Basic EMC System 2.0

for measurements according to the basic standards of the EMC directive

Three phase version type EMV D 22500/APS:

The relating standards:

emission:
IEC/EN 61000-3-2
IEC/EN 61000-3-3
IEC/EN 61000-3-11
IEC/EN 61000-3-12

immunity:
IEC/EN 61000-4-4
IEC/EN 61000-4-5
IEC/EN 61000-4-7
IEC/EN 61000-4-8
IEC/EN 61000-4-11
IEC/EN 61000-4-13
IEC/EN 61000-4-14
IEC/EN 61000-4-17
IEC/EN 61000-4-27
IEC/EN 61000-4-28
IEC/EN 61000-4-29
IEC/EN 61000-4-34

IEC/EN 60146-1-1
IEC/EN 61000-2-2
IEC/EN 61131-2
IEC/EN 61496-1
IEC/EN 61800-3
IEC/EN 62040-2

SEMI F47-0706

The “Basic EMC System 2.0” is the fully compliant turnkey system for all line conducted Emission and Immunity tests according to the EMC directive.

It is available as a single phase and as a three-phase version.

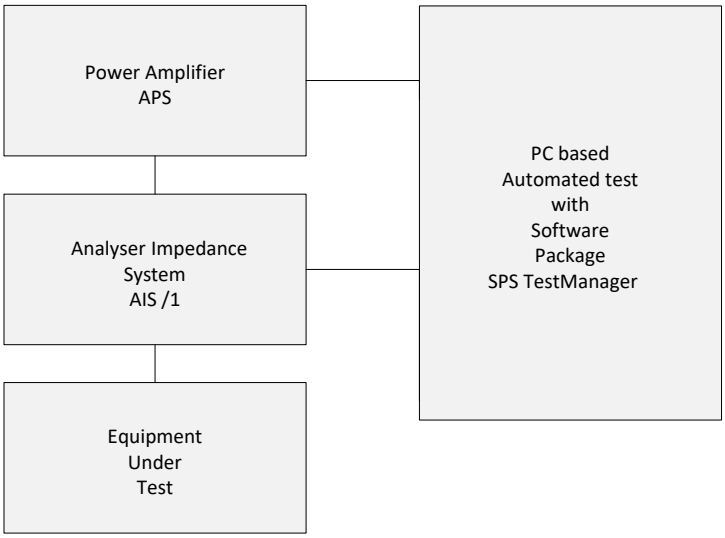
The version number 2.0 relates to the original “Basic EMC system” released more than 25 years ago and since that time very successful in the market.

Above and beyond the standards the “Basic EMC System 2.0” is a universal grid simulation and measurement system for voltage, frequency and phase symmetry simulation.

On the other hand, the sources of the “Basic EMC System 2.0”, the APS amplifiers are the new reference sources for many applications. Their improved technical performance and advantages (compared to the PAS sources) like low THD, very fast rise and fall time, stability and power capability are unique on the market.

THE PRINCIPLE DIAGRAM:

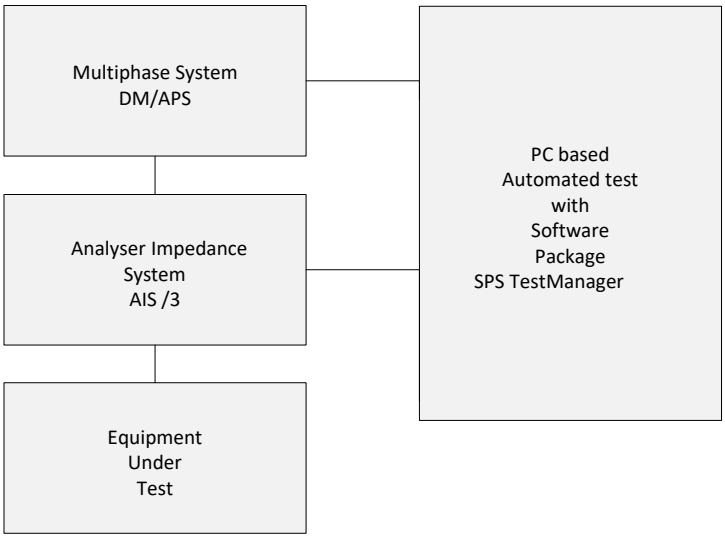
Single phase version:



