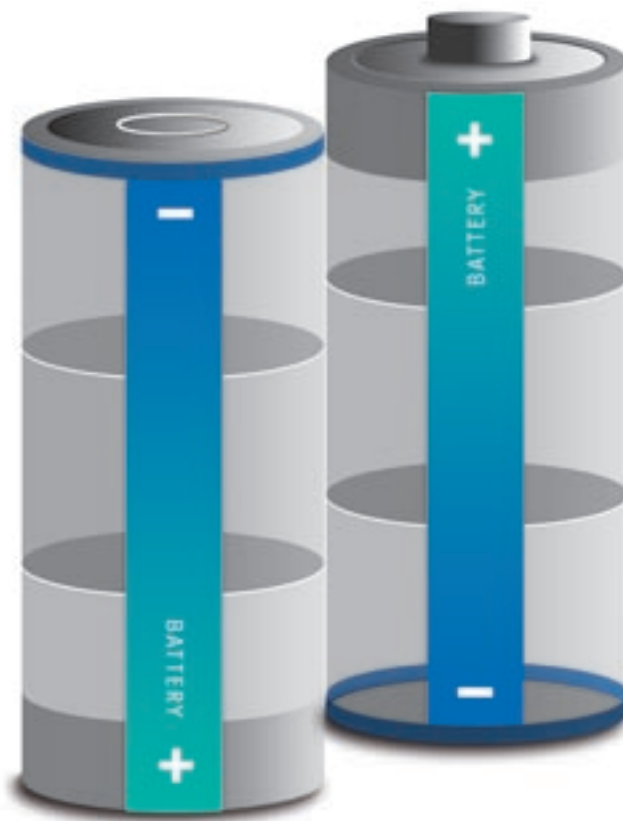




## » MARS «



Modular  
Building Blocks

Layout  
Schematics

Development  
Kit

### Smart ready-to-use power solution

- » Mobile Application platform for Rechargeable Systems
- » Minimize efforts, save time and money
- » Use ready-made building blocks and proven layout & schematics

# » Ready, Steady, MARS «

## Time-to-market vs. development effort MARS Development Kit

MARS is a universal development platform for all Kontron modules based on the ETX® or COM Express™ standards. It allows you to save a great deal of time and effort when developing Smart Battery concepts. Simply adapt the modular building blocks you need and utilize the proven layout and schematics instead of having to develop the complete unit yourself. Draw on all of the resources that MARS offers and you'll gain the development time that you need to get your target application faster to market.

### Mobility is increasing

More and more manufacturers are depending on intelligent battery management solutions. Typical applications include mobile medical patient monitoring, mobile measurement devices, rugged computer units for outdoor use, surveying equipment and vehicle diagnosis.

Develop your own mobile power supply solution and evaluate the best functionality for your application with the reference platform. It includes an ATX power cable, an SM-Bus connecting cable and a Y-power cable, so your test setup is ready to run in just a few minutes.

### Proven layout & schematics

Speed up your design-in with complete modular building blocks including layout and schematics, without losing time!

### Support for two smart batteries

The input voltage range can be flexibly scaled from 5 V to 28 V. MARS supports a wide variety of differing battery types even if these form part of a single application. You can use MARS as an intelligent battery system and run two rechargeable batteries simultaneously. In addition, these act as backup for an uninterruptible power supply, thus guaranteeing system security.

