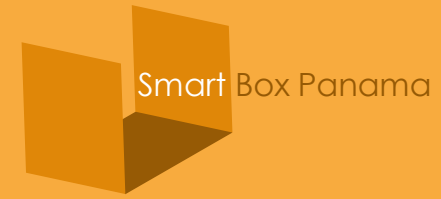




Remote monitoring of Solar Systems with Victron Energy VE.Direct LoRaWAN

Why remote monitoring?



- Improves reliability of the solar systems
- Easy maintenance
- Less frequent battery replacement
- Reduces overall project cost



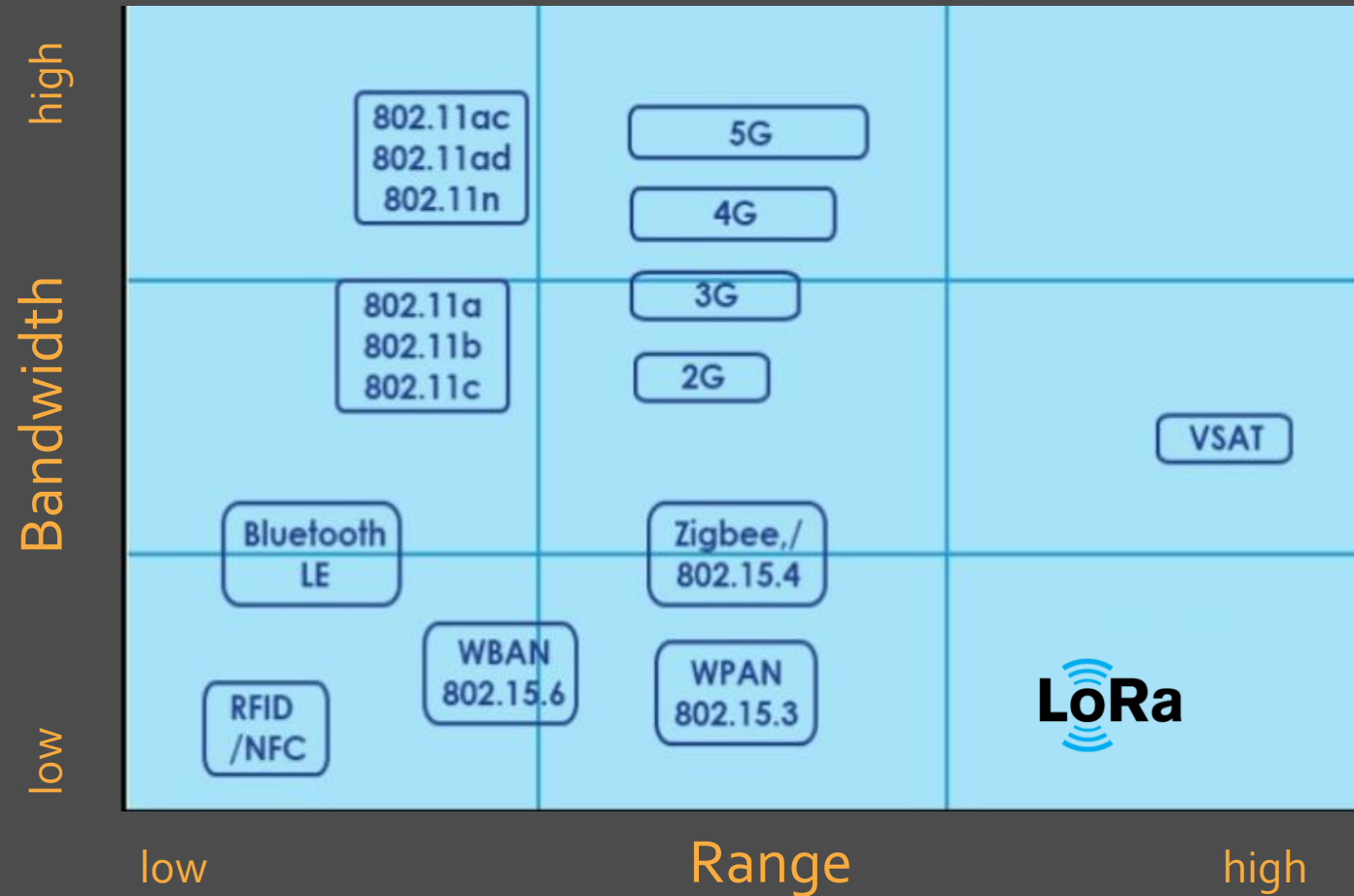
Benefits using LoRaWAN

LoRaWAN is a protocol for low-power, long-range, wireless radio networking.

