

# FU2200A COMMUNICATION PROTOCOL

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## 0. VERSION HISTORY

Rev10	2014,06,17	First Version
Rev20	2014,08,16	Added Network interface parameters
Rev21	2014,09,02	1. Added harmonic content input register and Waveform Files 2. Added $U_1U_2U_3I_1I_2I_3$ Vector Data
Rev22	2014,10,04	1. Register 1, bit2 used for enlarge current(Double), for bear 10A
Rev23	2014,11,06	1. Register 1, bit3 used for enlarge voltage(Double), for bear 800V 2. If current doubling, the unit of power and demand will be doubling too. If voltage doubling, the unit of power and demand will be doubling too. If voltage, current both doubling, the unit of power and demand will be fourfold accordingly.

## 1. RS485 COMMUNICATION

1200-38400bps, Modbus-RTU protocol

## 2. FUNCTION CODE

Code	Descriptions	Explanation
01	Read the digital output state	Get the current state of the digital output (ON/OFF)
02	Read DI status	Get the current state of the digital input (ON/OFF)
03	Read Hold register	Get one or more registers binary value
04	Read Input register	Get one or more Input registers binary value
05	Control of digital output	Control the digital output state (ON/OFF)
06	Preset single hold register	Set the binary values into a single register
16	Preset multiple hold registers	Set the binary values to a series of multiple register
20	Read file	Read data record
110	Custom	Write parameter password verification etc.

## 3. INSTANTANEOUS VALUE (INPUT REGISTER)

Register	Item	Descriptions	LSB	Explanation
0	Version	Version		High byte: hardware version; low byte: software version
1	Flag	Flag		bit: power on; bit1: factory pattern; bit2 Double size current; bit3 Double size voltage

Register	Item	Descriptions	LSB	Explanation
2	Version <sup>1</sup>	Ethernet Version		High byte: hardware version; low byte: software version
3				
4	Ua	A phase voltage	0.01V	3P3WNo Data
5	Ub	B phase voltage	0.01V	
6	Uc	C phase voltage	0.01V	
7	Ulnavg	Average phase voltage	0.01V	
8	Uab	AB line voltage	0.01V	
9	Ubc	BC line voltage	0.01V	
10	Uca	CA line voltage	0.01V	
11	Ullavg	Average line voltage	0.01V	
12	Ia	A phase current	0.1mA	
13	Ib	B phase current	0.1mA	3P3WNo Data
14	Ic	C phase current	0.1mA	
15	Iavg	Average current	0.1mA	
16	In	Zero sequence current	0.1mA	3P3WNo Data
17	Pa	A phase active power	0.2W	Signed integer
18	Pb	B phase active power	0.2W	Signed integer
19	Pc	C phase active power	0.2W	Signed integer
20	Psum	Sum phase active power	0.2W	Signed integer
21	Qa	A phase reactive power	0.2var	Signed integer
22	Qb	B phase reactive power	0.2var	Signed integer
23	Qc	C phase reactive power	0.2var	Signed integer
24	Qsum	Sum phase reactive power	0.2var	Signed integer
25	Sa	A phase apparent power	0.2VA	
26	Sb	B phase apparent power	0.2VA	
27	Sc	C phase apparent power	0.2VA	
28	Ssum	Sum phase apparent power	0.2VA	
29	Pfa	A phase power factor	0.0001	Signed integer
30	Pfb	B phase power factor	0.0001	Signed integer
31	Pfc	C phase power factor	0.0001	Signed integer
32	Pfsum	Sum phase power factor	0.0001	Signed integer
33	AngUa	A phase voltage angle	0.01°	
34	AngUb	B phase voltage angle	0.01°	
35	AngUc	C phase voltage angle	0.01°	
36	AngIa	A phase current angle	0.01°	
37	AngIb	B phase current angle	0.01°	
38	AngIc	C phase current angle	0.01°	
39	Freq	Frequency	0.001Hz	

<sup>1</sup> Only supply register value when access through Ethernet port

Register	Item	Descriptions	LSB	Explanation
40	Uunbl	Voltage asymmetry	0.01%	
41	Iunbl	Current asymmetry	0.01%	
42	LCR	Load characteristics		High byte: 00; Low byte: 'L'/'C'/'R'
43	DemP	Active demand	0.2W	Signed integer
44	DemQ	Reactive demand	0.2var	Signed integer
45	DemS	Apparent demand	0.2VA	
46	U <sub>1</sub> Real	U <sub>1_real</sub>		
47	U <sub>1</sub> Img	U <sub>1_img</sub>		
48	U <sub>2</sub> Real	U <sub>2_real</sub>		
49	U <sub>2</sub> Img	U <sub>2_img</sub>		
50	U <sub>3</sub> Real	U <sub>3_real</sub>		
51	U <sub>3</sub> img	U <sub>3_img</sub>		
52	I <sub>1</sub> real	I <sub>1_real</sub>		
53	I <sub>1</sub> img	I <sub>1_img</sub>		
54	I <sub>2</sub> real	I <sub>2_real</sub>		
55	I <sub>2</sub> img	I <sub>2_img</sub>		
56	I <sub>3</sub> real	I <sub>3_real</sub>		
57	I <sub>3</sub> img	I <sub>3_img</sub>		

#### 4. ENERGY (INPUT REGISTER)

Register	Item	Descriptions	LSB	Explanation
128	EPimp	Positive active energy Hi	0.001kWh	Total energy
129	EPimp	Positive active energy Lo	0.001kWh	
130	EPexp	Reverse active energy Hi	0.001kWh	
131	EPexp	Reverse active energy Lo	0.001kWh	
132	EPtotal	Total active energy Hi	0.001kWh	
133	EPtotal	Total active energy Lo	0.001kWh	
134	EPnet	Net active energy Hi	0.001kWh	
135	EPnet	Net active energy Lo	0.001kWh	
136	EQimp	Positive reactive energy Hi	0.001kvarh	
137	EQimp	Positive reactive energy Lo	0.001kvarh	
138	EQexp	Reverse reactive energy Hi	0.001kvarh	
139	EQexp	Reverse reactive energy Lo	0.001kvarh	
140	EQtotal	Total reactive energy Hi	0.001kvarh	
141	EQtotal	Total reactive energy Lo	0.001kvarh	
142	EQnet	Net reactive energy Hi	0.001kvarh	
143	EQnet	Net reactive energy Lo	0.001kvarh	
144	ESimp	Positive apparent energy Hi	0.001kVAh	
145	ESimp	Positive apparent energy Lo	0.001kVAh	
146	ESexp	Reverse apparent energy Hi	0.001kVAh	

Register	Item	Descriptions	LSB	Explanation
147	ESexp	Reverse apparent energy Lo	0.001kVAh	Tariff 1 energy
148	EStotal	Total apparent energy Hi	0.001kVAh	
149	EStotal	Total apparent energy Lo	0.001kVAh	
150	ESnet	Net apparent energy Hi	0.001kVAh	
151	ESnet	Net apparent energy Lo	0.001kVAh	
152	EPimp	Positive active energy Hi	0.001kWh	
153	EPimp	Positive active energy Lo	0.001kWh	
154	EPexp	Reverse active energy Hi	0.001kWh	
155	EPexp	Reverse active energy Lo	0.001kWh	
156	EPtotal	Total active energy Hi	0.001kWh	
157	EPtotal	Total active energy Lo	0.001kWh	
158	EPnet	Net active energy Hi	0.001kWh	
159	EPnet	Net active energy Lo	0.001kWh	
160	EQimp	Positive reactive energy Hi	0.001kvarh	
161	EQimp	Positive reactive energy Lo	0.001kvarh	
162	EQexp	Reverse reactive energy Hi	0.001kvarh	
163	EQexp	Reverse reactive energy Lo	0.001kvarh	
164	EQtotal	Total reactive energy Hi	0.001kvarh	
165	EQtotal	Total reactive energy Lo	0.001kvarh	
166	EQnet	Net reactive energy Hi	0.001kvarh	
167	EQnet	Net reactive energy Lo	0.001kvarh	
168	ESimp	Positive apparent energy Hi	0.001kVAh	Tariff 2 energy
169	ESimp	Positive apparent energy Lo	0.001kVAh	
170	ESexp	Reverse apparent energy Hi	0.001kVAh	
171	ESexp	Reverse apparent energy Lo	0.001kVAh	
172	EStotal	Total apparent energy Hi	0.001kVAh	
173	EStotal	Total apparent energy Lo	0.001kVAh	
174	ESnet	Net apparent energy Hi	0.001kVAh	
175	ESnet	Net apparent energy Lo	0.001kVAh	
176	EPimp	Positive active energy Hi	0.001kWh	
177	EPimp	Positive active energy Lo	0.001kWh	
178	EPexp	Reverse active energy Hi	0.001kWh	
179	EPexp	Reverse active energy Lo	0.001kWh	
180	EPtotal	Total active energy Hi	0.001kWh	
181	EPtotal	Total active energy Lo	0.001kWh	
182	EPnet	Net active energy Hi	0.001kWh	
183	EPnet	Net active energy Lo	0.001kWh	
184	EQimp	Positive reactive energy Hi	0.001kvarh	
185	EQimp	Positive reactive energy Lo	0.001kvarh	
186	EQexp	Reverse reactive energy Hi	0.001kvarh	
187	EQexp	Reverse reactive energy Lo	0.001kvarh	

Register	Item	Descriptions	LSB	Explanation	
188	EQtotal	Total reactive energy Hi	0.001kvarh		
189	EQtotal	Total reactive energy Lo	0.001kvarh		
190	EQnet	Net reactive energy Hi	0.001kvarh		
191	EQnet	Net reactive energy Lo	0.001kvarh		
192	ESimp	Positive apparent energy Hi	0.001kVAh		
193	ESimp	Positive apparent energy Lo	0.001kVAh		
194	ESexp	Reverse apparent energy Hi	0.001kVAh		
195	ESexp	Reverse apparent energy Lo	0.001kVAh		
196	EStotal	Total apparent energy Hi	0.001kVAh		
197	EStotal	Total apparent energy Lo	0.001kVAh		
198	ESnet	Net apparent energy Hi	0.001kVAh		
199	ESnet	Net apparent energy Lo	0.001kVAh		
200	EPimp	Positive active energy Hi	0.001kWh		Tariff 3 energy
201	EPimp	Positive active energy Lo	0.001kWh		
202	EPexp	Reverse active energy Hi	0.001kWh		
203	EPexp	Reverse active energy Lo	0.001kWh		
204	EPtotal	Total active energy Hi	0.001kWh		
205	EPtotal	Total active energy Lo	0.001kWh		
206	EPnet	Net active energy Hi	0.001kWh		
207	EPnet	Net active energy Lo	0.001kWh		
208	EQimp	Positive reactive energy Hi	0.001kvarh		
209	EQimp	Positive reactive energy Lo	0.001kvarh		
210	EQexp	Reverse reactive energy Hi	0.001kvarh		
211	EQexp	Reverse reactive energy Lo	0.001kvarh		
212	EQtotal	Total reactive energy Hi	0.001kvarh		
213	EQtotal	Total reactive energy Lo	0.001kvarh		
214	EQnet	Net reactive energy Hi	0.001kvarh		
215	EQnet	Net reactive energy Lo	0.001kvarh		
216	ESimp	Positive apparent energy Hi	0.001kVAh		
217	ESimp	Positive apparent energy Lo	0.001kVAh		
218	ESexp	Reverse apparent energy Hi	0.001kVAh		
219	ESexp	Reverse apparent energy Lo	0.001kVAh		
220	EStotal	Total apparent energy Hi	0.001kVAh		
221	EStotal	Total apparent energy Lo	0.001kVAh		
222	ESnet	Net apparent energy Hi	0.001kVAh		
223	ESnet	Net apparent energy Lo	0.001kVAh		
224	EPimp	Positive active energy Hi	0.001kWh	Tariff 4 energy	
225	EPimp	Positive active energy Lo	0.001kWh		
226	EPexp	Reverse active energy Hi	0.001kWh		
227	EPexp	Reverse active energy Lo	0.001kWh		
228	EPtotal	Total active energy Hi	0.001kWh		

