

RENAC N3 HV Modbus Protocol V1.00

Catalog

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1.Data types

Name	Description
U16	Unsigned integer (16 bits)
U32	Unsigned integer (32 bits)
I16	Signed integer (16 bits)
I32	Signed integer (32 bits)
STR	Character string
Bitfield16	16-bit data expressed by bit
Bitfield32	32-bit data expressed by bit
N/A	Not applicable
RO	Data that is readable only
RW	Data that is readable and writable
WO	Data that is writable only

2.Function code

Function Code	Meaning	Remarks
0x03	Read registers.	Continuously reads a single register or multiple registers.
0x06	Write a single register.	Writes into a single register.
0x10	Write multiple registers.	Continuously writes into multiple registers.

3.Register definition

Signal Name	Read/Write	Type	Unit	Gain	Address	Quantity	Scope
Model	RO	STR	N/A	1	10000	16	ASCII, left-justified
Inverter SN	RO	STR	N/A	1	10016	16	ASCII, left-justified
Bms Master SN	RO	STR	N/A	1	10032	16	ASCII, left-justified
Bms Slave1 SN	RO	STR	N/A	1	10048	16	
Bms Slave2 SN	RO	STR	N/A	1	10064	16	
Bms Slave3 SN	RO	STR	N/A	1	10080	16	
Bms Slave4 SN	RO	STR	N/A	1	10096	16	
Bms Slave5 SN	RO	STR	N/A	1	10112	16	
Bms Slave6 SN	RO	STR	N/A	1	10128	16	
Bms Slave7 SN	RO	STR	N/A	1	10144	16	
Bms Slave8 SN	RO	STR	N/A	1	10160	16	
Inverter Master Ver	RO	U16	N/A	1	10176	1	For example, value 100 represents version 1.00
Inverter Slave Ver	RO	U16	N/A	1	10177	1	
Inverter Hmi Ver	RO	U16	N/A	1	10178	1	
Bms Master Ver	RO	U16	N/A	1	10179	1	
Bms Slave Ver	RO	U16	N/A	1	10180	1	
Protocol Ver	RO	U16	N/A	1	10181	1	
Hmi Boot Ver	RO	U16	N/A	1	10182	1	
Self-Test Result OVP1	RO	U16	V	10	10200	1	
Self-Test Result	RO	U16	mS	1	10201	1	

OVP1 Time							
Self-Test Result OVP2	RO	U16	V	10	10202	1	
Self-Test Result OVP2 Time	RO	U16	mS	1	10203	1	
Self-Test Result UVP1	RO	U16	V	10	10204	1	
Self-Test Result UVP1 Time	RO	U16	mS	1	10205	1	
Self-Test Result UVP2	RO	U16	V	10	10206	1	
Self-Test Result UVP2 Time	RO	U16	mS	1	10207	1	
Self-Test Result OFP1	RO	U16	Hz	100	10208	1	
Self-Test Result OFP1 Time	RO	U16	mS	1	10209	1	
Self-Test Result OFP2	RO	U16	Hz	100	10210	1	
Self-Test Result OFP2 Time	RO	U16	mS	1	10211	1	
Self-Test Result UFP1	RO	U16	Hz	100	10212	1	
Self-Test Result UFP1 Time	RO	U16	mS	1	10213	1	
Self-Test Result UFP2	RO	U16	Hz	100	10214	1	
Self-Test Result UFP2 Time	RO	U16	mS	1	10215	1	
PV1 voltage	RO	I16	V	10	11000	1	
PV1 current	RO	I16	A	10	11001	1	
PV1 power	RO	I16	W	1	11002	1	
PV2 voltage	RO	I16	V	10	11003	1	
PV2 current	RO	I16	A	10	11004	1	
PV2 power	RO	I16	W	1	11005	1	
Reserved					11006~ 11015	10	
Internal temperature	RO	I16	°C	10	11016	1	
Charger temperature	RO	I16	°C	10	11017	1	
Boost temperature	RO	I16	°C	10	11018	1	
Inverter	RO	I16	°C	10	11019	1	

