

endrich news

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Our Product of the Month EVE Li-Ion Energy Storage Systems

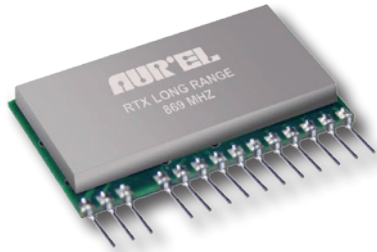


- EVE Li-Ion-Energy storage systems can facilitate the increasing penetration of renewable energy into power grids
- Environmental-protection lithium-ion energy storage battery with the lightest, fast charge and discharge, and cycle life of over 15,000 times
- Shifting energy from low-value to high-value periods provides renewable generators with better return on investment
- De-linking supply from demand
- Peak demand reduction
- Improved power quality and reliability

EVE[®]
ENERGY VERY ENDURE

Energy Storage Systems for Smart Grids

LONG RANGE TRANSCEIVER FOR DISTANCE UP TO 3KM (LOS LINE OF SIGHT)



FEATURES

- » Double transmission mode: DIRECT & PACKET
- » RS-232 signals store and forward operation
- » AT-commands for internal registers programming
- » HperTerminal compatible
- » Number of channels: 7 max.
- » Dimensions: 38.1×24×4.5 mm
- » **UART data rate: 2400, 4800, 9600 bps**
- » ERP: max. 500 mW
- » High sensitivity: -118 dBm with data rate 500 bps
- » Fixed supply voltage: 3.3V
- » Average range: 3 km

AUREL S.p.A., our partner for RF Modules, presented 2 transceiver radio solutions in the 868~870 MHz band for long range data communication. The **RTX LONG RANGE** radio transceiver half-duplex, offers improved performance such as longer RF range up to 3 km and operates in the European license free 869.5 to 868.65 MHz band.

The high sensitivity level (-118 dBm) joined with its typical output power (500 mW) can assure a budget-link around 145 dBm. This improves the communication distance of 4~5 times better compared with a traditional 10 mW LPD device.

It operates in 2 different modes: DIRECT MODE with modulation and demodulation of proper data protocol or PACKET MODE, selectable via UART through AT commands, same as a radio-modem.

7 channels available, selectable depending on transmission speed. GFSK modulation. Blocking immunity performance are compliant with Class 1, optimum rejection to the disturbances in the adjacent channels.

APPLICATIONS

- » Irrigation systems
- » Solar panel monitoring
- » Animal tracking, SCADA, Alarms, AMR etc.

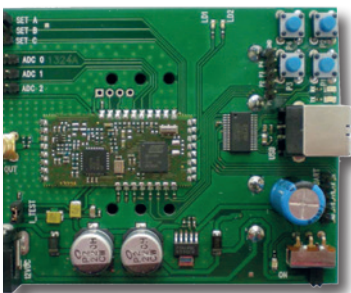
SPECIFICATIONS

PARAMETER	MIN.	TYP.	MAX.
DC Levels			
Supply voltage Pins 1, 15	2.7V	3.3V	3.6V
Current consumption (RX mode)		32 mA	
Current consumption (TX mode @+27 dBm)	420 mA	500 mA	550 mA
Current consumption (standby mode)		8 µA	10 µA
RF TX			
Frequency band/-deviation		869.4 ... 869.65 MHz ±3.5 kHz	
Emitted power (Direct Mode Pin 14=1)	25 dBm	27 dBm	29 dBm
Emitted power (Direct Mode Pin 14=0)	20 dBm	21 dBm	23 dBm
Emitted power(Packet Mode)	8 dBm		29 dBm
Modulation type		GFSK	
RF RX			
Sensitivity, Direct Mode	-115 dBm	-116 dBm	-120 dBm
IF Band		12 kHz	
RF Band		600 kHz	
Performance			
UART data rate	2400 bps	4800 bps	9600 bps
Standard distance		3000 m	
Operating temperature range		-20°C ... +70°C	
Dimensions (L×B×H)		38.1×24×4.5 mm	

SMD LONG RANGE TRANSCEIVER FOR DISTANCE UP TO 6KM



UART data rate:
9600 bps, 19200 bps,
115200 bps



Evaluation board for testing the XTR-8LR100 transceiver performance.

