1. Overview

This document contains the Modbus-TCP protocol data bit information forwarded by the BCQ system. The applicable all-in-one ESS model is: NE233L.

All data is forwarded on the same channel, with a default forwarding port number of 3200 and a default device address of 1.

Date	Version	Content
2024-01-01	1.0	Start Publishing
2024-11-21	1.1	2.4/3.4 Add new supplementary information

2. PCS data forwarding

2.1. read coil

Function code: 0x01

Description	Modbus address (decimal)
Overall fault bit	1
On-/off-grid run bit	2
Overall PCS alarm	3
PCS comm status	4

2.2. holding register

Function code: read 0x03, write 0x06

Description	Modbus address (decimal)	Rate	Data Type	Unit	Description
Off-grid mode settings	5001	1	INT16		1: Off-gird mode enabled; 0: on-grid enabled
Module work mode settings	5002	1	INT16		1: current source mode; 0: DC voltage source mode;
Power on/off command	5003	1	INT16		1: On; 0: Off;
Fault reset command	5004	1	INT16		Write 32768 to reset
Active power setting value	5005	10	INT16	0.1kW	Only can be set under on-grid mode; Positive indicates discharging, negative indicates charging

2.3. input register

Function code: 0x04

Description	Modbus address (decimal)	Rate	Data Type	Unit	Description
PCS AC current Ia RMS value	1	10	INT16	0.1A	

PCS AC current Ib RMS value	2	10	INT16	0.1A	
PCS AC current Ic RMS value	3	10	INT16	0.1A	
PoC line voltage Uab RMS value	4	10	INT16	0.1V	
PoC line voltage Ubc RMS value	5	10	INT16	0.1V	
PoC line voltage Uca RMS value	6	10	INT16	0.1V	
DC bus overall voltage	7	10	INT16	0.1V	
DC current	8	10	INT16	0.1A	
AC active power	9	10	INT16	0.1kW	
AC reactive power	10	10	INT16	0.1KVar	
power factor	11	100	INT16		
DC power	12	10	INT16	0.1kW	
Grid frequency	13	100	INT16	0.01Hz	
Charge and discharge power setting	14	10	INT16	0.1kW	
Reactive power setting	15	10	INT16	0.1kVar	
Forward operation status	16	1	INT16		见 2.4-9
Hardware fault word 1	17	1	INT16		见 2.4-1
Hardware fault word 2	18	1	INT16		见 2.4-2
Grid fault word	19	1	INT16		见 2.4-3
Bus fault word	20	1	INT16		见 2.4-4
AC capacitor fault word	21	1	INT16		见 2.4-5
System fault word	22	1	INT16		见 2.4-6
Switch fault word	23	1	INT16		见 2.4-7
Other fault word	24	1	INT16		见 2.4-8

2.4. Supplement

1. Hardware fault word 1

bit0 -- EPO fault flag;
bit1 -- IGBT hardware over-current flag;
bit2 -- bus hardware over-voltage flag;
bit4 -- Power module wave-by-wave current limit flag;
Bit5 -- Balancing module hardware over-current flag;
1 For fault, 0 for normal; other are reserved;

2.Hardware fault word 2

bit0 -- 24V power fault flag;
bit1 -- fan fault flag;
bit2 -- connection fault flag;
bit6 -- SPD fault;
Bit7 --inductor over-temperature fault flag;
bit8 -- Power module over-temperature flag;
Bit9 -- Balancing module over-temperature flag;
bit10 -- 15V power fault flag;
bit11 -- System fire alarm fault flag;

bit12 -- Battery dry contact fault flag;
bit13 -- Dry contact overload fault flag;
bit14 -- Ambient temperature over-temperature fault flag;
bit15 -- Dry contact over-temperature fault flag;
1 For fault, 0 for normal; other are reserved;

3. Power grid fault word

bit0 --APhase over-voltage fault flag;
bit1 - B Phase over-voltage fault flag;
bit2 - C Phase over-voltage fault flag;
bit3 --APhase under-voltage fault flag;
bit4 -- B Phase under-voltage fault flag;
bit5 -- C Phase under-voltage fault flag;
bit6 -- Grid over-frequency;
bit7 -- Grid under-frequency;
bit8 -- Grid wrong phase sequence;
bit9 -- APhase software over-current;
bit10 -- BPhase software over-current;
bit11 -- CPhase software over-current;
bit12 -- Grid voltage imbalance;
bit13 -- Grid current imbalance;
Bit14 -- Grid missing phase;
bit15 -- N Line over-current;
1 For fault, 0 for normal; other are reserved;

4. bus fault word

bit0 -- pre-charge bus over-voltage；
bit1 -- Pre-charge bus under-voltage;；
bit2 -- uncontrolled rectification bus over-voltage；
bit3 -- uncontrolled rectification bus under-voltage;
Bit4 -- operation bus over-voltage；
bit5 -- operation bus under-voltage；
bit6 -- imbalance between positive and negative buses；
bit7 -- battery under-voltage；
bit8 -- current mode bus under-voltage；
bit9 -- battery over-voltage；
bit10 -- DC pre-charge over-current；
bit11 -- DC over-current；
bit12 -- Balancing module software over-current；
bit15 -- Battery reverse connection；
1 For fault, 0 for normal; other are reserved;

5. AC capacitor fault word

Bit0 -- Pre-charge timeout;
Bit1 -- pre-charge Aphase overflow;
Bit2 -- pre-charge B phase overflow;
Bit3 -- pre-charge C Phase overflow.
1 For fault, 0 for normal; other are reserved;

6. System fault word

bit2 --AD Sampling zero-drift fault;
bit11 -- BMS Battery system fault;
bit12 -- STS communication fault;
bit13 -- BMS communication fault;
bit14 -- slave module CAN communication fault;
bit15 -- EMS communication fault;
1 For fault, 0 for normal; other are reserved;

