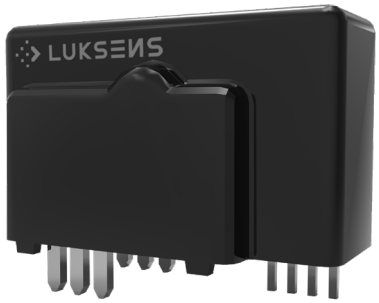
NxxASP Current Sensor

The NxxASP is a current transducer which operates on the principle of magnetic compensation. It measures DC, AC or pulse currents and their combinations, with galvanic isolation techniques used to separate the primary and secondary circuits.



Features

- Non-contact measurement of high current
- Close-Loop measurement (compensated)
- Max. measuring range ±200A (DC or AC peak)
- Nearly zero magnetic hysteresis
- Superior temperature stability and linearity
- High frequency bandwidth 100kHz
- RoHs compliance (Lead-Free)

Advantages

- Accurately measures AC, DC and pulse currents
- Fast response < 1µs
- High immunity from external interference
- Excellent current overload capacity

Applications

- AC variable speed drives and servo motor drives
- Static converters for DC motor drives
- Battery management systems
- Uninterruptible power supplies (UPS)
- Switched-mode power supplies (SMPS)
- Welding supplies for welding applications

Standards

- EN 50178:1997
- IEC 60950-1:2006
- IEC 61010-1:2010

Absolute maximum ratings

Symbol	Parameter	Min.	Max.	Unit
$V_{DD\ max.}$	Maximum supply voltage (not destructive)	4.75	5.25	V
I_{PM}	Maximum measuring current	- 200	200	A
	at frequency >1kHZ (M100ASP)	-300	300	A
T_A	Ambient operating temperature	-40	85	°C
T_S	Storage temperature range	-40	100	°C
$V_{ESD-HBM}$	ESD sensitivity HBM (Human Body Model)		8	kV

Stresses above these ratings may cause permanent damage. Exposure to absolute maximum ratings for extended periods may degrade reliability.

Specifications (T_A= 25°C, V_{DD}= 5.0V)

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
V_{DD}	Supply voltage			5		V
I_C	Current consumption	I_P=0A without load		18		mA
I_{PN}	Current nominal measuring range	M50ASP	-150	±50	150	A
		M100ASP	-200	±100	200	
R_L	Output load resistance	V_{OUT} to GND	2			kΩ
V_{OUT}	Nominal output (customized available)	I_P=I_{PN}		V_0±0.625		V
V_{REF}	Internal reference voltage	I_P=0A	2.475	2.5	2.525	V
V_0	Zero current output voltage	I_P=0A		V_{DD}/2		V
V_{OE}	Offset voltage V_{OE}=V_0-V_{REF} (V_{DD}=2.5V)	I_P=0A	-15		15	mV
T_{CVOE}	Temperature coefficient of V_{OE}	T_A=-40°C ...85°C		100		PPM/°C
T_{CG}	Temperature coefficient of G	T_A=-40°C ...85°C (except T_{CVOE})		300	500	PPM/°C
ε_L	Non-linearity error	±I_{PN} without offset		<0.7		%
T_R	Step response to 90% of I_{PN}	(Design target)		<1		µs
BW	Frequency bandwidth (-1dB)			100		kHz

Insulation characteristics

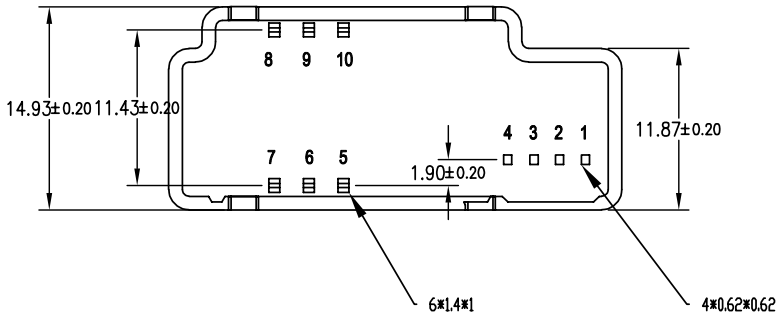
Symbol	Parameter	Value	Unit	Comment
V_D	Insulation voltage for isolation, 50Hz, 1 min	>3000	V	
R_{ISO}	Isolation resistance @500VDC	>500	MΩ	
D-CLE	Clearance	10.7	mm	Shortest distance through air
D-CRD	Creepage distance	10.7	mm	Shortest path along sensor body

