

PW4001

HIOKI

PW4001-01
PW4001-02
PW4001-03
PW4001-04
PW4001-05

Modbus/TCP Communication
Instruction Manual

POWER ANALYZER



Check for the latest edition and
other language versions.



- ✓ This instruction manual explains the communication commands for The PW4001 Power Analyzer.
- ✓ Before using the PW4001, be sure to read the instruction manual of the PW4001.
- ✓ For details regarding the command settings, please refer to “9 Connecting with Computers” in the instruction manual for the PW4001.
- ✓ Although all reasonable care has been taken in the production of this instruction manual, should you find any points which are unclear or in error, please contact your local distributor or Hioki’s website.

EN

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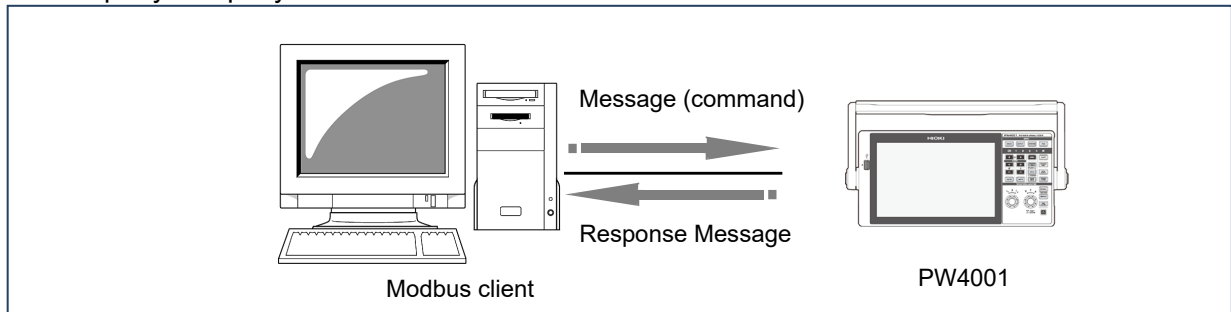
1 Modbus/TCP Communication

1.1 Function Overview

In this manual, PW4001 is represented as the instrument.

This instrument functions as a Modbus*¹/TCP server. You can control the instrument and acquire measurement data by sending messages from a Modbus client instrument to this instrument.

*¹ Third-party company's trademark



The instrument uses **TCP/IP port 502** as a listening port for the Modbus/TCP communication.

In addition, **the unit ID (server address)** for the Modbus/TCP server of this instrument is **1**. Any messages with a unit ID other than this value cannot be accepted.

1.2 Function Code

The function codes supported by the instrument are as follows.

Code No.	Functions	Description
0x03	Reading the holding register	Reads up to 125 sets of data continuously from the holding register.
0x04	Reading the input register	Reads up to 125 sets of data continuously from the input register.
0x06	Writing to the holding register	Writes data to one holding register.

1.3 Specifying a Register

You can specify a register from the Modbus client instrument as follows.

1.3.1 When using a commercially available SCADA system, etc.

Specify the Ref No. (reference number) listed in “3.1 Register Map” and “4.1 Register Map”.

Example: Specify Ref No. “30021” to acquire Urms1 Float lower 2 bytes “Input register:0020”.

1.3.2 When using a communication program created by the customer

Specify the Hex No. (relative number) listed in “3.1 Register Map” or “4.1 Register Map”.

Example: Specify Hex No. “0014” to acquire Urms1 Float lower 2 bytes “Input register:0020”.

2 Register

2.1 Register Overview

In this instrument, measurement data and settings data are assigned to the internal register for Modbus/TCP.

When the client instrument sends messages to the instrument via Modbus/TCP communication and the internal register of the instrument is read and written, measurement data can be acquired, integration can be started, etc.

2.2 Register Configuration (Overall Configuration)

	Register No.	Category		Description
Input register	0000 to 0019	Status		Status of each channel
	0020 to 0837	Basic measurement items	Power measurement items	Measurement data, such as voltage, current, and power
	1000 to 1189		Integration measurement items	Data regarding integration measurement
	2000 to 2127		Frequency and calculation measurement items	Frequency measurement data and user-defined formula (UDF) data
	3000 to 3039		Motor analysis measurement items	Motor analysis measurement data
	4000 to 4231	Harmonic measurement items		Harmonic measurement data
	5000 to 5247	CUSTOM screen items		Measurement data linked to the CUSTOM screen display
	6000 to 7999	Optional output items		Measurement data specified using communication commands
	8000 to 8035	Measurement range setting items		Measurement range information
Holding register	0000 to 0007	Instrument control		Register value hold, integration control, etc.
Others		Prohibited area		Reading and writing are not supported.

2.2.1 Input register non-assigned area

Any area with input register numbers skipped (register No. 0846 to 999, etc.) is an area to which data is not assigned. This area can be read with a Modbus message; however, the value is all NAN (0x7FC00000). Access to the address beyond the suffix of the input register (register No. 8040) generates an error.

3 Input Register

3.1 Register Map

3.1.1 Status

Reg No.	Ref No.	Hex No.	Register name	Register description	
0000	30001	0000	Status	Status	uint32 lower 2 bytes
0001	30002	0001			uint32 upper 2 bytes
0002	30003	0002	StatusCH1	CH1 status	uint32 lower 2 bytes
0003	30004	0003			uint32 upper 2 bytes
0004	30005	0004	StatusCH2	CH2 status	uint32 lower 2 bytes
0005	30006	0005			uint32 upper 2 bytes
0006	30007	0006	StatusCH3	CH3 status	uint32 lower 2 bytes
0007	30008	0007			uint32 upper 2 bytes
0008	30009	0008	StatusCH4	CH4 status	uint32 lower 2 bytes
0009	30010	0009			uint32 upper 2 bytes
~					
0018	30019	0012	StatusMotor	Motor channel status	uint32 lower 2 bytes
0019	30020	0013			uint32 upper 2 bytes

