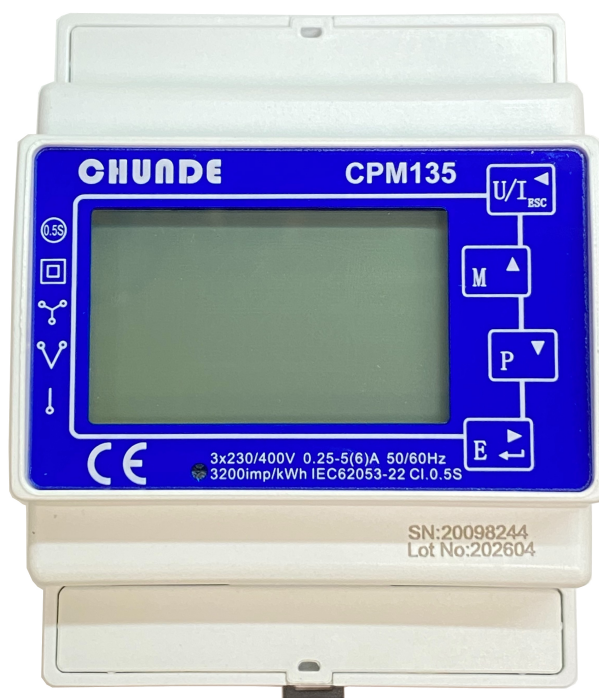


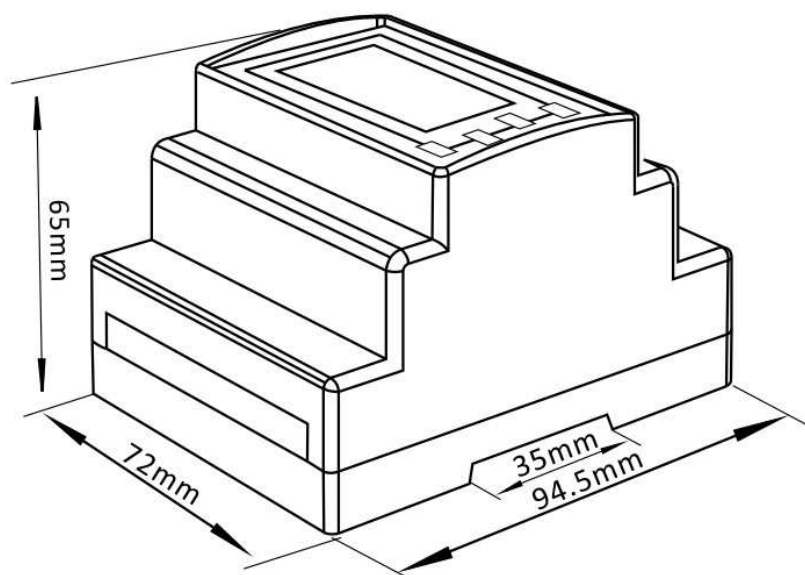
CHUNDE

CPM-135 鋁軌型多功能電力儀錶

用戶使用手冊 Rev1.6

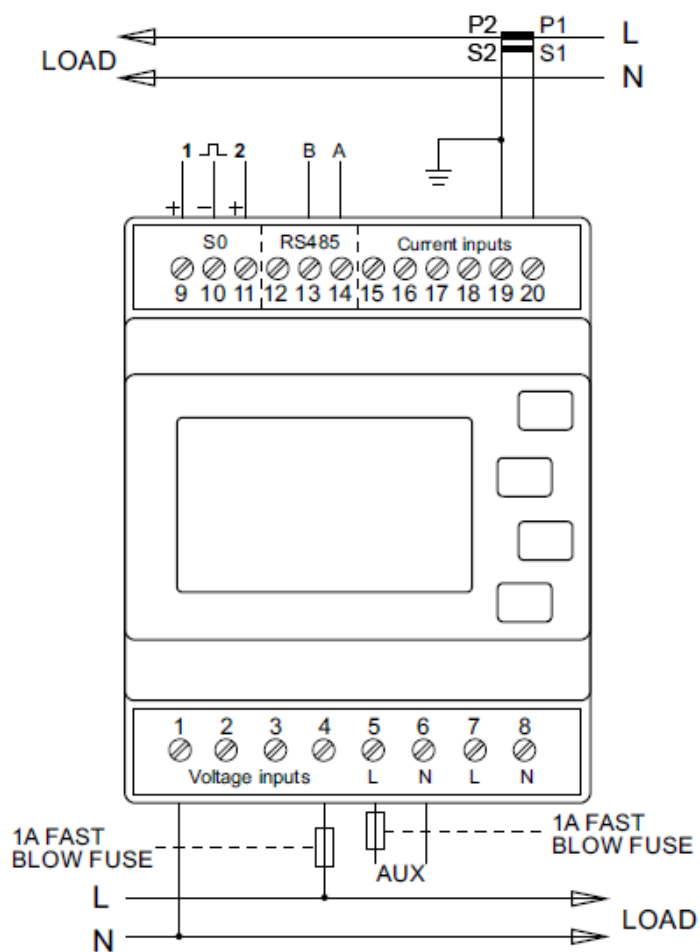


尺寸

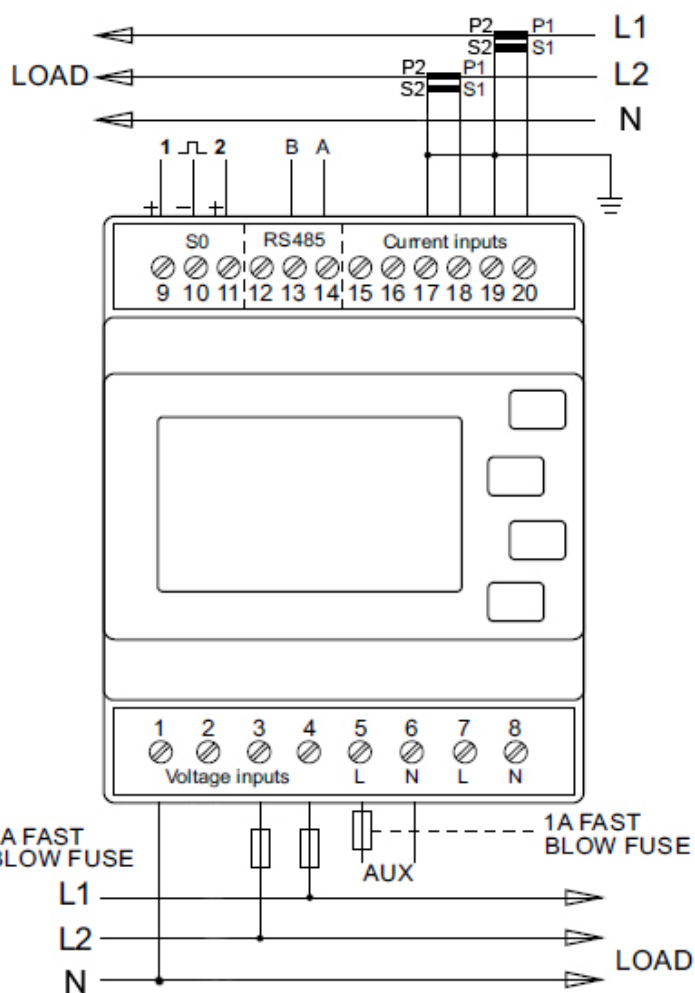


接線圖

單相二線1p2

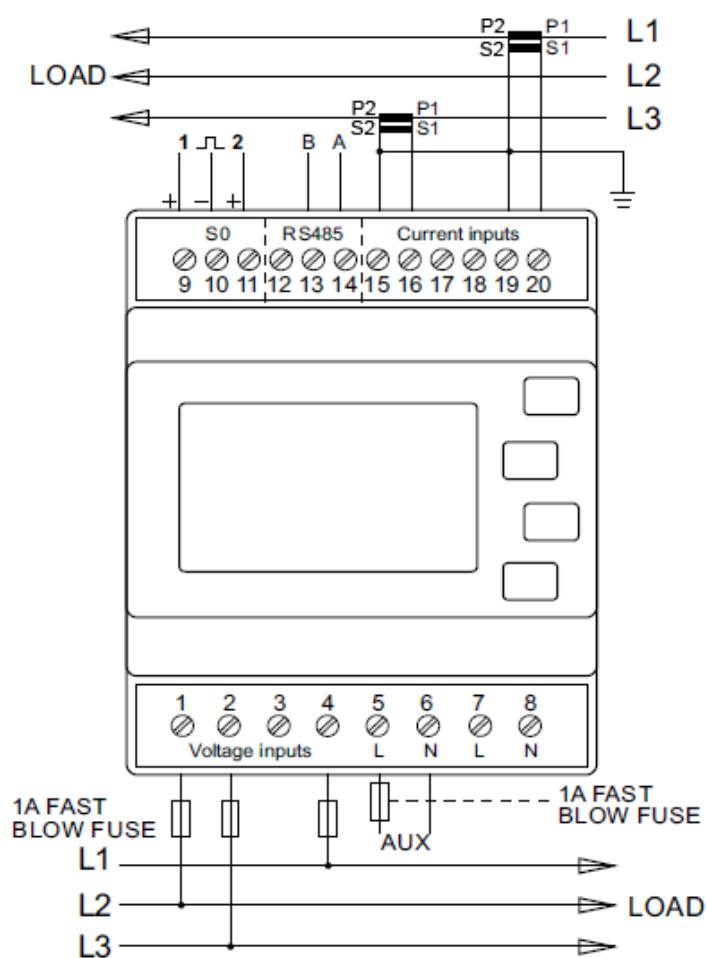