temperature							
Battery voltage	RO	I16	V	10	11020	1	
Battery current	RO	I16	A	10	11021	1	
Battery power	RO	I16	W	1	11022	1	
BMS-voltage	RO	I16	V	10	11023	1	
BMS-current	RO	I16	A	10	11024	1	
BMS-temp	RO	I16	°C	10	11025	1	
BMS-SOC	RO	U16	N/A	1	11026	1	
BMS-SOH	RO	U16	N/A	1	11027	1	
BMS- ChargeCutoffVoltage	RO	I16	V	10	11028	1	
BMS- DischargeCutoffVoltage	RO	I16	V	10	11029	1	
BMS-MaxCharge Current	RO	I16	A	10	11030	1	
BMS-MaxDischarge Current	RO	I16	A	10	11031	1	
BMS-MaxCellVoltage	RO	I16	V	1000	11032	1	
BMS-MinCellVoltage	RO	I16	V	1000	11033	1	
BMS-MaxCellVoltageNo	RO	U16	N/A	1	11034	1	
BMS-MinCellVoltageNo	RO	U16	N/A	1	11035	1	
BMS-MaxCellTemp	RO	I16	°C	10	11036	1	
BMS-MinCellTemp	RO	I16	°C	10	11037	1	
BMS-MaxCellTempNo	RO	U16	N/A	1	11038	1	
BMS-MinCellTempNo	RO	U16	N/A	1	11039	1	
BMS-BasicStatus	RO	Bitfield16	N/A	1	11040	1	Bit15-Bit5: Reserve; Bit4: 0 : Null; 1 : Balance charge request

							Bit3: 0 : Null; 1 : Forced charge request Bit2-Bit0: 0: Sleep, 1: Charge, 2: Discharge, 3: Idle, 4~7: Reserve
BMS-Cycletime	RO	U16	N/A	1	11041	1	
BMS-MaxModule Voltage	RO	I16	V	10	11042	1	
BMS-MinModule Voltage	RO	I16	V	10	11043	1	
BMS-MaxModule VoltageNo	RO	U16	N/A	1	11044	1	
BMS-MinModule VoltageNo	RO	U16	N/A	1	11045	1	
BMS-MaxModule Temp	RO	I16	°C	10	11046	1	
BMS-MinModule Temp	RO	I16	°C	10	11047	1	
BMS-MaxModule TempNo	RO	U16	N/A	1	11048	1	
BMS-MinModule TempNo	RO	U16	N/A	1	11049	1	
Forbid Charge Flag	RO	U16	N/A	1	11050	1	
Forbid Discharge Flag	RO	U16	N/A	1	11051	1	
Total Cell No	RO	U16	N/A	1	11052	1	
Module No	RO	U16	N/A	1	11053	1	
Cell No Per Module	RO	U16	N/A	1	11054	1	
Voltage level	RO	U16	V	1	11055	1	
AH number	RO	U16	AH	1	11056	1	
Inverter state	RO	U16	N/A	1	11057	1	0:Wait

							1:Check 2:Normal 3:Standby 4:Fault 5:Permanent 6:Update 7:EpsCheck 8:Eps 9:SelfTest 10: Idle
BMS connect state	RO	U16	N/A	1	11058	1	0: NG 1: OK
Meter1 connect state	RO	U16	N/A	1	11059	1	0: NG 1: OK
Fault 1	RO	Bitfield16	N/A	1	11060	1	
Fault 2	RO	Bitfield16	N/A	1	11061	1	
Fault 3	RO	Bitfield16	N/A	1	11062	1	
Fault 4	RO	Bitfield16	N/A	1	11063	1	
Fault 5	RO	Bitfield16	N/A	1	11064	1	
Fault 6	RO	Bitfield16	N/A	1	11065	1	
Fault 7	RO	Bitfield16	N/A	1	11066	1	
Fault 8	RO	Bitfield16	N/A	1	11067	1	
Fault 9	RO	Bitfield16	N/A	1	11068	1	
Fault 10	RO	Bitfield16	N/A	1	11069	1	
Fault 11	RO	Bitfield16	N/A	1	11070	1	
Fault 12	RO	Bitfield16	N/A	1	11071	1	
Fault 13	RO	Bitfield16	N/A	1	11072	1	
Fault 14	RO	Bitfield16	N/A	1	11073	1	
Fault 15	RO	Bitfield16	N/A	1	11074	1	