Register	Item	Descriptions	LSB	Explanation
229	EPtotal	Total active energy Lo	0.001kWh	
230	EPnet	Net active energy Hi	0.001kWh	
231	EPnet	Net active energy Lo	0.001kWh	
232	EQimp	Positive reactive energy Hi	0.001kvarh	
233	EQimp	Positive reactive energy Lo	0.001kvarh	
234	EQexp	Reverse reactive energy Hi	0.001kvarh	
235	EQexp	Reverse reactive energy Lo	0.001kvarh	
236	EQtotal	Total reactive energy Hi	0.001kvarh	
237	EQtotal	Total reactive energy Lo	0.001kvarh	
238	EQnet	Net reactive energy Hi	0.001kvarh	
239	EQnet	Net reactive energy Lo	0.001kvarh	
240	ESimp	Positive apparent energy Hi	0.001kVAh	
241	ESimp	Positive apparent energy Lo	0.001kVAh	
242	ESexp	Reverse apparent energy Hi	0.001kVAh	
243	ESexp	Reverse apparent energy Lo	0.001kVAh	
244	EStotal	Total apparent energy Hi	0.001kVAh	
245	EStotal	Total apparent energy Lo	0.001kVAh	
246	ESnet	Net apparent energy Hi	0.001kVAh	
247	ESnet	Net apparent energy Lo	0.001kVAh	

\* Notes:Net active energy, net reactive energy, net apparent energy: High and low together, with Signed long integer.

## 5. EXTREME DATA (INPUT REGISTER)

Register	Item	Descriptions	LSB	Explanation
1024	Ua max	A phase maximum voltage	0.01V	Max voltage
1025	Year month			High byte: year; low byte: month
1026	Day hour			High byte: day; low byte: hour
1027	Minute second			High byte: minute; low byte: second
1028	Ub max	B phase maximum voltage	0.01V	Max voltage
1029	Year month			High byte: year; low byte: month
1030	Day hour			High byte: day; low byte: hour
1031	Minute second			High byte: minute; low byte: second
1032	Uc max	C phase maximum voltage	0.01V	Max voltage
1033	Year month			High byte: year; low byte: month
1034	Day hour			High byte: day; low byte: hour
1035	Minute second			High byte: minute; low byte: second
1036	Ua min	A phase minimum voltage	0.01V	Min voltage
1037	Year month			High byte: year; low byte: month
1038	Day hour			High byte: day; low byte: hour

Register	Item	Descriptions	LSB	Explanation
1039	Minute second			High byte: minute; low byte: second
1040	Ub min	B phase minimum voltage	0.01V	Min voltage
1041	Year month			High byte: year; low byte: month
1042	Day hour			High byte: day; low byte: hour
1043	Minute second			High byte: minute; low byte: second
1044	Uc min	C phase minimum voltage	0.01V	Min voltage
1045	Year month			High byte: year; low byte: month
1046	Day hour			High byte: day; low byte: hour
1047	Minute second			High byte: minute; low byte: second
1048	Uab max	AB line maximum voltage	0.01V	Max voltage
1049	Year month			High byte: year; low byte: month
1050	Day hour			High byte: day; low byte: hour
1051	Minute second			High byte: minute; low byte: second
1052	Ubc max	BC line maximum voltage	0.01V	Max voltage
1053	Year month			High byte: year; low byte: month
1054	Day hour			High byte: day; low byte: hour
1055	Minute second			High byte: minute; low byte: second
1056	Uca max	CA line maximum voltage	0.01V	Max voltage
1057	Year month			High byte: year; low byte: month
1058	Day hour			High byte: day; low byte: hour
1059	Minute second			High byte: minute; low byte: second
1060	Uab min	AB line minimum voltage	0.01V	Min voltage
1061	Year month			High byte: year; low byte: month
1062	Day hour			High byte: day; low byte: hour
1063	Minute second			High byte: minute; low byte: second
1064	Ubc min	BC line minimum voltage	0.01V	Min voltage
1065	Year month			High byte: year; low byte: month
1066	Day hour			High byte: day; low byte: hour
1067	Minute second			High byte: minute; low byte: second
1068	Uca min	CA line minimum voltage	0.01V	Min voltage
1069	Year month			High byte: year; low byte: month
1070	Day hour			High byte: day; low byte: hour
1071	Minute second			High byte: minute; low byte: second
1072	Iamax	A phase maximum current	0.1mA	Max current
1073	Year month			High byte: year; low byte: month
1074	Day hour			High byte: day; low byte: hour
1075	Minute second			High byte: minute; low byte: second
1076	Ibmax	B phase maximum current	0.1mA	Max current
1077	Year month			High byte: year; low byte: month
1078	Day hour			High byte: day; low byte: hour
1079	Minute second			High byte: minute; low byte: second





Register	Item	Descriptions	LSB	Explanation
1080	Icmax	C phase maximum current	0.1mA	Max current
1081	Year month			High byte: year; low byte: month
1082	Day hour			High byte: day; low byte: hour
1083	Minute second			High byte: minute; low byte: second
1084	Iamin	A phase minimum current	0.1mA	Min current
1085	Year month			High byte: year; low byte: month
1086	Day hour			High byte: day; low byte: hour
1087	Minute second			High byte: minute; low byte: second
1088	Ibmin	B phase minimum current	0.1mA	Min current
1089	Year month			High byte: year; low byte: month
1090	Day hour			High byte: day; low byte: hour
1091	Minute second			High byte: minute; low byte: second
1092	Icmin	C phase minimum current	0.1mA	Min current
1093	Year month			High byte: year; low byte: month
1094	Day hour			High byte: day; low byte: hour
1095	Minute second			High byte: minute; low byte: second
1096	Pmax	maximum total active power	0.2W	Max active power, with signed integer
1097	Year month			High byte: year; low byte: month
1098	Day hour			High byte: day; low byte: hour
1099	Minute second			High byte: minute; low byte: second
1100	Pmin	minimum total active power	0.2W	Min active power, with signed integer
1101	Year month			High byte: year; low byte: month
1102	Day hour			High byte: day; low byte: hour
1103	Minute second			High byte: minute; low byte: second
1104	Qmax	maximum total reactive power	0.2var	Max reactive power, with signed integer
1105	Year month			High byte: year; low byte: month
1106	Day hour			High byte: day; low byte: hour
1107	Minute second			High byte: minute; low byte: second
1108	Qmin	minimum total reactive power	0.2var	Min reactive power, with signed integer
1109	Year month			High byte: year; low byte: month
1110	Day hour			High byte: day; low byte: hour
1111	Minute second			High byte: minute; low byte: second
1112	Smax	maximum total apparent power	0.2VA	Max apparent power
1113	Year month			High byte: year; low byte: month
1114	Day hour			High byte: day; low byte: hour
1115	Minute second			High byte: minute; low byte: second
1116	Smin	minimum total apparent power	0.2VA	Min apparent power
1117	Year month			High byte: year; low byte: month
1118	Day hour			High byte: day; low byte: hour
1119	Minute second			High byte: minute; low byte: second
1120	Pfmax	maximum	0.0001	Max power factor, with signed integer



Register	Item	Descriptions	LSB	Explanation
1121	Year month	total power factor		High byte: year; low byte: month
1122	Day hour			High byte: day; low byte: hour
1123	Minute second			High byte: minute; low byte: second
1124	Pfmin	minimum total power factor	0.0001	Min power factor, with signed integer
1125	Year month			High byte: year; low byte: month
1126	Day hour			High byte: day; low byte: hour
1127	Minute second			High byte: minute; low byte: second
1128	Fmax	Maximum frequency	0.001Hz	Max frequency
1129	Year month			High byte: year; low byte: month
1130	Day hour			High byte: day; low byte: hour
1131	Minute second			High byte: minute; low byte: second
1132	Fmin	Minimum frequency	0.001Hz	Min frequency
1133	Year month			High byte: year; low byte: month
1134	Day hour			High byte: day; low byte: hour
1135	Minute second			High byte: minute; low byte: second
1136	DPmax	Maximum total active demand	0.2W	Max active power demand, with signed integer
1137	Year month			High byte: year; low byte: month
1138	Day hour			High byte: day; low byte: hour
1139	Minute second			High byte: minute; low byte: second
1140	DPmin	Minimum total active demand	0.2W	Min active power demand
1141	Year month			High byte: year; low byte: month
1142	Day hour			High byte: day; low byte: hour
1143	Minute second			High byte: minute; low byte: second
1144	DQmax	Maximum total reactive demand	0.2var	Max reactive power demand
1145	Year month			High byte: year; low byte: month
1146	Day hour			High byte: day; low byte: hour
1147	Minute second			High byte: minute; low byte: second
1148	DQmin	Minimum total reactive demand	0.2var	Min reactive power demand
1149	Year month			High byte: year; low byte: month
1150	Day hour			High byte: day; low byte: hour
1151	Minute second			High byte: minute; low byte: second
1152	DSmax	Maximum total apparent demand	0.2VA	Max apparent power demand
1153	Year month			High byte: year; low byte: month
1154	Day hour			High byte: day; low byte: hour
1155	Minute second			High byte: minute; low byte: second
1156	DSmin	Minimum total apparent demand	0.2VA	Min apparent power demand
1157	Year month			High byte: year; low byte: month
1158	Day hour			High byte: day; low byte: hour
1159	Minute second			High byte: minute; low byte: second
1160	U <sub>1</sub> THDmax	U <sub>1</sub> harmonic	0.01%	VoltageU <sub>1</sub> (2PT as U <sub>12</sub> ) THD max Value



