

Modbus ⇨ IEC61850 for

UPC4

(Using PowerLogic™ G3200)

USER MANUAL



Notes to this manual

ATTENTION! Read this manual carefully before installing and commissioning the specified module. Familiarity with the contents of this manual is required for installing and operating the specified module. The rules for prevention of accidents for the specific country and the general safety rules in accordance with IEC 364 must be observed.

The function description in this manual corresponds to the date of publishing. Technical changes and changes in form and content can be made at any time by the manufacturer without notice. There are no obligations to update the manual continually.

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1 Hardware, connections, configuration

1.1 Technical description

Both the DC controller UPC4 and the protocol converter PowerLogic™ G3200 support MODBUS RTU functionality. The UPC4 needs to be enabled to this protocol type (see section 1.1.2). A connection between UPC4 and G3200 via MODBUS effects that the standard IEC61850 is supported by the couple UPC4 and G3200.

UPC4 software release 2.32 or higher should be used. Previous software (2.20 to 2.31) can be used, but therein the objects *2.1.1 Device UPC4* are not available and the bits *2.3.3 Digital output* are wrongly mapped.

1.1.1 Electrical connection

Connect the gateway to the UPC4 according to the table below.

The UPC4 provides MODBUS signals by 4-pole Screw Terminal Block (MSTB).

The MODBUS signals have to be connected to the 5-pole terminal block of the gateway G3200.

UPC4 4-pole MSTB	Symbol	Description	G3200 5-pole MSTB	Symbol
1		Cable shield (not connected with GND)	5	
2	A	D0 (RS485-)	4	Rx-
3	B	D1 (RS485+)	3	Rx+
4	GND	Signal Common	–	–

Wires are required with a cross section of 0.5 to 2.5 mm² (AWG 24-12). Cable maximum length is 1500 m with shield. Shield connection is typically not necessary. Avoid two or more connections to the same potential with the shield (closed loop).

NOTE: Never use the shield as live wire!

Termination DIP switch UPC4:



ON = Top

Gateway PowerLogic™ G3200:

Supply Voltage 24 VDC ±10% (2-pole MSTB). Maximum power input is 4 Watt. Thus, the gateway can be supplied by the external power supply of the UPC4.

There is a **green marked** RJ45 connector to connect to Ethernet. To operate with the G3200 it is necessary to connect it to Ethernet. This is the IEC61850 Server side, Port 102. Web access using Port 80 (http).

DIP-Switch:

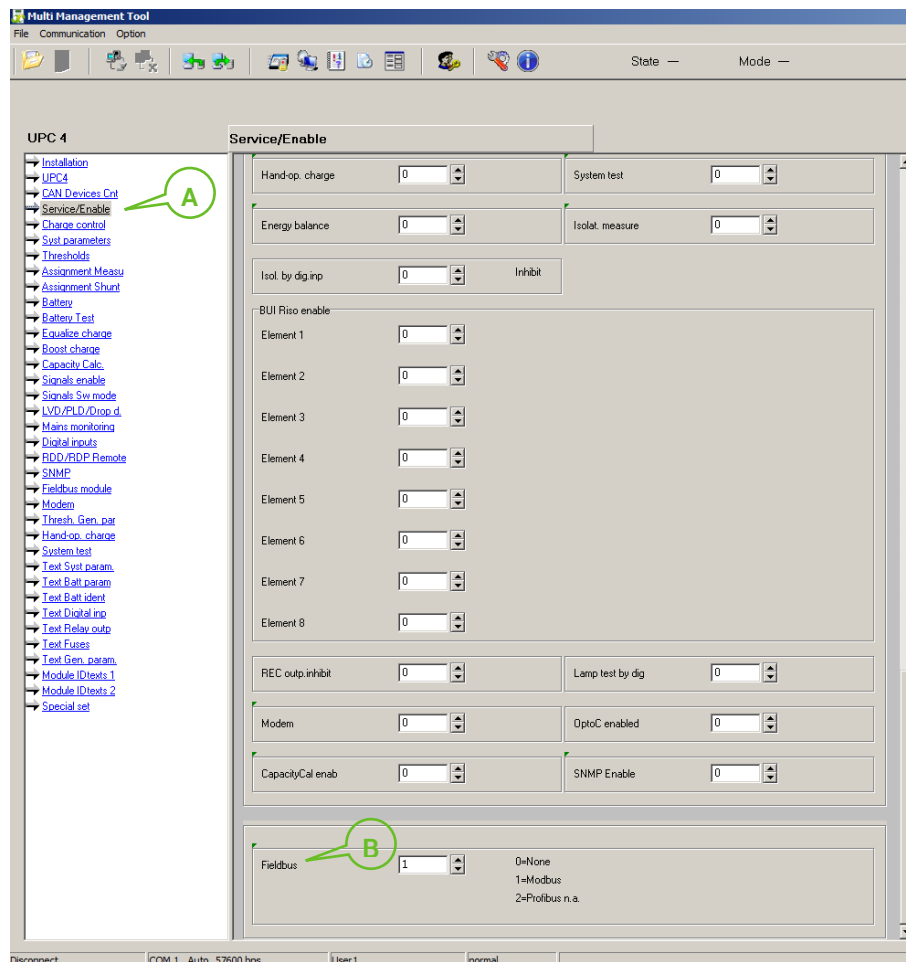


ON = Top

1.1.2 Configuration

The parameters related to MODBUS operation are among of the **UPC4** configuration parameters and can be changed according to the following:

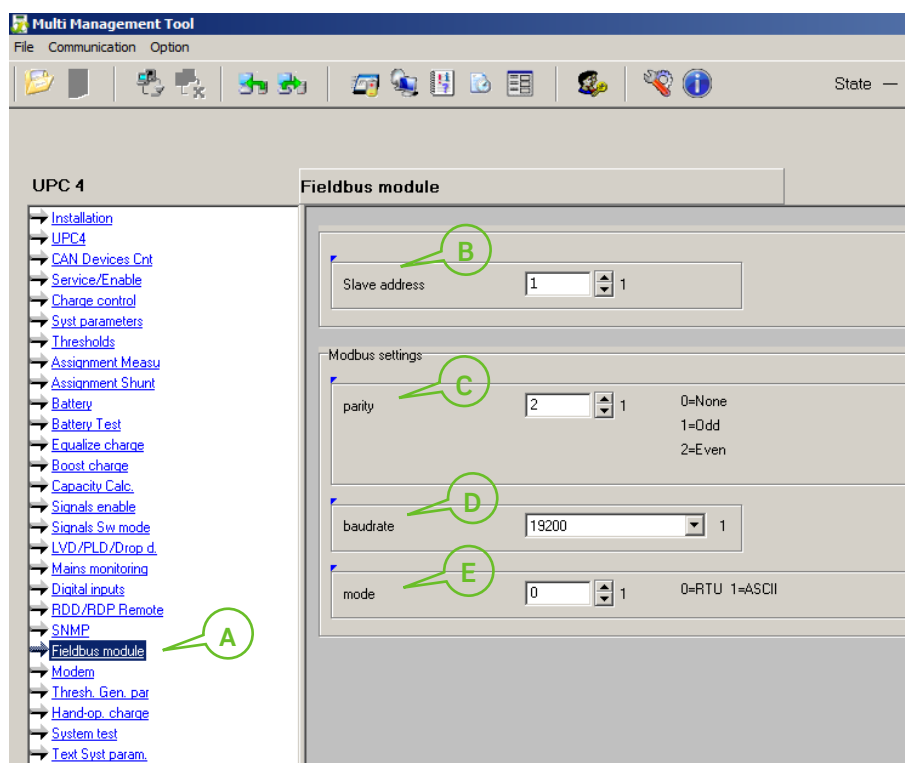
1. Connect the UPC4 via null modem cable or Ethernet cable to your PC or Laptop, start the configuration software MMT and load (read) the parameters from UPC4. The parameter groups are listed in the left window.
2. Go to the parameter group *Service/Enable* (A) and set the parameter *Fieldbus* (B) to the value 1 (=Modbus). After that, Modbus functionality is enabled.