		ld16					
Fault 16	RO	Bitfie ld16	N/A	1	11075	1	
Grid-R Voltage	RO	U16	V	10	11076	1	
Grid-S Voltage	RO	U16	V	10	11077	1	
Grid-T Voltage	RO	U16	V	10	11078	1	
Inv-R Current	RO	I16	A	10	11079	1	
Inv-S Current	RO	I16	A	10	11080	1	
Inv-T Current	RO	I16	A	10	11081	1	
Inv-R Power	RO	I16	W	1	11082	1	
Inv-S Power	RO	I16	W	1	11083	1	
Inv-T Power	RO	I16	W	1	11084	1	
Grid-R Frequency	RO	U16	Hz	100	11085	1	
Grid-S Frequency	RO	U16	Hz	100	11086	1	
Grid-T Frequency	RO	U16	Hz	100	11087	1	
Eps-R Voltage	RO	U16	V	10	11088	1	
Eps-S Voltage	RO	U16	V	10	11089	1	
Eps-T Voltage	RO	U16	V	10	11090	1	
Eps-R Current	RO	I16	A	10	11091	1	
Eps-S Current	RO	I16	A	10	11092	1	
Eps-T Current	RO	I16	A	10	11093	1	
Eps-R Power	RO	I16	W	1	11094	1	
Eps-S Power	RO	I16	W	1	11095	1	
Eps-T Power	RO	I16	W	1	11096	1	
Eps Frequency	RO	U16	Hz	100	11097	1	
Meter1-R Power	RO	I16	W	1	11098	1	
Meter1-S Power	RO	I16	W	1	11099	1	
Meter1-T Power	RO	I16	W	1	11100	1	
Meter1 Power	RO	I16	W	1	11101	1	
Meter2-R Power	RO	I16	W	1	11102	1	
Meter2-S Power	RO	I16	W	1	11103	1	
Meter2-T Power	RO	I16	W	1	11104	1	
Meter2 Power	RO	I16	W	1	11105	1	
Meter3-R Power	RO	I16	W	1	11106	1	
Meter3-S Power	RO	I16	W	1	11107	1	
Meter3-T Power	RO	I16	W	1	11108	1	
Meter3 Power	RO	I16	W	1	11109	1	
Load-R Power	RO	I16	W	1	11110	1	
Load-S Power	RO	I16	W	1	11111	1	
Load-T Power	RO	I16	W	1	11112	1	
Load Power	RO	I16	W	1	11113	1	
Total	RO	U32	KWh	10	14000	2	

PV energy							
Today PV energy	RO	U16	KWh	10	14002	1	
Total charge energy	RO	U32	KWh	10	14003	2	
Today charge energy	RO	U16	KWh	10	14005	1	
Total discharge energy	RO	U32	KWh	10	14006	2	
Today discharge energy	RO	U16	KWh	10	14008	1	
Total feed-in energy	RO	U32	KWh	10	14009	2	
Today feed-in energy	RO	U16	KWh	10	14011	1	
Total Consumption energy	RO	U32	KWh	10	14012	2	
Today Consumption energy	RO	U16	KWh	10	14014	1	
Total output energy	RO	U32	KWh	10	14015	2	
Today output energy	RO	U16	KWh	10	14017	1	
Total input energy	RO	U32	KWh	10	14018	2	
Today input energy	RO	U16	KWh	10	14020	1	
Total load energy	RO	U32	KWh	10	14021	2	
Today load energy	RO	U16	KWh	10	14023	1	
Total Eps energy	RO	U32	KWh	10	14024	2	
Today Eps energy	RO	U16	KWh	10	14026	1	
System on/off	RW	U16	N/A	1	20000	1	0: off 1: on
RTC-year	RW	U16	N/A	1	20001	1	0-99
RTC-month	RW	U16	N/A	1	20002	1	1-12
RTC-day	RW	U16	N/A	1	20003	1	1-31
RTC-hour	RW	U16	N/A	1	20004	1	0-23

