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HANDBUCH

Modbus RTU - STORION SMILE + T30

V1.23

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Inhalt

GEFAHR

Der unsachgemäße Anschluss dieses Gerätes kann zu Brandgefahr, schweren Verletzungen oder sogar zum Tod führen. Nehmen Sie das Gerät erst in Betrieb nachdem Sie diese Anleitung gelesen und verstanden haben. Folgen Sie allen Installations- und Betriebsanweisungen bei Gebrauch des Gerätes.

Installation, Betrieb und Wartung des Gerätes dürfen nur von qualifiziertem Personal durchgeführt werden.

WARNUNG

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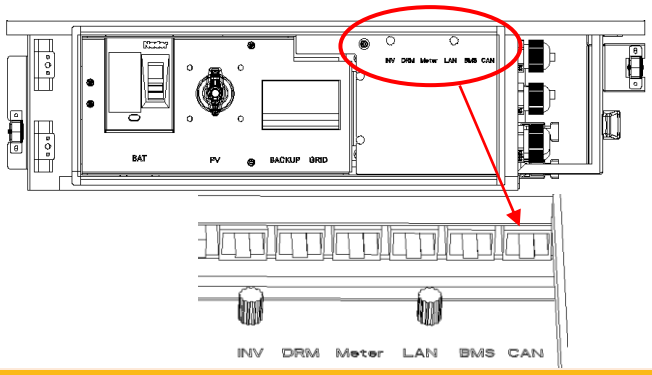
1. Modbus RTU – Schnittstelle

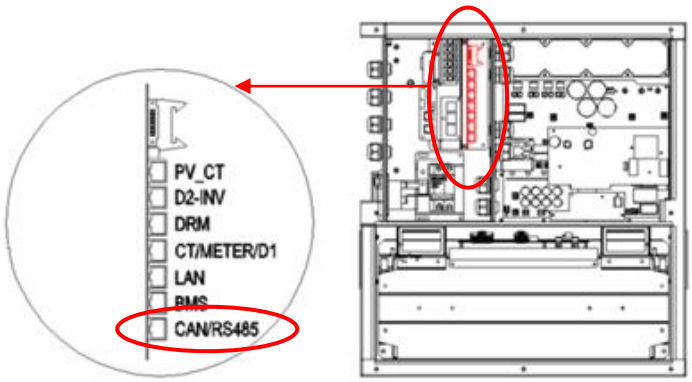
1.1 SMILE5



Item	
Anschluss	LAN2 oder CAN – Modbus muss im Display aktiviert werden
Modbus	4B5A RTU
BT	9600
AUX	Ja

Hinweis: Modbus muss im Display aktiviert werden.

1.2 SMILE-B3



Item	Beschreibung
Anschluss	CAN/RS485
Modbus	4B5A RTU
BT	9600
AUX	Ja

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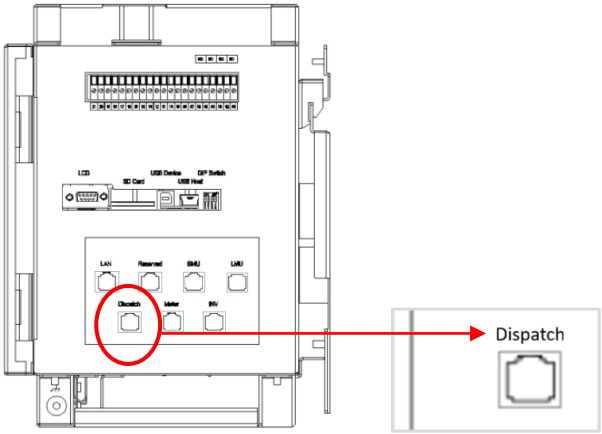
1.3 SMILE-T10



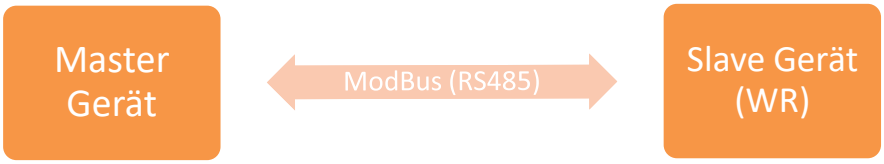
Item	Beschreibung
Anschluss	Dispatch
Modbus	3B6A RTU
BT	9600
AUX	Ja

1.4 Storion T30

Item	Beschreibung
Anschluss	Dispatch
Modbus	3B6A RTU
BT	19200
AUX	Nein

2. Modbus RTU - Kommunikation

2.1 Kommunikationsflussdiagramm



2.2 Kommunikationsbeschreibung

RS485/MODBUS-RTU Kommunikation

Schnittstelle:	RS485
Verbindungsmodus:	Zwei-Draht (RS485+, RS485-), geschirmte Twisted-Pair-Leiter
Arbeitsmodus:	Halbduplex
Reaktionszeit:	<300 ms
Befehlsintervall:	>300 ms
Zeitüberschreitung:	>10 s

2.3 Übertragungsmodus

Die Informationen werden im asynchronen Modus in Bytes übertragen. Die Kommunikationsinformationen, die zwischen dem Host-Computer und dem Slave-Computer übertragen werden, haben das 10-Bit-Format. Die 10 Bits setzen sich aus dem Anfangsbit, 8 Datenbits (zuerst wird das am wenigsten wirksame Bit übertragen) ohne Paritätsprüfbit und 1 Stoppbit zusammen.

Datenbereich Format:

Master

Adresscode	Funktion	Daten	CRC Prüfcode
1 byte	1 byte	N byte	2 byte

Slave

Adresscode	Funktion	Daten	CRC Prüfcode
1 byte	1 byte	N byte	2 byte

Adresscode: Der Adresscode befindet sich am Anfang des Frames, das Dezimalsystem im Umrichter ist 1 ~ 247. **Die Standardadresse ist 0x55. Abbildung des Datenbereichs in Teil 3.**

Funktionscode: Funktionscode, der dem Zielterminal mitteilt, welche Funktion ausgeführt werden soll. In der folgenden Tabelle ist der in diesem Wechselrichter verwendete Funktionscode sowie deren Bedeutung und Funktion aufgeführt.

Datenbereich: Der Datenbereich enthält die Daten, die vom Terminal zur Ausführung einer bestimmten Funktion benötigt werden, oder die gesammelten Daten, wenn das Terminal auf eine Anfrage antwortet.

CRC-Prüfcode: Die CRC-Domäne (Error Check) belegt 2 Byte, einschließlich eines 16-Bit-Binärsystemwerts. Der CRC-Wert wird von der Sendeeinrichtung berechnet und dann an den Datenrahmen der Empfangseinrichtung angehängt. Während des Empfangs wird der CRC-Wert erneut berechnet und anschließend mit dem empfangenden CRC-Domänenwert verglichen. Wenn diese beiden Werte nicht gleich sind, tritt ein Fehler auf.

Basis auf C-Sprache für CRC-Prüfcode:

```
u16CRC16_Check(const u8 *P    ,u16 ubCRCNum)              //CRC check code
{
    u8 temp;
    u8 i;
    u16 c;
    u8 TT;
    u16 crc = 0xffff;
    for(c=0;c<ubCRCNum;c++)
    {
        temp = P[c];
        crc =crc^temp;
        for(i=0;i<8;i++)
        {
            TT = crc & 1;
            crc = crc>>1;
            crc = crc&0x7fff;
            if(TT == 1)
            {
                crc = crc^0xa001;
            }
            crc = crc&0xffff;
        }
    }
    return crc;
}
```

3. Datenbereich

Funktionscode: Funktionscode, der dem Zielterminal mitteilt, welche Funktion ausgeführt werden soll. In der folgenden Tabelle ist der in diesem Wechselrichter verwendete Funktionscode sowie deren Bedeutung und Funktion aufgeführt.

Datenregister lesen (0x03)

Rahmenformat – Master:

Daten	Erklärung
0x03H (Hexadezimal)	Datenregister lesen
High-Byte der Startregister-Adr.	
Low-Byte der Startregister-Adr.	
High-Byte der Registernummer	
Low-Byte der Registernummer	

Rahmenformat – Slave (Daten lesen erfolgreich):

Daten	Erklärung
03H (Hexadezimal)	Datenregister lesen
Anzahl der Bytes (2*N)	Länge der wiedergegebenen Daten
Nr.1 High-Bytes der Daten	Data1 High-Byte.
Nr.1 Low-Bytes der Daten	Data1 Low-Byte.
……	
……	
Nr.N High Byte der Daten	DataN High-Byte.
Nr.N Low-Byte der Daten	DataN Low-Byte.

Datenregister schreiben (0x10)

Rahmenformat – Master:

Daten	Erklärung
0x10H (Hexadezimal)	Datenregister schreiben
High-Byte der Startregister-Adr.	
Low-Byte der Startregister-Adr.	
High-Byte der Registernummer	
Low-Byte der Registernummer	
Anzahl der Bytes	
Nr.1 High-Bytes der Daten	Data1 High-Byte.
Nr.1 Low-Bytes der Daten	Data1 Low-Byte.
……	
……	
Nr.N High Byte der Daten	DataN High-Byte.
Nr.N Low-Byte der Daten	DataN Low-Byte.

Rahmenformat – Slave (Daten schreiben erfolgreich):

Daten	Erklärung
0x10H (Hexadezimal)	Datenregister schreiben
High-Byte der Startregister-Adr.	
Low-Byte der Startregister-Adr.	
High-Byte der Registernummer	
Low-Byte der Registernummer	

Einzelregister schreiben (0x06)

Rahmenformat – Master:

Daten	Erklärung
0x06H (Hexadezimal)	Einzelregister schreiben
High-Byte der Startregister-Adr.	
Low-Byte der Startregister-Adr.	
High-Bytes der Daten	High-Byte
Low-Bytes der Daten	Low-Byte

Rahmenformat – Slave (Daten schreiben erfolgreich):

Daten	Erklärung
0x06H (Hexadezimal)	Datenregister schreiben
High-Byte der Startregister-Adr.	
Low-Byte der Startregister-Adr.	
High-Bytes der Daten	High-Byte
Low-Bytes der Daten	Low-Byte

Fehlerbetrieb – Slave Return:

Daten	Erklärung
Geräteadresse	
Funktionscode + 0x80	
Fehlercode	

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4. Adressregister und Anwendungsdetails

Adress-register	Variable	Gehört zu R/W	Daten-Format	Daten-Modell	Bemerkung / Einheit
Meter					
Netzzähler - Konfiguration					
0000H	Grid Meter CT Enable *Netzzähler CT Aktivieren*	R/W	*Belegt 2 Bytes*	unsigned short	1/bit
0001H	Grid Meter CT Rate *Netzzähler CT Verhältnis*	R/W	*Belegt 2 Bytes*	unsigned short	1/bit
Netzzähler - Betrieb					
0010H 0011H	Total energy feed to grid(Grid) *Gesamte Netzeinspeisung (Netz)*	R	*Belegt 4 Bytes*	unsigned int	0.01KWh/bit
0012H 0013H	Total energy consume from grid(Grid) *Gesamter Netzbezug (Netz)*	R	*Belegt 4 Bytes*	unsigned int	0.01KWh/bit
0014H	Voltage of A phase(Grid) *Spannung Phase A (Netz)*	R	*Belegt 2 Bytes*	unsigned short	1V
0015H	Voltage of B phase(Grid) *Spannung Phase B (Netz)*	R	*Belegt 2 Bytes*	unsigned short	1V
0016H	Voltage of C phase(Grid) *Spannung Phase C (Netz)*	R	*Belegt 2 Bytes*	unsigned short	1V
0017H	Current of A phase(Grid) *Strom Phase A (Netz)*	R	*Belegt 2 Bytes*	short	0.1A
0018H	Current of B phase(Grid) *Strom Phase B (Netz)*	R	*Belegt 2 Bytes*	short	0.1A
0019H	Current of C phase(Grid) *Strom Phase C (Netz)*	R	*Belegt 2 Bytes*	short	0.1A
001AH	Frequency(Grid) *Frequenz (Netz)*	R	*Belegt 2 Bytes*	unsigned short	0.01HZ
001BH 001CH	Active power of A phase(Grid) *Wirkleistung Phase A (Netz)*	R	*Belegt 4 Bytes*	int	1w/bit
001DH 001EH	Active power of B phase(Grid) *Wirkleistung Phase B (Netz)*	R	*Belegt 4 Bytes*	int	1w/bit
001FH 0020H	Active power of C phase(Grid) *Wirkleistung Phase C (Netz)*	R	*Belegt 4 Bytes*	int	1w/bit
0021H 0022H	Total Active power(Grid Meter) *Gesamte Wirkleistung (Netzzähler)*	R	*Belegt 4 Bytes*	int	1w/bit
0023H 0024H	Reactive power of A phase(Grid) *Blindleistung Phase A (Netz)*	R	*Belegt 4 Bytes*	int	1Var