Please continue as stated on the next page:

3. Go to the parameter group *Fieldbus module* (A) and check the parameters *Slave address* (B), *parity* (C), *baudrate* (D) and *mode* (E). Make sure that these four parameters are set to their default values according to the table and as shown in the picture below:

Item	Default value
Slave address	1
Baud	19200
Parity	2 (=Even)
Mode	0 (=RTU)



NOTE: For general use of the UPC4 configuration software (MMT) please read the UPC4 operation manual and the manual of the MMT respectively.

The IP address of the **G3200** is pre-set to 192.168.0.124.

You can access the G3200 via a Web browser: `http://192.168.0.124`

Login: User name: user
 Password: user

Thereafter the G3200 is widely configurable relating to *TCP/IP*.

NOTE: Do not forget the logout procedure.

1.1.3 IED Capability Description

The IEC61850 standard requires each vendor to supply an IED Capability Description (ICD) (xyz.icd). The ICD file specifies all of the capabilities of the server implementation, including detailed descriptions of all object models. This file is used by IEC61850 clients to configure databases and engineering tools. Dependent on the client software it can be necessary to write the current IP number of the gateway G3200 into the ICD file! If this is not done, possibly the ICD file will be refused by the client software (on connect).

```

10 <!--P type= OSI-HE-qualifier xsi:type= tp_OSI-HE-qualifier /23/P-->
11 <Communication>
12   <SubNetwork name="SN1">
13     <ConnectedAP apName="AP1" iedName="GW51_">
14       <Address>
15         <P type="IP" xsi:type="tp_IP">192.168.0.124</P>
16         <P type="IP-SUBNET" xsi:type="tp_IP-SUBNET">255.255.255.0</P>
17         <P type="IP-GATEWAY" xsi:type="tp_IP-GATEWAY">0.0.0.0</P>
18         <P type="OSI-PSEL" xsi:type="tp_OSI-PSEL">00000001</P>
19         <P type="OSI-SSEL" xsi:type="tp_OSI-SSEL">0001</P>
20         <P type="OSI-TSEL" xsi:type="tp_OSI-TSEL">0001</P>
21       </Address>
22     </ConnectedAP>
23   </SubNetwork>
24 </Communication>

```

See above line 15, the black digits.

See lines 16 and 17 too.

The line numbers can change; use the tokens **tp_IP** and so on to identify the correct lines.

The ICD file is a plain text file.

Editing this file is not difficult:

```

      <P type      = "IP" xsi:type =
"tp_IP" > 192.168.0.124
</P>

```

That is the same as:

```
<P type="IP" xsi:type="tp_IP">192.168.0.124</P>
```

2 Pathnames IEC61850

Each of the presented pathnames represents a data object of the UPC4.

The pathnames follow the rules of the communication standard IEC61850.

The tokens DC, ST, MX, LPHD, LTIM, MMDC and so on are defined by this standard.

Delimiting characters are “/” and “\$.”

2.1 Measurement- and status values

2.1.1 Device UPC4

Vendor	GW51_UPC4_LD1/LPHD1\$DC\$PhyNam\$vendor
Model	GW51_UPC4_LD1/LPHD1\$DC\$PhyNam\$model
Serial number	GW51_UPC4_LD1/LPHD1\$DC\$PhyNam\$serno
Software Release	GW51_UPC4_LD1/LPHD1\$DC\$PhyNam\$release
IP-Address	GW51_UPC4_LD1/LPHD1\$DC\$PhyNam\$ipAddr

2.1.2 Timestamp of UPC4

Second value	GW51_UPC4_LD1/LTIM1\$ST\$Second\$stVal
Minute value	GW51_UPC4_LD1/LTIM1\$ST\$Minute\$stVal
Hour value	GW51_UPC4_LD1/LTIM1\$ST\$Hour\$stVal
Day value	GW51_UPC4_LD1/LTIM1\$ST\$Day\$stVal
Month value	GW51_UPC4_LD1/LTIM1\$ST\$Month\$stVal
Year value	GW51_UPC4_LD1/LTIM1\$ST\$Year\$stVal
Date +Time format	GW51_UPC4_LD1/LTIM1\$ST\$DatTim\$t

2.1.3 DC system

Load voltage	GW51_UPC4_LD1/MMDC1\$MX\$DC_System\$Vload\$mag
Load current	GW51_UPC4_LD1/MMDC1\$MX\$DC_System\$Iload\$mag
Load current calculated	GW51_UPC4_LD1/MMDC1\$MX\$DC_System\$Iload_calculated\$mag
Isolation resistance	GW51_UPC4_LD1/MMDC1\$MX\$DC_System\$Risol\$mag
Battery current Sum	GW51_UPC4_LD1/MMDC1\$MX\$DC_System\$Sum_Ibatt\$mag
Rectifier current Sum	GW51_UPC4_LD1/MMDC1\$MX\$DC_System\$Sum_Irect\$mag
DcDc current sum	GW51_UPC4_LD1/MMDC1\$MX\$DC_System\$Sum_Idcdc\$mag

2.1.4 Battery values

Voltage 1	GW51_UPC4_LD1/ZBAT1\$MX\$Batt1\$voltage\$mag
Current 1	GW51_UPC4_LD1/ZBAT1\$MX\$Batt1\$current\$mag
Tap voltage 1	GW51_UPC4_LD1/ZBAT1\$MX\$Batt1\$tappvolt\$mag
Temperature 1	GW51_UPC4_LD1/ZBAT1\$MX\$Batt1\$temperature\$mag
Batteries 2 .. 6	...
Voltage 7	GW51_UPC4_LD1/ZBAT1\$MX\$Batt7\$voltage\$mag
Current 7	GW51_UPC4_LD1/ZBAT1\$MX\$Batt7\$current\$mag
Tap voltage 7	GW51_UPC4_LD1/ZBAT1\$MX\$Batt7\$tappvolt\$mag
Temperature 7	GW51_UPC4_LD1/ZBAT1\$MX\$Batt7\$temperature\$mag

2.1.5 General measurands

Voltage 1	GW51_UPC4_LD1/MMDC2\$MX\$Gen_measurands\$voltage1\$mag
Voltages 2 .. 5	...
Voltage 6	GW51_UPC4_LD1/MMDC2\$MX\$Gen_measurands\$voltage6\$mag
Current 1	GW51_UPC4_LD1/MMDC2\$MX\$Gen_measurands\$current1\$mag
Currents 2 .. 5	...
Current 6	GW51_UPC4_LD1/MMDC2\$MX\$Gen_measurands\$current6\$mag
Temperature 1	GW51_UPC4_LD1/MMDC2\$MX\$Gen_measurands\$temperature1\$mag
Temperatures 2 .. 5	...
Temperature 6	GW51_UPC4_LD1/MMDC2\$MX\$Gen_measurands\$temperature6\$mag
Resistance 1	GW51_UPC4_LD1/MMDC2\$MX\$Gen_measurands\$resistance1\$mag
Resistances 2 .. 5	...
Resistance 6	GW51_UPC4_LD1/MMDC2\$MX\$Gen_measurands\$resistance6\$mag