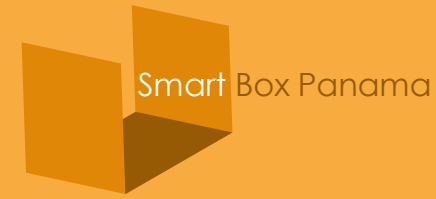
As it operates in an unlicensed band, devices can be deployed without interference from other licensed radios. It's convenient for small footprint devices to "talk" with other "things" on large scales.

Benefits:

- Long range, very wide coverage
- Low power consumption
- One gateway for many systems
- Excellent for M2M/IoT applications



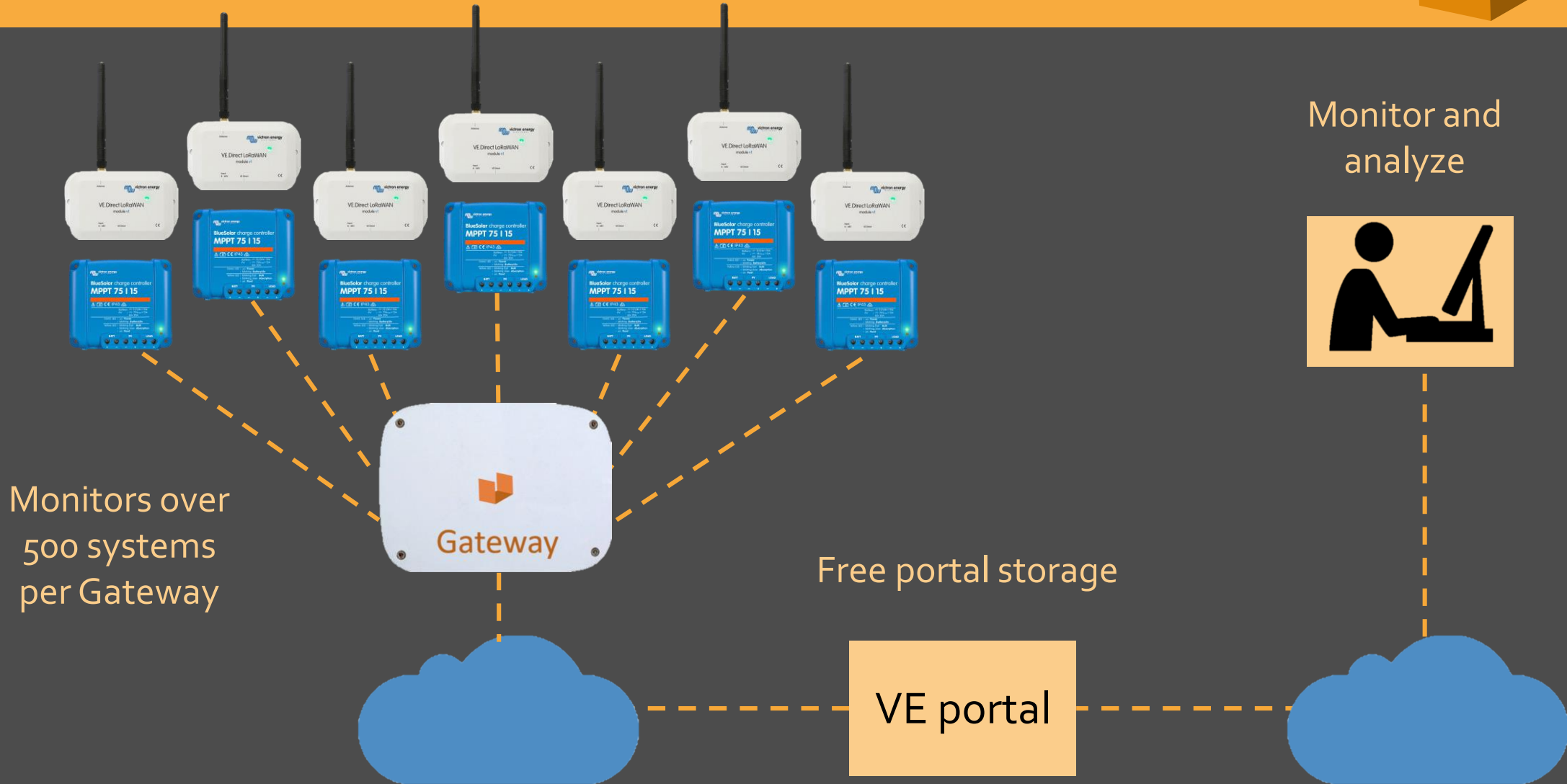
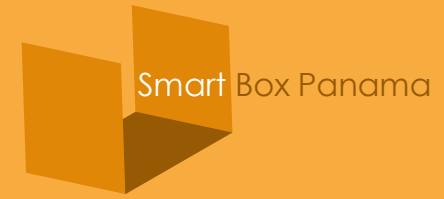
Victron Energy VE.Direct LoRaWAN



