy to install, simple, suitable for a variety of occasions.
Application areas: electric welder, power supply equipment, power heating equipment, large UPS equipment, motor driving equipment, etc.

Selection Guide

Part No.	Input Voltage (VDC)	Primary RMS Current (A)	Primary Current Measurement Range (A)	Secondary RMS Current (mA)	Turns Ratio
TL100-D1C	±12/±15	100	-150~+150	50	1:2000
TL200-D1C	±12/±15	200	-300~+300	100	1:2000
TL300-D1C	±12/±15	300	-500~+500	150	1:2000
TL300P-D1C	±12/±15	300	-500~+500	150	1:2000

Note: TLx00-D1C and TLx00P-D1C have the same performance. For differences, see the dimensions.

Electrical Characteristics

Item		Operating Conditions	Part No.	Min	Typ	Max	Unit.
Primary Nominal Rated RMS Current I_{PN} (A)		Ta=25℃	TL100-D1C	--	100	--	A
			TL200-D1C	--	200	--	A
			TL300(P)-D1C	--	300	--	A
Primary Current Measurement Range I_{PM} (A)		Ta=25℃	TL100-D1C	-150	--	150	A
			TL200-D1C	-300	--	300	A
			TL300(P)-D1C	-500	--	500	A
Secondary Nominal Rated RMS Current I_{SN} (mA)		Ta=25℃	TL100-D1C	--	50	--	mA
			TL200-D1C	--	100	--	mA
			TL300(P)-D1C	--	150	--	mA
Conversion Ratio K_N		Primary side coil=1	All the models	1:2000			--
Supply Voltage V_C		Withstand symmetrical voltage change ±5%	All the models	±11.4/±14.25	±12/±15	±12.6/±15.75	V
Current Consumption I_C		Actual output current I_S	All the models	--	12+I_S	25+I_S	mA
Temperature Drift	Zero Electric Temperature Drift Current	@Ta=-40 to -30℃	All the models	--	0.6	1.8	mA
	Temperature Drift Coefficient	@Ta=-30 to 85℃	TL100-D1C	--	60	100	PPM/℃
		@Ta=-30 to 85℃	TL200-D1C	--	40	70	
		@Ta=-30 to 85℃	TL300(P)-D1C	--	20	40	

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			$R_{M\,min}$	$R_{M\,max}$	--
Measuring Resistance RM	VC=±12V@I_{PM}≤100A	TL100-D1C	0	136	Ω
	VC=±12V@I_{PM}≤150A		0	74	Ω
	VC=±15V@I_{PM}≤100A		0	175	Ω
	VC=±15V@I_{PM}≤150A		0	106	Ω
	VC=±12V@I_{PM}≤200A	TL200-D1C	0	50	Ω
	VC=±12V@I_{PM}≤300A		0	26	Ω
	VC=±15V@I_{PM}≤200A		0	73	Ω
	VC=±15V@I_{PM}≤300A		0	40	Ω
	VC=±12V@I_{PM}≤300A	TL300(P)-D1C	0	30	Ω
	VC=±12V@I_{PM}≤500A		0	7	Ω
	VC=±15V@I_{PM}≤300A		0	43	Ω
	VC=±15V@I_{PM}≤500A		0	17	Ω

Dynamic Characteristics

Item	Operating Conditions	Min	Typ	Max	Unit
Overall Accuracy X_G	Ta=25℃	--	±0.3	±0.5	%
Linearity Error ε_L	Ta=25℃	--	0.05	0.1	%
Response Time t_r	Up to 10% of I_{PN}	--	--	500	ns
	Up to 90% of I_{PN}	--	--	1	μs
Frequency Bandwidth (-3dB) BW		0	--	100	kHz
Offset Current I_O	@I_P=0，Ta=25℃	-0.2	--	0.2	mA

