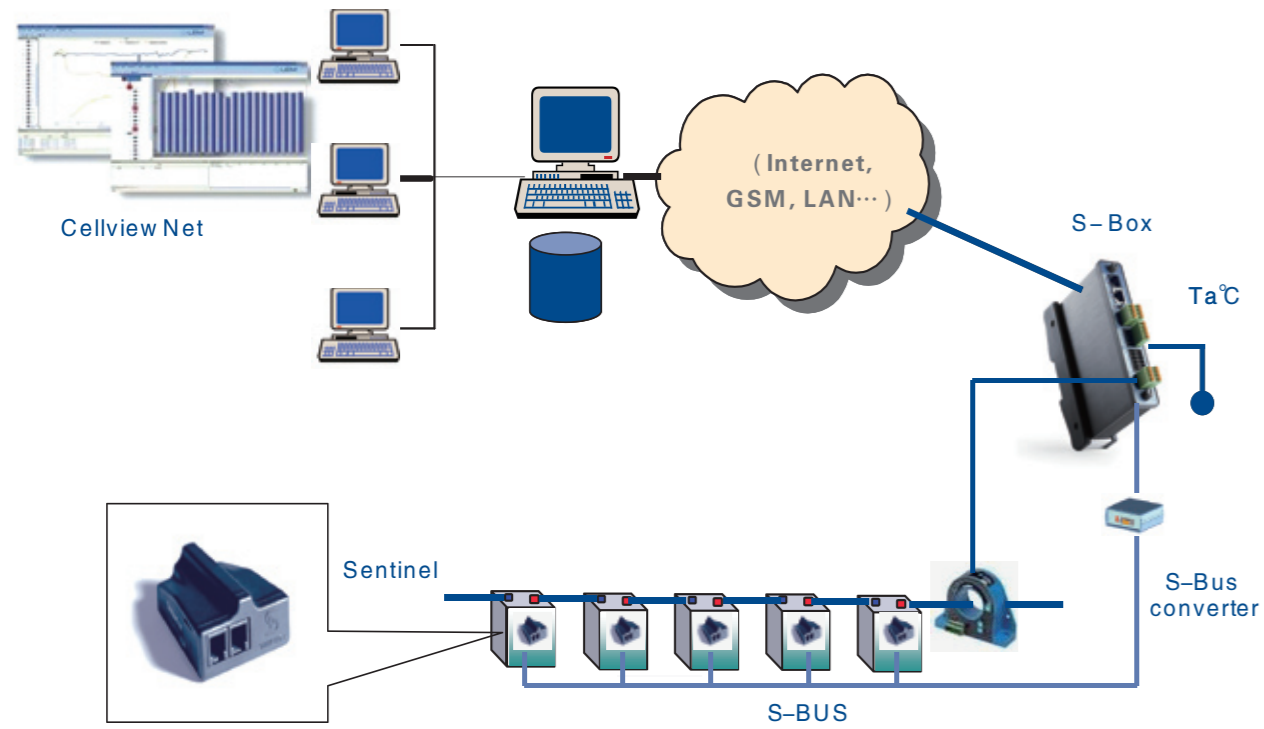


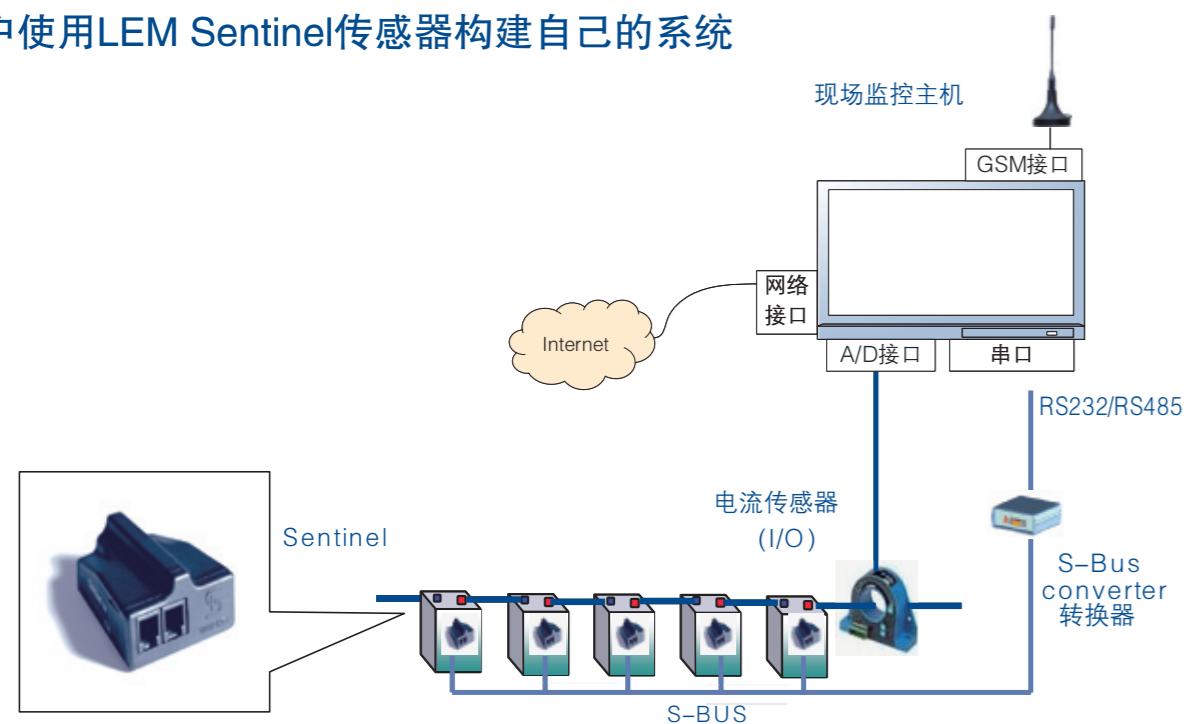
Sentinel

“确信你安全可靠”

LEM蓄电池监控整体解决方案



用户使用LEM Sentinel传感器构建自己的系统



LEM五年质量保证



5 Year Warranty on LEM Transducers

We design and manufacture high quality and highly reliable products for our customers all over the world.

We have delivered several million current and voltage transducers since 1972 and most of them are still being used today for traction vehicles, industrial motor drives, UPS systems and many other applications requiring high quality standards.

The LEM 5-year warranty applies to all LEM transducers and is valid in addition to the legal warranty.

The warranty granted on LEM transducers is for a period of 5 years (60 months) from the date of their delivery. (not applicable to EM4T & EM4TII & TEMA4T & LEMABOX & LZQJ products and automotive transducers where the warranty period is of 2 years).

During this period LEM shall replace or repair all defective parts at its' cost (provided the defect is due to defective material or workmanship).

Additional claims as well as claims for the compensation of damages, which do not occur on the delivered material itself, are not covered by this warranty.

All defects must be notified to LEM immediately and faulty material must be returned to the factory along with a description of the defect.

Warranty repairs and or replacements are carried out at LEM's discretion.

The customer bears the transport costs. An extension of the warranty period following repairs undertaken under warranty cannot be granted.

The warranty becomes invalid if the buyer has modified or repaired, or has had repaired by a third party the material without LEM's written consent.

The warranty does not cover any damage caused by incorrect conditions of use and cases of force majeure.

No responsibility will apply except legal requirements regarding product liability.

The warranty explicitly excludes all claims exceeding the above conditions. LEM, warranty application date: April 1. 2008

François Gabella
President & CEO LEM

Commercial Information

SENTINEL

电池监测解决方案



莱姆电子 (中国) 有限公司
 地 址: 北京市顺义区林河工业区林河大街28号院
 邮 编: 101300
 电 话: +86 10 8945 5288
 传 真: +86 10 8048 4303
 网 址: www.lem.com.cn
 电子邮件: bj@lem.com