APPLICATIONS

Features suitable for those application:

- » Agriculture (irrigation control, environment sensing)
- » Smart metering (electric, water, gas)
- » Security smart home (smoke detectors, security systems, smart appliances)
- » Tracking (Animal tracking, motor bikes, cars, bicycles)

SPECIFICATIONS

PARAMETER	MIN.	TYP.	MAX.
DC Levels			
Supply voltage Pins 1, 15	2.4V	3.3V	3.6V
Current consumption (RX mode)		17 mA	
Current consumption (TX mode @+20 dBm)	90 mA	110 mA	120 mA
Current consumption (standby mode)		1 μ A	2 μ A
RF TX			
Frequency band/- deviation		869.4 ... 869.65 MHz \pm 3.5 kHz	
Emitted power (ERP)	17 dBm	19 dBm	20 dBm
Modulation type		LORA™	
Channel width	20.8 kHz	62.5 kHz	125 kHz
RF RX			
Sensitivity, 125 kHz Band (SF:6-10-12)	-118 dBm	-132 dBm	-137 dBm
Sensitivity, 62.5 kHz Band (SF:6-10-12)	-121 dBm	-135 dBm	-140 dBm
Sensitivity, 20.8 kHz Band (SF:6-10-12)	-127 dBm	-140 dBm	-144 dBm
Performance			
Spreading factor	6	10	12
UART data rate	9600 bps	19200 bps	115200 bps
Standard distance		6000 m	
Operating temperature range		-20°C ... +70°C	
Dimensions (L×W×H)		37×18×2.2 mm	

The **XTR-8LR100** is in **proto type stage**. This SMD Transceiver is a radio modem with UART interface including an implemented data packet addressing technique that allows a point-multipoint communication and 248 Byte of maximum payload. Transceiver module with **LORA™** technology that enables the **Internet of Things**. Compared to standard modulation techniques, the half duplex transceiver based on Semtech (SX1276 chipset) patented " LORA SSM" modulation technique providing an ultra long distance radio communication (>6 km) with low current consumption feature, and significantly improved robustness to interference. Transceiver works in 869.4 ... 869.65 MHz (100 mW, ver. 8LR100) which offer a link budget of >165 dBm and 868 ... 868,6 MHz (25 mW ver. XXX) European band with possibility to set the channel width. XTR-8LR100 improves up to 20 dB the receiver sensitivity, allowing long distances by using low power in transmission and low consumption, inexpensive power supply circuits and low cost batteries. The low supply voltage (3.3V) allows the use with battery power supply. Ideal for SCADA (Supervisory Control and Data Acquisition) applications or for the monitoring and control of technical processes by means of a computer system, so for a variety of industrial control.

ENERGY STORAGE SYSTEM - RENEWABLE ENERGY INTEGRATION



From Smart Homes to Smart Grids, Reliable Energy Storage is Vital

With the emergence of wind power, solar power and the other new energy sources, and development of intelligent grid technology as well, large-scale energy storage station is come into being to meet peak power allocation. EVE is developing the environmental-protection lithium-ion energy storage battery with the lightest, fast charge and discharge, and cycle life of over 15,000 times to meet the future demand of energy storage stations and new energy vehicle charging stations. EVE strives to become an advanced enterprise in the field of energy storage battery industry before 2015.

Why Choose Li-ion for Energy Storage

Li-ion battery technology offers many valuable features for energy storage systems:

- » High energy density [135Wh/L]
- » Very short response time, limited only by power electronics
- » Excellent cycling capability
- » High round-trip efficiency [better than 95%]
- » High charge retention
- » Long life [20 years with daily cycles at 60% depth of discharge]
- » Maintenance-free and self-diagnostic
- » EVE Li-ion technology also has a significantly lower environmental footprint than other technologies, thank to its high recycling rate.

