

Modbus Tables Summary

Rev. 1.14 – October 2022

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1. Revision History

This document is in revision 1.14.

Differences from revision 1.1 to revision 1.2

- 2 Partial Reactive Energies (P_Er+ and P_Er-) removed from two tables (their presence was a mistake)

Differences from revision 1.2 to revision 1.3

- Change of Device Identification Table, Change base addresses of the tables (to have more free space between tables)
- Other minor modifications and more explanations added.

Differences from revision 1.3 to revision 1.4

- Change of Product Names and Model Names

Differences from revision 1.4 to revision 1.5

- Partial Energies in 1P Meter 40A 1M are removed. Consequently, also the "Reset of Partial Energies" command is not used in 1P Meter 40A meter
- In Network setting table, 1BL wiring connection has value =1 instead of value = 0

Differences from revision 1.5 to revision 1.6

- in 3ple_1P_80, it is possible to select the Meter when resetting Partial Registers

Differences from revision 1.6 to revision 1.7

- in 3ple_1P_80, Power factors are readable according only to IEC convention.

Differences from revision 1.7 to revision 1.8

- U8 and 2XU8 types removed; in 3ple_1P_80, there is only one Frequency, common to all 3 phases

Differences from revision 1.8 to revision 1.9

- in the table "3ple 1P_80 Energies and Partial Energies" the addresses in hex format were correct, but their translations into decimal were wrong.

Differences from revision 1.9 to revision 1.10

- in the table "Instantaneous measures" the Reactive Power values Q(L1), Q(L2) and Q(L3) are readable also for 3ple_1P_80 .

Differences from revision 1.10 to revision 1.11

- in the table "Instantaneous measures" the Power factors according only to IEEE convention are readable also for 3ple_1P_80 .

Differences from revision 1.11 to revision 1.12

- added the 1-phase 2-module Swiss references.
- a new family of devices added: 3ple_1P_CT

Differences from revision 1.12 to revision 1.13

- For the models: ECR380D, ECR381D, ECA380D, ECA381D a new alternative revision of firmware is generated (1.2), with some more Energies available in the "Energies and Partial Energies (kWh, ΣT)" group (see chapter 6).

Differences from revision 1.13 to revision 1.14

- A new revision of firmware (2.0) will be adopted for all Energy meters. In this new firmware revision, the table 6 will change in the following way:
 - o In all 3phase models (not only in 80A models), in table 6 all the Energies are available
 - o In 1phase models (both 40A and 80A), in table 6, the Energy Registers Ea+ (ΣT) and Ea- (ΣT), will be available. The other new Energies will be readable as 0xFFFFFFFF
 - o In all 3Phase models, an alternative method for calculating 3Phase Energies has been added (see paragraph dedicated to Magnitude and Vectorial summations)

2. Models Summary

This document is dedicated to the following Energy Meters

Commercial Reference	Modbus Table "Product Name"	Modbus Table "Model Name"	Reactive Energies shown on the display	3 Phase Energies Calculation Method
ECR140D	1P Meter 40A 1M	MODBUS Screw MID	YES	NA
ECR180D	1P Meter 80A 2M	MODBUS Screw MID	YES	NA
ECR181D	1P Meter 80A 2M	AGARDIO RJ45 MID	NO (Swiss Market model)	NA
ECA180D	1P Meter 80A 2M	MODBUS Screw MID	YES	NA
ECA181D	1P Meter 80A 2M	AGARDIO RJ45 MID	NO (Swiss Market model)	NA
ECR180T	1PMeter 3x80A 4M	MODBUS Screw	YES	NA
ECA180T	1PMeter 3x80A 4M	AGARDIO RJ45	YES	NA
ECR300T	1PMeter 3x/5A 4M	MODBUS Screw	NO	NA
ECA300T	1PMeter 3x/5A 4M	AGARDIO RJ45	NO	NA
ECR380D	3P Meter 80A 4M	MODBUS Screw MID	YES	by Magnitude (Welmec)
ECR381D	3P Meter 80A 4M	MODBUS Screw MID	NO (Swiss Market model)	by Magnitude (Welmec)
ECR382D	3P Meter 80A 4M	MODBUS Screw MID	YES	Vectorial (ARN)
ECA380D	3P Meter 80A 4M	AGARDIO RJ45 MID	YES	by Magnitude (Welmec)
ECA381D	3P Meter 80A 4M	AGARDIO RJ45 MID	NO (Swiss Market model)	by Magnitude (Welmec)
ECA382D	3P Meter 80A 4M	AGARDIO RJ45 MID	YES	Vectorial (ARN)
ECR310D	3P Meter 125A 6M	MODBUS Screw MID	YES	by Magnitude (Welmec)
ECR311D	3P Meter 125A 6M	MODBUS Screw MID	NO (Swiss Market model)	by Magnitude (Welmec)
ECR312D	3P Meter 125A 6M	MODBUS Screw MID	YES	Vectorial (ARN)
ECA310D	3P Meter 125A 6M	AGARDIO RJ45 MID	YES	by Magnitude (Welmec)
ECA311D	3P Meter 125A 6M	AGARDIO RJ45 MID	NO (Swiss Market model)	by Magnitude (Welmec)
ECA312D	3P Meter 125A 6M	AGARDIO RJ45 MID	YES	Vectorial (ARN)
ECR300C	3P Meter /5A 4M	MODBUS Screw MID	YES	by Magnitude (Welmec)
ECR301C	3P Meter /5A 4M	MODBUS Screw MID	NO (Swiss Market model)	by Magnitude (Welmec)
ECR302C	3P Meter /5A 4M	MODBUS Screw MID	YES	Vectorial (ARN)
ECA300C	3P Meter /5A 4M	AGARDIO RJ45 MID	YES	by Magnitude (Welmec)
ECA301C	3P Meter /5A 4M	AGARDIO RJ45 MID	NO (Swiss Market model)	by Magnitude (Welmec)
ECA302C	3P Meter /5A 4M	AGARDIO RJ45 MID	YES	Vectorial (ARN)

3. Legenda

1P_40 Single Phase 40 Ampere 1 Module Energy Meter
 1P_80 Single Phase 80 Ampere 2 Modules Energy Meter
 3P_80 Three Phase 80 Ampere 4 Modules Direct Connected Energy Meter
 3P_125 Three Phase 125 Ampere 6 Modules Direct Connected Energy Meter
 3P_CT Three Phase ../5A or ../1A 4 Modules CT Connected Energy Meter
 3ple_1P_80 Triple Single Phase 80 Ampere 4 Modules Energy Meter
 Agardio Modbus connection through RJ-45 instead of screw terminals. Not available in 1P_40. The Modbus tables do not change (except where explicitly indicated). The specific Modbus functions (identification and user-blocks) are available on all Modbus devices (not limited to agardio versions).

