

**NEW!**

# DIFFERENTIAL CURRENT SENSORS FOR HIGH POWER PV STRING INVERTERS

VACUUMSCHMELZE developed a completely new differential current sensor series to fulfill the requirements of the largest available photovoltaic string inverters on the market and even to fulfill the requirements of upcoming developments of high power inverters above 255 kW.

The trend in PV string inverters for large solar power plants is towards higher power classes. The currently largest inverters have an output of 255 kW and the trend in development points to a further increase of output. This requires current sensors with a higher current capability. The new VAC differential current sensor series T60404-N4647-P98x was specially developed to fulfill the requirements of string inverters from 80kW to 255kW and upcoming developments. The newest models of this sensor are designed for phase currents up to  $200A_{rms}$ . Designs are available with integrated primary conductors for PCB mounting or with pass-through opening. The large inner hole for primary conductors of 35 mm x 16.5 mm enables individual solutions for different customer requirements. For upcoming string inverter developments it will be possible to increase the current capability of this series to even higher phase currents than  $200 A_{rms}$ .

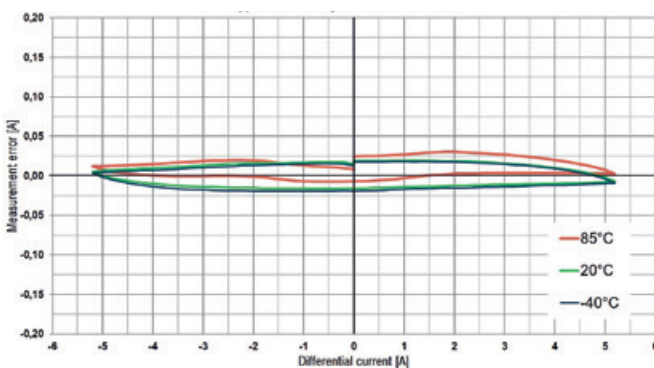
Differential current sensors are used in the RCMU (Residual Current Monitoring Unit) in PV inverters. Leakage currents represent safety risks and thus impact the whole system. When the leakage current exceeds the limit acc. to IEC 62109 the inverter should shut down and disconnect. Therefore, the current sensors need to detect very small leakage currents while very high phase currents must not affect them. Hence, VAC sensors have a metal screen against external fields and several self-optimizing functions. This allows to

measure the differential current with an excellent accuracy. The total measurement error is  $\leq 1.5\%$  (@  $I_{PN}$ ; 25 °C). The existing models measure a differential nominal current of  $I_{\Delta N} = 1 - 3 A_{rms}$  (tailored to IEC 62109) and have a measuring range of 1.7 - 5  $A_{PEAK}$ .

## TYPICAL PROPERTIES AND ADVANTAGES OF T60404-P4647-P98X SERIES

- For high power applications
- Sensitive DC/AC differential current detection ( $I_{\Delta N} = 1 - 3 A_{rms}$ ) with galvanic isolation
- Excellent accuracy – total measurement error  $\leq 1.5\%$  ( $I_{PN}$ ; 25 °C)
- Single +5 V supply voltage
- Wide frequency bandwidth DC to 10 kHz
- Operating temperature range: -40 to +85 °C
- Large inner hole 35 mm x 16.5 mm
- System Voltage up to 1,500V
- UL approval acc. to UL508
- Automatic demagnetization for offset reduction
- Self-monitoring and test functions
- Superior metal screen against external fields
- Very low offset current temperature dependency
- Short response time
- Red phosphorous free

## TYPICAL ACCURACY OF 4647-P982/P985 WITH ELIMINATED GAIN AND OFFSET CURRENT



ADVANCED MAGNETIC SOLUTIONS

**VAC**<sup>®</sup>  
VACUUMSCHMELZE

**VACUUMSCHMELZE GMBH & CO. KG**

Grüner Weg 37  
D 63450 Hanau / Germany  
Phone +49 6181 380  
Fax +49 6181 382645  
info@vacuumschmelze.com  
www.vacuumschmelze.com

**VACUUMSCHMELZE CHINA MAGNETICS**

Shanghai Sales Office  
Room 06, 19F  
Zhongrong Hengrui International Plaza  
620 Zhangyang Road, Pudong District  
Shanghai, PRC 200122  
Phone +86 21 58 31 98 37  
Fax +86 21 58 31 99 37  
vac\_china@vacuumschmelze.com

**VAC MAGNETICS LLC**

2935 Dolphin Drive  
Suite 103  
Elizabethtown, KY 42701  
Phone +1 270 769 1333  
Fax +1 270 769 3118  
info-usa@vacmagnetics.com

**OMG CHEMICALS & MAGNETICS PVT. LTD.****VACUUMSCHMELZE INDIA OFFICE**

A-101 & 102, Kailas Business Park  
Veer Savarkar Road  
Park Site  
Vikhroli West  
Mumbai-400079, Maharashtra  
Phone +91 22 2518 0017 / 0018  
vac\_india@vacuumschmelze.com

Published by VACUUMSCHMELZE GmbH & Co. KG, Hanau  
© VACUUMSCHMELZE GmbH & Co. KG 2020. All rights reserved.

® is a Registered Trademark of VACUUMSCHMELZE GmbH & Co. KG

**ADVANCED MAGNETIC SOLUTIONS**