

IVT 3 SERIES

Compact High Precision Current Measurement Device



Introduction

The IVT 3 Base is a compact high precision current measurement device, which is built on a platform concept where functional components can be added to adapt to many different use cases. The Pro version supports insulation resistance monitoring and 3 or 6 voltage measurement channels. The IVT 3 Base Series is developed according to ISO 26262:2018 (Road vehicles – Functional safety“).



Applications

The IVT 3 Base Series can be used for a wide range of DC applications, like:

- Hybrid and full electric vehicle drives
- Stationary energy storage systems
- Uninterruptable power supply (UPS) systems
- Battery and storage based applications
- Industrial Applications
- Fuel cells

Current/Voltage/Insulation Monitoring Sensor

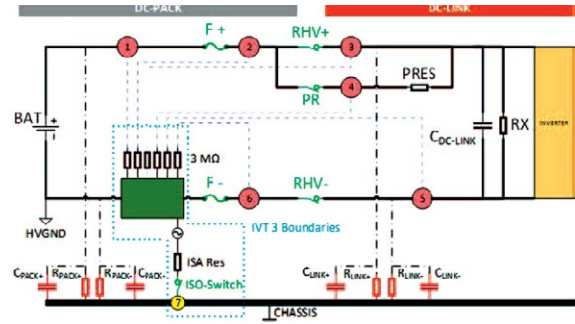
- Shunt based current measuring system
- 3 or 6 voltage measurement channels
- Active insulation monitoring (QM)
- ASIL C on current
- ASIL B on voltage
- ASIL B on insulation monitoring
- Nominal current measurement range = $\pm 1.000A$
- Extended Measurement range: $\pm 4000 A$
- Initial Accuracy = 0.1 % of rdg. +0.05A of range at room temperature
- Total accuracy $\pm (0.4 \% \text{ of rdg.} + 0.1 A)$
- Isolation according to ISO 60664 basic isolation
- CAN 2.0B
- Firmware update via OBD
- Temperature measurement
- Supply Voltage 12V-24V

	IVT 3 Base	IVT 3 Pro
Current Measurement (ASIL C)	✓	✓
Voltage Measurement 3 - 6 channels (ASIL B)	not available	✓
Insulation monitoring (QM)	not available	✓
Temp. Measurement	✓	✓
Firmware update via OBD	✓	✓
AUTOSAR 4.0.3	✓	✓
CAN 2.0 B	✓	✓
CAN Termination	optional	optional
Analog Output	optional	optional
Sleep mode	optional	optional
Supply Voltage 24 V	development	✓



Installation

The following graphic shows the connection scheme of the IVT 3 Pro. Positions **1,2,3,4,5,6** are fixed. Measurements **1,3,5** are at minimum necessary for the insulation monitoring (3 voltage channels). Other installation positions are possible on request. The IVT 3 Base can also be placed in the plus path of the battery. In this case, the rules for the voltage measurement points remain the same, however the position of the Sensor and **1** are inverted.



TECHNICAL DATA CURRENT

Description	Value			Unit
Measurement range	nominal: ±1,000	overcurrent: ±1,500	extended: ±4,000	A
Resolution	2			mA
Initial accuracy	± (0.1% of rdg.* + 0.05)			A
Total accuracy	± (0.4% of rdg.* + 0.1)	± (0.4% of rdg.* + 0.1)	± (1.0% of rdg.* + 0.1)	A
Linearity	±0.01			% of rng.**
Noise	≤70			mA (RMS)

TECHNICAL DATA VOLTAGE

Description	Value			Unit
Measurement range	nominal: ±1,000		extended: ±1,250	V
Resolution	<40			mV
Initial accuracy	± (0.1% of rdg.* + 0.1)			V
Total accuracy	± (0.4% of rdg.* + 0.1)	± (0.4% of rdg.* + 0.1)	± (5.0% of rdg.* + 0.1)	V
Linearity	±0.01			% of rng.**
Noise	≤60			mV (RMS)

Note: number of channels 3 or 6

TECHNICAL DATA OF THE ACTIVE INSULATION DETECTION

Parameter	Min.	Max	Unit
Nominal measurement range	0	50	MΩ
Total accuracy measurement, range 0 kΩ - 100 kΩ	-30	+0	kΩ
Total accuracy measurement, range 100 kΩ - 5 MΩ	-25	+0	%
Total accuracy measurement, range 5 MΩ - 50 MΩ	-30	+0	%

* rdg. = reading

** rng. = range