2.2 CAN Devices

2.2.1 Mains monitoring board

Phase voltage L1	GW51_UPC4_LD1/MMXU1\$MX\$MM_board\$V_L1\$mag
Phase voltage L2	GW51_UPC4_LD1/MMXU1\$MX\$MM_board\$V_L2\$mag
Phase voltage L3	GW51_UPC4_LD1/MMXU1\$MX\$MM_board\$V_L3\$mag
Phase current L1	GW51_UPC4_LD1/MMXU1\$MX\$MM_board\$I_L1\$mag
Phase current L2	GW51_UPC4_LD1/MMXU1\$MX\$MM_board\$I_L2\$mag
Phase current L3	GW51_UPC4_LD1/MMXU1\$MX\$MM_board\$I_L3\$mag
Phase frequency L1	GW51_UPC4_LD1/MMXU1\$MX\$MM_board\$F_L1\$mag
Phase frequency L2	GW51_UPC4_LD1/MMXU1\$MX\$MM_board\$F_L2\$mag
Phase frequency L3	GW51_UPC4_LD1/MMXU1\$MX\$MM_board\$F_L3\$mag

2.2.2 Rectifier#1 values

Output voltage 1	GW51_UPC4_LD1/ZSCR1\$MX\$Rectifier\$Rec1\$vOut
Output current 1	GW51_UPC4_LD1/ZSCR1\$MX\$Rectifier\$Rec1\$iOut
Temperature 1	GW51_UPC4_LD1/ZSCR1\$MX\$Rectifier\$Rec1\$temp
Rectifiers#1 2..47	...
Output voltage 48	GW51_UPC4_LD1/ZSCR1\$MX\$Rectifier\$Rec48\$vOut
Output current 48	GW51_UPC4_LD1/ZSCR1\$MX\$Rectifier\$Rec48\$iOut
Temperature 48	GW51_UPC4_LD1/ZSCR1\$MX\$Rectifier\$Rec48\$temp

2.2.3 Rectifier#1 status bits

Configured Count of Rectifiers (not a bit)	GW51_UPC4_LD1/ZSCR1\$ST\$Rectifier\$Count\$stVal
CAN contact	GW51_UPC4_LD1/ZSCR1\$ST\$Rectifier\$Rec1\$can_contact
Collective alarm	GW51_UPC4_LD1/ZSCR1\$ST\$Rectifier\$Rec1\$alarm
Mains fault	GW51_UPC4_LD1/ZSCR1\$ST\$Rectifier\$Rec1\$mains_fault
Switched OFF	GW51_UPC4_LD1/ZSCR1\$ST\$Rectifier\$Rec1\$switch_off
Temperature High	GW51_UPC4_LD1/ZSCR1\$ST\$Rectifier\$Rec1\$temp_high
Output voltage High	GW51_UPC4_LD1/ZSCR1\$ST\$Rectifier\$Rec1\$vout_high
Output voltage Low	GW51_UPC4_LD1/ZSCR1\$ST\$Rectifier\$Rec1\$vout_low
Rectifiers#1 2..47	...
CAN contact	GW51_UPC4_LD1/ZSCR1\$ST\$Rectifier\$Rec48\$can_contact
Collective alarm	GW51_UPC4_LD1/ZSCR1\$ST\$Rectifier\$Rec48\$alarm
Mains fault	GW51_UPC4_LD1/ZSCR1\$ST\$Rectifier\$Rec48\$mains_fault
Switched OFF	GW51_UPC4_LD1/ZSCR1\$ST\$Rectifier\$Rec48\$switch_off
Temperature High	GW51_UPC4_LD1/ZSCR1\$ST\$Rectifier\$Rec48\$temp_high
Output voltage High	GW51_UPC4_LD1/ZSCR1\$ST\$Rectifier\$Rec48\$vout_high
Output voltage Low	GW51_UPC4_LD1/ZSCR1\$ST\$Rectifier\$Rec48\$vout_low

NOTE: Rectifier#1 = PSS, PSR

2.2.4 Rectifier#2 values

Output voltage	GW51_UPC4_LD1/ZSCR2\$MX\$Rectifier\$Rec1\$vOut
Output current	GW51_UPC4_LD1/ZSCR2\$MX\$Rectifier\$Rec1\$iOut
Input voltage AC DC	GW51_UPC4_LD1/ZSCR2\$MX\$Rectifier\$Rec1\$vIn
Intake temperature	GW51_UPC4_LD1/ZSCR2\$MX\$Rectifier\$Rec1\$tIn
Exhaust temperature	GW51_UPC4_LD1/ZSCR2\$MX\$Rectifier\$Rec1\$tOut
Rectifiers#2 2..47	...
Output voltage	GW51_UPC4_LD1/ZSCR2\$MX\$Rectifier\$Rec48\$vOut
Output current	GW51_UPC4_LD1/ZSCR2\$MX\$Rectifier\$Rec48\$iOut
Input voltage AC DC	GW51_UPC4_LD1/ZSCR2\$MX\$Rectifier\$Rec48\$vIn
Intake temperature	GW51_UPC4_LD1/ZSCR2\$MX\$Rectifier\$Rec48\$tIn
Exhaust temperature	GW51_UPC4_LD1/ZSCR2\$MX\$Rectifier\$Rec48\$tOut

2.2.5 Rectifier#2 status bits

CAN contact	GW51_UPC4_LD1/ZSCR2\$ST\$Rectifier\$Rec1\$can_contact
Collective alarm	GW51_UPC4_LD1/ZSCR2\$ST\$Rectifier\$Rec1\$alarm
Rectifiers#2 2..47	...
CAN contact	GW51_UPC4_LD1/ZSCR2\$ST\$Rectifier\$Rec48\$can_contact
Collective alarm	GW51_UPC4_LD1/ZSCR2\$ST\$Rectifier\$Rec48\$alarm

NOTE: Rectifier#2 = Flatpack, Powerpack, Minipack, Micropack

2.2.6 Inverter values

Output voltage	GW51_UPC4_LD1/ZCON2\$MX\$Inverter\$Inv1\$vOut
Output current	GW51_UPC4_LD1/ZCON2\$MX\$Inverter\$Inv1\$iOut
Output frequency	GW51_UPC4_LD1/ZCON2\$MX\$Inverter\$Inv1\$fOut
Temperature	GW51_UPC4_LD1/ZCON2\$MX\$Inverter\$Inv1\$temp
Inverters 2..15	...
Output voltage	GW51_UPC4_LD1/ZCON2\$MX\$Inverter\$Inv16\$vOut
Output current	GW51_UPC4_LD1/ZCON2\$MX\$Inverter\$Inv16\$iOut
Output frequency	GW51_UPC4_LD1/ZCON2\$MX\$Inverter\$Inv16\$fOut
Temperature	GW51_UPC4_LD1/ZCON2\$MX\$Inverter\$Inv16\$temp

2.2.7 Inverter status bits

Configured Count of Inverters (not a bit)	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Count\$stVal
CAN contact	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv1\$can_contact
Collective alarm	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv1\$alarm
Output current High	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv1\$iout_high
Switched OFF	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv1\$switched_off
Input voltage High	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv1\$vin_high
Input voltage Low	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv1\$vin_low
Output voltage High	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv1\$vout_high
Output voltage Low	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv1\$vout_low
Inverters 2..15	...
CAN contact	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv16\$can_contact
Collective alarm	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv16\$alarm
Output current High	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv16\$iout_high
Switched OFF	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv16\$switched_off
Input voltage High	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv16\$vin_high
Input voltage Low	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv16\$vin_low
Output voltage High	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv16\$vout_high
Output voltage Low	GW51_UPC4_LD1/ZCON2\$ST\$Inverter\$Inv16\$vout_low