3.1.2 Power measurement items

Reg No.	Ref No.	Hex No.	Register name	Register description	
0020	30021	0014	Urms1	CH1 voltage RMS value	Float lower 2 bytes
0021	30022	0015			Float upper 2 bytes
0022	30023	0016	Urms2	CH2 voltage RMS value	Float lower 2 bytes
0023	30024	0017			Float upper 2 bytes
0024	30025	0018	Urms3	CH3 voltage RMS value	Float lower 2 bytes
0025	30026	0019			Float upper 2 bytes
0026	30027	001A	Urms4	CH4 voltage RMS value	Float lower 2 bytes
0027	30028	001B			Float upper 2 bytes
~					
0036	30037	0024	Urms12	CH12 voltage RMS value	Float lower 2 bytes
0037	30038	0025			Float upper 2 bytes
0038	30039	0026	Urms23	CH23 voltage RMS value	Float lower 2 bytes
0039	30040	0027			Float upper 2 bytes
0040	30041	0028	Urms34	CH34 voltage RMS value	Float lower 2 bytes
0041	30042	0029			Float upper 2 bytes
~					
0050	30051	0032	Urms123	CH123 voltage RMS value	Float lower 2 bytes
0051	30052	0033			Float upper 2 bytes
0052	30053	0034	Urms234	CH234 voltage RMS value	Float lower 2 bytes
0053	30054	0035			Float upper 2 bytes
~					
0062	30063	003E	Umn1	CH1 voltage mean value rectification RMS value equivalent	Float lower 2 bytes
0063	30064	003F			Float upper 2 bytes
0064	30065	0040	Umn2	CH2 voltage mean value rectification RMS value equivalent	Float lower 2 bytes
0065	30066	0041			Float upper 2 bytes
0066	30067	0042	Umn3	CH3 voltage mean value rectification RMS value equivalent	Float lower 2 bytes
0067	30068	0043			Float upper 2 bytes
0068	30069	0044	Umn4	CH4 voltage mean value rectification RMS value equivalent	Float lower 2 bytes
0069	30070	0045			Float upper 2 bytes
~					
0078	30079	004E	Umn12	CH12 voltage mean value rectification RMS value equivalent	Float lower 2 bytes
0079	30080	004F			Float upper 2 bytes
0080	30081	0050	Umn23	CH23 voltage mean value rectification RMS value equivalent	Float lower 2 bytes
0081	30082	0051			Float upper 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
0082	30083	0052	Umn34	CH34 voltage mean value	Float lower 2 bytes
0083	30084	0053		rectification RMS value equivalent	Float upper 2 bytes
~					
0092	30093	005C	Umn123	CH123 voltage mean value	Float lower 2 bytes
0093	30094	005D		rectification RMS value equivalent	Float upper 2 bytes
0094	30095	005E	Umn234	CH234 voltage mean value	Float lower 2 bytes
0095	30096	005F		rectification RMS value equivalent	Float upper 2 bytes
~					
0104	30105	0068	Uac1	CH1 voltage AC component	Float lower 2 bytes
0105	30106	0069			Float upper 2 bytes
0106	30107	006A	Uac2	CH2 voltage AC component	Float lower 2 bytes
0107	30108	006B			Float upper 2 bytes
0108	30109	006C	Uac3	CH3 voltage AC component	Float lower 2 bytes
0109	30110	006D			Float upper 2 bytes
0110	30111	006E	Uac4	CH4 voltage AC component	Float lower 2 bytes
0111	30112	006F			Float upper 2 bytes
~					
0120	30121	0078	Udc1	CH1 voltage simple average	Float lower 2 bytes
0121	30122	0079			Float upper 2 bytes
0122	30123	007A	Udc2	CH2 voltage simple average	Float lower 2 bytes
0123	30124	007B			Float upper 2 bytes
0124	30125	007C	Udc3	CH3 voltage simple average	Float lower 2 bytes
0125	30126	007D			Float upper 2 bytes
0126	30127	007E	Udc4	CH4 voltage simple average	Float lower 2 bytes
0127	30128	007F			Float upper 2 bytes
~					
0136	30137	0088	Ufnd1	CH1 voltage fundamental wave component	Float lower 2 bytes
0137	30138	0089			Float upper 2 bytes
0138	30139	008A	Ufnd2	CH2 voltage fundamental wave component	Float lower 2 bytes
0139	30140	008B			Float upper 2 bytes
0140	30141	008C	Ufnd3	CH3 voltage fundamental wave component	Float lower 2 bytes
0141	30142	008D			Float upper 2 bytes
0142	30143	008E	Ufnd4	CH4 voltage fundamental wave component	Float lower 2 bytes
0143	30144	008F			Float upper 2 bytes
~					
0152	30153	0098	Upk1+	CH1 voltage waveform peak (+)	Float lower 2 bytes
0153	30154	0099			Float upper 2 bytes
0154	30155	009A	Upk2+	CH2 voltage waveform peak (+)	Float lower 2 bytes
0155	30156	009B			Float upper 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
0156	30157	009C	Upk3+	CH3 voltage waveform peak (+)	Float lower 2 bytes
0157	30158	009D			Float upper 2 bytes
0158	30159	009E	Upk4+	CH4 voltage waveform peak (+)	Float lower 2 bytes
0159	30160	009F			Float upper 2 bytes
~					
0168	30169	00A8	Upk1-	CH1 voltage waveform peak (-)	Float lower 2 bytes
0169	30170	00A9			Float upper 2 bytes
0170	30171	00AA	Upk2-	CH2 voltage waveform peak (-)	Float lower 2 bytes
0171	30172	00AB			Float upper 2 bytes
0172	30173	00AC	Upk3-	CH3 voltage waveform peak (-)	Float lower 2 bytes
0173	30174	00AD			Float upper 2 bytes
0174	30175	00AE	Upk4-	CH4 voltage waveform peak (-)	Float lower 2 bytes
0175	30176	00AF			Float upper 2 bytes
~					
0184	30185	00B8	Uthd1	CH1 total harmonic voltage distortion	Float lower 2 bytes
0185	30186	00B9			Float upper 2 bytes
0186	30187	00BA	Uthd2	CH2 total harmonic voltage distortion	Float lower 2 bytes
0187	30188	00BB			Float upper 2 bytes
0188	30189	00BC	Uthd3	CH3 total harmonic voltage distortion	Float lower 2 bytes
0189	30190	00BD			Float upper 2 bytes
0190	30191	00BE	Uthd4	CH4 total harmonic voltage distortion	Float lower 2 bytes
0191	30192	00BF			Float upper 2 bytes
~					
0200	30201	00C8	Urf1	CH1 voltage ripple factor	Float lower 2 bytes
0201	30202	00C9			Float upper 2 bytes
0202	30203	00CA	Urf2	CH2 voltage ripple factor	Float lower 2 bytes
0203	30204	00CB			Float upper 2 bytes
0204	30205	00CC	Urf3	CH3 voltage ripple factor	Float lower 2 bytes
0205	30206	00CD			Float upper 2 bytes
0206	30207	00CE	Urf4	CH4 voltage ripple factor	Float lower 2 bytes
0207	30208	00CF			Float upper 2 bytes
~					
0216	30217	00D8	Uunb123	CH123 voltage unbalance rate	Float lower 2 bytes
0217	30218	00D9			Float upper 2 bytes
0218	30219	00DA	Uunb234	CH234 voltage unbalance rate	Float lower 2 bytes
0219	30220	00DB			Float upper 2 bytes
~					
0228	30229	00E4	Irms1	CH1 current RMS value	Float lower 2 bytes
0229	30230	00E5			Float upper 2 bytes
0230	30231	00E6	Irms2	CH2 current RMS value	Float lower 2 bytes
0231	30232	00E7			Float upper 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
0232	30233	00E8	Irms3	CH3 current RMS value	Float lower 2 bytes
0233	30234	00E9			Float upper 2 bytes
0234	30235	00EA	Irms4	CH4 current RMS value	Float lower 2 bytes
0235	30236	00EB			Float upper 2 bytes
~					
0244	30245	00F4	Irms12	CH12 current RMS value	Float lower 2 bytes
0245	30246	00F5			Float upper 2 bytes
0246	30247	00F6	Irms23	CH23 current RMS value	Float lower 2 bytes
0247	30248	00F7			Float upper 2 bytes
0248	30249	00F8	Irms34	CH34 current RMS value	Float lower 2 bytes
0249	30250	00F9			Float upper 2 bytes
~					
0258	30259	0102	Irms123	CH123 current RMS value	Float lower 2 bytes
0259	30260	0103			Float upper 2 bytes
0260	30261	0104	Irms234	CH234 current RMS value	Float lower 2 bytes
0261	30262	0105			Float upper 2 bytes
~					
0270	30271	010E	Imn1	CH1 current mean value rectification RMS value equivalent	Float lower 2 bytes
0271	30272	010F			Float upper 2 bytes
0272	30273	0110	Imn2	CH2 current mean value rectification RMS value equivalent	Float lower 2 bytes
0273	30274	0111			Float upper 2 bytes
0274	30275	0112	Imn3	CH3 current mean value rectification RMS value equivalent	Float lower 2 bytes
0275	30276	0113			Float upper 2 bytes
0276	30277	0114	Imn4	CH4 current mean value rectification RMS value equivalent	Float lower 2 bytes
0277	30278	0115			Float upper 2 bytes
~					
0286	30287	011E	Imn12	CH12 current mean value rectification RMS value equivalent	Float lower 2 bytes
0287	30288	011F			Float upper 2 bytes
0288	30289	0120	Imn23	CH23 current mean value rectification RMS value equivalent	Float lower 2 bytes
0289	30290	0121			Float upper 2 bytes
0290	30291	0122	Imn34	CH34 current mean value rectification RMS value equivalent	Float lower 2 bytes
0291	30292	0123			Float upper 2 bytes
~					
0300	30301	012C	Imn123	CH123 current mean	Float lower 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
0301	30302	012D		value rectification RMS value equivalent	Float upper 2 bytes
0302	30303	012E	Imn234	CH234 current mean value rectification RMS value equivalent	Float lower 2 bytes
0303	30304	012F			Float upper 2 bytes
~					
0312	30313	0138	lac1	CH1 current AC component	Float lower 2 bytes
0313	30314	0139			Float upper 2 bytes
0314	30315	013A	lac2	CH2 current AC component	Float lower 2 bytes
0315	30316	013B			Float upper 2 bytes
0316	30317	013C	lac3	CH3 current AC component	Float lower 2 bytes
0317	30318	013D			Float upper 2 bytes
0318	30319	013E	lac4	CH4 current AC component	Float lower 2 bytes
0319	30320	013F			Float upper 2 bytes
~					
0328	30329	0148	ldc1	CH1 current simple average	Float lower 2 bytes
0329	30330	0149			Float upper 2 bytes
0330	30331	014A	ldc2	CH2 current simple average	Float lower 2 bytes
0331	30332	014B			Float upper 2 bytes
0332	30333	014C	ldc3	CH3 current simple average	Float lower 2 bytes
0333	30334	014D			Float upper 2 bytes
0334	30335	014E	ldc4	CH4 current simple average	Float lower 2 bytes
0335	30336	014F			Float upper 2 bytes
~					
0344	30345	0158	lfnd1	CH1 current fundamental wave component	Float lower 2 bytes
0345	30346	0159			Float upper 2 bytes
0346	30347	015A	lfnd2	CH2 current fundamental wave component	Float lower 2 bytes
0347	30348	015B			Float upper 2 bytes
0348	30349	015C	lfnd3	CH3 current fundamental wave component	Float lower 2 bytes
0349	30350	015D			Float upper 2 bytes
0350	30351	015E	lfnd4	CH4 current fundamental wave component	Float lower 2 bytes
0351	30352	015F			Float upper 2 bytes
~					
0360	30361	0168	lpk1+	CH1 current waveform peak (+)	Float lower 2 bytes
0361	30362	0169			Float upper 2 bytes
0362	30363	016A	lpk2+	CH2 current waveform peak (+)	Float lower 2 bytes
0363	30364	016B			Float upper 2 bytes
0364	30365	016C	lpk3+	CH3 current waveform peak (+)	Float lower 2 bytes
0365	30366	016D			Float upper 2 bytes
0366	30367	016E	lpk4+	CH4 current waveform peak (+)	Float lower 2 bytes
0367	30368	016F			Float upper 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
~					
0376	30377	0178	lpk1-	CH1 current waveform peak (-)	Float lower 2 bytes
0377	30378	0179			Float upper 2 bytes
0378	30379	017A	lpk2-	CH2 current waveform peak (-)	Float lower 2 bytes
0379	30380	017B			Float upper 2 bytes
0380	30381	017C	lpk3-	CH3 current waveform peak (-)	Float lower 2 bytes
0381	30382	017D			Float upper 2 bytes
0382	30383	017E	lpk4-	CH4 current waveform peak (-)	Float lower 2 bytes
0383	30384	017F			Float upper 2 bytes
~					
0392	30393	0188	lthd1	CH1 total harmonic current distortion	Float lower 2 bytes
0393	30394	0189			Float upper 2 bytes
0394	30395	018A	lthd2	CH2 total harmonic current distortion	Float lower 2 bytes
0395	30396	018B			Float upper 2 bytes
0396	30397	018C	lthd3	CH3 total harmonic current distortion	Float lower 2 bytes
0397	30398	018D			Float upper 2 bytes
0398	30399	018E	lthd4	CH4 total harmonic current distortion	Float lower 2 bytes