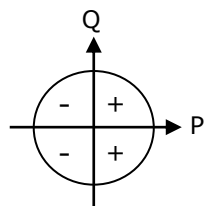
Ea+ Imported Active Energy
 Ea- Exported Active Energy
 Er+ Imported Reactive Energy
 Er- Exported Reactive Energy
 P_Ea+ Partial (resettable) Imported Active Energy
 P_Ea- Partial (resettable) Exported Active Energy
 P Active Power
 Q Reactive Power
 S Apparent Power
 PF-IEC Power Factor = P/S , not to be confused with $\cos(\varphi)$. Sign is according to IEC convention (see below)
 PF-IEEE Power Factor = P/S , not to be confused with $\cos(\varphi)$. Sign is according to IEEE convention (see below) (not available in 3ple_1P_80)

U16, U32 unsigned integer 16, 32 bits
 S16,S32 signed integer 16, 32 bits
 [M1][M2][M3] Meter 1, 2, 3 [L1][L2][L3] Line1, Line2, Line3 [T1][T2]...T[8] Tariff 1, 2, ..., 8
 ΣT Sum of all tariffs

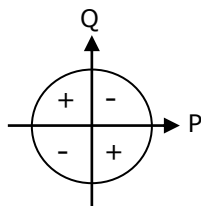
Note: there are no defaults values: if the meter answers, the value is good.

Grayed text The item is readable, but its value is not available.

Highlight Background The item is readable and writable



PF sign according to IEC convention



PF sign according to IEEE convention

4. Differences between the two methods of 3Phase Energy calculation

We have seen that there are 3 Phase models that calculate the three-phase Energies using Summation by Quantities (magnitude) (as recommended by WELMEC) and models that apply Summation by Vectors ("Ferraris" Mode recommended by VDE-AR-N 4400 norm, valid in Germany).

The difference between the 2 methods is the three-phase energy accumulation criterion when the energy accumulations of the individual phases have different signs (directions). Suppose that the increases of Phase Energies in the interval T are:

$$\Delta E(L1) = \int_t^{t+T} P(L1)dt = +35 \text{ Wh} \quad \Delta E(L2) = \int_t^{t+T} P(L2)dt = -50 \text{ Wh} \quad \Delta E(L3) = \int_t^{t+T} P(L3)dt = +25 \text{ Wh}$$

In models with Magnitude summation the three-phase energy increases are:

$$\Delta E_i(\Sigma L) = 35 \text{ Wh} + 25 \text{ Wh} = 60 \text{ Wh} \quad \Delta E_e(\Sigma L) = 50 \text{ Wh}$$

Both Imported and Exported three-phase energy are therefore increased.

In models with vectorial summation, on the other hand, only the three-phase Imported or Exported Energy is increased, depending on the sign of the sum of the three contributions. In our case:

$$\Delta E(\Sigma L) = \Delta E(L1) + \Delta E(L2) + \Delta E(L3) = 35 \text{ Wh} - 50 \text{ Wh} + 25 \text{ Wh} = +10 \text{ Wh}$$

The sum is positive, so only the imported Energy is increased, leaving the Exported Energy unchanged.

$$\Delta E_i(\Sigma L) = +10 \text{ Wh}$$

$$\Delta E_e(\Sigma L) = 0$$

6. Instantaneous Measures

Size 49 – Starting Address: 0xB000 - Applicable Functions: Read_Holding_Registers (0x03)