單相三線1p3

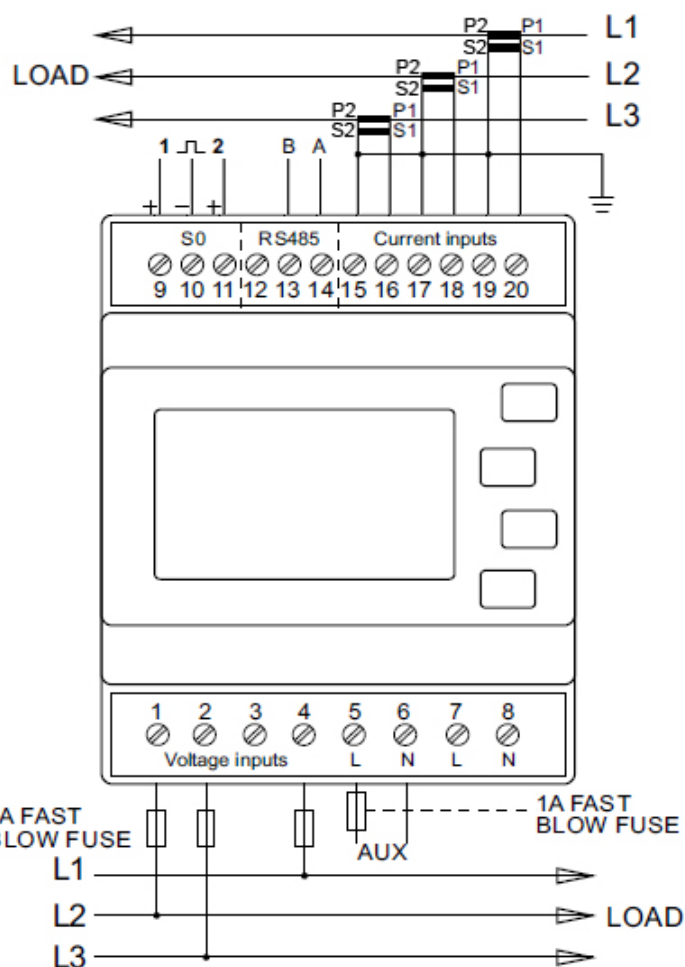


接線圖

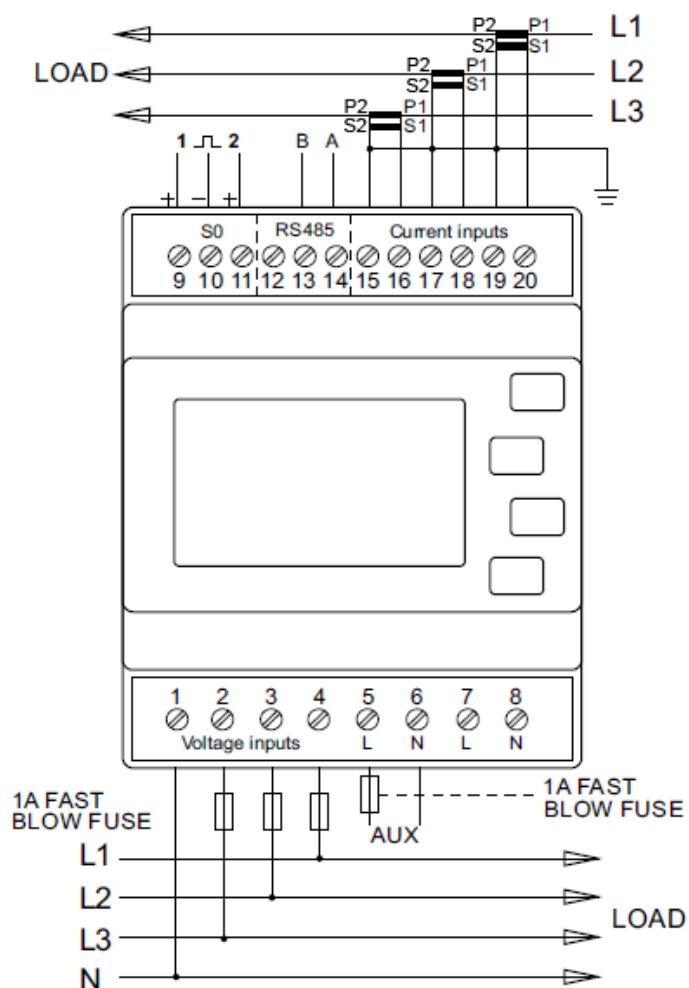
三相三線 3p3 2ct



三相三線 3p3 3ct



三相四線 3p4



介紹

本手冊提供操作、維護和安裝說明。單元測量並顯示單相兩線 (1p2w)、單相兩線 (1p3w) 三相三線 (3p3w) 和三相四線 (3p4w) 的特性，包括進出的電壓、頻率、電流、有功、無功、功率因數。

