Magnetic Proportion System / Through Type

L08P IPV/W/IPVW SERIES

CE RoHS

ABSOLUTE MAXIMUM RATINGS

Parameters	Symbol	Unit	Value	Comment
Supply voltage	Vcc	V	± 18V	

ISOLATION CHARACTERISTICS

Parameters	Symbol	Unit	Value	Comment
Insulation voltage	Vd	—	AC2500V, for 1minute (Sensing current 0.5mA)	Primary ⇔ Secondary
Insulation resistance	R_{IS}	—	≧ 500M Ω (at DC500V)	Primary ⇔ Secondary
Case material	—	—	UL94 V-0	

ENVIRONMENTAL AND MECHANICAL CHARACTERISTICS

Parameters	Symbol	Unit	Value			Comment
			MIN	TYP	MAX	
Ambient operating temperature	T_A	℃	− 40		+ 80	
Ambient storage temperature	T_S	℃	− 40		+ 85	
Mass	m	g		22		

SPECIFICATIONS

Ta=+25℃,R_L=10kΩ,Vcc=±15V

Parameters		Symbol	Unit	Value			Comment
				MIN	TYP	MAX	
Primary norminal current	**L08P050D15IPV**	I_{PN}	A		50		
	L08P100D15IPV				100		
	L08P150D15IPV				150		
	L08P200D15W				200		
	L08P300D15IPVW				300		
	L08P400D15IPVW				400		
	L08P500D15IPVW				500		
Primary current, measuring range * 1	**L08P050D15IPV**	I_{PM}	A	150			
	L08P100D15IPV			300			
	L08P150D15IPV			450			
	L08P200D15W			600			
	L08P300D15IPVW			600			
	L08P400D15IPVW			600			
	L08P500D15IPVW			600			

SPECIFICATIONS

Ta=+25℃,R_L=10kΩ,Vcc=±15V

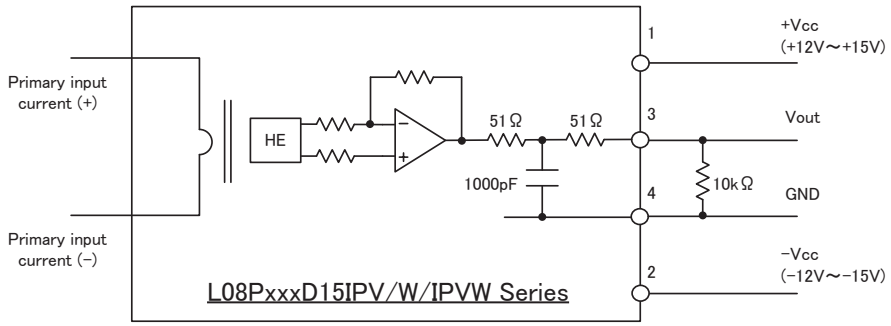
Parameters		Symbol	Unit	Value MIN	Value TYP	Value MAX	Comment
Supply voltage		Vcc	V	±12(±5%)	±15(±5%)		
Consumption current		Icc	mA		14	20	
Rated output voltage		Vo	V	3.960	4.000	4.040	at I_{PN}
Offset voltage ＊2		Vof	V	− 0.030	0.000	＋0.030	at I_{PN} = 0A
Hysteresis error		V_{OH}	mV			± 20	at 0A → I_{PN} → 0A
Thermal drift of gain		TcVo	%/℃			± 0.05	Without TcVof
Thermal drift of Vof	**L08P050D15IPV**	TcVof	mV/℃			± 2	at I_{PN} = 0A
	L08P100D15IPV					± 1	
	L08P150D15IPV					± 1	
	L08P200D15W					± 1	
	L08P300D15IPVW					± 1	
	L08P400D15IPVW					± 1	
	L08P500D15IPVW					± 1	
Linearity error (0A ～ I_{PN})		ε_L	%	− 1		＋1	
Response time (@70% of I_{PN} − 70% of Vo)		tr	μs			3	di/dt=100A/μs
Response time (@10% of I_{PN} − 90% of Vo)	**L08P050D15IPV**	tr	μs			5	di/dt=100A/μs
	L08P100D15IPV					5	
	L08P150D15IPV					5	
	L08P200D15W					5	
	L08P300D15IPVW					5	
	L08P400D15IPVW					5	
	L08P500D15IPVW					8	
Response time (@10% of 250A − 90% of 2V)	**L08P500D15IPVW**	tr	μs			7	di/dt=100A/μs

＊1 If the product of 200A or less operate at Vcc = ± 12V power supplies, measuring range reduced to 2.5 x I_{PN}.
＊2 Offset voltage value is after removal of core hysteresis.