IN 3P_CT ENERGY METERS, CURRENTS AND POWERS ARE REFERRED TO **PRIMARY** SIDE OF EXTERNAL CTS

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	1P_40	1P_80	3P_80A	3P_125	3P_CT	3ple_1P_80A (*)	3ple_1P_CT (*)
45056	B000	1	V(L1-N)	V/100	U16	9200...27600	9200...27600	9200...27600	9200...27600	9200...27600	9200...27600	9200...27600
45057	B001	1	V(L2-N)	V/100	U16	0xFFFF	0xFFFF	9200...27600	9200...27600	9200...27600	9200...27600	9200...27600
45058	B002	1	V(L3-N)	V/100	U16	0xFFFF	0xFFFF	9200...27600	9200...27600	9200...27600	9200...27600	9200...27600
45059	B003	1	V(L1-L2)	V/100	U16	0xFFFF	0xFFFF	16000...48000	16000...48000	16000...48000	0xFFFF	0xFFFF
45060	B004	1	V(L2-L3)	V/100	U16	0xFFFF	0xFFFF	16000...48000	16000...48000	16000...48000	0xFFFF	0xFFFF
45061	B005	1	V(L3-L1)	V/100	U16	0xFFFF	0xFFFF	16000...48000	16000...48000	16000...48000	0xFFFF	0xFFFF
45062	B006	1	F	Hz/100	U16	4500...6500	4500...6500	4500...6500	4500...6500	4500...6500	4500...6500	4500...6500
45063	B007	1	Not Used	Hz/100	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	0xFFFF	0xFFFF	0xFFFF
45064	B008	1	Not Used	Hz/100	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	0xFFFF	0xFFFF	0xFFFF
45065	B009	2	I(L1)	mA	U32	0...40000	0...80000	0...80000	0...125000	0...7200000	0...80000	0...7200000
45067	B00B	2	I(L2)	mA	U32	0xFFFFFFFF	0xFFFFFFFF	0...80000	0...125000	0...7200000	0...80000	0...7200000
45069	B00D	2	I(L3)	mA	U32	0xFFFFFFFF	0xFFFFFFFF	0...80000	0...125000	0...7200000	0...80000	0...7200000
45071	B00F	2	I(Neutral)	mA	U32	0xFFFFFFFF	0xFFFFFFFF	0...80000	0...125000	0...7200000	0xFFFFFFFF	0xFFFFFFFF
45073	B011	2	P(ΣL)	±kW/100	S32	-1104...+1104	-2208...+2208	-6624...+6624	-10350...+10350	-596160...+596160	0x7FFFFFFF	0x7FFFFFFF
45075	B013	2	Q(ΣL)	±kvar/100	S32	-1104...+1104	-2208...+2208	-6624...+6624	-10350...+10350	-596160...+596160	0x7FFFFFFF	0x7FFFFFFF
45077	B015	2	S(ΣL)	kVA/100	U32	0...1104	0...2208	0...6624	0...10350	0...596160	0xFFFFFFFF	0xFFFFFFFF
45079	B017	1	PF(ΣL) IEC (§)	0,001	S16	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000	0x7FFF	0x7FFF
45080	B018	1	PF(ΣL) IEEE (§)	0,001	S16	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000	0x7FFF	0x7FFF
45081	B019	2	P(L1)	±kW/100	S32	-1104...+1104	-2208...+2208	-2208...+2208	-3450...+3450	-198720...+198720	-2208...+2208	-198720...+198720
45083	B01B	2	P(L2)	±kW/100	S32	0x7FFFFFFF	0x7FFFFFFF	-2208...+2208	-3450...+3450	-198720...+198720	-2208...+2208	-198720...+198720
45085	B01D	2	P(L3)	±kW/100	S32	0x7FFFFFFF	0x7FFFFFFF	-2208...+2208	-3450...+3450	-198720...+198720	-2208...+2208	-198720...+198720
45087	B01F	2	Q(L1)	±kvar/100	S32	-1104...+1104	-2208...+2208	-2208...+2208	-3450...+3450	-198720...+198720	-2208...+2208	-198720...+198720
45089	B021	2	Q(L2)	±kvar/100	S32	0x7FFFFFFF	0x7FFFFFFF	-2208...+2208	-3450...+3450	-198720...+198720	-2208...+2208	-198720...+198720
45091	B023	2	Q(L3)	±kvar/100	S32	0x7FFFFFFF	0x7FFFFFFF	-2208...+2208	-3450...+3450	-198720...+198720	-2208...+2208	-198720...+198720
45093	B025	2	S(L1)	kVA/100	U32	0...1104	0...2208	0...2208	0...3450	0...198720	0...2208	0...198720
45095	B027	2	S(L2)	kVA/100	U32	0xFFFFFFFF	0xFFFFFFFF	0...2208	0...3450	0...198720	0...2208	0...198720
45097	B029	2	S(L3)	kVA/100	U32	0xFFFFFFFF	0xFFFFFFFF	0...2208	0...3450	0...198720	0...2208	0...198720
45099	B02B	1	PF(L1) IEC (§)	0,001	S16	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000
45100	B02C	1	PF(L2) IEC (§)	0,001	S16	0x7FFF	0x7FFF	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000
45101	B02D	1	PF(L3) IEC (§)	0,001	S16	0x7FFF	0x7FFF	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000
45102	B02E	1	PF(L1) IEEE (§)	0,001	S16	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000
45103	B02F	1	PF(L2) IEEE (§)	0,001	S16	0x7FFF	0x7FFF	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000
45104	B030	1	PF(L3) IEEE (§)	0,001	S16	0x7FFF	0x7FFF	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000	-1000...+1000

(*) in 3ple_1P_80A and 3ple_1P_CT, L1 means Meter 1, L2 means Meter2 and L3 means Meter3

(§) In case no power is flowing (Ln or ΣL), Power Factor is = +1000.

7. Energies and Partial Energies (kWh, ΣT)**Size 24 for Models: ECR380D, ECA380D and ECR140D****Size 12 for all other Models****Starting Address: 0xB060 - Applicable Functions: Read_Holding_Registers (0x03)**IN 3P_CT ENERGY METERS, ENERGIES ARE REFERRED TO **PRIMARY** SIDE OF EXTERNAL CTS

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	1P_40	1P_80	3P_80	3P_125	3P_CT	3ple_1P_80A	3ple_1P_CT
45152	B060	2	Ea+ (ΣT)	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45154	B062	2	Er+ (ΣT)	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45156	B064	2	Ea- (ΣT)	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45158	B066	2	Er- (ΣT)	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45160	B068	2	P_Ea+ (ΣT)	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45162	B06A	2	P_Ea- (ΣT)	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45164	B06C	2	Ea+ (ΣT)	Wh	U32	0...99,999,999	0...4,294,967,295 Reset after U32 overflow	0...4,294,967,295 Reset after U32 overflow	0...4,294,967,295 Reset after U32 overflow	0...4,294,967,295 Reset after U32 overflow	Not Available (§)	Not Available (§)
45166	B06E	2	Ea- (ΣT)	Wh	U32	0...99,999,999	0...4,294,967,295 Reset after U32 overflow	0...4,294,967,295 Reset after U32 overflow	0...4,294,967,295 Reset after U32 overflow	0...4,294,967,295 Reset after U32 overflow	Not Available (§)	Not Available (§)
45168	B070	2	Ea+ (ΣT) – ARN (*)	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...99,999,999	Not Available (§)	Not Available (§)
45170	B072	2	Ea- (ΣT) – ARN (*)	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...99,999,999	Not Available (§)	Not Available (§)
45172	B074	2	Ea+ (ΣT) – ARN (*)	Wh	U32	0xFFFFFFFF	0xFFFFFFFF	0...4,294,967,295 Reset after U32 overflow	0...4,294,967,295 Reset after U32 overflow	0...4,294,967,295 Reset after U32 overflow	Not Available (§)	Not Available (§)
45174	B076	2	Ea- (ΣT) – ARN (*)	Wh	U32	0xFFFFFFFF	0xFFFFFFFF	0...4,294,967,295 Reset after U32 overflow	0...4,294,967,295 Reset after U32 overflow	0...4,294,967,295 Reset after U32 overflow	Not Available (§)	Not Available (§)

(*) alternative Active Energies calculation method, according to AR-N-4400 standard (in case the power is flowing in one direction in one or more phases, and in the opposite direction in the remaining phase(s), the accumulation is calculated using the “net” 3phase power, hence only Ea+ or Ea- is increased, not both)

(§) these values are available with firmware revision >= 1.2. Trying to read them from devices with firmware revision <1.2 will generate an exception answer (not existing word). Currently, only 3P_80 and 1p_40 families have a firmware revision 1.2 available.