最大需求電流可在最多 60 分鐘的預設期間進行測量。為了測量能量，除了為產品供電所需的電源外，裝置還需要電壓和電流輸入。

此儀表可配置為配合多種CT使用，為單元提供廣泛的操作範圍。

內建介面提供脈衝和 RS485模組匯流排 RTU 輸出。

配置受密碼保護。

本裝置可由獨立輔助 (AC 或 DC) 電源供電。此外，您也可以在此適當的情況下從監控電源供電。

產品特點

▲可測量並顯示的參數：

- 所有相位電壓和電壓總諧波失真
- 頻率
- 電流, 電流需量和各相電流總諧失真
- 功率、最大功率需量與功率因數
- 進出口有功電量
- 進出口無功電量

▲可設置的參數：

- 變更密碼
- 供應系統選擇 1p2w、1p3w、3p3w、3p4w
- 需求間隔時間
- 重設需求測量
- 脈衝輸出持續時間

兩個脈衝輸出表示實際能量測。RS485 輸出允許從另一台顯示器或電腦進行遠端監控。

電流輸入訊號

本機可配置一次電流和二次電流之間以 CT 比操作。二次 CT 有兩個選項：1A/5A

RS485 RTU 輸出

本機具有 Modbus RTU 通訊協定的 RS485 序列埠，提供遠端監控和控制單元的方法設定螢幕可用來設定 RS485 連接埠。

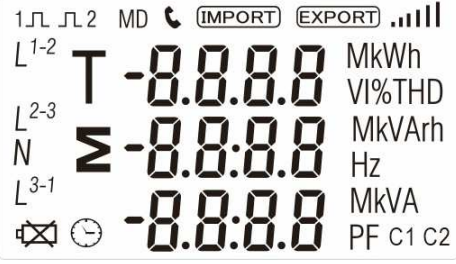
脈衝輸出

本機提供兩個脈衝輸出，有功、無功能量時脈測量。

有功能量的常數為3200imp/kWh (端子11 和 12)。

脈衝 1 (端子 9&10) 的脈衝寬度可以從選單中設定。

啟動畫面

1		第一個螢幕會亮起所有顯示區段，並可用作顯示檢查。
2		第二個畫面顯示裝置中安裝的韌體及其組建編號。
3		接口執行自我測試，並指示如果測試通過的結果。

測量

按鈕的操作方式如下：

1		選擇電壓和電流顯示畫面 在設定模式中，這是“左”或“返回”按鈕。
2		選擇頻率和功率因數顯示畫面 在設定模式中，這是“向上”按鈕
3		選擇電源顯示畫面 在設定模式中，這是“向下”按鈕
4		選擇能源顯示畫面 在設定模式下，這是“返回”或“右鍵”按鈕

電壓/電流

每次連續按壓



按鈕切換顯示：

1-1		各相電壓 (3p4w、1p3w、1p2w)
1-2		各線電壓
2		各相電流
2-1		N相電流 (3p4w、1p3w、1p2w)
3-2		各相電壓總諧波畸變率 (3p4w、1p3w、1p2w)
4		各相電流總諧波畸變率

頻率/功因/需量

每次連續按壓 **M**  按鈕切換顯示：

1		頻率和功率因數 (總計)
2		各相功率因數 (3p4w、1p3w、1p2w)
3		最大電流需量
4		最大功率需量

功率

每次連續按壓

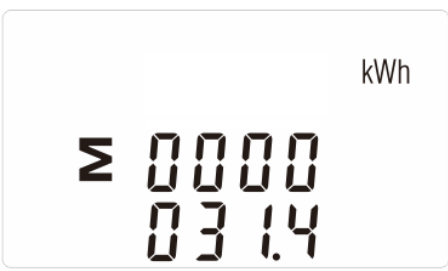
P ▼

按鈕切換顯示：

1		各相有功功率 (3p4w、1p3w、1p2w)
2		各相無功功率 (3p4w、1p3w、1p2w)
3		各相視在功率 (3p4w、1p3w、1p2w)
4		系統有功功率 系統無功功率 系統視在功率

能量

每次連續按壓  按鈕選擇一個新的範圍：

1-1		總有功電度kWh (累計量無歸零功能)
1-2		T1~T4各有功電度kWh (T1~T4是使用4段時間來計量 相關設定請參考通訊手冊設置)
2-1		總無功電度kVarh (累計量無歸零功能)
2-2		T1~T4無功電度kVarh (T1~T4是使用4段時間來計量 相關設定請參考通訊手冊設置)
3-1		日期
3-2		時間

參數設定

在測量資料顯示方式下，長按E鍵將進入系統參數設定模式。

在設定模式下

“E” 鍵短按用於移動遊標，每按一次，遊標右移一位，同時遊標所在的數位會閃動顯示。

“E” 鍵長按用於對本屏參數設定內容的確認。

“M” 鍵為加 1 鍵，即每按一次 “P” 鍵遊標所在的位執行一次加 1 操作，滿十歸零。

“P” 鍵為減 1 鍵，即每按一次 “E” 鍵遊標所在的位執行一次減 1 操作，減零返九。

“V/I” 返回上一層顯示。



保護密碼詢問頁如左圖：

進入設定模式的初始畫面為保護密碼詢問頁。“保護密碼”是按鍵設定功能的密鑰，即只有鍵入正確的密碼才能進行各種參數的設定工作。

出廠默認為**"1000"**。每次進入設定模式，保護密碼詢問頁都顯示“0000”

，用戶鍵入密碼1000然後按“E”鍵確認，則進入第一屏設定頁，否則返回到測量顯示方式。

通訊設定

	通訊位址設定 可設為1~247內任一整數。
	通訊串列傳輸速率設定 可設為2.4k、4.8k、9.6k、19.2k、38.4k。
	檢查位元設定 可設為none、EvEn、odd
	結束位元設定 可設為1、2

CT和 PT 設定

	二次側CT設定 可設為1A、5A
	一次側CT設定 可設為1~9999A
	二次側PT設定 可設為1~9999V
	一次側PT設定 可設為1~9999V

設定

	脈衝輸出單位設定 可設為kwh、imp kwh、Exp kvrah、kvarh
	脈衝輸出速率設定 可設為0.001、0.01、0.1、1、10、100、1000 如左圖示設定為1脈衝=10kwh



脈衝輸出持續時間設定
可設為200、100、60毫秒

需量周期設定



需量時間周期設定
(整合電流和功率讀數以達到最大需求量測的時間)
可設為0、5、8、10、15、20、30、60分鐘

螢幕背光設定



藍色背光時間設定
可設為OFF、ON、5、10、30、60、120分鐘

電壓接線方式設定



電壓接線方式設定
可設為1P2、1P3、3P4、3P3

CO2碳排量設定



碳排量係數設定

(0.495經濟部規範)
台灣碳排量計算公式:每年度數(kwh)*0.495/1000
單位:公噸CO2e/年(tCO2e/Year)

系統日期設定

	系統日期設定 常按E鍵可進入設定調整年、月、日
---	----------------------------

系統時間設定

	系統時間設定 常按E鍵可進入設定調整小時、分鐘、秒
---	------------------------------

顯示分時計費設定

	顯示分時計費設定 常按E鍵可進入顯示
	按上下鍵可顯示4費率，8個時間段

清除設定

	重置電流和功率的最大demand值 E鍵長按進入後螢幕顯示MD閃爍後在長按E鍵即清除
---	---

密碼更改

	密碼更改設定 可設為0001~9999
---	--------------------------------

電流方向修正設定

	電流方向修正設定 可設定1a、1b、1c三顆比流器電流方向修正 Frd(向前)、rEY(向後)。
	選擇1a、1b、1c其一
	再選擇Frd(向前)或rEY(向後)