There are a number of ways that EVE Lithium-ion energy storage systems can facilitate the increasing penetration of renewable energy into power grids:

Support for Large Renewable Generation Plants

Improving the network compatibility of large solar or wind power plant:

- » smoothing of intermittent generation and reducing ramp rates
- » capacity firming to maintain production within a predictable window
- » local dynamic voltage support

Stabilization of Transmission Grids

Grid stability is a growing issue due to the increased penetration of intermittent and unpredictable renewable energy sources.

Provides vital ancillary services:

- » instantly available synchronized reserves with no fuel consumption
- » frequency and area regulation

Constraint Relief in Distribution Grids

Energy storage can play a key role in highly stressed sections of the grid operating close to their maximum load:

- » defer or even eliminate the need for major investments in network infrastructure to handle demand peaks
- » dynamic voltage support for the integration of decentralized generation
- optimize power flows within smart grids

Local Energy Management

For distributed installations, such as in residential, CES (Community Energy Storage) and commercial or small industrial systems:

- » effective time-shifting. Shifting energy from low-value to high-value periods provides renewable generators with better return on investment
- » de-linking supply from demand
- » peak demand reduction
- » improved power quality and reliability

ENERGY STORAGE SYSTEM - RENEWABLE ENERGY INTEGRATION

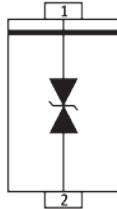
SPECIFICATIONS

PARAMETER	TYPE CNXT-1000-A1	TYPE CNXT-2000-A1	TYPE CNXT-6000-A	TYPE CNXT-6000-B	TYPE CNXT-10000-B	
Battery	Capacity [Wh]	1000	2500	6000	6000	10000
	Chemical systems	LiFePO ₄	LiFePO ₄	LiFePO ₄	LiFePO ₄	LiFePO ₄
	Life	≥8 years	≥8 years	≥8 years	≥8 years	≥8 years
Import	Mains voltage	110V/60 Hz	110V/60 Hz	110V/60 Hz	230V/50 Hz	230V/50 Hz
	Solar power gen. module volt.	72V _{DC}	72V _{DC}	144V _{DC}	144V _{DC}	288V _{DC}
	Wind turbine comp. voltage	110V/60 Hz	110V/60 Hz	110V/60 Hz	230V/50 Hz	230V/50 Hz
	Rated power	350W	350W	750W	750W	1250W
	Rated charging time	3h	7.2h	8h	8h	8h
Export	Rated voltage	110V/60 Hz	110V/60 Hz	110V/60 Hz	230V/50 Hz	230V/50 Hz
	Rated power	400W	1000W	1500W	1500W	2500W
	Rated discharge time	2.5h	2h	4h	4h	4h
Power Supply	Operating voltage [V]	24/12/5/3.3	24/12/5/3.3	24/12/5/3.3	24/12/5/3.3	24/12/5/3.3
	Max. power consumption	200 mA	220 mA	280 mA	280 mA	390 mA
	Max. standby power consumpt.	5 mA	6 mA	10 mA	10 mA	14 mA
Function	Autom. select of input source	×	×	×	×	×
	Priority output of green energy	×	×	×	×	×
	Autom. battery charge/discharge	CC-CV	CC-CV	CC-CV	CC-CV	CC-CV
	Interface PC	RS-232	RS-232	RS-232	RS-232	Ethernet
	LCD parameter display	–	–	×	×	×
	LED status indication	×	×	×	×	×
	Abnormal sound/light alarm	×	×	×	×	×
Protection	Battery over-voltage protection	×	×	×	×	×
	Battery over-current protection	×	×	×	×	×
	Battery over-discharge protection	×	×	×	×	×
	Battery over-temp. protection	×	×	×	×	×
	Battery short-circuit protection	×	×	×	×	×
Mechan. Parameter	Shape	Box-Type	Box-Type	Cabinet-Type	Cabinet-Type	Cabinet-Type
	Length [mm]	685	710	600	600	800
	Width [mm]	225	250	450	450	500
	Height [mm]	316	546	900	900	1100
	Weight [kg]	≤16	≤30	≤90	≤90	≤170