Register	Item	Descriptions	LSB	Explanation
1161	Year month	THD max		High byte: year; low byte: month
1162	Day hour			High byte: day; low byte: hour
1163	Year month			High byte: minute; low byte: second
1164	U <sub>2</sub> THDmax	U <sub>2</sub> harmonic THD max	0.01%	Voltage U <sub>2</sub> THD max value
1165	Year month			High byte: year; low byte: month
1166	Day hour			High byte: day; low byte: hour
1167	Year month			High byte: minute; low byte: second
1168	U <sub>3</sub> THDmax	U <sub>3</sub> harmonic THD max	0.01%	Voltage U <sub>3</sub> (2PT as U <sub>31</sub> )THD max
1169	Year month			High byte: year; low byte: month
1170	Day hour			High byte: day; low byte: hour
1171	Year month			High byte: minute; low byte: second
1172	I <sub>1</sub> THDmax	I <sub>1</sub> harmonic THD max	0.01%	Current I <sub>1</sub> (2PT as I <sub>12</sub> )THD max
1173	Year month			High byte: year; low byte: month
1174	Day hour			High byte: day; low byte: hour
1175	Year month			High byte: minute; low byte: second
1176	I <sub>2</sub> THDmax	I <sub>2</sub> harmonic THD max	0.01%	Current I <sub>2</sub> THD max
1177	Year month			High byte: year; low byte: month
1178	Day hour			High byte: day; low byte: hour
1179	Year month			High byte: minute; low byte: second
1180	I <sub>3</sub> THDmax	I <sub>3</sub> harmonic THD max	0.01%	Current I <sub>3</sub> (2PT as I <sub>31</sub> )THD max
1181	Year month			High byte: year; low byte: month
1182	Day hour			High byte: day; low byte: hour
1183	Year month			High byte: minute; low byte: second
1184	U <sub>1</sub> THDmin	U <sub>1</sub> harmonic THD min	0.01%	Voltage U <sub>1</sub> (2PT as U <sub>12</sub> )THD min
1185	Year month			High byte: year; low byte: month
1186	Day hour			High byte: day; low byte: hour
1187	Year month			High byte: minute; low byte: second
1188	U <sub>2</sub> THDmin	U <sub>2</sub> harmonic THD min	0.01%	Voltage U <sub>2</sub> THD min
1189	Year month			High byte: year; low byte: month
1190	Day hour			High byte: day; low byte: hour
1191	Year month			High byte: minute; low byte: second
1192	U <sub>3</sub> THDmin	U <sub>3</sub> harmonic THD min	0.01%	Voltage U <sub>3</sub> (2PT as U <sub>31</sub> )THD min
1193	Year month			High byte: year; low byte: month
1194	Day hour			High byte: day; low byte: hour
1195	Year month			High byte: minute; low byte: second
1196	I <sub>1</sub> THDmin	I <sub>1</sub> harmonic THD min	0.01%	Current I <sub>1</sub> (2PT as I <sub>12</sub> )THD min
1197	Year month			High byte: year; low byte: month
1198	Day hour			High byte: day; low byte: hour
1199	Year month			High byte: minute; low byte: second
1200	I <sub>2</sub> THDmin	I <sub>2</sub> harmonic THD min	0.01%	Current I <sub>2</sub> THD min
1201	Year month			High byte: year; low byte: month

Register	Item	Descriptions	LSB	Explanation
1202	Day hour	I <sub>3</sub> harmonic THD min		High byte: day; low byte: hour
1203	Year month			High byte: minute; low byte: second
1204	I <sub>3</sub> THDmin		0.01%	Current I <sub>3</sub> (2PT as I <sub>31</sub> )THD min
1205	Year month			High byte: year; low byte: month
1206	Day hour			High byte: day; low byte: hour
1207	Year month			High byte: minute; low byte: second

## 6. HARMONIC CONTENT (INPUT REGISTER)

register	item	Descriptions	LSB	Explanation
1280	U <sub>1</sub> Har[0]	U <sub>1</sub> THD	0.01%	When 2PT Connecting TypeU <sub>12</sub> , Following are the same
1281	U <sub>1</sub> Har[1]	U <sub>1</sub> Harmonic content	0.01%	Fixed 100.00%
1282	U <sub>1</sub> Har[2]	U <sub>1</sub> 2 Times of Harmonic content	0.01%	
1283	U <sub>1</sub> Har[3]	U <sub>1</sub> 3Times of Harmonic content	0.01%	
1284	U <sub>1</sub> Har[4]	U <sub>1</sub> 4Times of Harmonic content	0.01%	
1285	U <sub>1</sub> Har[5]	U <sub>1</sub> 5Times of Harmonic content	0.01%	
1286	U <sub>1</sub> Har[6]	U <sub>1</sub> 6Times of Harmonic content	0.01%	
1287	U <sub>1</sub> Har[7]	U <sub>1</sub> 7Times of Harmonic content	0.01%	
1288	U <sub>1</sub> Har[8]	U <sub>1</sub> 8Times of Harmonic content	0.01%	
1289	U <sub>1</sub> Har[9]	U <sub>1</sub> 9 Times of Harmonic content	0.01%	
1290	U <sub>1</sub> Har[10]	U <sub>1</sub> 10Times of Harmonic content	0.01%	
1291	U <sub>1</sub> Har[11]	U <sub>1</sub> 11Times of Harmonic content	0.01%	
1292	U <sub>1</sub> Har[12]	U <sub>1</sub> 12Times of Harmonic content	0.01%	
1293	U <sub>1</sub> Har[13]	U <sub>1</sub> 13Times of Harmonic content	0.01%	
1294	U <sub>1</sub> Har[14]	U <sub>1</sub> 14Times of Harmonic content t	0.01%	
1295	U <sub>1</sub> Har[15]	U <sub>1</sub> 15 Times of Harmonic content	0.01%	
1296	U <sub>1</sub> Har[16]	U <sub>1</sub> 16 Times of Harmonic content	0.01%	
1297	U <sub>1</sub> Har[17]	U <sub>1</sub> 17 Times of Harmonic content	0.01%	
1298	U <sub>1</sub> Har[18]	U <sub>1</sub> 18 Times of Harmonic content	0.01%	
1299	U <sub>1</sub> Har[19]	U <sub>1</sub> 19 Times of Harmonic content	0.01%	
1300	U <sub>1</sub> Har[20]	U <sub>1</sub> 20 Times of Harmonic content	0.01%	
1301	U <sub>1</sub> Har[21]	U <sub>1</sub> 21 Times of Harmonic content	0.01%	
1302	U <sub>1</sub> Har[22]	U <sub>1</sub> 22 Times of Harmonic content	0.01%	
1303	U <sub>1</sub> Har[23]	U <sub>1</sub> 23 Times of Harmonic content	0.01%	
1304	U <sub>1</sub> Har[24]	U <sub>1</sub> 24 Times of Harmonic content	0.01%	
1305	U <sub>1</sub> Har[25]	U <sub>1</sub> 25 Times of Harmonic content	0.01%	
1306	U <sub>1</sub> Har[26]	U <sub>1</sub> 26 Times of Harmonic content	0.01%	
1307	U <sub>1</sub> Har[27]	U <sub>1</sub> 27 Times of Harmonic content	0.01%	
1308	U <sub>1</sub> Har[28]	U <sub>1</sub> 28 Times of Harmonic content	0.01%	



register	item	Descriptions	LSB	Explanation
1309	U <sub>1</sub> Har[29]	U <sub>1</sub> 29 Times of Harmonic content	0.01%	
1310	U <sub>1</sub> Har[20]	U <sub>1</sub> 30 Times of Harmonic content	0.01%	
1311	U <sub>1</sub> Har[31]	U <sub>1</sub> 31 Times of Harmonic content	0.01%	
1312	U <sub>1</sub> Har[32]	U <sub>1</sub> 32 Times of Harmonic content	0.01%	
1313	U <sub>1</sub> Har[33]	U <sub>1</sub> 33 Times of Harmonic content	0.01%	
1314	U <sub>1</sub> Har[34]	U <sub>1</sub> 34 Times of Harmonic content	0.01%	
1315	U <sub>1</sub> Har[35]	U <sub>1</sub> 35 Times of Harmonic content	0.01%	
1316	U <sub>1</sub> Har[36]	U <sub>1</sub> 36 Times of Harmonic content	0.01%	
1317	U <sub>1</sub> Har[37]	U <sub>1</sub> 37 Times of Harmonic content	0.01%	
1318	U <sub>1</sub> Har[38]	U <sub>1</sub> 38 Times of Harmonic content	0.01%	
1319	U <sub>1</sub> Har[39]	U <sub>1</sub> 39 Times of Harmonic content	0.01%	
1320	U <sub>1</sub> Har[40]	U <sub>1</sub> 40 Times of Harmonic content	0.01%	
1321	U <sub>1</sub> Har[41]	U <sub>1</sub> 41 Times of Harmonic content	0.01%	
1322	U <sub>1</sub> Har[42]	U <sub>1</sub> 42 Times of Harmonic content	0.01%	
1323	U <sub>1</sub> Har[43]	U <sub>1</sub> 43 Times of Harmonic content	0.01%	
1324	U <sub>1</sub> Har[44]	U <sub>1</sub> 44 Times of Harmonic content	0.01%	
1325	U <sub>1</sub> Har[45]	U <sub>1</sub> 45 Times of Harmonic content	0.01%	
1326	U <sub>1</sub> Har[46]	U <sub>1</sub> 46 Times of Harmonic content	0.01%	
1327	U <sub>1</sub> Har[47]	U <sub>1</sub> 47 Times of Harmonic content	0.01%	
1328	U <sub>1</sub> Har[48]	U <sub>1</sub> 48 Times of Harmonic content	0.01%	
1329	U <sub>1</sub> Har[49]	U <sub>1</sub> 49 Times of Harmonic content	0.01%	
1330	U <sub>1</sub> Har[50]	U <sub>1</sub> 50 Times of Harmonic content	0.01%	
1331	U <sub>1</sub> Har[51]	U <sub>1</sub> 51 Times of Harmonic content	0.01%	
1332	U <sub>1</sub> Har[52]	U <sub>1</sub> 52 Times of Harmonic content	0.01%	
1333	U <sub>1</sub> Har[53]	U <sub>1</sub> 53 Times of Harmonic content	0.01%	
1334	U <sub>1</sub> Har[54]	U <sub>1</sub> 54 Times of Harmonic content	0.01%	
1335	U <sub>1</sub> Har[55]	U <sub>1</sub> 55 Times of Harmonic content	0.01%	
1336	U <sub>1</sub> Har[56]	U <sub>1</sub> 56 Times of Harmonic content	0.01%	
1337	U <sub>1</sub> Har[57]	U <sub>1</sub> 57 Times of Harmonic content	0.01%	
1338	U <sub>1</sub> Har[58]	U <sub>1</sub> 58 Times of Harmonic content	0.01%	
1339	U <sub>1</sub> Har[59]	U <sub>1</sub> 59 Times of Harmonic content	0.01%	
1340	U <sub>1</sub> Har[60]	U <sub>1</sub> 60 Times of Harmonic content	0.01%	
1341	U <sub>1</sub> Har[61]	U <sub>1</sub> 61 Times of Harmonic content	0.01%	
1342	U <sub>1</sub> Har[62]	U <sub>1</sub> 62 Times of Harmonic content	0.01%	
1343	U <sub>1</sub> Har[63]	U <sub>1</sub> 63 Times of Harmonic content	0.01%	
1344	U <sub>2</sub> Har[0]	U <sub>2</sub> THD	0.01%	
1345	U <sub>2</sub> Har[1]	U <sub>2</sub> Harmonic content	0.01%	Fixed 100.00%
1346	U <sub>2</sub> Har[2]	U <sub>2</sub> 2 Times of Harmonic content	0.01%	
1347	U <sub>2</sub> Har[3]	U <sub>2</sub> 3 Times of Harmonic content	0.01%	
1348	U <sub>2</sub> Har[4]	U <sub>2</sub> 4 Times of Harmonic content	0.01%	
1349	U <sub>2</sub> Har[5]	U <sub>2</sub> 5 Times of Harmonic content	0.01%	



