

**MAPPA DEI REGISTRI QC-POWER-3PC**

La seguente tabella mostra tutti i registri del QC-POWER-3PC. Tutti i registri sono a 16 bit di tipo integer (signed o unsigned).

VALORI MISURATI (Codice Funzione \$ 03)

Registro HEX	Word	Descrizione	M.U.	Tipo
\$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 ϕ	[-]	(Signed)
\$1020	2	PHASE COS ϕ_1	[-]	(Signed)
\$1022	2	PHASE COS ϕ_2	[-]	(Signed)
\$1024	2	PHASE COS ϕ_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:

- QUANDO LO STRUMENTO NON RIESCE A MISURARE INVIA COME VALORE 0000

- significa che ci sono dei registri non consecutivi

**CONTATORI ENERGIA**

TABELLA REGISTRI con valore IMPOSTATO EN =BI DIR (Contatori di energia attiva importata/esportata)					
Registro HEX	Word	Descrizione	Simbolo	M.U.	Tipo
\$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)

TABELLA REGISTRI con valore IMPOSTATO TOT =PAR (Totalizzatore/ contatori resettabili)					
Registro HEX	Word	Descrizione	Simbolo	M.U.	Tipo
\$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)

TABELLA REGISTRI con valore IMPOSTATO EN =TIMEBAND (Contatori FASCIA ORARIA b1 / b2)					
Registro HEX	Word	Descrizione	Simbolo	M.U.	Tipo
\$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)

**VALORE MEMORIZZATO IN EEPROM (Codice Funzione \$03)**

Registro HEX	Word	Descrizione	M.U.	Tipo
\$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)

SCRITTURA DI PARAMETRI (funzione \$10)**Registri per resettare le energie ed i valori misurati memorizzati.**

La scrittura in questi registri DEVE ESSERE FATTA in un unico messaggio utilizzando sia MSB che LSB.

Registro HEX	Word	Descrizione	Scrittura valori	
			MSB Word	LSB Word
\$11B0	2	RESET ENERGY COUNTERS	\$11B0	\$55AA
\$11B2	2	RESET MAX. INSTANTANEOUS VALUES	\$11B2	\$55AA
\$11B4	2	RESET MAX AVG (max demand) VALUES	\$11B4	\$55AA
\$11B6	2	RESET ALL VALUES (MAX and counters values)	\$11B6	\$55AA

Esempio:

Il seguente messaggio causa il reset dei valori di MAX AVG nel dispositivo all'indirizzo 1 (byte esadecimale).

NOTE:

Quando il valore impostato è **EN = BI-DIR** (bidirezionale) scrivendo nei registri \$11B0-\$11B1 o \$11B6-\$11B7 tutti i contatori dell'energia vengono resettati.

Quando il valore impostato è **EN = TOT-PAR** (totalizzatore e contatori azzerabili) scrivendo nei registri \$11B0-\$11B1 o \$11B6-\$11B7 vengono azzerati solamente i contatori azzerabili.

Quando il valore impostato è **EN = TIMEBAND** (contatori fascia oraria) scrivendo nei registri \$11B0-\$11B1 o \$11B6-\$11B7 tutti i contatori dell'energia vengono resettati.

LETTURA E SCRITTURA IMPOSTAZIONI QC-POWER-3PC (Codice Funzione \$03 & \$10)

Registro HEX	Word	Descrizione	Range
\$11A0	2	KCT TRANSFORM RATIO IL1-IL2-IL3	1÷400 (KVT ratio is from 0.1 to 400) 1=0.1
\$11A2	2	KVT TRANSFORM RATIO * 0.1	...=... 4000=400

**VALORE MEMORIZZATO IN EEPROM (Codice Funzione \$03)**

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

**ESEMPIO DI LETTURA**

Questo è un esempio di trasmissione dei dati del QC-POWER-3PC dall'indirizzo 1, richiedendo 16 variabili come segue:

Registro HEX	Word	Descrizione	Range	Tipo
\$101E	2	3-PHASE SYSTEM POWER FACTOR	[-]	(Signed)
\$1020	2	POWER FACTOR L ₁	[-]	(Signed)
\$1022	2	POWER FACTOR L ₂	[-]	(Signed)
\$1024	2	POWER FACTOR L ₃	[-]	(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)

Flusso dati da inviare al QC-POWER-3-PC (il suffisso H indica che i dati sono in formato esadecimale):

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

RISOLUZIONE DEI PROBLEMI

Se non c'è nessuna risposta da parte del QC-POWER-3PC:

- controllare la connessione dal QC-POWER-3PC al convertitore RS232/RS485;
- controllare se i dati in uscita dalla porta seriale RS232 arrivano al convertitore RS232/485
- provare ad incrementare il tempo di attesa della risposta (300 mS vanno bene);
- controllare se la trasmissione dei dati è **CORRETTA** come nell'esempio, monitorando i dati tramite porta seriale RS485 servendosi di un terminale (per esempio Hyperterminal o altri emulatori); assicurarsi che il tempo di risposta del convertitore seriale RS232/485 sia settato tra 1 o 2 ms.