8. 3ple 1P 80 and 3ple 1P CT Energies and Partial Energies (kWh, ΣT)

Size 24 – Starting Address: 0xB080 - Applicable Functions: Read_Holding_Registers (0x03)

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	1P_40	1P_80	3P_80	3P_125	3P_CT	3ple_1P_80A	3ple_1P_CT
45184	B080	2	Ea+ (M1)(ΣT)	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45186	B082	2	Ea+ (M2)(ΣT)	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45188	B084	2	Ea+ (M3)(ΣT)	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45190	B086	2	Ea- (M1)(ΣT)	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45192	B088	2	Ea- (M2)(ΣT)	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45194	B08A	2	Ea- (M3)(ΣT)	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45196	B08C	2	P_Ea+ (M1)(ΣT)	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45198	B08E	2	P_Ea+ (M2)(ΣT)	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45200	B090	2	P_Ea+ (M3)(ΣT)	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45202	B092	2	P_Ea- (M1)(ΣT)	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45204	B094	2	P_Ea- (M2)(ΣT)	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45206	B096	2	P_Ea- (M3)(ΣT)	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999

9. Tariff Control

Size 5 – Starting Address: 0xB0B0 - Applicable Functions: Read_Holding_Registers (0x03) and Preset_Single_Register (0x06) at address 0xB0B4

Dec Addr.	Hex Addr.	Len	Description	Data Type	All Models
45232	B0B0	1	Number of available Tariffs = 8 (or 4)	U16	Always = 8 (4 in 3ple_1P_80A and 3ple_1P_CT)
45233	B0B1	1	Active Tariff on the product, regarding the Tariff Mode and physical input OR Modbus Tariff	U16	1...8 (1...4 in 3ple_1P_80A and 3ple_1P_CT)
45234	B0B2	1	Physical Input Driven Tariff	U16	1...2 (0xFFFF in 1P_40 and 1P_80 Agardio, because they have no physical tariff digital input)
45235	B0B3	1	Tariff Mode: 0 or 1 (read only, can only be changed through HMI)	U16	0: tariff is HW driven (active tariff=Physical tariff) 1: tariff is Modbus driven (tariff by writing Set Tariff) (the tariff mode is defined by means of keyboard and display, except 1P_40 40 because it has no physical tariff digital input, hence Tariff_mode is always = 1)
45236	B0B4	1	Set Tariff (writable) (always read as 0)	U16	1...8 (1...4 in 3ple_1P_80A and 3ple_1P_CT) writable (always read as 0)

10. Energies per Tariff (kWh)

Size 64 – Starting Address: 0xB0C0 - Applicable Functions: Read_Holding_Registers (0x03)
 IN 3P_CT ENERGY METERS, ENERGIES ARE REFERRED TO **PRIMARY** SIDE OF EXTERNAL CTS

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	1P_40	1P_80	3P_80	3P_125	3P_CT	3ple_1P_80A	3ple_1P_CT
45248	B0C0	2	Ea+ [T1]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45250	B0C2	2	Ea+ [T2]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45252	B0C4	2	Ea+ [T3]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45254	B0C6	2	Ea+ [T4]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45256	B0C8	2	Ea+ [T5]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45258	B0CA	2	Ea+ [T6]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45260	B0CC	2	Ea+ [T7]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45262	B0CE	2	Ea+ [T8]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45264	B0D0	2	Ea- [T1]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45266	B0D2	2	Ea- [T2]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45268	B0D4	2	Ea- [T3]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45270	B0D6	2	Ea- [T4]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45272	B0D8	2	Ea- [T5]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45274	B0DA	2	Ea- [T6]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45276	B0DC	2	Ea- [T7]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45278	B0DE	2	Ea- [T8]	kWh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45280	B0E0	2	Er+ [T1]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45282	B0E2	2	Er+ [T2]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45284	B0E4	2	Er+ [T3]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45286	B0E6	2	Er+ [T4]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45288	B0E8	2	Er+ [T5]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45290	B0EA	2	Er+ [T6]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45292	B0EC	2	Er+ [T7]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45294	B0EE	2	Er+ [T8]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45296	B0F0	2	Er- [T1]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45298	B0F2	2	Er- [T2]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45300	B0F4	2	Er- [T3]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45302	B0F6	2	Er- [T4]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45304	B0F8	2	Er- [T5]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45306	B0FA	2	Er- [T6]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45308	B0FC	2	Er- [T7]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45310	B0FE	2	Er- [T8]	kvarh	U32	0...99,999	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF

11. Partial Active Energies per Tariff (kWh)**Size 32 – Starting Address: 0xB140 - Applicable Functions: Read_Holding_Registers (0x03)**IN 3P_CT ENERGY METERS, ENERGIES ARE REFERRED TO **PRIMARY** SIDE OF EXTERNAL CTS

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	1P_40	1P_80	3P_80	3P_125	3P_CT	3ple_1P_80A	3ple_1P_CT
45376	B140	2	P_Ea+ [T1]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45378	B142	2	P_Ea+ [T2]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45380	B144	2	P_Ea+ [T3]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45382	B146	2	P_Ea+ [T4]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45384	B148	2	P_Ea+ [T5]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45386	B14A	2	P_Ea+ [T6]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45388	B14C	2	P_Ea+ [T7]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45390	B14E	2	P_Ea+ [T8]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45392	B150	2	P_Ea- [T1]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45394	B152	2	P_Ea- [T2]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45396	B154	2	P_Ea- [T3]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45398	B156	2	P_Ea- [T4]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45400	B158	2	P_Ea- [T5]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45402	B15A	2	P_Ea- [T6]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45404	B15C	2	P_Ea- [T7]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45406	B15E	2	P_Ea- [T8]	kWh	U32	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF

12. Energies per Phase (kWh)**Size 24 – Starting Address: 0xB180 - Applicable Functions: Read_Holding_Registers (0x03)**IN 3P_CT ENERGY METERS, ENERGIES ARE REFERRED TO **PRIMARY** SIDE OF EXTERNAL CTS

