TABLE OF QC-POWER-3PC REGISTERS

The following table shown all the QC-POWER-3PC registers. All registers are 16-bit integer type (signed or unsigned).

MEASURED VALUES (Function code $ 03)

Register HEX	Word	Description	M.U.	Type
$1000	2	3-PHASE SYSTEM VOLTAGE	[V]	(Unsigned)
$1002	2	PHASE VOLTAGE L_{1-N}	[V]	(Unsigned)
$1004	2	PHASE VOLTAGE L_{2-N}	[V]	(Unsigned)
$1006	2	PHASE VOLTAGE L_{3-N}	[V]	(Unsigned)
$1008	2	LINE TO LINE VOLTAGE L_{1-2}	[V]	(Unsigned)
$100A	2	LINE TO LINE VOLTAGE L_{2-3}	[V]	(Unsigned)
$100C	2	LINE TO LINE VOLTAGE L_{3-1}	[V]	(Unsigned)
$100E	2	3-PHASE SYSTEM CURRENT	[mA]	(Unsigned)
$1010	2	LINE CURRENT L_1	[mA]	(Unsigned)
$1012	2	LINE CURRENT L_2	[mA]	(Unsigned)
$1014	2	LINE CURRENT L_3	[mA]	(Unsigned)
$1016	2	3-PHASE SYSTEM POWER FACTOR	[-]	(Signed)
$1018	2	POWER FACTOR L_1	[-]	(Signed)
$101A	2	POWER FACTOR L_2	[-]	(Signed)
$101C	2	POWER FACTOR L_3	[-]	(Signed)
$101E	2	3-PHASE SYSTEM COS$\varnothing$	[-]	(Signed)
$1020	2	PHASE COS$\varnothing_1$	[-]	(Signed)
$1022	2	PHASE COS$\varnothing_2$	[-]	(Signed)
$1024	2	PHASE COS$\varnothing_3$	[-]	(Signed)
$1026	2	3-PHASE SYSTEM APPARENT POWER	[VA]	(Unsigned)
$1028	2	APPARENT POWER L_1	[VA]	(Unsigned)
$102A	2	ACTIVE POWER L_2	[VA]	(Unsigned)
$102C	2	ACTIVE POWER L_3	[VA]	(Unsigned)
$102E	2	3-PHASE SYSTEM REACTIVE POWER	[W]	(Signed)
$1030	2	REACTIVE POWER L_1	[W]	(Signed)
$1032	2	REACTIVE POWER L_2	[W]	(Signed)
$1034	2	REACTIVE POWER L_3	[W]	(Signed)
$1036	2	3-PHASE SYSTEM REACTIVE POWER	[VAR]	(Signed)
$1038	2	REACTIVE POWER L_1	[VAR]	(Signed)
$103A	2	REACTIVE POWER L_2	[VAR]	(Signed)
$103C	2	REACTIVE POWER L_3	[VAR]	(Signed)
. . .				
$1046	2	FREQUENCY	[mHz]	(Unsigned)
$1048	2	NEUTRAL CURRENT	[mA]	(Unsigned)
. . .				
$1096	2	TEMPERATURE	[°C]	(Unsigned)
$1098	2	HOURS COUNTER	[dh]	(Unsigned)

NOTE:

- WHEN THE INSTRUMENT CAN'T MEASURE IT SEND 0000 AS VALUE.

- …. means that there are registers not consecutive

ENERGY COUNTERS

REGISTERS TABLE with SETUP value **EN = BI-DIR** (mported /exported active energy counters)

