

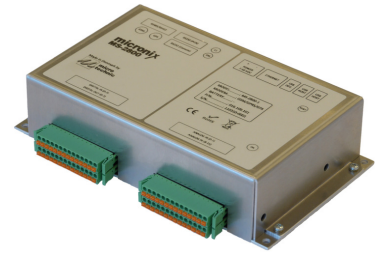


The MS-2800 runs Linux

Micronix MS-2800 series

Boxed SBC module including:

- 400 MHz ARM9 microcontroller
- GSM/GPRS modem (optional)
- GPS receiver (optional)
- Power supply with 100µA power down
- UPS with Li-Ion charger
- 16 isolated 24-bit A/D channels
- 16 isolated digital I/O
- 2 x USB host, 1 x USB device
- 1 x RS232, 1 x RS485/RS422
- 1 x Ethernet
- Web interface
- Linux OS installed



Micronix MS-2800 is a Single Board Computer module based on the Atmel AT91SAM9G20 microcontroller enclosed in an aluminum box. A combination of a power supply, a charger for a built-in Li-Ion battery, a GSM/GPRS modem, a GPS receiver and analogue and digital I/O makes this module very useful in many standalone applications. The MS-2800 uses the Telit GE863-GPS with a quad band (900/950/1800/ 1900 MHz) cellular engine and a SiRFstarIII™ single chip GPS receiver.

The power supply can be backed-up by a built-in Li-Ion battery and the charger will insure that the battery is fully charged. Two low-power modes allow a very long operation on battery power: *Powerdown* with wakeup on: timer and external wakeup input. *Standby* with wakeup on: timer, incoming SMS, and input change.

The MS-2800 has 16 isolated analogue inputs ($\pm 10V$, 0-2.0V or 0-20mA), enabling data acquisition with a resolution up to 24 bits. 8 digital inputs and 8 digital outputs (all opto-isolated) allow the user to control auxiliary equipment. Wireless communication and SMS features are supported by the GSM/GPRS modem. The SIM card is inserted into a push-push SIM card socket placed on a GSM/GPRS/GPS sub module (optional).

The MS-2800 comes with a Linux OS installed. It has a preinstalled data logging application, which can log analogue and digital inputs periodically or based on input events. Data can be stored in an internal RAM, Flash or on a Micro SD card. The system has a web interface for configuration and data retrieval, accessible through a direct USB connection to a PC, through GPRS, or through Ethernet.

The Micronix MS-2800 represents the latest development within GSM/GPRS technology and holds all the necessary approvals (R&TTE and GCF). The MS-2800 is ideal for data logging and alarm systems. The MS-2800 withstands extended temperatures, shock and vibration of mobile equipment.

Micronix MS-2800 Features

- 400 MHz ARM9 microcontroller
- 32 MB on-board RAM (64MB on request)
- 8 MB on-board Flash
- Micro SD Flash slot
- Quad-band modem (optional)
- SiRFstarIII™ single chip GPS receiver (optional)
- GPS data via UART port (optional)
- 2 x USB 2.0 Full Speed (12 Mbps) host
- 1 x USB 2.0 Full Speed (12 Mbps) device
- 1 x Ethernet 10/100 Mbps
- RS232 using a DSUB 9 connector
- RS485 or RS422 using two modular jacks (6/6)
- 8 digital inputs and 8 digital outputs, opto-isolated
- 16 isolated analogue inputs ($\pm 10V$, 0-2.0V or 0-20mA), 24-bit sigma-delta A/D converter
- Low power consumption
- Wide temperature range: -20° to +70 °C
- Low cost

General specifications

Input voltage		Environmental Data	
Input voltage	7-50V DC, operational	Operating temperature	-20° to 70° C
Max input voltage	60V DC, withstands load-dump and wrong polarization	Storage temperature	-40° to 85° C
Power consumption		Humidity	20 to 90% non-condensing
Power down	100µA	Cyclic humidity	ETS 300 019-2-5 or equal
Standby	0.1W	Vibration	10-1000 Hz Sine and random @ 1-1.5G RMS
CPU idle	0.6W	Sustained vibration	EN 60068-2-34 & EN 60068-2-36
CPU active	0.9W	Shock	IEC 60068-2-27 & IEC 60068-2-29
Ethernet active	+0.75W (can be disabled in HW)	Size (W x L x H)	200 x 113 x 47 mm
A/D converter on	+0.1W (can be disabled by SW)	Weight	?? g (excl. packaging)
GPRS on, idle	+0.15W	CE approvals	????
GPRS on, transmitting	+2W		
GPS on, tracking	+0.7W		
Battery charger	Li-Ion, 7.4V 2-3Ah		