CPM135 protocol V1.1

Input Registers, Function code 04

Address (Register)	Input Register Parameter				Modbus Protocol Start Address Hex		3 Ø	3 Ø	1 Ø	1 Ø
	Description	Length (bytes)	Data Format	Units	Hi Byte	Lo Byte	4 W	3 W	2 W	3 W
各相電壓 (3P4/1P3/1P2)	30001 Phase 1 line to neutral volts.	4	Float	V	00	00	√	X	√	√
	30003 Phase 2 line to neutral volts.	4	Float	V	00	02	√	X	X	√
	30005 Phase 3 line to neutral volts.	4	Float	V	00	04	√	X	X	X
各相電流	30007 Phase 1 current.	4	Float	A	00	06	√	√	√	√
	30009 Phase 2 current.	4	Float	A	00	08	√	√	X	√
	30011 Phase 3 current.	4	Float	A	00	0A	√	√	X	X
各相功率 (3P4/1P3/1P2)	30013 Phase 1 active power.	4	Float	W	00	0C	√	X	√	√
	30015 Phase 2 active power.	4	Float	W	00	0E	√	X	X	√
	30017 Phase 3 active power.	4	Float	W	00	10	√	X	X	X
各相視在功率 (3P4/1P3/1P2)	30019 Phase 1 apparent power.	4	Float	VA	00	12	√	X	√	√
	30021 Phase 2 apparent power.	4	Float	VA	00	14	√	X	X	√
	30023 Phase 3 apparent power.	4	Float	VA	00	16	√	X	X	X
各相無功功率 (3P4/1P3/1P2)	30025 Phase 1 reactive power.	4	Float	VAr	00	18	√	X	√	√
	30027 Phase 2 reactive power.	4	Float	VAr	00	1A	√	X	X	√
	30029 Phase 3 reactive power.	4	Float	VAr	00	1C	√	X	X	X
各相功因 (3P4/1P3/1P2)	30031 Phase 1 power factor (1).	4	Float	None	00	1E	√	X	√	√
	30033 Phase 2 power factor (1).	4	Float	None	00	20	√	X	X	√
	30035 Phase 3 power factor (1).	4	Float	None	00	22	√	X	X	X
相角分析 (3P4/1P3/1P2)	30037 Phase 1 phase angle.	4	Float	Degrees	00	24	√	X	√	√
	30039 Phase 2 phase angle.	4	Float	Degrees	00	26	√	X	X	√
	30041 Phase 3 phase angle.	4	Float	Degrees	00	28	√	X	X	X
平均相電壓(3P4/1P3/1P2)	30043 Average line to neutral volts.	4	Float	V	00	2A	√	X	X	√
平均電流	30047 Average line current.	4	Float	A	00	2E	√	√	√	√
總電流	30049 Sum of line currents.	4	Float	A	00	30	√	√	√	√
系統總和功率	30053 Total system power.	4	Float	W	00	34	√	√	√	√
總和視在功率	30057 Total system volt amps.	4	Float	VA	00	38	√	√	√	√
總和無功功率	30061 Total system VAr.	4	Float	VAr	00	3C	√	√	√	√
總和功因	30063 Total system power factor (1).	4	Float	None	00	3E	√	√	√	√
頻率	30067 Total system phase angle.	4	Float	Degrees	00	42	√	√	√	√
	30071 Frequency of supply voltages.	4	Float	Hz	00	46	√	√	√	√
	30073 Total import active energy .	4	Float	kWh	00	48	√	√	√	√
消耗有功電度	30075 Total export active energy .	4	Float	kWH	00	4A	√	√	√	√
釋放有功電度	30077 Total import reactive energy .	4	Float	kVArh	00	4C	√	√	√	√
電感性無功電度	30079 Total export reactive energy .	4	Float	kVArh	00	4E	√	√	√	√
電容性無功電度	30081 Total apparent energy.	4	Float	kVAh	00	50	√	√	√	√
消耗視在電度	30083 Ah.	4	Float	Ah	00	52	√	√	√	√
	30085 Total system power demand (2) .	4	Float	W	00	54	√	√	√	√

線電壓 平均線電壓 中性電流	30087	Maximum total system power demand (2).	4	Float	W	00	56	√	√	√	√
	30101	Total system VA demand.	4	Float	VA	00	64	√	√	√	√
	30103	Maximum total system VA demand.	4	Float	VA	00	66	√	√	√	√
	30105	Neutral current demand.	4	Float	Amps	00	68	√	X	X	√
	30107	Maximum neutral current demand.	4	Float	Amps	00	6A	√	X	X	√
	30109	Total system reactive power demand. (2)	4	Float	VAr	00	6C	√	X	√	√
	30111	Maximum total system reactive power demand(2)	4	Float	VAr	00	6E	√	X	√	√
	30201	Line 1 to Line 2 volts.	4	Float	V	00	C8	√	√	X	√
	30203	Line 2 to Line 3 volts.	4	Float	V	00	CA	√	√	X	X
	30205	Line 3 to Line 1 volts.	4	Float	V	00	CC	√	√	X	X
	30207	Average line to line volts.	4	Float	V	00	CE	√	√	X	√
	30225	Neutral current.	4	Float	A	00	E0	√	X	X	√
	30235	Phase 1 L/N volts THD	4	Float	%	00	EA	√	X	√	√
	30237	Phase 2 L/N volts THD	4	Float	%	00	EC	√	X	X	√
	30239	Phase 3 L/N volts THD	4	Float	%	00	EE	√	X	X	X
	30241	Phase 1 Current THD	4	Float	%	00	F0	√	√	√	√
	30243	Phase 2 Current THD	4	Float	%	00	F2	√	√	X	√
	30245	Phase 3 Current THD	4	Float	%	00	F4	√	√	X	X
	30249	Average line to neutral volts THD.	4	Float	%	00	F8	√	X	√	√
	30251	Average line current THD.	4	Float	%	00	FA	√	√	√	√
	30255	Total system power factor (1).	4	Float	Degrees	00	FE	√	√	√	√
	30259	Phase 1 current demand.	4	Float	A	01	02	√	√	√	√
	30261	Phase 2 current demand.	4	Float	A	01	04	√	√	X	X
	30263	Phase 3 current demand.	4	Float	A	01	06	√	√	X	√
	30265	Maximum phase 1 current demand.	4	Float	A	01	08	√	√	√	√
	30267	Maximum phase 2 current demand.	4	Float	A	01	0A	√	√	X	X
	30269	Maximum phase 3 current demand.	4	Float	A	01	0C	√	√	X	√
	30335	Line 1 to line 2 volts THD.	4	Float	%	01	4E	√	√	X	X
	30337	Line 2 to line 3 volts THD.	4	Float	%	01	50	√	√	X	X
	30339	Line 3 to line 1 volts THD.	4	Float	%	01	52	√	√	X	X
	30341	Average line to line volts THD.	4	Float	%	01	54	√	√	X	X
	30343	Total active Energy (3)	4	Float	kWh	01	56	√	√	√	√
	30345	Total reactive Energy (3)	4	Float	kVArh	01	58	√	√	√	√
	30347	L1 import active Energy	4	Float	kWh	01	5A	√	X	√	√
	30349	L2 import active Energy	4	Float	kWh	01	5C	√	X	X	√
	30351	L3 import active Energy	4	Float	kWh	01	5E	√	X	X	X
	30353	L1 export active Energy	4	Float	kWh	01	60	√	X	√	√
	30355	L2 export active Energy	4	Float	kWh	01	62	√	X	X	√
	30357	L3 export active Energy	4	Float	kWh	01	64	√	X	X	X
	30359	L1 total active Energy	4	Float	kWh	01	66	√	X	√	√
	30361	L2 total active Energy	4	Float	kWh	01	68	√	X	X	√
	30363	L3 total active Energy	4	Float	kWh	01	6A	√	X	X	X