0025H 0026H	Reactive power of B phase(Grid) *Blindleistung Phase B (Netz)*	R	*Belegt 4 Bytes*	int	1Var
0027H 0028H	Reactive power of C phase(Grid) *Blindleistung Phase C (Netz)*	R	*Belegt 4 Bytes*	int	1Var
0029H 002AH	Total reactive power(Grid) *Gesamte Blindleistung (Netz)*	R	*Belegt 4 Bytes*	int	1Var
002BH 002CH	Apparent power of A phase(Grid) *Scheinleistung Phase A (Netz)*	R	*Belegt 4 Bytes*	int	1VA
002DH 002EH	Apparent power of B phase(Grid) *Scheinleistung Phase B (Netz)*	R	*Belegt 4 Bytes*	int	1VA
002FH 0030H	Apparent power of C phase(Grid) *Scheinleistung Phase C (Netz)*	R	*Belegt 4 Bytes*	int	1VA
0031H 0032H	Total apparent power(Grid) *Gesamte Scheinleistung (Netz)*	R	*Belegt 4 Bytes*	int	1VA
0033H	Power factor of A phase(Grid) *Leistungsfaktor Phase A (Netz)*	R	*Belegt 2 Bytes*	short	0.01
0034H	Power factor of B phase(Grid) *Leistungsfaktor Phase B (Netz)*	R	*Belegt 2 Bytes*	short	0.01
0035H	Power factor of C phase(Grid) *Leistungsfaktor Phase C (Netz)*	R	*Belegt 2 Bytes*	short	0.01
0036H	Total Power factor(Grid) *Leistungsfaktor Gesamt (Netz)*	R	*Belegt 2 Bytes*	short	0.01
PV-Zähler - Konfiguration					
0080H	PV Meter CT Enable *PV-Zähler CT Aktivieren*	R/W	*Belegt 2 Bytes*	unsigned short	1/bit
0081H	PV Meter CT Rate *PV-Zähler CT Verhältnis*	R/W	*Belegt 2 Bytes*	unsigned short	1/bit
PV-Zähler - Betrieb					
0090H 0091H	Total energy feed to Grid(PV) *Gesamte Netzeinspeisung (PV)*	R	*Belegt 4 Bytes*	unsigned int	0.01KWh/bit
0092H 0093H	Total energy consumed from Grid(PV) *Gesamter Netzbezug (PV)*	R	*Belegt 4 Bytes*	unsigned int	0.01KWh/bit
0094H	Voltage of A phase(PV) *Spannung Phase A (PV)*	R	*Belegt 2 Bytes*	unsigned short	1V
0095H	Voltage of B phase(PV) *Spannung Phase B (PV)*	R	*Belegt 2 Bytes*	unsigned short	1V
0096H	Voltage of C phase(PV) *Spannung Phase C (PV)*	R	*Belegt 2 Bytes*	unsigned short	1V
0097H	Current of A phase(PV) *Strom Phase A (PV)*	R	*Belegt 2 Bytes*	short	0.1A

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0098H	Current of B phase(PV) *Strom Phase B (PV)*	R	*Belegt 2 Bytes*	short	0.1A
0099H	Current of C phase(PV) *Strom Phase C (PV)*	R	*Belegt 2 Bytes*	short	0.1A
009AH	Frequency(PV) *Frequenz (PV)*	R	*Belegt 2 Bytes*	unsigned short	0.01HZ
009BH 009CH	Active power of A phase(PV) *Wirkleistung Phase A (PV)*	R	*Belegt 4 Bytes*	int	1w/bit
009DH 009EH	Active power of B phase(PV) *Wirkleistung Phase B (PV)*	R	*Belegt 4 Bytes*	int	1w/bit
009FH 00A0H	Active power of C phase(PV) *Wirkleistung Phase C (PV)*	R	*Belegt 4 Bytes*	int	1w/bit
00A1H 00A2H	Total Active power(PV Meter) *Gesamte Wirkleistung (PV)*	R	*Belegt 4 Bytes*	int	1w/bit
00A3H 00A4H	Reactive power of A phase(PV) *Blindleistung Phase A (PV)*	R	*Belegt 4 Bytes*	int	1Var
00A5H 00A6H	Reactive power of B phase(PV) *Blindleistung Phase B (PV)*	R	*Belegt 4 Bytes*	int	1Var
00A7H 00A8H	Reactive power of C phase(PV) *Blindleistung Phase C (PV)*	R	*Belegt 4 Bytes*	int	1Var
00A9H 00AAH	Total reactive power(PV) *Gesamte Blindleistung (PV)*	R	*Belegt 4 Bytes*	int	1Var
00ABH 00ACH	Apparent power of A phase(PV) *Scheinleistung Phase A (PV)*	R	*Belegt 4 Bytes*	int	1VA
00ADH 00AEH	Apparent power of B phase(PV) *Scheinleistung Phase B (PV)*	R	*Belegt 4 Bytes*	int	1VA
00AFH 00B0H	Apparent power of C phase(PV) *Scheinleistung Phase C (PV)*	R	*Belegt 4 Bytes*	int	1VA
00B1H 00B2H	Total apparent power(PV) *Gesamte Scheinleistung (PV)*	R	*Belegt 4 Bytes*	int	1VA
00B3H	Power factor of A phase(PV) *Leistungsfaktor Phase A (PV)*	R	*Belegt 2 Bytes*	short	0.01
00B4H	Power factor of B phase(PV) *Leistungsfaktor Phase B (PV)*	R	*Belegt 2 Bytes*	short	0.01
00B5H	Power factor of C phase(PV) *Leistungsfaktor Phase C (PV)*	R	*Belegt 2 Bytes*	short	0.01
00B6H	Total Power factor(PV) *Leistungsfaktor Gesamt (PV)*	R	*Belegt 2 Bytes*	short	0.01
Batterie – HOME-Serie					
0100H	Battery voltage *Batteriespannung*	R	*Belegt 2 Bytes*	unsigned short	0.1V/bit

0101H	Battery current *Batteriestrom*	R	*Belegt 2 Bytes*	short	0.1A/bit
0102H	Battery SOC *Batterie-Ladezustand*	R	*Belegt 2 Bytes*	unsigned short	0.1/bit
0103H	Battery status *Batteriestatus*	R	*Belegt 2 Bytes*	unsigned short	Hinweis1
0104H	Battery relay status *Batterierelaisstatus*	R	*Belegt 2 Bytes*	unsigned short	Hinweis2
0105H	Pack ID of min cell voltage *Pack ID der min. Zellenspannung*	R	*Belegt 2 Bytes*	unsigned short	0.001V/bit
0106H	Cell ID of min cell voltage *Zellen-ID der min. Zellenspannung*	R	*Belegt 2 Bytes*	unsigned short	0.001V/bit
0107H	Min cell voltage *Min. Zellenspannung*	R	*Belegt 2 Bytes*	unsigned short	0.001V/bit
0108H	Pack ID of max cell voltage *Pack ID der max. Zellenspannung*	R	*Belegt 2 Bytes*	unsigned short	0.001V/bit
0109H	Cell ID of max cell voltage *Zellen-ID der max. Zellenspannung*	R	*Belegt 2 Bytes*	unsigned short	0.001V/bit
010AH	Max cell voltage *Max. Zellenspannung*	R	*Belegt 2 Bytes*	unsigned short	0.001V/bit
010BH	Pack ID of min cell temperature *Pack ID der min. Zelltemperatur*	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit
010CH	Cell ID of min cell temperature *Zell-ID der min. Zelltemperatur*	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit
010DH	Min cell temperature *Min. Zelltemperatur*	R	*Belegt 2 Bytes*	short	0.1℃/bit
010EH	Pack ID of max cell temperature *Pack ID der max. Zelltemperatur*	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit
010FH	Cell ID of max cell temperature *Zellen-ID der max. Zelltemperatur*	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit
0110H	Max cell temperature *Max. Zelltemperatur*	R	*Belegt 2 Bytes*	short	0.1℃/bit
0111H	Battery max charge current *Max. Ladestrom der Batterie*	R	*Belegt 2 Bytes*	unsigned short	0.1A/bit
0112H	Battery max discharge current *Max. Entladestrom der Batterie*	R	*Belegt 2 Bytes*	unsigned short	0.1A/bit
0113H	Battery charge cut-off voltage *Abschaltspannung für Batterieladung*	R	*Belegt 2 Bytes*	unsigned short	0.1V/bit
0114H	Battery discharge cut-off voltage *Abschaltspannung für Batterieentladung*	R	*Belegt 2 Bytes*	unsigned short	0.1V/bit

0115H	BMU software version *BMU-Softwareversion*	R	*Belegt 2 Bytes*	unsigned short	
0116H	LMU software version *LMU-Softwareversion*	R	*Belegt 2 Bytes*	unsigned short	
0117H	ISO software version *ISO-Softwareversion*	R	*Belegt 2 Bytes*	unsigned short	
0118H	Battery num *Batterienummer*	R	*Belegt 2 Bytes*	unsigned short	Battery module number
0119H	Battery capacity *Batteriekapazität*	R	*Belegt 2 Bytes*	unsigned short	0.1KWH/bit
011AH	Battery type *Batterietyp*	R	*Belegt 2 Bytes*	unsigned short	Hinweis3
011BH	Battery SOH *Batterie SOH*	R	*Belegt 2 Bytes*	unsigned short	0.1/bit
011CH 011DH	Battery warning *Batteriewarnung*	R	*Belegt 4 Bytes*	unsigned int	Reserve
011EH 011FH	Battery fault *Batteriefehler*	R	*Belegt 4 Bytes*	unsigned int	Hinweis4
0120H 0121H	Battery charge energy *Batterieladeenergie*	R	*Belegt 4 Bytes*	unsigned int	0.1KWH/bit
0122H 0123H	Battery discharge energy *Batterieentladeenergie*	R	*Belegt 4 Bytes*	unsigned int	0.1KWH/bit
0124H 0125H	Battery energy charge from grid *Batterieladung aus Netz*	R	*Belegt 4 Bytes*	unsigned int	0.1KWH/bit
0126H	Battery Power *Batterieleistung*	R	*Belegt 2 Bytes*	short	1W/bit（ -: Charge, +: Discharge）
0127H	Battery remaining time	R	*Belegt 2 Bytes*	unsigned short	1Minute/bit
0128H	Battery Implementation Charge SOC	R	*Belegt 2 Bytes*	unsigned short	0.1/bit(Rate_SOC-UPS_SOC)
0129H	Battery Implementation Discharge SOC	R	*Belegt 2 Bytes*	unsigned short	0.1/bit(Rate_SOC-UPS_SOC)
012AH	Battery Remaining Charge SOC	R	*Belegt 2 Bytes*	unsigned short	0.1/bit(Rate_SOC-Remain_SOC)
012BH	Battery Remaining Discharge SOC	R	*Belegt 2 Bytes*	unsigned short	0.1/bit(Remain_SOC - UPS_SOC)
012CH	Battery Max charge power	R	*Belegt 2 Bytes*	unsigned short	1W/bit
012DH	Battery Max Discharge power	R	*Belegt 2 Bytes*	unsigned short	1W/bit

012EH	Battery MOS Control	R/W	*Belegt 2 Bytes*	unsigned short	0:Open, 1:Close
012FH	Battery SOC Calibration	R	*Belegt 2 Bytes*	unsigned short	0:Disable, 1: Enable
0130H	Battery Single cut error code	R	*Belegt 2 Bytes*	unsigned short	
0131H 0132H	Battery fault1	R	*Belegt 4 Bytes*	unsigned int	
0133H 0134H	Battery fault2	R	*Belegt 4 Bytes*	unsigned int	
0135H 0136H	Battery fault3	R	*Belegt 4 Bytes*	unsigned int	
0137H 0138H	Battery fault4	R	*Belegt 4 Bytes*	unsigned int	
0139H 013AH	Battery fault5	R	*Belegt 4 Bytes*	unsigned int	
013BH 013CH	Battery fault6	R	*Belegt 4 Bytes*	unsigned int	
013DH 013EH	Battery warning1	R	*Belegt 4 Bytes*	unsigned int	
013FH 0140H	Battery warning2	R	*Belegt 4 Bytes*	unsigned int	
0141H 0142H	Battery warning3	R	*Belegt 4 Bytes*	unsigned int	
0143H 0144H	Battery warning4	R	*Belegt 4 Bytes*	unsigned int	
0145H 0146H	Battery warning5	R	*Belegt 4 Bytes*	unsigned int	
0147H 0148H	Battery warning6	R	*Belegt 4 Bytes*	unsigned int	
Wechselrichter – HOME-Serie					
0400H	Inverter_Voltage_L1 *WR-Spannung L1*	R	*Belegt 2 Bytes*	unsigned short	0.1V/bit
0401H	Inverter _Voltage_L2 *WR-Spannung L2*	R	*Belegt 2 Bytes*	unsigned short	0.1V/bit
0402H	Inverter_Voltage_L3 *WR-Spannung L3*	R	*Belegt 2 Bytes*	unsigned short	0.1V/bit
0403H	Inverter_Current_L1 *WR-Strom L1*	R	*Belegt 2 Bytes*	short	0.1A/bit
0404H	Inverter_Current_L2 *WR-Strom L2*	R	*Belegt 2 Bytes*	short	0.1A/bit
0405H	Inverter_Current_L3 *WR-Strom L3*	R	*Belegt 2 Bytes*	short	0.1A/bit