0399	30400	018F			Float upper 2 bytes
~					
0408	30409	0198	lrf1	CH1 current ripple factor	Float lower 2 bytes
0409	30410	0199			Float upper 2 bytes
0410	30411	019A	lrf2	CH2 current ripple factor	Float lower 2 bytes
0411	30412	019B			Float upper 2 bytes
0412	30413	019C	lrf3	CH3 current ripple factor	Float lower 2 bytes
0413	30414	019D			Float upper 2 bytes
0414	30415	019E	lrf4	CH4 current ripple factor	Float lower 2 bytes
0415	30416	019F			Float upper 2 bytes
~					
0424	30425	01A8	lunb123	CH123 current unbalance rate	Float lower 2 bytes
0425	30426	01A9			Float upper 2 bytes
0426	30427	01AA	lunb234	CH234 current unbalance rate	Float lower 2 bytes
0427	30428	01AB			Float upper 2 bytes
~					
0436	30437	01B4	P1	CH1 active power	Float lower 2 bytes
0437	30438	01B5			Float upper 2 bytes
0438	30439	01B6	P2	CH2 active power	Float lower 2 bytes
0439	30440	01B7			Float upper 2 bytes
0440	30441	01B8	P3	CH3 active power	Float lower 2 bytes
0441	30442	01B9			Float upper 2 bytes
0442	30443	01BA	P4	CH4 active power	Float lower 2 bytes
0443	30444	01BB			Float upper 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
~					
0452	30453	01C4	P12	CH12 active power	Float lower 2 bytes
0453	30454	01C5			Float upper 2 bytes
0454	30455	01C6	P23	CH23 active power	Float lower 2 bytes
0455	30456	01C7			Float upper 2 bytes
0456	30457	01C8	P34	CH34 active power	Float lower 2 bytes
0457	30458	01C9			Float upper 2 bytes
~					
0466	30467	01D2	P123	CH123 active power	Float lower 2 bytes
0467	30468	01D3			Float upper 2 bytes
0468	30469	01D4	P234	CH234 active power	Float lower 2 bytes
0469	30470	01D5			Float upper 2 bytes
~					
0478	30479	01DE	Pfnd1	CH1 fundamental wave active power	Float lower 2 bytes
0479	30480	01DF			Float upper 2 bytes
0480	30481	01E0	Pfnd2	CH2 fundamental wave active power	Float lower 2 bytes
0481	30482	01E1			Float upper 2 bytes
0482	30483	01E2	Pfnd3	CH3 fundamental wave active power	Float lower 2 bytes
0483	30484	01E3			Float upper 2 bytes
0484	30485	01E4	Pfnd4	CH4 fundamental wave active power	Float lower 2 bytes
0485	30486	01E5			Float upper 2 bytes
~					
0494	30495	01EE	Pfnd12	CH12 fundamental wave active power	Float lower 2 bytes
0495	30496	01EF			Float upper 2 bytes
0496	30497	01F0	Pfnd23	CH23 fundamental wave active power	Float lower 2 bytes
0497	30498	01F1			Float upper 2 bytes
0498	30499	01F2	Pfnd34	CH34 fundamental wave active power	Float lower 2 bytes
0499	30500	01F3			Float upper 2 bytes
~					
0508	30509	01FC	Pfnd123	CH123 fundamental wave active power	Float lower 2 bytes
0509	30510	01FD			Float upper 2 bytes
0510	30511	01FE	Pfnd234	CH234 fundamental wave active power	Float lower 2 bytes
0511	30512	01FF			Float upper 2 bytes
~					
0520	30521	0208	S1	CH1 apparent power	Float lower 2 bytes
0521	30522	0209			Float upper 2 bytes
0522	30523	020A	S2	CH2 apparent power	Float lower 2 bytes
0523	30524	020B			Float upper 2 bytes
0524	30525	020C	S3	CH3 apparent power	Float lower 2 bytes
0525	30526	020D			Float upper 2 bytes
0526	30527	020E	S4	CH4 apparent power	Float lower 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
0527	30528	020F			Float upper 2 bytes
~					
0536	30537	0218	S12	CH12 apparent power	Float lower 2 bytes
0537	30538	0219			Float upper 2 bytes
0538	30539	021A	S23	CH23 apparent power	Float lower 2 bytes
0539	30540	021B			Float upper 2 bytes
0540	30541	021C	S34	CH34 apparent power	Float lower 2 bytes
0541	30542	021D			Float upper 2 bytes
~					
0550	30551	0226	S123	CH123 apparent power	Float lower 2 bytes
0551	30552	0227			Float upper 2 bytes
0552	30553	0228	S234	CH234 apparent power	Float lower 2 bytes
0553	30554	0229			Float upper 2 bytes
~					
0562	30563	0232	Sfnd1	CH1 fundamental wave apparent power	Float lower 2 bytes
0563	30564	0233			Float upper 2 bytes
0564	30565	0234	Sfnd2	CH2 fundamental wave apparent power	Float lower 2 bytes
0565	30566	0235			Float upper 2 bytes
0566	30567	0236	Sfnd3	CH3 fundamental wave apparent power	Float lower 2 bytes
0567	30568	0237			Float upper 2 bytes
0568	30569	0238	Sfnd4	CH4 fundamental wave apparent power	Float lower 2 bytes
0569	30570	0239			Float upper 2 bytes
~					
0578	30579	0242	Sfnd12	CH12 fundamental wave apparent power	Float lower 2 bytes
0579	30580	0243			Float upper 2 bytes
0580	30581	0244	Sfnd23	CH23 fundamental wave apparent power	Float lower 2 bytes
0581	30582	0245			Float upper 2 bytes
0582	30583	0246	Sfnd34	CH34 fundamental wave apparent power	Float lower 2 bytes
0583	30584	0247			Float upper 2 bytes
~					
0592	30593	0250	Sfnd123	CH123 fundamental wave apparent power	Float lower 2 bytes
0593	30594	0251			Float upper 2 bytes
0594	30595	0252	Sfnd234	CH234 fundamental wave apparent power	Float lower 2 bytes
0595	30596	0253			Float upper 2 bytes
~					
0604	30605	025C	Q1	CH1 reactive power	Float lower 2 bytes
0605	30606	025D			Float upper 2 bytes
0606	30607	025E	Q2	CH2 reactive power	Float lower 2 bytes
0607	30608	025F			Float upper 2 bytes
0608	30609	0260	Q3	CH3 reactive power	Float lower 2 bytes
0609	30610	0261			Float upper 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
0610	30611	0262	Q4	CH4 reactive power	Float lower 2 bytes
0611	30612	0263			Float upper 2 bytes
~					
0620	30621	026C	Q12	CH12 reactive power	Float lower 2 bytes
0621	30622	026D			Float upper 2 bytes
0622	30623	026E	Q23	CH23 reactive power	Float lower 2 bytes
0623	30624	026F			Float upper 2 bytes
0624	30625	0270	Q34	CH34 reactive power	Float lower 2 bytes
0625	30626	0271			Float upper 2 bytes
~					
0634	30635	027A	Q123	CH123 reactive power	Float lower 2 bytes
0635	30636	027B			Float upper 2 bytes
0636	30637	027C	Q234	CH234 reactive power	Float lower 2 bytes
0637	30638	027D			Float upper 2 bytes
~					
0646	30647	0286	Qfnd1	CH1 fundamental wave reactive power	Float lower 2 bytes
0647	30648	0287			Float upper 2 bytes
0648	30649	0288	Qfnd2	CH2 fundamental wave reactive power	Float lower 2 bytes
0649	30650	0289			Float upper 2 bytes
0650	30651	028A	Qfnd3	CH3 fundamental wave reactive power	Float lower 2 bytes
0651	30652	028B			Float upper 2 bytes
0652	30653	028C	Qfnd4	CH4 fundamental wave reactive power	Float lower 2 bytes
0653	30654	028D			Float upper 2 bytes
~					
0662	30663	0296	Qfnd12	CH12 fundamental wave reactive power	Float lower 2 bytes
0663	30664	0297			Float upper 2 bytes
0664	30665	0298	Qfnd23	CH23 fundamental wave reactive power	Float lower 2 bytes
0665	30666	0299			Float upper 2 bytes
0666	30667	029A	Qfnd34	CH34 fundamental wave reactive power	Float lower 2 bytes
0667	30668	029B			Float upper 2 bytes
~					
0676	30677	02A4	Qfnd123	CH123 fundamental wave reactive power	Float lower 2 bytes
0677	30678	02A5			Float upper 2 bytes
0678	30679	02A6	Qfnd234	CH234 fundamental wave reactive power	Float lower 2 bytes
0679	30680	02A7			Float upper 2 bytes
~					
0688	30689	02B0	$\lambda 1$	CH1 power factor	Float lower 2 bytes
0689	30690	02B1			Float upper 2 bytes
0690	30691	02B2	$\lambda 2$	CH2 power factor	Float lower 2 bytes
0691	30692	02B3			Float upper 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
0692	30693	02B4	$\lambda 3$	CH3 power factor	Float lower 2 bytes
0693	30694	02B5			Float upper 2 bytes
0694	30695	02B6	$\lambda 4$	CH4 power factor	Float lower 2 bytes
0695	30696	02B7			Float upper 2 bytes
~					
0704	30705	02C0	$\lambda 12$	CH12 power factor	Float lower 2 bytes
0705	30706	02C1			Float upper 2 bytes
0706	30707	02C2	$\lambda 23$	CH23 power factor	Float lower 2 bytes
0707	30708	02C3			Float upper 2 bytes
0708	30709	02C4	$\lambda 34$	CH34 power factor	Float lower 2 bytes
0709	30710	02C5			Float upper 2 bytes
~					
0718	30719	02CE	$\lambda 123$	CH123 power factor	Float lower 2 bytes
0719	30720	02CF			Float upper 2 bytes
0720	30721	02D0	$\lambda 234$	CH234 power factor	Float lower 2 bytes
0721	30722	02D1			Float upper 2 bytes
~					
0730	30731	02DA	$\lambda \text{fnd}1$	CH1 fundamental wave power factor	Float lower 2 bytes
0731	30732	02DB			Float upper 2 bytes
0732	30733	02DC	$\lambda \text{fnd}2$	CH2 fundamental wave power factor	Float lower 2 bytes
0733	30734	02DD			Float upper 2 bytes
0734	30735	02DE	$\lambda \text{fnd}3$	CH3 fundamental wave power factor	Float lower 2 bytes
0735	30736	02DF			Float upper 2 bytes
0736	30737	02E0	$\lambda \text{fnd}4$	CH4 fundamental wave power factor	Float lower 2 bytes
0737	30738	02E1			Float upper 2 bytes
~					
0746	30747	02EA	$\lambda \text{fnd}12$	CH12 fundamental wave power factor	Float lower 2 bytes
0747	30748	02EB			Float upper 2 bytes
0748	30749	02EC	$\lambda \text{fnd}23$	CH23 fundamental wave power factor	Float lower 2 bytes
0749	30750	02ED			Float upper 2 bytes
0750	30751	02EE	$\lambda \text{fnd}34$	CH34 fundamental wave power factor	Float lower 2 bytes
0751	30752	02EF			Float upper 2 bytes
~					
0760	30761	02F8	$\lambda \text{fnd}123$	CH123 fundamental wave power factor	Float lower 2 bytes
0761	30762	02F9			Float upper 2 bytes
0762	30763	02FA	$\lambda \text{fnd}234$	CH234 fundamental wave power factor	Float lower 2 bytes
0763	30764	02FB			Float upper 2 bytes
~					
0772	30773	0304	$\Theta U1$	CH1 voltage phase angle	Float lower 2 bytes
0773	30774	0305			Float upper 2 bytes
0774	30775	0306	$\Theta U2$	CH2 voltage phase angle	Float lower 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
0775	30776	0307			Float upper 2 bytes
0776	30777	0308	ΘU3	CH3 voltage phase angle	Float lower 2 bytes
0777	30778	0309			Float upper 2 bytes
0778	30779	030A	ΘU4	CH4 voltage phase angle	Float lower 2 bytes
0779	30780	030B			Float upper 2 bytes
~					
0788	30789	0314	ΘI1	CH1 current phase angle	Float lower 2 bytes
0789	30790	0315			Float upper 2 bytes
0790	30791	0316	ΘI2	CH2 current phase angle	Float lower 2 bytes
0791	30792	0317			Float upper 2 bytes
0792	30793	0318	ΘI3	CH3 current phase angle	Float lower 2 bytes
0793	30794	0319			Float upper 2 bytes
0794	30795	031A	ΘI4	CH4 current phase angle	Float lower 2 bytes
0795	30796	031B			Float upper 2 bytes
~					
0804	30805	0324	Φ1	CH1 power phase angle	Float lower 2 bytes
0805	30806	0325			Float upper 2 bytes
0806	30807	0326	Φ2	CH2 power phase angle	Float lower 2 bytes
0807	30808	0327			Float upper 2 bytes
0808	30809	0328	Φ3	CH3 power phase angle	Float lower 2 bytes
0809	30810	0329			Float upper 2 bytes
0810	30811	032A	Φ4	CH4 power phase angle	Float lower 2 bytes
0811	30812	032B			Float upper 2 bytes
~					
0820	30821	0334	Φ12	CH12 power phase angle	Float lower 2 bytes
0821	30822	0335			Float upper 2 bytes
0822	30823	0336	Φ23	CH23 power phase angle	Float lower 2 bytes
0823	30824	0337			Float upper 2 bytes
0824	30825	0338	Φ34	CH34 power phase angle	Float lower 2 bytes
0825	30826	0339			Float upper 2 bytes
~					
0834	30835	0342	Φ123	CH123 power phase angle	Float lower 2 bytes
0835	30836	0343			Float upper 2 bytes
0836	30837	0344	Φ234	CH234 power phase angle	Float lower 2 bytes
0837	30838	0345			Float upper 2 bytes

