NMEA2000 Switch bank PGN definitions

This document is an add-on to our Datacommunication whitepaper. That whitepaper contains a list of PGNs transmitted by each product type. This document defines the bit definitions of the switch banks.

Download the main document, the Datacommunication whitepaper, from the whitepapers section on our website.

Proprietary messages: VREGs

Note that besides the standard NMEA2000 PGNs, Victron devices also transmit proprietary messages, called VREGs. VREGs are used for all parameters cannot be sent with standard NMEA 2000 PGNs. The VREG PGN number is 61184 (0xEF00), and it is sent to the broadcast address 61439 (0xEFFF).

See the document “VE.Can registers - public.docx” for detailed VREG information and examples. It is available for download on the whitepaper section on our website..

More CAN-bus and NMEA2000 related documentation

- Changing NMEA2000 instances
- NMEA2000 and VE.Can

PGN List

Switch Bank Control - PGN 127502 (0x1F20E) (deprecated)

This message is no longer transmitted and has been replaced by PGN 127501.
This applies to products with versions as specified in the table below or newer.

Product	Version
BlueSolar MPPT 150/70 & 150/85	v2.00
Lynx Shunt VE.Can	v1.00
Skylla-i (all models)	v1.08
VE.Direct to VE.Can\NMEA 2000 interface	v1.06
VE.Bus to VE.Can\NMEA 2000 interface	v0.12

Binary Status Report - PGN 127501 (0x1F20D)

This PGN is sent out by multiple products, however the details differ per product.

BlueSolar Charger 150/70 & 150/85

Signal	Meaning
Bank Instance	Instance of the message, default value 0
Status 1 - Relay	“On” - The relay on the charger is active, the contact is closed
Status 2 - Alarm	“On” - There is an alarm condition
Status 3 - Low voltage	“On” - Battery voltage is too low
Status 4 - High voltage	“On” - Battery voltage is too high
Status 5 - Solar activity*	“On” - Solar panel irradiated (can be used for day/night detection)
Status 6 … 28	Not used, reports as “Unavailable”

* Since v2.01

When the Alarm status bit is set to “On”, the alarm reason can be queried using Victron propietary register 0xEDDA (Charger error code).

Lynx Shunt VE.Can

Since v1.07 the Lynx Shunt also transmits PGN 127501 for the relay trigger reason next to the PGN with the alarm reason.
The mapping of the status bits is identical to the alarm message.
The default instance of the alarm message is 0, as the default instance for the relay message is 1.

Signal	Meaning
Bank Instance	Instance of the message Default value for alarm message is 0 Default value for relay message is 1
Status 1 – Low voltage	“On” – Battery voltage is too low
Status 2 – High voltage	“On” – Battery voltage is too high
Status 3 – Low SOC	“On” – The Battery state of charge is too low
Status 4 – Low fused voltage	“On” – Fused voltage is too low
Status 5 – High fused voltage	“On” – Fused voltage is too high
Status 6 – Fuse blown	“On” – The fuse is blown
Status 7 – High battery temperature	“On” – Battery temperature is too high
Status 8 – Low battery temperature	“On” – Battery temperature is too low
Status 9 – High internal temperature	“On” – Internal temperature is too high
Status 10 … 28	Not used, report as “Unavailable”

The alarm and relay thresholds can be configured using Victron proprietary registers.

Skylla-i

Signal	Meaning
Bank Instance	Instance of the message, default value 0
Status 1 - Relay	“On” - The relay on the charger is active, the contact is closed
Status 2 - Alarm	“On” - There is an alarm condition
Status 3 - Low voltage	“On” - Battery voltage is too low

Signal	Meaning
Status 4 - High voltage	“On” - Battery voltage is too high
Status 5 … 28	Not used, reports as “Unavailable”

When the Alarm status bit is set to “On”, the alarm reason can be queried using Victron propietary register 0xEDDA (Charger error code).

VE.Direct to VE.Can\NMEA 2000 interface

See the manual of the VE.Direct to VE.Can interface:
https://www.victronenergy.com/accessories/ve-direct-to-ve-can-interface

VE.Bus to VE.Can\NMEA 2000 interface

Signal	Meaning
Bank Instance	Instance of the message, default value 0
Status 1 … 4	Not used, report as “Unavailable”
Status 5 - Low battery warning	“On” - There is a low battery voltage warning
Status 6 – Low battery alarm	“On” – There is a low battery voltage alarm
Status 7 – Temperature warning	“On” – There is a temperature warning
Status 8 – Temeprature alarm	“On” – There is a temperature alarm
Status 9 – Overload warning	“On” – There is an overload warning
Status 10 – Overload alarm	“On” – There is an overload alarm
Status 11 – Ripple warning*	“On” – There is a ripple warning
Status 12 – Ripple alarm*	“On” – There is a ripple alarm
Status 13 … 28	Not used, report as “Unavailable”

* Since v0.11

The LED state of the multi can be used to easily imitate the front of the multi itself. This is only for graphical purposes. Do not interpret the LED status to get the state of the device, since LED behaviour might be subject to change and combinations of LEDs have different meanings. Use the state fields themselves for these purposes. This is for GUI / user interfaces only.

Signal	Meaning
Bank Instance	Instance of the message, default value 1
Status 1	Led Mains On
Status 2	Led Mains Blink
Status 3	Led Absorption On
Status 4	Led Absorption Blink
Status 5	Led Bulk On
Status 6	Led Bulk Blink
Status 7	Led Float On
Status 8	Led Float Blink
Status 9	Led Inverter On
Status 10	Led Inverter Blink
Status 11	Led Overload On

Signal	Meaning
Status 12	Led Overload Blink
Status 13	Led Low Battery On
Status 14	Led Low Battery Blink
Status 15	Led Temperature On
Status 16	Led Temperature Blink
Status 17 ... 28	Not used, report as “Unavailable”

The state of an individual led can be extracted from the combined.

Blink	On	Nibble	Meaning
Off	Off	0x0000	The LED is off
Off	On	0x0001	The LED is on
On	Off	0x0100	The LED is blinking
On	On	0x0101	The LED is blinking in opposite sense as normal blinking. When LEDs of state 0x0100 are off LED in this state are on and vice versa
Unavailable	Unavailable	other	Led state is not available
Reserved	Reserved		