RTC-minute	RW	U16	N/A	1	20005	1	0-59
RTC-second	RW	U16	N/A	1	20006	1	0-59
Language	RW	U16	N/A	1	20007	1	0 : English
Grid code	RW	U16	N/A	1	20008	1	
Meter1 Addr	RW	U16	N/A	1	20009	1	1-247(1)
Meter2 Addr	RW	U16	N/A	1	20010	1	1-247(2)
Meter3 Addr	RW	U16	N/A	1	20011	1	1-247(3)
Modbus Addr	RW	U16	N/A	1	20012	1	1-247
Password	RW	U16	N/A	1	20013	1	0-9999
DRM0 state	RW	U16	N/A	1	20100	1	0: disable 1: enable
Meter1 En/Dis	RW	U16	N/A	1	20101	1	0: disable 1: enable
Remote power control Enable	RW	U16	N/A	1	20102	1	0: disable 1: enable
ISO En/Dis	RW	U16	N/A	1	20103	1	0: disable 1: enable
GFCI En/Dis	RW	U16	N/A	1	20104	1	0: disable 1: enable
Anti-islanding En/Dis	RW	U16	N/A	1	20105	1	0: disable 1: enable
Freq Protect Restrictive	RW	U16	N/A	1	20106	1	0: disable 1: enable
Ground connect check En/Dis	RW	U16	N/A	1	20107	1	0: disable 1: enable
Phase unbalance En/Dis	RW	U16	N/A	1	20108	1	0: disable 1: enable
Bypass Relay En/Dis	RW	U16	N/A	1	20109	1	0: disable 1: enable
Work mode	RW	U16	N/A	1	21000	1	0: Self use 1:ForceTime Use 2: Back up 3:Feed-in First
P1GridCharge Flag	RW	U16	N/A	1	21001	1	0: disable 1: enable
ChargeStartTime1 Hour	RW	U16	N/A	1	21002	1	0-23
ChargeStartTime1 Minute	RW	U16	N/A	1	21003	1	0-59
ChargeEndTime1	RW	U16	N/A	1	21004	1	0-23

Hour							
ChargeEndTime1 Minute	RW	U16	N/A	1	21005	1	0-59
P2GridCharge Flag	RW	U16	N/A	1	21006	1	0: disable 1: enable
ChargeStartTime2 Hour	RW	U16	N/A	1	21007	1	0-23
ChargeStartTime2 Minute	RW	U16	N/A	1	21008	1	0-59
ChargeEndTime2 Hour	RW	U16	N/A	1	21009	1	0-23
ChargeEndTime2 Minute	RW	U16	N/A	1	21010	1	0-59
BackUpGridChar ge Flag	RW	U16	N/A	1	21011	1	0: disable 1: enable
BackupChargeSta rtTimeHour	RW	U16	N/A	1	21012	1	0-23
BackupChargeSta rtTimeMinute	RW	U16	N/A	1	21013	1	0-59
BackupChargeEn dTimeHour	RW	U16	N/A	1	21014	1	0-23
BackupChargeEn dTimeMinute	RW	U16	N/A	1	21015	1	0-59
Maximum set charge current	RW	U16	A	10	21016	1	0-30
Maximum set discharge current	RW	U16	A	10	21017	1	0-30
Minimum SoC	RW	U16	N/A	1	21018	1	5-100%
Minimum SoC-OnGrid	RW	U16	N/A	1	21019	1	5-100%
Export limit	RW	U16	W	1	21020	1	0-60000
Power limit percent	RW	I16	Pn/ 100	1	21021	1	[-100, 100]
Con/Recon Enable	RO	Bitfie ld16	N/A	1	22000	1	Bit0:soft start Bit1:voltage para Bit2:freq para
Connect time	RW	U16	s	1	22001	1	10-600
Connect power gradient	RW	U16	% / min	10	22002	1	6-3000
Reconnect time	RW	U16	s	1	22003	1	10-600
Reconnect power	RW	U16	% /	10	22004	1	6-3000

