

SMT – Product Family

Softing Measurement Technology – the Universal Measurement and Automation System for Mobile and Stationary Applications

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SMT combines sophisticated measurement technology with signal generation, communication, computing power and memory depth. The module family provides a whole range of physical I/Os and communication interfaces in one modular system.



System Design

The unique module concept enables optimal adaptation to each individual application. Channels can be scaled to virtually any degree – from just a few IOs to several hundred. Not even decentral systems or large spatial distances pose a problem thanks to intelligent networking possibilities.

The modularity of SMT is in no way limited to measurement and communication channels. Fundamental system characteristics such as energy supply, cooling and computing power can be adapted to suit the individual case of application. At the same time, the Softing Measurement Technology is geared to the best possible integration. Due to the sophisticated housing mechanism, the systems only ever grow to the minimum size required for a particular function scope.

Areas of Application

As SMT systems are rugged, they are perfect for harsh, mobile use in test vehicles. However, they are also often used in stationary applications such as test benches and in manufacturing. SMT tasks are in no way limited to simply acquiring measured values. As a combined measurement, test and automation system, Softing Measurement Technology is responsible for relevant functions in the areas control and regulation, process monitoring and automation, real-time simulation and data logging.

Areas of Application

- Mobile measurement technology for road tests
- Measurement data acquisition in test bench applications
- Process monitoring
- Application of control and regulation systems
- Automation of component test benches
- Test system for manufacturing tests

Advantages

- High degree of coverage of different applications
- Compact, rugged and 100 % suitable for use in vehicles
- Flexible adjustment to the particular application
- Uniform measurement technology and peripherals in mobile and stationary use
- Future-proof thanks to open and generic interfaces
- Support of standalone use
- Comprehensive fail-safe and onboard diagnostic functions
- System assembly possible at the flick of a wrist and without tools
- Simple parameterization using transducer memory
- All ports accessible from the front
- Optical display of channel and module state



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Scalability

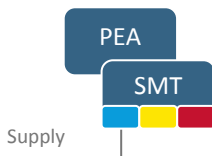
An SMT base system consists of two fans, a supply module suitable for the relevant application and a data processing module. The degree to which the system is extended depends entirely on the needs of the relevant application and can be varied to virtually any degree. A whole range of communication modules as well as acquisition and output components for physical variables are available. These are plugged according to the number of channels required in each case.



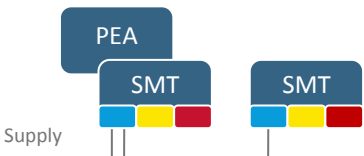
Link Variants

SMT is not limited to monolithic system setups. If required, the components can also be arranged decentrally and intelligently connected to one another. Both SMT modules and the models of the μ Series can be combined diversely in order to accommodate individual requirements, for example in terms of space, environmental conditions, energy supply and handling.

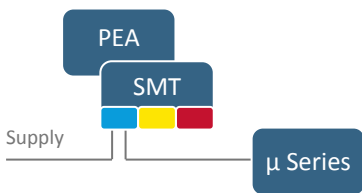
Central SMT system incl. PEA measuring software



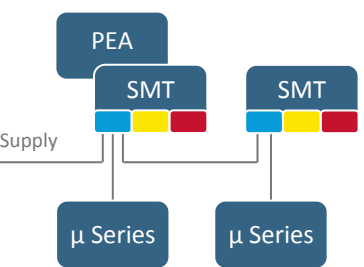
Central SMT system incl. PEA measuring software + separate SMT slave system



Central SMT system incl. PEA measuring software + field bus measurement technology (μ Series)



Central SMT system incl. PEA measuring software + separate SMT slave system + field bus measurement technology (μ Series)



System Modules

The system modules cover the areas energy supply, cooling and networking as well as data processing.