register	item	Descriptions	LSB	Explanation
1350	U <sub>2</sub> Har[6]	U <sub>2</sub> 6 Times of Harmonic content	0.01%	
1351	U <sub>2</sub> Har[7]	U <sub>2</sub> 7Times of Harmonic content	0.01%	
1352	U <sub>2</sub> Har[8]	U <sub>2</sub> 8 Times of Harmonic content	0.01%	
1353	U <sub>2</sub> Har[9]	U <sub>2</sub> 9 Times of Harmonic content	0.01%	
1354	U <sub>2</sub> Har[10]	U <sub>2</sub> 10 Times of Harmonic content	0.01%	
1355	U <sub>2</sub> Har[11]	U <sub>2</sub> 11 Times of Harmonic content	0.01%	
1356	U <sub>2</sub> Har[12]	U <sub>2</sub> 12 Times of Harmonic content	0.01%	
1357	U <sub>2</sub> Har[13]	U <sub>2</sub> 13 Times of Harmonic content	0.01%	
1358	U <sub>2</sub> Har[14]	U <sub>2</sub> 14 Times of Harmonic content	0.01%	
1359	U <sub>2</sub> Har[15]	U <sub>2</sub> 15 Times of Harmonic content	0.01%	
1360	U <sub>2</sub> Har[16]	U <sub>2</sub> 16 Times of Harmonic content	0.01%	
1361	U <sub>2</sub> Har[17]	U <sub>2</sub> 17 Times of Harmonic content	0.01%	
1362	U <sub>2</sub> Har[18]	U <sub>2</sub> 18 Times of Harmonic content	0.01%	
1363	U <sub>2</sub> Har[19]	U <sub>2</sub> 19 Times of Harmonic content	0.01%	
1364	U <sub>2</sub> Har[20]	U <sub>2</sub> 20 Times of Harmonic content	0.01%	
1365	U <sub>2</sub> Har[21]	U <sub>2</sub> 21 Times of Harmonic content	0.01%	
1366	U <sub>2</sub> Har[22]	U <sub>2</sub> 22 Times of Harmonic content	0.01%	
1367	U <sub>2</sub> Har[23]	U <sub>2</sub> 23Times of Harmonic content	0.01%	
1368	U <sub>2</sub> Har[24]	U <sub>2</sub> 24 Times of Harmonic content	0.01%	
1369	U <sub>2</sub> Har[25]	U <sub>2</sub> 25 Times of Harmonic content	0.01%	
1370	U <sub>2</sub> Har[26]	U <sub>2</sub> 26 Times of Harmonic content	0.01%	
1371	U <sub>2</sub> Har[27]	U <sub>2</sub> 27Times of Harmonic content	0.01%	
1372	U <sub>2</sub> Har[28]	U <sub>2</sub> 28Times of Harmonic content	0.01%	
1373	U <sub>2</sub> Har[29]	U <sub>2</sub> 29 Times of Harmonic content	0.01%	
1374	U <sub>2</sub> Har[20]	U <sub>2</sub> 30 Times of Harmonic content	0.01%	
1375	U <sub>2</sub> Har[31]	U <sub>2</sub> 31Times of Harmonic content	0.01%	
1376	U <sub>2</sub> Har[32]	U <sub>2</sub> 32Times of Harmonic content	0.01%	
1377	U <sub>2</sub> Har[33]	U <sub>2</sub> 33Times of Harmonic content	0.01%	
1378	U <sub>2</sub> Har[34]	U <sub>2</sub> 34Times of Harmonic content	0.01%	
1379	U <sub>2</sub> Har[35]	U <sub>2</sub> 35Times of Harmonic content	0.01%	
1380	U <sub>2</sub> Har[36]	U <sub>2</sub> 36Times of Harmonic content	0.01%	
1381	U <sub>2</sub> Har[37]	U <sub>2</sub> 37Times of Harmonic content	0.01%	
1382	U <sub>2</sub> Har[38]	U <sub>2</sub> 38Times of Harmonic content	0.01%	
1383	U <sub>2</sub> Har[39]	U <sub>2</sub> 39Times of Harmonic content	0.01%	
1384	U <sub>2</sub> Har[40]	U <sub>2</sub> 40Times of Harmonic content	0.01%	
1385	U <sub>2</sub> Har[41]	U <sub>2</sub> 41Times of Harmonic content	0.01%	
1386	U <sub>2</sub> Har[42]	U <sub>2</sub> 42Times of Harmonic content	0.01%	
1387	U <sub>2</sub> Har[43]	U <sub>2</sub> 43Times of Harmonic content	0.01%	
1388	U <sub>2</sub> Har[44]	U <sub>2</sub> 44Times of Harmonic content	0.01%	
1389	U <sub>2</sub> Har[45]	U <sub>2</sub> 45Times of Harmonic content	0.01%	
1390	U <sub>2</sub> Har[46]	U <sub>2</sub> 46Times of Harmonic content	0.01%	

register	item	Descriptions	LSB	Explanation
1391	U <sub>2</sub> Har[47]	U <sub>2</sub> 47Times of Harmonic content	0.01%	
1392	U <sub>2</sub> Har[48]	U <sub>2</sub> 48Times of Harmonic content	0.01%	
1393	U <sub>2</sub> Har[49]	U <sub>2</sub> 49Times of Harmonic content	0.01%	
1394	U <sub>2</sub> Har[50]	U <sub>2</sub> 50Times of Harmonic content	0.01%	
1395	U <sub>2</sub> Har[51]	U <sub>2</sub> 51Times of Harmonic content	0.01%	
1396	U <sub>2</sub> Har[52]	U <sub>2</sub> 52Times of Harmonic content	0.01%	
1397	U <sub>2</sub> Har[53]	U <sub>2</sub> 53Times of Harmonic content	0.01%	
1398	U <sub>2</sub> Har[54]	U <sub>2</sub> 54Times of Harmonic content	0.01%	
1399	U <sub>2</sub> Har[55]	U <sub>2</sub> 55Times of Harmonic content	0.01%	
1400	U <sub>2</sub> Har[56]	U <sub>2</sub> 56Times of Harmonic content	0.01%	
1401	U <sub>2</sub> Har[57]	U <sub>2</sub> 57Times of Harmonic content	0.01%	
1402	U <sub>2</sub> Har[58]	U <sub>2</sub> 58Times of Harmonic content	0.01%	
1403	U <sub>2</sub> Har[59]	U <sub>2</sub> 59Times of Harmonic content	0.01%	
1404	U <sub>2</sub> Har[60]	U <sub>2</sub> 60Times of Harmonic content	0.01%	
1405	U <sub>2</sub> Har[61]	U <sub>2</sub> 61Times of Harmonic content	0.01%	
1406	U <sub>2</sub> Har[62]	U <sub>2</sub> 62Times of Harmonic content	0.01%	
1407	U <sub>2</sub> Har[63]	U <sub>2</sub> 63Times of Harmonic content	0.01%	
1408	U <sub>3</sub> Har[0]	U <sub>3</sub> THD	0.01%	When 2PT connecting type U <sub>31</sub> ,Following the same
1409	U <sub>3</sub> Har[1]	U <sub>3</sub> Harmonic content	0.01%	Fixed 100.00%
1410	U <sub>3</sub> Har[2]	U <sub>3</sub> 2Times of Harmonic content	0.01%	
1411	U <sub>3</sub> Har[3]	U <sub>3</sub> 3Times of Harmonic content	0.01%	
1412	U <sub>3</sub> Har[4]	U <sub>3</sub> 4Times of Harmonic content	0.01%	
1413	U <sub>3</sub> Har[5]	U <sub>3</sub> 5Times of Harmonic content	0.01%	
1414	U <sub>3</sub> Har[6]	U <sub>3</sub> 6Times of Harmonic content	0.01%	
1415	U <sub>3</sub> Har[7]	U <sub>3</sub> 7Times of Harmonic content	0.01%	
1416	U <sub>3</sub> Har[8]	U <sub>3</sub> 8Times of Harmonic content	0.01%	
1417	U <sub>3</sub> Har[9]	U <sub>3</sub> 9Times of Harmonic content	0.01%	
1418	U <sub>3</sub> Har[10]	U <sub>3</sub> 10Times of Harmonic content	0.01%	
1419	U <sub>3</sub> Har[11]	U <sub>3</sub> 11Times of Harmonic content	0.01%	
1420	U <sub>3</sub> Har[12]	U <sub>3</sub> 12Times of Harmonic content	0.01%	
1421	U <sub>3</sub> Har[13]	U <sub>3</sub> 13Times of Harmonic content	0.01%	
1422	U <sub>3</sub> Har[14]	U <sub>3</sub> 14Times of Harmonic content	0.01%	
1423	U <sub>3</sub> Har[15]	U <sub>3</sub> 15Times of Harmonic content	0.01%	
1424	U <sub>3</sub> Har[16]	U <sub>3</sub> 16Times of Harmonic content	0.01%	
1425	U <sub>3</sub> Har[17]	U <sub>3</sub> 17Times of Harmonic content	0.01%	
1426	U <sub>3</sub> Har[18]	U <sub>3</sub> 18Times of Harmonic content	0.01%	
1427	U <sub>3</sub> Har[19]	U <sub>3</sub> 19Times of Harmonic content	0.01%	
1428	U <sub>3</sub> Har[20]	U <sub>3</sub> 20Times of Harmonic content	0.01%	
1429	U <sub>3</sub> Har[21]	U <sub>3</sub> 21Times of Harmonic content	0.01%	
1430	U <sub>3</sub> Har[22]	U <sub>3</sub> 22Times of Harmonic content	0.01%	