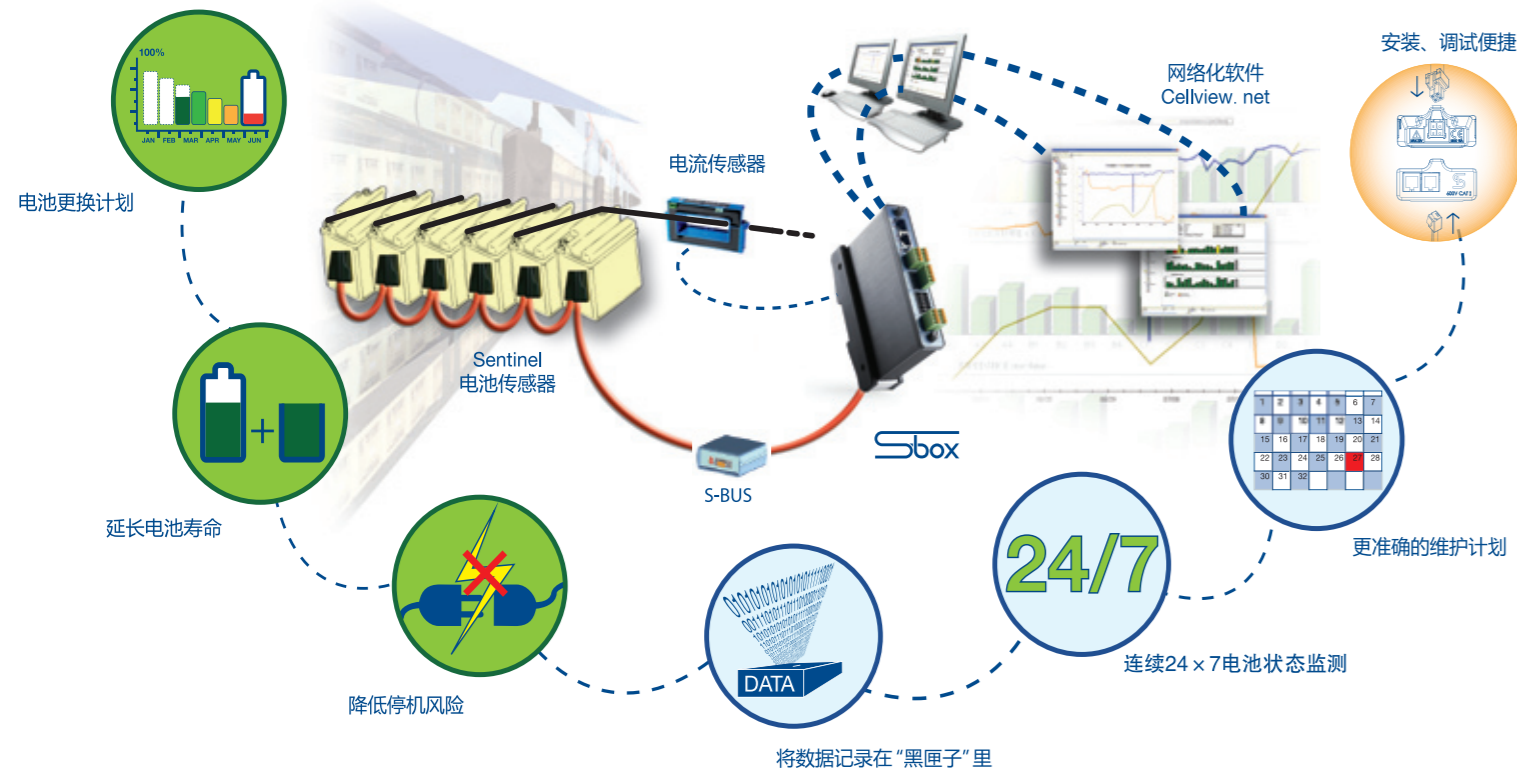
内部版号: CH 29104 C (11.03 • 3 • CDH)

Distributor



Sentinel



“确信你安全可靠”