0406H 0407H	Inverter_Power_L1 *WR-Leistung L1*	R	*Belegt 4 Bytes*	int	1W/bit
0408H 0409H	Inverter_Power_L2 *WR-Leistung L2*	R	*Belegt 4 Bytes*	int	1W/bit
040AH 040BH	Inverter_Power_L3 *WR-Leistung L3*	R	*Belegt 4 Bytes*	int	1W/bit
040CH 040DH	Inverter_Power_Total *WR-Gesamtleistung*	R	*Belegt 4 Bytes*	int	1W/bit
040EH	Inverter_Backup_Voltage_L1 *WR-Backupspannung L1*	R	*Belegt 2 Bytes*	unsigned short	0.1V/bit
040FH	Inverter_Backup_Voltage_L2 *WR-Backupspannung L2*	R	*Belegt 2 Bytes*	unsigned short	0.1V/bit
0410H	Inverter_Backup_Voltage_L3 *WR-Backupspannung L3*	R	*Belegt 2 Bytes*	unsigned short	0.1V/bit
0411H	Inverter_Backup_Current_L 1 *WR-Backupstrom L1*	R	*Belegt 2 Bytes*	unsigned short	0.1A/bit
0412H	Inverter_Backup_Current_L2 *WR-Backupstrom L2*	R	*Belegt 2 Bytes*	unsigned short	0.1A/bit
0413H	Inverter_Backup_Current_L3 *WR-Backupstrom L3*	R	*Belegt 2 Bytes*	unsigned short	0.1A/bit
0414H 0415H	Inverter_Backup_Power_L1 *WR-Backupleistung L1*	R	*Belegt 4 Bytes*	unsigned int	1W/bit
0416H 0417H	Inverter_Backup_Power_L2 *WR-Backupleistung L2*	R	*Belegt 4 Bytes*	unsigned int	1W/bit
0418H 0419H	Inverter_Backup_Power_L3 *WR-Backupleistung L3*	R	*Belegt 4 Bytes*	unsigned int	1W/bit
041AH 041BH	Inverter_Backup_Power_Total *WR-Gesamtbackupleistung*	R	*Belegt 4 Bytes*	unsigned int	1W/bit
041CH	Inverter Grid Frequency *WR-Netzfreqzenz*	R	*Belegt 2 Bytes*	unsigned short	0.01Hz/bit
041DH	PV1 Voltage *PV1-Spannung*	R	*Belegt 2 Bytes*	unsigned short	0.1V/bit
041EH	PV1 Current *PV1-Strom*	R	*Belegt 2 Bytes*	unsigned short	0.1A/bit
041FH 0420H	PV1 power *PV1-Leistung*	R	*Belegt 4 Bytes*	unsigned int	1w/bit
0421H	PV2 Voltage *PV2-Spannung*	R	*Belegt 2 Bytes*	unsigned short	0.1V/bit
0422H	PV2 Current *PV2-Strom*	R	*Belegt 2 Bytes*	unsigned short	0.1A/bit
0423H 0424H	PV2 power *PV2-Leistung*	R	*Belegt 4 Bytes*	unsigned int	1w/bit

0425H	PV3 Voltage *PV3-Spannung*	R	*Belegt 2 Bytes*	unsigned short	0.1V/bit
0426H	PV3 Current *PV3-Strom*	R	*Belegt 2 Bytes*	unsigned short	0.1A/bit
0427H 0428H	PV3 power *PV3-Leistung*	R	*Belegt 4 Bytes*	unsigned int	1w/bit
0429H	PV4 Voltage *PV4-Spannung*	R	*Belegt 2 Bytes*	unsigned short	0.1V/bit
042AH	PV4 Current *PV4-Strom*	R	*Belegt 2 Bytes*	unsigned short	0.1A/bit
042BH 042CH	PV4 power *PV4-Leistung*	R	*Belegt 4 Bytes*	unsigned int	1w/bit
042DH	PV5 Voltage *PV5-Spannung*	R	*Belegt 2 Bytes*	unsigned short	0.1V/bit
042EH	PV5 Current *PV5-Strom*	R	*Belegt 2 Bytes*	unsigned short	0.1A/bit
042FH 0430H	PV5 power *PV5-Leistung*	R	*Belegt 4 Bytes*	unsigned int	1w/bit
0431H	PV6 Voltage *PV6-Spannung*	R	*Belegt 2 Bytes*	unsigned short	0.1V/bit
0432H	PV6 Current *PV6-Strom*	R	*Belegt 2 Bytes*	unsigned short	0.1A/bit
0433H 0434H	PV6 power *PV6-Leistung*	R	*Belegt 4 Bytes*	unsigned int	1w/bit
0435H	INV Temperature *WR-Temperatur*	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit
0436H 0437H	Inverter warning1 *WR-Warnung1*	R	*Belegt 4 Bytes*	unsigned int	Reserve
0438H 0439H	Inverter warning2 *WR-Warnung2*	R	*Belegt 4 Bytes*	unsigned int	Reserve
043AH 043BH	Inverter fault1 *WR-Fehler1*	R	*Belegt 4 Bytes*	unsigned int	Reserve
043CH 043DH	Inverter fault2 *WR-Fehler2*	R	*Belegt 4 Bytes*	unsigned int	Reserve
043EH 043FH	Inverter Total PV Energy *PV-Gesamtenergie*	R	*Belegt 4 Bytes*	unsigned int	0.1KWH/bit
0440H	Inverter work mode *WR-Arbeitsmodus*	R	*Belegt 2 Bytes*	unsigned short	Hinweis5
Wechselrichter – Information					
0680H~ 0644H	Inverter master software version *WR (Master) Software-Version*	R	*Belegt 10 Bytes*	unsigned char	

0645H~ 0649H	Inverter slave software version *WR (Slave) Software-Version*	R	*Belegt 10 Bytes*	unsigned char	
064AH~ 0653H	Inverter SN *WR-SN*	R	*Belegt 20 Bytes*	unsigned char	
System – Information					
0740H	System_time : (year)-(month) *Systemzeit: (Jahr)-(Monat)*	R/W	*Belegt 2 Bytes*	unsigned short	Data format hex; 0xYYMM, example: Send0x1109; year:0x11(2017) month:0x09(09);
0741H	System_time : (day)-(hour) *Systemzeit: (Tag)-(Stunde)*	R/W	*Belegt 2 Bytes*	unsigned short	Data format hex; 0xDDHH, example: Send0x1109; day:0x11(The 17 day) hour:0x09(09);
0742H	System_time : (minute)-(second) *Systemzeit: (Minute)-(Sekunde)*	R/W	*Belegt 2 Bytes*	unsigned short	Data format hex; 0xmmss, example: Send 0x1109; min:0x11(17) second:0x09(09);
0743H	EMS SN byte1-2	R	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x414C=='AL'
0744H	EMS SN byte3-4	R	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x3132=='12'
0745H	EMS SN byte5-6	R	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x3132=='12'
0746H	EMS SN byte7-8	R	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x3132=='12'
0747H	EMS SN byte9-10	R	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x3132=='12'
0748H	EMS SN byte11-12	R	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x3132=='12'
0749H	EMS SN byte13-14	R	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x3132=='12'
074AH	EMS SN byte15-16	R	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x3132=='12'
074BH	EMS Version High	R	*Belegt 2 Bytes*	unsigned short	
074CH	EMS Version Middle	R	*Belegt 2 Bytes*	unsigned short	
074DH	EMS Version Low	R	*Belegt 2 Bytes*	unsigned short	

System – Konfiguration					
0800H	MAX Feed into grid percent	R/W	*Belegt 2 Bytes*	unsigned short	1%/bit
0801H 0802H	PV Capacity Storage	R/W	*Belegt 4 Bytes*	unsigned int	1W/bit
0803H 0804H	PV Capacity of Grid Inverter	R/W	*Belegt 4 Bytes*	unsigned int	1W/bit
0805H	System mode	R/W	*Belegt 2 Bytes*	unsigned short	1:AC Mode 2:DC Mode 3:Hybird Mode
0806H	Meter CT Select	R/W	*Belegt 2 Bytes*	unsigned short	0:Grid&PV use CT; 1:Grid use CT, PV use Meter; 2:Grid use Meter, PV use CT; 3: Grid&PV use Meter;
0807H	Battery Ready	R/W	*Belegt 2 Bytes*	unsigned short	0:OFF 1:ON
0808H	IP Method	R/W	*Belegt 2 Bytes*	unsigned short	0:DHCP 1:STATIC
0809H 080AH	Local IP	R/W	*Belegt 4 Bytes*	unsigned short	0xC0，0xA8，0x01，0x01 192.168.1.1
080BH 080CH	Subnet Mask	R/W	*Belegt 4 Bytes*	unsigned short	0xFF，0xFF，0xFF，0x01 255.255.255.1
080DH 080EH	Gateway	R/W	*Belegt 4 Bytes*	unsigned short	0xC0，0xA8，0x01，0x01 192.168.1.1
080FH	Modbus Address	R/W	*Belegt 2 Bytes*	unsigned short	**default 0x55**
0810H	Modbus Baud rate	R/W	*Belegt 2 Bytes*	unsigned short	0：9600 1：115200 2：256000
Zeitsteuerung					
084FH	Time period control flag	R/W	*Belegt 2 Bytes*	unsigned short	0 :Disable Time period control 1:Enable Charge Time period control 2:Enable discharge Time period control 3:Enable Time period control

0850H	UPS Reserve Soc	R/W	*Belegt 2 Bytes*	unsigned short	0.1/bit
0851H	Time discharge start time1	R/W	*Belegt 2 Bytes*	unsigned short	1H/bit
0852H	Time discharge stop time1	R/W	*Belegt 2 Bytes*	unsigned short	1H/bit
0853H	Time discharge start time2	R/W	*Belegt 2 Bytes*	unsigned short	1H/bit
0854H	Time discharge stop time2	R/W	*Belegt 2 Bytes*	unsigned short	1H/bit
0855H	Charge Cut Soc	R/W	*Belegt 2 Bytes*	unsigned short	0.1/bit
0856H	Time charge start time1	R/W	*Belegt 2 Bytes*	unsigned short	1H/bit
0857H	Time charge stop time1	R/W	*Belegt 2 Bytes*	unsigned short	1H/bit
0858H	Time charge start time2	R/W	*Belegt 2 Bytes*	unsigned short	1H/bit
0859H	Time charge stop time2	R/W	*Belegt 2 Bytes*	unsigned short	1H/bit
Dispatch					
0880H	Dispatch Start	R/W	*Belegt 2 Bytes*	unsigned short	1:start; 0:stop
0881H 0882H	Dispatch Active power	R/W	*Belegt 4 Bytes*	Int	1W/bit Offset:32000 charge:<32000 discharge:>32000
0883H 0884H	Dispatch Reactive power	R/W	*Belegt 4 Bytes*	Int	1Var/bit Offset:32000 charge:<32000 discharge:>32000
0885H	Dispatch Mode	R/W	*Belegt 2 Bytes*	unsigned short	Hinweis7
0886H	Dispatch SOC	R/W	*Belegt 2 Bytes*	unsigned short	0.4%/bit example: Send SOC=95, corresponding to the SOC of 38%.
0887H 0888H	Dispatch Time	R/W	*Belegt 4 Bytes*	unsigned int	1S/bit

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AUX					
08B0H	EMS DO0	W	*Belegt 2 Bytes*	unsigned short	Bypass Control function
08B1H	EMS DO1	W	*Belegt 2 Bytes*	unsigned short	System fault output.
08C0H	EMS DI0	R	*Belegt 2 Bytes*	unsigned short	EPO, Battery MOS cut off.
08C1H	EMS DI1	R	*Belegt 2 Bytes*	unsigned short	Reserved
System - Betriebsdaten					
08D0H 08D1H	PV Inverter Energy	R	*Belegt 4 Bytes*	unsigned int	0.1KWH/bit
08D2H 08D3H	The system total PV energy	R	*Belegt 4 Bytes*	unsigned int	0.1KWH/bit
08D4H 08D5H	System fault	R	*Belegt 4 Bytes*	unsigned int	Hinweis6
Safety TEST					
1000H	Grid_Regulation	R/W	*Belegt 2 Bytes*	unsigned short	Hinweis8
1001H	Safety Test Enable	R/W	*Belegt 2 Bytes*	unsigned short	Safety Test Enable 0: Disable 1: Enable
1002H 1003H	Safety Mode Enable	R/W	*Belegt 4 Bytes*	unsigned int	Hinweis9
1004H	Starting_slope	R/W	*Belegt 2 Bytes*	unsigned short	0.01%Pn/min
1005H	Phase state	R/W	*Belegt 2 Bytes*	unsigned short	0：advance 1：phase lag
1006H	PF Value	R/W	*Belegt 2 Bytes*	short	0.01
1007H	Volt-WATT Starting	R/W	*Belegt 2 Bytes*	unsigned short	0.1V
1008H	Volt-WATT Stop	R/W	*Belegt 2 Bytes*	unsigned short	0.1V
1009H	Set Battery Power	R/W	*Belegt 2 Bytes*	short	1W/bit Charge mode or Dis charge mode Set Battery Power

