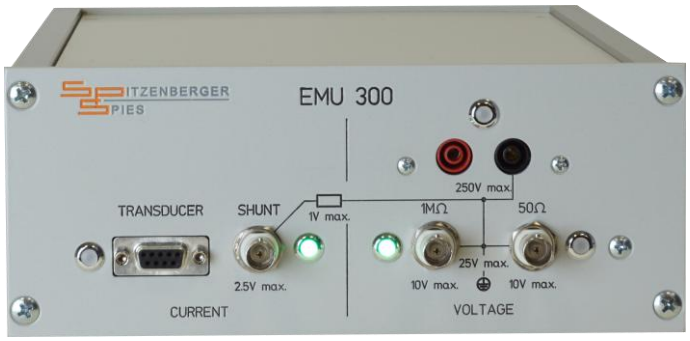
EMU 300

EXTERNAL MEASUREMENT UNIT

The relating applications:

Precise current and voltage measurements

Magnetic field tests:
ISO 11452-8
Automotive tests:
ISO 16750-2
ISO 21780
and many other standards



External Measurement Unit EMU 300

- ✓ Measurement bandwidth DC … 300 kHz
- ✓ High precision synchronised voltage and current measurement
- ✓ Single frequency measurement available for noise suppression
- ✓ 50 Ω input available for e.g. magnetic field sensors
- ✓ Built-in power supply for transducer
- ✓ Synchronisation with amplifier's signal generation (LVA/APS)
- ✓ Control via amplifier (LVA/APS), interface commands available
- ✓ Supported by SPS TestManager and SPS SystemControl

PRECISE HIGH BANDWIDTH MEASUREMENT

Voltage ripple test using the EMU

The standards ISO 16750-2 (2023), ISO 21780 and various other manufacturer standards define tests with superimposed alternating voltage. A frequency sweep of this alternating voltage is performed during the test. Certain standards require that voltage and current have to be measured physically close to the input terminals of the DUT.
These current and voltage values can be measured simultaneously using the two channels of the EMU. The EMU`s capability to evaluate measured signals at a single frequency is often advantageous. Especially evaluating at the currently generated frequency can help with noise suppression, among other things.
The software uses these measurements to precisely control the voltage at the DUT and can limit the current through the DUT if necessary.

The SPS TestManager supports an automated test run for several voltage ripple tests (see fig. 1).

