

Description of the access  
Through JBUS for  
**iPDU**

Ver.2 11/20/10

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## 2. PRESENTATION

This document must be used as a reference for the computer power controller customers whose design products which must monitor to the computer power system.

### 2.1. INTRODUCTION

This document describes the Power Distribution Unit (PDU) protocol, adopted to communicate with all communication products, like Supervisor, Network communication, etc... This protocol will be implemented in the computer power controller equipment, in order to use the same driver for all products. This document describes the specific implementation of communication protocol.

### 2.2. COMMUNICATION LAYERS

<b>APPLICATIONS</b>
REMOTE MONITOR TERMINAL CENTRAL COMPUTER
<b>DATA TABLE</b>
FIXED
<b>ADDRESS SPECIFICATION</b>
PUBLIC DATA JBUS/MODBUS in RTU mode
<b>MODBUS TRANSPORT PROTOCOL</b>
<b>HARDWARE</b>
RS485

### 3. MODBUS GENERAL PURPOSE

#### 3.1. INTRODUCTION

JBUS/MODBUS is a Master/Slave protocol, in which Master could be one of the 255 slaves. The master sent a request to a slaver; the slaver sent the data or an ACK to the Master.

#### 3.2. GENERAL MESSAGE FORMAT

SLAVE NUMBER (1 byte)	Specified the destination node
IFUNCTION CODE (1 byte)	Specified a READ or WRITE data command
DATA FIELD	Information to read or write data (Address, value, number of data...)
CONTROL WORD (CRC16) (2 bytes, 1 word)	Algorithm calculation of each data

#### 3.3. MODBUS FUNCTION

Read Holding Register (03h)

Preset Single Register (06h)

Remark:

1 Address = 16 bits or 1 Word (LSB and MSB)

### 3.4. MODBUS FUNCTION DESCRIPTION

#### 3.4.1 FUNCTION 0x03

Master request: 8 bytes

Slave Number	Function READ	Address High	Address Low	0	Nb of word to read	CRC Low	CRC High
1	0x03	0xE0	0x00	0	10		

Ex. Request to slave number1, the data (10 words) beginning at 0xE000 (Address)

Slave Message:

Slave Number	Function READ	Nb of byte	First data hi byte	First data low byte	Next data	CRC Low	CRC High
1	0x03	20	0x20	0x02	.....		

Example: the first data is  $(0x20 * 256) + 0x02 = 0x2002$

#### 3.4.2. FUNCTION 0x06

This function is used to send a command to the slave.

Slave number	Function Write Word	Address High	Address Low	data to write high byte	data to write low byte	CRC Low	CRC High
1	0x06	0xE0	0x10	0x30	0x03		

Slave message

Response

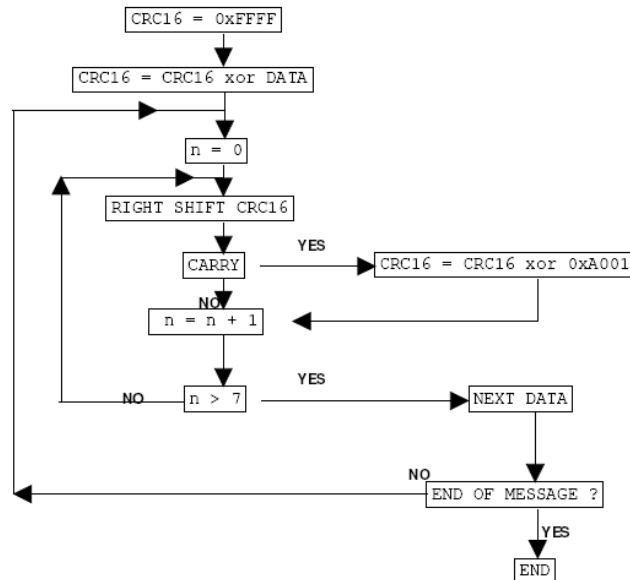
Slave number	Function Write Word	Address High	Address Low	data to write high byte	data to write low byte	CRC Low	CRC High
1	0x06	0xE0	0x10	0x30	0x03		

The slave sends the same message if not error occurred.

### 3.5. ACKNOWLEDGEMENT OF END OF DATA PACKAGE

A time-out equal to a value of 10\* time of transmission of a character, points out that the data package is finished (the CRC has been sent).