100AH	Set PV Power	R/W	*Belegt 2 Bytes*	unsigned short	Set Photovoltaic (pv) power supply network
100BH	Ovp	R/W	*Belegt 2 Bytes*	unsigned short	0.1V
100CH	OvpT	R/W	*Belegt 2 Bytes*	unsigned short	1ms
100DH	Ovp10	R/W	*Belegt 2 Bytes*	unsigned short	0.1V
100EH	Ovp10T	R/W	*Belegt 2 Bytes*	unsigned short	1S
100FH	Uvp	R/W	*Belegt 2 Bytes*	unsigned short	0.1V
1010H	UvpT	R/W	*Belegt 2 Bytes*	unsigned short	1ms
1011H	Uvp2	R/W	*Belegt 2 Bytes*	unsigned short	0.1V
1012H	Uvp2T	R/W	*Belegt 2 Bytes*	unsigned short	1ms
1013H	Ofp	R/W	*Belegt 2 Bytes*	unsigned short	0.01HZ
1014H	OfpT	R/W	*Belegt 2 Bytes*	unsigned short	1ms
1015H	Ofp2	R/W	*Belegt 2 Bytes*	unsigned short	0.01HZ
1016H	Ofp2T	R/W	*Belegt 2 Bytes*	unsigned short	1ms
1017H	Ufp	R/W	*Belegt 2 Bytes*	unsigned short	0.01HZ
1018H	UfpT	R/W	*Belegt 2 Bytes*	unsigned short	1ms
1019H	Ufp2	R/W	*Belegt 2 Bytes*	unsigned short	0.01HZ
101AH	Ufp2T	R/W	*Belegt 2 Bytes*	unsigned short	1ms
101BH	Ufp2T	R/W	*Belegt 2 Bytes*	unsigned short	1ms
ATE TEST					
1100H	Reset Mode	W	*Belegt 2 Bytes*	unsigned short	0:None 1:Energy Reset 2:Meter Reset 4:Factory Reset

1101H	EMS SN byte1-2	R/W	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x414C=='AL'
1102H	EMS SN byte3-4	R/W	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x3132=='12'
1103H	EMS SN byte5-6	R/W	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x3132=='12'
1104H	EMS SN byte7-8	R/W	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x3132=='12'
1105H	EMS SN byte9-10	R/W	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x3132=='12'
1106H	EMS SN byte11-12	R/W	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x3132=='12'
1107H	EMS SN byte13-14	R/W	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x3132=='12'
1108H	EMS SN byte15-16	R/W	*Belegt 2 Bytes*	unsigned short	EMS SN :ASCII 0x3132=='12'
1109H	EMS MAC byte1-2	R/W	*Belegt 2 Bytes*	unsigned short	EMS MAC :HEX 0x70B3=0x70,0xB3
110AH	EMS MAC byte3-4	R/W	*Belegt 2 Bytes*	unsigned short	EMS MAC : HEX 0xD57A=0xD5,0x7A
110BH	EMS MAC byte5-6	R/W	*Belegt 2 Bytes*	unsigned short	EMS MAC : HEX 0x2C11=0x2C,0x11
110CH	Pointing to the server	R/W	*Belegt 2 Bytes*	unsigned short	0:Formal Server 1:RD test 2:Production test
110DH	Network type	R/W	*Belegt 2 Bytes*	unsigned short	
110EH	System laguage	R/W	*Belegt 2 Bytes*	unsigned short	0:English 1: German
110FH	Inverter model	R/W	*Belegt 2 Bytes*	unsigned short	0:INVERTER_NULL, 1:KELONG_S5, 2:KELONG_B5, 3:GINLONG_T10,
CT-Kalibrierung					
11B9H	Grid voltage	R	*Belegt 2 Bytes*	unsigned short	0.1V/Bit
11BAH	Grid CT Current	R	*Belegt 2 Bytes*	short	0.1A/Bit
11BBH	PV CT Current	R	*Belegt 2 Bytes*	short	0.1A/Bit
11BCH	Grid CT Power	R	*Belegt 2 Bytes*	short	1W/Bit

11BDH	PV CT Power	R	*Belegt 2 Bytes*	short	1W/Bit
11BEH	Volt calibration point1	R/W	*Belegt 2 Bytes*	unsigned short	0.01V/Bit
11BFH	Volt calibration coef1	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11C0H	Volt calibration offset1	R/W	*Belegt 2 Bytes*	short	0.01V/Bit
11C1H	Volt calibration point2	R/W	*Belegt 2 Bytes*	unsigned short	0.01V/Bit
11C2H	Volt calibration coef2	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11C3H	Volt calibration offset2	R/W	*Belegt 2 Bytes*	short	0.01V/Bit
11C4H	Grid current calibration point1	R/W	*Belegt 2 Bytes*	unsigned short	0.1A/Bit
11C5H	Grid current calibration coef1	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11C6H	Grid current calibration offset1	R/W	*Belegt 2 Bytes*	short	0.1A/Bit
11C7H	Grid current calibration point2	R/W	*Belegt 2 Bytes*	unsigned short	0.1A/Bit
11C8H	Grid current calibration coef2	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11C9H	Grid current calibration offset2	R/W	*Belegt 2 Bytes*	short	0.1A/Bit
11CAH	Grid current calibration point3	R/W	*Belegt 2 Bytes*	unsigned short	0.1A/Bit
11CBH	Grid current calibration coef3	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11CCH	Grid current calibration offset3	R/W	*Belegt 2 Bytes*	short	0.1A/Bit
11CDH	Grid current calibration point4	R/W	*Belegt 2 Bytes*	unsigned short	0.1A/Bit
11CEH	Grid current calibration coef4	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11CFH	Grid current calibration offset4	R/W	*Belegt 2 Bytes*	short	0.1A/Bit
11D0H	Grid current calibration point5	R/W	*Belegt 2 Bytes*	unsigned short	0.1A/Bit
11D1H	Grid current calibration coef5	R/W	*Belegt 2 Bytes*	short	0.0001/Bit

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11D2H	Grid current calibration offset5	R/W	*Belegt 2 Bytes*	short	0.1A/Bit
11D3H	Grid power calibration point1	R/W	*Belegt 2 Bytes*	unsigned short	1W/Bit
11D4H	Grid power calibration coef1	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11D5H	Grid power calibration offset1	R/W	*Belegt 2 Bytes*	short	1W/Bit
11D6H	Grid power calibration point2	R/W	*Belegt 2 Bytes*	unsigned short	1W/Bit
11D7H	Grid power calibration coef2	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11D8H	Grid power calibration offset2	R/W	*Belegt 2 Bytes*	short	1W/Bit
11D9H	Grid power calibration point3	R/W	*Belegt 2 Bytes*	unsigned short	1W/Bit
11DAH	Grid power calibration coef3	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11DBH	Grid power calibration offset3	R/W	*Belegt 2 Bytes*	short	1W/Bit
11DCH	Grid power calibration point4	R/W	*Belegt 2 Bytes*	unsigned short	1W/Bit
11DDH	Grid power calibration coef4	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11DEH	Grid power calibration offset4	R/W	*Belegt 2 Bytes*	short	1W/Bit
11DFH	Grid power calibration point5	R/W	*Belegt 2 Bytes*	unsigned short	1W/Bit
11E0H	Grid power calibration coef5	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11E1H	Grid power calibration offset	R/W	*Belegt 2 Bytes*	short	1W/Bit
11E2H	PV current calibration point1	R/W	*Belegt 2 Bytes*	unsigned short	0.1A/Bit
11E3H	PV current calibration coef1	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11E4H	PV current calibration offset1	R/W	*Belegt 2 Bytes*	short	0.1A/Bit
11E5H	PV current calibration point2	R/W	*Belegt 2 Bytes*	unsigned short	0.1A/Bit
11E6H	PV current calibration coef2	R/W	*Belegt 2 Bytes*	short	0.0001/Bit

11E7H	PV current calibration offset2	R/W	*Belegt 2 Bytes*	short	0.1A/Bit
11E8H	PV current calibration point3	R/W	*Belegt 2 Bytes*	unsigned short	0.1A/Bit
11E9H	PV current calibration coef3	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11EAH	PV current calibration offset3	R/W	*Belegt 2 Bytes*	short	0.1A/Bit
11EBH	PV current calibration point4	R/W	*Belegt 2 Bytes*	unsigned short	0.1A/Bit
11ECH	PV current calibration coef4	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11EDH	PV current calibration offset4	R/W	*Belegt 2 Bytes*	short	0.1A/Bit
11EEH	PV current calibration point5	R/W	*Belegt 2 Bytes*	unsigned short	0.1A/Bit
11EFH	PV current calibration coef5	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11F0H	PV current calibration offset5	R/W	*Belegt 2 Bytes*	short	0.1A/Bit
11F1H	PV power calibration point1	R/W	*Belegt 2 Bytes*	unsigned short	1W/Bit
11F2H	PV power calibration coef1	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11F3H	PV power calibration offset1	R/W	*Belegt 2 Bytes*	short	1W/Bit
11F4H	PV power calibration point2	R/W	*Belegt 2 Bytes*	unsigned short	1W/Bit
11F5H	PV power calibration coef2	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11F6H	PV power calibration offset2	R/W	*Belegt 2 Bytes*	short	1W/Bit
11F7H	PV power calibration point3	R/W	*Belegt 2 Bytes*	unsigned short	1W/Bit
11F8H	PV power calibration coef3	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11F9H	PV power calibration offset3	R/W	*Belegt 2 Bytes*	short	1W/Bit
11FAH	PV power calibration point4	R/W	*Belegt 2 Bytes*	unsigned short	1W/Bit
11FBH	PV power calibration coef4	R/W	*Belegt 2 Bytes*	short	0.0001/Bit

11FCH	PV power calibration offset4	R/W	*Belegt 2 Bytes*	short	1W/Bit
11FDH	PV power calibration point5	R/W	*Belegt 2 Bytes*	unsigned short	1W/Bit
11FEH	PV power calibration coef5	R/W	*Belegt 2 Bytes*	short	0.0001/Bit
11FFH	PV power calibration offset5	R/W	*Belegt 2 Bytes*	short	1W/Bit
Batterie – INDUSTRIE-Serie					
A000H A001H	Topbmu SN	R	*Belegt 4 Bytes*	unsigned int	
A002H	Topbmu soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A003H	Topbmu protocol version	R	*Belegt 2 Bytes*	unsigned short	
A004H	Topbmu hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A005H	Topbmu max charge current	R	*Belegt 2 Bytes*	unsigned short	0.1A /bit
A006H	Topbmu max discharge current	R	*Belegt 2 Bytes*	unsigned short	0.1A /bit
A007H	Topbmu status flag	R	*Belegt 2 Bytes*	unsigned short	Hinweis10
A008H	Topbmu max pole temperature	R	*Belegt 2 Bytes*	short	0.1℃/bit -40
A009H	Topbmu voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
A00AH	Topbmu current	R	*Belegt 2 Bytes*	short	0.1 A/bit
A00BH	Topbmu insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
A00CH	Topbmu SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A00DH	Topbmu SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A00EH	Topbmu min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001v/bit
A00FH	Topbmu min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A010H	Topbmu max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001v/bit
A011H	Topbmu max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	

A012H	Topbmu min cell temperature	R	*Belegt 2 Bytes*	short	0.1℃/bit -40
A013H	Topbmu min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	
A014H	Topbmu max cell temperature	R	*Belegt 2 Bytes*	short	0.1℃/bit -40
A015H	Topbmu max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	
A016H	Topbmu max pole temperature ID	R	*Belegt 2 Bytes*	unsigned short	
A017H	Topbmu version	R	*Belegt 2 Bytes*	unsigned short	22:TOPBMU-M48112-S/0: TOPBMU 42:TOPBMU-M38344-S/57: TOPBMU-M48240-S
A018H	Topbmu BMU version	R	*Belegt 2 Bytes*	unsigned short	15:BMU- HV900112/ 26:BMU- HV50056/ 38:BMU- HV900105/ 50:HV900120/ 41:BMU- HV90086/ 56:HV900120-HE
A019H	Topbmu ISO version	R	*Belegt 2 Bytes*	unsigned short	14:LMU-M48112- S/ 25:LMU-M4856-S/ 37:LMU-M38210-S/ 49:M19360- S/ 40:LMU- M38344-S/ 55:LMU-M48240-S
A01AH	Topbmu LMU version	R	*Belegt 2 Bytes*	unsigned short	14:LMU-M48112- S/ 25:LMU-M4856-S/ 37:LMU-M38210-S/ 49:M19360- S/ 40:LMU- M38344-S/ 55:LMU-M48240-S
A01BH	Topbmu reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis11