200 WATT ASYMMETRICAL LINE PROTECTION TVS ARRAY – PESD1LIN



SOD-323 PACKAGE



FEATURES

- » Compatible to IEC 61000-4-2 (ESD): Air 15kV, contact 8kV
- » Compatible to IEC 61000-4-4 (EFT): 40 A, 5/50ns
- » Compatible to IEC 61000-4-5 (Surge): 24 A, 8/20 μ s - Level 2 (Line-Gnd) & Level 3 (Line-Line)
- » 200 W peak pulse power per line ($t_p = 8/20 \mu$ s)
- » Replacement for MLV (0805)
- » Bidirectional configuration
- » Low clamping voltage
- » Asymmetrical line protection: Pin1-2 - 15V, Pin 2-1 - 24V
- » RoHS compatible, REACH compatible
- » Lead-free-pure-tin plating
- » Reflow soldering temperature: 260-270°C
- » Flammability rating UL 94V-0

The manufacturer ProTek Devices introduces an asymmetric TVS Array front line protection of LIN (Local Interconnect Network) BUS BUS systems, which is designed for industrial applications such as field devices, protocol converters and gateways. The new circuit protection device is designed for a peak power of 200 watts per line and a secondary overvoltage, can be caused by lightning, for a period of 8/20 microseconds. The component PESD1LIN is available in a bidirectional configuration and an ideal replacement for multilayer varistors (MLV 0805) in LIN BUS applications. The component was designed to protect power line or I/O interfaces, to provide an asymmetric line protection of 15V (pin 1-2) and 24V (pin 2-1). A further advantage is the low clamping voltage. The minimum breakdown voltage is 17.2 V at 15 mA (pin 1-2) and 25.5V (pin 2-1).

With the PESD1LIN and the last year presented PESD1CAN and PESD2CAN the company Endrich provides its customers technically sophisticated solutions for the most common bus systems in industrial area.

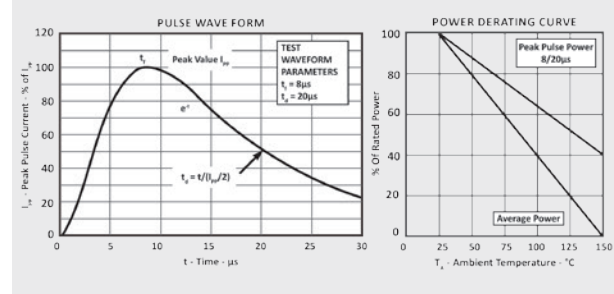
APPLICATIONS

- » Automotive applications
- » Local Interconnect Network (LIN) Bus Protection

MAXIMUM RATINGS

PARAMETER	VALUE
Operating-/storage temp. T_{OPR} / T_{STG} [°C]	-55 ... +150
Peak pulse power [W] P_{FP} ($t_p=8/20\mu$ s)	200
Peak pulse current [A] I_{FP} ($t_p=8/20\mu$ s)	24

PULSE WAVE FORM / POWER DERATING CURVE



ELECTRICAL CHARACTERISTICS PER LINE

CONFIGURATION	DEVICE MARKING	RATED STAND-OFF VOLTAGE V_{WM} [V]	MIN. BREAKDOWN VOLTAGE V_{BR} [V] @ 15mA	MAX. CLAMPING VOLT. [V] @ 8/20 μ s, $I_p=1A$	MAX. CLAMPING VOLT. [V] @ 8/20 μ s @ I_{FP}	MAX. LEAKAGE CURRENT I_D [nA] @ V_{WM}	TYP. CAPACITANCE [pF] @ 0V, 1MHz
Pin 1 zu 2	54	15	17.2	25 V	44V @ 5A	45	17
Pin 2 zu 1		24	25.5	40 V	70V @ 3A	45	17

ULTRA HIGH RELIABILITY RESISTORS WITH LONG-SIDE TERMINALS



Thin film resistors PRG series of Susumu are now available from Endrich. Susumu is the technology leader in this segment and offers one of the largest product ranges in the world market.