### 3.6. CRC 16 CALCULATION



#### 3.6.1. Example of CRC calculation

```

unsigned int CALCUL_CRC(unsigned int *Msg)
{
  unsigned int Crc;
  int lenght,i,n;
  Crc = 0xFFFF;
  lenght = Msg[0];
  for ( i = 1 ; i <= lenght ; i++)
  {
    Crc ^= Msg[i];
    for ( n = 1 ; n <= 8 ; n++)
    {
      /* if CRC is even */
      if ((Crc % 2) == 0)
      /* to right decrement */
      Crc >>= 1;
      else
      {
        Crc >>= 1;
        Crc ^= 0xA001;
      }
    }
  }
  return( Crc );
}

```

## 4. MODBUS GENERALITIES

### 4.1. DATA BASES

Each equipment has its DATA BASE, described into the following tables:

Set machine number

Set current latching alarm

Set buzzer

Measurements

Alarm

### 4.2. INFORMATION CODING

Each information is identified with a code i.e.

DATA BASE	INFORMATION CODING
Set machine number (W/R)	Nxx for machine number
Set current latching alarm(W/R)	Sxx for current latching alarm
Set buzzer(W/R)	Bxx for buzzer mode
Measurements(R)	Mxx for Measurements
Alarm(W/R)	Axx for alarms

REMARK: W: The data can be wrote.

R: The data can be read.

## 5. MODBUS DEFINITION

### 5.1. MACHINE NUMBER DATA AREA

<b>CODE</b>	<b>ADDRESS</b>	<b>Description</b>
N00	0x30F2	Default value is 1

Before the product out of the factory, the default setting for the machine number is one. If there are more than one CPC facilities on the scene, it must be set different machine number for the CPC.

## 5.2. CURRENT LATCHING ALARM DATA AREA

In this section, the over current alarm could be set as follows:

<b>CODE</b>	<b>ADDRESS</b>	<b>Description</b>
S00	0x306C MSB 0x306C LSB	Panel1 channel1 current high high latching alarm Panel1 channel1 current high latching alarm
S01	0x306D MSB 0x306D LSB	Panel1 channel2 current high high latching alarm Panel1 channel2 current high latching alarm
S02	0x306E MSB 0x306E LSB	Panel1 channel3 current high high latching alarm Panel1 channel3 current high latching alarm
S03	0x306F MSB 0x306F LSB	Panel1 channel4 current high high latching alarm Panel1 channel4 current high latching alarm
S04	0x3070 MSB 0x3070 LSB	Panel1 channel5 current high high latching alarm Panel1 channel5 current high latching alarm
S05	0x3071 MSB 0x3071 LSB	Panel1 channel6 current high high latching alarm Panel1 channel6 current high latching alarm
S06	0x3072 MSB 0x3072 LSB	Panel1 channel7 current high high latching alarm Panel1 channel7 current high latching alarm
S07	0x3073 MSB 0x3073 LSB	Panel1 channel8 current high high latching alarm Panel1 channel8 current high latching alarm
S08	0x3074 MSB 0x3074 LSB	Panel1 channel9 current high high latching alarm Panel1 channel9 current high latching alarm
S09	0x3075 MSB 0x3075 LSB	Panel1 channel10 current high high latching alarm Panel1 channel10 current high latching alarm
S10	0x3076 MSB 0x3076 LSB	Panel1 channel11 current high high latching alarm Panel1 channel11 current high latching alarm
S11	0x3077 MSB 0x3077 LSB	Panel1 channel12 current high high latching alarm Panel1 channel12 current high latching alarm
S12	0x3078 MSB 0x3078 LSB	Panel1 channel13 current high high latching alarm Panel1 channel13 current high latching alarm
S13	0x3079 MSB 0x3079 LSB	Panel1 channel14 current high high latching alarm Panel1 channel14 current high latching alarm
S14	0x307A MSB 0x307A LSB	Panel1 channel15 current high high latching alarm Panel1 channel15 current high latching alarm
S15	0x307B MSB 0x307B LSB	Panel1 channel16 current high high latching alarm Panel1 channel16 current high latching alarm