A01CH	Topbmu restarts number	R	*Belegt 2 Bytes*	unsigned short	
A01DH	Topbmu clusters number	R	*Belegt 2 Bytes*	unsigned short	
A01EH~ A0FFH					Reserve
A100H A101H	Toperror charge over current cluster high	R	*Belegt 4 Bytes*	unsigned int	
A102H A103H	Toperror charge over current cluster low	R	*Belegt 4 Bytes*	unsigned int	
A104H A105H	Toperror discharge over current cluster high	R	*Belegt 4 Bytes*	unsigned int	
A106H A107H	Toperror discharge over current cluster low	R	*Belegt 4 Bytes*	unsigned int	
A108H A109H	Toperror pole over current cluster high	R	*Belegt 4 Bytes*	unsigned int	
A10AH A10BH	Toperror pole over current cluster low	R	*Belegt 4 Bytes*	unsigned int	
A10CH A10DH	Toperror cell over temperature cluster high	R	*Belegt 4 Bytes*	unsigned int	
A10EH A10FH	Toperror cell over temperature cluster low	R	*Belegt 4 Bytes*	unsigned int	
A110H A111H	Toperror charge low temperature cluster high	R	*Belegt 4 Bytes*	unsigned int	
A112H A113H	Toperror charge low temperature cluster low	R	*Belegt 4 Bytes*	unsigned int	
A114H A115H	Toperror discharge low temperature cluster high	R	*Belegt 4 Bytes*	unsigned int	
A116H A117H	Toperror discharge low temperature cluster low	R	*Belegt 4 Bytes*	unsigned int	
A118H A119H	Toperror cell over voltage cluster high	R	*Belegt 4 Bytes*	unsigned int	
A11AH A11BH	Toperror cell over voltage cluster low	R	*Belegt 4 Bytes*	unsigned int	
A11CH A11DH	Toperror cell under voltage cluster high	R	*Belegt 4 Bytes*	unsigned int	
A11EH A11FH	Toperror cell under voltage cluster low	R	*Belegt 4 Bytes*	unsigned int	
A120H A121H	Toperror cell temperature difference cluster high	R	*Belegt 4 Bytes*	unsigned int	

A122H A123H	Toperror cell temperature difference cluster low	R	*Belegt 4 Bytes*	unsigned int	
A124H A125H	Toperror cell voltage difference cluster high	R	*Belegt 4 Bytes*	unsigned int	
A126H A127H	Toperror cell voltage difference cluster low	R	*Belegt 4 Bytes*	unsigned int	
A128H A129H	Toperror insulation cluster high	R	*Belegt 4 Bytes*	unsigned int	
A12AH A12BH	Toperror insulation cluster low	R	*Belegt 4 Bytes*	unsigned int	
A12CH A12DH	Toperror LMU communication failure cluster high	R	*Belegt 4 Bytes*	unsigned int	
A12EH A12FH	Toperror LMU communication failure cluster low	R	*Belegt 4 Bytes*	unsigned int	
A130H A131H	Toperror temperature sensor failure cluster high	R	*Belegt 4 Bytes*	unsigned int	
A132H A133H	Toperror temperature sensor failure cluster low	R	*Belegt 4 Bytes*	unsigned int	
A134H A135H	Toperror Wireharness failure cluster high	R	*Belegt 4 Bytes*	unsigned int	
A136H A137H	Toperror Wireharness failure cluster low	R	*Belegt 4 Bytes*	unsigned int	
A138H A139H	Toperror high voltage box communication failure cluster high	R	*Belegt 4 Bytes*	unsigned int	
A13AH A13BH	Toperror high voltage box communication failure cluster low	R	*Belegt 4 Bytes*	unsigned int	
A13CH A13DH	Toperror total pressure detect cluster high	R	*Belegt 4 Bytes*	unsigned int	
A13EH A13FH	Toperror total pressure detect cluster low	R	*Belegt 4 Bytes*	unsigned int	
A140H A141H	Toperror relay failure cluster high	R	*Belegt 4 Bytes*	unsigned int	
A142H A143H	Toperror relay failure cluster low	R	*Belegt 4 Bytes*	unsigned int	
A144H A145H	Toperror cluster excision cluster high	R	*Belegt 4 Bytes*	unsigned int	
A146H A147H	Toperror cluster excision cluster low	R	*Belegt 4 Bytes*	unsigned int	

A148H A149H	Toperror ISO communication failure cluster high	R	*Belegt 4 Bytes*	unsigned int	
A14AH A14BH	Toperror ISO communication failure cluster low	R	*Belegt 4 Bytes*	unsigned int	
A14CH A14DH	Toperror LMU SN repeat cluster high	R	*Belegt 4 Bytes*	unsigned int	
A14EH A14FH	Toperror LMU SN repeat cluster low	R	*Belegt 4 Bytes*	unsigned int	
A150H A151H	Toperror LMU ID repeat cluster high	R	*Belegt 4 Bytes*	unsigned int	
A152H A153H	Toperror LMU ID repeat cluster low	R	*Belegt 4 Bytes*	unsigned int	
A154H A155H	Toperror LMU ID discontinuity cluster high	R	*Belegt 4 Bytes*	unsigned int	
A156H A157H	Toperror LMU ID discontinuity cluster low	R	*Belegt 4 Bytes*	unsigned int	
A158H A159H	Toperror current sensor failure cluster high	R	*Belegt 4 Bytes*	unsigned int	
A15AH A15BH	Toperror current sensor failure cluster low	R	*Belegt 4 Bytes*	unsigned int	
A15CH A15DH	Toperror no LMU failure cluster high	R	*Belegt 4 Bytes*	unsigned int	
A15EH A15FH	Toperror no LMU failure cluster low	R	*Belegt 4 Bytes*	unsigned int	
A160H A161H	Toperror no bottom failure cluster high	R	*Belegt 4 Bytes*	unsigned int	
A162H A163H	Toperror no bottom failure cluster low	R	*Belegt 4 Bytes*	unsigned int	
A164H A165H	Toperror force close relay failure cluster high	R	*Belegt 4 Bytes*	unsigned int	
A166H A167H	Toperror force close relay failure cluster low	R	*Belegt 4 Bytes*	unsigned int	
A168H A169H	Toperror force close relay mode cluster high	R	*Belegt 4 Bytes*	unsigned int	
A16AH A16BH	Toperror force close relay mode cluster low	R	*Belegt 4 Bytes*	unsigned int	
A16CH A16DH	Toperror factory test mode cluster high	R	*Belegt 4 Bytes*	unsigned int	

A16EH A16FH	Toperror factory test mode cluster low	R	*Belegt 4 Bytes*	unsigned int	
A170H A171H	Toperror bmu warn and state cluster	R	*Belegt 2 Bytes*	unsigned short	Hinweis12
A172H~ A1FFH					Reserve
A200H A201H	Bmu01 SN	R	*Belegt 4 Bytes*	unsigned int	
A202H	Bmu01 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A203H	Bmu01 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A204H	Bmu01 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
A205H	Bmu01 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
A206H	Bmu01 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
A207H	Bmu01 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
A208H	Bmu01 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A209H	Bmu01 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A20AH A20BH	Bmu01 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
A20CH A20DH	Bmu01 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
A20EH A20FH	Bmu01 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
A210H A211H	Bmu01 equalization	R	*Belegt 4 Bytes*	unsigned int	
A212H A213H	Bmu01 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
A214H	Bmu01 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
A215H	Bmu01 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
A216H A217H	Bmu01 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
A218H A219H	Bmu01 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	

A21AH A21BH	Bmu01 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
A21CH	Bmu01 LMU number	R	*Belegt 2 Bytes*	unsigned short	
A21DH	Bmu01 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
A21EH	Bmu01 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
A21FH	Bmu01 restarts number	R	*Belegt 2 Bytes*	unsigned short	
A220H	Bmu01 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU-HV900112/ 26:BMU- HV50056/ 38:BMU- HV900105/ 50:HV900120/ 41:BMU-HV90086
A221H	Bmu01 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
A222H	Bmu01 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A223H	Bmu01 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
A224H	Bmu01 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A225H	Bmu01 min cell temperature	R	*Belegt 2 Bytes*	short	
A226H	Bmu01 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
A227H	Bmu01 max cell temperature	R	*Belegt 2 Bytes*	short	
A228H	Bmu01 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
A229H~ A2FFH					Reserve
A300H A301H	Bmu02 SN	R	*Belegt 4 Bytes*	unsigned int	
A302H	Bmu02 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A303H	Bmu02 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A304H	Bmu02 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
A305H	Bmu02 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit

A306H	Bmu02 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
A307H	Bmu02 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
A308H	Bmu02 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A309H	Bmu02 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A30AH A30BH	Bmu02 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
A30CH A30DH	Bmu02 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
A30EH A30FH	Bmu02 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
A310H A311H	Bmu02 equalization	R	*Belegt 4 Bytes*	unsigned int	
A312H A313H	Bmu02 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
A314H	Bmu02 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
A315H	Bmu02 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
A316H A317H	Bmu02 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
A318H A319H	Bmu02 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
A31AH A31BH	Bmu02 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
A31CH	Bmu02 LMU number	R	*Belegt 2 Bytes*	unsigned short	
A31DH	Bmu02 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
A31EH	Bmu02 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
A31FH	Bmu02 restarts number	R	*Belegt 2 Bytes*	unsigned short	
A320H	Bmu02 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU- HV900112/ 26:BMU- HV50056/ 38:BMU- HV900105/ 50:HV900120/ 41:BMU-HV90086
A321H	Bmu02 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V

A322H	Bmu02 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A323H	Bmu02 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
A324H	Bmu02 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A325H	Bmu02 min cell temperature	R	*Belegt 2 Bytes*	short	
A326H	Bmu02 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
A327H	Bmu02 max cell temperature	R	*Belegt 2 Bytes*	short	
A328H	Bmu02 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
A329H~ A3FFH					Reserve
A400H A401H	Bmu03 SN	R	*Belegt 4 Bytes*	unsigned int	
A402H	Bmu03 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A403H	Bmu03 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A404H	Bmu03 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
A405H	Bmu03 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
A406H	Bmu03 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
A407H	Bmu03 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
A408H	Bmu03 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A409H	Bmu03 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A40AH A40BH	Bmu03 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
A40CH A40DH	Bmu03 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
A40EH A40FH	Bmu03 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
A410H A411H	Bmu03 equalization	R	*Belegt 4 Bytes*	unsigned int	

A412H A413H	Bmu03 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
A414H	Bmu03 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
A415H	Bmu03 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
A416H A417H	Bmu03 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
A418H A419H	Bmu03 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
A41AH A41BH	Bmu03 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
A41CH	Bmu03 LMU number	R	*Belegt 2 Bytes*	unsigned short	
A41DH	Bmu03 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
A41EH	Bmu03 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
A41FH	Bmu03 restarts number	R	*Belegt 2 Bytes*	unsigned short	
A420H	Bmu03 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU- HV900112/ 26:BMU- HV50056/ 38:BMU- HV900105/ 50:HV900120/ 41:BMU-HV90086
A421H	Bmu03 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
A422H	Bmu03 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A423H	Bmu03 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
A424H	Bmu03 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A425H	Bmu03 min cell temperature	R	*Belegt 2 Bytes*	short	
A426H	Bmu03 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
A427H	Bmu03 max cell temperature	R	*Belegt 2 Bytes*	short	
A428H	Bmu03 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
A429H~ A4FFH					Reserve

A500H A501H	Bmu04 SN	R	*Belegt 4 Bytes*	Unsigned int	
A502H	Bmu04 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A503H	Bmu04 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A504H	Bmu04 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
A505H	Bmu04 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
A506H	Bmu04 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
A507H	Bmu04 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
A508H	Bmu04 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A509H	Bmu04 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A50AH A50BH	Bmu04 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
A50CH A50DH	Bmu04 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
A50EH A50FH	Bmu04 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
A510H A511H	Bmu04 equalization	R	*Belegt 4 Bytes*	unsigned int	
A512H A513H	Bmu04 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
A514H	Bmu04 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
A515H	Bmu04 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
A516H A517H	Bmu04 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
A518H A519H	Bmu04 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
A51AH A51BH	Bmu04 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
A51CH	Bmu04 LMU number	R	*Belegt 2 Bytes*	unsigned short	
A51DH	Bmu04 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14