Compared to standard resistors with terminals on the short side, PRG series resistors have their terminals on the long side of the component body. This allows Susumu to specify PRG resistors with a higher power rating or customers can use a smaller product to reach the same performance compared to a

standard part. Another positive effect is the increased tolerance against voltage and surge pulses as well as reduced parasitic inductance. Due to these enhanced performance ratings, the PRG series is a viable alternative to MELF resistors.

Since PRG resistors, same as most products from Susumu, come with the additional glass passivation, excellent reliability and performance is guaranteed. Extended resistance range compared with other thin film resistors, especially for the range below 10 Ω are available. Tolerances of ±0.5% / ±0.1%, TCR of ±50/25 ppm/°C and case sizes from 1206 to 2512 with power rating of 1 W to 3 W are realized.

Typical application for these resistors are industrial electronics, automotive, Inverter, weighting technology, test and measurement devices and as mentioned as MELF replacement. The resistors are now available.

SPECIFICATIONS

	TYPE	SMD SIZE	POWER RATING	R-TOLERANCE	TCR	R-VALUE RANGE
PRG3216	1206	1.0W	±0.1% (B)	±25 ppm/°C (P)	47 Ω ... 100 kΩ	
			±0.5% (D)	±50 ppm/°C (Q)	10 Ω ... 100 kΩ	
PRG5025	2010	1.5W ... 2.0W	±0.1% (B)	±25 ppm/°C (P)	47 Ω ... 200 kΩ	
			±0.5% (D)	±50 ppm/°C (Q)	10 Ω ... 200 kΩ	
PRG6432	2512	2.0W ... 3.0W	±0.1% (B)	±25 ppm/°C (P)	47 Ω ... 250 kΩ	
			±0.5% (D)	±50 ppm/°C (Q)	10 Ω ... 250 kΩ	

RELIABILITY TEST DATA

ITEM	TEST METHOD (JIS C5201-1)	ΔR LIMITS
Short Time Overload	2.5 times of Rated Load for 5sec.	< 47 Ω: ±(0.10% +0.01 Ω) ≥ 47 Ω: ±(0.05% +0.01 Ω)
Load Life	70°C Rated Load 90 min. On/ 30 min. Off for 1000 hrs.	
Temp. Hum. Bias	85°C 85% RH 1/10 power loaded 90 min. On/ 30 min. Off for 1000 hrs.	< 47 Ω: ±(0.25% +0.05 Ω) ≥ 47 Ω: ±(0.10% +0.01 Ω)
Thermal Shock	-55°C (30 min)/room temp.(2 min) /+125°C(30 min)/room temp.(2min) no load × 1000 cycles	
High Temperature	155°C for 1000 h, no bias	

CUSTOM TEMPERATURE SENSORS

FEATURES

- » Proven stability and reliability
- » Variety of metal, plastic housings and tubings designed for specific applications
- » Potted with different kinds of resin for good sensor protection and thermal conductivity
- » Available with special kinds of cables, connectors and other attachments
- » Wide range of customized R/T curves
- » Ability to design R/T curves meeting customer's and application requirements
- » Small batch series on request

We offer a wide range of temperature sensors

based on NTC/PTC thermistors, Platinum temperature elements (PT100, PT1000, etc.) and other temperature sensing elements. These sensors can be used for temperature measurement in consumer and industrial applications. We can offer products for applications that require stable working temperatures between -80°C and +1000°C.

APPLICATIONS

- » Fire detectors
- » Climate control
- » HVAC
- » Industrial ovens
- » Instrumentation
- » Refrigeration



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