Register HEX	Word	Description	Symbol	M.U.	Type
$103E	2	3-PHASE SYS. ACTIVE ENERGY Imported	kWhr +	[100*Wh]	(Unsigned)
$1040	2	3-PHASE SYS. REACTIVE INDUCTIVE ENERGY	kVArh +	[100*VARh]	(Unsigned)
$1042	2	3-PHASE SYS. ACTIVE ENERGY Exported	kWhr -	[100*Wh]	(Unsigned)
…					
$104E	2	PHASE L1 ACTIVE ENERGY Imported	kWhr+ L1	[100*Wh]	(Unsigned)
$1050	2	PHASE L2 ACTIVE ENERGY Imported	kWhr+ L2	[100*Wh]	(Unsigned)
$1052	2	PHASE L3 ACTIVE ENERGY Imported	kWhr+ L3	[100*Wh]	(Unsigned)
$1054	2	PHASE L1 ACTIVE ENERGY Exported	KWhr- L1	[100*Wh]	(Unsigned)
$1056	2	PHASE L2 ACTIVE ENERGY Exported	KWhr- L2	[100*Wh]	(Unsigned)
$1058	2	PHASE L3 ACTIVE ENERGY Exported	KWhr- L3	[100*Wh]	(Unsigned)
$105A	2	3-PHASE SYS. REACTIVE CAPACITIVE ENERGY	kVArh -	[100*VARh]	(Unsigned)

REGISTERS TABLE with SETUP value **EN = TOT-PAR** (Totalizer / resettable counters)

Register HEX	Word	Description	Symbol	M.U.	Type
$103E	2	3-PHASE SYS. ACTIVE ENERGY Totalizer	Kwh Tot.	[100*Wh]	(Unsigned)
$1040	2	3-PHASE S. REACTIVE ENERGY Totalizer	kVArh Tot.	[100*VARh]	(Unsigned)
$1042	2	3-PHASE SYS. ACTIVE ENERGY Resettable	Kwh Part.	[100*Wh]	(Unsigned)
$1044	2	3-PHASE S. REACTIVE ENERGY Resettable	kVArh Part.	[100*VARh]	(Unsigned)
…					
$104E	2	PHASE L1 ACTIVE ENERGY Totalizer	Kwh L1 Tot.	[100*Wh]	(Unsigned)
$1050	2	PHASE L2 ACTIVE ENERGY Totalizer	Kwh L2 Tot.	[100*Wh]	(Unsigned)
$1052	2	PHASE L3 ACTIVE ENERGY Totalizer	Kwh L3 Tot.	[100*Wh]	(Unsigned)
$1054	2	PHASE L1 ACTIVE ENERGY Resettable	Kwh L1 Part.	[100*Wh]	(Unsigned)
$1056	2	PHASE L2 ACTIVE ENERGY Resettable	Kwh L2 Part.	[100*Wh]	(Unsigned)
$1058	2	PHASE L3 ACTIVE ENERGY Resettable	Kwh L3 Part.	[100*Wh]	(Unsigned)

REGISTERS TABLE with SETUP value **EN = TIMEBAND** (TIMEBAND b1 / b2 counters)

Register HEX	Word	Description	Symbol	M.U.	Type
$103E	2	3-PHASE SYS. ACTIVE ENERGY Timeband 1	Kwh b1.	[100*Wh]	(Unsigned)
$1040	2	3-PHASE S. REACTIVE ENERGY Timeband 1	KVArh+ b1	[100*VARh]	(Unsigned)
$1042	2	3-PHASE SYS. ACTIVE ENERGY Timeband 2	Kwh b2.	[100*Wh]	(Unsigned)
$1044	2	3-PHASE S. REACTIVE ENERGY Timeband 2	KVArh+ b2.	[100*VARh]	(Unsigned)
. . .					
$104E	2	PHASE L1 ACTIVE ENERGY Timeband 1	Kwh L1 b1	[100*Wh]	(Unsigned)
$1050	2	PHASE L2 ACTIVE ENERGY Timeband 1	Kwh L2 b1	[100*Wh]	(Unsigned)
$1052	2	PHASE L3 ACTIVE ENERGY Timeband 1	Kwh L3 b1	[100*Wh]	(Unsigned)
$1054	2	PHASE L1 ACTIVE ENERGY Timeband 2	Kwh L1 b2	[100*Wh]	(Unsigned)
$1056	2	PHASE L2 ACTIVE ENERGY Timeband 2	Kwh L2 b2	[100*Wh]	(Unsigned)
$1058	2	PHASE L3 ACTIVE ENERGY Timeband 2	Kwh L3 b2	[100*Wh]	(Unsigned)
$105A	2	3-PHASE S. CAPACITIVE ENERGY Timeband 1	KVArh- b1.	[100*VARh]	(Unsigned)
$105C	2	3-PHASE S. CAPACITIVE ENERGY Timeband 2	KVArh- b2.	[100*VARh]	(Unsigned)