## MARS REFERENCE APPLICATIONS



**Application:**  
Intensive monitoring system  
**Vertical market:**  
Medical  
**COM:** ETX®

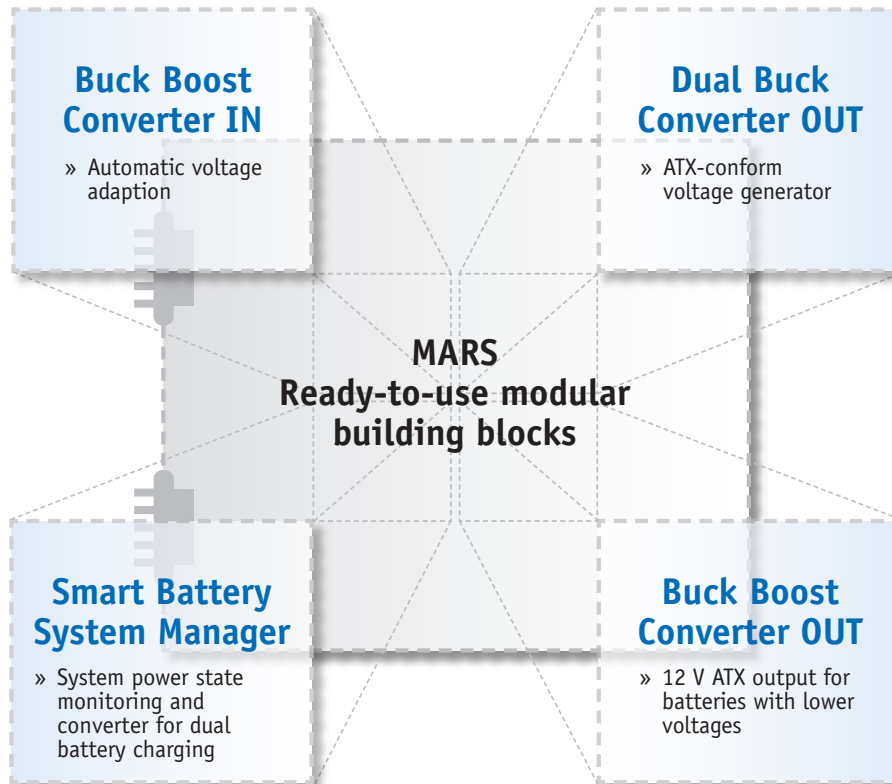


**Application:**  
Mobile test system for control unit diagnosis  
**Vertical market:**  
Test & Measurement  
**COM:** ETX®



**Application:**  
Mobile terminal for flow heater diagnostics  
**Vertical market:**  
Industrial automation  
**COM:** COM Express™

# » Configuration for any application «



## Outsource your carrier board development

Gain more capacity for your core business by using Kontron Certified Design Partner resources. Profit from extensive COM design know-how, and remain permanently up-to-date through close cooperation with the Kontron Embedded Modules "Boards & More" custom design & manufacturing division.

## MARS APPLICATIONS ON CERTIFIED DESIGN PARTNER BASEBOARDS



### COM Express™ rBaseETXe

- » Programmable battery voltage and charge current via SM-Bus interface
- » 3-Cell and 4-Cell Li-Ion voltage regulation 9 V, 12 V–14.4 V, 16 V–19.2 V
- » Charger and adapter overcurrent protection



### ETX® Gold Cap USV

- » Zero-maintenance, zero-wear uninterruptible power supply
- » 5 sec. buffer for entire system on power loss
- » System shuts down in controlled form into a defined operating state



### ETX® Mini backup rechargeable battery

- » Uninterruptible power supply by means of Li-Ion rechargeable battery
- » 10 min. buffer if power source changed
- » System battery can be charged from external battery if connected

# » Flexible power concept «

## Comparison of battery types

### Nickel-Metal hydride (NiMH):

- » Greater energy density than NiCd
- » Shorter life expectancy: 300-500 charge cycles
- » Contains no poisonous metallic substances
- » For mobile telephones, laptop computers

### Nickel-Cadmium (NiCd):

- » Moderate energy density
- » Longer life expectancy: 1500 charge cycles
- » Suitable for large temperature ranges
- » For radio and medical equipment and tools

### Lithium-Ion (Li-Ion):

- » Offers high energy density at low weight
- » Shorter life expectancy: 300-500 charge cycles
- » Needs no maintenance
- » For mobile telephones and notebook computers

### Lithium-Polymer (LiPo):

- » Increased safety: More resistant to overcharging
- » Shorter life expectancy: 300-500 charge cycles
- » Needs no maintenance
- » For mobile telephones

## Energy-saving modes (ACPI standard)

**S0 – System fully functional:** All systems up and running.

**S1 – Basic sleep mode:** A few functions are deactivated, the CPU stops executing instructions.

**S2 – Extended sleep mode:** Further components are deactivated, particularly the CPU cache.

**S3 – Standby mode:** Most hardware on the motherboard is deactivated, operating state is stored in volatile memory (Suspend To RAM = STR, Suspend To Memory = STM).