2.2.8 DCDC converter values

Output voltage	GW51_UPC4_LD1/ZCON1\$MX\$DCDCconv\$DcDc1\$vOut
Output current	GW51_UPC4_LD1/ZCON1\$MX\$DCDCconv\$DcDc1\$iOut
Temperature	GW51_UPC4_LD1/ZCON1\$MX\$DCDCconv\$DcDc1\$temp
DCDC converters 2..15	...
Output voltage	GW51_UPC4_LD1/ZCON1\$MX\$DCDCconv\$DcDc16\$vOut
Output current	GW51_UPC4_LD1/ZCON1\$MX\$DCDCconv\$DcDc16\$iOut
Temperature	GW51_UPC4_LD1/ZCON1\$MX\$DCDCconv\$DcDc16\$temp

2.2.9 DCDC converter status bits

Configured Count of DCDC Converters (not a bit)	GW51_UPC4_LD1/ZCON1\$ST\$DCDCconv\$Count\$stVal
CAN contact	GW51_UPC4_LD1/ZCON1\$ST\$DCDCconv\$DcDc1\$can_contact
Collective alarm	GW51_UPC4_LD1/ZCON1\$ST\$DCDCconv\$DcDc1\$alarm
Mains fault	GW51_UPC4_LD1/ZCON1\$ST\$DCDCconv\$DcDc1\$mains_fault
Switched OFF	GW51_UPC4_LD1/ZCON1\$ST\$DCDCconv\$DcDc1\$switch_off
Temperature High	GW51_UPC4_LD1/ZCON1\$ST\$DCDCconv\$DcDc1\$temp_high
Output voltage High	GW51_UPC4_LD1/ZCON1\$ST\$DCDCconv\$DcDc1\$vout_high
Output voltage Low	GW51_UPC4_LD1/ZCON1\$ST\$DCDCconv\$DcDc1\$vout_low
DCDC converters 2..15	...
CAN contact	GW51_UPC4_LD1/ZCON1\$ST\$DCDCconv\$DcDc16\$can_contact
Collective alarm	GW51_UPC4_LD1/ZCON1\$ST\$DCDCconv\$DcDc16\$alarm
Mains fault	GW51_UPC4_LD1/ZCON1\$ST\$DCDCconv\$DcDc16\$mains_fault
Switched OFF	GW51_UPC4_LD1/ZCON1\$ST\$DCDCconv\$DcDc16\$switch_off
Temperature High	GW51_UPC4_LD1/ZCON1\$ST\$DCDCconv\$DcDc16\$temp_high
Output voltage High	GW51_UPC4_LD1/ZCON1\$ST\$DCDCconv\$DcDc16\$vout_high
Output voltage Low	GW51_UPC4_LD1/ZCON1\$ST\$DCDCconv\$DcDc16\$vout_low

2.2.10 Bypass switch values

Battery voltage	GW51_UPC4_LD1/XSWI1\$MX\$BypassSwitch\$STS1\$vBatt
Mains voltage	GW51_UPC4_LD1/XSWI1\$MX\$BypassSwitch\$STS1\$vAcMains
INV Output voltage	GW51_UPC4_LD1/XSWI1\$MX\$BypassSwitch\$STS1\$vAcInv
Output current	GW51_UPC4_LD1/XSWI1\$MX\$BypassSwitch\$STS1\$iOut
Mains frequency	GW51_UPC4_LD1/XSWI1\$MX\$BypassSwitch\$STS1\$fMains
Inverter frequency	GW51_UPC4_LD1/XSWI1\$MX\$BypassSwitch\$STS1\$fInv
Temperature	GW51_UPC4_LD1/XSWI1\$MX\$BypassSwitch\$STS1\$temp

2.2.11 Bypass switch status bits

CAN contact	GW51_UPC4_LD1/XSWI1\$ST\$BypassSwitch\$STS1\$can_contact
Collective alarm	GW51_UPC4_LD1/XSWI1\$ST\$BypassSwitch\$STS1\$collective_alarm
Inverter error	GW51_UPC4_LD1/XSWI1\$ST\$BypassSwitch\$STS1\$INV_err
Current High	GW51_UPC4_LD1/XSWI1\$ST\$BypassSwitch\$STS1\$current_high
DC voltage High	GW51_UPC4_LD1/XSWI1\$ST\$BypassSwitch\$STS1\$dc_volt_high
DC voltage High Warning level	GW51_UPC4_LD1/XSWI1\$ST\$BypassSwitch\$STS1\$dc_volt_high_warn
DC voltage Low	GW51_UPC4_LD1/XSWI1\$ST\$BypassSwitch\$STS1\$dc_volt_low
DC voltage Low Warning level	GW51_UPC4_LD1/XSWI1\$ST\$BypassSwitch\$STS1\$dc_volt_low_warn
Error Source 1 (preference)	GW51_UPC4_LD1/XSWI1\$ST\$BypassSwitch\$STS1\$err_src1
Error Source 2 (reserve)	GW51_UPC4_LD1/XSWI1\$ST\$BypassSwitch\$STS1\$err_src2
Load on Inverter (Load on Mains)	GW51_UPC4_LD1/XSWI1\$ST\$BypassSwitch\$STS1\$load_on_INV
Mains priority (INV priority)	GW51_UPC4_LD1/XSWI1\$ST\$BypassSwitch\$STS1\$mains_priority
Relay active (inactive)	GW51_UPC4_LD1/XSWI1\$ST\$BypassSwitch\$STS1\$relay_active
Synchronizing error	GW51_UPC4_LD1/XSWI1\$ST\$BypassSwitch\$STS1\$sync_err
Temperature of heat sink High	GW51_UPC4_LD1/XSWI1\$ST\$BypassSwitch\$STS1\$temp_heat_sink

2.2.12 BUI error bits [#1]

CAN contact	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1_can_contact\$stVal
Collective alarm	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1_alarm\$stVal
BUI 2..7	...
CAN contact	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_8_can_contact\$stVal
Collective alarm	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_8_alarm\$stVal

2.2.13 BUI error bits [#2]

Voltage1 Overflow	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$v1_overflow
Voltage2 Overflow	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$v2_overflow
Voltage3 Overflow	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$v3_overflow
Current1 Overflow	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$i1_overflow
Current2 Overflow	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$i2_overflow
Current3 Overflow	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$i3_overflow
Temperature1 Overflow	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$t1_overflow
Temperature2 Overflow	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$t2_overflow
Shunt1 Voltage Overflow	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$i1_Shunt_volt_overflow
Shunt2 Voltage Overflow	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$i2_Shunt_volt_overflow
Shunt3 Voltage Overflow	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$i3_Shunt_volt_overflow
Isolation Overflow	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$iso_overflow
Reference Overflow	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$ref_overflow
Isolation resistance not valid	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$rIso_Not_valid
Cold Start currently	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$cold_start
CRC fault Calibration values	GW51_UPC4_LD1/GGIO10\$ST\$StateBUI\$BUI_1\$src_fault_CalibValues
BUI 2	ditto
BUI 3	ditto

NOTE: Due to limitations of the Gateway G3200 the bits of only three (of 8) BUI are used.

2.2.14 Circuit breaker bits (FMB)

Circuit breaker 1	GW51_UPC4_LD1/XCBR1\$ST\$Fuse\$Fuse1\$stVal
Circuit breaker 2..47	...
Circuit breaker 48	GW51_UPC4_LD1/XCBR1\$ST\$Fuse\$Fuse48\$stVal

NOTE: Due to limitations of the Gateway G3200 the bits of only 48 (of 192) circuit breaker are used.