STANDARDS

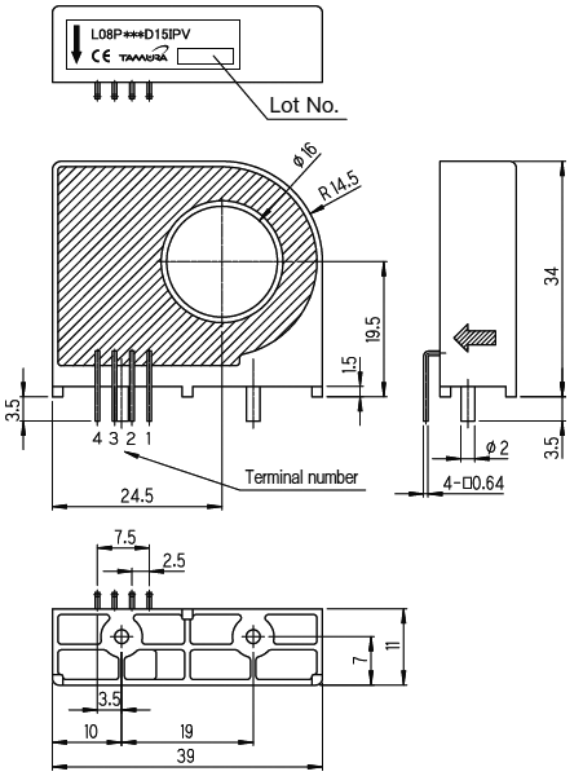
EN62477-1:2012 and EN62477-1:2012/A11:2014

CONNECTION



DIMENSIONS (mm)

L08PxxxD15IPV



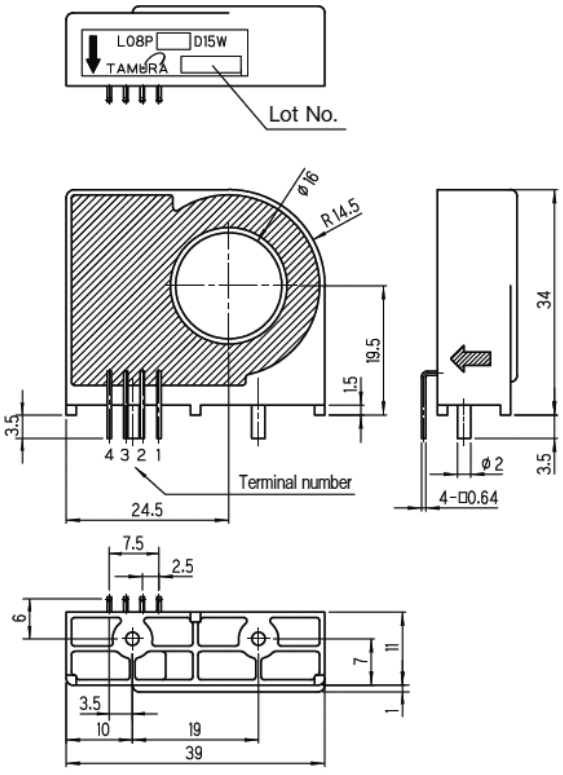
Terminal number

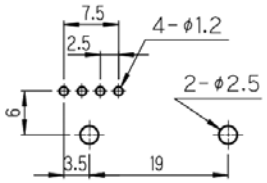
1 ＋Vcc (＋15V)
2 －Vcc (－15V)
3 Vout
4 GND

Note

1. Unless otherwise specified, tolerances shall be ±0.5mm

L08PxxxD15W/IPVW





Circuit boad hole dimension
(View of solder surface)

Important Notice

1. The content of this information is subject to change without prior notice for the purpose of improvements, etc. Ensure that you are in possession of the most up-to-date information when using this product.

2. This product is intended to be used in general electronics applications (electric home appliances, business equipment, information equipment, communication terminal equipment, measuring devices, industrial equipment, and so on). This product is neither intended nor warranted for use in following equipment or devices:

   Special application (such as for medical devices, transportation equipment, traffic signal control equipment, fire and crime prevention equipment, aeronautics and space devices, nuclear power control, fuel control, in-vehicle equipment, safety devices, and so on) in which extremely high quality and high reliability is required, or if the malfunction or failures of product could be cause loss of human life, bodily injury.