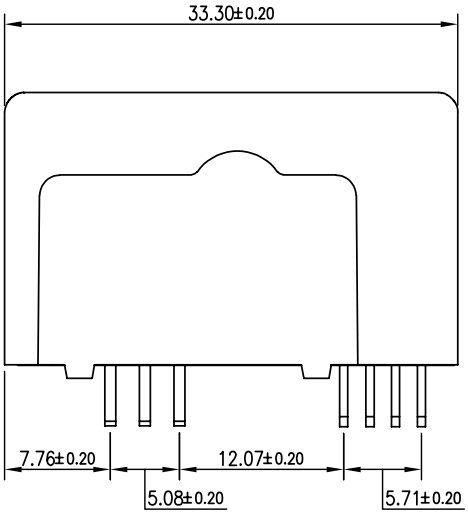
General characteristics

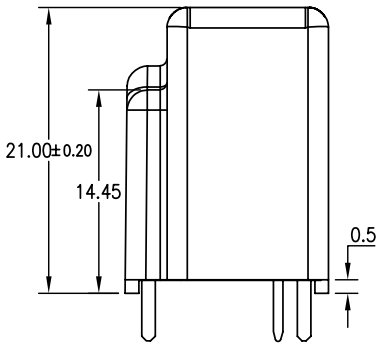
Symbol	Parameter	Value	Unit	Comment
M-HSE	Housing material	V0		Flame retardant UL 94

Dimension (mm)

N50ASP N100ASP

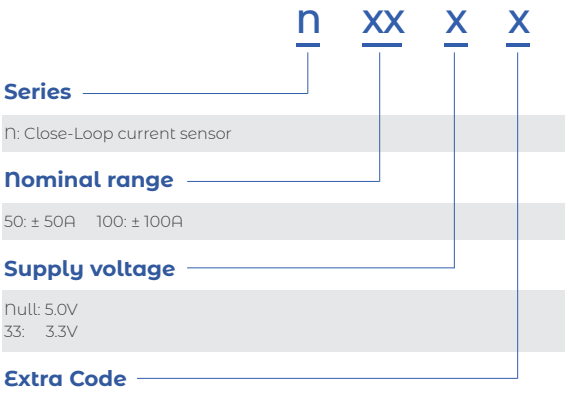






Pin	Symbol
1	V_{OUT}
2	$+V_{DD}$
3	GND
4	V_{REF}
5,6,7	$-I_P$
8,9,10	$+I_P$

Name Guide Description



Notes

The content of this document is subject to revision without notice. Luksens shall have no liability for any error or damage of any kind resulting from the use of this document.

Safety and Environment

The product is to be installed by manufacturer trained personnel or competent person trained in accordance with manufacturer installation instructions.

With respect to applicable standards IEC 61010-1/ EN 61010-1 *safety requirements for electrical equipment for measurement, control and laboratory use part 1 general requirements*, the product should be used in limited energy secondary circuits.

Risk of electrical shock

Certain parts of the module can carry hazardous voltage during the operation process of the product because hazardous live voltage of primary conductor, power supply occurs, injury and/or serious damage will be caused if this warning is ignored.

Conducting parts must be inaccessible after installation of the product. Additional protection including shield or protective housing could be used according to IEC 60664 Insulation coordination for equipment within low-voltage supply systems.

Disconnection of the main supply will protect against possible injury and serious damage.

ESD protection

Damage from an ESD event will occur if the personnel is not well grounded when handling.

Important notice

Luksens reserves the right to change the specifications, including all statements and data appearing in Luksens' catalogues, data sheets and advertisements, without notice. Luksens will publish the modified specifications on its website. If such changes to specifications are made, Luksens shall have no obligation to provide the change on Products previously purchased. The information included herein is believed to be accurate and reliable. However, since additional design, measure, production, quality control take effect in the end product, therefore Luksens shall have no liability for any potential hazards, damages, injuries or less of life resulting from the end product. Luksens products are not to be used in any equipment or system, including but not limited to life support equipment or systems, where failure of Luksens products may cause bodily harm.