INGECON SUN STORAGE 100TL

INPUT REGISTERS

Table of contents

1 INPUT REGISTERS (REG. 30000)

1.1 INPUT REGISTERS

Modbus Register	Description		Type
30000	Current Date. Year		UINT16
30001	Current Date. Month		UINT16
30002	Current Date. Day		UINT16
30003	Current Date. Hour		UINT16
30004	Current Date. Minute		UINT16
30005	Current Date. Second		UINT16
30006	Current Date. Year		UINT16
30007-30014	Reserved for INGETEAM		-
30015	Inverter Instantaneous Alarms 1	[Note 1]	UINT16
30016	Inverter Instantaneous Alarms 2	[Note 1]	UINT16
30017	Inverter Instantaneous Alarms 3	[Note 1]	UINT16
30018	Inverter Instantaneous Alarms 4	[Note 1]	UINT16
30019	Inverter Instantaneous Stop Event	[Note 2]	UINT16
30020	Inverter Warning Code	[Note 1]	UINT16
30021	Inverter Status	[Note 3]	UINT16
30022	Output grid RMS current of phase 1	[A x 100]	UINT16
30023	Output grid RMS current of phase 2	[A x 100]	UINT16
30024	Output grid RMS current of phase 3	[A x 100]	UINT16
30025	Grid RMS voltage of phase 1	[V x 10]	UINT16
30026	Grid RMS voltage of phase 2	[V x 10]	UINT16
30027	Grid RMS voltage of phase 3	[V x 10]	UINT16
30028	Grid frequency	[Hz x 100]	UINT16
30029	Output apparent power	[VA / 10]	UINT16
30030	Output active power	[W / 10]	INT16
30031	Output reactive power	[VAr / 10]	INT16
30032	Cosine of Phi	[x 1000]	INT16
30033	DC current	[A x 100]	INT16
30034	DC voltage	[V]	UINT16
30035	DC power	[W / 10]	INT16
30036	Isolation resistance	[kOhms]	UINT16
30037-30052	Reserved for INGETEAM		-
30053	Active power reduction rate	[%]	UINT16
30054	Active power reduction reason	[Note 4]	UINT16
30055	Reactive power Reference Type	[Note 5]	UINT16
30056-30069	Reserved for INGETEAM		-
30070	Battery Temperature	[ºC]	INT16

30071-30072	Reserved for INGETEAM		-
30073	Battery Alarms	[Note 7]	UINT16
30074	Battery Flags	[Note 8]	UINT16
30075	Communication Status with BMS		UINT16
30076-31014	Reserved for INGETEAM		-
31015	Battery SOC	[%]	UINT16
31016-31024	Reserved for INGETEAM		-
31025	Battery FSM	[Note 6]	UINT16

NOTES:

- **Note 1:** ***Alarms and Warning Code.*** Check AAA0030IMB07 document. General definitions – Alarms and Stop Events.

- **Note 2:** ***Stop Events.*** Check AAA0030IMB07 document. General definitions – Alarms and Stop Events. This inverter shares the same Stop Events as the document till SE Number 238.

- Until version F, then there are some different Stop Events defined in the following Table.

Number	FW Description	Description
239	SE_OPERATION_MODE_ERROR	Incorrect operation mode
246	SE_VDC_OPERATION_MAX	VDC voltage above the maximum defined
247	SE_VDC_OPERATION_MIN	VDC voltage below the minimum defined
248	SE_DISCHARGING_OVC	Discharging current above the maximum defined
249	SE_CHARGING_OVC	Charging current below the maximum defined
250	SE_IBATT_RIPPLE	Current ripple above the maximum defined
251	SE_ABSORBED_PAC	Absorbed PAC
252	SE_BATTERY_FAULT	Alarms received from the BMS
253	SE_BATTERY_COMM_FAULT	Communication with battery lost

- **Note 3:** ***Inverter Status***. Check the following Table.

Number	Description
0	Not ready to connect
1	Waiting to connect
2	Connected to the grid

- **Note 4:** ***Active power reduction reason***. Check the following Table.

Number	Description
0	Inverter disconnected
1	No reduction
2	Temperature AC
3	Temperature DC
4	Temperature PCB
5	Communications
6	Grid frequency
7	High Grid Voltage
8	Reactive priority and Output Current Limit
9	Configuration
10	Connection Initial Ramp
11	Self-Consumption Mode
12	Manufacturer reserved

13	Grid Voltage
14	CosPhi algorithm
15	Low Grid Voltage
16	Q at night
17	Battery Limit

- **Note 5:** ***Reactive power Reference Type.*** Check the following Table.

Number	Description
0	Cos Phi configuration
1	Qref Manual
2	CosPhi Manual
3	Qref Communications
4	CosPhi Communications
5	Qref (qvsV)
6	CosPhi (CosPhivsPac)

- **Note 6:** ***Battery FSM***. Check the following Table.

Number	Description
0	Stand-By
1	Discharging
2	Charging with constant current
3	Charging with constant voltage
4	Floating
5	Equalizing
6	Error Communication with BMS
7	No configured

- **Note 7:** ***Battery Alarms***. The number of the bit in “1” status must be searched. If there are no alarms, a 0 will be read from the register. Check the following Table.

Bit	Description
0	High Charge Current
1	High Voltage
2	Low Voltage
3	High Temperature
4	Low Temperature
5	BMS Internal
6	Cell Imbalance
7	High Discharge Current

- **Note 8: *Battery Flags*** The number of the bit in “1” status must be searched. If there are no flags, a “0” will be read from the register. Check the following Table.

Bit	Description
0	Stop Charge
1	Stop Discharge
2	Forced Charge
3	Calibration Request

1.2 FUNCTION 0x04: READ INPUT REGISTERS

Function 0x04 allows reading online data or Input Registers (references 3xxxx) from the inverter. The registers are redirected starting with the register number 1, which in the memory address is the position 0. Within the Input Registers map it can be read whatever part of the memory.

The master sends a Query message to the inverter. It asks the number, 0xNHNL, of Input Registers starting in the address 0xFHFL.

Address	--	Inverter Address[1 .. 247]
Function	0x04	Read Input Registers
Starting Address Hi	0xFH	Address of 1st register (HI byte)
Starting Address Lo	0xFL	Address of 1st register (LO byte)
Number of Points Hi	0xNH	Number of registers to read (HI byte)
Number of Points Lo	0xNL	Number of registers to read (LO byte)
Error Check (CRC) - Hi	--	Cyclic Redundancy Code (HI byte)
Error Check (CRC) - Lo	--	Cyclic Redundancy Code (LO byte)

The inverter answer sending the following Response message, which includes the values of the 0xNHNL configuration parameters (2 bytes per register [0xNN])

Address	--	Inverter address[1 .. 247]
Function	0x04	Read Input Registers
Byte Count	0xNN	Number of data octets
Data Hi	--	Value of *register 1* (HI byte)
Data Lo	--	Value of *register 1* (LO byte)
Data Hi	--	…
Data Lo	--	…
Data Hi	--	Value of *register n* (HI byte)
Data Lo	--	Value of *register n* (LO byte)
Error Check (CRC) - Hi	--	Cyclic Redundancy Code (HI byte)
Error Check (CRC) - Lo	--	Cyclic Redundancy Code (LO byte)

2 REVISION HISTORY

Revision	Date	Change Description	Author
_	30/09/2021	Initial document	S.R.B.
_A	08/11/2022	Stop Events Note added	S.R.B.
_B	08/02/2023	Battery State changed and Battery alarms and flags added	S.R.B.