3.1.3 Integration measurement items

Reg No.	Ref No.	Hex No.	Register name	Register description	
1000	31001	03E8	lh1+	CH1 positive-direction current integrated value	Float lower 2 bytes
1001	31002	03E9			Float upper 2 bytes
1002	31003	03EA	lh2+	CH2 positive-direction current integrated value	Float lower 2 bytes
1003	31004	03EB			Float upper 2 bytes
1004	31005	03EC	lh3+	CH3 positive-direction current integrated value	Float lower 2 bytes
1005	31006	03ED			Float upper 2 bytes
1006	31007	03EE	lh4+	CH4 positive-direction current integrated value	Float lower 2 bytes
1007	31008	03EF			Float upper 2 bytes
~					
1016	31017	03F8	lh1-	CH1 negative-direction current integrated value	Float lower 2 bytes
1017	31018	03F9			Float upper 2 bytes
1018	31019	03FA	lh2-	CH2 negative-direction current integrated value	Float lower 2 bytes
1019	31020	03FB			Float upper 2 bytes
1020	31021	03FC	lh3-	CH3 negative-direction current integrated value	Float lower 2 bytes
1021	31022	03FD			Float upper 2 bytes
1022	31023	03FE	lh4-	CH4 negative-direction current integrated value	Float lower 2 bytes
1023	31024	03FF			Float upper 2 bytes
~					
1032	31033	0408	lh1	CH1 positive- and negative-direction integrated current sum	Float lower 2 bytes
1033	31034	0409			Float upper 2 bytes
1034	31035	040A	lh2	CH2 positive- and negative-direction integrated current sum	Float lower 2 bytes
1035	31036	040B			Float upper 2 bytes
1036	31037	040C	lh3	CH3 positive- and negative-direction integrated current sum	Float lower 2 bytes
1037	31038	040D			Float upper 2 bytes
1038	31039	040E	lh4	CH4 positive- and negative-direction integrated current sum	Float lower 2 bytes
1039	31040	040F			Float upper 2 bytes
~					
1048	31049	0418	WP1+	CH1 positive-direction active power integrated value	Float lower 2 bytes
1049	31050	0419			Float upper 2 bytes
1050	31051	041A	WP2+	CH2 positive-direction active power integrated value	Float lower 2 bytes
1051	31052	041B			Float upper 2 bytes
1052	31053	041C	WP3+	CH3 positive-direction	Float lower 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
1053	31054	041D		active power integrated value	Float upper 2 bytes
1054	31055	041E	WP4+	CH4 positive-direction active power integrated value	Float lower 2 bytes
1055	31056	041F			Float upper 2 bytes
~					
1064	31065	0428	WP12+	CH12 positive-direction active power integrated value	Float lower 2 bytes
1065	31066	0429			Float upper 2 bytes
1066	31067	042A	WP23+	CH23 positive-direction active power integrated value	Float lower 2 bytes
1067	31068	042B			Float upper 2 bytes
1068	31069	042C	WP34+	CH34 positive-direction active power integrated value	Float lower 2 bytes
1069	31070	042D			Float upper 2 bytes
~					
1078	31079	0436	WP123+	CH123 positive-direction active power integrated value	Float lower 2 bytes
1079	31080	0437			Float upper 2 bytes
1080	31081	0438	WP234+	CH234 positive-direction active power integrated value	Float lower 2 bytes
1081	31082	0439			Float upper 2 bytes
~					
1090	31091	0442	WP1-	CH1 negative-direction active power integrated value	Float lower 2 bytes
1091	31092	0443			Float upper 2 bytes
1092	31093	0444	WP2-	CH2 negative-direction active power integrated value	Float lower 2 bytes
1093	31094	0445			Float upper 2 bytes
1094	31095	0446	WP3-	CH3 negative-direction active power integrated value	Float lower 2 bytes
1095	31096	0447			Float upper 2 bytes
1096	31097	0448	WP4-	CH4 negative-direction active power integrated value	Float lower 2 bytes
1097	31098	0449			Float upper 2 bytes
~					
1106	31107	0452	WP12-	CH12 negative-direction active power integrated value	Float lower 2 bytes
1107	31108	0453			Float upper 2 bytes
1108	31109	0454	WP23-	CH23 negative-direction active power integrated value	Float lower 2 bytes
1109	31110	0455			Float upper 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
1110	31111	0456	WP34-	CH34 negative-direction active power integrated value	Float lower 2 bytes
1111	31112	0457			Float upper 2 bytes
~					
1120	31121	0460	WP123-	CH123 negative-direction active power integrated value	Float lower 2 bytes
1121	31122	0461			Float upper 2 bytes
1122	31123	0462	WP234-	CH234 negative-direction active power integrated value	Float lower 2 bytes
1123	31124	0463			Float upper 2 bytes
~					
1132	31133	046C	WP1	CH1 positive- and negative-direction integrated active power sum	Float lower 2 bytes
1133	31134	046D			Float upper 2 bytes
1134	31135	046E	WP2	CH2 positive- and negative-direction integrated active power sum	Float lower 2 bytes
1135	31136	046F			Float upper 2 bytes
1136	31137	0470	WP3	CH3 positive- and negative-direction integrated active power sum	Float lower 2 bytes
1137	31138	0471			Float upper 2 bytes
1138	31139	0472	WP4	CH4 positive- and negative-direction integrated active power sum	Float lower 2 bytes
1139	31140	0473			Float upper 2 bytes
~					
1148	31149	047C	WP12	CH12 positive- and negative-direction integrated active power sum	Float lower 2 bytes
1149	31150	047D			Float upper 2 bytes
1150	31151	047E	WP23	CH23 positive- and negative-direction integrated active power sum	Float lower 2 bytes
1151	31152	047F			Float upper 2 bytes
1152	31153	0480	WP34	CH34 positive- and negative-direction integrated active power sum	Float lower 2 bytes
1153	31154	0481			Float upper 2 bytes
~					

Reg No.	Ref No.	Hex No.	Register name	Register description	
1162	31163	048A	WP123	CH123 positive- and negative-direction integrated active power sum	Float lower 2 bytes
1163	31164	048B			Float upper 2 bytes
1164	31165	048C	WP234	CH234 positive- and negative-direction integrated active power sum	Float lower 2 bytes
1165	31166	048D			Float upper 2 bytes
~					
1174	31175	0496	Etime1	CH1 integrated elapsed time (sec.)	uint32 lower 2 bytes
1175	31176	0497			uint32 upper 2 bytes
1176	31177	0498		CH1 integrated elapsed time (msec.)	uint32 lower 2 bytes
1177	31178	0499			uint32 upper 2 bytes
1178	31179	049A	Etime2	CH2 integrated elapsed time (sec.)	uint32 lower 2 bytes
1179	31180	049B			uint32 upper 2 bytes
1180	31181	049C		CH2 integrated elapsed time (msec.)	uint32 lower 2 bytes
1181	31182	049D			uint32 upper 2 bytes
1182	31183	049E	Etime3	CH3 integrated elapsed time (sec.)	uint32 lower 2 bytes
1183	31184	049F			uint32 upper 2 bytes
1184	31185	04A0		CH3 integrated elapsed time (msec.)	uint32 lower 2 bytes
1185	31186	04A1			uint32 upper 2 bytes
1186	31187	04A2	Etime4	CH4 integrated elapsed time (sec.)	uint32 lower 2 bytes
1187	31188	04A3			uint32 upper 2 bytes
1188	31189	04A4		CH4 integrated elapsed time (msec.)	uint32 lower 2 bytes
1189	31190	04A5			uint32 upper 2 bytes