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	1P_40	1P_80	3P_80	3P_125	3P_CT	3ple_1P_80A	3ple_1P_CT
45440	B180	2	Ea+[L1]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45442	B182	2	Ea+[L2]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45444	B184	2	Ea+[L3]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45446	B186	2	Ea-[L1]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45448	B188	2	Ea-[L2]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45450	B18A	2	Ea-[L3]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45452	B18C	2	Er+[L1]	kvarh	U32	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45454	B18E	2	Er+[L2]	kvarh	U32	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45456	B190	2	Er+[L3]	kvarh	U32	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45458	B192	2	Er-[L1]	kvarh	U32	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45460	B194	2	Er-[L2]	kvarh	U32	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF
45462	B196	2	Er-[L3]	kvarh	U32	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...9,999,999	0...99,999,999	0xFFFFFFFF	0xFFFFFFFF

13. 3ple 1P 80A and 3ple 1P CT Meter Energies per Tariff (kWh)

Size 48 – Starting Address: 0xB1B0 - Applicable Functions: Read_Holding_Registers (0x03)

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	1P_40	1P_80	3P_80	3P_125	3P_CT	3ple 1P_80	3ple 1P_CT
45488	B1B0	2	Ea+ [M1] [T1]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45490	B1B2	2	Ea+ [M1] [T2]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45492	B1B4	2	Ea+ [M1] [T3]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45494	B1B6	2	Ea+ [M1] [T4]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45496	B1B8	2	Ea- [M1] [T1]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45498	B1BA	2	Ea- [M1] [T2]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45500	B1BC	2	Ea- [M1] [T3]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45502	B1BE	2	Ea- [M1] [T4]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45504	B1C0	2	Ea+ [M2] [T1]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45506	B1C2	2	Ea+ [M2] [T2]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45508	B1C4	2	Ea+ [M2] [T3]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45510	B1C6	2	Ea+ [M2] [T4]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45512	B1C8	2	Ea- [M2] [T1]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45514	B1CA	2	Ea- [M2] [T2]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45516	B1CC	2	Ea- [M2] [T3]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45518	B1CE	2	Ea- [M2] [T4]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45520	B1D0	2	Ea+ [M3] [T1]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45522	B1D2	2	Ea+ [M3] [T2]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45524	B1D4	2	Ea+ [M3] [T3]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45526	B1D6	2	Ea+ [M3] [T4]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45528	B1D8	2	Ea- [M3] [T1]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45530	B1DA	2	Ea- [M3] [T2]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45532	B1DC	2	Ea- [M3] [T3]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45534	B1DE	2	Ea- [M3] [T4]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999

14. 3ple 1P 80A and 3ple 1P CT Meter Partial Energies per Tariff (kWh)

Size 48 – Starting Address: 0xB210 - Applicable Functions: Read_Holding_Registers (0x03)

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	1P_40	1P_80	3P_80	3P_125	3P_CT	3ple 1P_80	3ple 1P_CT
45584	B210	2	P_Ea+ [M1] [T1]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45586	B212	2	P_Ea+ [M1] [T2]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45588	B214	2	P_Ea+ [M1] [T3]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45590	B216	2	P_Ea+ [M1] [T4]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45592	B218	2	P_Ea- [M1] [T1]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45594	B21A	2	P_Ea- [M1] [T2]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45596	B21C	2	P_Ea- [M1] [T3]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45598	B21E	2	P_Ea- [M1] [T4]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45600	B220	2	P_Ea+ [M2] [T1]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45602	B222	2	P_Ea+ [M2] [T2]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45604	B224	2	P_Ea+ [M2] [T3]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45606	B226	2	P_Ea+ [M2] [T4]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45608	B228	2	P_Ea- [M2] [T1]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45610	B22A	2	P_Ea- [M2] [T2]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45612	B22C	2	P_Ea- [M2] [T3]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45614	B22E	2	P_Ea- [M2] [T4]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45616	B230	2	P_Ea+ [M3] [T1]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45618	B232	2	P_Ea+ [M3] [T2]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45620	B234	2	P_Ea+ [M3] [T3]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45622	B236	2	P_Ea+ [M3] [T4]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45624	B238	2	P_Ea- [M3] [T1]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45626	B23A	2	P_Ea- [M3] [T2]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45628	B23C	2	P_Ea- [M3] [T3]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999
45630	B23E	2	P_Ea- [M3] [T4]	kWh	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...9,999,999	0...99,999,999

15. Instantaneous Measures at Secondary Side**Size 31 – Starting Address: 0xB270 - Applicable Functions: Read_Holding_Registers (0x03)**ONLY FOR 3P_CT AND 3ple_1P_CT ENERGY METERS. CURRENTS AND POWERS ARE REFERRED TO **SECONDARY** SIDE OF EXTERNAL CTS