S16	0x307C MSB 0x307C LSB	Panel1 channel17 current high high latching alarm Panel1 channel17 current high latching alarm
S17	0x307D MSB 0x307D LSB	Panel1 channel18 current high high latching alarm Panel1 channel18 current high latching alarm
S18	0x307E MSB 0x307E LSB	Panel1 channel19 current high high latching alarm Panel1 channel19 current high latching alarm
S19	0x307F MSB 0x307F LSB	Panel1 channel20 current high high latching alarm Panel1 channel20 current high latching alarm
S20	0x3080 MSB 0x3080 LSB	Panel1 channel21 current high high latching alarm Panel1 channel21 current high latching alarm
S21	0x3081 MSB 0x3081 LSB	Panel1 channel22 current high high latching alarm Panel1 channel22 current high latching alarm
S22	0x3082 MSB 0x3082 LSB	Panel1 channel23 current high high latching alarm Panel1 channel23 current high latching alarm
S23	0x3083 MSB 0x3083 LSB	Panel1 channel24 current high high latching alarm Panel1 channel24 current high latching alarm
S24	0x3084 MSB 0x3084 LSB	Panel1 channel25 current high high latching alarm Panel1 channel25 current high latching alarm
S25	0x3085 MSB 0x3085 LSB	Panel1 channel26 current high high latching alarm Panel1 channel26 current high latching alarm
S26	0x3086 MSB 0x3086 LSB	Panel1 channel27 current high high latching alarm Panel1 channel27 current high latching alarm
S27	0x3087 MSB 0x3087 LSB	Panel1 channel28 current high high latching alarm Panel1 channel28 current high latching alarm
S28	0x3088 MSB 0x3088 LSB	Panel1 channel29 current high high latching alarm Panel1 channel29 current high latching alarm
S29	0x3089 MSB 0x3089 LSB	Panel1 channel30 current high high latching alarm Panel1 channel30 current high latching alarm
S30	0x308A MSB 0x308A LSB	Panel1 channel31 current high high latching alarm Panel1 channel31 current high latching alarm
S31	0x308B MSB 0x308B LSB	Panel1 channel32 current high high latching alarm Panel1 channel32 current high latching alarm
S32	0x308C MSB 0x308C LSB	Panel1 channel33 current high high latching alarm Panel1 channel33 current high latching alarm
S33	0x308D MSB 0x308D LSB	Panel1 channel34 current high high latching alarm Panel1 channel34 current high latching alarm

S34	0x308E MSB 0x308E LSB	Panel1 channel35 current high high latching alarm Panel1 channel35 current high latching alarm
S35	0x308F MSB 0x308F LSB	Panel1 channel36 current high high latching alarm Panel1 channel36 current high latching alarm
S36	0x3090 MSB 0x3090 LSB	Panel1 channel37 current high high latching alarm Panel1 channel37 current high latching alarm
S37	0x3091 MSB 0x3091 LSB	Panel1 channel38 current high high latching alarm Panel1 channel38 current high latching alarm
S38	0x3092 MSB 0x3092 LSB	Panel1 channel39 current high high latching alarm Panel1 channel39 current high latching alarm
S39	0x3093 MSB 0x3093 LSB	Panel1 channel40 current high high latching alarm Panel1 channel40 current high latching alarm
S40	0x3094 MSB 0x3094 LSB	Panel1 channel41 current high high latching alarm Panel1 channel41 current high latching alarm
S41	0x3095 MSB 0x3095 LSB	Panel1 channel42 current high high latching alarm Panel1 channel42 current high latching alarm
S42	0x3096 MSB 0x3096 LSB	Panel2 channel1 current high high latching alarm Panel2 channel1 current high latching alarm
S43	0x3097 MSB 0x3097 LSB	Panel2 channel2 current high high latching alarm Panel2 channel2 current high latching alarm
S44	0x3098 MSB 0x3098 LSB	Panel2 channel3 current high high latching alarm Panel2 channel3 current high latching alarm
S45	0x3099 MSB 0x3099 LSB	Panel2 channel4 current high high latching alarm Panel2 channel4 current high latching alarm
S46	0x309A MSB 0x309A LSB	Panel2 channel5 current high high latching alarm Panel2 channel5 current high latching alarm
S47	0x309B MSB 0x309B LSB	Panel2 channel6 current high high latching alarm Panel2 channel6 current high latching alarm
S48	0x309C MSB 0x309C LSB	Panel2 channel7 current high high latching alarm Panel2 channel7 current high latching alarm
S49	0x309D MSB 0x309D LSB	Panel2 channel8 current high high latching alarm Panel2 channel8 current high latching alarm
S50	0x309E MSB 0x309E LSB	Panel2 channel9 current high high latching alarm Panel2 channel9 current high latching alarm
S51	0x309F MSB 0x309F LSB	Panel2 channel10 current high high latching alarm Panel2 channel10 current high latching alarm