7. Switch fault word

Bit0 -- Pre-charge relay failed to close;
Bit1 -- Pre-charge relay failed to disconnect;
Bit2 -- Pre-charge relay closing status error;
Bit3 -- Pre-charge relay disconnection status error;
Bit4 -- Main relay failed to close;
Bit5 -- Main relay failed to disconnect;
Bit6 -- Main relay closing status error;
Bit7 -- Main relay disconnection status error;
Bit8 -- AC main relay adhesion fault;
Bit9 -- DC relay open-circuit fault;
1 For fault, 0 for normal; other are reserved;

8. Other fault word

Bit0 --inverter voltage A Phase over-voltage fault flag;
Bit1 -- inverter voltage B Phase over-voltage fault flag;
Bit2 -- inverter voltage C Phase over-voltage fault flag;
Bit3 -- islanding fault flag;
Bit5 -- System resonance fault flag;
Bit6 -- Software over-voltage and over-current flag;
Bit8 -- HVRT timeout fault flag;
Bit9 -- inverter voltage A Phase under-voltage fault flag;
Bit10 -- inverter voltage B Phase under-voltage fault flag;
Bit11 -- inverter voltage C Phase under-voltage fault flag;
Bit12 -- off-grid no synchronization signal failure flag;
Bit14 -- off-grid short circuit fault flag;
Bit15 -- LVRT timeout fault flag;

1 For fault, 0 for normal; other are reserved;

9. Forwarding operational status

0 – shutdown;
1 -- standby;
2 -- charge;
3 -- discharge;
It's not bit , it's decimal

- **Instructions**

A. If the AC main relay adhesion fault, DC relay open circuit fault, AC main relay open circuit fault and other faults, please contact the manufacturer in time; If it is powered off, do not power it on again.

B. Hardware fault words 1, hardware fault words 2 (except SPD fault, power module over temperature fault) need to be powered off and reset.

C. Battery voltage fault, battery over voltage fault, battery reverse connection fault, power module

D. Over temperature fault, after fault recovery, you can automatically reset;

For other faults (all faults except A, B, and C), when the module is shut down (after the shutdown command is sent), the module can be reset by sending the fault reset command.

3. BMS data forwarding

3.1. read coil

Function code: 0x01

Description	Modbus address (decimal)

group terminal over-voltage level 1 alarm	101
group terminal over-voltage level 2 alarm	102
group terminal over-voltage level 3 alarm	103
group terminal under-voltage level 1 alarm	104
group terminal under-voltage level 2 alarm	105
group terminal under-voltage level 3 alarm	106
group terminal discharge over-current level 1 alarm	107
group terminal discharge over-current level 2 alarm	108
group terminal discharge over-current level 3 alarm	109
group terminal charging over-current level 1 alarm	110
group terminal charging over-current level 2 alarm	111
group terminal charging over-current level 3 alarm	112
group terminal insulation level 1 alarm	113
group terminal insulation level 2 alarm	114
group terminal insulation level 3 alarm	115
cell charging over-temperature level 1 alarm	116
cell charging over temperature level 2 alarm	117
cell charging over-temperature level 3 alarm	118
cell charging under-temperature level 1 alarm	119
cell charging under-temperature level 2 alarm	120
cell charging under-temperature level 3 alarm	121
Cell voltage over-voltage level 1 alarm	122
Cell voltage over-voltage level 2 alarm	123
Cell voltage over-voltage level 3 alarm	124
Cell voltage under-voltage level 1 alarm	125
Cell voltage under-voltage level 2 alarm	126
Cell voltage under-voltage level 3 alarm	127
Cell voltage over-voltage-difference level 1 alarm	128
Cell voltage over-voltage-difference level 2 alarm	129
Cell voltage over-voltage-difference level 3 alarm	130
Cell voltage over-temperature-difference level 1 alarm	131
Cell voltage over-temperature-difference level 2 alarm	132
Cell voltage over-temperature-difference level 3 alarm	133
low SOC level 1 alarm	134
low SOC level 2 alarm	135
low SOC level 3 alarm	136
power plug-in box over-temperature level 1 alarm	137
power plug-in box over-temperature level 2 alarm	138
power plug-in box over-temperature level 3 alarm	139
Battery module over-voltage level 1 alarm	140
Battery module over-voltage level 2 alarm	141
Battery module over-voltage level 3 alarm	142
Battery module under-voltage level 1 alarm	143

Battery module under-voltage level 2 alarm	144
Battery module under-voltage level 3 alarm	145
DI1 fault	146
DI2 fault	147
DI3 fault	148
DI4 fault	149
DI5 fault	150
DI6 fault	151
DI7 fault	152
DI8 fault	153
Internal communication lost	154
Cell voltage sampling abnormal	155
Cell temperature sampling abnormal	156
Display control detection fault	157
Inter-cluster over-voltage-difference	158
Inter-cluster trip fault	159
Battery limit fault	160
software version parameters inconsistent	161
Communication fault with PCS	162
PC forced control debugging mode	163
CAN Hall sensor fault	164
CAN Hall sensor communication fault	165
Hardware self-test abnormal	166
cell voltage wire harness fault	167
balancing fault	168
EMS communication fault	169
Communication fault with level-3 BMS	170
cell discharging over-temperature level 1 alarm	171
cell discharging over-temperature level 2 alarm	172
cell discharging over-temperature level 3 alarm	173
cell discharging under-temperature level 1 alarm	174
cell discharging under-temperature level 2 alarm	175
cell discharging under-temperature level 3 alarm	176
high SOC level 1 alarm	177
high SOC level 2 alarm	178
high SOC level 3 alarm	179
high temperature rise level 1 alarm	180
high temperature rise level 2 alarm	181
high temperature rise level 3 alarm	182
Alarm status	183
fault status	184
communication status	185

Note: Level 1 alarms indicate minor faults, Level 2 alarms indicate moderate faults, and Level 3 and other alarms indicate severe faults.