register	item	Descriptions	LSB	Explanation
1431	U <sub>3</sub> Har[23]	U <sub>3</sub> 23Times of Harmonic content	0.01%	
1432	U <sub>3</sub> Har[24]	U <sub>3</sub> 24Times of Harmonic content	0.01%	
1433	U <sub>3</sub> Har[25]	U <sub>3</sub> 25Times of Harmonic content	0.01%	
1434	U <sub>3</sub> Har[26]	U <sub>3</sub> 26Times of Harmonic content	0.01%	
1435	U <sub>3</sub> Har[27]	U <sub>3</sub> 27Times of Harmonic content	0.01%	
1436	U <sub>3</sub> Har[28]	U <sub>3</sub> 28Times of Harmonic content	0.01%	
1437	U <sub>3</sub> Har[29]	U <sub>3</sub> 29Times of Harmonic content	0.01%	
1438	U <sub>3</sub> Har[20]	U <sub>3</sub> 30Times of Harmonic content	0.01%	
1439	U <sub>3</sub> Har[31]	U <sub>3</sub> 31Times of Harmonic content	0.01%	
1440	U <sub>3</sub> Har[32]	U <sub>3</sub> 32Times of Harmonic content	0.01%	
1441	U <sub>3</sub> Har[33]	U <sub>3</sub> 33Times of Harmonic content	0.01%	
1442	U <sub>3</sub> Har[34]	U <sub>3</sub> 34Times of Harmonic content	0.01%	
1443	U <sub>3</sub> Har[35]	U <sub>3</sub> 35Times of Harmonic content	0.01%	
1444	U <sub>3</sub> Har[36]	U <sub>3</sub> 36Times of Harmonic content	0.01%	
1445	U <sub>3</sub> Har[37]	U <sub>3</sub> 37Times of Harmonic content	0.01%	
1446	U <sub>3</sub> Har[38]	U <sub>3</sub> 38Times of Harmonic content	0.01%	
1447	U <sub>3</sub> Har[39]	U <sub>3</sub> 39Times of Harmonic content	0.01%	
1448	U <sub>3</sub> Har[40]	U <sub>3</sub> 40Times of Harmonic content	0.01%	
1449	U <sub>3</sub> Har[41]	U <sub>3</sub> 41Times of Harmonic content	0.01%	
1450	U <sub>3</sub> Har[42]	U <sub>3</sub> 42Times of Harmonic content	0.01%	
1451	U <sub>3</sub> Har[43]	U <sub>3</sub> 43Times of Harmonic content	0.01%	
1452	U <sub>3</sub> Har[44]	U <sub>3</sub> 44Times of Harmonic content	0.01%	
1453	U <sub>3</sub> Har[45]	U <sub>3</sub> 45Times of Harmonic content	0.01%	
1454	U <sub>3</sub> Har[46]	U <sub>3</sub> 46Times of Harmonic content	0.01%	
1455	U <sub>3</sub> Har[47]	U <sub>3</sub> 47Times of Harmonic content	0.01%	
1456	U <sub>3</sub> Har[48]	U <sub>3</sub> 48Times of Harmonic content	0.01%	
1457	U <sub>3</sub> Har[49]	U <sub>3</sub> 49Times of Harmonic content	0.01%	
1458	U <sub>3</sub> Har[50]	U <sub>3</sub> 50Times of Harmonic content	0.01%	
1459	U <sub>3</sub> Har[51]	U <sub>3</sub> 51Times of Harmonic content	0.01%	
1460	U <sub>3</sub> Har[52]	U <sub>3</sub> 52Times of Harmonic content	0.01%	
1461	U <sub>3</sub> Har[53]	U <sub>3</sub> 53Times of Harmonic content	0.01%	
1462	U <sub>3</sub> Har[54]	U <sub>3</sub> 54Times of Harmonic content	0.01%	
1463	U <sub>3</sub> Har[55]	U <sub>3</sub> 55Times of Harmonic content	0.01%	
1464	U <sub>3</sub> Har[56]	U <sub>3</sub> 56Times of Harmonic content	0.01%	
1465	U <sub>3</sub> Har[57]	U <sub>3</sub> 57Times of Harmonic content	0.01%	
1466	U <sub>3</sub> Har[58]	U <sub>3</sub> 58Times of Harmonic content	0.01%	
1467	U <sub>3</sub> Har[59]	U <sub>3</sub> 59Times of Harmonic content	0.01%	
1468	U <sub>3</sub> Har[60]	U <sub>3</sub> 60Times of Harmonic content	0.01%	
1469	U <sub>3</sub> Har[61]	U <sub>3</sub> 61Times of Harmonic content	0.01%	
1470	U <sub>3</sub> Har[62]	U <sub>3</sub> 62Times of Harmonic content	0.01%	
1471	U <sub>3</sub> Har[63]	U <sub>3</sub> 63Times of Harmonic content	0.01%	



register	item	Descriptions	LSB	Explanation
1472	I <sub>1</sub> Har[0]	I <sub>1</sub> THD	0.01%	
1473	I <sub>1</sub> Har[1]	I <sub>1</sub> Harmonic content	0.01%	Fixed 100.00%
1474	I <sub>1</sub> Har[2]	I <sub>1</sub> 2Times of Harmonic content	0.01%	
1475	I <sub>1</sub> Har[3]	I <sub>1</sub> 3Times of Harmonic content	0.01%	
1476	I <sub>1</sub> Har[4]	I <sub>1</sub> 4Times of Harmonic content	0.01%	
1477	I <sub>1</sub> Har[5]	I <sub>1</sub> 5Times of Harmonic content	0.01%	
1478	I <sub>1</sub> Har[6]	I <sub>1</sub> 6Times of Harmonic content	0.01%	
1479	I <sub>1</sub> Har[7]	I <sub>1</sub> 7Times of Harmonic content	0.01%	
1480	I <sub>1</sub> Har[8]	I <sub>1</sub> 8Times of Harmonic content	0.01%	
1481	I <sub>1</sub> Har[9]	I <sub>1</sub> 9Times of Harmonic content	0.01%	
1482	I <sub>1</sub> Har[10]	I <sub>1</sub> 10Times of Harmonic content	0.01%	
1483	I <sub>1</sub> Har[11]	I <sub>1</sub> 11Times of Harmonic content	0.01%	
1484	I <sub>1</sub> Har[12]	I <sub>1</sub> 12Times of Harmonic content	0.01%	
1485	I <sub>1</sub> Har[13]	I <sub>1</sub> 13Times of Harmonic content	0.01%	
1486	I <sub>1</sub> Har[14]	I <sub>1</sub> 14Times of Harmonic content	0.01%	
1487	I <sub>1</sub> Har[15]	I <sub>1</sub> 15Times of Harmonic content	0.01%	
1488	I <sub>1</sub> Har[16]	I <sub>1</sub> 16Times of Harmonic content	0.01%	
1489	I <sub>1</sub> Har[17]	I <sub>1</sub> 17Times of Harmonic content	0.01%	
1490	I <sub>1</sub> Har[18]	I <sub>1</sub> 18Times of Harmonic content	0.01%	
1491	I <sub>1</sub> Har[19]	I <sub>1</sub> 19Times of Harmonic content	0.01%	
1492	I <sub>1</sub> Har[20]	I <sub>1</sub> 20Times of Harmonic content	0.01%	
1493	I <sub>1</sub> Har[21]	I <sub>1</sub> 21Times of Harmonic content	0.01%	
1494	I <sub>1</sub> Har[22]	I <sub>1</sub> 22Times of Harmonic content	0.01%	
1495	I <sub>1</sub> Har[23]	I <sub>1</sub> 23Times of Harmonic content	0.01%	
1496	I <sub>1</sub> Har[24]	I <sub>1</sub> 24Times of Harmonic content	0.01%	
1497	I <sub>1</sub> Har[25]	I <sub>1</sub> 25Times of Harmonic content	0.01%	
1498	I <sub>1</sub> Har[26]	I <sub>1</sub> 26Times of Harmonic content	0.01%	
1499	I <sub>1</sub> Har[27]	I <sub>1</sub> 27Times of Harmonic content	0.01%	
1500	I <sub>1</sub> Har[28]	I <sub>1</sub> 28Times of Harmonic content	0.01%	
1501	I <sub>1</sub> Har[29]	I <sub>1</sub> 29Times of Harmonic content	0.01%	
1502	I <sub>1</sub> Har[20]	I <sub>1</sub> 30Times of Harmonic content	0.01%	
1503	I <sub>1</sub> Har[31]	I <sub>1</sub> 31Times of Harmonic content	0.01%	
1504	I <sub>1</sub> Har[32]	I <sub>1</sub> 32Times of Harmonic content	0.01%	
1505	I <sub>1</sub> Har[33]	I <sub>1</sub> 33Times of Harmonic content	0.01%	
1506	I <sub>1</sub> Har[34]	I <sub>1</sub> 34Times of Harmonic content	0.01%	
1507	I <sub>1</sub> Har[35]	I <sub>1</sub> 35Times of Harmonic content	0.01%	
1508	I <sub>1</sub> Har[36]	I <sub>1</sub> 36Times of Harmonic content	0.01%	
1509	I <sub>1</sub> Har[37]	I <sub>1</sub> 37Times of Harmonic content	0.01%	
1510	I <sub>1</sub> Har[38]	I <sub>1</sub> 38Times of Harmonic content	0.01%	
1511	I <sub>1</sub> Har[39]	I <sub>1</sub> 39Times of Harmonic content	0.01%	

register	item	Descriptions	LSB	Explanation
1512	I <sub>1</sub> Har[40]	I <sub>1</sub> 40Times of Harmonic content	0.01%	
1513	I <sub>1</sub> Har[41]	I <sub>1</sub> 41Times of Harmonic content	0.01%	
1514	I <sub>1</sub> Har[42]	I <sub>1</sub> 42Times of Harmonic content	0.01%	
1515	I <sub>1</sub> Har[43]	I <sub>1</sub> 43Times of Harmonic content	0.01%	
1516	I <sub>1</sub> Har[44]	I <sub>1</sub> 44Times of Harmonic content	0.01%	
1517	I <sub>1</sub> Har[45]	I <sub>1</sub> 45Times of Harmonic content	0.01%	
1518	I <sub>1</sub> Har[46]	I <sub>1</sub> 46Times of Harmonic content	0.01%	
1519	I <sub>1</sub> Har[47]	I <sub>1</sub> 47Times of Harmonic content	0.01%	
1520	I <sub>1</sub> Har[48]	I <sub>1</sub> 48Times of Harmonic content	0.01%	
1521	I <sub>1</sub> Har[49]	I <sub>1</sub> 49Times of Harmonic content	0.01%	
1522	I <sub>1</sub> Har[50]	I <sub>1</sub> 50Times of Harmonic content	0.01%	
1523	I <sub>1</sub> Har[51]	I <sub>1</sub> 51Times of Harmonic content	0.01%	
1524	I <sub>1</sub> Har[52]	I <sub>1</sub> 52Times of Harmonic content	0.01%	
1525	I <sub>1</sub> Har[53]	I <sub>1</sub> 53Times of Harmonic content	0.01%	
1526	I <sub>1</sub> Har[54]	I <sub>1</sub> 54Times of Harmonic content	0.01%	
1527	I <sub>1</sub> Har[55]	I <sub>1</sub> 55Times of Harmonic content	0.01%	
1528	I <sub>1</sub> Har[56]	I <sub>1</sub> 56Times of Harmonic content	0.01%	
1529	I <sub>1</sub> Har[57]	I <sub>1</sub> 57Times of Harmonic content	0.01%	
1530	I <sub>1</sub> Har[58]	I <sub>1</sub> 58Times of Harmonic content	0.01%	
1531	I <sub>1</sub> Har[59]	I <sub>1</sub> 59Times of Harmonic content	0.01%	
1532	I <sub>1</sub> Har[60]	I <sub>1</sub> 60Times of Harmonic content	0.01%	
1533	I <sub>1</sub> Har[61]	I <sub>1</sub> 61Times of Harmonic content	0.01%	
1534	I <sub>1</sub> Har[62]	I <sub>1</sub> 62Times of Harmonic content	0.01%	
1535	I <sub>1</sub> Har[63]	I <sub>1</sub> 63Times of Harmonic content	0.01%	
1536	I <sub>2</sub> Har[0]	I <sub>2</sub> THD	0.01%	
1537	I <sub>2</sub> Har[1]	I <sub>2</sub> Harmonic content	0.01%	Fixed 100.00%
1538	I <sub>2</sub> Har[2]	I <sub>2</sub> 2Times of Harmonic content	0.01%	
1539	I <sub>2</sub> Har[3]	I <sub>2</sub> 3Times of Harmonic content	0.01%	
1540	I <sub>2</sub> Har[4]	I <sub>2</sub> 4Times of Harmonic content	0.01%	
1541	I <sub>2</sub> Har[5]	I <sub>2</sub> 5Times of Harmonic content	0.01%	
1542	I <sub>2</sub> Har[6]	I <sub>2</sub> 6Times of Harmonic content	0.01%	
1543	I <sub>2</sub> Har[7]	I <sub>2</sub> 7Times of Harmonic content	0.01%	
1544	I <sub>2</sub> Har[8]	I <sub>2</sub> 8Times of Harmonic content	0.01%	
1545	I <sub>2</sub> Har[9]	I <sub>2</sub> 9Times of Harmonic content	0.01%	
1546	I <sub>2</sub> Har[10]	I <sub>2</sub> 10Times of Harmonic content	0.01%	
1547	I <sub>2</sub> Har[11]	I <sub>2</sub> 11Times of Harmonic content	0.01%	
1548	I <sub>2</sub> Har[12]	I <sub>2</sub> 12Times of Harmonic content	0.01%	
1549	I <sub>2</sub> Har[13]	I <sub>2</sub> 13Times of Harmonic content	0.01%	
1550	I <sub>2</sub> Har[14]	I <sub>2</sub> 14Times of Harmonic content	0.01%	
1551	I <sub>2</sub> Har[15]	I <sub>2</sub> 15Times of Harmonic content	0.01%	
1552	I <sub>2</sub> Har[16]	I <sub>2</sub> 16Times of Harmonic content	0.01%	