- Connects to the MPPT75/10 solar charge regulator
- Range of 15 km (5 km in urban areas)
- Plug-and-play installation
- Monitors solar panel power, battery voltage and battery current



Communication structure



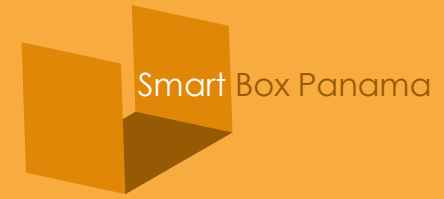
Monitors over
500 systems
per Gateway

Free portal storage

VE portal

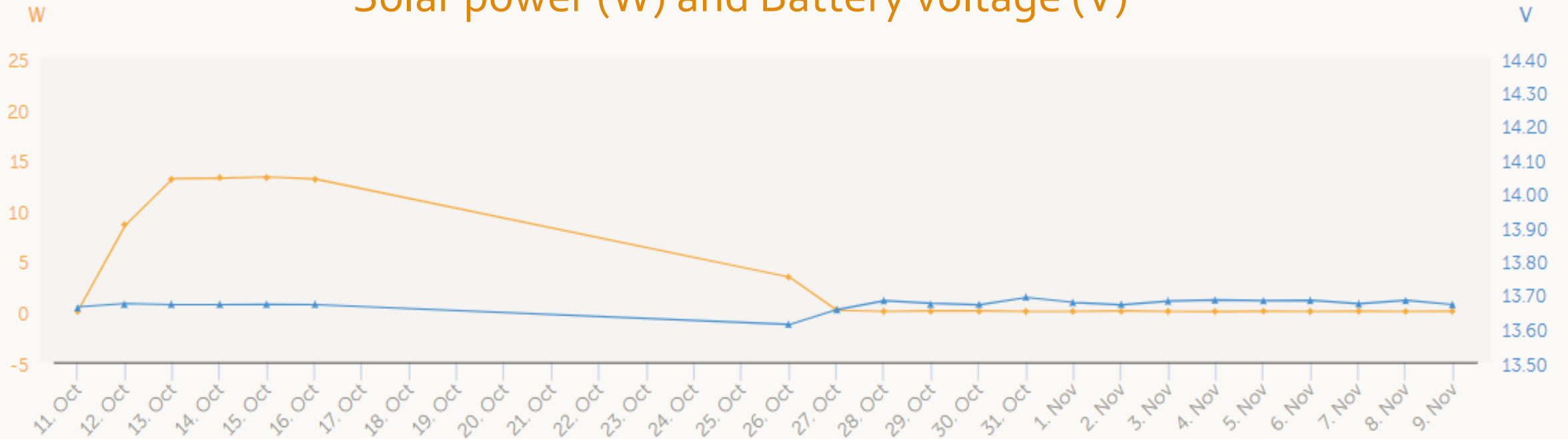
Monitor and
analyze

Information available from the portal



Solar Battery

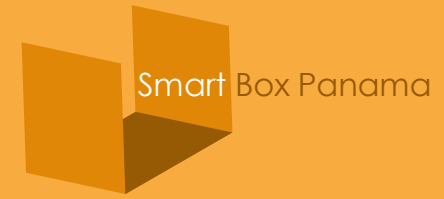
Solar power (W) and Battery voltage (V)



last 30 days

2017-11-09

Information available from the portal



last 7 days



Custom date

Solar Charger Voltage and Current

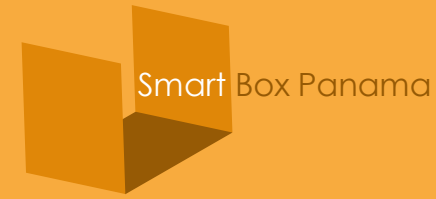
↕ Battery voltage (V)

↕ Battery current (A)

Battery voltage (V)



Victron Energy VE.Direct LoRaWAN



The VE.Direct LoRaWAN can monitor:



MPPT Solar Chargers

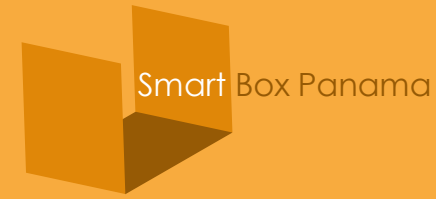


Battery Monitors



Phoenix Inverters

LoRaWAN Gateway



- One LoRaWAN Gateway monitors over 500 sites
- Monitoring range is 15 km (5 km in urban areas)
- Backhaul via Ethernet
- 915 MHz (US) frequency band
- 12V supply voltage, can be solar powered
- Available from Smart Box Panama



Other benefits

Since a Lora WAN network is generated and the gateway can support hundreds of devices, there is the option of adding more devices for monitoring:

- Temperature
- Movement
- Humidity
- Light
- and other industrial sensors