3.1.4 Frequency and calculation measurement items

Reg No.	Ref No.	Hex No.	Register name	Register description	
2000	32001	07D0	fU1	CH1 voltage frequency	Float lower 2 bytes
2001	32002	07D1			Float upper 2 bytes
2002	32003	07D2	fU2	CH2 voltage frequency	Float lower 2 bytes
2003	32004	07D3			Float upper 2 bytes
2004	32005	07D4	fU3	CH3 voltage frequency	Float lower 2 bytes
2005	32006	07D5			Float upper 2 bytes
2006	32007	07D6	fU4	CH4 voltage frequency	Float lower 2 bytes
2007	32008	07D7			Float upper 2 bytes
~					
2016	32017	07E0	fI1	CH1 current frequency	Float lower 2 bytes
2017	32018	07E1			Float upper 2 bytes
2018	32019	07E2	fI2	CH2 current frequency	Float lower 2 bytes
2019	32020	07E3			Float upper 2 bytes
2020	32021	07E4	fI3	CH3 current frequency	Float lower 2 bytes
2021	32022	07E5			Float upper 2 bytes
2022	32023	07E6	fI4	CH4 current frequency	Float lower 2 bytes
2023	32024	07E7			Float upper 2 bytes
~					
2032	32033	07F0	η 1	Efficiency 1	Float lower 2 bytes
2033	32034	07F1			Float upper 2 bytes
2034	32035	07F2	η 2	Efficiency 2	Float lower 2 bytes
2035	32036	07F3			Float upper 2 bytes
2036	32037	07F4	η 3	Efficiency 3	Float lower 2 bytes
2037	32038	07F5			Float upper 2 bytes
2038	32039	07F6	η 4	Efficiency 4	Float lower 2 bytes
2039	32040	07F7			Float upper 2 bytes
2040	32041	07F8	Loss1	Loss 1	Float lower 2 bytes
2041	32042	07F9			Float upper 2 bytes
2042	32043	07FA	Loss2	Loss 2	Float lower 2 bytes
2043	32044	07FB			Float upper 2 bytes
2044	32045	07FC	Loss3	Loss 3	Float lower 2 bytes
2045	32046	07FD			Float upper 2 bytes
2046	32047	07FE	Loss4	Loss 4	Float lower 2 bytes
2047	32048	07FF			Float upper 2 bytes
2048	32049	0800	UDF1	User-defined calculation 1	Float lower 2 bytes
2049	32050	0801			Float upper 2 bytes
2050	32051	0802	UDF2	User-defined calculation 2	Float lower 2 bytes
2051	32052	0803			Float upper 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
2052	32053	0804	UDF3	User-defined calculation 3	Float lower 2 bytes
2053	32054	0805			Float upper 2 bytes
2054	32055	0806	UDF4	User-defined calculation 4	Float lower 2 bytes
2055	32056	0807			Float upper 2 bytes
2056	32057	0808	UDF5	User-defined calculation 5	Float lower 2 bytes
2057	32058	0809			Float upper 2 bytes
2058	32059	080A	UDF6	User-defined calculation 6	Float lower 2 bytes
2059	32060	080B			Float upper 2 bytes
2060	32061	080C	UDF7	User-defined calculation 7	Float lower 2 bytes
2061	32062	080D			Float upper 2 bytes
2062	32063	080E	UDF8	User-defined calculation 8	Float lower 2 bytes
2063	32064	080F			Float upper 2 bytes
2064	32065	0810	UDF9	User-defined calculation 9	Float lower 2 bytes
2065	32066	0811			Float upper 2 bytes
2066	32067	0812	UDF10	User-defined calculation 10	Float lower 2 bytes
2067	32068	0813			Float upper 2 bytes
2068	32069	0814	UDF11	User-defined calculation 11	Float lower 2 bytes
2069	32070	0815			Float upper 2 bytes
2070	32071	0816	UDF12	User-defined calculation 12	Float lower 2 bytes
2071	32072	0817			Float upper 2 bytes
2072	32073	0818	UDF13	User-defined calculation 13	Float lower 2 bytes
2073	32074	0819			Float upper 2 bytes
2074	32075	081A	UDF14	User-defined calculation 14	Float lower 2 bytes
2075	32076	081B			Float upper 2 bytes
2076	32077	081C	UDF15	User-defined calculation 15	Float lower 2 bytes
2077	32078	081D			Float upper 2 bytes
2078	32079	081E	UDF16	User-defined calculation 16	Float lower 2 bytes
2079	32080	081F			Float upper 2 bytes
2080	32081	0820	UDF17	User-defined calculation 17	Float lower 2 bytes
2081	32082	0821			Float upper 2 bytes
2082	32083	0822	UDF18	User-defined calculation 18	Float lower 2 bytes
2083	32084	0823			Float upper 2 bytes
2084	32085	0824	UDF19	User-defined calculation 19	Float lower 2 bytes
2085	32086	0825			Float upper 2 bytes
2086	32087	0826	UDF20	User-defined calculation 20	Float lower 2 bytes
2087	32088	0827			Float upper 2 bytes
2088	32089	0828	CAN1	CAN input value 1	Float lower 2 bytes
2089	32090	0829			Float upper 2 bytes
2090	32091	0830	CAN2	CAN input value 2	Float lower 2 bytes
2091	32092	0831			Float upper 2 bytes
2092	32093	0832	CAN3	CAN input value 3	Float lower 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
2093	32094	0833			Float upper 2 bytes
2094	32095	0834	CAN4	CAN input value 4	Float lower 2 bytes
2095	32096	0835			Float upper 2 bytes
2096	32097	0836	CAN5	CAN input value 5	Float lower 2 bytes
2097	32098	0837			Float upper 2 bytes
2098	32099	0838	CAN6	CAN input value 6	Float lower 2 bytes
2099	32100	0839			Float upper 2 bytes
2100	32101	0840	CAN7	CAN input value 7	Float lower 2 bytes
2101	32102	0841			Float upper 2 bytes
2102	32103	0842	CAN8	CAN input value 8	Float lower 2 bytes
2103	32104	0843			Float upper 2 bytes
2104	32105	0844	CAN9	CAN input value 9	Float lower 2 bytes
2105	32106	0845			Float upper 2 bytes
2106	32107	0846	CAN10	CAN input value 10	Float lower 2 bytes
2107	32108	0847			Float upper 2 bytes
2108	32109	0848	CAN11	CAN input value 11	Float lower 2 bytes
2109	32110	0849			Float upper 2 bytes
2110	32111	0850	CAN12	CAN input value 12	Float lower 2 bytes
2111	32112	0851			Float upper 2 bytes
2112	32113	0852	CAN13	CAN input value 13	Float lower 2 bytes
2113	32114	0853			Float upper 2 bytes
2114	32115	0854	CAN14	CAN input value 14	Float lower 2 bytes
2115	32116	0855			Float upper 2 bytes
2116	32117	0856	CAN15	CAN input value 15	Float lower 2 bytes
2117	32118	0857			Float upper 2 bytes
2118	32119	0858	CAN16	CAN input value 16	Float lower 2 bytes
2119	32120	0859			Float upper 2 bytes
2120	32121	0860	CAN17	CAN input value 17	Float lower 2 bytes
2121	32122	0861			Float upper 2 bytes
2122	32123	0862	CAN18	CAN input value 18	Float lower 2 bytes
2123	32124	0863			Float upper 2 bytes
2124	32125	0864	CAN19	CAN input value 19	Float lower 2 bytes
2125	32126	0865			Float upper 2 bytes
2126	32127	0866	CAN20	CAN input value 20	Float lower 2 bytes
2127	32128	0867			Float upper 2 bytes

3.1.5 Motor analysis measurement items

Reg No.	Ref No.	Hex No.	Register name	Register description	
3000	33001	0BB8	Tq1	Torque 1	Float lower 2 bytes
3001	33002	0BB9			Float upper 2 bytes
3002	33003	0BBA	Tq2	Torque 2	Float lower 2 bytes
3003	33004	0BBB			Float upper 2 bytes
~					
3008	33009	0BC0	Spd1	RPM 1	Float lower 2 bytes
3009	33010	0BC1			Float upper 2 bytes
3010	33011	0BC2	Spd2	RPM 2	Float lower 2 bytes
3011	33012	0BC3			Float upper 2 bytes
~					
3016	33017	0BC8	Pm1	Motor power 1	Float lower 2 bytes
3017	33018	0BC9			Float upper 2 bytes
3018	33019	0BCA	Pm2	Motor power 2	Float lower 2 bytes
3019	33020	0BCB			Float upper 2 bytes
~					
3024	33025	0BD0	Slip1	Slip 1	Float lower 2 bytes
3025	33026	0BD1			Float upper 2 bytes
3026	33027	0BD2	Slip2	Slip 2	Float lower 2 bytes
3027	33028	0BD3			Float upper 2 bytes
~					
3032	33033	0BD8	CHA	CHA free input during independent input mode operation	Float lower 2 bytes
3033	33034	0BD9			Float upper 2 bytes
3034	33035	0BDA	CHB	CHB free input during independent input mode operation	Float lower 2 bytes
3035	33036	0BDB			Float upper 2 bytes
3036	33037	0BDC	CHC	CHC free input during independent input mode operation	Float lower 2 bytes
3037	33038	0BDD			Float upper 2 bytes
3038	33039	0BDE	CHD	CHD free input during independent input mode operation	Float lower 2 bytes
3039	33040	0BDF			Float upper 2 bytes

