

K-No.: 25102	100 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 (electronic circuit)	Date: 14.11.2007
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Description <ul style="list-style-type: none"> • Closed loop (compensation) Current Sensor with magnetic field probe • Printed circuit board mounting • Casing and materials UL-listed 	Characteristics <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • AC variabel speed drives and servo motor drives • Static converters for for DC motor drives • Battery supplied applications • Switched Mode Power Supplies (SMPS) • Power Supplies for welding applications • Uninterruptable Power Supplies (UPS)
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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	1 : 1000	

Accuracy – Dynamic performance data (with DRV401 @ $V_C = 5V \pm 5\%$)		min.	typ.	max.	Unit
$I_{P,max}$	Max. measuring range @ $R_M = 12,5 \Omega$	± 230			A
$X(T)$	Measuring accuracy @ $I_{PN}, T_A = -40... +85^\circ C$			0.5	%
ϵ_L	Linearity			0.1	%
$I_o(T)$	Offset current @ $I_p=0, T_A = -40... +85^\circ C$		0.02	0.1	mA
I_{oH}	Hysteresis		0.06	0.1	mA
t_r	Response time		1		μs
$\Delta t(I_{p,max})$	Delay time at $di/dt = 100 A/\mu s$		1		μs
f	Frequency range	DC...100			kHz

General Data		min.	typ.	max.	Unit
T_A	Ambient temperature	-40		+85	$^\circ C$
T_S	Storage temperature	-40		+90	$^\circ C$
m	Mass		18		g
R_S	Secondary coil resistance @ $T_A=85^\circ C$			14	Ω
C_k	Coupling capacity		6		pF

Mechanical Stress according to M3209/3
 Settings: 10 – 2000 Hz, 1 min/Decade, 2 hours

Constructed and manufactured and tested in accordance with EN 61800-5-1 (primary to secondary)

Reinforced insulation, Insulation material group 1, Pollution degree 2

S_{clear}	clearance (component without solder pad)	12			mm
S_{creep}	creepage (component without solder pad)	12			mm
V_{sys}	System voltage overvoltage category 3	RMS		600	V
V_{work}	Working voltage (table 7 acc. to EN61800-5-1)	RMS		1000	V
U_{PD}	Rated discharge voltage	peak value		1225	V

Type Testing according EN 61800-5-1 (primary to secondary)

V_W	HV transient test according to M3064 (1,2 μs / 50 μs -wave form)			8	kV
V_d	Testing voltage to M3014		(5 s)	3.6	kV
V_e	Partial discharge voltage acc.M3024 (RMS)			1300	V
	with V_{vor} (RMS)			1625	V

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

K-No.: 25102

100 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
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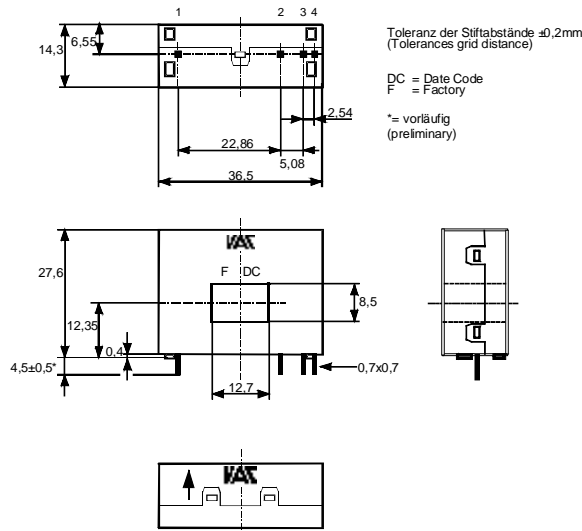
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Mechanical outline (mm):