Alarms such as cell under voltage, cell over voltage, low SOC, and high SOC occur more frequently during charging and discharging and can generally be ignored under normal circumstances.

3.2. holding register

Function code: read 0x03, write 0x06

Description	Modbus address (decimal)	Rate	type of data
Reset command (remote adjustment)	5101	1	Positive-sequence 16-bit signed integer

3.3. input register

Function code: 0x04

Description	Modbus address (decimal)	Rate	type of data
cluster current value	101	10	Positive-sequence 16-bit signed integer
cluster overall SOC	102	10	Positive-sequence 16-bit signed integer
cluster overall SOH	103	1	Positive-sequence 16-bit signed integer
cluster voltage	104	10	Positive-sequence 16-bit signed integer
cluster battery status	105	1	Positive-sequence 16-bit signed integer
Max. battery temperature	106	10	Positive-sequence 16-bit signed integer
Module No. with Max. battery temperature	107	1	Positive-sequence 16-bit signed integer
Intra-module No. with Max. battery temperature	108	1	Positive-sequence 16-bit signed integer
Min. battery temperature	109	10	Positive-sequence 16-bit signed integer
Module No. with Min. battery temperature	110	1	Positive-sequence 16-bit signed integer
Intra-module No. with Min. battery temperature	111	1	Positive-sequence 16-bit signed integer

average battery temperature	112	10	Positive-sequence 16-bit signed integer
overall number of cells in the battery pack	113	1	Positive-sequence 16-bit signed integer
Cell average voltage	114	1000	Positive-sequence 16-bit signed integer
Max. cell voltage	115	1000	Positive-sequence 16-bit signed integer
Module No. with Max. cell voltage	116	1	Positive-sequence 16-bit signed integer
Intra-module No. with Max. cell voltage	117	1	Positive-sequence 16-bit signed integer
Min. cell voltage	118	1000	Positive-sequence 16-bit signed integer
Module No. with Min. cell voltage	119	1	Positive-sequence 16-bit signed integer
Intra-module No. with Min. cell voltage	120	1	Positive-sequence 16-bit signed integer
cell average SOC	121	10	Positive-sequence 16-bit signed integer
Accumulated charging power	122	10	Positive-sequence 32-bit signed integer
Accumulated discharging power	124	10	Positive-sequence 32-bit signed integer
System alarm status	126	1	Positive-sequence 16-bit signed integer
Max. allowable charging power	127	10	Positive-sequence 16-bit signed integer
Max. allowable discharge power	128	10	Positive-sequence 16-bit signed integer
Accumulated charging energy in one day	129	10	Positive-sequence 16-bit signed integer
Accumulated discharging energy in one day	130	10	Positive-sequence 16-bit signed integer

3.4. Supplement

3.4.1. Battery Cluster Status

1 – Initialization;
2 – Self-checking;
3 – Powering on;
4 – Power-on complete;

5 – Charging disabled;
6 – Discharge disabled;
7 – Standby;
8 – Fault power-off;
9 – Fault cleared after power-off;
10 – Test mode;
11 – Single-cluster maintenance;
12 – Powering down;
13 – Power-down complete;
This is not parsed bit by bit but represented in decimal format.

3.4.2. System Alarm Status
bit0 -- Charging disabled flag;
bit1 -- Discharge disabled flag;
bit2 -- Alarm status;
bit3 -- Fully charged status;
bit5 -- Fully discharged status;
1 indicates valid, and 0 indicates invalid. Other bits are reserved.

4. Battery cell data forwarding

4.1. input register

Function code: 0x04

Description	Modbus address (decimal)	Rate	type of data
Cell voltage 001	1001	1000	Positive-sequence 16-bit signed integer
Cell voltage 002	1002	1000	Positive-sequence 16-bit signed integer
Cell voltage 003	1003	1000	Positive-sequence 16-bit signed integer
Cell voltage 004	1004	1000	Positive-sequence 16-bit signed integer
Cell voltage 005	1005	1000	Positive-sequence 16-bit signed integer
Cell voltage 006	1006	1000	Positive-sequence 16-bit signed integer
Cell voltage 007	1007	1000	Positive-sequence 16-bit signed integer
Cell voltage 008	1008	1000	Positive-sequence 16-bit signed

			integer
Cell voltage 009	1009	1000	Positive-sequence 16-bit signed integer
Cell voltage 010	1010	1000	Positive-sequence 16-bit signed integer
Cell voltage 011	1011	1000	Positive-sequence 16-bit signed integer
Cell voltage 012	1012	1000	Positive-sequence 16-bit signed integer
Cell voltage 013	1013	1000	Positive-sequence 16-bit signed integer
Cell voltage 014	1014	1000	Positive-sequence 16-bit signed integer
Cell voltage 015	1015	1000	Positive-sequence 16-bit signed integer
Cell voltage 016	1016	1000	Positive-sequence 16-bit signed integer
Cell voltage 017	1017	1000	Positive-sequence 16-bit signed integer
Cell voltage 018	1018	1000	Positive-sequence 16-bit signed integer
Cell voltage 019	1019	1000	Positive-sequence 16-bit signed integer
Cell voltage 020	1020	1000	Positive-sequence 16-bit signed integer
Cell voltage 021	1021	1000	Positive-sequence 16-bit signed integer
Cell voltage 022	1022	1000	Positive-sequence 16-bit signed integer
Cell voltage 023	1023	1000	Positive-sequence 16-bit signed integer
Cell voltage 024	1024	1000	Positive-sequence 16-bit signed integer
Cell voltage 025	1025	1000	Positive-sequence 16-bit signed integer
Cell voltage 026	1026	1000	Positive-sequence 16-bit signed integer
Cell voltage 027	1027	1000	Positive-sequence 16-bit signed integer
Cell voltage 028	1028	1000	Positive-sequence 16-bit signed integer
Cell voltage 029	1029	1000	Positive-sequence 16-bit signed integer