Energy Supply	Supply Module for Operation with an On-Board Electrical System or Battery Supply	
	12 V input voltage / 120 W power output 12 V input voltage / 240 W power output	V12-120.4 V12-240.1
	Supply Module for Mains Operation in Stationary Applications	
	Mains operation / 240 W power output / integrated system cooling	VAC-240.1
	Buffer Module for Bridging Voltage Interruption	
	Intrinsic charging / fast-charging / 33 Wh total capacity	B12-033.1
Cooling	Fan Modules for Appropriate Cooling of All Components	
	Left-hand side of system / incl. handle Right-hand side of system / incl. handle	XLL.2 XLR.2
Networking	Link Module for Connecting Decentral Components	
	Link between system bus and energy supply when SMT systems are cascaded	LBITSTER.3
	Interface Module for Integrating Fieldbus Measurement Components	
	Link to Softing μ Series / one CAN node / 15 W power output / 160 measuring signals	ICANSYS.3
	Interface Module for Linking Components to Workstations via Ethernet	
	System supply and Ethernet interface for using SMT in the lab	RGC-ETH.1
	Interface Module for Linking Components to Automation Systems via EtherCAT	
	System supply and EtherCAT interface for using SMT on an EtherCAT master	RGC-RTE.1
Data Processing	Controller Module for Data Acquisition and Processing with the Measuring Software PEA	
	PC with Intel® Core™ i7 / data storage on SSD / removable memory via USB and SD card	RGC-PC.2

Communication Modules

A whole range of interface components is available for communication purposes.

CAN	Communication Module for Integrating Signal-Based CAN Networks (2 Nodes)	
	Use for data acquisition and residual bus simulation / 250 measuring and output signals	ICAN.2
FlexRay	Communication Module for Linking to FlexRay Clusters (2 Nodes)	
	Signal acquisition / cold-start-capable and sync-capable / 250 measuring and output signals	IFLEXRAY.1
GPS	Communication Module for Acquiring GPS Signals in Mobile Applications	
	Integrated GPS receiver / external GPS antenna can be connected	IGPS.1
LIN	Communication Module for Integrating Signal-Based LIN Networks (4 Nodes)	
	Can be configured as master, slave or bus monitor / 160 measuring and output signals	ILIN.1

Physical IOs

The modules are used to acquire and stimulate physical variables and support a large number of common transducers.

Electrical Inputs and Outputs	Measurement Amplifier for Acquiring Voltages, Currents and IEPE-Sensors (8 Channels)	
	Acquisition of analog signal outputs (ECUs, transducers) / cell monitoring / IEPE sensors	MS08.2
	Output Module for Generating Analog Voltage Signals (8 Channels)	
	Stimulation of analog signal inputs / sensor simulation / output of measured values	AS08.1
	Input and Output Module for Acquiring and Generating Digital Signals (32 Channels)	
	Status and alarm outputs / actuator drive / ECU signals / switch monitoring	MD32.1
Acquisition of Transducers	Measurement Amplifier for Acquiring Voltages, Currents, IEPE Sensors and Voltage-Fed Transducers (8 Channels)	
	Acquisition of analog signal outputs (ECUs, transducers) incl. supply for active measurement transducers / cell monitoring / IEPE sensors	MA08.2
	Measurement Amplifier for Supplying and Acquiring Ratiometric Transducers (8 Channels)	
	DC interpretation of ohmic and piezoresistive half and full bridges	MB08.1
	Measurement Amplifier for Temporal Interpretation of Pulse-Shaped Signals (4 Channels)	
	Incremental encoders / counter applications / acquisition of frequency and PWM	MD04.1
	Measurement Amplifiers for Measuring Temperatures with Thermocouples (20 Channels)	
	Galvanic isolation of individual channels / measuring point assignment via thermocouple identification	MT20.2

Technical Data

General System Data	
Online data rate	50 kSPS
Max. no. of SMT modules per system	99
Internal clock	1 MHz
System bus bandwidth	1.25 GBit/s
Mechanical Data	
Module height	140 mm
Module depth	187 mm
System width	Depends on state of system expansion, cf. technical data of the individual modules
Environmental Conditions	
Storage	-30 °C ... +85 °C, 10 % ... 90 % rel. humidity, non-condensing
Operation	-30 °C ... +70 °C, 10 % ... 90 % rel. humidity, non-condensing