30365	L1 import reactive energy	4	Float	kVArh	01	6C	√	X	√	√
30367	L2 import reactive energy	4	Float	kVArh	01	6E	√	X	X	√
30369	L3 import reactive energy	4	Float	kVArh	01	70	√	X	X	X
30371	L1 export reactive energy	4	Float	kVArh	01	72	√	X	√	√
30373	L2 export reactive energy	4	Float	kVArh	01	74	√	X	X	√
30375	L3 export reactive energy	4	Float	kVArh	01	76	√	X	X	X
30377	L1 total reactive energy	4	Float	kVArh	01	78	√	X	√	√
30379	L2 total reactive energy	4	Float	kVArh	01	7A	√	X	X	√
30381	L3 total reactive energy	4	Float	kVArh	01	7C	√	X	X	X
30385	Current resettable total active energy	4	Float	kWh	01	80	√	√	√	√
30387	Current resettable total reactive energy	4	Float	kVArh	01	82	√	√	√	√
30389	Current resettable import active energy	4	Float	kWh	01	84	√	√	√	√
30391	Current resettable export active energy	4	Float	kWh	01	86	√	√	√	√
30393	Current resettable import reactive energy	4	Float	kVArh	01	88	√	√	√	√
30395	Current resettable export reactive energy	4	Float	kVArh	01	8A	√	√	√	√
30397	Net kWh (Import - Export)	4	Float	kWh	01	8C	√	√	√	√
30399	Net kVArh (Import - Export)	4	Float	kVArh	01	8E	√	√	√	√
34097	Total Current month active Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	10	00	√	√	√	√
34107	Total Last 1 month active Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	10	0A	√	√	√	√
34117	Total Last 2 month active Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	10	14	√	√	√	√
34127	TotalLast3month active Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	10	1E	√	√	√	√
34137	Total Last 4 month active Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	10	28	√	√	√	√
34147	TotalLast5month active Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	10	32	√	√	√	√
34157	TotalLast6month active Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	10	3C	√	√	√	√
34167	TotalLast7month active Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	10	46	√	√	√	√
34177	TotalLast8month active Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	10	50	√	√	√	√
34187	TotalLast9month active Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	10	5A	√	√	√	√
34197	TotalLas10 month active Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	10	64	√	√	√	√
34207	TotalLast11 month active Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	10	6E	√	√	√	√
34217	TotalLast12 month active Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	10	78	√	√	√	√

34227	Current month positive active Energy (Total 、Rate1、Rate2、Rate3、Rate4	20	Float	kWh	10	82	√	√	√	√
34237	Last 1 month positive active Energy (Total 、Rate1、Rate2、Rate3、Rate4	20	Float	kWh	10	8C	√	√	√	√
34247	Last 2 month positive active Energy (Total 、Rate1、Rate2、Rate3、Rate4	20	Float	kWh	10	96	√	√	√	√
34257	Last 3 month positive active Energy (Total 、Rate1、Rate2、Rate3、Rate4	20	Float	kWh	10	A0	√	√	√	√
34267	Last 4 month positive active Energy (Total 、Rate1、Rate2、Rate3、Rate4	20	Float	kWh	10	AA	√	√	√	√
34277	Last 5 month positive active Energy (Total 、Rate1、Rate2、Rate3、Rate4	20	Float	kWh	10	B4	√	√	√	√
34287	Last 6 month positive active Energy (Total 、Rate1、Rate2、Rate3、Rate4	20	Float	kWh	10	BE	√	√	√	√
34297	Last 7 month positive active Energy (Total 、Rate1、Rate2、Rate3、Rate4	20	Float	kWh	10	C8	√	√	√	√
34307	Last 8 month positive active Energy (Total 、Rate1、Rate2、Rate3、Rate4	20	Float	kWh	10	D2	√	√	√	√
34317	Last 9 month positive active Energy (Total 、Rate1、Rate2、Rate3、Rate4	20	Float	kWh	10	DC	√	√	√	√
34327	Last 10 month positive active Energy (Total 、Rate1、Rate2、Rate3、Rate4	20	Float	kWh	10	E6	√	√	√	√
34337	Last 11 month positive active Energy (Total 、Rate1、Rate2、Rate3、Rate4	20	Float	kWh	10	F0	√	√	√	√
34347	Last 12 month positive active Energy (Total 、Rate1、Rate2、Rate3、Rate4	20	Float	kWh	10	FA	√	√	√	√
34357	Current month reverse active Energy (Total 、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	11	04	√	√	√	√
34367	Last 1 month reverse active Energy (Total 、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	11	0E	√	√	√	√
34377	Last 2 month reverse active Energy (Total 、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	11	18	√	√	√	√
34387	Last 3 month reverse active Energy (Total 、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	11	22	√	√	√	√
34397	Last 4 month reverse active Energy (Total 、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	11	2C	√	√	√	√
34407	Last 5 month reverse active Energy (Total 、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	11	36	√	√	√	√
34417	Last 6 month reverse active Energy (Total 、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	11	40	√	√	√	√
34427	Last 7 month reverse active Energy (Total 、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	11	4A	√	√	√	√
34437	Last 8 month reverse active Energy (Total 、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	11	54	√	√	√	√

34447	Last 9 month reverse active Energy (Total 、Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	11	5E	√	√	√	√
34457	Last 10 month reverse active Energy (Total 、Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	11	68	√	√	√	√
34467	Last 11 month reverse active Energy (Total 、Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	11	72	√	√	√	√
34477	Last 12 month reverse active Energy (Total 、Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	11	7C	√	√	√	√
34877	Total active Energy Rate 1	4	Float	kWh	13	0C	√	√	√	√
34879	Total active Energy Rate 2	4	Float	kWh	13	0E	√	√	√	√
34881	Total active Energy Rate 3	4	Float	kWh	13	10	√	√	√	√
34883	Total active Energy Rate 4	4	Float	kWh	13	12	√	√	√	√
34885	Import active Energy Rate 1	4	Float	kWh	13	14	√	√	√	√
34887	Import active Energy Rate 2	4	Float	kWh	13	16	√	√	√	√
34889	Import active Energy Rate 3	4	Float	kWh	13	18	√	√	√	√
34891	Import active Energy Rate 4	4	Float	kWh	13	1A	√	√	√	√
34893	Export active Energy Rate 1	4	Float	kWh	13	1C	√	√	√	√
34895	Export active Energy Rate 2	4	Float	kWh	13	1E	√	√	√	√
34897	Export active Energy Rate 3	4	Float	kWh	13	20	√	√	√	√
34899	Export active Energy Rate 4	4	Float	kWh	13	22	√	√	√	√
34901	Total reactive Energy Rate 1	4	Float	kVArh	13	24	√	√	√	√
34903	Total reactive Energy Rate 2	4	Float	kVArh	13	26	√	√	√	√
34905	Total reactive Energy Rate 3	4	Float	kVArh	13	28	√	√	√	√
34907	Total reactive Energy Rate 4	4	Float	kVArh	13	2A	√	√	√	√
34909	Import reactive Energy Rate 1	4	Float	kVArh	13	2C	√	√	√	√
34911	Import reactive Energy Rate 2	4	Float	kVArh	13	2E	√	√	√	√
34913	Import reactive Energy Rate 3	4	Float	kVArh	13	30	√	√	√	√
34915	Import reactive Energy Rate 4	4	Float	kVArh	13	32	√	√	√	√
34917	Export reactive Energy Rate 1	4	Float	kVArh	13	34	√	√	√	√
34919	Export reactive Energy Rate 2	4	Float	kVArh	13	36	√	√	√	√
34921	Export reactive Energy Rate 3	4	Float	kVArh	13	38	√	√	√	√
34923	Export reactive Energy Rate 4	4	Float	kVArh	13	3A	√	√	√	√
35377	Total Last 1 month active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	15	00	√	√	√	√
35387	Total Last 2 month active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	15	0A	√	√	√	√
35397	TotalLast3month active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	15	14	√	√	√	√
35407	Total Last 4 month active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	15	1E	√	√	√	√
35417	TotalLast5month active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	15	28	√	√	√	√
35427	TotalLast6month active used Energy	20	Float	kWh	15	32	√	√	√	√