A51EH	Bmu04 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
A51FH	Bmu04 restarts number	R	*Belegt 2 Bytes*	unsigned short	
A520H	Bmu04 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU- HV900112/ 26:BMU- HV50056/ 38:BMU- HV900105/ 50:HV900120/ 41:BMU-HV90086
A521H	Bmu04 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
A522H	Bmu04 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A523H	Bmu04 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
A524H	Bmu04 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A525H	Bmu04 min cell temperature	R	*Belegt 2 Bytes*	short	
A526H	Bmu04 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
A527H	Bmu04 max cell temperature	R	*Belegt 2 Bytes*	short	
A528H	Bmu04 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
A529H~ A5FFH					Reserve
A600H A601H	Bmu05 SN	R	*Belegt 4 Bytes*	unsigned int	
A602H	Bmu05 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A603H	Bmu05 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A604H	Bmu05 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
A605H	Bmu05 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
A606H	Bmu05 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
A607H	Bmu05 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
A608H	Bmu05 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit

A609H	Bmu05 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A60AH A60BH	Bmu05 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
A60CH A60DH	Bmu05 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
A60EH A60FH	Bmu05 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
A610H A611H	Bmu05 equalization	R	*Belegt 4 Bytes*	unsigned int	
A612H A613H	Bmu05 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
A614H	Bmu05 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
A615H	Bmu05 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
A616H A617H	Bmu05 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
A618H A619H	Bmu05 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
A61AH A61BH	Bmu05 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
A61CH	Bmu05 LMU number	R	*Belegt 2 Bytes*	unsigned short	
A61DH	Bmu05 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
A61EH	Bmu05 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
A61FH	Bmu05 restarts number	R	*Belegt 2 Bytes*	unsigned short	
A620H	Bmu05 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU- HV900112/ 26: BMU- HV50056/ 38:BMU- HV900105/ 50:HV900120/ 41:BMU-HV90086
A621H	Bmu05 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
A622H	Bmu05 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A623H	Bmu05 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
A624H	Bmu05 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	

A625H	Bmu05 min cell temperature	R	*Belegt 2 Bytes*	short	
A626H	Bmu05 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
A627H	Bmu05 max cell temperature	R	*Belegt 2 Bytes*	short	
A628H	Bmu05 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
A629H~ A6FFH					Reserve
A700H A701H	Bmu06 SN	R	*Belegt 4 Bytes*	unsigned int	
A702H	Bmu06 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A703H	Bmu06 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A704H	Bmu06 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
A705H	Bmu06 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
A706H	Bmu06 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
A707H	Bmu06 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
A708H	Bmu06 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A709H	Bmu06 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A70AH A70BH	Bmu06 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
A70CH A70DH	Bmu06 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
A70EH A70FH	Bmu06 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
A710H A711H	Bmu06 equalization	R	*Belegt 4 Bytes*	unsigned int	
A712H A713H	Bmu06 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
A714H	Bmu06 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
A715H	Bmu06 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01

A716H A717H	Bmu06 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
A718H A719H	Bmu06 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
A71AH A71BH	Bmu06 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
A71CH	Bmu06 LMU number	R	*Belegt 2 Bytes*	unsigned short	
A71DH	Bmu06 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
A71EH	Bmu06 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
A71FH	Bmu06 restarts number	R	*Belegt 2 Bytes*	unsigned short	
A720H	Bmu06 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU- HV900112/ 26:BMU- HV50056/ 38:BMU- HV900105/ 50:HV900120/ 41:BMU-HV90086
A721H	Bmu06 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
A722H	Bmu06 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A723H	Bmu06 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
A724H	Bmu06 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A725H	Bmu06 min cell temperature	R	*Belegt 2 Bytes*	short	
A726H	Bmu06 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
A727H	Bmu06 max cell temperature	R	*Belegt 2 Bytes*	short	
A728H	Bmu06 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
A729H A7FFH					Reserve
A800H A801H	Bmu07 SN	R	*Belegt 4 Bytes*	unsigned int	
A802H	Bmu07 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A803H	Bmu07 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit

A804H	Bmu07 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
A805H	Bmu07 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
A806H	Bmu07 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
A807H	Bmu07 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
A808H	Bmu07 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A809H	Bmu07 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A80AH A80BH	Bmu07 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
A80CH A80DH	Bmu07 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
A80EH A80FH	Bmu07 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
A810H A811H	Bmu07 equalization	R	*Belegt 4 Bytes*	unsigned int	
A812H A813H	Bmu07 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
A814H	Bmu07 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
A815H	Bmu07 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
A816H A817H	Bmu07 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
A818H A819H	Bmu07 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
A81AH A81BH	Bmu07 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
A81CH	Bmu07 LMU number	R	*Belegt 2 Bytes*	unsigned short	
A81DH	Bmu07 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
A81EH	Bmu07 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
A81FH	Bmu07 restarts number	R	*Belegt 2 Bytes*	unsigned short	

A820H	Bmu07 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU-HV900112/ 26:BMU- HV50056/ 38:BMU-HV900105/ 50:HV900120/ 41:BMU-HV90086
A821H	Bmu07 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
A822H	Bmu07 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A823H	Bmu07 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
A824H	Bmu07 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A825H	Bmu07 min cell temperature	R	*Belegt 2 Bytes*	short	
A826H	Bmu07 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
A827H	Bmu07 max cell temperature	R	*Belegt 2 Bytes*	short	
A828H	Bmu07 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
A829H~ A8FFH					Reserve
A900H A901H	Bmu08 SN	R	*Belegt 4 Bytes*	unsigned int	
A902H	Bmu08 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A903H	Bmu08 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
A904H	Bmu08 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
A905H	Bmu08 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
A906H	Bmu08 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
A907H	Bmu08 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
A908H	Bmu08 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A909H	Bmu08 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
A90AH A90BH	Bmu08 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	

A90CH A90DH	Bmu08 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
A90EH A90FH	Bmu08 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
A910H A911H	Bmu08 equalization	R	*Belegt 4 Bytes*	unsigned int	
A912H A913H	Bmu08 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
A914H	Bmu08 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
A915H	Bmu08 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
A916H A917H	Bmu08 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
A918H A919H	Bmu08 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
A91AH A91BH	Bmu08 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
A91CH	Bmu08 LMU number	R	*Belegt 2 Bytes*	unsigned short	
A91DH	Bmu08 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
A91EH	Bmu08 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
A91FH	Bmu08 restarts number	R	*Belegt 2 Bytes*	unsigned short	
A920H	Bmu08 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU-HV900112/ 26:BMU-HV50056/ 38:BMU-HV900105/ 50:HV900120/ 41:BMU-HV90086
A921H	Bmu08 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
A922H	Bmu08 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A923H	Bmu08 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
A924H	Bmu08 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
A925H	Bmu08 min cell temperature	R	*Belegt 2 Bytes*	short	
A926H	Bmu08 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40

A927H	Bmu08 max cell temperature	R	*Belegt 2 Bytes*	short	
A928H	Bmu08 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
A929H~ A9FFH					Reserve
AA00H AA01H	Bmu09 SN	R	*Belegt 4 Bytes*	unsigned int	
AA02H	Bmu09 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
AA03H	Bmu09 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
AA04H	Bmu09 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
AA05H	Bmu09 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
AA06H	Bmu09 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
AA07H	Bmu09 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
AA08H	Bmu09 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
AA09H	Bmu09 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
AA0AH AA0BH	Bmu09 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
AA0CH AA0DH	Bmu09 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
AA0EH AA0FH	Bmu09 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
AA10H AA11H	Bmu09 equalization	R	*Belegt 4 Bytes*	unsigned int	
AA12H AA13H	Bmu09 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
AA14H	Bmu09 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
AA15H	Bmu03 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
AA16H AA17H	Bmu09 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
AA18H AA19H	Bmu09 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	

AA1AH AA1BH	Bmu09 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
AA1CH	Bmu09 LMU number	R	*Belegt 2 Bytes*	unsigned short	
AA1DH	Bmu09 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
AA1EH	Bmu09 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
AA1FH	Bmu09 restarts number	R	*Belegt 2 Bytes*	unsigned short	
AA20H	Bmu09 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU-HV900112/ 26:BMU-HV50056/ 38:BMU-HV900105/ 50:HV900120/ 41:BMU-HV90086
AA21H	Bmu09 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
AA22H	Bmu09 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
AA23H	Bmu09 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
AA24H	Bmu09 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
AA25H	Bmu09 min cell temperature	R	*Belegt 2 Bytes*	short	
AA26H	Bmu09 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
AA27H	Bmu09 max cell temperature	R	*Belegt 2 Bytes*	short	
AA28H	Bmu09 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
AA29H~ AAFFH					Reserve
AB00H AB01H	Bmu10 SN	R	*Belegt 4 Bytes*	unsigned int	
AB02H	Bmu10 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
AB03H	Bmu10 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
AB04H	Bmu10 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
AB05H	Bmu10 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit

AB06H	Bmu10 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
AB07H	Bmu10 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
AB08H	Bmu10 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
AB09H	Bmu10 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
AB0AH AB0BH	Bmu10 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
AB0CH AB0DH	Bmu10 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
AB0EH AB0FH	Bmu10 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
AB10H AB11H	Bmu10 equalization	R	*Belegt 4 Bytes*	unsigned int	
AB12H AB13H	Bmu10 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
AB14H	Bmu10 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
AB15H	Bmu10 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
AB16H AB17H	Bmu10 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
AB18H AB19H	Bmu10 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
AB1AH AB1BH	Bmu10 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
AB1CH	Bmu10 LMU number	R	*Belegt 2 Bytes*	unsigned short	
AB1DH	Bmu10 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
AB1EH	Bmu10 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
AB1FH	Bmu10 restarts number	R	*Belegt 2 Bytes*	unsigned short	
AB20H	Bmu10 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU-HV900112/ 26:BMU-HV50056/ 38:BMU-HV900105/ 50:HV900120/ 41:BMU-HV90086
AB21H	Bmu10 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V

AB22H	Bmu10 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
AB23H	Bmu10 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
AB24H	Bmu10 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
AB25H	Bmu10 min cell temperature	R	*Belegt 2 Bytes*	short	
AB26H	Bmu10 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
AB27H	Bmu10 max cell temperature	R	*Belegt 2 Bytes*	short	
AB28H	Bmu10 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
AB29H~ ABFFH					Reserve
AC00H AC01H	Bmu11 SN	R	*Belegt 4 Bytes*	unsigned int	
AC02H	Bmu11 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
AC03H	Bmu11 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
AC04H	Bmu11 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
AC05H	Bmu11 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
AC06H	Bmu11 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
AC07H	Bmu11 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
AC08H	Bmu11 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
AC09H	Bmu11 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
AC0AH AC0BH	Bmu11 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
AC0CH AC0DH	Bmu11 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
AC0EH AC0FH	Bmu11 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
AC10H AC11H	Bmu11 equalization	R	*Belegt 4 Bytes*	unsigned int	

AC12H AC13H	Bmu11 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
AC14H	Bmu11 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
AC15H	Bmu11 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
AC16H AC17H	Bmu11 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
AC18H AC19H	Bmu11 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
AC1AH AC1BH	Bmu11 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
AC1CH	Bmu10 LMU number	R	*Belegt 2 Bytes*	unsigned short	
AC1DH	Bmu11 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
AC1EH	Bmu11 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
AC1FH	Bmu11 restarts number	R	*Belegt 2 Bytes*	unsigned short	
AC20H	Bmu11 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU-HV900112/ 26:BMU-HV50056/ 38:BMU-HV900105/ 50:HV900120/ 41:BMU-HV90086
AC21H	Bmu11 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
AC22H	Bmu11 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
AC23H	Bmu11 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
AC24H	Bmu11 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
AC25H	Bmu11 min cell temperature	R	*Belegt 2 Bytes*	short	
AC26H	Bmu11 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
AC27H	Bmu11 max cell temperature	R	*Belegt 2 Bytes*	short	
AC28H	Bmu11 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
AC29H~ ACFFH					Reserve

AD00H AD01H	Bmu12 SN	R	*Belegt 4 Bytes*	unsigned int	
AD02H	Bmu12 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
AD03H	Bmu12 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
AD04H	Bmu12 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
AD05H	Bmu12 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
AD06H	Bmu12 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
AD07H	Bmu12 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
AD08H	Bmu12 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
AD09H	Bmu12 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
AD0AH AD0BH	Bmu12 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
AD0CH AD0DH	Bmu12 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
AD0EH AD0FH	Bmu12 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
AD10H AD11H	Bmu12 equalization	R	*Belegt 4 Bytes*	unsigned int	
AD12H AD13H	Bmu12 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
AD14H	Bmu12 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
AD15H	Bmu12 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
AD16H AD17H	Bmu12 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
AD18H AD19H	Bmu12 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
AD1AH AD1BH	Bmu12 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
AD1CH	Bmu12 LMU number	R	*Belegt 2 Bytes*	unsigned short	
AD1DH	Bmu12 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14