The main components of the single-phase version of the "Basic EMC System 2.0":

- ***APS** power amplifier with power supply NT*
  www.spitzenberger.de/weblink/1107
- *analyser reference system* ***AIS***
  including
  reference impedance
  harmonic analyser
  flickermeter
  http://www.spitzenberger.de/weblink/1303
- *Software platform*
  SPS TestManager

Three phase version:



The main components of the three-phase version of the "Basic EMC System 2.0":

- ***3x APS** power amplifier with common power supply NT/D*
  http://www.spitzenberger.de/weblink/1107
- *analyser reference system* ***AIS/3***
  including
  reference impedance
  harmonic analyser
  flickermeter
  http://www.spitzenberger.de/weblink/1303
- *Software platform*
  SPS TestManager

Single phase version type EMV E 5000/APS:

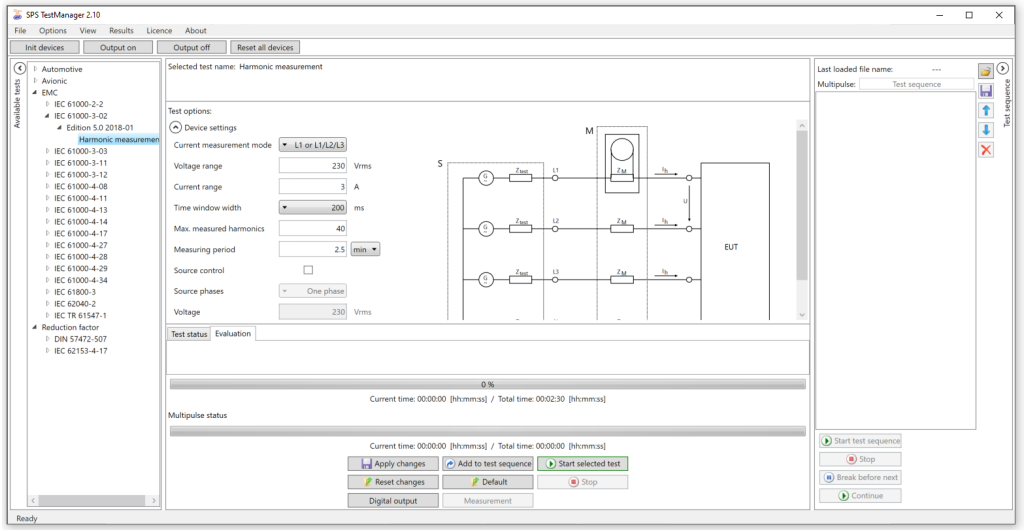
“Basic EMC System 2.0”
Single phase types:

- *EMV E 1000/APS*
- *EMV E 2500/APS*
- *EMV E 5000/APS*
- *EMV E 7500/APS*
- *EMV E 10000/APS*
- *EMV E 15000/APS*
- *EMV E 20000/APS*
- *EMV E 25000/APS*
- *EMV E 30000/APS*
- *EMV E 40000/APS*
- *EMV E 50000/APS*