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	1P_40	1P_80	3P_80	3P_125	3P_CT	3ple 1P_80	3ple_1P_CT
45680	B270	1	V(L1-N)	V/100	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	9200...27600	0xFFFF	9200...27600
45681	B271	1	V(L2-N)	V/100	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	9200...27600	0xFFFF	9200...27600
45682	B272	1	V(L3-N)	V/100	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	9200...27600	0xFFFF	9200...27600
45683	B273	1	V(L1-L2)	V/100	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	16000...48000	0xFFFF	0xFFFF
45684	B274	1	V(L2-L3)	V/100	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	16000...48000	0xFFFF	0xFFFF
45685	B275	1	V(L3-L1)	V/100	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	16000...48000	0xFFFF	0xFFFF
45686	B276	1	F	Hz/100	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	4500...6500	0xFFFF	4500...6500
45687	B277	1	I(L1)	mA	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	0...6000	0xFFFF	0...6000
45688	B278	1	I(L2)	mA	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	0...6000	0xFFFF	0...6000
45689	B279	1	I(L3)	mA	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	0...6000	0xFFFF	0...6000
45690	B27A	1	I(Neutral)	mA	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	0...6000	0xFFFF	0xFFFF
45691	B27B	1	P(Σ L)	\pm W	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-4968...+4968	0x7FFF	0x7FFF
45692	B27C	1	Q(Σ L)	\pm var	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-4968...+4968	0x7FFF	0x7FFF
45693	B27D	1	S(Σ L)	VA	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	0...4968	0xFFFF	0xFFFF
45694	B27E	1	PF(Σ L) IEC (§)	0,001	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-1000...+1000	0x7FFF	0x7FFF
45695	B27F	1	PF(Σ L) IEEE (§)	0,001	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-1000...+1000	0x7FFF	0x7FFF
45696	B280	1	P(L1)	\pm W	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-1656...+1656	0x7FFF	-1656...+1656
45697	B281	1	P(L2)	\pm W	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-1656...+1656	0x7FFF	-1656...+1656
45698	B282	1	P(L3)	\pm W	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-1656...+1656	0x7FFF	-1656...+1656
45699	B283	1	Q(L1)	\pm var	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-1656...+1656	0x7FFF	-1656...+1656
45700	B284	1	Q(L2)	\pm var	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-1656...+1656	0x7FFF	-1656...+1656
45701	B285	1	Q(L3)	\pm var	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-1656...+1656	0x7FFF	-1656...+1656
45702	B286	1	S(L1)	VA	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	0...1656	0xFFFF	0...1656
45703	B287	1	S(L2)	VA	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	0...1656	0xFFFF	0...1656
45704	B288	1	S(L3)	VA	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	0...1656	0xFFFF	0...1656
45705	B289	1	PF(L1) IEC (§)	0,001	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-1000...+1000	0x7FFF	-1000...+1000
45706	B28A	1	PF(L2) IEC (§)	0,001	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-1000...+1000	0x7FFF	-1000...+1000
45707	B28B	1	PF(L3) IEC (§)	0,001	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-1000...+1000	0x7FFF	-1000...+1000
45708	B28C	1	PF(L1) IEEE (§)	0,001	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-1000...+1000	0x7FFF	-1000...+1000
45709	B28D	1	PF(L2) IEEE (§)	0,001	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-1000...+1000	0x7FFF	-1000...+1000
45710	B28E	1	PF(L3) IEEE (§)	0,001	S16	0x7FFF	0x7FFF	0x7FFF	0x7FFF	-1000...+1000	0x7FFF	-1000...+1000

 (§) In case no power is flowing (Ln or Σ L), Power Factor is = +1000.

16. 3P CT Energies and Partial Energies at Secondary Side (kWh/100, ΣT)**Size 12 – Starting Address: 0xB2B0 - Applicable Functions: Read_Holding_Registers (0x03)**ONLY FOR 3P_CT ENERGY METERS. ENERGIES ARE REFERRED TO **SECONDARY** SIDE OF EXTERNAL CTS

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	1P_40	1P_80	3P_80	3P_125	3P_CT	3ple 1P_80	3ple_1P_CT
45744	B2B0	2	Ea+ (ΣT)	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45746	B2B2	2	Er+ (ΣT)	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45748	B2B4	2	Ea- (ΣT)	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45750	B2B6	2	Er- (ΣT)	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45752	B2B8	2	P_Ea+ (ΣT)	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45754	B2BA	2	P_Ea- (ΣT)	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF

Note: in a CT connected Energy Meter, the maximum Energy on the display is 99,999,999.9 referred to Primary side of external CT. Since the maximum CT ratio is 1200 (6000/5A or 1200/1A) the limit at secondary side is $99,999,999.9/1200 = 83,333.33$

17. 3P CT Energies per Tariff at Secondary Side (kWh/100)**Size 64 – Starting Address: 0xB2D0 - Applicable Functions: Read_Holding_Registers (0x03)**ONLY FOR 3P_CT ENERGY METERS. ENERGIES ARE REFERRED TO **SECONDARY** SIDE OF EXTERNAL CTS

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	1P_40	1P_80	3P_80	3P_125	3P_CT	3ple 1P_80	3ple_1P_CT
45776	B2D0	2	Ea+ [T1]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45778	B2D2	2	Ea+ [T2]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45780	B2D4	2	Ea+ [T3]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45782	B2D6	2	Ea+ [T4]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45784	B2D8	2	Ea+ [T5]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45786	B2DA	2	Ea+ [T6]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45788	B2DC	2	Ea+ [T7]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45790	B2DE	2	Ea+ [T8]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45792	B2E0	2	Ea- [T1]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45794	B2E2	2	Ea- [T2]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45796	B2E4	2	Ea- [T3]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45798	B2E6	2	Ea- [T4]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45800	B2E8	2	Ea- [T5]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45802	B2EA	2	Ea- [T6]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45804	B2EC	2	Ea- [T7]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45806	B2EE	2	Ea- [T8]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45808	B2F0	2	Er+ [T1]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45810	B2F2	2	Er+ [T2]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45812	B2F4	2	Er+ [T3]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45814	B2F6	2	Er+ [T4]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45816	B2F8	2	Er+ [T5]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45818	B2FA	2	Er+ [T6]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45820	B2FC	2	Er+ [T7]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45822	B2FE	2	Er+ [T8]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45824	B300	2	Er- [T1]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45826	B302	2	Er- [T2]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45828	B304	2	Er- [T3]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45830	B306	2	Er- [T4]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45832	B308	2	Er- [T5]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45834	B30A	2	Er- [T6]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45836	B30C	2	Er- [T7]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45838	B30E	2	Er- [T8]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF

18. 3P CT Partial Active Energies per Tariff at Secondary Side (kWh/100)**Size 32 – Starting Address: 0xB350 - Applicable Functions: Read_Holding_Registers (0x03)**ONLY FOR 3P_CT ENERGY METERS. ENERGIES ARE REFERRED TO **SECONDARY** SIDE OF EXTERNAL CTS

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	1P_40	1P_80	3P_80	3P_125	3P_CT	3ple 1P_80	3ple 1P_CT
45904	B350	2	P_Ea+ [T1]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45906	B352	2	P_Ea+ [T2]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45908	B354	2	P_Ea+ [T3]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45910	B356	2	P_Ea+ [T4]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45912	B358	2	P_Ea+ [T5]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45914	B35A	2	P_Ea+ [T6]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45916	B35C	2	P_Ea+ [T7]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45918	B35E	2	P_Ea+ [T8]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45920	B360	2	P_Ea- [T1]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45922	B362	2	P_Ea- [T2]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45924	B364	2	P_Ea- [T3]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45926	B366	2	P_Ea- [T4]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45928	B368	2	P_Ea- [T5]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45930	B36A	2	P_Ea- [T6]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45932	B36C	2	P_Ea- [T7]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45934	B36E	2	P_Ea- [T8]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF

19. 3P CT Energies per Phase at Secondary Side (kWh/100)**Size 24 – Starting Address: 0xB390 - Applicable Functions: Read_Holding_Registers (0x03)**ENERGIES ARE REFERRED TO **SECONDARY** SIDE OF EXTERNAL CTS

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	1P_40	1P_80	3P_80	3P_125	3P_CT	3ple 1P_80	3ple 1P_CT
45968	B390	2	Ea+[L1]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45970	B392	2	Ea+[L2]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45972	B394	2	Ea+[L3]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45974	B396	2	Ea-[L1]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45976	B398	2	Ea-[L2]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45978	B39A	2	Ea-[L3]	kWh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45980	B39C	2	Er+[L1]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45982	B39E	2	Er+[L2]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45984	B3A0	2	Er+[L3]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45986	B3A2	2	Er-[L1]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45988	B3A4	2	Er-[L2]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF
45990	B3A6	2	Er-[L3]	kvarh/100	U32	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0xFFFFFFFF	0...8,333,333	0xFFFFFFFF	0xFFFFFFFF

20. Network Setting

Size 4 – Starting Address: 0xC000 - Applicable Functions: Read_Holding_Registers (0x03)

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	1P_40	1P_80	3P_80	3P_125	3P_CT	3ple 1P_80	3ple 1P_CT
49152	C000	1	Network Type	enum	U16	1 : 1BL	1 : 1BL	4 : 4NBL	4 : 4NBL	4 : 4NBL	1 : 1BL	1 : 1BL
49153	C001	1	CT secondary	A	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	1 or 5	0xFFFF	1 or 5
49154	C002	1	CT primary	A	U16	0xFFFF	0xFFFF	0xFFFF	0xFFFF	1...1200 Or 5...6000	0xFFFF	1...1200 Or 5...6000
49155	C003	1	MID Certified	enum	U16	Always 1 =MID	Always 1 =MID	Always 1 =MID	Always 1 =MID	Always 1 =MID	Always 0=no MID	Always 0=no MID

Note: if a 6 module meter is used in 1Ln (to have a 1-phase 125A meter), the value read will always be **4NBL** (internal behaviour is 4NBL)

21. Overflow Events

Size 6 – Starting Address: 0xC010 - Applicable Functions: Read_Holding_Registers (0x03)

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	1P_40	1P_80	3P_80	3P_125	3P_CT
49168	C010	2	Overflow value	kWh/kvarh	U32	100,000	10,000,000	10,000,000	10,000,000	83,333
49170	C012	1	Number of Overflow Events for Ea+		U16	0...255	0...255	0...255	0...255	0...255
49171	C013	1	Number of Overflow Events for Er+		U16	0...255	0...255	0...255	0...255	0...255
49172	C014	1	Number of Overflow Events for Ea-		U16	0...255	0...255	0...255	0...255	0...255
49173	C015	1	Number of Overflow Events for Er-		U16	0...255	0...255	0...255	0...255	0...255

In case of 3ple 1P 80A and 3ple 1P CT Meter, the table has different meanings

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	3ple 1P_80	3ple 1P_CT
49168	C010	2	Overflow value	kWh/kvarh	U32	10,000,000	83,333
49170	C012	1	In the Most Significant byte: In the Least Significant byte:	Number of Overflow Events for Ea+ [Meter1] Number of Overflow Events for Ea- [Meter1]	U16	MS byte 0...255 LS byte 0...255	MS byte 0...255 LS byte 0...255
49171	C013	1	In the Most Significant byte: In the Least Significant byte:	Number of Overflow Events for Ea+ [Meter2] Number of Overflow Events for Ea- [Meter2]	U16	MS byte 0...255 LS byte 0...255	MS byte 0...255 LS byte 0...255
49172	C014	1	In the Most Significant byte: In the Least Significant byte:	Number of Overflow Events for Ea+ [Meter3] Number of Overflow Events for Ea- [Meter3]	U16	MS byte 0...255 LS byte 0...255	MS byte 0...255 LS byte 0...255
49173	C015	1	Not used-		U16	0xFFFF	0xFFFF

22. Reset of Partial Energies – Not applicable in 1P Meter 40A 1M**Size 4 – Starting Address: 0xC020 - Applicable Functions: Read_Holding_Registers (0x03) and Preset_Single_Register (0x06)**

