

Y06-500S Series Current Sensor

The Y06-500S series 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 $\pm 800\text{A}$ (DC or AC peak)
- Nearly zero magnetic hysteresis
- Superior temperature stability and linearity
- High frequency bandwidth 100kHz
- RoHs compliance (Lead-Free)

Applications

- AC variable speed drives and servo motor drives
- Static converters for DC motor drives
- Energy managements
- Uninterruptible power supplies (UPS)
- Switched-mode power supplies (SMPS)
- Overcurrent protections
- Short circuit protections
- Welding applications

Advantages

- Accurately measures AC, DC and pulse currents
- Fast response $< 1\mu\text{s}$
- High immunity from external interference
- Excellent current overload capacity

Standards

- EN 50178:1997
- IEC 61800-5-1:2020
- IEC 61010-1:2010
- IEC 62109-1: 2010

Absolute maximum ratings

Symbol	Parameter	Min.	Max.	Unit
$V_{DD\ max.}$	Maximum supply voltage (not destructive)	-24	24	V
I_{PM}	Maximum measuring current	-800	800	A
T_A	Ambient operating temperature	0	70	°C
T_S	Storage temperature range	-40	85	°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 ($T_A = 25^\circ\text{C}$, $V_{DD} = \pm 15.0\text{V}$)

Symbol	Parameter	Description	Unit
V_{DD}	Supply voltage	$\pm 15 \dots 24$	V
I_C	Current consumption @ $I_p=0$ without I_{OE}	<30	mA
I_{PN}	Current nominal measuring range	± 500	A
I_{PM}	Maximum measuring current	± 800	A
K_N	Conversion ratio	1:5,000	
R_S	Coil resistance @70 °C	80	Ω
R_m	Measuring resistance with $\pm 15\text{V}$	$0 \sim 55 @ \pm 500\text{A}_{max}$, $0 \sim 4 @ \pm 800\text{A}_{max}$	Ω
T_{ctof}	Temperature coefficient of offset @ $I_p=0$, $T_A = -20^\circ\text{C} \dots 70^\circ\text{C}$	< ± 0.4	mA
TEB	Full scale of I_{PN} @ $T_A = 25^\circ\text{C}$	<0.6	%/ I_{PN}
ϵ_L	Non-linearity error @ $\pm I_{PN}$ without offset	<0.1	%/ I_{PN}
I_{OE}	Offset current @ $I_p=0$	± 0.2 Typ. / ± 0.4 Max.	mA
I_{om}	Magnetic offset current at $I_p = 0\text{A} \rightarrow 3I_{PN} \rightarrow 0\text{A}$	<0.2	mA
T_R	Step response to 90% of I_{PN}	<1	μs
BW	Frequency bandwidth (-1dB)	100	kHz
di/dt	di/dt accurately followed	>100	A/ μs

Insulation Parameters

Symbol	Parameter	Value	Unit	Comment
V_D	Insulation voltage for isolation, 50Hz, 1 min	3000	V	
R_{ISO}	Isolation resistance @500VDC	>500	MΩ	

General characteristics

Symbol	Parameter	Value	Unit	Comment
m-HSE	Housing material	V0		Flame retardant UL 94
m-FC	Flux collector material	Oriented silicon steel		Superior magnetic permeability
m	Mass	251	grams	