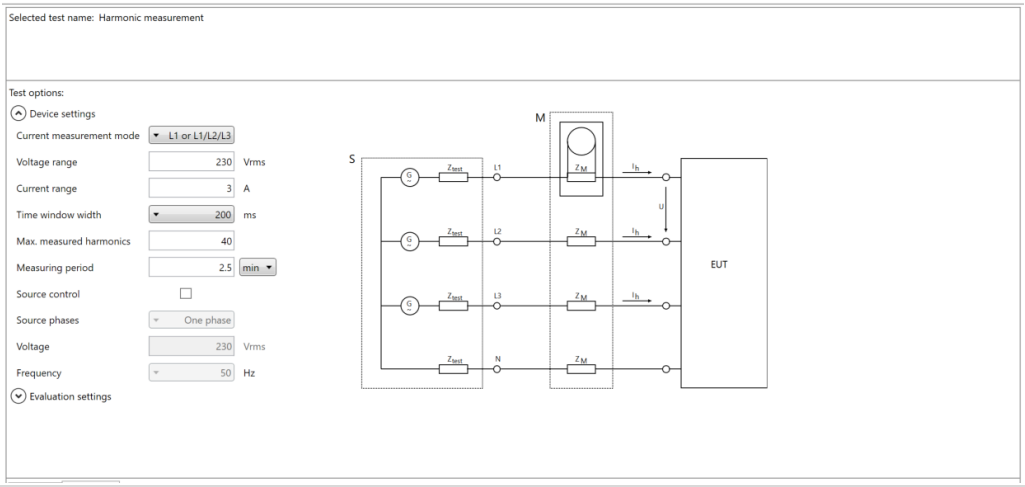
“Basic EMC System 2.0”
Three phase types:

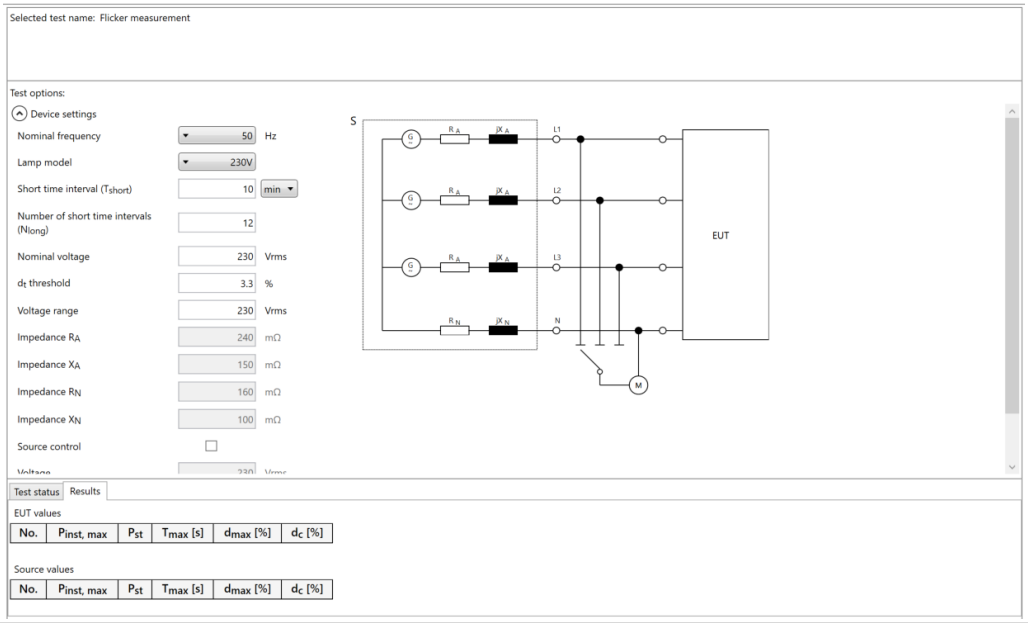
- *EMV D 3000/APS*
- *EMV D 7500/APS*
- *EMV D 15000/APS*
- *EMV D 22500/APS*
- *EMV D 30000/APS*
- *EMV D 45000/APS*
- *EMV D 60000/APS*
- *EMV D 75000/APS*
- *EMV D 90000/APS*
- *EMV D 120000/APS*
- *EMV D 150000/APS*

Basic software unit SPS TESTMANAGER EMC - Framework for Basic EMC System software application



Software module IEC 61000-3-2/-3/-11/-12 - Automatic testing and measuring of harmonic emissions and flicker