Dec Addr.	Hex Addr.	Len	Description	Data Type	3ple 1P_80 & 3ple 1P_CT	1P Meter 40A 1M	All other Models
49184	C020	1	<p>Writable register, used to reset Partial Energy Register 8 bit fields in the lower byte (only 4 in case of 3ple 1P): Write 1 in one or more bits to reset the Partial Registers of the corresponding tariff:</p> <p>Bit 7→ clear all the Partial Registers of Tariff 8 (*) Bit 6→ clear all the Partial Registers of Tariff 7 (*) Bit 5→ clear all the Partial Registers of Tariff 6 (*) Bit 4→ clear all the Partial Registers of Tariff 5 (*) Bit 3→ clear all the Partial Registers of Tariff 4 Bit 2→ clear all the Partial Registers of Tariff 3 Bit 1→ clear all the Partial Registers of Tariff 2 Bit 0→ clear all the Partial Registers of Tariff 1</p> <p>(*) not used in 3ple 1P_80 and 3ple_1P_CT, that have a maximum of 4 tariffs For example, to reset the Partial Registers of Tariff 1 and 3, write the value 0x0005 = 0000 0000 0000 0101 binary</p>	U16	Writable Always read as 0	Not writable Always read as 0xFFFF	Writable Always read as 0
49185	C021	1	<p>Writable register, used to reset Partial Energy Register in 3ple 1P_80 and 3ple 1P CT 4 bit fields in the lower byte: Write 1 in one or more bits to reset the Partial Registers of the corresponding tariff:</p> <p>Bit 3→ clear all the Partial Registers of Tariff 4 for Meter 1 Bit 2→ clear all the Partial Registers of Tariff 3 for Meter 1 Bit 1→ clear all the Partial Registers of Tariff 2 for Meter 1 Bit 0→ clear all the Partial Registers of Tariff 1 for Meter 1</p>	U16	Writable Always read as 0	Not writable Always read as 0xFFFF	Not writable Always read as 0xFFFF
49186	C022	1	<p>Writable register, used to reset Partial Energy Register in 3ple 1P_80 and 3ple 1P CT 4 bit fields in the lower byte: Write 1 in one or more bits to reset the Partial Registers of the corresponding tariff:</p> <p>Bit 3→ clear all the Partial Registers of Tariff 4 for Meter 2 Bit 2→ clear all the Partial Registers of Tariff 3 for Meter 2 Bit 1→ clear all the Partial Registers of Tariff 2 for Meter 2 Bit 0→ clear all the Partial Registers of Tariff 1 for Meter 2</p>	U16	Writable Always read as 0	Not writable Always read as 0xFFFF	Not writable Always read as 0xFFFF
49187	C023	1	<p>Writable register, used to reset Partial Energy Register in 3ple 1P_80 and 3ple 1P CT 4 bit fields in the lower byte: Write 1 in one or more bits to reset the Partial Registers of the corresponding tariff:</p> <p>Bit 3→ clear all the Partial Registers of Tariff 4 for Meter 3 Bit 2→ clear all the Partial Registers of Tariff 3 for Meter 3 Bit 1→ clear all the Partial Registers of Tariff 2 for Meter 3 Bit 0→ clear all the Partial Registers of Tariff 1 for Meter 3</p>	U16	Writable Always read as 0	Not writable Always read as 0xFFFF	Not writable Always read as 0xFFFF

Note: when the Energies of one or more Tariffs are cleared, also the P_Ea+ (ΣT) and P_Ea- (ΣT) decrease of the same quantity.

23. Debug Info**Size 2 – Starting Address: 0xC030 - Applicable Functions: Read_Holding_Registers (0x03)**

Dec Addr.	Hex Addr.	Len	Description	Data Type	All Models
49200	C030	1	Number of device switch-on since its production	U16	1...999
49201	C031	1	Number of Buttons pushes	U16	1...9999

24. Modbus Configuration**Size 2 – Starting Address: 0xC040 - Applicable Functions: Read_Holding_Registers (0x03) and Preset_Single_Register (0x06)**

Dec Addr.	Hex Addr.	Len	Description	Unit	Data Type	All Models
49216	C040	1	Modbus Address (writable)		U16	1...247
49217	C041	1	Modbus Baud Rate, Modbus Parity & Stop Bits (writable) MSbyte = Baud Rate Lsbyte = Parity 0x00 : 1200 0x00 = No Parity, 1 Stop Bit 0x01 : 2400 0x01 = No Parity, 2 Stop Bits 0x02 : 4800 0x02 = Odd Parity, 1 Stop Bit 0x03 : 9600 0x03 = Odd Parity, 2 Stop Bits 0x04 : 19200 0x04 = Even Parity, 1 Stop Bit 0x05 : 38400 0x05 = Even Parity, 2 Stop Bits Examples: 0x0401 ↔ 19200 baud, No Parity, 2 Stop Bits 0x0004 ↔ 1200 baud, Even Parity, 1 Stop Bit	enum	U16	High byte 0...5 Low Byte 0...5

25. Device Identification (through Read Device Identification function)

Applicable Functions: Read_Device_Identification (0x2B/0x0E)

Object ID	Category	Description	Data Type	1P_40	1P_80 Modbus	1P_80 Agardio	3P_80 Modbus	3P_80 Agardio	3P_125 Modbus	3P_125 Agardio	3P_CT Modbus	3P_CT Agardio	3ple 1P_80 Modbus	3ple 1P_80 Agardio	3ple 1P_CT Modbus	3ple 1P_CT Agardio
0x00	Basic	Vendor Name	ASCII	"Hager"												
0x01	Basic	Product Code In case of Swiss Mkt	ASCII	"ECR140D"	"ECR180D"	"ECA180D"	"ECR380D" "ECR381D"	"ECA380D" "ECA381D"	"ECR310D" "ECR311D"	"ECA310D" "ECR311D"	"ECR300C" "ECR301C"	"ECA300C" "ECA301C"	"ECR180T"	"ECA180T"	"ECR300T"	"ECA300T"
0x02	Basic	Product Version	ASCII	"2.1.0" (example)												
0x03	Regular	Vendor URL	ASCII	"http://www.hager.com"												
0x04	Regular	Product Name	ASCII	"1P Meter 40A 1M"	"1P Meter 80A 2M"	"1P Meter 80A 2M"	"3P Meter 80A 4M"	"3P Meter 80A 4M"	"3P Meter 125A 6M"	"3P Meter 125A 6M"	"3P Meter /5A 4M"	"3P Meter /5A 4M"	"1PMeter 3x80A 4M"	"1PMeter 3x80A 4M"	"1PMeter 3xCT 4M"	"1PMeter 3xCT 4M"
0x05	Regular	Model Name	ASCII	"MODBUS Screw MID"	"MODBUS Screw MID"	"AGARDIO RJ45 MID"	"MODBUS Screw MID"	"AGARDIO RJ45 MID"	"MODBUS Screw MID"	"AGARDIO RJ45 MID"	"MODBUS Screw MID"	"AGARDIO RJ45 MID"	"MODBUS Screw"	"AGARDIO RJ45"	"MODBUS Screw"	"AGARDIO RJ45"
0x06	Regular	User Application Name	ASCII	"APL"												
0x80	Extended	Serial	ASCII	"0218230020" (example)												
0x81	Extended	Production Date	ASCII	"ddd/YYYY" (example = "143/2018")												
0x82	Extended	Hardware Version	ASCII	"1.4.0" (example)												

26. User Blocks

Applicable Functions: User-Defined Functions (0x43/0x01, 0x43/0x02, 0x43/0x03)

Refer to "agardio.manager Slave Modbus Specification" Hager Group

Available Blocks: 1
Maximum Words per Block: 64