	(Total、 Rate1、 Rate2、 Rate3、 Rate4)									
35437	TotalLast7month active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	15	3C	√	√	√	√
35447	TotalLast8month active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	15	46	√	√	√	√
35457	TotalLast9month active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	15	50	√	√	√	√
35467	TotalLas10 month active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	15	5A	√	√	√	√
35477	TotalLast11 month active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	15	64	√	√	√	√
35487	TotalLast12 month active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	15	6E	√	√	√	√
35497	Last 1 month positive active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4	20	Float	kWh	15	78	√	√	√	√
35507	Last 2 month positive active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4	20	Float	kWh	15	82	√	√	√	√
35517	Last 3 month positive active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4	20	Float	kWh	15	8C	√	√	√	√
35527	Last 4 month positive active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4	20	Float	kWh	15	96	√	√	√	√
35537	Last 5 month positive active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4	20	Float	kWh	15	A0	√	√	√	√
35547	Last 6 month positive active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4	20	Float	kWh	15	AA	√	√	√	√
35557	Last 7 month positive active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4	20	Float	kWh	15	B4	√	√	√	√
35567	Last 8 month positive active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4	20	Float	kWh	15	BE	√	√	√	√
35577	Last 9 month positive active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4	20	Float	kWh	15	C8	√	√	√	√
35587	Last 10 month positive active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4	20	Float	kWh	15	D2	√	√	√	√
35597	Last 11 month positive active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4	20	Float	kWh	15	DC	√	√	√	√
35607	Last 12 month positive active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4	20	Float	kWh	15	E6	√	√	√	√
35617	Last 1 month reverse active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	15	F0	√	√	√	√
35627	Last 2 month reverse active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	15	FA	√	√	√	√
35637	Last 3 month reverse active used Energy (Total、 Rate1、 Rate2、 Rate3、 Rate4)	20	Float	kWh	16	04	√	√	√	√

35647	Last 4 month reverse active used Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	16	0C	√	√	√	√
35657	Last 5 month reverse active used Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	16	18	√	√	√	√
35667	Last 6 month reverse active used Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	16	22	√	√	√	√
35677	Last 7 month reverse active used Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	16	2C	√	√	√	√
35687	Last 8 month reverse active used Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	16	36	√	√	√	√
35697	Last 9 month reverse active used Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	16	40	√	√	√	√
35707	Last 10 month reverse active used Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	16	4A	√	√	√	√
35717	Last 11 month reverse active used Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	16	54	√	√	√	√
35727	Last 12 month reverse active used Energy (Total、Rate1、Rate2、Rate3、Rate4)	20	Float	kWh	16	5E	√	√	√	√
310001	Total import active energy .	8	Int64	Wh	27	10	√	√	√	√
310005	Total export active energy .	8	Int64	Wh	27	14	√	√	√	√
310009	Total import reactive energy .	8	Int64	VArh	27	18	√	√	√	√
310013	Total export reactive energy .	8	Int64	VArh	27	1C	√	√	√	√
310017	Total apparent energy.	8	Int64	VAh	27	20	√	√	√	√
310021	Total active Energy	8	Int64	Wh	27	24	√	√	√	√
310025	Total reactive Energy	8	Int64	VArh	27	28	√	√	√	√
310029	L1 import active Energy	8	Int64	Wh	27	2C	√	X	√	√
310033	L2 import active Energy	8	Int64	Wh	27	30	√	X	X	√
310037	L3 import active Energy	8	Int64	Wh	27	34	√	X	X	X
310041	L1 export active Energy	8	Int64	Wh	27	38	√	X	√	√
310045	L2 export active Energy	8	Int64	Wh	27	3C	√	X	√	√
310049	L3 export active Energy	8	Int64	Wh	27	40	√	X	√	X
310053	L1 total active Energy	8	Int64	Wh	27	44	√	X	√	√
310057	L2 total active Energy	8	Int64	Wh	27	48	√	X	√	√
310061	L3 total active Energy	8	Int64	Wh	27	4C	√	X	√	X
310065	L1 import reactive energy	8	Int64	VArh	27	50	√	X	√	√
310069	L2 import reactive energy	8	Int64	VArh	27	54	√	X	√	√
310073	L3 import reactive energy	8	Int64	VArh	27	58	√	X	√	X
310077	L1 export reactive energy	8	Int64	VArh	27	5C	√	X	√	√
310081	L2 export reactive energy	8	Int64	VArh	27	60	√	X	√	√
310085	L3 export reactive energy	8	Int64	VArh	27	64	√	X	√	X
310089	L1 total reactive energy	8	Int64	VArh	27	68	√	X	√	√
310093	L2 total reactive energy	8	Int64	VArh	27	6C	√	X	√	√
310097	L3 total reactive energy	8	Int64	VArh	27	70	√	X	√	X

