



# SPECIFICATION

Item-No.: **T60404-M4645-X030**

K-No.: 24373

**100A 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: 15.11.2019

Customer: Standard Type

Customers Part No.:

Page 1 of 2

**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 variable 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	$\Omega$
$I_{SN}$	Output rated current, r.m.s	100	mA
$K_N$	Turns ratio	1...4 : 1000	

**Accuracy – Dynamic performance data** (with DRV401 @  $V_C=5V \pm 5\%$ )

		min.	typ.	max.	Unit
$I_{P,max}$	max. measuring range (@ $R_M = 1\Omega$ )	$\pm 130$			A
X	Measuring accuracy @ $I_{PN}, T_A=25^\circ C$ (Module)			0.5	%
$\epsilon_L$	Linearity			0.2	%
$I_{OH}$	Hysteresis		0.03	0.1	mA
$t_r$	Response time			9	$\mu s$
$\Delta t(I_{P,max})$	Delay time at $di/dt = 100 A/\mu s$			2.5	$\mu s$
f	Frequency range	DC...100			kHz

**General Data**

		min.	typ.	max.	Unit
$T_A$	Ambient operation temperature	-40		+85	$^\circ C$
$T_S$	Ambient storage temperature	-40		+85	$^\circ C$
m	Mass		31		g
$R_S$	Secondary coil resistance @ $T_A=85^\circ C$			29.5	$\Omega$
$R_P$	Primary coil resistance per turn @ $T_A=25^\circ C$		0.25		m $\Omega$
$C_k$	Coupling capacity		10		pF
	Mechanical Stress according to M3209/3 Settings: 10 – 2000 Hz, 1 min/Octave, 2 hours			2	g
$V_b$	Rated insulation voltage, according to EN50178 reinforced insulation Insulation material group 1, Pollution degree 2 mains supply, rms non mains supply (peak od DC)			600 1100	V 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 acc. to M3064 (1,2 $\mu s$ / 50 $\mu s$ -wave form) 5 pulses -> pol. +, 5 pulses -> pol. -			8	kV
$V_d$	Testing voltage acc. to M3014, 60s			3.5	kV <sub>RMS</sub>
$V_e$	Partial discharge voltage acc. to M3024			1240	V <sub>RMS</sub>

Date	Name	Index	Change
15.11.19	NSch.	81	Data sheet reworked / updated (current status) and max. measuring range +/- 130 added. Minor change.

Hrsg.: R&D-PD NPI D editor	Bearb.: DJ designer	MC-PM: NSch. check	freig.: SB released
-------------------------------	------------------------	-----------------------	------------------------

Weitergabe sowie Vervielfältigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht ausdrücklich zugestanden. Zuwiderhandlungen verpflichten zu Schadenersatz. Alle Rechte für den Fall der Patenterteilung oder GM-Eintragung vorbehalten

**K-No.: 24373**
**100A 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: 15.11.2019**
**Customer: Standard Type**
**Customers Part No.:**
**Page 2 of 2**
**Mechanical outline (mm):**

General tolerances DIN ISO 2768-c

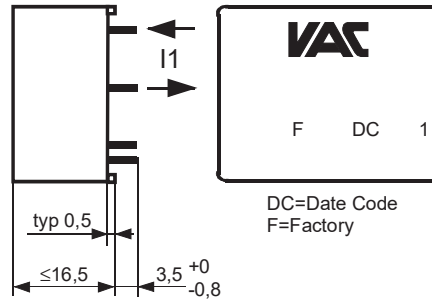
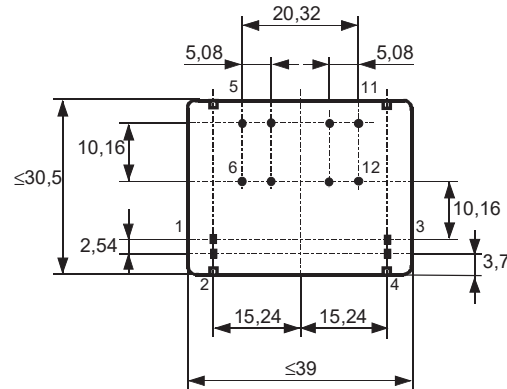
 Toleranz der Stiftabstände ±0,25mm  
 Tolerances grid distance

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

**Connections:**

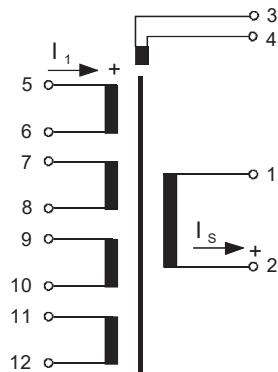
No.: 1...4 = 0.88x0.6

No.: 5...12 = Ø 1.9


**Marking:**

 4645-X030  
 F DC

 DC=Date Code  
 F=Factory

**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)

**Routine Tests:** (Measurements after temperature balance of the samples at room temperature, SC=significant characteristic)

$K_N$ (SC)	(V)	M3011/6c:	Turns ratio	4 : 1000 ± 0.5	%
$I_0$	(V)	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	$\Omega$
R (S1-S2)	(V)	M3011/5:	Winding resistance magnetic probe coil	2.5...3.5	$\Omega$
$V_d$	(V)	M3014:	Testing voltage, 1s Pin 1 - 4 to Pin 5 - 12	3.5	kV <sub>RMS</sub>
$V_e$	(AQL1/S4)	M3024:	Partial discharge voltage	>1240	V

**Other Information:**

- 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.

 Hrg.: R&D-PD NPI D  
 editor

 Bearb.: DJ  
 designer

 MC-PM: NSch.  
 check

 freig.: SB  
 released

Weitergabe sowie Vervielfältigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht ausdrücklich zugestanden. Zuwiderhandlungen verpflichten zu Schadenersatz. Alle Rechte für den Fall der Patenterteilung oder GM-Eintragung vorbehalten