3.1.6 Harmonic measurement items

The following items are all primary measurement data in the initial settings

Reference: 3.3 Harmonic Measurement Items

Reg No.	Ref No.	Hex No.	Register name	Register description	
4000	34001	0FA0	HARMStatus	Status	uint32 lower 2 bytes
4001	34002	0FA1			uint32 upper 2 bytes
4002	34003	0FA2	Uk1	CH1 harmonic voltage	Float lower 2 bytes
4003	34004	0FA3		RMS value	Float upper 2 bytes
4004	34005	0FA4	Uk2	CH2 harmonic voltage	Float lower 2 bytes
4005	34006	0FA5		RMS value	Float upper 2 bytes
4006	34007	0FA6	Uk3	CH3 harmonic voltage	Float lower 2 bytes
4007	34008	0FA7		RMS value	Float upper 2 bytes
4008	34009	0FA8	Uk4	CH4 harmonic voltage	Float lower 2 bytes
4009	34010	0FA9		RMS value	Float upper 2 bytes
~					
4018	34019	0FB2	ΘUk1	CH1 harmonic voltage	Float lower 2 bytes
4019	34020	0FB3		phase angle	Float upper 2 bytes
4020	34021	0FB4	ΘUk2	CH2 harmonic voltage	Float lower 2 bytes
4021	34022	0FB5		phase angle	Float upper 2 bytes
4022	34023	0FB6	ΘUk3	CH3 harmonic voltage	Float lower 2 bytes
4023	34024	0FB7		phase angle	Float upper 2 bytes
4024	34025	0FB8	ΘUk4	CH4 harmonic voltage	Float lower 2 bytes
4025	34026	0FB9		phase angle	Float upper 2 bytes
~					
4034	34035	0FC2	Ik1	CH1 harmonic current	Float lower 2 bytes
4035	34036	0FC3		RMS value	Float upper 2 bytes
4036	34037	0FC4	Ik2	CH2 harmonic current	Float lower 2 bytes
4037	34038	0FC5		RMS value	Float upper 2 bytes
4038	34039	0FC6	Ik3	CH3 harmonic current	Float lower 2 bytes
4039	34040	0FC7		RMS value	Float upper 2 bytes
4040	34041	0FC8	Ik4	CH4 harmonic current	Float lower 2 bytes
4041	34042	0FC9		RMS value	Float upper 2 bytes
~					
4050	34051	0FD2	ΘIk1	CH1 harmonic current	Float lower 2 bytes
4051	34052	0FD3		phase angle	Float upper 2 bytes
4052	34053	0FD4	ΘIk2	CH2 harmonic current	Float lower 2 bytes
4053	34054	0FD5		phase angle	Float upper 2 bytes
4054	34055	0FD6	ΘIk3	CH3 harmonic current	Float lower 2 bytes
4055	34056	0FD7		phase angle	Float upper 2 bytes
4056	34057	0FD8	ΘIk4	CH4 harmonic current	Float lower 2 bytes
4057	34058	0FD9		phase angle	Float upper 2 bytes
~					

Reg No.	Ref No.	Hex No.	Register name	Register description	
4066	34067	0FE2	Pk1	CH1 harmonic active power	Float lower 2 bytes
4067	34068	0FE3			Float upper 2 bytes
4068	34069	0FE4	Pk2	CH2 harmonic active power	Float lower 2 bytes
4069	34070	0FE5			Float upper 2 bytes
4070	34071	0FE6	Pk3	CH3 harmonic active power	Float lower 2 bytes
4071	34072	0FE7			Float upper 2 bytes
4072	34073	0FE8	Pk4	CH4 harmonic active power	Float lower 2 bytes
4073	34074	0FE9			Float upper 2 bytes
~					
4082	34083	0FF2	Pk12	CH12 harmonic active power	Float lower 2 bytes
4083	34084	0FF3			Float upper 2 bytes
4084	34085	0FF4	Pk23	CH23 harmonic active power	Float lower 2 bytes
4085	34086	0FF5			Float upper 2 bytes
4086	34087	0FF6	Pk34	CH34 harmonic active power	Float lower 2 bytes
4087	34088	0FF7			Float upper 2 bytes
~					
4096	34097	1000	Pk123	CH123 harmonic active power	Float lower 2 bytes
4097	34098	1001			Float upper 2 bytes
4098	34099	1002	Pk234	CH234 harmonic active power	Float lower 2 bytes
4099	34100	1003			Float upper 2 bytes
~					
4108	34109	100C	Θk1	CH1 harmonic voltage/ current phase difference	Float lower 2 bytes
4109	34110	100D			Float upper 2 bytes
4110	34111	100E	Θk2	CH2 harmonic voltage/ current phase difference	Float lower 2 bytes
4111	34112	100F			Float upper 2 bytes
4112	34113	1010	Θk3	CH3 harmonic voltage/ current phase difference	Float lower 2 bytes
4113	34114	1011			Float upper 2 bytes
4114	34115	1012	Θk4	CH4 harmonic voltage/ current phase difference	Float lower 2 bytes
4115	34116	1013			Float upper 2 bytes
~					
4124	34125	101C	Θ12	CH12 harmonic voltage/ current phase difference	Float lower 2 bytes
4125	34126	101D			Float upper 2 bytes
4126	34127	101E	Θ23	CH23 harmonic voltage/ current phase difference	Float lower 2 bytes
4127	34128	101F			Float upper 2 bytes
4128	34129	1020	Θ34	CH34 harmonic voltage/ current phase difference	Float lower 2 bytes
4129	34130	1021			Float upper 2 bytes
~					
4138	34139	102A	Θ123	CH123 harmonic voltage/ current phase difference	Float lower 2 bytes
4139	34140	102B			Float upper 2 bytes
4140	34141	102C	Θ234	CH234 harmonic voltage/ current phase difference	Float lower 2 bytes
4141	34142	102D			Float upper 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
~					
4150	34151	1036	HDUk1	CH1 harmonic voltage	Float lower 2 bytes
4151	34152	1037		content percentage	Float upper 2 bytes
4152	34153	1038	HDUk2	CH2 harmonic voltage	Float lower 2 bytes
4153	34154	1039		content percentage	Float upper 2 bytes
4154	34155	103A	HDUk3	CH3 harmonic voltage	Float lower 2 bytes
4155	34156	103B		content percentage	Float upper 2 bytes
4156	34157	103C	HDUk4	CH4 harmonic voltage	Float lower 2 bytes
4157	34158	103D		content percentage	Float upper 2 bytes
~					
4166	34167	1046	HDIk1	CH1 harmonic current	Float lower 2 bytes
4167	34168	1047		content percentage	Float upper 2 bytes
4168	34169	1048	HDIk2	CH2 harmonic current	Float lower 2 bytes
4169	34170	1049		content percentage	Float upper 2 bytes
4170	34171	104A	HDIk3	CH3 harmonic current	Float lower 2 bytes
4171	34172	104B		content percentage	Float upper 2 bytes
4172	34173	104C	HDIk4	CH4 harmonic current	Float lower 2 bytes
4173	34174	104D		content percentage	Float upper 2 bytes
~					
4182	34183	1056	HDPk1	CH1 harmonic power	Float lower 2 bytes
4183	34184	1057		content percentage	Float upper 2 bytes
4184	34185	1058	HDPk2	CH2 harmonic power	Float lower 2 bytes
4185	34186	1059		content percentage	Float upper 2 bytes
4186	34187	105A	HDPk3	CH3 harmonic power	Float lower 2 bytes
4187	34188	105B		content percentage	Float upper 2 bytes
4188	34189	105C	HDPk4	CH4 harmonic power	Float lower 2 bytes
4189	34190	105D		content percentage	Float upper 2 bytes
~					
4198	34199	1066	HDPk12	CH12 harmonic power	Float lower 2 bytes
4199	34200	1067		content percentage	Float upper 2 bytes
4200	34201	1068	HDPk23	CH23 harmonic power	Float lower 2 bytes
4201	34202	1069		content percentage	Float upper 2 bytes
4202	34203	106A	HDPk34	CH34 harmonic power	Float lower 2 bytes
4203	34204	106B		content percentage	Float upper 2 bytes
~					
4212	34213	1074	HDPk123	CH123 harmonic power	Float lower 2 bytes
4213	34214	1075		content percentage	Float upper 2 bytes
4214	34215	1076	HDPk234	CH234 harmonic power	Float lower 2 bytes
4215	34216	1077		content percentage	Float upper 2 bytes
~					
4224	34225	1080	fHRM1	CH1 harmonics	Float lower 2 bytes

Reg No.	Ref No.	Hex No.	Register name	Register description	
4225	34226	1081		synchronization frequency	Float upper 2 bytes
4226	34227	1082	fHRM2	CH2 harmonics	Float lower 2 bytes
4227	34228	1083		synchronization frequency	Float upper 2 bytes
4228	34229	1084	fHRM3	CH3 harmonics	Float lower 2 bytes
4229	34230	1085		synchronization frequency	Float upper 2 bytes
4230	34231	1086	fHRM4	CH4 harmonics	Float lower 2 bytes
4231	34232	1087		synchronization frequency	Float upper 2 bytes

3.1.7 CUSTOM screen items

Reg No.	Ref No.	Hex No.	Register name	Register description	
5000	35001	1388	8Item1	Measurement data	Float lower 2 bytes
5001	35002	1389		assigned to 8Item1	Float upper 2 bytes
:	:	:			
5014	35015	1396	8Item8	Measurement data	Float lower 2 bytes
5015	35016	1397		assigned to 8Item8	Float upper 2 bytes
5016	35017	1398	16Item1	Measurement data	Float lower 2 bytes
5017	35018	1399		assigned to 16Item1	Float upper 2 bytes
:	:	:			
5046	35047	13B6	16Item16	Measurement data	Float lower 2 bytes
5047	35048	13B7		assigned to 16Item16	Float upper 2 bytes
5048	35049	13B8	36Item1	Measurement data	Float lower 2 bytes
5049	35050	13B9		assigned to 36Item1	Float upper 2 bytes
:	:	:			
5118	35119	13FE	36Item36	Measurement data	Float lower 2 bytes
5119	35120	13FF		assigned to 36Item36	Float upper 2 bytes
5120	35121	1400	64Item1	Measurement data	Float lower 2 bytes
5121	35122	1401		assigned to 64Item1	Float upper 2 bytes
:	:	:			
5246	35247	147E	64Item64	Measurement data	Float lower 2 bytes
5247	35248	147F		assigned to 64Item64	Float upper 2 bytes

