



IVT 3.0 SERIES



INTRODUCTION

The IVT 3.0 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 channels voltage measurement. The IVT 3.0 Series is developed according to ISO 26262:2018 (Road vehicles – Functional safety”).

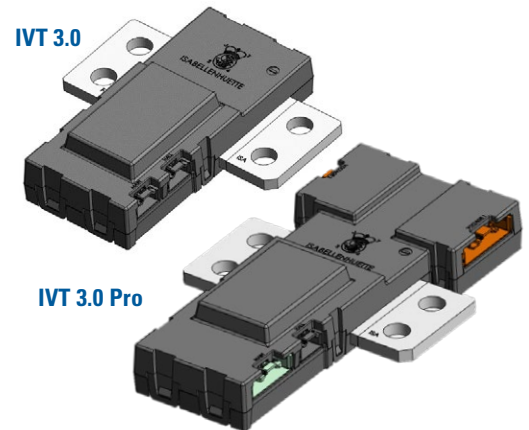
APPLICATIONS

The IVT 3.0 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

Current/Voltage/Insulation Monitoring Sensor

- Shunt based current measuring system
- 3 or 6 voltage measurement channels
- Active insulation monitoring
- ASIL C on current
- ASIL B on voltage
- ASIL B on insulation monitoring
- Nominal current measurement range = $\pm 1.000A$
- Extended Measurement range: 4000A
- Initial Accuracy = 0,1 % of rdg. + 0,005% of range at room temperature
- Total Accuracy = 0,4 % of rdg. + 0,005% of range (over whole temperature range -40°C up to 125°C)
- Galvanic insulation 1.000V
- CAN 2.0B
- Firmware update via OBD
- Temperature measurement
- Supply voltage 12V

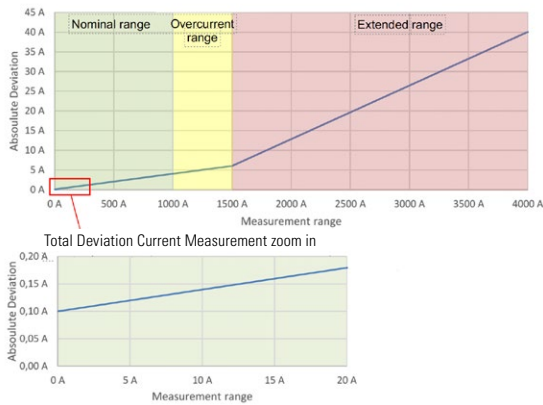


	IVT 3.0	IVT 3.0 Pro
Current Measurement (ASIL C)	✓	✓
Voltage Measurement 6 channels (ASIL B)	not available	✓
Insulation monitoring (ASIL B)	not available	✓
Temp. Measurement	✓	✓
Firmware update via OBD	✓	✓
AUTOSAR 3.0.4	✓	✓
CAN 2.0 B	✓	✓
CAN FD	optional	optional
CAN Termination	optional	optional
Analog Output	optional	optional
Sleep mode	optional	optional
SAE J 1939	optional	optional
CAN Open	development	development
Supply Voltage 24 V	development	development

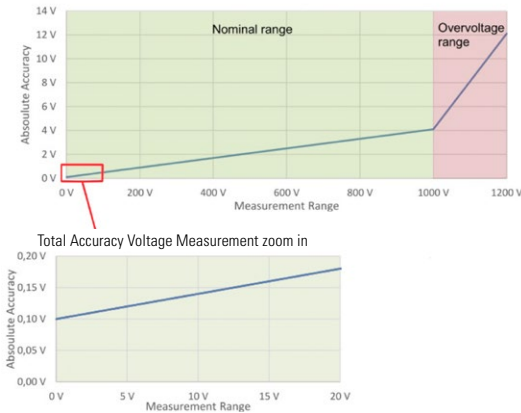
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This graphic shows the maximum deviation of the current measurement over the whole temperature range of -04...105°.

Total deviation current measurement

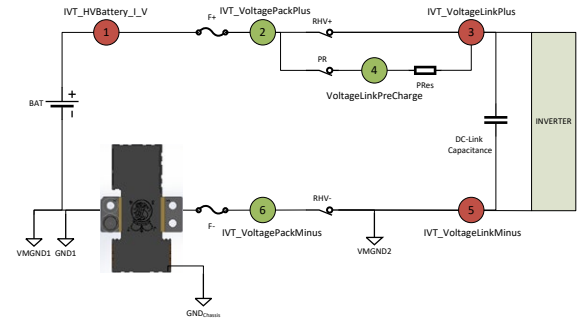


Absolute Accuracy Voltage Measurement



INSTALLATION

The following graphic shows the connection scheme of the IVT 3.0 Pro. For the voltage channels in IVT 3.0 Pro, the measurement points **1,3,5** must be connected as shown in the picture, to ensure that there is no disturbance of the insulation monitoring. **2,4,6** can be moved to other locations. Other installation positions on request. The IVT 3.0 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 of the active Insulation detection

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

Supplementary analog current measurement channel

The analog channel is implemented by a passive hall sensor that requires a stable 5V supply voltage, as the output voltage is ratiometrically dependent on the input voltage. This analog output is not necessary to reach any ASIL C classification.

Parameter	Min.	Typical	Max.	Unit
Nominal measurement range		±4000		A
Linearity		0.04		% (of 2.5V)
Sensitivity		~0.3		mV/A
Supply voltage	4.5	5	5.5	V (DC)
Analog temperature measurement range	-40		150	°C