VALUES STORED IN EEPROM (Function code $03)

Register HEX	Word	Description	M.U.	Type
$1060	2	MAX ISTANT. CURRENT L1	[mA]	(Unsigned)
$1062	2	MAX ISTANT. CURRENT L2	[mA]	(Unsigned)
$1064	2	MAX ISTANT. CURRENT L3	[mA]	(Unsigned)
$1066	2	MAX ISTANT. 3-PHASE ACTIVE POWER	[W]	(Signed)
$1068	2	MAX ISTANT. 3-PHASE APPARENT POWER	[VA]	(Unsigned)
$106A	2	MAX AVG (max demand) CURRENT L1	[mA]	(Unsigned)
$106C	2	MAX AVG (max demand) CURRENT L2	[mA]	(Unsigned)
$106E	2	MAX AVG (max demand) CURRENT L3	[mA]	(Unsigned)
$1070	2	MAX AVG (max demand) 3-PH. ACTIVE POWER	[W]	(Signed)
$1072	2	MAX ISTANT. VOLTAGE L1	[V]	(Unsigned)
$1074	2	MAX ISTANT. VOLTAGE L2	[V]	(Unsigned)
$1076	2	MAX ISTANT. VOLTAGE L3	[V]	(Unsigned)
$1078	2	MAX ISTANT. 3-PHASE REACTIVE. POWER	[VAr]	(Signed)
$107A	2	MAX AVG (max demand) 3-PH. REACTIVE POWER	[VAr]	(Signed)
$107C	2	MAX AVG (max demand) 3-PH. APPARENT POWER	[VAr]	(Unsigned)
$107E	2	LAST AVERAGE 3-PHASE ACTIVE POWER	[W]	(Signed)
$1080	2	LAST AVERAGE 3-PHASE REACTIVE POWER	[VAr]	(Signed)
$1082	2	LAST AVERAGE 3-PHASE APPARENT POWER	[VA]	(Unsigned)
…				
$108A	2	LAST AVERAGE CURRENT L1	[mA]	(Unsigned)
$108C	2	LAST AVERAGE CURRENT L2	[mA]	(Unsigned)
$108E	2	LAST AVERAGE CURRENT L3	[mA]	(Unsigned)

WRITE PARAMETERS (function $10)
Registers to reset energies and measured values stored
Writing these registers MUST BE DONE in a single message sending both MSB and LSB words.

Register HEX	Word	Description	Write value	
			MSB Word	LSB Word
$11BO	2	RESET ENERGY COUNTERS	$11B0	$55AA
$11B2	2	RESET MAX. ISTANTANEOUS VALUES	$11B2	$55AA
$11B4	2	RESET MAX AVG (max demand) VALUES	$11B4	$55AA
$11B6	2	RESET ALL VALUES (MAX and counters values)	$11B6	$55AA

Example:
The follow message cause the reset of MAX AVG values in device at address 1 (follows Hex bytes) 01 10 11 B4 00 02 04 11 B4 55 AA [CRC16]

NOTE:
When SETUP value is **EN = BI-DIR** (bidirectional) writing registers $11B0-$11B1 or $11B6-$11B7 all the energy counters will be reset.

When SETUP value is **EN = TOT-PAR** (totalizer and resettable counters) writing registers $11B0-$11B1 or $11B6-$11B7 only the resettable counters will be zeroed.

When SETUP value is **EN = TIMEBAND** (Timeband counters) writing registers $11B0-$11B1 or $11B6-$11B7 all the energy counters will be reset.