General Characteristics

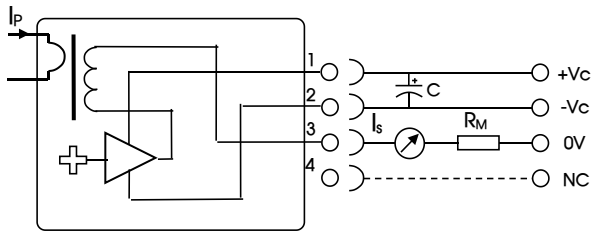
Item	Operating Conditions	Min	Typ	Max	Unit
Weight		50	60	70	g
Ambient Operating Temperature Ta		-40	--	+85	℃
Ambient Storage Temperature T_S		-40	--	+105	℃
Secondary Coil Resistance R_S	@Ta=25℃	--	15	--	Ω

Isolation Characteristics

Item	Operating Conditions	Min	Typ	Max	Unit
Power Frequency Withstand Voltage V_d	Primary input, secondary output; 50Hz, 1min; Leakage current<0.1mA	--	3.5	--	kVAC
Case Material		Blue plastic; Flame-retardant and heat-resistant (UL94 V-0)			

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Connection and Description



Test instructions:

1、I_P is measured current, I_S is measuring current, C=100 μ F/50V. If the input power is stable, the capacitor C can be removed;

2、R_M is measuring resistance, set according to the required voltage range of the output circuit;

3、By measuring the test current I_S flowing through R_M, or the voltage U_R across R_M, the primary current I_P can be obtained:

$$I_P = K_N * I_S = K_N * (U_R / R_M)$$

4、I_S is positive when I_P flows in the direction of the arrow;

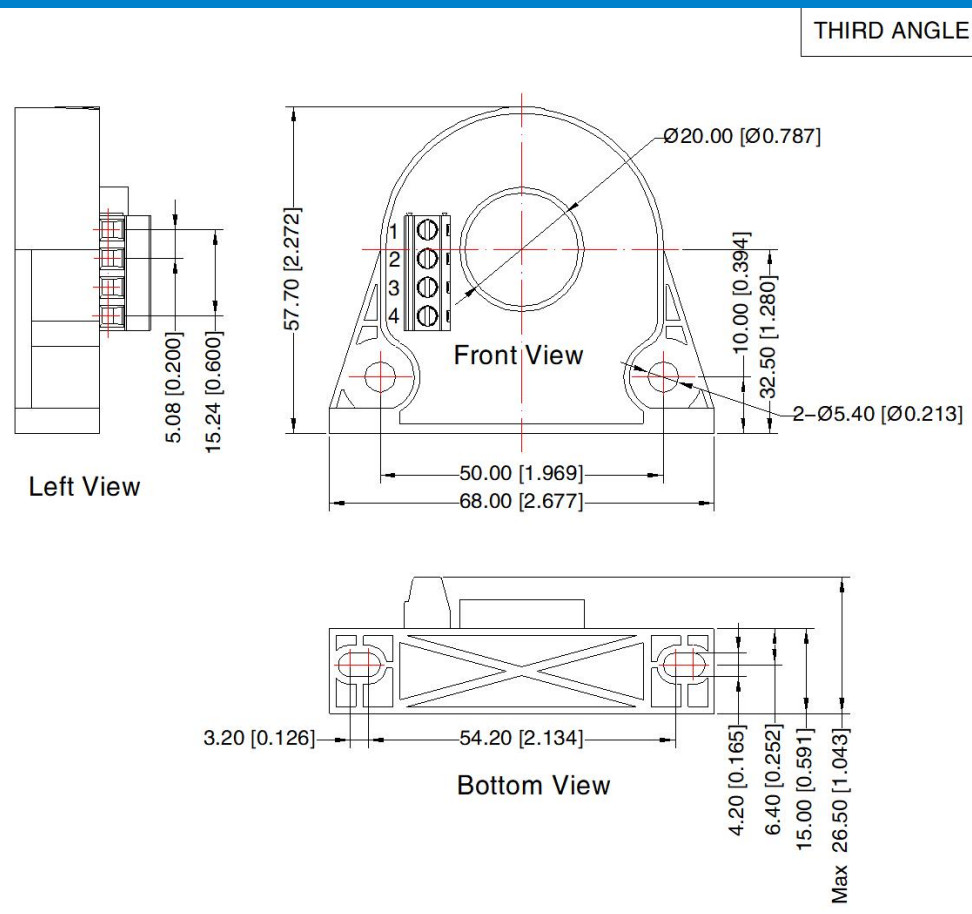
5、The temperature of the primary winding coil should be lower than 100℃;