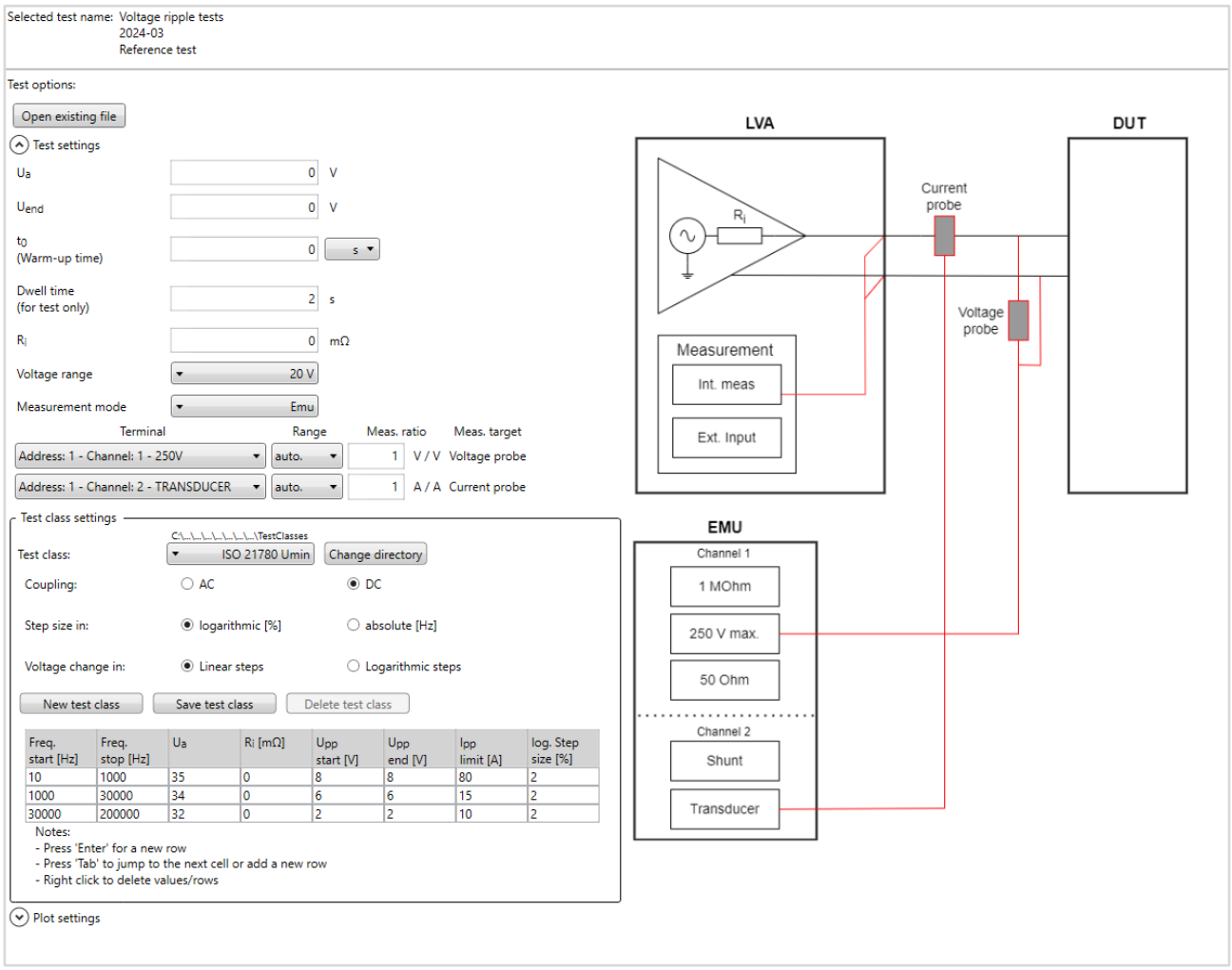


Fig. 1: Voltage ripple test with the SPS TestManager

Magnetic field test using the EMU

The EMU can be used for magnetic field tests in accordance with ISO 11452-8 and various manufacturer standards. The DUT is exposed to a defined magnetic field, generated by a coil. The resulting magnetic field strength is measured by a sensor coil, whose output voltage is measured by one channel of the EMU. With the second channel of the EMU the current (proportional to magnetic field strength) through the generating coil is measured.

The SPS TestManager supports an automated test run for magnetic field tests (see fig. 2).