Sentinel 技术参数

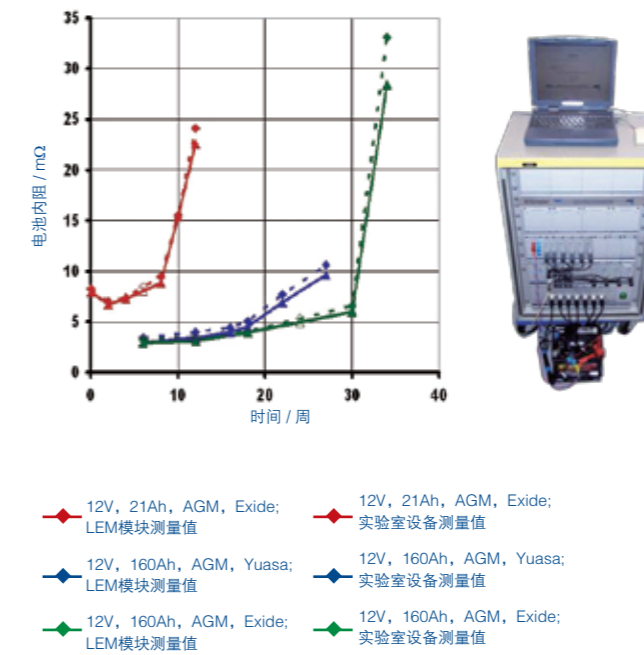
- 每个蓄电池配一只 Sentinel 传感器
- 测量每个蓄电池的阻抗，温度和电压
- 测量范围
 - 电压：
 - Sentinel 2-HV.....+4.8V~15V 6V,12V 蓄电池
 - Sentinel 2-LV.....+1.5V ~ 3V 2V 蓄电池
 - Sentinel 3.....+1.5V~15V
 - 温度：
 - 10~70°C
 - 阻抗：
 - 0.05~250mΩ
- 测量精度
 - 电压全程测量精度..... ± 0.5%
 - 温度测量精度..... ± 2°C
 - 阻抗重复测量精度..... ± 2%
- 通讯波特率.....9600 bps
- 测量周期
 - 电压 / 温度25ms (max)
 - 阻抗5s
 - 阻抗测量间隔10min 以上
- 总线联网，每条总线最多连接 254 个 Sentinel 传感器
- 体积小、安装简单

Sentinel用于蓄电池监控的特点

- 分布式安装，模块与蓄电池一一对应，现场布线简单、工程成本低且系统易于扩充；
- 
- 独立的模块使得监控非常灵活，在蓄电池数量少的地方更凸显经济优势；
 - 模块可以检测单个电池的表面温度，能够预防火灾发生，同时可以指导用户及时改良蓄电池工作环境。
- 
- Sentinel 通讯协议开放，可以灵活地和各种监控平台兼容。
 - Sentinel 采用了 LEM 定制的片上系统 SoC，高度的集成确保模块更高的可靠性和抗干扰性能。
 - 使用 Sentinel 构成的系统不需要将承载着较大电流的连接电缆连接到监控柜上，可以取得更加安全的使用效果。