6、Dynamic characteristics best condition: the measured wire completely fills the hole;

7、Hot plug is unavailable;

8、It is recommended to use a power supply VRA2415ZP-6WR3 (MORNSUN) with about 5W output power and output voltage of ±15V.

Dimensions and Recommended



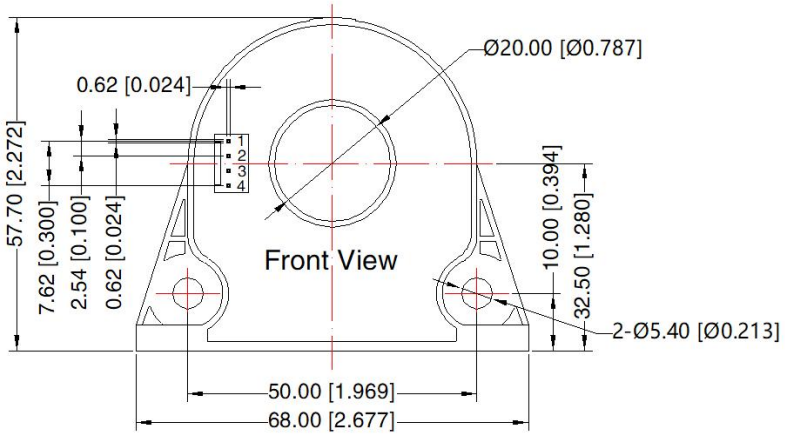
Pin-Out	
Pin	Mark
1	+12~15V
2	-12~15V
3	M
4	NC

Note:
Unit: mm[inch]
Wire range: 26-14 AWG
Tightening torque: Max 0.3 N・m
General tolerances: ±0.50[±0.02]

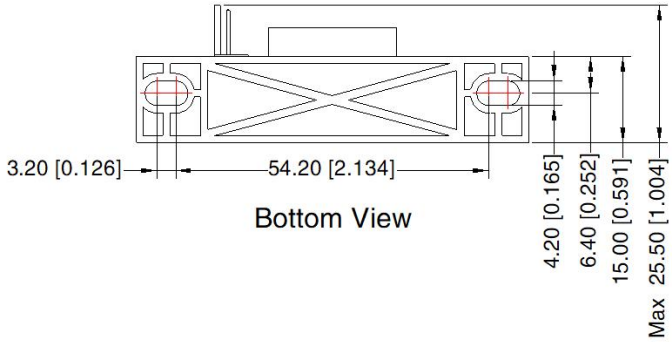
TLx00-D1C Dimensions

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THIRD ANGLE PROJECTION



Pin-Out		
Pin	Mark	Customer Connector
1	+12~15V	Housing：MOLEX 22-01-2041 Terminal：MOLEX 22-27-2041 or equivalent
2	-12~15V	
3	M	
4	NC	



Note：
Unit：mm[inch]
General tolerances：± 0.50[± 0.02]

TLx00P-D1C Dimensions

Notes:
1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58070004;
2. All index testing methods in this datasheet are based on company corporate standards;
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75%RH with nominal input voltage;
4. We can provide product customization service, please contact our technicians directly for specific information;
5. This products is used in electronic equipment, please follow the operation and instructions of the manual, and use it in a standard and safe environment;
6. Please do not install the product in a dangerous area; beware of the risk of electric shock during operating, some modules may generate dangerous voltages (such as primary wires, power supply wires);
7. This products is a build-in device, After installation, the conductive part must not be touched completely. A protective box or shield can be used;
8. It is strictly forbidden to disassemble and assemble the products privately to prevent equipment without failure or malfunction;
9. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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