2.3 Status bits

2.3.1 Miscellaneous bits #1

Digital Input 1.1	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$DigInp1_1\$stVal
Digital Inputs 1.2...1.15	...
Digital Input 1.16	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$DigInp1_16\$stVal
Digital Input 2.1	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$DigInp2_1\$stVal
Digital Inputs 2.2 ... 2.15	...
Digital Input 2.16	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$DigInp2_16\$stVal

2.3.2 Miscellaneous bits #2

Led 6	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_6\$stVal
Led 6 blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_6_blink\$stVal
Led CAN0	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_can0\$stVal
Led CAN0 blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_can0_blink\$stVal
Led CAN1	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_can1\$stVal
Led CAN1 blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_can1_blink\$stVal
Led Error	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_error\$stVal
Led Error blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_error_blink\$stVal
Led Function	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_function\$stVal
Led Function blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_function_blink\$stVal
Led MMB	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_mmb\$stVal
Led MMB blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_mmb_blink\$stVal
Led RDX1	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_rdx1\$stVal
Led RDX1 blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_rdx1_blink\$stVal
Led RDX2	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_rdx2\$stVal
Led RDX2 blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_rdx2_blink\$stVal
Led RDX3	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_rdx3\$stVal
Led RDX3 blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_rdx3_blink\$stVal
Led RDX4	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_rdx4\$stVal
Led RDX4 blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_rdx4_blink\$stVal
Led RDX5	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_rdx5\$stVal
Led RDX5 blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_rdx5_blink\$stVal
Led RDX6	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_rdx6\$stVal
Led RDX6 blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_rdx6_blink\$stVal
Led red2	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_red2\$stVal
Led red2 blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_red2_blink\$stVal
Led Standby	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_standby\$stVal
Led Standby blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_standby_blink\$stVal
Led Sys1	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_sys1\$stVal
Led Sys1 blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_sys1_blink\$stVal
Led Sys2	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_sys2\$stVal
Led Sys2 blink	GW51_UPC4_LD1/GGIO8\$ST\$Bits\$LED_sys2_blink\$stVal

2.3.3 Digital output

Error state	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$error_state\$stVal
Events	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$events\$stVal
Modem Traps	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$modem_traps\$stVal
Led OK	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$led_OK\$stVal
Led RDX1	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$led_RDX1\$stVal
Led RDX2	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$led_RDX2\$stVal
Led RDX3	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$led_RDX3\$stVal
Led RDX4	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$led_RDX4\$stVal
Led RDX5	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$led_RDX5\$stVal
Led RDX6	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$led_RDX6\$stVal
Relay K1	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$relay_K1\$stVal
Relay K2	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$relay_K2\$stVal
Relay K3	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$relay_K3\$stVal
Relay K4	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$relay_K4\$stVal
Relay K5	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$relay_K5\$stVal
Relay K6	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$relay_K6\$stVal
Relay K11	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$relay_K11\$stVal
Relay K12	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$relay_K12\$stVal
Relay K13	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$relay_K13\$stVal
Relay K14	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$relay_K14\$stVal
Relay K15	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$relay_K15\$stVal
Relay K16	GW51_UPC4_LD1/GGI09\$ST\$DigitalOutput\$relay_K16\$stVal

Error state (see above) is the output of the bit matrix used for the filtered signal bits below.

All outputs here are outputs of bit matrixes.

2.3.4 CAN device state bits

BMB1 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$BMB1_alarm\$stVal
BMB1 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$BMB1_can_contact\$stVal
BMB2 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$BMB2_alarm\$stVal
BMB2 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$BMB2_can_contact\$stVal
BMB3 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$BMB3_alarm\$stVal
BMB3 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$BMB3_can_contact\$stVal
BMB4 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$BMB4_alarm\$stVal
BMB4 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$BMB4_can_contact\$stVal
BMB5 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$BMB5_alarm\$stVal
BMB5 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$BMB5_can_contact\$stVal
BMB6 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$BMB6_alarm\$stVal
BMB6 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$BMB6_can_contact\$stVal
DIB1 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$DIB1_alarm\$stVal
DIB1 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$DIB1_can_contact\$stVal
DIB2 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$DIB2_alarm\$stVal
DIB2 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$DIB2_can_contact\$stVal
FAN1 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$FAN1_alarm\$stVal
FAN1 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$FAN1_can_contact\$stVal
FAN2 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$FAN2_alarm\$stVal
FAN2 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$FAN2_can_contact\$stVal
FMB1 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$FMB1_alarm\$stVal
FMB1 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$FMB1_can_contact\$stVal
FMB2 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$FMB2_alarm\$stVal
FMB2 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$FMB2_can_contact\$stVal
FMB3 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$FMB3_alarm\$stVal
FMB3 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$FMB3_can_contact\$stVal
FMB4 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$FMB4_alarm\$stVal
FMB4 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$FMB4_can_contact\$stVal
MMB1 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$MMB1_alarm\$stVal
MMB1 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$MMB1_can_contact\$stVal
MMB2 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$MMB2_alarm\$stVal
MMB2 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$MMB2_can_contact\$stVal
RLB1 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$RLB1_alarm\$stVal
RLB1 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$RLB1_can_contact\$stVal
RLB2 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$RLB2_alarm\$stVal
RLB2 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$RLB2_can_contact\$stVal
UMD1 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$UMD1_alarm\$stVal
UMD1 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$UMD1_can_contact\$stVal
UMD2 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$UMD2_alarm\$stVal
UMD2 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$UMD2_can_contact\$stVal
UMD3 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$UMD3_alarm\$stVal
UMD3 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$UMD3_can_contact\$stVal
UMD4 Alarm	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$UMD4_alarm\$stVal
UMD4 CAN contact	GW51_UPC4_LD1/GGIO11\$ST\$StateBits\$UMD4_can_contact\$stVal

NOTE: Due to limitations of the Gateway G3200 the bits of only two (of 16) FAN racks are used and the FAN current error bits (16x6) are not used.

2.3.5 Event information bits

LVD enabled	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$enable_LVD\$stVal
PLD1 enabled	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$enable_PLD1\$stVal
PLD2 enabled	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$enable_PLD2\$stVal
LVD manual	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$manual_LVD\$stVal
PLD1 manual	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$manual_PLD1\$stVal
PLD2 manual	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$manual_PLD2\$stVal
Battery test data store enabled	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$enable_BTstore\$stVal
Battery test enabled	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$enable_BattTest\$stVal
Boost charge enabled	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$enable_BoostCharge\$stVal
Equalize charge enabled	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$enable_EqualizeCharge\$stVal
LVD optocoupler	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$optocoupler_LVD\$stVal
PLD1 optocoupler	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$optocoupler_PLD1\$stVal
PLD2 optocoupler	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$optocoupler_PLD2\$stVal
Battery test data store is running	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$run_BTstore\$stVal
Battery test is running	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$run_BattTest\$stVal
Boost charge is running	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$run_BoostCharge\$stVal
Equalize charge is running	GW51_UPC4_LD1/GGIO12\$ST\$EventBits\$run_EqualizeCharge\$stVal

2.4 Signal bits - direct

2.4.1 Digital Input

Digital input 1.1	GW51_UPC4_LD1/Dir_GGIO1\$ST\$Digital_Inputs\$DI1_1\$stVal
Digital Inputs 1.2 ... 1.7	...
Digital input 1.8	GW51_UPC4_LD1/Dir_GGIO1\$ST\$Digital_Inputs\$DI1_8\$stVal
Digital input 2.1	GW51_UPC4_LD1/Dir_GGIO1\$ST\$Digital_Inputs\$DI2_1\$stVal
Digital Inputs 2.2 ... 2.7	...
Digital input 2.8	GW51_UPC4_LD1/Dir_GGIO1\$ST\$Digital_Inputs\$DI2_8\$stVal