register	item	Descriptions	LSB	Explanation
1553	I <sub>2</sub> Har[17]	I <sub>2</sub> 17Times of Harmonic content	0.01%	
1554	I <sub>2</sub> Har[18]	I <sub>2</sub> 18Times of Harmonic content	0.01%	
1555	I <sub>2</sub> Har[19]	I <sub>2</sub> 19Times of Harmonic content	0.01%	
1556	I <sub>2</sub> Har[20]	I <sub>2</sub> 20Times of Harmonic content	0.01%	
1557	I <sub>2</sub> Har[21]	I <sub>2</sub> 21Times of Harmonic content	0.01%	
1558	I <sub>2</sub> Har[22]	I <sub>2</sub> 22Times of Harmonic content	0.01%	
1559	I <sub>2</sub> Har[23]	I <sub>2</sub> 23Times of Harmonic content	0.01%	
1560	I <sub>2</sub> Har[24]	I <sub>2</sub> 24Times of Harmonic content	0.01%	
1561	I <sub>2</sub> Har[25]	I <sub>2</sub> 25Times of Harmonic content	0.01%	
1562	I <sub>2</sub> Har[26]	I <sub>2</sub> 26Times of Harmonic content	0.01%	
1563	I <sub>2</sub> Har[27]	I <sub>2</sub> 27Times of Harmonic content	0.01%	
1564	I <sub>2</sub> Har[28]	I <sub>2</sub> 28Times of Harmonic content	0.01%	
1565	I <sub>2</sub> Har[29]	I <sub>2</sub> 29Times of Harmonic content	0.01%	
1566	I <sub>2</sub> Har[20]	I <sub>2</sub> 30Times of Harmonic content	0.01%	
1567	I <sub>2</sub> Har[31]	I <sub>2</sub> 31Times of Harmonic content	0.01%	
1568	I <sub>2</sub> Har[32]	I <sub>2</sub> 32Times of Harmonic content	0.01%	
1569	I <sub>2</sub> Har[33]	I <sub>2</sub> 33Times of Harmonic content	0.01%	
1570	I <sub>2</sub> Har[34]	I <sub>2</sub> 34Times of Harmonic content	0.01%	
1571	I <sub>2</sub> Har[35]	I <sub>2</sub> 35Times of Harmonic content	0.01%	
1572	I <sub>2</sub> Har[36]	I <sub>2</sub> 36Times of Harmonic content	0.01%	
1573	I <sub>2</sub> Har[37]	I <sub>2</sub> 37Times of Harmonic content	0.01%	
1574	I <sub>2</sub> Har[38]	I <sub>2</sub> 38Times of Harmonic content	0.01%	
1575	I <sub>2</sub> Har[39]	I <sub>2</sub> 39Times of Harmonic content	0.01%	
1576	I <sub>2</sub> Har[40]	I <sub>2</sub> 40Times of Harmonic content	0.01%	
1577	I <sub>2</sub> Har[41]	I <sub>2</sub> 41Times of Harmonic content	0.01%	
1578	I <sub>2</sub> Har[42]	I <sub>2</sub> 42Times of Harmonic content	0.01%	
1579	I <sub>2</sub> Har[43]	I <sub>2</sub> 43Times of Harmonic content	0.01%	
1580	I <sub>2</sub> Har[44]	I <sub>2</sub> 44Times of Harmonic content	0.01%	
1581	I <sub>2</sub> Har[45]	I <sub>2</sub> 45Times of Harmonic content	0.01%	
1582	I <sub>2</sub> Har[46]	I <sub>2</sub> 46Times of Harmonic content	0.01%	
1583	I <sub>2</sub> Har[47]	I <sub>2</sub> 47Times of Harmonic content	0.01%	
1584	I <sub>2</sub> Har[48]	I <sub>2</sub> 48Times of Harmonic content	0.01%	
1585	I <sub>2</sub> Har[49]	I <sub>2</sub> 49Times of Harmonic content	0.01%	
1586	I <sub>2</sub> Har[50]	I <sub>2</sub> 50Times of Harmonic content	0.01%	
1587	I <sub>2</sub> Har[51]	I <sub>2</sub> 51Times of Harmonic content	0.01%	
1588	I <sub>2</sub> Har[52]	I <sub>2</sub> 52Times of Harmonic content	0.01%	
1589	I <sub>2</sub> Har[53]	I <sub>2</sub> 53Times of Harmonic content	0.01%	
1590	I <sub>2</sub> Har[54]	I <sub>2</sub> 54Times of Harmonic content	0.01%	
1591	I <sub>2</sub> Har[55]	I <sub>2</sub> 55Times of Harmonic content	0.01%	
1592	I <sub>2</sub> Har[56]	I <sub>2</sub> 56Times of Harmonic content	0.01%	
1593	I <sub>2</sub> Har[57]	I <sub>2</sub> 57Times of Harmonic content	0.01%	

register	item	Descriptions	LSB	Explanation
1594	I <sub>2</sub> Har[58]	I <sub>2</sub> 58Times of Harmonic content	0.01%	
1595	I <sub>2</sub> Har[59]	I <sub>2</sub> 59Times of Harmonic content	0.01%	
1596	I <sub>2</sub> Har[60]	I <sub>2</sub> 60Times of Harmonic content	0.01%	
1597	I <sub>2</sub> Har[61]	I <sub>2</sub> 61Times of Harmonic content	0.01%	
1598	I <sub>2</sub> Har[62]	I <sub>2</sub> 62Times of Harmonic content	0.01%	
1599	I <sub>2</sub> Har[63]	I <sub>2</sub> 63Times of Harmonic content	0.01%	
1600	I <sub>3</sub> Har[0]	I <sub>3</sub> THD	0.01%	
1601	I <sub>3</sub> Har[1]	I <sub>3</sub> Harmonic content	0.01%	Fixed100.00%
1602	I <sub>3</sub> Har[2]	I <sub>3</sub> 2Times of Harmonic content	0.01%	
1603	I <sub>3</sub> Har[3]	I <sub>3</sub> 3Times of Harmonic content	0.01%	
1604	I <sub>3</sub> Har[4]	I <sub>3</sub> 4Times of Harmonic content	0.01%	
1605	I <sub>3</sub> Har[5]	I <sub>3</sub> 5Times of Harmonic content	0.01%	
1606	I <sub>3</sub> Har[6]	I <sub>3</sub> 6Times of Harmonic content	0.01%	
1607	I <sub>3</sub> Har[7]	I <sub>3</sub> 7Times of Harmonic content	0.01%	
1608	I <sub>3</sub> Har[8]	I <sub>3</sub> 8Times of Harmonic content	0.01%	
1609	I <sub>3</sub> Har[9]	I <sub>3</sub> 9Times of Harmonic content	0.01%	
1610	I <sub>3</sub> Har[10]	I <sub>3</sub> 10Times of Harmonic content	0.01%	
1611	I <sub>3</sub> Har[11]	I <sub>3</sub> 11Times of Harmonic content	0.01%	
1612	I <sub>3</sub> Har[12]	I <sub>3</sub> 12Times of Harmonic content	0.01%	
1613	I <sub>3</sub> Har[13]	I <sub>3</sub> 13Times of Harmonic content	0.01%	
1614	I <sub>3</sub> Har[14]	I <sub>3</sub> 14Times of Harmonic content	0.01%	
1615	I <sub>3</sub> Har[15]	I <sub>3</sub> 15Times of Harmonic content	0.01%	
1616	I <sub>3</sub> Har[16]	I <sub>3</sub> 16Times of Harmonic content	0.01%	
1617	I <sub>3</sub> Har[17]	I <sub>3</sub> 17Times of Harmonic content	0.01%	
1618	I <sub>3</sub> Har[18]	I <sub>3</sub> 18Times of Harmonic content	0.01%	
1619	I <sub>3</sub> Har[19]	I <sub>3</sub> 19Times of Harmonic content	0.01%	
1620	I <sub>3</sub> Har[20]	I <sub>3</sub> 20Times of Harmonic content	0.01%	
1621	I <sub>3</sub> Har[21]	I <sub>3</sub> 21Times of Harmonic content	0.01%	
1622	I <sub>3</sub> Har[22]	I <sub>3</sub> 22Times of Harmonic content	0.01%	
1623	I <sub>3</sub> Har[23]	I <sub>3</sub> 23Times of Harmonic content	0.01%	
1624	I <sub>3</sub> Har[24]	I <sub>3</sub> 24Times of Harmonic content	0.01%	
1625	I <sub>3</sub> Har[25]	I <sub>3</sub> 25Times of Harmonic content	0.01%	
1626	I <sub>3</sub> Har[26]	I <sub>3</sub> 26Times of Harmonic content	0.01%	
1627	I <sub>3</sub> Har[27]	I <sub>3</sub> 27Times of Harmonic content	0.01%	
1628	I <sub>3</sub> Har[28]	I <sub>3</sub> 28Times of Harmonic content	0.01%	
1629	I <sub>3</sub> Har[29]	I <sub>3</sub> 29Times of Harmonic content	0.01%	
1630	I <sub>3</sub> Har[20]	I <sub>3</sub> 30Times of Harmonic content	0.01%	
1631	I <sub>3</sub> Har[31]	I <sub>3</sub> 31Times of Harmonic content	0.01%	
1632	I <sub>3</sub> Har[32]	I <sub>3</sub> 32Times of Harmonic content	0.01%	
1633	I <sub>3</sub> Har[33]	I <sub>3</sub> 33Times of Harmonic content	0.01%	
1634	I <sub>3</sub> Har[34]	I <sub>3</sub> 34Times of Harmonic content	0.01%	