gradient			min					
Connect voltage high limit	RW	U16	V	10	22005	1		230-300
Connect voltage low limit	RW	U16	V	10	22006	1		150-230
Connect frequency high limit	RW	U16	Hz	100	22007	1		50-65
Connect frequency low limit	RW	U16	Hz	100	22008	1		45-60
Voltage Protect Enable	RO	Bitfield16	N/A	1	22100	1		Bit0:level1 protect Bit1:level2 protect Bit2:10min volt protect
Voltage high limit1	RW	U16	V	10	22101	1		230-300
Voltage high limit1 protect time	RW	U16	ms	0.1	22102	1		20-100000ms
Voltage high limit2	RW	U16	V	10	22103	1		230-300
Voltage high limit2 protect time	RW	U16	ms	0.1	22104	1		20-100000ms
Voltage low limit1	RW	U16	V	10	22105	1		50-230
Voltage low limit1 protect time	RW	U16	ms	0.1	22106	1		20-100000ms
Voltage low limit2	RW	U16	V	10	22107	1		50-230
Voltage low limit2 protect time	RW	U16	ms	0.1	22108	1		20-100000ms
10min voltage high limit	RW	U16	V	10	22109	1		230-300
Voltage Protect Activate	RW	Bitfield16	N/A	1	22110	1		Bit0:level1 high Bit1:level2 high

							Bit2:level1 low Bit3:level2 Low Bit4:10min volt protect
Frequency Protect Enable	RO	Bitfield16	N/A	1	22200	1	Bit0:level1 protect Bit1:level2 protect
Frequency high limit1	RW	U16	Hz	100	22201	1	50-65
Frequency high limit1 protect time	RW	U16	ms	0.1	22202	1	20-100000ms
Frequency high limit2	RW	U16	Hz	100	22203	1	50-65
Frequency high limit2 protect time	RW	U16	ms	0.1	22204	1	20-100000ms
Frequency low limit1	RW	U16	Hz	100	22205	1	45-60
Frequency low limit1 protect time	RW	U16	ms	0.1	22206	1	20-100000ms
Frequency low limit2	RW	U16	Hz	100	22207	1	45-60
Frequency low limit2 protect time	RW	U16	ms	0.1	22208	1	20-100000ms
Frequency Protect Activate	RW	Bitfield16	N/A	1	22209	1	Bit0:level1 high Bit1:level2 high Bit2:level1 low Bit3:level2 low
P(f) Enable	RW	U16	N/A	1	23000	1	0: disable 1: enable
Mode	RW	U16	N/A	1	23001	1	0: fstop deactivat

							ed 1: fstop activated
P(f) enter delay	RW	U16	ms	1	23002	1	0-5000
Overfrequency start frequency	RW	U16	Hz	100	23003	1	50-55
Overfrequency droop	RW	U16	N/A	100	23004	1	2%-12%
Overfrequency recover frequency	RW	U16	Hz	100	23005	1	50-55
Underfrequency start frequency	RW	U16	Hz	100	23006	1	45-50
Underfrequency droop	RW	U16	N/A	100	23007	1	2%-12%
Underfrequency recover frequency	RW	U16	Hz	100	23008	1	45-50
Power recover gradient	RW	U16	% / min	10	23009	1	6-3000
Power recover delay	RW	U16	s	1	23010	1	0-600
P(u) enable	RW	U16	N/A	1	23100	1	0: disable 1: enable
V1	RW	U16	V	10	23101	1	150-300
V2	RW	U16	V	10	23102	1	150-300
V3	RW	U16	V	10	23103	1	150-300
V4	RW	U16	V	10	23104	1	150-300
P1	RW	U16	Pn/ 100	1	23105	1	0-100
P4	RW	U16	Pn/ 100	1	23106	1	0-100
P(u) delay	RW	U16	s	1	23107	1	0-10
power decline gradient	RW	U16	(Pn/ 100)/ s	1	23108	1	1-100
Reactive power control mode	RW	U16	N/A	1	23200	1	0: None 1:Fixed PF 2:Fixed Q 3:CosphiP 4:Q(U)
Fixed PF	RW	I16	N/A	100	23201	1	> 0:over- Excited