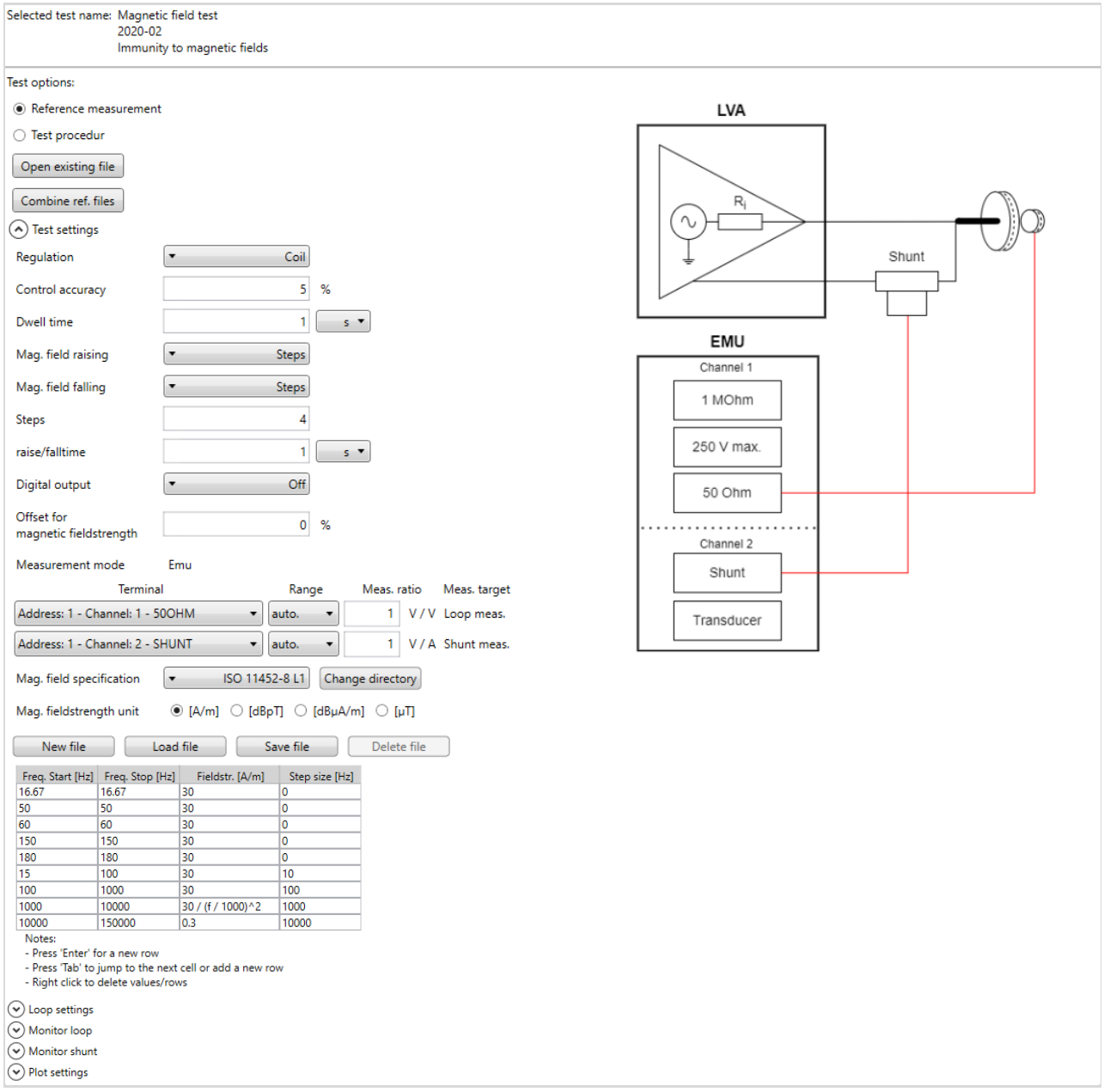


Fig. 2: Magnetic field test with the SPS TestManager

SOFTWARE CONTROL

SPS TestManager

- ✓ Test and evaluation software for fully compliant emission and immunity tests
- ✓ Automated test run of various IEC and automotive standards