**S4 – Hibernation mode:** Operating state is stored in non-volatile memory (Suspend To Disk = STD).

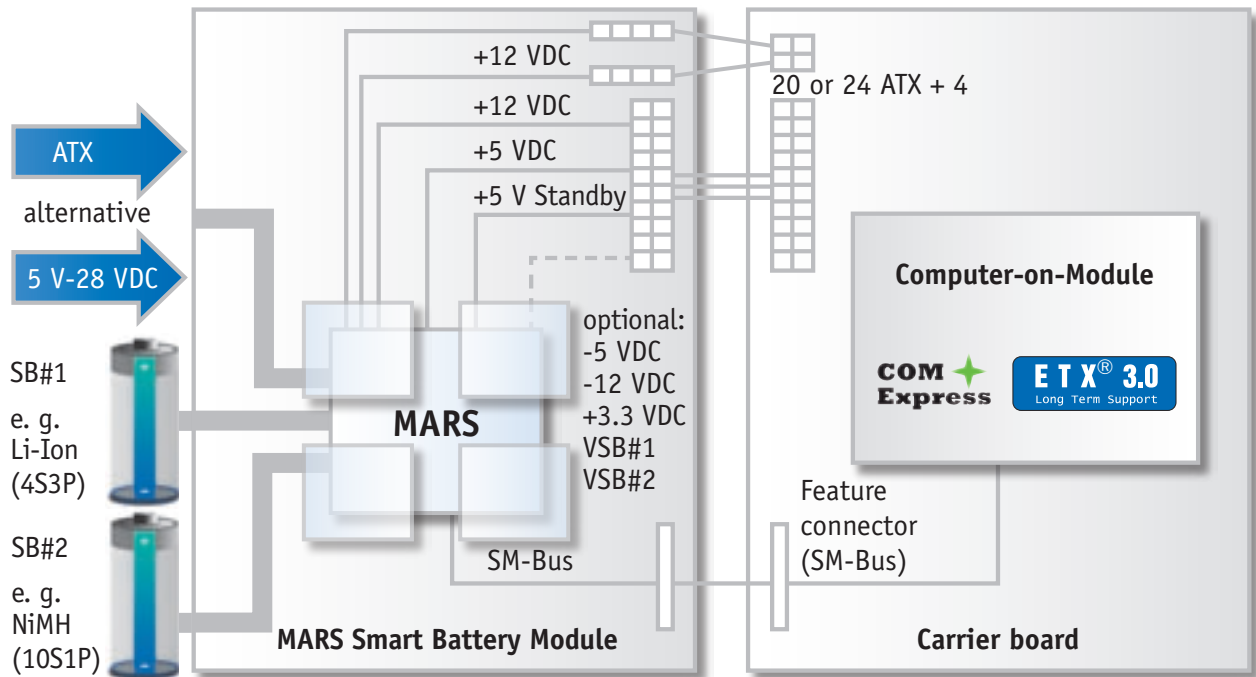
**S5 – Soft-off mode:** The system is shut down but the power supply continues to deliver power and the system can be woken by input from a mechanical source (power-on switch) connected to the mainboard or, depending on the model and the BIOS setup, via the network interface.

## MARS Starter Kit - Technical Information

Form factor	185 mm x 160 mm (7.28" x 6.3")
Height	16.5 mm
Input voltage range	5 VDC to 28 VDC
Applicable smart batteries*	LiMH and NiCd up to 10S1P, e. g. 9S1P (10.8 V), 10S1P (12 V) Li-Ion and LiPo up to 4S3P, e. g. 2S2P (7.2 V), 3S3P (10.8 V), 4S3P (14.4 V)
Supported products	Basic functions are supported by all Kontron COMs. For key functions please see Appendix D in manual.
Output voltages*	12 VDC (max. 60 W), 5 V Standby, 5 VDC (max. 42.5 W), additional lines for: 3.3 V, -5 V, -12 V
MARS Development Kit Art. No. 18029-0000-00-0	MARS platform, wire for ATX power connector, wire for "feature connector" (SM-Bus), Y-wire power connector

\* see manual for details

# » Benefits in a nutshell «



Test setup: MARS platform with ETXexpress® computer-on-module and ETXexpress® miniBaseboard

**ORDER YOUR  
MARS STARTER KIT  
NOW! »**

- » Evaluate efficiently: Smart Battery Starter Kit
- » Broadly scalable: Input voltage range 5 VDC to 28 VDC
- » Configure optimally: Use ready-made modular building blocks
- » Use in parallel: Support for two smart batteries
- » Save time and money: Proven layout and schematic documents

# » Learn more «

## Kontron Academy

Kontron's workshops provide a solid basis for the use, development and design-in of Kontron boards. Hands-on use of the development environment and understanding the building process and programming interfaces are the primary objectives of the Kontron training courses. Different workshops are available to address all the developer's hardware and software needs.

More information on training courses is available at [www.kontron.com/specialtrainings](http://www.kontron.com/specialtrainings)

Hardware-related services and customization are offered by Kontron's Boards & More division. Please visit

[www.kontron.com/boardsandmore](http://www.kontron.com/boardsandmore)

or ask your Kontron sales representative.



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The long-term strategy



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