310101	Total active Energy Rate 1	8	Int64	Wh	27	74	√	√	√	√
310105	Total active energy Rate 2	8	Int64	Wh	27	78	√	√	√	√
310109	Total active energy Rate 3	8	Int64	Wh	27	7C	√	√	√	√
310113	Total active energy Rate 4	8	Int64	Wh	27	80	√	√	√	√
310117	Import active energy Rate 1	8	Int64	Wh	27	84	√	√	√	√
310121	Import active energy Rate 2	8	Int64	Wh	27	88	√	√	√	√
310125	Import active energy Rate 3	8	Int64	Wh	27	8C	√	√	√	√
310129	Import active energy Rate 4	8	Int64	Wh	27	90	√	√	√	√
310133	Export active energy Rate 1	8	Int64	Wh	27	94	√	√	√	√
310137	Export active energy Rate 2	8	Int64	Wh	27	98	√	√	√	√
310141	Export active energy Rate 3	8	Int64	Wh	27	9C	√	√	√	√
310145	Export active energy Rate 4	8	Int64	Wh	27	A0	√	√	√	√
310149	Total reactive energy Rate 1	8	Int64	VArh	27	A4	√	√	√	X
310153	Total reactive energy Rate 2	8	Int64	VArh	27	A8	√	√	√	X
310157	Total reactive energy Rate 3	8	Int64	VArh	27	AC	√	√	√	X
310161	Total reactive energy Rate 4	8	Int64	VArh	27	B0	√	√	√	X
310165	Import reactive energy Rate 1	8	Int64	VArh	27	B4	√	√	√	X
310169	Import reactive energy Rate 2	8	Int64	VArh	27	B8	√	√	√	X
310173	Import reactive energy Rate 3	8	Int64	VArh	27	BC	√	√	√	X
310177	Import reactive energy Rate 4	8	Int64	VArh	27	C0	√	√	√	X
310181	Export reactive energy Rate 1	8	Int64	VArh	27	C4	√	√	√	X
310185	Export reactive energy Rate 2	8	Int64	VArh	27	C8	√	√	√	X
310189	Export reactive energy Rate 3	8	Int64	VArh	27	CC	√	√	√	X
310193	Export reactive energy Rate 4	8	Int64	VArh	27	D0	√	√	√	X
310197	Net Wh (Import - Export)	8	Int64	Wh	27	D4	√	√	√	√
310201	Net VArh (Import - Export)	8	Int64	VArh	27	D8	√	√	√	X
310251	Phase 1 line to neutral volts.	4	Int32	0.1V	28	0A	√	X	√	√
310253	Phase 2 line to neutral volts.	4	Int32	0.1V	28	0C	√	X	X	X
310255	Phase 3 line to neutral volts.	4	Int32	0.1V	28	0E	√	X	X	X
310257	Phase 1 current.	4	Int32	0.001A	28	10	√	√	√	√
310259	Phase 2 current.	4	Int32	0.001A	28	12	√	√	X	X
310261	Phase 3 current.	4	Int32	0.001A	28	14	√	√	X	X
310263	Phase 1 active power.	4	Int32	0.1W	28	16	√	X	√	√
310265	Phase 2 active power.	4	Int32	0.1W	28	18	√	X	X	X
310267	Phase 3 active power.	4	Int32	0.1W	28	1A	√	X	X	X
310269	Phase 1 apparent power.	4	Int32	0.1VA	28	1C	√	X	√	X
310271	Phase 2 apparent power.	4	Int32	0.1VA	28	1E	√	X	X	X
310273	Phase 3 apparent power.	4	Int32	0.1VA	28	20	√	X	X	X
310275	Phase 1 reactive power.	4	Int32	0.1VAr	28	22	√	X	√	X
310277	Phase 2 reactive power.	4	Int32	0.1VAr	28	24	√	X	X	X
310279	Phase 3 reactive power.	4	Int32	0.1VAr	28	26	√	X	X	X
310281	Phase 1 power factor	4	Int32	0.01	28	28	√	X	√	X
310283	Phase 2 power factor	4	Int32	0.01	28	2A	√	X	X	X

310285	Phase 3 power factor (	4	Int32	0.01	28	2C	√	X	X	X
310287	Phase 1 phase angle.	4	Int32	0.01Degrees	28	2E	√	X	√	X
310289	Phase 2 phase angle.	4	Int32	0.01Degrees	28	30	√	X	X	X
310291	Phase 3 phase angle.	4	Int32	0.01Degrees	28	32	√	X	X	X
310293	Average line to neutral volts.	4	Int32	0.1V	28	34	√	X	X	√
310295	Average line current.	4	Int32	0.1A	28	36	√	√	√	√
310297	Sum of line currents.	4	Int32	0.1A	28	38	√	√	√	√
310299	Total system power.	4	Int32	0.1W	28	3A	√	√	√	√
310301	Total system volt amps.	4	Int32	0.1VA	28	3C	√	√	√	X
310303	Total system VAR.	4	Int32	0.1Ar	28	3E	√	√	√	X
310305	Total system power factor .	4	Int32	0.01	28	40	√	√	√	X
310307	Total system phase angle.	4	Int32	0.01Degrees	28	42	√	√	√	X
310309	Frequency of supply voltages.	4	Int32	0.01Hz	28	44	√	√	√	X
310311	CO2	8	Int64	0.001Kg	28	46	√	√	√	√
320131	CO2	4	Float	Kg	4E	A2	√	√	√	√

Notes:

1. The power factor has its sign adjusted to indicate the direction of the current. Positive refers to forward current, negative refers to reverse current.
2. The power sum demand calculation is for import – export.
3. Total active energy / reactive energy equals to Import + export.

Holding Register, Function code 03 / 10

Address Register	Parameter	Modbus Protocol Start Address Hex		Valid range	Mode
		High Byte	Low Byte		
40001	Demand Time	00	00	Read minutes into first demand calculation. When the Demand Time reaches the Demand Period then the demand values are valid. Length : 4 byte Data Format : Float	ro
40003	Demand Period	00	02	Write demand period: 0~60 minutes, Default 60. Setting the period to 0 will cause the demand to show the current parameter value, and demand max to show the maximum parameter value since last demand reset.	r/w

				Length : 4 byte Data Format : Float	
40005	滑差時間	00	04	預設1，單位min。 設定範圍： 1 ~(Demand Period -1). Length : 4 byte Data Format : Float	r/w
40011	System Type	00	0A	Write system type: 1 = 1P2W; 2 = 3P3W; 3 = 3P4W,(default); 4 = 1P3W Length : 4 byte Data Format : Float (KPPA is asked)	r/w
40013	Pulse 1 Width	00	0C	Write pulse on period in milliseconds: 60, 100 or 200, default 100. Length : 4 byte Data Format : Float	r/w
40015	Key Parameter Programming Authorization (KPPA)	00	0E	Read: to get the status of the KPPA 0 = not authorized; 1 = authorized Write the correct password to get KPPA, enable to program key parameters. Length : 4 byte Data Format : Float	r/w
40019	通訊檢查位元 和停止位元	00	12	Write the network port parity/stop bits for MODBUS Protocol, where: 0 = One stop bit and no parity, default. 1 = One stop bit and even parity. 2 = One stop bit and odd parity. 3 = Two stop bits and no parity. Length : 4 byte Data Format : Float	r/w
40021	Modbus address	00	14	Write the network port node Address: 1 to 247 for MODBUS Protocol, default 1. Length : 4 byte Data Format : Float	r/w
40023	Pulse 1 Rate	00	16	Write pulse rate index: n = 0 to 6 0- - 0.001 kwh/imp 1--0.01kwh/imp 2--0.1kwh/imp 3--1kwh/imp 4-10kwh/imp 5-100kwh/imp 6-1000kwh/imp Length : 4 byte	r/w