SPS SystemControl

- ✓ Simultaneous two channel measurement for voltage and current

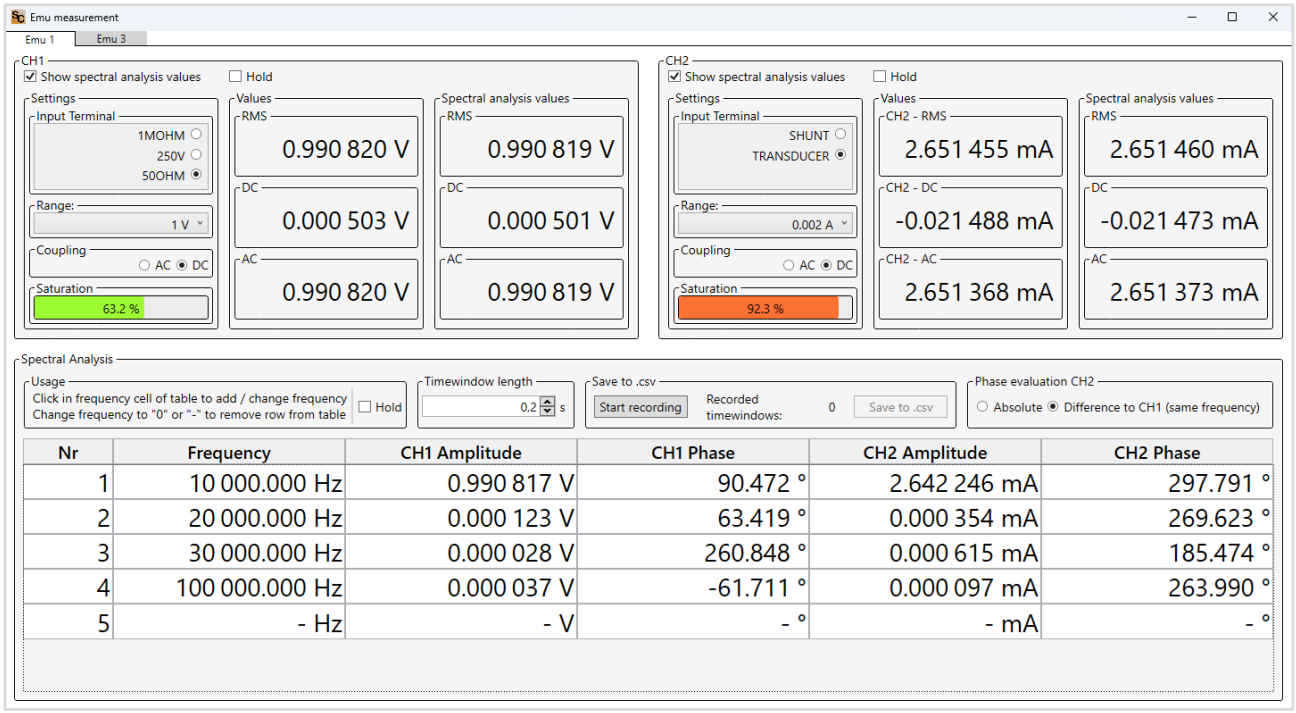


Fig. 3: EMU measurement within the SPS SystemControl

Command interface

- ✓ Easily integrate the device into your own software applications
- ✓ Remote control commands are based on the SCPI standard

TECHNICAL DATA – EMU 300

		EMU		
Voltage measurement				
	Input terminal	250 V laboratory sockets	1 MΩ BNC	50 Ω BNC
	Max. input (RMS)	250 V	10 V	10 V
	Measurement ranges (RMS)	0.25 V / 2.5 / 25 V / 250 V	10 mV / 0.1 V / 1.0 V / 10 V	
	Measurement ranges (peak)	±0.36 V / ±3.6 V / ±36 V / ±360 V	±18 mV / ±0.18 V / ±1.8 V / ±18 V	
	Measurement accuracy	± (% of measured value + % of measurement range value)		
	Frequency	DC … 10 kHz	10 kHz … 100 kHz	100 kHz … 300 kHz
	Accuracy	0.5 + 0.05	1.0 + 0.1	3.0 + 0.3
Current measurement				
	Input terminal	transducer (9-pol Sub-D)	shunt (BNC)	
	Max. input (RMS)	2 A	2 V	
	Measurement ranges (RMS)	2 mA / 20 mA / 0.2 A / 2 A	2 mV / 20 mV / 0.2 V / 2 V	
	Measurement ranges (peak)	± 3.5 mA / ± 35 mA / ± 0.35 A / ± 3.5 A	± 3.5 mV / ± 35 mV / ± 0.35 V / ± 3.5 V	
	Measurement accuracy	± (% of measured value + % of measurement range value)		
	Frequency	DC … 10 kHz	10 kHz … 100 kHz	100 kHz … 300 kHz
	Accuracy	0.5 + 0.05	1.0 + 0.1	3.0 + 0.3
Synchronisation bus		device synchronisation and internal communication optical fibre, LC duplex		
Ambient temperature		+10 °C up to +40 °C		
Storage temperature		-25 °C up to +60 °C		
Relative humidity		non condensing, max. 80 % for temperature < 31 °C, decreasing linearly to 50 % at 40 °C		
Ingress protection		IP20		
Power supply *(±10 %, 50/60 Hz)*		230 V		
Line protection, connection		2 A, Schuko		
Housing		desktop unit or plug-in, colour light grey (RAL 7035)		
		1/2 19", 2 U		
	approx. dimension (H x W x D)	89 x 222 x 450 mm		
Weight *(approx.)*		3.7 kg		

OPTIONS AND ACCESSORIES

Options	
FG.CT.100	Current transducer 100 A (SIGNALTEC CT 100)
FG.CT.200	Current transducer 200 A (SIGNALTEC CT 200)
FG.CT.400	Current transducer 400 A (SIGNALTEC CT 400)