AD1EH	Bmu12 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
AD1FH	Bmu12 restarts number	R	*Belegt 2 Bytes*	unsigned short	
AD20H	Bmu12 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU-HV900112/ 26:BMU-HV50056/ 38:BMU-HV900105/ 50:HV900120/ 41:BMU-HV90086
AD21H	Bmu12 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
AD22H	Bmu12 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
AD23H	Bmu12 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
AD24H	Bmu12 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
AD25H	Bmu12 min cell temperature	R	*Belegt 2 Bytes*	short	
AD26H	Bmu12 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
AD27H	Bmu12 max cell temperature	R	*Belegt 2 Bytes*	short	
AD28H	Bmu12 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
AD29H~ ADFFH					Reserve
AE00H AE01H	Bmu13 SN	R	*Belegt 4 Bytes*	unsigned int	
AE02H	Bmu13 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
AE03H	Bmu13 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
AE04H	Bmu13 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
AE05H	Bmu13 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
AE06H	Bmu13 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
AE07H	Bmu13 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
AE08H	Bmu13 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit

AE09H	Bmu13 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
AE0AH AE0BH	Bmu13 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
AE0CH AE0DH	Bmu13 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
AE0EH AE0FH	Bmu13 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
AE10H AE11H	Bmu13 equalization	R	*Belegt 4 Bytes*	unsigned int	
AE12H AE13H	Bmu13 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
AE14H	Bmu13 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
AE15H	Bmu13 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
AE16H AE17H	Bmu13 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
AE18H AE19H	Bmu13 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
AE1AH AE1BH	Bmu13 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
AE1CH	Bmu13 LMU number	R	*Belegt 2 Bytes*	unsigned short	
AE1DH	Bmu13 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
AE1EH	Bmu13reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
AE1FH	Bmu13 restarts number	R	*Belegt 2 Bytes*	unsigned short	
AE20H	Bmu13 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU-HV900112/ 26:BMU-HV50056/ 38:BMU-HV900105/ 50:HV900120/ 41:BMU-HV90086
AE21H	Bmu13 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
AE22H	Bmu13 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
AE23H	Bmu13 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V

AE24H	Bmu13 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
AE25H	Bmu13 min cell temperature	R	*Belegt 2 Bytes*	short	
AE26H	Bmu13 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
AE27H	Bmu13 max cell temperature	R	*Belegt 2 Bytes*	short	
AE28H	Bmu13 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
AE29H~ AEFFH					Reserve
AF00H AF01H	Bmu14 SN	R	*Belegt 4 Bytes*	unsigned int	
AF02H	Bmu14 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
AF03H	Bmu14 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
AF04H	Bmu14 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
AF05H	Bmu14 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
AF06H	Bmu14 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
AF07H	Bmu14 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
AF08H	Bmu14 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
AF09H	Bmu14 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
AF0AH AF0BH	Bmu14 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
AF0CH AF0DH	Bmu14 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
AF0EH AF0FH	Bmu14 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
AF10H AF11H	Bmu14 equalization	R	*Belegt 4 Bytes*	unsigned int	
AF12H AF13H	Bmu14 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
AF14H	Bmu14 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01

AF15H	Bmu14 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
AF16H AF17H	Bmu14 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
AF18H AF19H	Bmu14 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
AF1AH AF1BH	Bmu14 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
AF1CH	Bmu14 LMU number	R	*Belegt 2 Bytes*	unsigned short	
AF1DH	Bmu14single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
AF1EH	Bmu14 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
AF1FH	Bmu14 restarts number	R	*Belegt 2 Bytes*	unsigned short	
AF20H	Bmu14 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU-HV900112/ 26:BMU-HV50056/ 38:BMU-HV900105/ 50:HV900120/ 41:BMU-HV90086
AF21H	Bmu14 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
AF22H	Bmu14 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
AF23H	Bmu14 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
AF24H	Bmu14 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
AF25H	Bmu14 min cell temperature	R	*Belegt 2 Bytes*	short	
AF26H	Bmu14 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
AF27H	Bmu14 max cell temperature	R	*Belegt 2 Bytes*	short	
AF28H	Bmu14 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
AF29H~ AFFFH					Reserve
B000H B001H	Bmu15 SN	R	*Belegt 4 Bytes*	unsigned int	
B002H	Bmu15 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit

B003H	Bmu15 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
B004H	Bmu15 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
B005H	Bmu15 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
B006H	Bmu15 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
B007H	Bmu15 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
B008H	Bmu15 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
B009H	Bmu15 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
B00AH B00BH	Bmu15 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
B00CH B00DH	Bmu15 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
B00EH B00FH	Bmu15 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
B010H B011H	Bmu15 equalization	R	*Belegt 4 Bytes*	unsigned int	
B012H B013H	Bmu15 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
B014H	Bmu15 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
B015H	Bmu15 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
B016H B017H	Bmu15 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
B018H B019H	Bmu15 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
B01AH B01BH	Bmu15 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
B01CH	Bmu15 LMU number	R	*Belegt 2 Bytes*	unsigned short	
B01DH	Bmu15 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
B01EH	Bmu15 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
B01FH	Bmu15 restarts number	R	*Belegt 2 Bytes*	unsigned short	

B020H	Bmu15 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU-HV900112/ 26:BMU-HV50056/ 38:BMU-HV900105/ 50:HV900120/ 41:BMU-HV90086
B021H	Bmu15 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
B022H	Bmu15 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
B023H	Bmu15 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
B024H	Bmu15 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
B025H	Bmu15 min cell temperature	R	*Belegt 2 Bytes*	short	
B026H	Bmu15 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
B027H	Bmu15 max cell temperature	R	*Belegt 2 Bytes*	short	
B028H	Bmu15 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
B029H~ B0FFH					Reserve
B100H B101H	Bmu16 SN	R	*Belegt 4 Bytes*	unsigned int	
B102H	Bmu16 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
B103H	Bmu16 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
B104H	Bmu16 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
B105H	Bmu16 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
B106H	Bmu16 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
B107H	Bmu16 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
B108H	Bmu16 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
B109H	Bmu16 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
B10AH B10BH	Bmu16 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	

B10CH B10DH	Bmu16 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
B10EH B10FH	Bmu16 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
B110H B111H	Bmu16 equalization	R	*Belegt 4 Bytes*	unsigned int	
B112H B113H	Bmu16 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
B114H	Bmu16 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
B115H	Bmu16 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
B116H B117H	Bmu16 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
B118H B119H	Bmu16 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
B11AH B11BH	Bmu16 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
B11CH	Bmu16 LMU number	R	*Belegt 2 Bytes*	unsigned short	
B11DH	Bmu16 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
B11EH	Bmu16 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
B11FH	Bmu16 restarts number	R	*Belegt 2 Bytes*	unsigned short	
B120H	Bmu16 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU-HV900112/ 26:BMU-HV50056/ 38:BMU-HV900105/ 50:HV900120/ 41:BMU-HV90086
B121H	Bmu16 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
B122H	Bmu16 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
B123H	Bmu16 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
B124H	Bmu16 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
B025H	Bmu16 min cell temperature	R	*Belegt 2 Bytes*	short	
B126H	Bmu16 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40

B127H	Bmu16 max cell temperature	R	*Belegt 2 Bytes*	short	
B128H	Bmu16 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
B129H~ B1FFH					Reserve
B200H B201H	Bmu17 SN	R	*Belegt 4 Bytes*	unsigned int	
B202H	Bmu17 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
B203H	Bmu17 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
B204H	Bmu17 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
B205H	Bmu17 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
B206H	Bmu17 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
B207H	Bmu17 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
B208H	Bmu17 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
B209H	Bmu17 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
B20AH B20BH	Bmu17 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
B20CH B20DH	Bmu17 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
B20EH B20FH	Bmu17 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
B210H B211H	Bmu17 equalization	R	*Belegt 4 Bytes*	unsigned int	
B212H B213H	Bmu17 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
B214H	Bmu17 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
B215H	Bmu17 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
B216H B217H	Bmu17 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
B218H B219H	Bmu17 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	

B21AH B21BH	Bmu17 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
B21CH	Bmu17 LMU number	R	*Belegt 2 Bytes*	unsigned short	
B21DH	Bmu17 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
B21EH	Bmu17 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
B21FH	Bmu17 restarts number	R	*Belegt 2 Bytes*	unsigned short	
B220H	Bmu17 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU-HV900112/ 26:BMU-HV50056/ 38:BMU-HV900105/ 50:HV900120/ 41:BMU-HV90086
B221H	Bmu17 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
B222H	Bmu17 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
B223H	Bmu17 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
B224H	Bmu17 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
B225H	Bmu17 min cell temperature	R	*Belegt 2 Bytes*	short	
B226H	Bmu17 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
B227H	Bmu17 max cell temperature	R	*Belegt 2 Bytes*	short	
B228H	Bmu17 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
B229H~ B2FFH					Reserve
B300H B301H	Bmu18 SN	R	*Belegt 4 Bytes*	unsigned int	
B302H	Bmu18 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
B303H	Bmu18 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
B304H	Bmu18 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13

B305H	Bmu18 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
B306H	Bmu18 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
B307H	Bmu18 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
B308H	Bmu18 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
B309H	Bmu18 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
B30AH B30BH	Bmu18 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
B30CH B30DH	Bmu18 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
B30EH B30FH	Bmu18 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
B310H B311H	Bmu18 equalization	R	*Belegt 4 Bytes*	unsigned int	
B312H B313H	Bmu18 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
B314H	Bmu18 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
B315H	Bmu18 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
B316H B317H	Bmu18 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
B318H B319H	Bmu18 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
B31AH B31BH	Bmu18 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
B31CH	Bmu18 LMU number	R	*Belegt 2 Bytes*	unsigned short	
B31DH	Bmu18 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
B31EH	Bmu18 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
B31FH	Bmu18 restarts number	R	*Belegt 2 Bytes*	unsigned short	
B320H	Bmu18 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU-HV900112/ 26:BMU-HV50056/ 38:BMU-HV900105/ 50:HV900120/ 41:BMU-HV90086

B321H	Bmu18 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
B322H	Bmu18 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
B323H	Bmu18 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
B024H	Bmu18 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
B325H	Bmu18 min cell temperature	R	*Belegt 2 Bytes*	short	
B326H	Bmu18 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
B327H	Bmu18 max cell temperature	R	*Belegt 2 Bytes*	short	
B328H	Bmu18 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
B329H~ B3FFH					Reserve
B400H B401H	Bmu19 SN	R	*Belegt 4 Bytes*	unsigned int	
B402H	Bmu19 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
B403H	Bmu19 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
B404H	Bmu19 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
B405H	Bmu19 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
B406H	Bmu19 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
B407H	Bmu19 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
B408H	Bmu19 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
B409H	Bmu19 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
B40AH B40BH	Bmu19 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
B40CH B40DH	Bmu19 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
B40EH B40FH	Bmu19 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	

B410H B411H	Bmu19 equalization	R	*Belegt 4 Bytes*	unsigned int	
B412H B413H	Bmu19 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
B414H	Bmu19 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
B415H	Bmu19 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
B416H B417H	Bmu19 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
B418H B419H	Bmu19 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
B41AH B41BH	Bmu19 BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
B41CH	Bmu19 LMU number	R	*Belegt 2 Bytes*	unsigned short	
B41DH	Bmu19 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
B41EH	Bmu19 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
B41FH	Bmu19 restarts number	R	*Belegt 2 Bytes*	unsigned short	
B420H	Bmu19 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU-HV900112/ 26:BMU-HV50056/ 38:BMU-HV900105/ 50:HV900120/ 41:BMU-HV90086
B421H	Bmu19 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
B422H	Bmu19 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
B423H	Bmu19 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
B424H	Bmu19 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
B425H	Bmu19 min cell temperature	R	*Belegt 2 Bytes*	short	
B426H	Bmu19 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
B427H	Bmu19 max cell temperature	R	*Belegt 2 Bytes*	short	
B428H	Bmu19 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40