3.1.8 Optional output items

Output items specified using the communications command :MODBus:ITEM

<Output No.>,<Output item>

Reg No.	Ref No.	Hex No.	Register name	Register description	
6000	36001	1770	Item1	Output items with <Output No.>=1	Float lower 2 bytes
6001	36002	1771		Float upper 2 bytes	
6002	36003	1772	Item2	Output items with <Output No.>=2	Float lower 2 bytes
6003	36004	1773		Float upper 2 bytes	
:	:	:			
Reg No.:6000+(X-1)×2			ItemX	Output items with	Float lower 2 bytes
Reg No.:6000+(X-1)×2+1				<Output No.>=X	Float upper 2 bytes
:	:	:			
7996	37997	1F3C	Item999	Output items with	Float lower 2 bytes
7997	37998	1F3D		<Output No.>=999	Float upper 2 bytes
7998	37999	1F3E	Item1000	Output items with	Float lower 2 bytes
7999	3800	1F3F		<Output No.>=1000	Float upper 2 bytes

3.1.9 Measurement range setting items

Reg No.	Ref No.	Hex No.	Register name	Register description	
8000	38001	1F40	URange1	CH1 voltage range value	Float lower 2 bytes
8001	38002	1F41			Float upper 2 bytes
8002	38003	1F42	URange2	CH2 voltage range value	Float lower 2 bytes
8003	38004	1F43			Float upper 2 bytes
8004	38005	1F44	URange3	CH3 voltage range value	Float lower 2 bytes
8005	38006	1F45			Float upper 2 bytes
8006	38007	1F46	URange4	CH4 voltage range value	Float lower 2 bytes
8007	38008	1F47			Float upper 2 bytes
~					
8016	38017	1F50	IRange1	CH1 current range value	Float lower 2 bytes
8017	38018	1F51			Float upper 2 bytes
8018	38019	1F52	IRange2	CH2 current range value	Float lower 2 bytes
8019	38020	1F53			Float upper 2 bytes
8020	38021	1F54	IRange3	CH3 current range value	Float lower 2 bytes
8021	38022	1F55			Float upper 2 bytes
8022	38023	1F56	IRange4	CH4 current range value	Float lower 2 bytes
8023	38024	1F57			Float upper 2 bytes
~					
8032	38033	1F60	URangeA	CHA voltage range	Float lower 2 bytes
8033	38034	1F61			Float upper 2 bytes
8034	38035	1F62	URangeC	CHC voltage range	Float lower 2 bytes
8035	38036	1F63			Float upper 2 bytes

3.2 Float Format Data

Float is IEEE754 single-precision floating-point format (32-bit) data.

One Modbus register is fixed to 16 bits and the Float format data is divided and saved to two registers with 16 bits each.

As all Float format data for this instrument is arranged in Little Endian order (in order of lower 16 bits and upper 16 bits), specify “Little” for the data order in which Float format data is handled on the client side.

Example: When CH1 voltage RMS value Urms1 is 100 V, the reading of the register is as follows.

Input register: 0020 = “0x0000”

Input register: 0021 = “0x42C8”

Data when an error occurs is as follows.

Exceeded value	+99999.9E+30
Error value	+77777.7E+30
Unassigned register Example: 0846 to 999	0x7FC00000 (NAN)

3.3 Harmonic Measurement Items

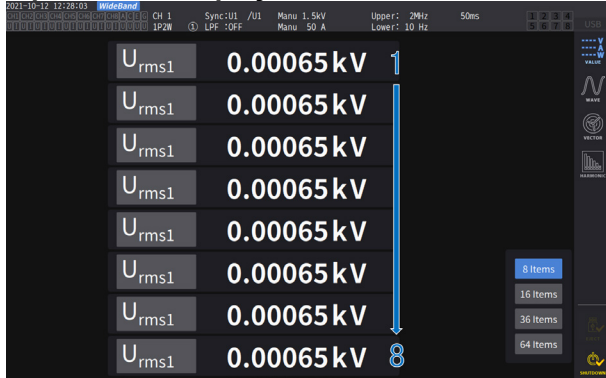
The harmonic measurement items for the input register (register No.: 4000 to 4231) are all primary measured data in the initial settings. By specifying the harmonic order in Harmonic Order (register No.: 0007) of the holding register, you can acquire the measured data of any order. For details of the register harmonic order, see “4.2.8 Harmonic order”.

Example: If you specify “100” for the harmonic order (register No.: 0007) for the holding register, the harmonic measurement items (register No.: 4000 to 4231) for the input register are all 100th measurement data.

3.4 CUSTOM Screen Items

The correspondence between CUSTOM screen items of the input register (register No.: 5000 to 5247) 8ITEM1 to 8ITEM8, 16Item1 to 16Item16, 36Item1 to 36Item36, and 64Item1 to 64Item64 and the CUSTOM screen display of the instrument is as follows.

8-parameter display



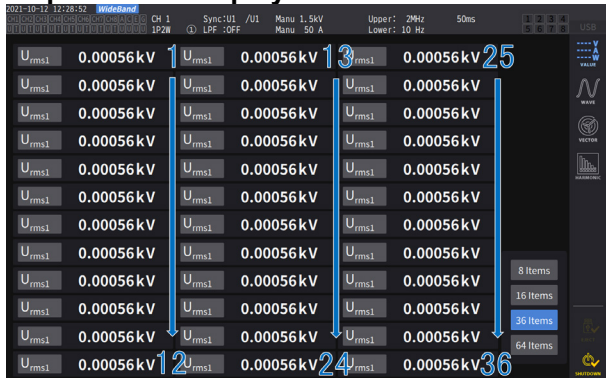
8Item1 to 8Item8 from top

16-parameter display



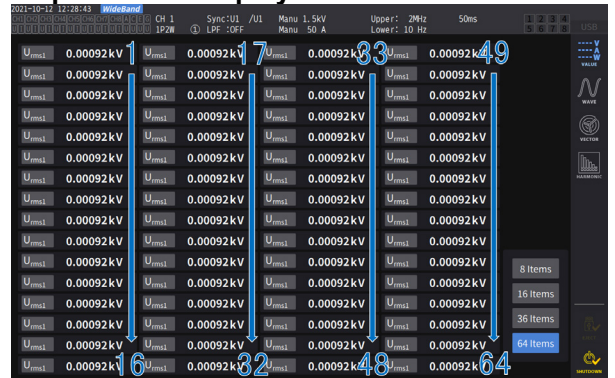
1st column from left: 16Item1 to 16Item8 from top
2nd column from left: 16Item9 to 16Item16 from top

36-parameter display



1st column from left: 36Item1 to 36Item12 from top
2nd column from left: 36Item13 to 36Item24 from top
3rd column from left: 36Item25 to 36Item36 from top

64-parameter display



1st column from left: 64Item1 to 64Item16 from top
2nd column from left: 64Item17 to 64Item32 from top
3rd column from left: 64Item33 to 64Item48 from top
4th column from left: 64Item49 to 64Item64 from top

3.5 Registering Optional Output Items

3.5.1 Registration of optional output items

For the input register optional output items (register No.: 6000 to 7999), up to 1000 optional output items can be assigned using the communications command `:MODBus:ITEM`. For details, see the register map under “3.1.8 Optional output items”. In the initial settings, “Pattern 1” of the preset output items is assigned to this area. For details on the preset output items, see “3.5.2 Preset output items”.

The optional output item registration is reset when the power is turned on again and “Pattern 1” of the preset output items is set every time the instrument starts up. The registration information of the optional output items cannot be saved in the settings file.

For the procedure to assign and preset output items using a communications command, see the PW4001 Communications Command Instruction Manual.

3.5.2 Preset output items

Preset output items can be specified using the communications command `:MODBus:ITEM:PRESet`. There is only one pattern for the preset output items that can be specified. The information of preset pattern 1 is as follows.

Pattern 1

Output No.	Output item
1	Urms1
2	Umn1
3	Uac1
4	Udc1
5	Ufnd1
6	PUpk1
7	MUpk1
8	Uthd1
9	Urf1
10	Irms1
11	Imn1
12	Iac1
13	Idc1
14	Ifnd1
15	PIpk1
16	MIpk1
17	Ithd1
18	Irf1
19	P1
20	Pfnd1
21	S1
22	Sfnd1
23	Q1

Output No.	Output item
24	Qfnd1
25	PF1
26	PFfnd1
27	Udeg1
28	Ideg1
29	DEG1
30	FU1
31	FI1
32	PIH1
33	MIH1
34	IH1
35	PWP1
36	MWP1
37	WP1
38 to 74	Urms2 to WP2
75 to 111	Urms3 to WP3
112 to 148	Urms4 to WP4
149	Urms12
150	Umn12
151	Irms12
152	Imn12
153	P12
154	Pfnd12
155	S12
156	Sfnd12
157	Q12
158	Qfnd12
159	PF12
160	PFfnd12
161	DEG12
162	PWP12
163	MWP12
164	WP12
165 to 180	Urms23 to WP23
181 to 196	Urms34 to WP34
197	Urms123
198	Umn123
199	Uunb123
200	Irms123
201	Imn123
202	Iunb123
203	P123

Output No.	Output item
204	Pfnd123
205	S123
206	Sfnd123
207	Q123
208	Qfnd123
209	PF123
210	PFfnd123
211	DEG123
212	PWP123
213	MWP123
214	WP123
215 to 232	Urms234 to WP234
233 to 1000	OFF

Note: When items to which OFF is specified are read, an error value is returned.

4 Holding Register

4.1 Register Map

4.1.1 Control data

Reg No.	Ref No.	Hex No.	Register name	Register description		R/W
0000	40001	0000	Register Hold	Register value hold/reset	uint16	R/W
0001	40002	0001	INTEG:All:Start/ Stop	All wiring integration start/stop	uint16	R/W
0002	40003	0002	INTEG:All:Reset	All wiring integration reset	uint16	W
0003	40004	0003	INTEG:Start	Each wiring integration start	uint16	R/W
0004	40005	0004	INTEG Stop	Each wiring integration stop	uint16	W
0005	40006	0005	INTEG:Reset	Each wiring integration reset	uint16	W
0006	40007	0006	HOLD	Measured value hold	uint16	R/W
0007	40008	0007	Harmonic Order	Harmonic order	uint16	R/W

For the procedure to use each register, see “4.2 Details of Control by Holding Register” in the following section.