S52	0x30A0 MSB 0x30A0 LSB	Panel2 channel11 current high high latching alarm Panel2 channel11 current high latching alarm
S53	0x30A1 MSB 0x30A1 LSB	Panel2 channel12 current high high latching alarm Panel2 channel12 current high latching alarm
S54	0x30A2 MSB 0x30A2 LSB	Panel2 channel13 current high high latching alarm Panel2 channel13 current high latching alarm
S55	0x30A3 MSB 0x30A3 LSB	Panel2 channel14 current high high latching alarm Panel2 channel14 current high latching alarm
S56	0x30A4 MSB 0x30A4 LSB	Panel2 channel15 current high high latching alarm Panel2 channel15 current high latching alarm
S57	0x30A5 MSB 0x30A5 LSB	Panel2 channel16 current high high latching alarm Panel2 channel16 current high latching alarm
S58	0x30A6 MSB 0x30A6 LSB	Panel2 channel17 current high high latching alarm Panel2 channel17 current high latching alarm
S59	0x30A7 MSB 0x30A7 LSB	Panel2 channel18 current high high latching alarm Panel2 channel18 current high latching alarm
S60	0x30A8 MSB 0x30A8 LSB	Panel2 channel19 current high high latching alarm Panel2 channel19 current high latching alarm
S61	0x30A9 MSB 0x30A9 LSB	Panel2 channel20 current high high latching alarm Panel2 channel20 current high latching alarm
S62	0x30AA MSB 0x30AA LSB	Panel2 channel21 current high high latching alarm Panel2 channel21 current high latching alarm
S63	0x30AB MSB 0x30AB LSB	Panel2 channel22 current high high latching alarm Panel2 channel22 current high latching alarm
S64	0x30AC MSB 0x30AC LSB	Panel2 channel23 current high high latching alarm Panel2 channel23 current high latching alarm
S65	0x30AD MSB 0x30AD LSB	Panel2 channel24 current high high latching alarm Panel2 channel24 current high latching alarm
S66	0x30AE MSB 0x30AE LSB	Panel2 channel25 current high high latching alarm Panel2 channel25 current high latching alarm
S67	0x30AF MSB 0x30AF LSB	Panel2 channel26 current high high latching alarm Panel2 channel26 current high latching alarm
S68	0x30B0 MSB 0x30B0 LSB	Panel2 channel27 current high high latching alarm Panel2 channel27 current high latching alarm
S69	0x30B1 MSB 0x30B1 LSB	Panel2 channel28 current high high latching alarm Panel2 channel28 current high latching alarm

S70	0x30B2 MSB 0x30B2 LSB	Panel2 channel29 current high high latching alarm Panel2 channel29 current high latching alarm
S71	0x30B3 MSB 0x30B3 LSB	Panel2 channel30 current high high latching alarm Panel2 channel30 current high latching alarm
S72	0x30B4 MSB 0x30B4 LSB	Panel2 channel31 current high high latching alarm Panel2 channel31 current high latching alarm
S73	0x30B5 MSB 0x30B5 LSB	Panel2 channel32 current high high latching alarm Panel2 channel32 current high latching alarm
S74	0x30B6 MSB 0x30B6 LSB	Panel2 channel33 current high high latching alarm Panel2 channel33 current high latching alarm
S75	0x30B7 MSB 0x30B7 LSB	Panel2 channel34 current high high latching alarm Panel2 channel34 current high latching alarm
S76	0x30B8 MSB 0x30B8 LSB	Panel2 channel35 current high high latching alarm Panel2 channel35 current high latching alarm
S77	0x30B9 MSB 0x30B9 LSB	Panel2 channel36 current high high latching alarm Panel2 channel36 current high latching alarm
S78	0x30BA MSB 0x30BA LSB	Panel2 channel37 current high high latching alarm Panel2 channel37 current high latching alarm
S79	0x30BB MSB 0x30BB LSB	Panel2 channel38 current high high latching alarm Panel2 channel38 current high latching alarm
S80	0x30BC MSB 0x30BC LSB	Panel2 channel39 current high high latching alarm Panel2 channel39 current high latching alarm
S81	0x30BD MSB 0x30BD LSB	Panel2 channel40 current high high latching alarm Panel2 channel40 current high latching alarm
S82	0x30BE MSB 0x30BE LSB	Panel2 channel41 current high high latching alarm Panel2 channel41 current high latching alarm
S83	0x30BF MSB 0x30BF LSB	Panel2 channel42 current high high latching alarm Panel2 channel42 current high latching alarm