READ & WRITE QC-POWER-3PC SETTINGS (Function code $03 & $10)

Register HEX	Word	Description	Range
$11AO	2	KCT TRANSFORM RATIO IL1-IL2-IL3	1÷4000 (KVT ratio is from 0.1 to 400) 1=0.1
$11A2	2	KVT TRANSFORM RATIO * 0.1	…=... 4000=400

VALUES STORED IN EEPROM (Function code $03)

Register HEX	Word	Description	Range
$109E	1	MSB BYTE: SYNC MODE LSB BYTE: ENERGY MODE	MSB BYTE VALUE MEANINGS 1 = EXTERNAL SYNC 2 = INT SYNC = 50 Hz 3 = INT SYNC = 60 Hz LSB BYTE VALUE MEANINGS 1 = TIMEBAND MODE 2 = TOTAL / PARTIAL MODE = NORMAL (SINGLE COUNTER)
$109F	1	MSB BYTE: NEUTRAL LINE MODE LSB BYTE: SINGLE PHASE / 3PHASE MODE	MSB BYTE VALUE MEANINGS 1 = 4-WIRE (WITH NEUTRAL WIRE) 2 = 3-WIRE LSB BYTE VALUE MEANINGS 1 = 3PHASE UNBALANCED 2 = 3PHASE BALANCED 3= SINGLE PHASE

READING EXAMPLE

This is an example of transmitted data to QC-POWER-3PC at address 01, requesting 16 variables, as follows:

Register HEX	Word	Description	Range	Typo
$101E	2	3-PHASE SYSTEM POWER FACTOR	[-]	(Signed)
$1020	2	POWER FACTOR L1	[-]	(Signed)
$1022	2	POWER FACTOR L2	[-]	(Signed)
$1024	2	POWER FACTOR L3	[-]	(Signed)
$1026	2	3-PHASE SYSTEM APPARENT POWER	[VA]	(Unsigned)
$1028	2	APPARENT POWER L_1	[VA]	(Unsigned)
$102A	2	APPARENT POWER L_2	[VA]	(Unsigned)
$102C	2	APPARENT POWER L_3	[VA]	(Unsigned)
$102E	2	3-PHASE SYSTEM ACTIVE POWER	[W]	(Unsigned)
$1030	2	ACTIVE POWER L_1	[W]	(Unsigned)
$1032	2	ACTIVE POWER L_2	[W]	(Unsigned)
$1034	2	ACTIVE POWER L_3	[W]	(Unsigned)
$1036	2	3-PHASE SYSTEM REACTIVE POWER	[VAR]	(Unsigned)
$1038	2	REACTIVE POWER L_1	[VAR]	(Unsigned)
$103A	2	REACTIVE POWER L_2	[VAR]	(Unsigned)
$103C	2	REACTIVE POWER L_3	[VAR]	(Unsigned)

Stream data to send to QC-POWER-3PC (H suffix mean hex data format):

01H	QC-POWER-3PC address
03H	Read function
10H	Address of 1st register requested (101EH)
1EH	
00H	Nr of Register requested (2 registers for each variable =32 registers = 0020H)
20H	
20H	CRC
D4H	CRC

Response from QC-POWER-3PC:

01H	QC-POWER-3PC address
03H	Read function
40H	Nr. of send bytes
…	Follow 64 bytes of data If
all data is zero (00) the CRC is the following	
05H	CRC
11H	CRC

TROUBLESHOOTING

If response from QC-POWER-3PC doesn't happen:

 - check connection from QC-POWER-3PC and RS232/RS485 converter;
 - check if data outgoing from the RS232 serial port of the PC come in the S232/485 converter - try to increase the wait time for response (300 ms is good);
 - check if the transmitted data stream is **EXACTLY** as in example, monitoring the data on the RS485 serial line with a terminal (i.e. Hyperterminal or other emulator);
 - be sure that the turnaround-time of the converter RS232/485 is set in range 1 to 2 MS.