							[80,100] < 0:under- Excited, [-100,-80]
Fixed Q	RW	I16	Var	1	23202	1	> 0:over- Excited [0,3600] < 0:under- Excited, [-3600,0]
CosphiP_Lockin V	RW	U16	V	10	23203	1	200-300
CosphiP_Lockout V	RW	U16	V	10	23204	1	200-300
CosphiP_PF1	RW	I16	N/A	100	23205	1	> 0:over- Excited [80,100] < 0:under- Excited, [-100,-80]
CosphiP_P1	RW	U16	Pn/ 100	1	23206	1	0-100
CosphiP_PF2	RW	I16	N/A	100	23207	1	> 0:over- Excited [80,100] < 0:under- Excited, [-100,-80]
CosphiP_P2	RW	U16	Pn/ 100	1	23208	1	0-100
CosphiP_PF3	RW	I16	N/A	100	23209	1	> 0:over- Excited [80,100] < 0:under- Excited, [-100,-80]
CosphiP_P3	RW	U16	Pn/ 100	1	23210	1	0-100
CosphiP_PF4	RW	I16	N/A	100	23211	1	> 0:over- Excited [80,100] < 0:under- Excited,

							[-100,-80]
CosphiP_P4	RW	U16	Pn/ 100	1	23212	1	0-100
Q(U) enter delay	RW	U16	s	1	23213	1	0-60
Q(U) LockinP	RW	U16	Pn/ 100	1	23214	1	0-100
Q(U) LockoutP	RW	U16	Pn/ 100	1	23215	1	0-100
Qu_V1	RW	U16	Un/ 100	1	23216	1	0-130
Qu_Q1	RW	I16	Pn/ 100	100	23217	1	> 0:over- Excited [60,100] < 0:under- Excited, [-100,-60]
Qu_V2	RW	U16	Un/ 100	1	23218	1	0-130
Qu_Q2	RW	I16	Pn/ 100	100	23219	1	> 0:over- Excited [60,100] < 0:under- Excited, [-100,-60]
Qu_V3	RW	U16	Un/ 100	1	23220	1	0-130
Qu_Q3	RW	I16	Pn/ 100	100	23221	1	> 0:over- Excited [60,100] < 0:under- Excited, [-100,-60]
Qu_V4	RW	U16	Un/ 100	1	23222	1	0-130
Qu_Q4	RW	I16	Pn/ 100	100	23223	1	> 0:over- Excited [60,100] < 0:under- Excited, [-100,-60]
UVRT enable	RW	U16	N/A	1	23300	1	0: disable 1: enable

OVRT enable	RW	U16	N/A	1	23301	1	0: disable 1: enable
UVRT V1	RW	U16	Un/ 100	1	23302	1	0-100
UVRT T1	RW	U16	ms	0.1	23303	1	10-6000ms
UVRT V2	RW	U16	Un/ 100	1	23304	1	0-100
UVRT T2	RW	U16	ms	0.1	23305	1	10-6000ms
UVRT V3	RW	U16	Un/ 100	1	23306	1	0-100
UVRT T3	RW	U16	ms	0.1	23307	1	10-6000ms
OVRT V1	RW	U16	Un/ 100	1	23308	1	100-130
OVRT T1	RW	U16	ms	0.1	23309	1	10-6000ms
OVRT V2	RW	U16	Un/ 100	1	23310	1	100-130
OVRT T2	RW	U16	ms	0.1	23311	1	10-6000ms
OVRT V3	RW	U16	Un/ 100	1	23312	1	100-130
OVRT T3	RW	U16	ms	0.1	23313	1	10-6000ms
Zero current under voltage threshold	RW	U16	Un/ 100	1	23314	1	20-100
Zero current over voltage threshold	RW	U16	Un/ 100	1	23315	1	100-130
ROCOF enable	RW	U16	N/A	1	23400	1	0: disable 1: enable
ROCOF threshold	RW	U16	Hz/s	10	23401	1	0.1-5
Clear events	WO				24000	1	
Clear energy	WO				24001	1	
Factory reset	WO				24002	1	
Battery awake	WO				24003	1	
Start Self-Test	WO	U16	N/A	1	24004	1	0:Start