2.4.2 General measurement

Voltage1	GW51_UPC4_LD1/Dir_GGIO2\$ST\$General_Measurement\$Voltage1\$stVal
Voltages 2 ... 5	...
Voltage6	GW51_UPC4_LD1/Dir_GGIO2\$ST\$General_Measurement\$Voltage6\$stVal
Current1	GW51_UPC4_LD1/Dir_GGIO2\$ST\$General_Measurement\$Current1\$stVal
Currents 2 ... 5	...
Current6	GW51_UPC4_LD1/Dir_GGIO2\$ST\$General_Measurement\$Current6\$stVal
Temperature1	GW51_UPC4_LD1/Dir_GGIO2\$ST\$General_Measurement\$Temperature1\$stVal
Temperatures 2 ... 5	...
Temperature6	GW51_UPC4_LD1/Dir_GGIO2\$ST\$General_Measurement\$Temperature6\$stVal
Resistance1	GW51_UPC4_LD1/Dir_GGIO2\$ST\$General_Measurement\$Resistance1\$stVal
Resistances 2 ... 5	...
Resistance6	GW51_UPC4_LD1/Dir_GGIO2\$ST\$General_Measurement\$Resistance6\$stVal

2.4.3 Virtual relay

Relay1 Q	GW51_UPC4_LD1/Dir_GGIO3\$ST\$Virtual_Relay\$Relay1_Qn\$stVal
Relay1 Q'	GW51_UPC4_LD1/Dir_GGIO3\$ST\$Virtual_Relay\$Relay1_Qi\$stVal
Relay2 Q	GW51_UPC4_LD1/Dir_GGIO3\$ST\$Virtual_Relay\$Relay2_Qn\$stVal
Relay2 Q'	GW51_UPC4_LD1/Dir_GGIO3\$ST\$Virtual_Relay\$Relay2_Qi\$stVal
Relay3 Q	GW51_UPC4_LD1/Dir_GGIO3\$ST\$Virtual_Relay\$Relay3_Qn\$stVal
Relay3 Q'	GW51_UPC4_LD1/Dir_GGIO3\$ST\$Virtual_Relay\$Relay3_Qi\$stVal
Relay4 Q	GW51_UPC4_LD1/Dir_GGIO3\$ST\$Virtual_Relay\$Relay4_Qn\$stVal
Relay4 Q'	GW51_UPC4_LD1/Dir_GGIO3\$ST\$Virtual_Relay\$Relay4_Qi\$stVal

2.4.4 CAN devices

BMB no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$BMB_no_can\$stVal
BMB alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$BMB_err\$stVal
BUI no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$BUI_no_can\$stVal
BUI alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$BUI_err\$stVal
DCC no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$DCC_no_can\$stVal
DCC alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$DCC_err\$stVal
DCC redundancy	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$DCC_redundancy\$stVal
DIB no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$DIB_no_can\$stVal
DIB alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$DIB_err\$stVal
FAN no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$FAN_no_can\$stVal
FAN alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$FAN_err\$stVal
FMB no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$FMB_no_can\$stVal
FMB alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$FMB_err\$stVal
INV no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$INV_no_can\$stVal
INV alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$INV_err\$stVal
INV redundancy	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$INV_redundancy\$stVal
MMB no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$MMB_no_can\$stVal
MMB alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$MMB_err\$stVal
RDP no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$RDP_no_can\$stVal
RDP alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$RDP_err\$stVal
RDD no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$RDX_no_can\$stVal
RDD alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$RDX_err\$stVal
REC#1 no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$REC1_no_can\$stVal
REC#1 alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$REC1_err\$stVal
REC#1 redundancy	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$REC1_redundancy\$stVal
REC#1 load high	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$REC1_load_high\$stVal
REC#1 load distrib.	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$REC1_load_distrib\$stVal
REC#2 no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$REC2_no_can\$stVal
REC#2 alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$REC2_err\$stVal
REC#2 redundancy	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$REC2_redundancy\$stVal
REC#2 load high	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$REC2_load_high\$stVal
REC#2 load distrib.	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$REC2_load_distrib\$stVal
RLB no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$RLB_no_can\$stVal
RLB alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$RLB_err\$stVal
STS no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_no_can\$stVal
STS alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_err\$stVal
STS collect. alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_collective_alarm\$stVal
STS inverter error	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_INV_err\$stVal
STS current high	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_current_high\$stVal
STS Vdc high	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_dc_volt_high\$stVal
STS Vdc high warn	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_dc_volt_high_warn\$stVal
STS VDC low	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_dc_volt_low\$stVal
STS VDC low warn	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_dc_volt_low_warn\$stVal
STS source1 error	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_err_src1\$stVal
STS source2 error	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_err_src2\$stVal
STS load on Inverter	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_load_on_INV\$stVal
STS priority: mains	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_mains_priority\$stVal
STS relay is active	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_relay_active\$stVal
STS synchron error	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_sync_err\$stVal
STS Heatsink temp.	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$STS_temp_heat_sink\$stVal
UMA no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$UMA_no_can\$stVal
UMA alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$UMA_err\$stVal
UMB no CAN	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$UMB_no_can\$stVal
UMB alarm	GW51_UPC4_LD1/Dir_GGIO4\$ST\$CAN_Devices\$UMB_err\$stVal

2.4.5 Battery thresholds

Battery operation	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt1\$Batt_operation\$stVal
Asymmetrical cell voltages	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt1\$Asymmetrical\$stVal
Fuse open	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt1\$Fuse_open\$stVal
Temperature greater than Tmax	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt1\$Tbatt_gt_Tmax\$stVal
Voltage greater than Vmax	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt1\$Vbatt_gt_Vmax\$stVal
Voltage greater than VmaxREC	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt1\$Vbatt_gt_VmaxREC\$stVal
Voltage less than Vmin	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt1\$Vbatt_lt_Vmin\$stVal
Voltage less than Vwarn	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt1\$Vbatt_lt_Vwarn\$stVal
Batteries 2 ... 6	...
Battery operation	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt7\$Batt_operation\$stVal
Asymmetrical cell voltages	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt7\$Asymmetrical\$stVal
Fuse open	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt7\$Fuse_open\$stVal
Temperature greater than Tmax	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt7\$Tbatt_gt_Tmax\$stVal
Voltage greater than Vmax	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt7\$Vbatt_gt_Vmax\$stVal
Voltage greater than VmaxREC	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt7\$Vbatt_gt_VmaxREC\$stVal
Voltage less than Vmin	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt7\$Vbatt_lt_Vmin\$stVal
Voltage less than Vwarn	GW51_UPC4_LD1/Dir_GGI05\$ST\$Batt7\$Vbatt_lt_Vwarn\$stVal