Cell voltage 030	1030	1000	Positive-sequence 16-bit signed integer
Cell voltage 031	1031	1000	Positive-sequence 16-bit signed integer
Cell voltage 032	1032	1000	Positive-sequence 16-bit signed integer
Cell voltage 033	1033	1000	Positive-sequence 16-bit signed integer
Cell voltage 034	1034	1000	Positive-sequence 16-bit signed integer
Cell voltage 035	1035	1000	Positive-sequence 16-bit signed integer
Cell voltage 036	1036	1000	Positive-sequence 16-bit signed integer
Cell voltage 037	1037	1000	Positive-sequence 16-bit signed integer
Cell voltage 038	1038	1000	Positive-sequence 16-bit signed integer
Cell voltage 039	1039	1000	Positive-sequence 16-bit signed integer
Cell voltage 040	1040	1000	Positive-sequence 16-bit signed integer
Cell voltage 041	1041	1000	Positive-sequence 16-bit signed integer
Cell voltage 042	1042	1000	Positive-sequence 16-bit signed integer
Cell voltage 043	1043	1000	Positive-sequence 16-bit signed integer
Cell voltage 044	1044	1000	Positive-sequence 16-bit signed integer
Cell voltage 045	1045	1000	Positive-sequence 16-bit signed integer
Cell voltage 046	1046	1000	Positive-sequence 16-bit signed integer
Cell voltage 047	1047	1000	Positive-sequence 16-bit signed integer
Cell voltage 048	1048	1000	Positive-sequence 16-bit signed integer
Cell voltage 049	1049	1000	Positive-sequence 16-bit signed integer
Cell voltage 050	1050	1000	Positive-sequence 16-bit signed integer
Cell voltage 051	1051	1000	Positive-sequence 16-bit signed integer

Cell voltage 052	1052	1000	Positive-sequence 16-bit signed integer
Cell voltage 053	1053	1000	Positive-sequence 16-bit signed integer
Cell voltage 054	1054	1000	Positive-sequence 16-bit signed integer
Cell voltage 055	1055	1000	Positive-sequence 16-bit signed integer
Cell voltage 056	1056	1000	Positive-sequence 16-bit signed integer
Cell voltage 057	1057	1000	Positive-sequence 16-bit signed integer
Cell voltage 058	1058	1000	Positive-sequence 16-bit signed integer
Cell voltage 059	1059	1000	Positive-sequence 16-bit signed integer
Cell voltage 060	1060	1000	Positive-sequence 16-bit signed integer
Cell voltage 061	1061	1000	Positive-sequence 16-bit signed integer
Cell voltage 062	1062	1000	Positive-sequence 16-bit signed integer
Cell voltage 063	1063	1000	Positive-sequence 16-bit signed integer
Cell voltage 064	1064	1000	Positive-sequence 16-bit signed integer
Cell voltage 065	1065	1000	Positive-sequence 16-bit signed integer
Cell voltage 066	1066	1000	Positive-sequence 16-bit signed integer
Cell voltage 067	1067	1000	Positive-sequence 16-bit signed integer
Cell voltage 068	1068	1000	Positive-sequence 16-bit signed integer
Cell voltage 069	1069	1000	Positive-sequence 16-bit signed integer
Cell voltage 070	1070	1000	Positive-sequence 16-bit signed integer
Cell voltage 071	1071	1000	Positive-sequence 16-bit signed integer
Cell voltage 072	1072	1000	Positive-sequence 16-bit signed integer
Cell voltage 073	1073	1000	Positive-sequence 16-bit signed integer

Cell voltage 074	1074	1000	Positive-sequence 16-bit signed integer
Cell voltage 075	1075	1000	Positive-sequence 16-bit signed integer
Cell voltage 076	1076	1000	Positive-sequence 16-bit signed integer
Cell voltage 077	1077	1000	Positive-sequence 16-bit signed integer
Cell voltage 078	1078	1000	Positive-sequence 16-bit signed integer
Cell voltage 079	1079	1000	Positive-sequence 16-bit signed integer
Cell voltage 080	1080	1000	Positive-sequence 16-bit signed integer
Cell voltage 081	1081	1000	Positive-sequence 16-bit signed integer
Cell voltage 082	1082	1000	Positive-sequence 16-bit signed integer
Cell voltage 083	1083	1000	Positive-sequence 16-bit signed integer
Cell voltage 084	1084	1000	Positive-sequence 16-bit signed integer
Cell voltage 085	1085	1000	Positive-sequence 16-bit signed integer
Cell voltage 086	1086	1000	Positive-sequence 16-bit signed integer
Cell voltage 087	1087	1000	Positive-sequence 16-bit signed integer
Cell voltage 088	1088	1000	Positive-sequence 16-bit signed integer
Cell voltage 089	1089	1000	Positive-sequence 16-bit signed integer
Cell voltage 090	1090	1000	Positive-sequence 16-bit signed integer
Cell voltage 091	1091	1000	Positive-sequence 16-bit signed integer
Cell voltage 092	1092	1000	Positive-sequence 16-bit signed integer
Cell voltage 093	1093	1000	Positive-sequence 16-bit signed integer
Cell voltage 094	1094	1000	Positive-sequence 16-bit signed integer
Cell voltage 095	1095	1000	Positive-sequence 16-bit signed integer