B429H~ B4FFH					Reserve
B500H B501H	Bmu20 SN	R	*Belegt 4 Bytes*	unsigned int	
B502H	Bmu20 soft version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
B503H	Bmu20 hard version	R	*Belegt 2 Bytes*	unsigned short	0.01/bit
B504H	Bmu20 state	R	*Belegt 2 Bytes*	unsigned short	Hinweis13
B505H	Bmu20 cluster voltage	R	*Belegt 2 Bytes*	unsigned short	0.1 V/bit
B506H	Bmu20 cluster current	R	*Belegt 2 Bytes*	short	0.1 A/bit
B507H	Bmu20 insulated resistance	R	*Belegt 2 Bytes*	unsigned short	1 kΩ/bit
B508H	Bmu20 SOC	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
B509H	Bmu20 SOH	R	*Belegt 2 Bytes*	unsigned short	0.4 %/bit
B50AH B50BH	Bmu20 LMU communication failure	R	*Belegt 4 Bytes*	unsigned int	
B50CH B50DH	Bmu20 temperature sensor failure	R	*Belegt 4 Bytes*	unsigned int	
B50EH B50FH	Bmu20 wireharness failure	R	*Belegt 4 Bytes*	unsigned int	
B510H B511H	Bmu20 equalization	R	*Belegt 4 Bytes*	unsigned int	
B512H B513H	Bmu20 equalization mos failure	R	*Belegt 4 Bytes*	unsigned int	
B514H	Bmu20 ISO soft version	R	*Belegt 2 Bytes*	unsigned short	0.01
B515H	Bmu20 ISO hard version	R	*Belegt 2 Bytes*	unsigned short	0.01
B516H B517H	Bmu20 Passive equalization	R	*Belegt 4 Bytes*	unsigned int	
B518H B519H	Bmu20 BOOST equalization	R	*Belegt 4 Bytes*	unsigned int	
B51AH B51BH	Bmu20BUCK equalization	R	*Belegt 4 Bytes*	unsigned int	
B51CH	Bmu20 LMU number	R	*Belegt 2 Bytes*	unsigned short	

B51DH	Bmu20 single cut fault code	R	*Belegt 2 Bytes*	unsigned short	Hinweis14
B51EH	Bmu20 reset log	R	*Belegt 2 Bytes*	unsigned short	Hinweis15
B51FH	Bmu20 restarts number	R	*Belegt 2 Bytes*	unsigned short	
B520H	Bmu20 version	R	*Belegt 2 Bytes*	unsigned short	15:BMU-HV900112/ 26:BMU-HV50056/ 38:BMU-HV900105/ 50:HV900120/ 41:BMU-HV90086
B521H	Bmu20 min cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
B522H	Bmu20 min cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
B523H	Bmu20 max cell voltage	R	*Belegt 2 Bytes*	unsigned short	0.001V
B524H	Bmu20 max cell voltage ID	R	*Belegt 2 Bytes*	unsigned short	
B525H	Bmu20 min cell temperature	R	*Belegt 2 Bytes*	short	
B526H	Bmu20 min cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
B527H	Bmu20 max cell temperature	R	*Belegt 2 Bytes*	short	
B528H	Bmu20 max cell temperature ID	R	*Belegt 2 Bytes*	unsigned short	0.1℃/bit -40
B529H~ B5FFH					Reserve

5. Anhang

Hinweis1: Batteriestatus

Beschreibung		
Wert	Laden	Entladen
0	0	0
1	0	1
256	1	0
257	1	1
512	2	0
513	2	1

Hinweis2: Batteriereleisstatus

Wert	Beschreibung
0	Lade- Entladerelais sind nicht angeschlossen
1	Nur das Entladerelais ist geschlossen
2	Nur das Laderelais ist geschlossen
3	Lade- und Entladerelais sind geschlossen

Hinweis3: Batterietyp

Batterie-ID	Batteriemodel
2	M4860
3	M48100
13	48112-P
16	Smile5-BAT
24	M4856-P
33	Smile-BAT-5.8P

Hinweis4: Batteriefehler

Alarmcode	Beschreibung	
Bit 0		
Bit 1		
Bit 2	Cell Temp Differ -	*Zelltemperaturdifferenz*
Bit 3	Balancer Fault -	*Balancer-Fehler*
Bit 4	Charge Over Current –	*Lade-Überstrom*
Bit 5	Balancer Mos Fault	
Bit 6	DischargeOver Current -	*Entlade-Überstrom*
Bit 7	Pole Over Temp –	*Pol-Übertemperatur*
Bit 8	Cell Over Volt –	*Zell-Überspannung*
Bit 9	Cell Volt Differ -	*Zellspannungsdifferenz*
Bit 10	Discharge Low Temp –	*Entladung -zu niedrige Temperatur*
Bit 11	Low Volt ShutDown -	*Niederspannungsabschaltung*
Bit 12	Cell Low Volt –	*Zell-Niederspannung*
Bit 13	ISO Comm Fault –	*ISO-Kommunikationsfehler*
Bit 14	LMU SN Repeat –	*LMU-Seriennummer Wiederholung*
Bit 15	BMU SN Repeat –	*BMU-Seriennummer Wiederholung*
Bit 16	IR Fault –	*IR-Fehler*
Bit 17	LMU Comm Fault –	*LMU-Kommunikationsfehler*
Bit 18	Cell Over Temp –	*Zell-Übertemperatur*
Bit 19	BMU Comm Fault –	*BMU-Kommunikationsfehler*
Bit 20	INV Comm Fault –	*Wechselrichter-Kommunikationsfehler*
Bit 21	Charge Low Temp –	*Ladung – zu niedrige Temperatur*
Bit 22	TOPBMU Comm Fault –	*TOP-BMU-Kommunikationsfehler*

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Bit 23	Volt Detect Fault –	*Spannungserkennungsfehler*
Bit 24	Wire Harness Fault -	*Kabelbaumfehler*
Bit 25	Cluster Cut Fault -	*Cluster-Schnittfehler*
Bit 26	Relay Fault -	*Relaisfehler*
Bit 27	LMU ID Repeat –	*LMU-ID Wiederholung*
Bit 28	LMU ID Discontinuous –	*LMU-ID diskontinuierlich*
Bit 29	Current Sensor Fault -	*Stromsensorfehler*
Bit 30		
Bit 31	Temp Sensor Fault –	*Temperatursensor-Fehler*

Hinweis5: Wechselrichter-Betriebsmodus

Wert	Beschreibung	Wert	Beschreibung
0	Wartemodus	3	Bypass-Modus
1	Online-Modus	4	Fehlermodus
2	USV-Modus		

Hinweis6: Systemfehler

Alarm code EMS SN byte1-2	Beschreibung AL	AE
Bit 0	Network Card_Fault	Wechselrichter getrennt
Bit 1	Rtc_Fault	Netzzähler getrennt
Bit 2	E2prom_Fault	Batterie getrennt
Bit 3	INV_Comms_Error	System nicht eingestellt
Bit 4	Grid_Meter_Lost	PV-Zähler getrennt
Bit 5	PV_Meter_Lost	Zähler nicht eingestellt
Bit 6	BMS_Lost	Falsche Anschluss-Richtung des PV-Zählers
Bit 7	UPS_Battery_Volt_Low	SD nicht eingefügt oder SD-Schreibfehler
Bit 8	Backup_Overload	RTC-Fehler
Bit 9	INV_Slave_Lost	SDRAM-Fehler
Bit 10	INV_Master_Lost	MMC-Fehler（CH376）
Bit 11	Parallel_Comm_Error	Netzwerkkartenfehler
Bit 12	Parallel_Mode_Differ	Erweiterungs-CAN-Fehler (MCP2515)
Bit 13		DRED-Fehler
Bit 14		Android LCD getrennt
Bit 15		STS_Lost
Bit 16		STS_Fault
Bit 17		PV_INV_Lost:n
Bit 18		DG_PV_Conflict
Bit 19		PV_INV_Fault:n
Bit 20		AirConFault
Bit 21		Fire_Fault

Bit 22		FireControllerErr
Bit 23		GC_Fault
Bit 24		AirConLost
Bit 25		OverCurr
Bit 26		PcsModeFault
Bit 27		BatEnergyLow
Bit 28		
Bit 29		
Bit 30		
Bit 31		

Hinweis7: Dispatch-Modus

Moduswert	Beschreibung
1	Der Akku wird nur über PV aufgeladen
2	Ladezustandskontrolle;
3	Load Following;
4	Maximize Output;
5	Normaler Modus;
6	Verbrauch optimieren;
7	Verbrauch maximieren;
8	ECO-Modus;
9	FCAS-Modus;
10	PV-Leistungseinstellung;

Hinweis8: Netzregulierung

Sicherheitscode	Netzregulierung	
	AL	AE
0	VDE0126	
1	ARN4105/11.18	
2	AS4777.2	
3	G83_2	
4	C10/C11	
5	TOR Erzeuger	
6	EN50438_NL	
7	EN50438_DK	
8	CEB	
9	CEI-021	
10	NRS097-2-1	
11	EN50549-GR	
12	UTE_C15_712	
13	IEC61727	

14	G59_3	
15	RD1699	
16	G99	
17		
18	Tahiti_60HZ	
19	AS4777.2-SA	
20	G98	
21	EN50549-CZ	
22	PEA	
23	MEA	
24	BISI	
25	JET-GR Series	
26		
27		
28	DEFAULT_50HZ	
29	DEFAULT_60HZ	
30	WAREHOUSE	
31	AS4777.2-NZ	
32	Korea	
33	G98/G99-IE	
34	EN50549-PL	

Hinweis9: Sicherheitsmodus aktivieren

Bit NO	Name	Beschreibung
Bit0	Volt-WATT Mode	Volt-watt response mode
Bit1	Volt-VAR Mode	Volt-var response mode
Bit2	Volt-Freq Mode	Volt-Freq response mode
Bit3	Power Factor Curve Mode	Fixed power factor mode
Bit4	Volt-WATT when Charging Mode	Charakteristische Leistungsfaktorkurve für cos φ (P)
Bit5	Reactive power mode	Blindleistungsregelungsmodus
Bit6		
Bit7		
Bit8		
Bit9		
Bit10		
Bit11		
Bit12		
Bit13		
Bit14		
Bit15		

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Hinweis10: Topbmu-Statusflag

Bit NO	Name	Beschreibung		
Bit0	Charge flag	00: nicht erlauben	01: erlauben	10: Zwangsladung
Bit1				
Bit2	Discharge flag	0: nicht erlauben	1: erlauben	
Bit3	SOC-Kalibrierungsmodus	0: exit	1: entry	
Bit4~7	Reserviert			

Hinweis11: Topbmu-Reset-Protokoll

Bit NO	Name	Beschreibung
Bit0	Fehlercode	Power on reset
Bit1		Under voltage reset
Bit2		Main reset pin reset
Bit3		Soft reset
Bit4		Configuration mismatch reset
Bit5		Watchdog timer reset
Bit6~7	Typ	1: reset
Bit8~15	Protokoll zurücksetzen	1~20

Hinweis12: Toperror bmu Warn- und Status-Cluster

Bit NO	Name	Description	
Bit0	Bmu SN repeat	0: normal	1: fault
Bit1	Bmu ID repeat	0: normal	1: fault
Bit2	Bmu ID discontinuity	0: normal	1: fault
Bit3	Lmu number inconsistent	0: normal	1: fault
Bit4	EMS communication lose	0: normal	1: fault
Bit5	total pressure anomaly detection	0: normal	1: fault
Bit6	Parallel failure detection	0: normal	1: fault
Bit7	No bmu warning	0: normal	1: fault
Bit8	Ems communication lose enable flag	0: disable	1: enable
Bit9	LMU Version inconsistency	0: consistent	1: inconsistent
Bit10	ISO Version inconsistency	0: consistent	1: inconsistent
Bit11	BMU Version inconsistency	0: consistent	1: inconsistent
Bit12~15	reserve		

Hinweis13: Bmu-X Status

Bit NO	Name	Description	
Bit0	Main relay status	0: off	1: on
Bit1	Precharge relay status	0: off	1: on
Bit2	Status of breaker	0: off	1: on
Bit3	Negative relay status	0: off	1: on
Bit4~7	Reserviert		

Hinweis14: Bmu-X Single Cut Fehlercode

Bit NO	Name	Beschreibung		
Bit0~1	Resektionszustand	00: normal	10: single cut	11: three cut
Bit3~8	Single-Cut-Fehlercode	0: normal	12: topbmu communicate fail	
		1: Pole over temperature	13: temp sensor fail	
		2: cell over temperature	14: relay fail	
		3: charge low temperature	15: pcs communicate fail	
		4: discharge low temperature	16: Under voltage shutdown failure	
		5: Temperature difference	17: total pressure anomaly detection	
		6: cell over voltage	18: ISO communicate lose	
		7: cell low voltage	19: LMU SN repeat	
		8: charge over current	20: LMU ID repeat	
		9: discharge over current	21: LMU ID discontinuity	
		10: Insulation fail	22: current sensor fail	
		11: LMU communicate fail	23: EMS communicate lose	

Hinweis15: Bmu-X reset log

Bit NO	Name	Beschreibung
Bit0	Error code	Power on reset
Bit1		Under voltage reset
Bit2		Main reset pin reset
Bit3		Soft reset
Bit4		Configuration mismatch reset
Bit5		Watchdog timer reset
Bit6~7	type	1: reset

Vielen Dank für das Lesen des Alpha ESS Handbuchs Modbus – Storion SMILE + T30. Falls Sie Probleme haben, senden Sie uns einfach eine E-Mail an service@alpha-ess.de.