register	item	Descriptions	LSB	Explanation
1635	I <sub>3</sub> Har[35]	I <sub>3</sub> 35Times of Harmonic content	0.01%	
1636	I <sub>3</sub> Har[36]	I <sub>3</sub> 36Times of Harmonic content	0.01%	
1637	I <sub>3</sub> Har[37]	I <sub>3</sub> 37Times of Harmonic content	0.01%	
1638	I <sub>3</sub> Har[38]	I <sub>3</sub> 38Times of Harmonic content	0.01%	
1639	I <sub>3</sub> Har[39]	I <sub>3</sub> 39Times of Harmonic content	0.01%	
1640	I <sub>3</sub> Har[40]	I <sub>3</sub> 40Times of Harmonic content	0.01%	
1641	I <sub>3</sub> Har[41]	I <sub>3</sub> 41Times of Harmonic content	0.01%	
1642	I <sub>3</sub> Har[42]	I <sub>3</sub> 42Times of Harmonic content	0.01%	
1643	I <sub>3</sub> Har[43]	I <sub>3</sub> 43Times of Harmonic content	0.01%	
1644	I <sub>3</sub> Har[44]	I <sub>3</sub> 44Times of Harmonic content	0.01%	
1645	I <sub>3</sub> Har[45]	I <sub>3</sub> 45Times of Harmonic content	0.01%	
1646	I <sub>3</sub> Har[46]	I <sub>3</sub> 46Times of Harmonic content	0.01%	
1647	I <sub>3</sub> Har[47]	I <sub>3</sub> 47Times of Harmonic content	0.01%	
1648	I <sub>3</sub> Har[48]	I <sub>3</sub> 48Times of Harmonic content	0.01%	
1649	I <sub>3</sub> Har[49]	I <sub>3</sub> 49Times of Harmonic content	0.01%	
1650	I <sub>3</sub> Har[50]	I <sub>3</sub> 50Times of Harmonic content	0.01%	
1651	I <sub>3</sub> Har[51]	I <sub>3</sub> 51Times of Harmonic content	0.01%	
1652	I <sub>3</sub> Har[52]	I <sub>3</sub> 52Times of Harmonic content	0.01%	
1653	I <sub>3</sub> Har[53]	I <sub>3</sub> 53Times of Harmonic content	0.01%	
1654	I <sub>3</sub> Har[54]	I <sub>3</sub> 54Times of Harmonic content	0.01%	
1655	I <sub>3</sub> Har[55]	I <sub>3</sub> 55Times of Harmonic content	0.01%	
1656	I <sub>3</sub> Har[56]	I <sub>3</sub> 56Times of Harmonic content	0.01%	
1657	I <sub>3</sub> Har[57]	I <sub>3</sub> 57Times of Harmonic content	0.01%	
1658	I <sub>3</sub> Har[58]	I <sub>3</sub> 58Times of Harmonic content	0.01%	
1659	I <sub>3</sub> Har[59]	I <sub>3</sub> 59Times of Harmonic content	0.01%	
1660	I <sub>3</sub> Har[60]	I <sub>3</sub> 60Times of Harmonic content	0.01%	
1661	I <sub>3</sub> Har[61]	I <sub>3</sub> 61Times of Harmonic content	0.01%	
1662	I <sub>3</sub> Har[62]	I <sub>3</sub> 62Times of Harmonic content	0.01%	
1663	I <sub>3</sub> Har[63]	I <sub>3</sub> 63Times of Harmonic content	0.01%	

## 7. CLOCK (HOLDING REGISTER)

Register	Item	Descriptions	Explanation
1920	year	year	In order to guarantee data integrity the six register need to be read and write at the same time
1921	month	month	
1922	day	day	
1923	hour	hour	
1924	minute	minute	
1925	second	second	

## 8. GENERAL PARAMETERS (HOLDING REGISTER)

Register	Item	Descriptions	Explanation
2048	PassHi	password	password of high word
2049	PassLo		password of low word
2050	Address	Communication address	High byte: 0; Low byte: address
2051	Baudrate1	Communication baud rate	1bps
2052	Baudrate2	Communication baud rate	1bps
2053	PTwire	Voltage connection mode	0-3LN,1-2LN,2-2LL
2054	CTwire	Current connection mode	0-3CT,1-1CT,2-2CT
2055	PT1Hi	primary side rated voltage high word	1V
2056	PT1Lo	primary side rated voltage low word	
2057	PT2	the second side rated voltage	1V
2058	CT1	primary side rated current	1A
2059	CT2	the second side rated current	1A
2060	DOmode	Working mode select	0-energy pulse; 1-alarm
2061	DO1pulse	DO1 energy pulse select	0-No output; 1-active energy; 2-reactive energy; 3- Apparent energy
2062	DO2pulse	DO2 energy pulse select	0-No output; 1-active energy; 2-reactive energy; 3- Apparent energy
2063	PulseWidth	PulseWidth	1ms
2064	PulseConst	PulseConst	1imp/kWh
2065	Relay1mode	Relay1mode	0- Level; 1-Pulse
2066	Relay1width	Relay1width	1ms
2067	Relay2mode	Relay2mode	0- Level; 1-Pulse
2068	Relay2width	Relay2width	1ms
2069	BLightSec	Backlight lighting time	1 second
2070	DemandWin	Demand sliding window of time	1 minute

## 9. DATA RECORDING PARAMETERS (HOLDING REGISTER)

Register	Item	Descriptions	Explanation	
2176	FlagHi	Record item flag *	Flag high word	the first group data record parameters
2177	FlagLo		Flag low word	
2178	intervalmin	Record interval time	1 minute	
2179	SpaceSize	Each record size	Must be a divisor of 256, with	

Register	Item	Descriptions	Explanation	
			the same below	
2180	AddrStartHi	start address high word	According to the 4096 alignment, with the same below	
2181	AddrStartLo	start address low word		
2182	AddrEndHi	end address high word		
2183	AddrEndLo	end address low word		
2184	Start_YM	Start record year month	If equal to 0, On behalf of begin immediately	
2185	Start_Dh	Start record day hour		
2186	Start_ms	Start record minute second		
2187	End_YM	End record year month	If equal to 0, On behalf of no end	
2188	End_Dh	End record day hour		
2189	End_ms	End record minute second		
2190	ActualSize	Each record actual size	X≤SpaceSize and X≤240	
2191				
2192	FlagHi	Record item flag	Flag high word	
2193	FlagLo		Flag low word	
2194	intervalmin	Record interval time	1minute	
2195	RecordSize	Each record size	Must be a divisor of 256,	
2196	AddrStartHi	start address high word		
2197	AddrStartLo	start address low word		
2198	AddrEndHi	end address high word		
2199	AddrEndLo	end address low word		
2200	Start_YM	Start record year month	If equal to 0, On behalf of begin immediately	
2201	Start_Dh	Start record day hour		
2202	Start_ms	Start record minute second		
2203	End_YM	End record year month	If equal to 0, On behalf of no end	
2204	End_Dh	End record day hour		
2205	End_ms	End record minute second		
2206	ActualSize	Each record actual size	X≤SpaceSize and X≤240	
2207				
2208	FlagHi	Record item flag	Flag high word	the third group data record parameters
2209	FlagLo		Flag low word	
2210	intervalmin	Record interval time	1minute	
2211	RecordSize	Each record size	Must be a divisor of 256,	

Register	Item	Descriptions	Explanation	
2212	AddrStartHi	start address high word		
2213	AddrStartLo	start address low word		
2214	AddrEndHi	end address high word		
2215	AddrEndLo	end address low word		
2216	Start_YM	Start record year month	If equal to 0, On behalf of begin immediately	
2217	Start_Dh	Start record day hour		
2218	Start_ms	Start record minute second		
2219	End_YM	End record year month	If equal to 0, On behalf of no end	
2220	End_Dh	End record day hour		
2221	End_ms	End record minute second		
2222	ActualSize	Each record actual size	$X \leq \text{SpaceSize}$ and $X \leq 240$	
2223				
2224	FlagHi	Record item flag	Flag high word	
2225	FlagLo		Flag low word	
2226	intervalmin	Record interval time	1minute	
2227	RecordSize	Each record size	Must be a divisor of 256,	
2228	AddrStartHi	start address high word		
2229	AddrStartLo	start address low word		
2230	AddrEndHi	end address high word		
2231	AddrEndLo	end address low word		
2232	Start_YM	Start record year month	If equal to 0, On behalf of begin immediately	
2233	Start_Dh	Start record day hour		
2234	Start_ms	Start record minute second		
2235	End_YM	End record year month	If equal to 0, On behalf of no end	
2236	End_Dh	End record day hour		
2237	End_ms	End record minute second		
2238	ActualSize	Each record actual size	$X \leq \text{SpaceSize}$ and $X \leq 240$	
2239				

Record item flag: Bit by bit indicates whether the item data was recorded, 1-On behalf of record; 0- On behalf of no record.

bit0-phase voltage

bit3-active power

bit6-power factor

bit1-line voltage

bit4-reactive power

bit7-frequency,

bit2-phase current

bit5-apparent power

Bit8-Voltage and current unbalance



bit9-demand

bit10-active energy

bit11-reactive energy

bit12-apparent energy

bit13-phase angle

bit14-tariff active energy

bit15-tariff reactive energy

bit16-tariff apparent energy

## 10. TOU PARAMETERS (HOLDING REGISTER)

Register	Item	Descriptions	Explanation	
2304	MMDD	Month day	Start using the (nSch+1) day time table from MM month DD day	The first season
2305	nSch	Day time table		
2306	MMDD	Month day	Start using the (nSch+1) day time table from MM month DD day	The second season
2307	nSch	Day time table		
2308	MMDD	Month day	Start using the (nSch+1) day time table from MM month DD day	The third season
2309	nSch	Day time table		
2310	MMDD	Month day	Start using the (nSch+1) day time table from MM month DD day	The fourth season
2311	nSch	Day time table		
2312	MMDD	Month day	Start using the (nSch+1) day time table from MM month DD day	The fifth Season
2313	nSch	Day time table		
2314	MMDD	Month day	Start using the (nSch+1) day time table from MM month DD day	The sixth season
2315	nSch	Day time table		
2316				
2317				
2318				
2319				
2320				
2321				
2322				
2323				
2324				
2325				
2326				
2327				
2328	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	The 1th day time table
2329	nRate	tariff		
2330	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2331	nRate	tariff		
2332	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2333	nRate	tariff		
2334	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2335	nRate	tariff		
2336	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2337	nRate	tariff		
2338	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2339	nRate	tariff		



Register	Item	Descriptions	Explanation
2340	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2341	nRate	tariff	
2342	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2343	nRate	tariff	
2344	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2345	nRate	tariff	
2346	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2347	nRate	tariff	
2348	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2349	nRate	tariff	
2350	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2351	nRate	tariff	
2352	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2353	nRate	tariff	
2354	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2355	nRate	tariff	
2356			
2357			
2358			
2359			
2360	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2361	nRate	tariff	
2362	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2363	nRate	tariff	
2364	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2365	nRate	tariff	
2366	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2367	nRate	tariff	
2368	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2369	nRate	tariff	
2370	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2371	nRate	tariff	
2372	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2373	nRate	tariff	
2374	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2375	nRate	tariff	
2376	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2377	nRate	tariff	
2378	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2379	nRate	tariff	
2380	hhmm	Hour and minute	Start using nRate tariff from HH