Cell voltage 096	1096	1000	Positive-sequence 16-bit signed integer
Cell voltage 097	1097	1000	Positive-sequence 16-bit signed integer
Cell voltage 098	1098	1000	Positive-sequence 16-bit signed integer
Cell voltage 099	1099	1000	Positive-sequence 16-bit signed integer
Cell voltage 100	1100	1000	Positive-sequence 16-bit signed integer
Cell voltage 101	1101	1000	Positive-sequence 16-bit signed integer
Cell voltage 102	1102	1000	Positive-sequence 16-bit signed integer
Cell voltage 103	1103	1000	Positive-sequence 16-bit signed integer
Cell voltage 104	1104	1000	Positive-sequence 16-bit signed integer
Cell voltage 105	1105	1000	Positive-sequence 16-bit signed integer
Cell voltage 106	1106	1000	Positive-sequence 16-bit signed integer
Cell voltage 107	1107	1000	Positive-sequence 16-bit signed integer
Cell voltage 108	1108	1000	Positive-sequence 16-bit signed integer
Cell voltage 109	1109	1000	Positive-sequence 16-bit signed integer
Cell voltage 110	1110	1000	Positive-sequence 16-bit signed integer
Cell voltage 111	1111	1000	Positive-sequence 16-bit signed integer
Cell voltage 112	1112	1000	Positive-sequence 16-bit signed integer
Cell voltage 113	1113	1000	Positive-sequence 16-bit signed integer
Cell voltage 114	1114	1000	Positive-sequence 16-bit signed integer
Cell voltage 115	1115	1000	Positive-sequence 16-bit signed integer
Cell voltage 116	1116	1000	Positive-sequence 16-bit signed integer
Cell voltage 117	1117	1000	Positive-sequence 16-bit signed integer

Cell voltage 118	1118	1000	Positive-sequence 16-bit signed integer
Cell voltage 119	1119	1000	Positive-sequence 16-bit signed integer
Cell voltage 120	1120	1000	Positive-sequence 16-bit signed integer
Cell voltage 121	1121	1000	Positive-sequence 16-bit signed integer
Cell voltage 122	1122	1000	Positive-sequence 16-bit signed integer
Cell voltage 123	1123	1000	Positive-sequence 16-bit signed integer
Cell voltage 124	1124	1000	Positive-sequence 16-bit signed integer
Cell voltage 125	1125	1000	Positive-sequence 16-bit signed integer
Cell voltage 126	1126	1000	Positive-sequence 16-bit signed integer
Cell voltage 127	1127	1000	Positive-sequence 16-bit signed integer
Cell voltage 128	1128	1000	Positive-sequence 16-bit signed integer
Cell voltage 129	1129	1000	Positive-sequence 16-bit signed integer
Cell voltage 130	1130	1000	Positive-sequence 16-bit signed integer
Cell voltage 131	1131	1000	Positive-sequence 16-bit signed integer
Cell voltage 132	1132	1000	Positive-sequence 16-bit signed integer
Cell voltage 133	1133	1000	Positive-sequence 16-bit signed integer
Cell voltage 134	1134	1000	Positive-sequence 16-bit signed integer
Cell voltage 135	1135	1000	Positive-sequence 16-bit signed integer
Cell voltage 136	1136	1000	Positive-sequence 16-bit signed integer
Cell voltage 137	1137	1000	Positive-sequence 16-bit signed integer
Cell voltage 138	1138	1000	Positive-sequence 16-bit signed integer
Cell voltage 139	1139	1000	Positive-sequence 16-bit signed integer

Cell voltage 140	1140	1000	Positive-sequence 16-bit signed integer
Cell voltage 141	1141	1000	Positive-sequence 16-bit signed integer
Cell voltage 142	1142	1000	Positive-sequence 16-bit signed integer
Cell voltage 143	1143	1000	Positive-sequence 16-bit signed integer
Cell voltage 144	1144	1000	Positive-sequence 16-bit signed integer
Cell voltage 145	1145	1000	Positive-sequence 16-bit signed integer
Cell voltage 146	1146	1000	Positive-sequence 16-bit signed integer
Cell voltage 147	1147	1000	Positive-sequence 16-bit signed integer
Cell voltage 148	1148	1000	Positive-sequence 16-bit signed integer
Cell voltage 149	1149	1000	Positive-sequence 16-bit signed integer
Cell voltage 150	1150	1000	Positive-sequence 16-bit signed integer
Cell voltage 151	1151	1000	Positive-sequence 16-bit signed integer
Cell voltage 152	1152	1000	Positive-sequence 16-bit signed integer
Cell voltage 153	1153	1000	Positive-sequence 16-bit signed integer
Cell voltage 154	1154	1000	Positive-sequence 16-bit signed integer
Cell voltage 155	1155	1000	Positive-sequence 16-bit signed integer
Cell voltage 156	1156	1000	Positive-sequence 16-bit signed integer
Cell voltage 157	1157	1000	Positive-sequence 16-bit signed integer
Cell voltage 158	1158	1000	Positive-sequence 16-bit signed integer
Cell voltage 159	1159	1000	Positive-sequence 16-bit signed integer
Cell voltage 160	1160	1000	Positive-sequence 16-bit signed integer
Cell voltage 161	1161	1000	Positive-sequence 16-bit signed integer