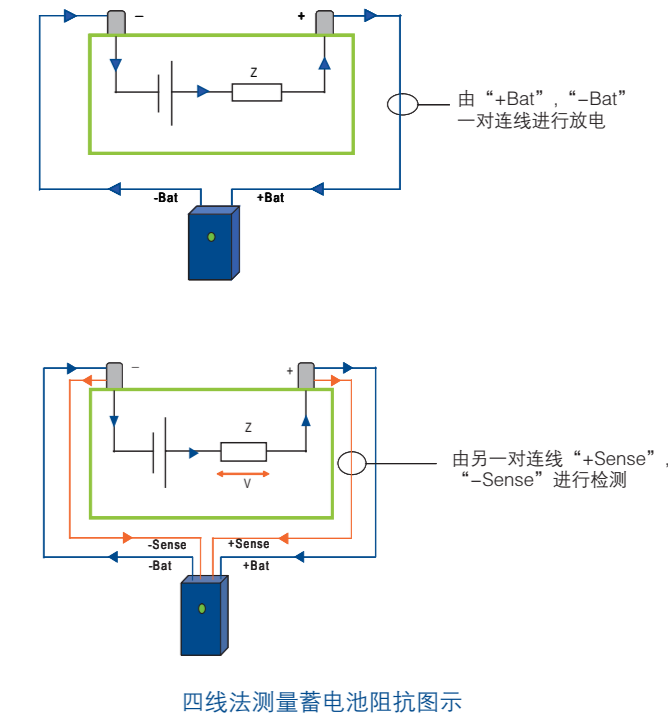
Sentinel 可靠性对比测试

经由 LEM 模块测量出的阻值与德国 Aachen 大学实验室设备 EISmeter 分析仪测量出的阻值基本一致。



Sentinel工作模式

四线法测量蓄电池阻抗，准确、合理。



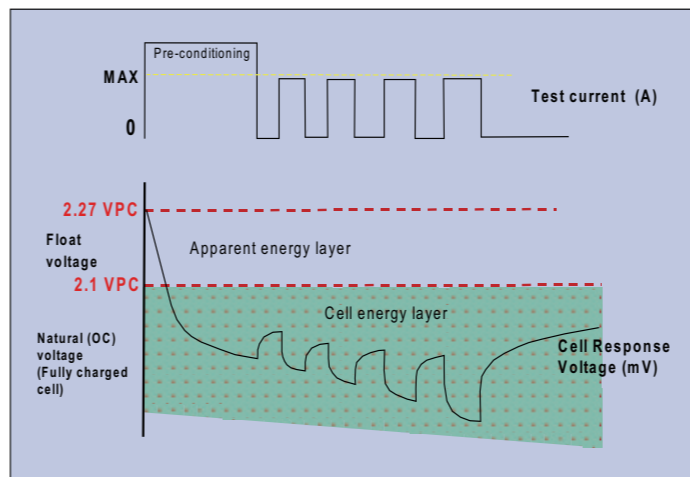
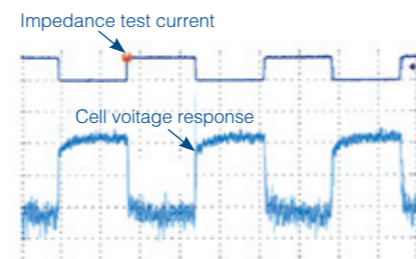
应用：

- VRLA式和富液式备用电池
- UPS：数据中心、医院、航空空管
- 铁路和轨道设备
- 电信DC系统和基础设施（移动通讯）
- 电力供电系统
- 高安全性生产过程（如半导体）

- 终端用户受益
- 更好的电池维护服务
- 快速安装

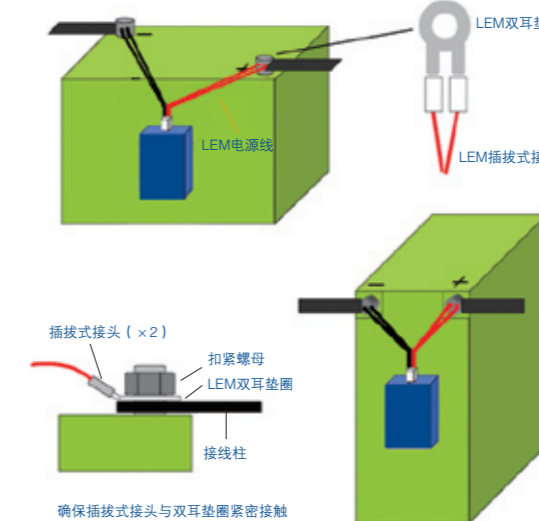
Sentinel测量阻抗原理

在放电过程中，Sentinel 使用内部算法控制电流振幅及脉冲频率，以保证蓄电池电压的响应来源于蓄电池本身的真实能量层（Cell energy layer）而不是表面能量层（Apparent energy layer）。模块通过短时间（5 秒）中等电流放电（方波）来测量阻抗，电流放电会引起很小的电压波动，Sentinel 能够监测到电压的波动，并放大处理，进而计算出阻抗值。



Sentinel的安装方式

电源线连接



通讯线连接

