

K-No.: 24373
5 ... 80 A Current-Sensor-Module

For the electronic measurement of currents:
DC, AC, pulsed, mixed ..., with a galvanic
Isolation between the primary circuit
(high power) and the secondary circuit

Date: 12.10.2006
Customer: Standard Type
Customers Part No.:
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Description

- Closed loop (compensation)
Current Sensor with magnetic
field probe
- Printed circuit board mounting
- Casing and materials UL-listed

Characteristics

- Excellent accuracy
- Very low offset current
- Very low temperature dependency and offset
current drift
- Very low hysteresis of offset current
- Short response time
- Wide frequency bandwidth
- Compact design

Applications

Mainly used for stationary operation in industrial
applications:

- AC variabel speed drives and servo motor
drives
- Static converters for DC motor drives
- Battery supplied applications
- Switched Mode Power Supplies (SMPS)
- Power Supplies for welding applications
- Uninterruptable Power Supplies (UPS)

Electrical Data - Ratings

I_{PN}	Primary rated current, r.m.s	100	A
R_M	Load resistance	0 ... 200	Ω
I_{SN}	Output rated current, r.m.s	100	mA
K_N	Turns ratio	4 : 1000	

Accuracy – Dynamic performance data

		min.	typ	max.	Unit
X^*	Measuring accuracy @ I_{PN} , $T_A=25^\circ\text{C}$ (Module)			0.5	%
ε_L	Linearity			0.2	%
I_{0H}	Hysteresis		0,03	0.1	mA
t_r	Response time			9	μs
$\Delta t(I_{p,max})$	Delay time at $di/dt = 100 \text{ A}/\mu\text{s}$			2.5	μs
f	Frequency range	DC...100			kHz

General Data

		min.	typ.	max.	Unit
T_A	Ambient temperature	-40		+85	$^\circ\text{C}$
T_S	Storage temperature	-40		+85	$^\circ\text{C}$
m	Mass		31		g
R_S	Secondary coil resistance @ $T_A=85^\circ\text{C}$			29.5	Ω
R_P	Primary coil resistance per turn @ $T_A=25^\circ\text{C}$		0,25		m Ω
C_k	Coupling capacity		10		pF
	Mechanical Stress according to M3209/3 Settings: 10 – 2000 Hz, 1 min/Decade, 2 hours			10g	
V_b	Rated insulation voltage, according to EN50178 reinforced insulation Insulation material group 1, Pollution degree 2 mains supply, rms			600	V
	non mains supply (peak od DC)			1100	V
S_{clear}	clearance (component without solder pad)			10	mm
S_{creep}	creepage (component without solder pad)			11	mm

Type Testing (Pin 1 - 4 to Pin 5 - 12)

Designed according standard EN 50178 with insulation material group 1

V_w	HV transient test according (to M3064) (1,2 μs / 50 μs -wave form)	8	kV
V_d	Testing voltage, 60s (to M3024)	3.5	kV
V_e	Partial discharge voltage acc.M3024 (RMS)	1240	V

All data marked with * is verified by final inspection, other values are type tested.

Datum	Name	Index	Änderung				
		81					
Hrsg.: KB-FB FT editor	Bearb: SA designer		KB-E: Len. check	KB-PM IA: KRe. check		freig.: SA released	

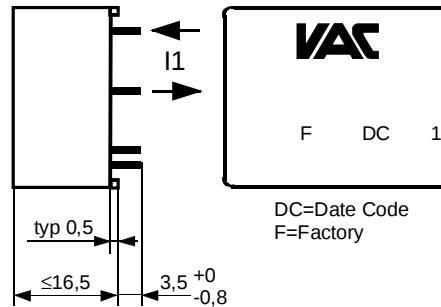
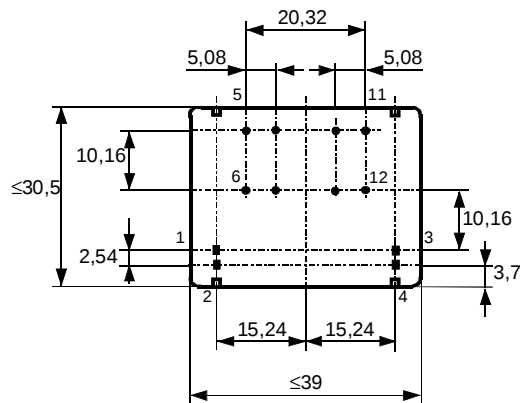
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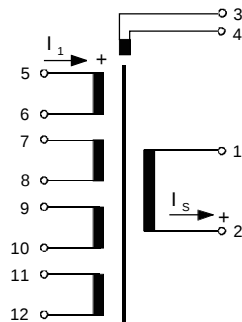
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Mechanical outline (mm):

General tolerances DIN ISO 2768-c

 Toleranz der Stiftabstände $\pm 0,25\text{mm}$
 Tolerances grid distance

 Ziffern 1 - 12 nicht aufgedruckt
 Numbers 1 - 12 not imprinted

Connections:

 Nr.: 1...4 = 0,88x0,6
 Nr.: 5...12 = $\varnothing 1,9$
Marking:
VAC
 4645X030
 F DC

Schematic diagram

 Pin 1 : K1 } Kompensationswicklung
 Pin 2 : K2 } (compensation winding)

 Pin 3 : S1 } Sensorwicklung
 Pin 4 : S2 } (sensor winding)

 Pin 5.....12 Primärstrom-Bügel
 (primary current turns)

Inspection (Measurements after temperature balance of the samples at room temperature.)

$K_N (N1/N2)^*$	(V)	M3011/6c:	Turns ratio ($I_1=40\text{A}$, 40...80 Hz)	4 : 1000 $\pm$ 0,5	%
I_0^*		M3226:	Offset current	< 0,1	mA
$\Delta\Phi (K1-K2)^*$	(V)	M3090:	Magnetic Flux compensation core	17...19,5	nVs
$\Delta\Phi (S1-S2)^*$	(V)	M3090:	Magnetic Flux sensor	20...35	nVs
$R_S (K1-K2)^*$	(V)	M3011/5:	Winding resistance compensation coil	20...35	Ω
$R (S1-S2)^*$	(V)	M3011/5:	Winding resistance magnetic probe coil	2,5...3,5	Ω
V_d^*	(V)	M3014:	Testing voltage, rms, 1s	3,5*	kV
V_e^*	(AQL1/S4)	M3024:	Partial discharge voltage	>1240*	V

Applicable documents

Classification of environmental conditions according to EN 60721 5K3

 Current direction: A positive output current appears at point I_s , by primary current in direction of the arrow.

Constructed, manufactured and tested in accordance with EN 50178 and agrees with the standards.

Housing and bobbin material: UL-listed. Flammability class UL 94V-0.

Enclosures according to IEC 60529: IP50.

Additional data available on request.

This specification is no declaration of warranty acc. BGB §443.

 Hrsg.: KB-FB FT
 editor

 Bearb: SA
 designer

 KB-E: Len.
 check

 KB-PM IA: KRe.
 check

 freig.: SA
 released

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