REMARK:MSB: most significant byte

LSB : least significant byte

### 5.3. BUZZER SETTING

<b>CODE</b>	<b>ADDRESS</b>	<b>Description</b>
B00	0x30D0	Value 0: enable
B01	0x30D0	Value 1:disable
B02	0x30D0	Value 2:buzzer test

The above table shows how to set buzzer, machine works in test mode when setting value is two, the buzzer would keep quite when setting value is one, while alarm occurred and the setting value is zero, the buzzer would sound for alarm.

#### 5.4. MEASUREMENTS DATA AREA

CODE	ADDRESS	Description
M00	0xE005	Panel1 Output frequency(Hz) scale ratio:100
M01	0xE006	Panel1 3phase line-to-neutral mean voltage(V) scale ratio:10
M02	0xE007	Panel1 3phase line-to-line mean voltage(V) scale ratio:10
M03	0xE008	Panel1 phase R-to-neutral voltage(V) scale ratio:10
M04	0xE009	Panel1 phase S-to-neutral voltage(V) scale ratio:10
M05	0xE00A	Panel1 phase T-to-neutral voltage(V) scale ratio:10
M06	0xE00B	Panel1 phase R-to-phase S voltage(V) scale ratio:10
M07	0xE00C	Panel1 phase S-to-phase T voltage(V) scale ratio:10
M08	0xE00D	Panel1 phase R-to-phase T voltage(V) scale ratio:10
M09	0xE00E 0xE00F	Panel1 3phase total kwh (MSW) scale ratio:10000 Panel1 3phase total kwh (LSW)
M10	0xE010	Panel1 3phase total kw scale ratio:1
M11	0xE011	Panel1 3phase total PF scale ratio:1000
M12	0xE012	Panel1 3phase mean current(A) scale ratio:1
M13	0xE013	Panel1 phase R kw scale ratio:10
M14	0xE014	Panel1 phase S kw scale ratio:10
M15	0xE015	Panel1 phase T kw scale ratio:10
M16	0xE016	Panel1 phase R PF scale ratio:1000
M17	0xE017	Panel1 phase S PF scale ratio:1000
M18	0xE018	Panel1 phase T PF scale ratio:1000
M19	0xE019	Panel1 phase R current(A) scale ratio:10

M20	0xE01A	Panel1 phase S current(A)	scale ratio:10
M21	0xE01B	Panel1 phase T current(A)	scale ratio:10
M22	0xE01C	Panel1 neutral current(A)	scale ratio:10
M23	0xE01D	Panel1 phase R current demand	scale ratio:10
M24	0xE01E	Panel1 phase S current demand	scale ratio:10
M25	0xE01F	Panel1 phase T current demand	scale ratio:10
M26	0xE020	Panel1 neutral current demand	scale ratio:10
M27	0xE021	Panel1 phase R maximum current demand	scale ratio:10
M28	0xE022	Panel1 phase S maximum current demand	scale ratio:10
M29	0xE023	Panel1 phase T maximum current demand	scale ratio:10
M30	0xE024	Panel1 neutral maximum current demand	scale ratio:10
M31	0xE025	Panel1 3phase total power demand(kw)	scale ratio:1
M32	0xE026	Panel1 3phase maximum total power demand(kw)	scale ratio:1
M33	0xE027	Panel1 phase R maximum current(A)	scale ratio:10
M34	0xE028	Panel1 phase S maximum current(A)	scale ratio:10
M35	0xE029	Panel1 phase T maximum current(A)	scale ratio:10
M36	0xE02A	Panel1 neutral maximum current(A)	scale ratio:10
M37	0xE02B	Panel1 3phase maximum power(kw)	scale ratio:1
M38	0xE02C	Panel1 channel1 kwh(MSW)	scale ratio:10000
	0xE02D	Panel1 channel1 kwh(LSW)	
...	...	...	
M79	0xE07E	Panel1 channel42 kwh(MSW)	
	0xE07F	Panel1 channel42 kwh(LSW)	
M80	0xE080	Panel1 channel1 power (kw)	scale ratio:100
...	...	...	
M121	0xE0A9	Panel1 channel42 power(kw)	