   Tamura Corporation shall not be held responsible for any damage incurred by customers or any third party when products are used in special application, unless specifically permitted in this document.

3. Tamura Corporation constantly strives to improve quality and reliability, but malfunction or failures are bound to occur with some probability in current sensor. To ensure that failures do not cause accidents resulting in injury or death, fire accidents, social damage, and so on, users are to thoroughly verify the safety of their designs in devices and/or systems.

4. The operation examples and circuit examples shown in this information are for reference purposes only, and Tamura Corporation disclaims all responsibility for any violations of industrial property rights, intellectual property rights and any other rights owned by Tamura Corporation or third parties that these may entail.

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   - *Use in liquids such as water, oil, chemical solutions, or organic solvents, and use in locations where the product will be exposed to such liquids.*
   - *Use that involves exposure to direct sunlight, outdoor exposure, or dusty conditions.*
   - *Use in locations where corrosive gases such as sea winds, Cl2, H2S, NH3, SO2, or NO2, are present. (Some product improves durability)*
   - *Use in environments with strong static electricity or electromagnetic radiation.*
   - *Use that involves placing inflammable material next to the product.*
   - *Use of this product either sealed with a resin filling or coated with resin.*
   - *Use of water or a water soluble detergent for flux cleaning.*
   - *Use in locations where condensation is liable to occur.*

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Application notes

<General Considerations>

1. The sensor uses polar electronic components. When the polarity of the power supply is mistaken, the sensor is damaged.
2. Static electricity or excessive voltage can increase an offset voltage in the Hall element, and cause offset voltage to change. Please exercise care in handling and application.
3. In order to prevent the influence of noise, the use of twisted cable or shielded cable for the output line is recommended
4. If using this device within a magnetic field generated by other devices, the specified accuracy may not be obtainable.
5. Our products (several models are excluded) are adjusted with the trimming method by the measurement condition (Load resistance, Power supply voltage) of specification sheets. Therefore, characteristics (Offset, Output, etc.) and its deviation may be changed in different circuit conditions from the measurement condition. All change characteristic items are not indicated on specification sheets.
6. The performance of current sensors with through-hole (aperture) is dependent on the position of the primary conductor. Tamura specifications are based on a primary conductor completely filling the through-hole (aperture) area.
7. The current sensor rated current in DC Amps.
8. Please use mating connector with equivalent terminal plating material to insure proper operation and avoid possibility of 'galvanic corrosion' .
9. Please do not store in high-temperature and high-humidity storage environment. Please use it after confirming soldering when it is kept for six months or more. (product soldered with substrate)
10. We recommend performing a zero offset adjustment by measuring the offset voltage at startup. In continuously operation for a few months, or at change of ambient temperature or humidity is large, we recommend regularly performing a zero offset adjustment at being idling (it is clear that the current is not apply) .
11. The current sensor doesn't have built-in protection circuit (devices and fuses, etc.). As a failure mode of the sensor, there is a short circuit and open state. In the case of a short-circuit state, the abnor-mal temperature rise of the internal parts is assumed, and there is a possibility to smoke and to ignite. If it is used in safety critical circuit blocks, please take appropriate measures by protection devices, protection circuits, etc. For closed loop –type sensors and flux gate (closed loop type) sensors, the consumption current of the secondary power supply varies in proportion to the measurement current.

<Open loop>

1. High frequency primary current may result in excessive heating in iron magnetic core and cause damage to internal circuitry; for high frequency applications select current sensor with ferrite core material.
2. If the measured current exceeds the rated current, magnetic core saturation will occur and the output voltage signal will not be linearly proportional to the measured current.

<Closed Loop>

1. For closed loop current sensors please insure the power supply voltage is balanced, symmetrical, and, applied simultaneously to avoid potential increase in DC offset error.
2. Maximum rated current measurement duration is timedependent. Maximum rated current applied in excess of the time limit can result in damage to internal electronic circuitry; please consult Tamura for assistance.
3. When using a measurement resistor to convert current output to voltage output select a resistor with stable temperature characteristic to insure accuracy of the output voltage.
4. Compensation current supplied to the secondary winding varies in proportion to the measured current based on the conversion ratio. (If/KN; KN = secondary turns) Please insure the PSU has required current capacity to supply compensation current to the secondary winding.

<Flux-Gate>

1. Compensation current supplied to the secondary winding varies in proportion to the measured current. Please insure the PSU has required current capacity to supply compensation current to the secondary winding.
2. There is 450kHz ripple voltage present on the output and reference output voltage signals . An external capacitor maybe added if necessary.

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