				Data Format : Float	
40025	Password	00	18	Read: to get the password of the meter Write: to program the new password of the meter Default 1000 Length : 4 byte Data Format : Float	r/w
40029	Network Baud Rate	00	1C	Write the network port baud rate for MODBUS Protocol, where: 0 = 2400 baud. 1 = 4800 baud. 2 = 9600 baud, default. 3 = 19200 baud. 4 = 38400 baud Length : 4 byte Data Format : Float	r/w
40047	PT1	00	2E	PT1 range PT2 50000V, default 400V for 3P3W, default 230V for others Length : 4 byte Data Format : Float	r/w
40049	PT2	00	30	PT2 range 100-500V, default 400V for 3P3W, default 230V for others Length : 4 byte Data Format : Float	r/w
40051	CT1	00	32	CT 2 is 5: CT1 range 1-9999A, default:5, CT 2 is 1: CT 1 (Range: 0001—1999),default:1 Length : 4 byte Data Format : Float	r/w
40053	CT2	00	34	CT 2: 1 or 5 Length : 4 byte Data Format : Float	r/w
40057	Current Direction correction (when the external CT is connected reversely)	00	38	0 = L1 Frd, L2 Frd, L3 Frd 1 = L1 Rev, L2 Frd, L3 Frd 2 = L1 Frd, L2 Rev, L3 Frd 3 = L1 Rev, L2 Rev, L3 Frd 4 = L1 Frd, L2 Frd, L3 Rev 5 = L1 Rev, L2 Frd, L3 Rev 6 = L1 Frd, L2 Rev, L3 Rev 7 = L1 Rev, L2 Rev, L3 Rev Default 0 Length : 4 byte Data Format :Float (KPPA is asked)	r/w
40061	Backlit time	00	3C	Default 60, min Range 0~121, 0 means backlit always on , 121 means backlit always	r/w

				off Length : 4byte Data Format : Float	
40071	CO2 RATE	00	46	Carbon emissions per kWh of electricity 00.0000~60.0000 kg Example:0x01 = 0.0001 Default:0.5703(0X00001647) Length : 4 byte Data Format : hex (KPPA is asked)	r/w
40087	Pulse 1 Energy Type	00	56	Write MODBUS Protocol input parameter for pulse output 1: 1: import active energy 2: total active energy 4: export active energy, default 5: import reactive energy 6: total reactive energy 8: export reactive energy Length : 4 byte Data Format : Float	r/w
461441	Time	F0	00	s-min-hour-week-Date-Month-Year-20 Length : 8 byte Data Format:BCD	r/w
461457	Reset historical data	F0	10	00 00 = reset demand info 00 03: clear the resettable energy Length : 2 byte Data Format: Hex	wo
463233	Tariff	F7	00	Tariff number-Min-Hour Tariff number: 01, 02, 03, 04 Min: 00-59 Hour: 00-23 Length : 24 byte Data Format:BCD	r/w
463793	Running time	F9	30	Continuous working period--hour Length : 4 byte Data Format : Float	r/w
464513	Serial number	FC	00	Serial number Length : 4 byte Data Format : unsigned int32 Note: Only read	ro
464515	Meter Code	FC	02	Meter Code 0x1218	ro

				Length : 4 byte Data Format : Hex Note: Only read	
464647	Display version	FC	84	電表液晶顯示板本號 XX.YY 格式: 第一個字節代表XX, 第二個字節代表YY Length : 2 byte Data Format : Hex Note: Only read	ro
464649	Code CRC	FC	88	Code CRC = 0x1A47DD5E Length : 4 byte Data Format : Hex Note: Only read	ro

Example:

1, Read Input Registers

Example: Read “Phase 1 line to neutral volts”

Request: 01 04 00 00 00 02 71 CB

Where, 01 = Meteraddress

04 = Function code

00 = High byte of registers starting address

00 = Low byte of registers starting address

00 = High byte of registers number

02 = Low byte of registers number

71 = CRC Low

CB = CRC High

Response: 01 04 04 43 66 33 34 1B 38

Where, 01 = Meteraddress

04 = Function code

04 = Byte count

43 = Data, (High Word, HighByte)

66 = Data, (High Word, LowByte)

33 = Data, (LowWord, HighByte)

34 = Data, (LowWord, LowByte)

1B = CRC Low

38 = CRC High

Note: 43 66 33 34 (Hex) = 230.2 (Floating point)

2, Read Holding Registers

Example: Read “Slide time”

Request: 01 03 00 04 00 02 85 CA

Where, 01 = Meteraddress

03 = Function code

00 = High byte of registers starting address

04 = Low byte of registers starting address

00 = High byte of registers number

02 = Low byte of registers number

85 = CRC Low

CA = CRC High

Response: 01 03 04 40 A0 00 00 EF D1

Where, 01 = Meteraddress

03 = Function code

04 = Byte Count

40 = Data, (High Word, HighByte)

A0 = Data, (High Word, LowByte)

00 = Data, (LowWord, HighByte)

00 = Data, (LowWord, LowByte)

EF = CRC Low

D1 = CRC High

03 =Data,(DI status)

E1 = CRC Low

89 = CRC High

Note: 40 A00000 (Hex)=5 (Floating point)

3,WriteHolding Registers

Example: Write“System Type”= 4

Request: 01 10 00 0A 00 02 04 40 80 00 00 67 F8

Where,01 = Meteraddress

10 = Function code

00 = High byte of registers starting address

0A = Low byte of registers starting address

00 =High byteof registersnumber

02 = Low byteof registersnumber

04 = Byte Count

40 =Data, (High Word, HighByte)

80 = Data, (High Word, LowByte)

00 =Data, (LowWord, HighByte)

00 = Data, (LowWord, LowByte)

67 = CRC Low

F8 = CRC High

Note: 40 800000 (Hex)=4 (Floating point)

Response: 01 10 00 0A 00 02 61 CA

Where,01 = Meteraddress

10 = Function code

00 = High byte of registers starting address

0A = Low byte of registers starting address

00 =High byteof registersnumber

02 = Low byteof registersnumber

61 = CRC Low

CA = CRC High

4,ReadInputStatus

Example: Read DI1~4 status

Request: 01 02 00 00 00 04 79 C9

Where,01 = Meteraddress

02 = Function code

00 = High byte of registers starting address

00 = Low byte of registers starting address

00 =High byteof read DI number

04 = Low byteof read DI number

79 = CRC Low

C9 = CRC High

Response: 01 02 01 03 E1 89

Where,01 = Meteraddress

02 = Function code

01 = Byte Count

Bit 0 refers to the status of DI-1. The value is 1, which means DI-1 is on.

Bit 1 refers to the status of DI-2. The value is 1, which means DI-2 is on

Bit 2 refers to the status of DI-3. The value is 0, which means DI-3 is off

Bit 3 refers to the status of DI-4. The value is 0, which means DI-4 is off

5,ReadCoilStatus

Example: Read DO1~2 status

Request: 01 01 00 00 00 02 BD CB

Where,01 = Meteraddress

01 = Function code

00 = High byte of registers starting address

00 = Low byte of registers starting address

00 =High byteof read DO number

02 = Low byteof read DO number

BD = CRC Low

CB = CRC High

Response: 01 01 01 02 D0 49

Where,01 = Meteraddress

01 = Function code

01 = Byte Count

02 =Data,(DO status)

D0 = CRC Low

49 = CRC High

Note: Data=0x02 = 0000 0010 (Binary Value).

Bit 0 refers to DO-1 status. The value is 0, which means DO-1 is open

Bit 1 refers to DO-2 status. The value is 1, which means DO-1 is close

6,Force Single Coil

Example: Control DO1=ON

Request: 01 05 00 00 FF 00 8C 3A

Where,01 = Meteraddress

05 = Function code

00 = High byte of registers starting address

00 = Low byte of registers starting address

FF =High byteof DO control data

00 = Low byteof DO control data

8C = CRC Low

3A = CRC High

Response: 01 05 00 00 FF 00 8C 3A

Where,01 = Meteraddress

05 = Function code

00 = High byte of registers starting address

00 = Low byte of registers starting address

FF =High byteof DO control data

00 = Low byteof DO control data

8C = CRC Low

3A = CRC High