2.4.6 Thresholds

Load voltage greater than Vmax	GW51_UPC4_LD1/Dir_GGI06\$ST\$Thresholds\$Vload_gt_Vmax\$stVal
Load voltage less than Vmin	GW51_UPC4_LD1/Dir_GGI06\$ST\$Thresholds\$Vload_lt_Vmin\$stVal
Load voltage less than VminDCC	GW51_UPC4_LD1/Dir_GGI06\$ST\$Thresholds\$Vload_lt_VminDCC\$stVal
Load voltage less than VminINV	GW51_UPC4_LD1/Dir_GGI06\$ST\$Thresholds\$Vload_lt_VminINV\$stVal
Limit Load current	GW51_UPC4_LD1/Dir_GGI06\$ST\$Thresholds\$Limit_Load_current\$stVal
Phase voltage 1.1 less than Vmin or greater than Vmax	GW51_UPC4_LD1/Dir_GGI06\$ST\$Thresholds\$L1_1V_lt_Vmin_or_gt_Vmax\$stVal
Phase voltage 1.2 less than Vmin or greater than Vmax	GW51_UPC4_LD1/Dir_GGI06\$ST\$Thresholds\$L2_1V_lt_Vmin_or_gt_Vmax\$stVal
Phase voltage 1.3 less than Vmin or greater than Vmax	GW51_UPC4_LD1/Dir_GGI06\$ST\$Thresholds\$L3_1V_lt_Vmin_or_gt_Vmax\$stVal
Phase voltage 2.1 less than Vmin or greater than Vmax	GW51_UPC4_LD1/Dir_GGI06\$ST\$Thresholds\$L1_2V_lt_Vmin_or_gt_Vmax\$stVal
Phase voltage 2.2 less than Vmin or greater than Vmax	GW51_UPC4_LD1/Dir_GGI06\$ST\$Thresholds\$L2_2V_lt_Vmin_or_gt_Vmax\$stVal
Phase voltage 2.3 less than Vmin or greater than Vmax	GW51_UPC4_LD1/Dir_GGI06\$ST\$Thresholds\$L3_2V_lt_Vmin_or_gt_Vmax\$stVal

2.4.7 Miscellaneous

Standard charge	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$StandardCharge\$stVal
Battery test	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$Battery_test\$stVal
Battery test aborted due to voltage error	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$Battery_test_fin\$stVal
Boost charge	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$BoostCharge\$stVal
Boost charge Fan	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$BoostCharge_Fan\$stVal
Boost charge Timeout	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$BoostCharge_timeout\$stVal
Capacity A Low	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$Capacity_A_low\$stVal
Capacity B Low	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$Capacity_B_low\$stVal
Diesel operation	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$Diesel_operation\$stVal
Difference Ah	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$Difference_Ah\$stVal
Drop Diode 1	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$Drop_Diode1\$stVal
Drop Diode 2	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$Drop_Diode2\$stVal
Equalize charge	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$EqualizeCharge\$stVal
Equalize charge Timeout	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$EqualizeCharge_timeout\$stVal
Isolation measurement	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$Isol_Measurement\$stVal
Isolation Minus	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$Isolation_minus\$stVal
Isolation Plus	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$Isolation_plus\$stVal
Output inhibit	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$Output_inhibit\$stVal
LVD	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$LVD\$stVal
PLD1	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$PLD1\$stVal
PLD2	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$PLD2\$stVal
Temp. sensor Limit	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$T_sensor_limit\$stVal
Temp. sensor Limit Battery	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$T_sensor_limit_Batt\$stVal
Supply1 Error	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$Supply1_err\$stVal
Supply2 Error	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$Supply2_err\$stVal
Supply3 Error	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$Supply3_err\$stVal
Boolean expression Error	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$ErrBoolExpr\$stVal
Boolean expression 1	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$BoolExpr1\$stVal
Boolean expression 2	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$BoolExpr2\$stVal
Boolean expression 3	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$BoolExpr3\$stVal
Boolean expression 4	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$BoolExpr4\$stVal
Boolean expression 5	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$BoolExpr5\$stVal
FATAL SYSTEM ERROR	GW51_UPC4_LD1/Dir_GGI07\$ST\$Miscellaneous\$FATAL_SYS_ERROR\$stVal

2.5 Signal bits - filtered

2.5.1 Digital input

Digital input 1.1	GW51_UPC4_LD1/Flt_GGIO1\$ST\$Digital_Inputs\$DI1_1\$stVal
Digital Inputs 1.2 ... 1.7	...
Digital input 1.8	GW51_UPC4_LD1/Flt_GGIO1\$ST\$Digital_Inputs\$DI1_8\$stVal
Digital input 2.1	GW51_UPC4_LD1/Flt_GGIO1\$ST\$Digital_Inputs\$DI2_1\$stVal
Digital Inputs 2.2 ... 2.7	...
Digital input 2.8	GW51_UPC4_LD1/Flt_GGIO1\$ST\$Digital_Inputs\$DI2_8\$stVal

2.5.2 General measurement

Voltage1	GW51_UPC4_LD1/Flt_GGIO2\$ST\$General_Measurement\$Voltage1\$stVal
Voltages 2 ... 5	...
Voltage6	GW51_UPC4_LD1/Flt_GGIO2\$ST\$General_Measurement\$Voltage6\$stVal
Current1	GW51_UPC4_LD1/Flt_GGIO2\$ST\$General_Measurement\$Current1\$stVal
Currents 2 ... 5	...
Current6	GW51_UPC4_LD1/Flt_GGIO2\$ST\$General_Measurement\$Current6\$stVal
Temperature1	GW51_UPC4_LD1/Flt_GGIO2\$ST\$General_Measurement\$Temperature1\$stVal
Temperatures 2 ... 5	...
Temperature6	GW51_UPC4_LD1/Flt_GGIO2\$ST\$General_Measurement\$Temperature6\$stVal
Resistance1	GW51_UPC4_LD1/Flt_GGIO2\$ST\$General_Measurement\$Resistance1\$stVal
Resistances 2 ... 5	...
Resistance6	GW51_UPC4_LD1/Flt_GGIO2\$ST\$General_Measurement\$Resistance6\$stVal

2.5.3 Virtual relay

Relay1 Q	GW51_UPC4_LD1/Flt_GGIO3\$ST\$Virtual_Relay\$Relay1_Qn\$stVal
Relay1 Q'	GW51_UPC4_LD1/Flt_GGIO3\$ST\$Virtual_Relay\$Relay1_Qi\$stVal
Relay2 Q	GW51_UPC4_LD1/Flt_GGIO3\$ST\$Virtual_Relay\$Relay2_Qn\$stVal
Relay2 Q'	GW51_UPC4_LD1/Flt_GGIO3\$ST\$Virtual_Relay\$Relay2_Qi\$stVal
Relay3 Q	GW51_UPC4_LD1/Flt_GGIO3\$ST\$Virtual_Relay\$Relay3_Qn\$stVal
Relay3 Q'	GW51_UPC4_LD1/Flt_GGIO3\$ST\$Virtual_Relay\$Relay3_Qi\$stVal
Relay4 Q	GW51_UPC4_LD1/Flt_GGIO3\$ST\$Virtual_Relay\$Relay4_Qn\$stVal
Relay4 Q'	GW51_UPC4_LD1/Flt_GGIO3\$ST\$Virtual_Relay\$Relay4_Qi\$stVal