4.2 Details of Control by Holding Register

4.2.1 Register value hold/reset

Reg No.	0000						
Register name	Register Hold						
Description	Register value hold When the register value hold is executed, the input register values at that time are retained and set so that they cannot be updated even if the measured values of the instrument are updated. The values read from the input register in this state are saved as data at the time of execution of the register value hold. When the data is overwritten with 1 with the register value in the hold state, the input register is updated with the latest values at that time and retained with those values from then on. Register value reset Register value hold is reset. Along with the update of the measured values of the instrument, the input register values are updated to the latest measurement data.						
Effective range	<table> <tr> <td>0</td><td>Reset</td></tr> <tr> <td>1</td><td>Hold</td></tr> <tr> <td>Other</td><td>Invalid</td></tr> </table>	0	Reset	1	Hold	Other	Invalid
0	Reset						
1	Hold						
Other	Invalid						
R/W	Read/write						
Reference	- Reading of Harmonic measurement items in the register value hold state When the harmonic order is changed with the register value in hold state, the harmonic measurement items of the input register are changed to the measurement data for the newly specified order. The data read at this time is measurement data at the time of execution of the register value hold but not the latest measurement data. When the register value hold is reset, the input register is updated with the latest measurement data. - Reading of CUSTOM screen items in the register value hold state When the display items of the CUSTOM screen are changed with the register value in hold state, the CUSTOM screen items of the input register are also changed in conjunction with the display items specified on the screen. The data read at this time is measurement data at the time of execution of the register value hold but not the latest measurement data. When the register value hold is reset, the input register is updated with the latest measurement data. - Reading of optional output items in the register value hold state When the output items using a communications command are changed with the register value in hold state, the optional output items of the input register are changed to the newly specified output items. The data read at this time is measurement data at the time of execution of the register value hold but not the latest measurement data. When the register value hold is reset, the input register is updated with the latest measurement data.						

4.2.2 All wiring integration start/stop

Reg No.	0001																			
Register name	INTEG:All:Start/Stop																			
Description	All wiring integration start Starts the integration (time control) in the all wiring integration mode. If the integration control method is not all wiring integration, it is changed to the all wiring integration and the integration starts. When the integration state is RUN, 0ADJ, or OTHER, the integration start is not executed. All wiring integration stop Stops the integration (time control) of all wiring integration. If the integration control method is not all wiring integration, the integration stop is not executed. When the integration state is RESET, STOP, 0ADJ, or OTHER, the integration stop is not executed.																			
Effective range	0	Stop																		
	1	Start																		
	Other	Invalid																		
R/W	Read/write																			
	While the wiring integration is being executed, the read value of the register is 0 (stop).																			
Reference	The integration can be queried using the communications command :INTEGrate:STATe?. <Integration state> <table><tr><td>Integration state</td><td>RESET</td><td>Integration is in reset</td></tr><tr><td></td><td>STOP</td><td>Integration is in stop</td></tr><tr><td></td><td>WAIT</td><td>Integration is in standby</td></tr><tr><td></td><td>RUN</td><td>Integration is in process</td></tr><tr><td></td><td>OTHER</td><td>States other than the above</td></tr><tr><td></td><td>0ADJ</td><td>Various zero adjustments are in process</td></tr></table> For details, see the PW4001 Communications Command Instruction Manual.		Integration state	RESET	Integration is in reset		STOP	Integration is in stop		WAIT	Integration is in standby		RUN	Integration is in process		OTHER	States other than the above		0ADJ	Various zero adjustments are in process
Integration state	RESET	Integration is in reset																		
	STOP	Integration is in stop																		
	WAIT	Integration is in standby																		
	RUN	Integration is in process																		
	OTHER	States other than the above																		
	0ADJ	Various zero adjustments are in process																		

4.2.3 All wiring integration reset

Reg No.	0002				
Register name	INTEG:All:Reset				
Description	Resets the integrated data of all wiring integration. If the integration control method is not all wiring integration, the integration reset is not executed. When the integration state is WAIT, RUN, 0ADJ, or OTHER, the integration reset is not executed.				
Effective range	<table> <tr> <td>0</td><td>Reset</td></tr> <tr> <td>Other</td><td>Invalid</td></tr> </table>	0	Reset	Other	Invalid
0	Reset				
Other	Invalid				
R/W	Write only				
Reference	The integration can be queried using the communications command :INTEGrate:STATe?. For details, see the PW4001 Communications Command Instruction Manual.				

4.2.4 Start of each wiring integration

Reg No.	0003																								
Register name	INTEG:Start																								
Description	Starts the integration (time control) of the wiring including the specified channel. If the integration control method is not each wiring integration, it is changed to the each wiring integration and the integration starts. Each wiring integration is executed in only the channel of the target channels that can start the integration. When the integration state is RUN, 0ADJ, or OTHER, the integration start is not executed in this channel. Specification of the channel to be controlled Specifies the channel in a value from 0 to 255. Set the channel so that the bit of the target channel is 1. <table><tr><td>128</td><td>64</td><td>32</td><td>16</td><td>8</td><td>4</td><td>2</td><td>1</td></tr><tr><td>Bit 7</td><td>Bit 6</td><td>Bit 5</td><td>Bit 4</td><td>Bit 3</td><td>Bit 2</td><td>Bit 1</td><td>Bit 0</td></tr><tr><td></td><td></td><td></td><td></td><td>CH4</td><td>CH3</td><td>CH2</td><td>CH1</td></tr></table>	128	64	32	16	8	4	2	1	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0					CH4	CH3	CH2	CH1
128	64	32	16	8	4	2	1																		
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0																		
				CH4	CH3	CH2	CH1																		
Effective range	0 to 255																								
R/W	Read/write For the read value, the bit of the channel for which integration is being executed is 1 regardless of the integration control method.																								
Reference	The integration can be queried using the communications command :INTEGrate:STATe?. For details, see the PW4001 Communications Command Instruction Manual.																								

4.2.5 Stop of each wiring integration

Reg No.	0004																								
Register name	INTEG:Stop																								
Description	Stops the integration (time control) of the wiring including the specified channel. If the integration control method is not each wiring integration, this control is not executed. The integration stop is executed in only the channel of the target channels that can stop the integration. When the integration state is RESET, STOP, 0ADJ, or OTHER, the integration stop is not executed in that channel. Specification of the channel to be controlled Specifies the channel in a value from 0 to 255. Set the channel so that the bit of the target channel is 1. <table><tr><td>128</td><td>64</td><td>32</td><td>16</td><td>8</td><td>4</td><td>2</td><td>1</td></tr><tr><td>Bit 7</td><td>Bit 6</td><td>Bit 5</td><td>Bit 4</td><td>Bit 3</td><td>Bit 2</td><td>Bit 1</td><td>Bit 0</td></tr><tr><td></td><td></td><td></td><td></td><td>CH4</td><td>CH3</td><td>CH2</td><td>CH1</td></tr></table>	128	64	32	16	8	4	2	1	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0					CH4	CH3	CH2	CH1
128	64	32	16	8	4	2	1																		
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0																		
				CH4	CH3	CH2	CH1																		
Effective range	0 to 255																								
R/W	Write only																								
Reference	The integration can be queried using the communications command :INTEGrate:STATe?. For details, see the PW4001 Communications Command Instruction Manual.																								

4.2.6 Each wiring integration reset

Reg No.	0005																								
Register name	INTEG:Reset																								
Description	Resets the integrated data of the wiring including the specified channel. If the integration control method is not each wiring integration, this control is not executed. The integration reset is executed only in the channel of the target channels that can be reset. When the integration state is WAIT, RUN, 0ADJ, or OTHER, the integration reset is not executed in that channel. Specification of the channel to be controlled Specifies the channel in a value from 0 to 255. Set the channel so that the bit of the target channel is 1. <table><tr><td>128</td><td>64</td><td>32</td><td>16</td><td>8</td><td>4</td><td>2</td><td>1</td></tr><tr><td>Bit 7</td><td>Bit 6</td><td>Bit 5</td><td>Bit 4</td><td>Bit 3</td><td>Bit 2</td><td>Bit 1</td><td>Bit 0</td></tr><tr><td></td><td></td><td></td><td></td><td>CH4</td><td>CH3</td><td>CH2</td><td>CH1</td></tr></table>	128	64	32	16	8	4	2	1	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0					CH4	CH3	CH2	CH1
128	64	32	16	8	4	2	1																		
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0																		
				CH4	CH3	CH2	CH1																		
Effective range	0 to 255																								
R/W	Write only																								
Reference	The integration can be queried using the communications command :INTEGrate:STATe?. For details, see the PW4001 Communications Command Instruction Manual.																								

4.2.7 Measured value hold

Reg No.	0006								
Register name	HOLD								
Description	Sets hold state.								
Effective range	<table> <tr> <td>0</td><td>Hold OFF</td></tr> <tr> <td>1</td><td>Hold ON</td></tr> <tr> <td>2</td><td>Peak hold ON</td></tr> <tr> <td>Other</td><td>Invalid</td></tr> </table>	0	Hold OFF	1	Hold ON	2	Peak hold ON	Other	Invalid
0	Hold OFF								
1	Hold ON								
2	Peak hold ON								
Other	Invalid								
R/W	Read/write								
Reference									

4.2.8 Harmonic order

Reg No.	0007
Register name	Harmonic Order
Description	Specifies the order for the harmonic measurement items of the input register. The initial value is "1".
Effective range	0 to 500
R/W	Read/write
Reference	For details, see "3.3 Harmonic Measurement Items".

5 Troubleshooting

Problem	Cause	Solution/Reference
No communications.	The cable is not connected properly. The cable in use is an item other than specified.	Refer to “9 Connecting the Instrument to a PC” in the PW4001 Instruction Manual.
	Power supply to some of the devices in connection is not turned ON.	Turn ON all the devices.
	The communication setting of the Modbus/TCP client instrument is not identical to the one for the instrument. The IP address setting is identical to the one for another device.	Refer to “9 Connecting the Instrument to a PC” in the PW4001 Instruction Manual.
	The TCP/IP port number is incorrect.	Set the port number to 502.
Communications are not working properly.	Function codes not supported by the instrument are used.	See “1.2 Function Code”.
	The ID (server address) is not correct.	Sets the unit ID (server address) to “1”.
The response message is not the same as what is displayed on the instrument panel.	It is not an error. A response message is created when the instrument receives a message. The message may not be identical to the display when it is loaded by the computer.	

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