M122	0xE0AA	Panel1 channel1 PF	scale ratio:1000
...	...	...	
M163	0xE0D3	Panel1 channel42 PF	
M164	0xE0D4	Panel1 channel1 current(A)	scale ratio:100
...	...	...	
M205	0xE0FD	Panel1 channel42 current(A)	
M206	0xE0FE	Panel1 channel1 power demand(kw)	scale ratio:100
...	...	...	
M247	0xF027	Panel1 channel42 power demand(kw)	
M248	0xF028	Panel1 channel1 maximum power demand(kw)	scale ratio:100
...	...	...	
M289	0xF051	Panel1 channel42 maximum power demand(kw)	
M290	0xF052	Panel1 channel1 current demand	scale ratio:100
...	...	...	
M331	0xF07B	Panel1 channel42 current demand	
M332	0xF07B	Panel1 channel1 maximum current demand	scale ratio:100
...	...	...	
M373	0xF0A5	Panel1 channel42 maximum current demand	
M374	0xF0A6	Phase detection (positive and negative) positive=1,negative=2	
M375	0xF0A7	Panel1 & Panel2 phase R output voltage THD(%)	scale ratio:100
M376	0xF0A8	Panel1 & Panel2 phase S output voltage THD(%)	scale ratio:100
M377	0xF0A9	Panel1 & Panel2 phase T output voltage THD(%)	scale ratio:100
M378	0xF0AA	Panel1 & Panel2 phase R output current THD(%)	scale ratio:100
M379	0xF0AB	Panel1 & Panel2 phase S output current THD(%)	scale ratio:100
M380	0xF0AC	Panel1 & Panel2 phase T output current THD(%)	scale ratio:100
M381	0xF0C0	Ground current(A)	scale ratio:100
M382	0xF0C2	Panel2 channel1 kwh(MSW)	scale ratio:10000
...	0xF0C3	Panel2 channel1 kwh(LSW)	
...	...	...	
M423	0x2014	Panel2 channel42 kwh(MSW)	
	0x2015	Panel2 channel42 kwh(LSW)	

M424	0x2016	Panel2 channel1 power (kw)	scale ratio:100
...	...	...	
M465	0x203F	Panel2 channel42 power(kw)	
M466	0x2040	Panel2 channel1 PF	scale ratio:1000
...	...	...	
M507	0x2069	Panel2 channel42 PF	
M508	0x206A	Panel2 channel1 current(A)	scale ratio:100
...	...	...	
M549	0x2093	Panel2 channel42 current(A)	
M550	0x2094	Panel2 channel1 power demand(kw)	scale ratio:100
...	...	...	
M591	0x20BD	Panel2 channel42 power demand(kw)	
M592	0x20BE	Panel2 channel1 maximum power demand(kw)	scale ratio:100
...	...	...	
M633	0x20E7	Panel2 channel42 maximum power demand(kw)	
M634	0x20E8	Panel2 channel1 current demand	scale ratio:100
...	...	...	
M675	0x3011	Panel2 channel42 current demand	
M676	0x3012	Panel2 channel1 maximum current demand	scale ratio:100
...	...	...	
M717	0x303B	Panel2 channel42 maximum current demand	
M718	0x303C	Panel2 Output frequency(Hz)	scale ratio:100
M719	0x303D	Panel2 3phase line-to-neutral mean voltage(V)	scale ratio:10
M720	0x303E	Panel2 3phase line-to-line mean voltage(V)	scale ratio:10
M721	0x303F	Panel2 phase R-to-neutral voltage(V)	scale ratio:10
M722	0x3040	Panel2 phase S-to-neutral voltage(V)	scale ratio:10
M723	0x3041	Panel2 phase T-to-neutral voltage(V)	scale ratio:10
M724	0x3042	Panel2 phase R-to-phase S voltage(V)	scale ratio:10
M725	0x3043	Panel2 phase S-to-phase T voltage(V)	scale ratio:10