The 2th day time table



Register	Item	Descriptions	Explanation	
2381	nRate	tariff	hours MM minutes	
2382	hhmm	Hour and minute	Start using nRate tariff from HH	
2383	nRate	tariff	hours MM minutes	
2384	hhmm	Hour and minute	Start using nRate tariff from HH	
2385	nRate	tariff	hours MM minutes	
2386	hhmm	Hour and minute	Start using nRate tariff from HH	
2387	nRate	tariff	hours MM minutes	
2388				
2389				
2390				
2391				
2392	hhmm	Hour and minute	Start using nRate tariff from HH	The 3th day time table
2393	nRate	tariff	hours MM minutes	
2394	hhmm	Hour and minute	Start using nRate tariff from HH	
2395	nRate	tariff	hours MM minutes	
2396	hhmm	Hour and minute	Start using nRate tariff from HH	
2397	nRate	tariff	hours MM minutes	
2398	hhmm	Hour and minute	Start using nRate tariff from HH	
2399	nRate	tariff	hours MM minutes	
2400	hhmm	Hour and minute	Start using nRate tariff from HH	
2401	nRate	tariff	hours MM minutes	
2402	hhmm	Hour and minute	Start using nRate tariff from HH	
2403	nRate	tariff	hours MM minutes	
2404	hhmm	Hour and minute	Start using nRate tariff from HH	
2405	nRate	tariff	hours MM minutes	
2406	hhmm	Hour and minute	Start using nRate tariff from HH	
2407	nRate	tariff	hours MM minutes	
2408	hhmm	Hour and minute	Start using nRate tariff from HH	
2409	nRate	tariff	hours MM minutes	
2410	hhmm	Hour and minute	Start using nRate tariff from HH	
2411	nRate	tariff	hours MM minutes	
2412	hhmm	Hour and minute	Start using nRate tariff from HH	
2413	nRate	tariff	hours MM minutes	
2414	hhmm	Hour and minute	Start using nRate tariff from HH	
2415	nRate	tariff	hours MM minutes	
2416	hhmm	Hour and minute	Start using nRate tariff from HH	
2417	nRate	tariff	hours MM minutes	
2418	hhmm	Hour and minute	Start using nRate tariff from HH	
2419	nRate	tariff	hours MM minutes	
2420				
2421				



Register	Item	Descriptions	Explanation	
2422				
2423				
2424	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	The 4th day time table
2425	nRate	tariff		
2426	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2427	nRate	tariff		
2428	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2429	nRate	tariff		
2430	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2431	nRate	tariff		
2432	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2433	nRate	tariff		
2434	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2435	nRate	tariff		
2436	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2437	nRate	tariff		
2438	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2439	nRate	tariff		
2440	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2441	nRate	tariff		
2442	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2443	nRate	tariff		
2444	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2445	nRate	tariff		
2446	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2447	nRate	tariff		
2448	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2449	nRate	tariff		
2450	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2451	nRate	tariff		
2452				
2453				
2454				
2455				
2456	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	The 5th day time table
2457	nRate	tariff		
2458	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2459	nRate	tariff		
2460	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes	
2461	nRate	tariff		
2462	hhmm	Hour and minute	Start using nRate tariff from HH	



Register	Item	Descriptions	Explanation	
2463	nRate	tariff	hours MM minutes	
2464	hhmm	Hour and minute	Start using nRate tariff from HH	
2465	nRate	tariff	hours MM minutes	
2466	hhmm	Hour and minute	Start using nRate tariff from HH	
2467	nRate	tariff	hours MM minutes	
2468	hhmm	Hour and minute	Start using nRate tariff from HH	
2469	nRate	tariff	hours MM minutes	
2470	hhmm	Hour and minute	Start using nRate tariff from HH	
2471	nRate	tariff	hours MM minutes	
2472	hhmm	Hour and minute	Start using nRate tariff from HH	
2473	nRate	tariff	hours MM minutes	
2474	hhmm	Hour and minute	Start using nRate tariff from HH	
2475	nRate	tariff	hours MM minutes	
2476	hhmm	Hour and minute	Start using nRate tariff from HH	
2477	nRate	tariff	hours MM minutes	
2478	hhmm	Hour and minute	Start using nRate tariff from HH	
2479	nRate	tariff	hours MM minutes	
2480	hhmm	Hour and minute	Start using nRate tariff from HH	
2481	nRate	tariff	hours MM minutes	
2482	hhmm	Hour and minute	Start using nRate tariff from HH	
2483	nRate	tariff	hours MM minutes	
2484				
2485				
2486				
2487				
2488	hhmm	Hour and minute	Start using nRate tariff from HH	The 6th day time table
2489	nRate	tariff	hours MM minutes	
2490	hhmm	Hour and minute	Start using nRate tariff from HH	
2491	nRate	tariff	hours MM minutes	
2492	hhmm	Hour and minute	Start using nRate tariff from HH	
2493	nRate	tariff	hours MM minutes	
2494	hhmm	Hour and minute	Start using nRate tariff from HH	
2495	nRate	tariff	hours MM minutes	
2496	hhmm	Hour and minute	Start using nRate tariff from HH	
2497	nRate	tariff	hours MM minutes	
2498	hhmm	Hour and minute	Start using nRate tariff from HH	
2499	nRate	tariff	hours MM minutes	
2500	hhmm	Hour and minute	Start using nRate tariff from HH	
2501	nRate	tariff	hours MM minutes	
2502	hhmm	Hour and minute	Start using nRate tariff from HH	
2503	nRate	tariff	hours MM minutes	

Register	Item	Descriptions	Explanation
2504	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2505	nRate	tariff	
2506	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2507	nRate	tariff	
2508	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2509	nRate	tariff	
2510	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2511	nRate	tariff	
2512	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2513	nRate	tariff	
2514	hhmm	Hour and minute	Start using nRate tariff from HH hours MM minutes
2515	nRate	tariff	
2516			
2517			
2518			
2519			

## 11. NETWORK INTERFACE PARAMETERS (HOLDING REGISTER)

Register	Item	Descriptions	Explanation
3072	enNet	NET enable	=1 enable NET
3073	enDHCP	DHCP enable	=1enable DHCP
3074	ListenPort	Server ,monitor port	
3075	IP Address	IPAddr[0][1]	For example:1.2.3.4, then,the transmission order is:0x01,0x02,0x03,0x04
3076		IPAddr[2][3]	
3077	IP Mask	IPMask[0][1]	For example:1.2.3.4, then,the transmission order is:0x01,0x02,0x03,0x04
3078		IPMask[2][3]	
3079	Gateway	Gateway[0][1]	For example:1.2.3.4, then,the transmission order is:0x01,0x02,0x03,0x04
3080		Gateway[2][3]	
3081	NetID	NetID[0][1]	Internet ID
3082		NetID[2][3]	
3083	MAC Address	MAC[0][1]	MACAddress
3084		MAC[2][3]	
3085		MAC[4][5]	
3086		reserval	
3087		reserval	
3088		reserval	
3089		reserval	
3090		reserval	
3091		reserval	
3092		reserval	

Register	Item	Descriptions	Explanation
3093		reserval	
3094		reserval	
3095		reserval	

## 12. PASSWORD COMPARISON:

### REQ PDU:

Func	1B	0x6E
Len	1B	0x05
SubFunc	1B	0x11
PASSWORD	4B	

### ACK PDU:

Func	1B	0xEE
ErrCode	1B	0x05

## 13. POWER METER RESET (UNDER THE MODE OF FACTORY<sup>2</sup>)

### REQ PDU:

Func	1B	0x6E
Len	1B	0x01
SubFunc	1B	0x50

### ACK PDU:

Func	1B	0xEE
ErrCode	1B	0x05

## 14. MAXIMUM AND DEMAND RESET

### REQ PDU:

Func	1B	0x6E
Len	1B	0x01
SubFunc	1B	0x7A

### ACK PDU:

Func	1B	0xEE
ErrCode	1B	0x05

## 15. REBOOT

### REQ PDU:

Func	1B	0x6E
Len	1B	0x01
SubFunc	1B	0xB1

<sup>2</sup> Customer does not need to operate.



**ACK PDU:**

Func	1B	0xEE
ErrCode	1B	0x05

**16. CLEAR DATA LOGGER(DATALOG)**

**REQ PDU:**

Func	1B	0x6E
Len	1B	0x01
SubFunc	1B	0x35

**ACK PDU:**

Func	1B	0xEE
ErrCode	1B	0x05

**17. READ DATA LOGGER:**

File No1: DataLog1

File No 2: DataLog2

File No 3: DataLog3

File No 4: DataLog4

**REQ PDU:**

Func	1B	0x14
Bytes	1B	Len=14 (must be the multiple of seven)

**ReqX:**

Style	1B	0x06
FileNo	2B	0x0001~0x0004
RecordNo	2B	0x0000~0xc34f
RecordLen	2B	N=0x0001~0x0078

**ReqX+1:**

Style	1B	0x06
FileNo	2B	0x0001~0x0004
RecordNo	2B	0x0000~0xc34f
RecordLen	2B	N=0x0001~0x0078

...

If 1<sup>st</sup>ReqXvalue is reasonable, assigned Req as natural ascending order, RecordNo skipping does not judge. The number of Req indicating the amount of records (RecordNum, RecordNum=Len/7), and  $(RecordLen*2)*RecordNum \leq 240$

**ACK PDU:**

Func	1B	0x14
Bytes	1B	$(2+(N*2))*2$

**AckX:**

Length	1B	$1+(N*2)$
Style	1B	0x06

RecordData (N\*2)B ...

**AckX+1:**

Length 1B 1+(N\*2)

Style 1B 0x06

RecordData (N\*2)B ...

...

**18. READ WAVEFORM DATA:**

File No32: U<sub>1</sub>                      File No 34: U<sub>3</sub>                      File No 36: I<sub>2</sub>

File No33: U<sub>2</sub>                      File No 35: I<sub>1</sub>                      File No 37: I<sub>3</sub>

**REQ PDU:**

Func 1B 0x14

Bytes 1B Len=14 (must be the multiple of seven)

**ReqX:**

Style 1B 0x06

FileNo 2B 0x0020~0x0025

RecordNo 2B 0x0000~0x007f

RecordLen 2B N=0x0001~0x0078

**ReqX+1:**

Style 1B 0x06

FileNo 2B 0x0020~0x0025

RecordNo 2B 0x0000~0x007f

RecordLen 2B N=0x0001~0x0078

... Assign every record is 64 points waveform data, ieRecordLen=N=64

Assign 1<sup>st</sup>ReqX value is reasonable, assigned Req as natural ascending order,RecordNo skipping does not judge.

The number of Req indicating the amount of records (RecordNum, RecordNum=Len/7), and (RecordLen\*2)\*RecordNum ≤240, according to this limit, when transmit a log, ie. RecordNum=1

**ACK PDU:**

Func 1B 0x14

Bytes 1B (2+(N\*2))\*2

**AckX:**

Length 1B 1+(N\*2)

Style 1B 0x06

RecordData (N\*2)B ...

**AckX+1:**

Length 1B 1+(N\*2)

Style 1B 0x06

RecordData (N\*2)B ...

...