Cell voltage 162	1162	1000	Positive-sequence 16-bit signed integer
Cell voltage 163	1163	1000	Positive-sequence 16-bit signed integer
Cell voltage 164	1164	1000	Positive-sequence 16-bit signed integer
Cell voltage 165	1165	1000	Positive-sequence 16-bit signed integer
Cell voltage 166	1166	1000	Positive-sequence 16-bit signed integer
Cell voltage 167	1167	1000	Positive-sequence 16-bit signed integer
Cell voltage 168	1168	1000	Positive-sequence 16-bit signed integer
Cell voltage 169	1169	1000	Positive-sequence 16-bit signed integer
Cell voltage 170	1170	1000	Positive-sequence 16-bit signed integer
Cell voltage 171	1171	1000	Positive-sequence 16-bit signed integer
Cell voltage 172	1172	1000	Positive-sequence 16-bit signed integer
Cell voltage 173	1173	1000	Positive-sequence 16-bit signed integer
Cell voltage 174	1174	1000	Positive-sequence 16-bit signed integer
Cell voltage 175	1175	1000	Positive-sequence 16-bit signed integer
Cell voltage 176	1176	1000	Positive-sequence 16-bit signed integer
Cell voltage 177	1177	1000	Positive-sequence 16-bit signed integer
Cell voltage 178	1178	1000	Positive-sequence 16-bit signed integer
Cell voltage 179	1179	1000	Positive-sequence 16-bit signed integer
Cell voltage 180	1180	1000	Positive-sequence 16-bit signed integer
Cell voltage 181	1181	1000	Positive-sequence 16-bit signed integer
Cell voltage 182	1182	1000	Positive-sequence 16-bit signed integer
Cell voltage 183	1183	1000	Positive-sequence 16-bit signed integer

Cell voltage 184	1184	1000	Positive-sequence 16-bit signed integer
Cell voltage 185	1185	1000	Positive-sequence 16-bit signed integer
Cell voltage 186	1186	1000	Positive-sequence 16-bit signed integer
Cell voltage 187	1187	1000	Positive-sequence 16-bit signed integer
Cell voltage 188	1188	1000	Positive-sequence 16-bit signed integer
Cell voltage 189	1189	1000	Positive-sequence 16-bit signed integer
Cell voltage 190	1190	1000	Positive-sequence 16-bit signed integer
Cell voltage 191	1191	1000	Positive-sequence 16-bit signed integer
Cell voltage 192	1192	1000	Positive-sequence 16-bit signed integer
Cell voltage 193	1193	1000	Positive-sequence 16-bit signed integer
Cell voltage 194	1194	1000	Positive-sequence 16-bit signed integer
Cell voltage 195	1195	1000	Positive-sequence 16-bit signed integer
Cell voltage 196	1196	1000	Positive-sequence 16-bit signed integer
Cell voltage 197	1197	1000	Positive-sequence 16-bit signed integer
Cell voltage 198	1198	1000	Positive-sequence 16-bit signed integer
Cell voltage 199	1199	1000	Positive-sequence 16-bit signed integer
Cell voltage 200	1200	1000	Positive-sequence 16-bit signed integer
Cell voltage 201	1201	1000	Positive-sequence 16-bit signed integer
Cell voltage 202	1202	1000	Positive-sequence 16-bit signed integer
Cell voltage 203	1203	1000	Positive-sequence 16-bit signed integer
Cell voltage 204	1204	1000	Positive-sequence 16-bit signed integer
Cell voltage 205	1205	1000	Positive-sequence 16-bit signed integer

Cell voltage 206	1206	1000	Positive-sequence 16-bit signed integer
Cell voltage 207	1207	1000	Positive-sequence 16-bit signed integer
Cell voltage 208	1208	1000	Positive-sequence 16-bit signed integer
Cell voltage 209	1209	1000	Positive-sequence 16-bit signed integer
Cell voltage 210	1210	1000	Positive-sequence 16-bit signed integer
Cell voltage 211	1211	1000	Positive-sequence 16-bit signed integer
Cell voltage 212	1212	1000	Positive-sequence 16-bit signed integer
Cell voltage 213	1213	1000	Positive-sequence 16-bit signed integer
Cell voltage 214	1214	1000	Positive-sequence 16-bit signed integer
Cell voltage 215	1215	1000	Positive-sequence 16-bit signed integer
Cell voltage 216	1216	1000	Positive-sequence 16-bit signed integer
Cell voltage 217	1217	1000	Positive-sequence 16-bit signed integer
Cell voltage 218	1218	1000	Positive-sequence 16-bit signed integer
Cell voltage 219	1219	1000	Positive-sequence 16-bit signed integer
Cell voltage 220	1220	1000	Positive-sequence 16-bit signed integer
Cell voltage 221	1221	1000	Positive-sequence 16-bit signed integer
Cell voltage 222	1222	1000	Positive-sequence 16-bit signed integer
Cell voltage 223	1223	1000	Positive-sequence 16-bit signed integer
Cell voltage 224	1224	1000	Positive-sequence 16-bit signed integer
Cell voltage 225	1225	1000	Positive-sequence 16-bit signed integer
Cell voltage 226	1226	1000	Positive-sequence 16-bit signed integer
Cell voltage 227	1227	1000	Positive-sequence 16-bit signed integer