3-phase power supply DM 60000/APS

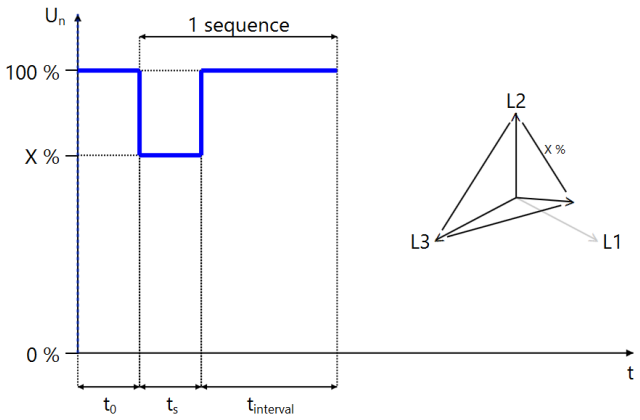
Software module IEC 61000-4-11

Voltage dips, short interruptions and voltage variations immunity tests

Selected test name: Voltage dips
Without neutral - Method A

Test options:

Parameter	Value	Unit
Phase system	Three phase	
Class	1	
Test case	Case-by-case	
Use EMC nominal AC voltage from the global parameters	☑	
U_n	230	Vrms
Test level	40	%
U_{L1-N}	121.7	Vrms
U_{L1-L2}	92	Vrms
U_{L3-L1}	200.51	Vrms
U_{end}	230	Vrms
Disturbed phases	L1-L2	
Use EMC nominal AC frequency from the global parameters	☑	
f_n	50	Hz
Phase angle of voltage dip	0	deg
Do a multiple phase angle test	☐	
Increment for multi phase angle test	45	deg
t_0 (one-time)	1	s
Cycles for t_s	1	
t_s	0.02	s



Software module IEC 61000-4-13 Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests
Software module IEC 61000-4-14 Voltage fluctuation immunity test for equipment with input current not exceeding 16 A per phase
Software module IEC 61000-4-17 Ripple on d.c. input power port immunity test
Software module IEC 61000-4-27 Unbalance, immunity test for equipment with input current not exceeding 16 A per phase
Software module IEC 61000-4-28 Variation of power frequency, immunity test for equipment with input current not exceeding 16 A per phase
Software module IEC 61000-4-29 Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests
Software module IEC 61000-4-34 Voltage dips, short interruptions and voltage variations immunity tests for equipment with mains current more than 16 A per phase
Software module IEC 61000-4-4 Electrical fast transient/burst immunity test
Software module IEC 61000-4-5 Surge immunity test
Software module IEC 60146-1-1 Simulation of commutation notches
Software module IEC 61000-2-2 Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems
Software module IEC 61131-2 Programmable controllers - Part 2: Equipment requirements and tests
Software module IEC 61496-1 Safety of machinery – voltage variation, frequency variation, harmonics, voltage interruptions
Software module IEC 61800-3 Adjustable speed electrical power drive systems
Software module IEC 62040-2 UPS immunity against harmonics, interharmonics, unbalance
Software module IEC TR 61547-1 Simulation of voltage fluctuations
Software module DNVGL-CG-0339 - Germanischer Lloyd a.c. interference on d.c. mains and simulation of harmonics on a.c. mains
Software module SEMI F47-0706 Specification for semiconductor processing equipment voltage sag immunity

OPTIONS AND ADD-ONS FOR ALL SYSTEM VERSIONS:

- Pulse generator CE-tester for testing burst and surge pulses according to IEC/EN 61000-4-4 and IEC/EN 61000-4-5
- Inrush current option for IEC/EN 61000-4-11 to upgrade APS amplifiers < 30000VA to IEC required inrush current capability
- Magnetic field test option for IEC/EN 61000-4-8 magnetic field tests including various coil types for magnetic field generation
- Reference load for harmonics and flicker for testing and calibration
- Additional transformer units for higher rms voltages
- Programmable internal impedance of the APS amplifiers
- Additional operation mode ‘Constant current’ for APS amplifiers

OPTIONS AND ADD-ONS FOR THREE PHASE SYSTEM VERSIONS:

- Common output for parallel operation
  Automated switching of single output terminals to common output terminals in parallel operation