Digital I/O specifications				
8 digital inputs, opto-isolated	0-30V	8 digital outputs, opto-isolated	PNP outputs	
Isolation Logic 0 Logic 1 Input current (max) @ 30Vin Connector	Up to 1000Vrms Uin: 0-1.5V Uin: 2.5-30V Iin: 5mA Pluggable terminal block	Isolation Max load current External voltage Protection Connector	Up to 1000Vrms 0.5A/output, 1.5A total 5-30V DC Snubber diode at each output Pluggable terminal block	
Analogue Input specifications				
Number of single ended inputs	Up to 16 with one common	Resolution	Up to 24 bit, depending on conversion speed	
Number of differential inputs	Pairs of two can be software configured for up to 8 differential inputs	Conversion speed	6.9 SPS to 3.5 kSPS	
Ranges (Must be specified in model no.)	-10V to +10V	0.025% initial accuracy	Isolation	1kV, 1 minute
		50 ppm/°C		
	0V to +2.0V	0.025% initial accuracy	Input impedance	1MΩ/100pF
		10 ppm/°C	Connector	
0 to 20mA	0.025% initial accuracy			
		50 ppm/°C		
Quad Band GSM/GPRS Modem specifications (optional)				
Antenna impedance	50Ω	Fax	Group 3, Class 1	
RF Output power	Class 4 (2W) @ 850 / 900MHz Class 1 (1W) @ 1800 / 1900MHz	CSD data transmission	Transparent up to 14.4 kbps Non-transparent up to 9.6 kbps Non-transparent mode V.110	
Modem antenna connector	FME female RF	SIM connector	Push-push connector inside the module	
SMS	Point-to-point mobile originated and mobile terminated SMS SMS cell broadcast Text and PDU mode			
Approvals	Fully type approved conforming with R&TTE CE, GCF, FCC, PTCRB, IC & Anatel			
GPS specifications (optional)				
GPS Chip	SiRFstarIII™ single chip GPS receiver supports 20-channels GPS, L1 1575.42 MHz Cold start < 35 sec Hot start < 3 sec			
Sensitivity	-159 dBm (with active antenna)			
Accuracy	< 2.5 m			
GPS output format	NMEA 0183			
SBAS support	WAAS and EGNOS			
AT commands	Dedicated GPS AT commands			
GPS antenna connector	FME female RF			
Antenna impedance	50Ω			
Models				
Basic features:				
<ul style="list-style-type: none"> ▪ Embedded CPU ARM9-400MHz ▪ Linux-based firmware ▪ 8 MB flash ▪ 32 MB SDRAM (push-push connector inside the module) ▪ Micro SD Flash adapter ▪ 2 x USB host (USB type A connector) ▪ 1 x USB device (USB type B connector) ▪ 1 x Ethernet ▪ 1 x RS-232 (DSUB 9 male connector) ▪ 1 X RS485 or RS422 (2 X Modular jack 6/6) ▪ 8 digital inputs, isolated ▪ 8 digital outputs, isolated 				
		Additional features		
Model number	P/N	16 analogue inputs	PSU	
MS-2800-1	016.109.101	-10V to +10V		
MS-2800-2	016.109.102	0V to +2.0V	√	
MS-2800-3	016.109.103	0 to 20mA	√	
MS-2800A-1	016.109.104	-10V to +10V		
MS-2800A-2	016.109.105	0V to +2.0V	√	
MS-2800A-3	016.109.106	0 to 20mA		
MS-2820	016.109.110	-	√	
MS-2820A	016.109.111	-	√	
Quad Band GSM/GPRS Modem incl. GSM antenna	016.103.001	These products must be ordered separately.		
Quad Band GSM/GPRS Modem + GPS incl. a combined GSM/GPS antenna	016.103.000			
Li-On battery, 7,4V – 2,2Ah				