Cell voltage 228	1228	1000	Positive-sequence 16-bit signed integer
Cell voltage 229	1229	1000	Positive-sequence 16-bit signed integer
Cell voltage 230	1230	1000	Positive-sequence 16-bit signed integer
Cell voltage 231	1231	1000	Positive-sequence 16-bit signed integer
Cell voltage 232	1232	1000	Positive-sequence 16-bit signed integer
Cell voltage 233	1233	1000	Positive-sequence 16-bit signed integer
Cell voltage 234	1234	1000	Positive-sequence 16-bit signed integer
Cell voltage 235	1235	1000	Positive-sequence 16-bit signed integer
Cell voltage 236	1236	1000	Positive-sequence 16-bit signed integer
Cell voltage 237	1237	1000	Positive-sequence 16-bit signed integer
Cell voltage 238	1238	1000	Positive-sequence 16-bit signed integer
Cell voltage 239	1239	1000	Positive-sequence 16-bit signed integer
Cell voltage 240	1240	1000	Positive-sequence 16-bit signed integer
Cell voltage 241	1241	1000	Positive-sequence 16-bit signed integer
Cell voltage 242	1242	1000	Positive-sequence 16-bit signed integer
Cell voltage 243	1243	1000	Positive-sequence 16-bit signed integer
Cell voltage 244	1244	1000	Positive-sequence 16-bit signed integer
Cell voltage 245	1245	1000	Positive-sequence 16-bit signed integer
Cell voltage 246	1246	1000	Positive-sequence 16-bit signed integer
Cell voltage 247	1247	1000	Positive-sequence 16-bit signed integer
Cell voltage 248	1248	1000	Positive-sequence 16-bit signed integer
Cell voltage 249	1249	1000	Positive-sequence 16-bit signed integer

Cell voltage 250	1250	1000	Positive-sequence 16-bit signed integer
Cell voltage 251	1251	1000	Positive-sequence 16-bit signed integer
Cell voltage 252	1252	1000	Positive-sequence 16-bit signed integer
Cell voltage 253	1253	1000	Positive-sequence 16-bit signed integer
Cell voltage 254	1254	1000	Positive-sequence 16-bit signed integer
Cell voltage 255	1255	1000	Positive-sequence 16-bit signed integer
Cell voltage 256	1256	1000	Positive-sequence 16-bit signed integer
Cell voltage 257	1257	1000	Positive-sequence 16-bit signed integer
Cell voltage 258	1258	1000	Positive-sequence 16-bit signed integer
Cell voltage 259	1259	1000	Positive-sequence 16-bit signed integer
Cell voltage 260	1260	1000	Positive-sequence 16-bit signed integer
cell temperature 001	1501	10	Positive-sequence 16-bit signed integer
cell temperature 002	1502	10	Positive-sequence 16-bit signed integer
cell temperature 003	1503	10	Positive-sequence 16-bit signed integer
cell temperature 004	1504	10	Positive-sequence 16-bit signed integer
cell temperature 005	1505	10	Positive-sequence 16-bit signed integer
cell temperature 006	1506	10	Positive-sequence 16-bit signed integer
cell temperature 007	1507	10	Positive-sequence 16-bit signed integer
cell temperature 008	1508	10	Positive-sequence 16-bit signed integer
cell temperature 009	1509	10	Positive-sequence 16-bit signed integer
cell temperature 010	1510	10	Positive-sequence 16-bit signed integer
cell temperature 011	1511	10	Positive-sequence 16-bit signed integer

cell temperature 012	1512	10	Positive-sequence 16-bit signed integer
cell temperature 013	1513	10	Positive-sequence 16-bit signed integer
cell temperature 014	1514	10	Positive-sequence 16-bit signed integer
cell temperature 015	1515	10	Positive-sequence 16-bit signed integer
cell temperature 016	1516	10	Positive-sequence 16-bit signed integer
cell temperature 017	1517	10	Positive-sequence 16-bit signed integer
cell temperature 018	1518	10	Positive-sequence 16-bit signed integer
cell temperature 019	1519	10	Positive-sequence 16-bit signed integer
cell temperature 020	1520	10	Positive-sequence 16-bit signed integer
cell temperature 021	1521	10	Positive-sequence 16-bit signed integer
cell temperature 022	1522	10	Positive-sequence 16-bit signed integer
cell temperature 023	1523	10	Positive-sequence 16-bit signed integer
cell temperature 024	1524	10	Positive-sequence 16-bit signed integer
cell temperature 025	1525	10	Positive-sequence 16-bit signed integer
cell temperature 026	1526	10	Positive-sequence 16-bit signed integer
cell temperature 027	1527	10	Positive-sequence 16-bit signed integer
cell temperature 028	1528	10	Positive-sequence 16-bit signed integer
cell temperature 029	1529	10	Positive-sequence 16-bit signed integer
cell temperature 030	1530	10	Positive-sequence 16-bit signed integer
cell temperature 031	1531	10	Positive-sequence 16-bit signed integer
cell temperature 032	1532	10	Positive-sequence 16-bit signed integer
cell temperature 033	1533	10	Positive-sequence 16-bit signed integer

cell temperature 034	1534	10	Positive-sequence 16-bit signed integer
cell temperature 035	1535	10	Positive-sequence 16-bit signed integer
cell temperature 036	1536	10	Positive-sequence 16-bit signed integer
cell temperature 037	1537	10	Positive-sequence 16-bit signed integer
cell temperature 038	1538	10	Positive-sequence 16-bit signed integer
cell temperature 039	1539	10	Positive-sequence 16-bit signed integer
cell temperature 040	1540	10	Positive-sequence 16-bit signed integer
cell temperature 041	1541	10	Positive-sequence 16-bit signed integer
cell temperature 042	1542	10	Positive-sequence 16-bit signed integer
cell temperature 043	1543	10	Positive-sequence 16-bit signed integer
cell temperature 044	1544	10	Positive-sequence 16-bit signed integer
cell temperature 045	1545	10	Positive-sequence 16-bit signed integer
cell temperature 046	1546	10	Positive-sequence 16-bit signed integer
cell temperature 047	1547	10	Positive-sequence 16-bit signed integer
cell temperature 048	1548	10	Positive-sequence 16-bit signed integer
cell temperature 049	1549	10	Positive-sequence 16-bit signed integer
cell temperature 050	1550	10	Positive-sequence 16-bit signed integer
cell temperature 051	1551	10	Positive-sequence 16-bit signed integer
cell temperature 052	1552	10	Positive-sequence 16-bit signed integer
cell temperature 053	1553	10	Positive-sequence 16-bit signed integer
cell temperature 054	1554	10	Positive-sequence 16-bit signed integer
cell temperature 055	1555	10	Positive-sequence 16-bit signed integer