2.5.4 CAN devices

BMB no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$BMB_no_can\$stVal
BMB alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$BMB_err\$stVal
BUI no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$BUI_no_can\$stVal
BUI alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$BUI_err\$stVal
DCC no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$DCC_no_can\$stVal
DCC alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$DCC_err\$stVal
DCC redundancy	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$DCC_redundancy\$stVal
DIB no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$DIB_no_can\$stVal
DIB alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$DIB_err\$stVal
FAN no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$FAN_no_can\$stVal
FAN alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$FAN_err\$stVal
FMB no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$FMB_no_can\$stVal
FMB alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$FMB_err\$stVal
INV no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$INV_no_can\$stVal
INV alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$INV_err\$stVal
INV redundancy	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$INV_redundancy\$stVal
MMB no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$MMB_no_can\$stVal
MMB alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$MMB_err\$stVal
RDP no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$RDP_no_can\$stVal
RDP alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$RDP_err\$stVal
RDD no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$RDX_no_can\$stVal
RDD alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$RDX_err\$stVal
REC#1 no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$REC1_no_can\$stVal
REC#1 alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$REC1_err\$stVal
REC#1 redundancy	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$REC1_redundancy\$stVal
REC#1 load high	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$REC1_load_high\$stVal
REC#1 load distrib.	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$REC1_load_distrib\$stVal
REC#2 no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$REC2_no_can\$stVal
REC#2 alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$REC2_err\$stVal
REC#2 redundancy	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$REC2_redundancy\$stVal
REC#2 load high	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$REC2_load_high\$stVal
REC#2 load distrib.	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$REC2_load_distrib\$stVal
RLB no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$RLB_no_can\$stVal
RLB alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$RLB_err\$stVal
STS no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_no_can\$stVal
STS alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_err\$stVal
STS collect. alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_collective_alarm\$stVal
STS Inverter error	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_INV_err\$stVal
STS current high	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_current_high\$stVal
STS Vdc high	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_dc_volt_high\$stVal
STS Vdc high warn	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_dc_volt_high_warn\$stVal
STS VDC low	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_dc_volt_low\$stVal
STS VDC low warn	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_dc_volt_low_warn\$stVal
STS source1 error	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_err_src1\$stVal
STS source2 error	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_err_src2\$stVal
STS load on Inverter	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_load_on_INV\$stVal
STS priority: mains	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_mains_priority\$stVal
STS relay is active	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_relay_active\$stVal
STS synchron error	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_sync_err\$stVal
STS Heatsink temp.	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$STS_temp_heat_sink\$stVal
UMA no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$UMA_no_can\$stVal
UMA alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$UMA_err\$stVal
UMB no CAN	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$UMB_no_can\$stVal
UMB alarm	GW51_UPC4_LD1/Flt_GGIO4\$ST\$CAN_Devices\$UMB_err\$stVal

2.5.5 Battery thresholds

Battery operation	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt1\$Batt_operation\$stVal
Asymmetrical cell voltages	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt1\$Asymmetrical\$stVal
Fuse open	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt1\$Fuse_open\$stVal
Temperature greater than Tmax	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt1\$Tbatt_gt_Tmax\$stVal
Voltage greater than Vmax	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt1\$Vbatt_gt_Vmax\$stVal
Voltage greater than VmaxREC	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt1\$Vbatt_gt_VmaxREC\$stVal
Voltage less than Vmin	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt1\$Vbatt_lt_Vmin\$stVal
Voltage less than Vwarn	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt1\$Vbatt_lt_Vwarn\$stVal
Batteries 2 ... 6	...
Battery operation	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt7\$Batt_operation\$stVal
Asymmetrical cell voltages	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt7\$Asymmetrical\$stVal
Fuse open	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt7\$Fuse_open\$stVal
Temperature greater than Tmax	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt7\$Tbatt_gt_Tmax\$stVal
Voltage greater than Vmax	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt7\$Vbatt_gt_Vmax\$stVal
Voltage greater than VmaxREC	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt7\$Vbatt_gt_VmaxREC\$stVal
Voltage less than Vmin	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt7\$Vbatt_lt_Vmin\$stVal
Voltage less than Vwarn	GW51_UPC4_LD1/Flt_GGI05\$ST\$Batt7\$Vbatt_lt_Vwarn\$stVal

2.5.6 Thresholds

Load voltage greater than Vmax	GW51_UPC4_LD1/F1t_GGI06\$\$ST\$Thresholds\$Vload_gt_Vmax\$stVal
Load voltage less than Vmin	GW51_UPC4_LD1/F1t_GGI06\$\$ST\$Thresholds\$Vload_lt_Vmin\$stVal
Load voltage less than VminDCC	GW51_UPC4_LD1/F1t_GGI06\$\$ST\$Thresholds\$Vload_lt_VminDCC\$stVal
Load voltage less than VminINV	GW51_UPC4_LD1/F1t_GGI06\$\$ST\$Thresholds\$Vload_lt_VminINV\$stVal
Limit Load current	GW51_UPC4_LD1/F1t_GGI06\$\$ST\$Thresholds\$Limit_Load_current\$stVal
Phase voltage 1.1 less than Vmin or greater than Vmax	GW51_UPC4_LD1/F1t_GGI06\$\$ST\$Thresholds\$L1_1V_lt_Vmin_or_gt_Vmax\$stVal
Phase voltage 1.2 less than Vmin or greater than Vmax	GW51_UPC4_LD1/F1t_GGI06\$\$ST\$Thresholds\$L2_1V_lt_Vmin_or_gt_Vmax\$stVal
Phase voltage 1.3 less than Vmin or greater than Vmax	GW51_UPC4_LD1/F1t_GGI06\$\$ST\$Thresholds\$L3_1V_lt_Vmin_or_gt_Vmax\$stVal
Phase voltage 2.1 less than Vmin or greater than Vmax	GW51_UPC4_LD1/F1t_GGI06\$\$ST\$Thresholds\$L1_2V_lt_Vmin_or_gt_Vmax\$stVal
Phase voltage 2.2 less than Vmin or greater than Vmax	GW51_UPC4_LD1/F1t_GGI06\$\$ST\$Thresholds\$L2_2V_lt_Vmin_or_gt_Vmax\$stVal
Phase voltage 2.3 less than Vmin or greater than Vmax	GW51_UPC4_LD1/F1t_GGI06\$\$ST\$Thresholds\$L3_2V_lt_Vmin_or_gt_Vmax\$stVal

2.5.7 Miscellaneous

Standard charge	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$StandardCharge\$stVal
Battery test	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$Battery_test\$stVal
Battery test aborted due to voltage error	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$Battery_test_fin\$stVal
Boost charge	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$BoostCharge\$stVal
Boost charge Fan	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$BoostCharge_Fan\$stVal
Boost charge Timeout	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$BoostCharge_timeout\$stVal
Capacity A Low	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$Capacity_A_low\$stVal
Capacity B Low	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$Capacity_B_low\$stVal
Diesel operation	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$Diesel_operation\$stVal
Difference Ah	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$Difference_Ah\$stVal
Drop Diode 1	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$Drop_Diode1\$stVal
Drop Diode 2	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$Drop_Diode2\$stVal
Equalize charge	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$EqualizeCharge\$stVal
Equalize charge Timeout	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$EqualizeCharge_timeout\$stVal
Isolation measurement	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$Isol_Measurement\$stVal
Isolation Minus	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$Isolation_minus\$stVal
Isolation Plus	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$Isolation_plus\$stVal
Output inhibit	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$Output_inhibit\$stVal
LVD	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$LVD\$stVal
PLD1	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$PLD1\$stVal
PLD2	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$PLD2\$stVal
Temp. sensor Limit	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$T_sensor_limit\$stVal
Temp. sensor Limit Battery	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$T_sensor_limit_Batt\$stVal
Supply1 Error	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$Supply1_err\$stVal
Supply2 Error	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$Supply2_err\$stVal
Supply3 Error	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$Supply3_err\$stVal
Boolean expression Error	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$ErrBoolExpr\$stVal
Boolean expression 1	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$BoolExpr1\$stVal
Boolean expression 2	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$BoolExpr2\$stVal
Boolean expression 3	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$BoolExpr3\$stVal
Boolean expression 4	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$BoolExpr4\$stVal
Boolean expression 5	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$BoolExpr5\$stVal
FATAL SYSTEM ERROR	GW51_UPC4_LD1/Flt_GGI07\$ST\$Miscellaneous\$FATAL_SYS_ERROR\$stVal



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