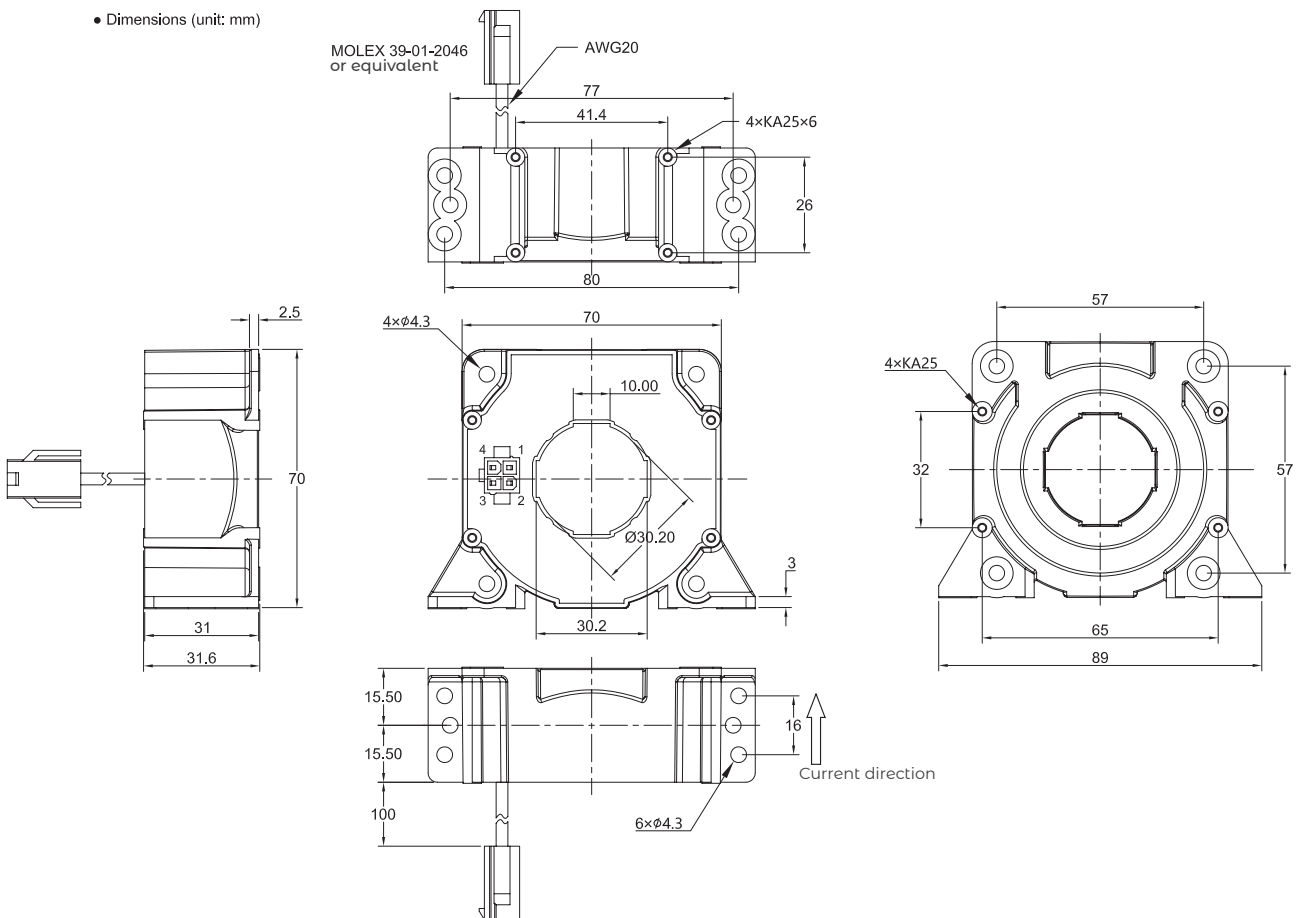
Mechanical characteristics

Symbol	Parameter	Comment
INS_{VERT}	Vertical position of installation	Standard-6 holes Ø 4.3 mm, 6 steel screws M4 Option-4 holes Ø 1.9 mm, 4 screws PTKA25, length: 6mm
INS_{HOR}	Horizon position of installation	Standard-4 holes Ø 1.9 mm Option-4 holes Ø 1.9 mm, 4 screws PTKA25, length: 10mm
H_{PRE}	Primary through-hole	Ø 30.2 mm Max.

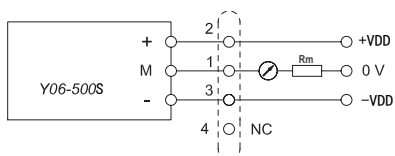
Dimension (mm)

Y06-500S

• Dimensions (unit: mm)

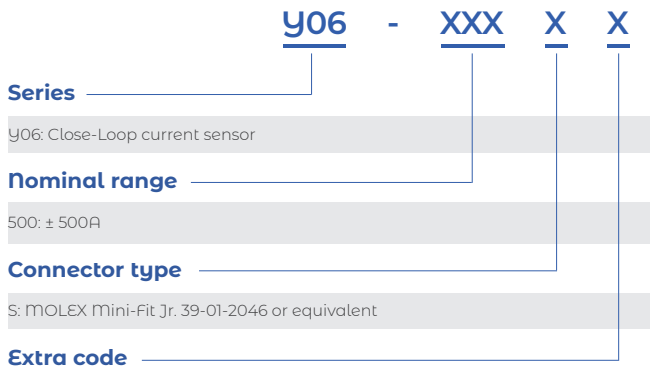


• Test Circuit



Pin	Symbol
1	V_{OUT}
2	$+V_{DD}$
3	$-V_{DD}$
4	nc

Name Guide Description



Notes

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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

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