General tolerances DIN ISO 2768-c

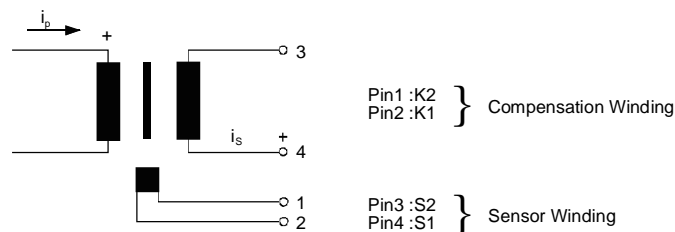

Connections:

 1...6: \varnothing 1 mm
 7..10: 0,46*0,46 mm

Marking:

 4645X100
 F DC

Schematic diagram



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

K_N (N1/N2)	(V)	M3011/6c:	Turns ratio ($I_p=100A$, 40...80 Hz)	1 : 1000 \pm 0,5	%
I_o		M3226:	Offset current	< 0.1	mA
$\Delta\Phi$ (K1-K2)	(V)	M3090:	Magnetic Flux compensation core	6...8	nVs
$\Delta\Phi$ (S1-S2)	(V)	M3090:	Magnetic Flux sensor	20...35	nVs
R_s (K1-K2)	(V)	M3011/5:	Winding resistance compensation coil	8.5...10,5	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 primary to secondary	1,8	kV
V_e	(AQL1/S4)	M3024:	Partial discharge voltage (RMS) with V_{vor} (RMS)	>1300 1625	V V

Applicable documents

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

Temperature of the primary conductor should not exceed 110°C

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.

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Explanation of several of the terms used in the tablets (in alphabetical order)

I_{0H} : Zero variation of I_o after overloading with a DC of tenfold the rated value ($R_M = R_{MN}$)

I_{0t} : Long term drift of I_o after 100 temperature cycles in the range -40 bis 85 °C.

t_r : Response time (describe the dynamic performance for the specified measurement range), measured as delay time at $I_P = 0,9 \cdot I_{Pmax}$ between a rectangular current and the output current.

$\Delta t (I_{Pmax})$: Delay time (describe the dynamic performance for the rapid current pulse rate e.g short circuit current) measured between I_{Pmax} and the output current i_a with a primary current rise of $di/dt = 100 A/\mu s$.

U_{PD} Rated discharge voltage (recurring peak voltage separated by the insulation) proved with a sinusoidal voltage V_e
 $U_{PD} = \sqrt{2} \cdot V_e / 1,5$

V_{vor} Defined voltage is the RMS value of a sinusoidal voltage with peak value of $1,875 \cdot U_{PD}$ required for partial discharge test in IEC 61800-5-1
 $V_{vor} = 1,875 \cdot U_{PD} / \sqrt{2}$

V_{sys} System voltage RMS value of rated voltage according to IEC 61800-5-1

V_{work} Working voltage voltage according to IEC 61800-5-1 which occurs by design in a circuit or across insulation

$X_{ges}(I_{PN})$: The sum of all possible errors over the temperature range by measuring a current I_{PN} :

$$X_{ges} = 100 \cdot \left| \frac{I_S(I_{PN})}{K_N \cdot I_{SN}} - 1 \right| \%$$

X : Permissible measurement error in the final inspection at RT, defined by

$$X = 100 \cdot \left| \frac{I_{SB}}{I_{SN}} - 1 \right| \%$$

where I_{SB} is the output DC value of an input DC current of the same magnitude as the (positive) rated current ($I_o = 0$)

X_{Ti} : Temperature drift of the rated value orientated output term. I_{SN} (cf. Notes on F_i) in a specified temperature range, obtained by:

$$X_{Ti} = 100 \cdot \left| \frac{I_{SB}(T_{A2}) - I_{SB}(T_{A1})}{I_{SN}} \right| \%$$

ϵ_L : Linearity fault defined by $e_L = 100 \cdot \left| \frac{I_P}{I_{PN}} - \frac{I_{Sx}}{I_{SN}} \right| \%$

Where I_P is any input DC and I_{Sx} the corresponding output term. I_{SN} : see notes of F_i ($I_o = 0$).

This "Additional information" is no declaration of warranty according BGB §443

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- Техническая поддержка проекта;
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Как с нами связаться

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