M726	0x3044	Panel2 phase R-to-phase T voltage(V)	scale ratio:10
M727	0x3045 0x3046	Panel2 3phæe total kwh (MSW) Panel2 3phase total kwh (LSW)	scale ratio:10000
M728	0x3047	Panel2 3phæe total kw	scale ratio:1
M729	0x3048	Panel2 3phæe total H	scale ratio:1000
M330	0x3049	Panel2 3phase mean current(A)	scale ratio:1
M731	0x304A	Panel2 phase R kw	scale ratio:10
M732	0x304B	Panel2 phase S kw	scale ratio:10
M733	0x304C	Panel2 phase T kw	scale ratio:10
M734	0x304D	Panel2 phase R PF	scale ratio:1000
M735	0x304E	Panel2 phase S PF	scale ratio:1000
M736	0x304F	Panel2 phase T PF	scale ratio:1000
M737	0x3050	Panel2 phase R current(A)	scale ratio:10
M738	0x3051	Panel2 phase S current(A)	scale ratio:10
M739	0x3052	Panel2 phase T current(A)	scale ratio:10
M740	0x3053	Panel2 neutral current(A)	scale ratio:10
M741	0x3054	Panel2 phase R current demand	scale ratio:10
M742	0x3055	Panel2 phase S current demand	scale ratio:10
M743	0x3056	Panel2 phase T current demand	scale ratio:10
M744	0x3057	Panel2 neutral current demand	scale ratio:10
M745	0x3058	Panel2 phase R maximum current demand	scale ratio:10
M746	0x3059	Panel2 phase S maximum current demand	scale ratio:10
M747	0x305A	Panel2 phase T maximum current demand	scale ratio:10
M748	0x305B	Panel2 neutral maximum current demand	scale ratio:10

M749	0x305C	Panel2 3phase total power demand(kw)	scale ratio:1
M750	0x305D	Panel2 3phase maximum total power demand(kw)	scale ratio:1
M751	0x305E	Panel2 phase R maximum current(A)	scale ratio:10
M752	0x305F	Panel2 phase S maximum current(A)	scale ratio:10
M753	0x3060	Panel2 phase T maximum current(A)	scale ratio:10
M754	0x3061	Panel2 neutral maximum current(A)	scale ratio:10
M755	0x3062	Panel2 3phase maximum power(kw)	scale ratio:1

Remark1: the scale ratio shows how to calculate the real vale from the data.

Ex: the scale ratio is 100  
real value is data/100.

Remark2: 32-bit integer values, such as KWH, are packed as follows:

	MSB	BYTE3	BYTE2	LSB
Modbus MSW:	MSB	LSB		
Modbus LSW:			MSB	LSB

Example:

For a 32-bit value of 0x12345678.

Modbus MSW = 0x1234

Modbus LSW = 0x5678

Remark3: data page is organized as follows data 0xE0->0xF0->0x20->0x30.

## 5.5 ALARM DATA AREA

If the alarm occurred, the relatively bit would be set as one.

<b>CODE</b>	<b>ADDRESS</b>	<b>Description</b>
A00	0x30C0 Bit0	Output over voltage
A01	0x30C0 Bit1	Output under voltage
A02	0x30C0 Bit2	Output over current plate1
A03	0x30C0 Bit3	Output over current plate2
A04	0x30C0 Bit4	Neutral over current plate1
A05	0x30C0 Bit5	Neutral over current plate2
A06	0x30C0 Bit6	Ground over current
A07	0x30C0 Bit7	Output voltage Abnormal
A08	0x30C0 Bit8	Phase loss
A09	0x30C0 Bit9	Phase rotation error
A10	0x30C0 Bit10	Over frequency
A11	0x30C0 Bit11	Under frequency
A12	0x30C0 Bit12	Transformer over temperature
A13	0x30C0 Bit13	Output harmonic current abnormally
A14	0x30E0 Bit0	Panel1 channel1 over current
...	...	...
A29	0x30E0 Bit15	Panel1 channel16 over current
A30	0x30E1 Bit0	Panel1 channel17 over current
...	...	...
A45	0x30E1 Bit15	Panel1 channel32 over current
A46	0x30E2 Bit0	Panel1 channel33 over current
...	...	...
A55	0x30E2 Bit9	Panel1 channel42 over current

A56	0x30E3 Bit0	Panel2 channel1 over current
...	...	...
A71	0x30E3 Bit15	Panel2 channel16 over current
A72	0x30E4 Bit0	Panel2 channel17 over current
...	...	...
A87	0x30E4 Bit15	Panel2 channel32 over current
A88	0x30E5 Bit0	Panel2 channel33 over current
...	...	...
A97	0x30E5 Bit9	Panel2 channel42 over current