cell temperature 056	1556	10	Positive-sequence 16-bit signed integer
cell temperature 057	1557	10	Positive-sequence 16-bit signed integer
cell temperature 058	1558	10	Positive-sequence 16-bit signed integer
cell temperature 059	1559	10	Positive-sequence 16-bit signed integer
cell temperature 060	1560	10	Positive-sequence 16-bit signed integer
cell temperature 061	1561	10	Positive-sequence 16-bit signed integer
cell temperature 062	1562	10	Positive-sequence 16-bit signed integer
cell temperature 063	1563	10	Positive-sequence 16-bit signed integer
cell temperature 064	1564	10	Positive-sequence 16-bit signed integer
cell temperature 065	1565	10	Positive-sequence 16-bit signed integer
cell temperature 066	1566	10	Positive-sequence 16-bit signed integer
cell temperature 067	1567	10	Positive-sequence 16-bit signed integer
cell temperature 068	1568	10	Positive-sequence 16-bit signed integer
cell temperature 069	1569	10	Positive-sequence 16-bit signed integer
cell temperature 070	1570	10	Positive-sequence 16-bit signed integer
cell temperature 071	1571	10	Positive-sequence 16-bit signed integer
cell temperature 072	1572	10	Positive-sequence 16-bit signed integer
cell temperature 073	1573	10	Positive-sequence 16-bit signed integer
cell temperature 074	1574	10	Positive-sequence 16-bit signed integer
cell temperature 075	1575	10	Positive-sequence 16-bit signed integer
cell temperature 076	1576	10	Positive-sequence 16-bit signed integer
cell temperature 077	1577	10	Positive-sequence 16-bit signed integer

cell temperature 078	1578	10	Positive-sequence 16-bit signed integer
cell temperature 079	1579	10	Positive-sequence 16-bit signed integer
cell temperature 080	1580	10	Positive-sequence 16-bit signed integer
cell temperature 081	1581	10	Positive-sequence 16-bit signed integer
cell temperature 082	1582	10	Positive-sequence 16-bit signed integer
cell temperature 083	1583	10	Positive-sequence 16-bit signed integer
cell temperature 084	1584	10	Positive-sequence 16-bit signed integer
cell temperature 085	1585	10	Positive-sequence 16-bit signed integer
cell temperature 086	1586	10	Positive-sequence 16-bit signed integer
cell temperature 087	1587	10	Positive-sequence 16-bit signed integer
cell temperature 088	1588	10	Positive-sequence 16-bit signed integer
cell temperature 089	1589	10	Positive-sequence 16-bit signed integer
cell temperature 090	1590	10	Positive-sequence 16-bit signed integer
cell temperature 091	1591	10	Positive-sequence 16-bit signed integer
cell temperature 092	1592	10	Positive-sequence 16-bit signed integer
cell temperature 093	1593	10	Positive-sequence 16-bit signed integer
cell temperature 094	1594	10	Positive-sequence 16-bit signed integer
cell temperature 095	1595	10	Positive-sequence 16-bit signed integer
cell temperature 096	1596	10	Positive-sequence 16-bit signed integer
cell temperature 097	1597	10	Positive-sequence 16-bit signed integer
cell temperature 098	1598	10	Positive-sequence 16-bit signed integer
cell temperature 099	1599	10	Positive-sequence 16-bit signed integer

cell temperature 100	1600	10	Positive-sequence 16-bit signed integer

5. I/O module data forwarding

5.1. read coil

Function code: 0x01

Description	Modbus address (decimal)
Temperature detector alarm	401
Smoke detector alarm	402
fire suppression alarm	403
immersion alarm	404
Cabinet door lock status	405
Emergency stop switch status	406
Incoming circuit breaker status	407
Busbar circuit breaker status	408
running indicator	409
Fault indicator	410
Dehumidification fan	411
Incoming circuit breaker trip	412
Busbar circuit breaker trip	413
DO06	414
DO07	415
DO08	416

6. Water-cooled air conditioner data forwarding

6.1. read coil

Function code: 0x01

description	Modbus address (decimal)

High temperature of outlet water alarm	701
Outlet water low temperature alarm	702
Outlet water temperature sensor failure	703
Return water temperature sensor failure	704
Hydration alarm	705
System pressure is too high alarm	706
Outlet water pressure is too high alarm	707
Water-cooled offline	708
Fault status	709

6.2. holding register

Function code: read 0x03, write 0x06

System power on and off	5201	1	Positive-sequence 16-bit signed integer
Mode settings	5202	1	Positive-sequence 16-bit signed integer
Control temperature selection	5203	1	Positive-sequence 16-bit signed integer

6.3. input register

Function code: 0x04

Outlet water temperature	701	10	Positive-sequence 16-bit signed integer
Return water temperature	702	10	Positive-sequence 16-bit signed integer
Exhaust gas temperature	703	10	Positive-sequence 16-bit signed integer
ambient temperature	704	10	Positive-sequence 16-bit signed integer
Inlet water pressure	705	100	Positive-sequence 16-bit signed integer
Water pressure	706	100	Positive-sequence 16-bit signed integer
Current speed of water pump	707	10	Positive-sequence 16-bit signed integer
water pump status	708	1	Positive-sequence 16-bit signed

			integer
Current system mode	709	1	Positive-sequence 16-bit signed integer