SMART MODULE FOR MULTIVERT® I-XTENSIO

MODBUS RTU VERSION FOR ENERGY MONITORING

IEC FUSE SWITCH DISCONNECTORS

USER MANUAL

IMPROVING SERVICE EFFICIENCY OF LOW VOLTAGE NETWORKS





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1. DOCUMENT

All documentation on our SMART Module RTU is available on the MERSEN website **EP.MERSEN.COM**

Additional instruction manuals

- Datasheet
- Mounting instruction / Legal notice
- Configuration Software (on request)
- Software for firmware upgrade (on request)
- Modbus configuration table (on request)



2. HAZARDS AND WARNINGS

The assembly, use, servicing and maintenance of this equipment must only be carried out by trained, qualified professionals.

MERSEN shall not be held responsible for failure to comply with the instructions in this manual.

2.1 Risk of electrocution, burns

- This device must only be installed and serviced by qualified personnel who have in-depth knowledge of installing, commissioning and operating the device and who have had appropriate training. He or she should have read and understood the various safety measures and warnings stated in the instructions.
- Before carrying out any work on the device, switch off the power supply to the device.
- Always use an appropriate voltage detection device to confirm the absence of voltage.
- Replace all devices, doors and covers before turning on power to this equipment.
- Always power the device with the correct rated voltage.
- Install the device following the recommended installation instructions and in a suitable electrical cabinet.
- Failure to take these precautions could cause serious injuries

2.2 Risk of damaging the device

To ensure that the device operates correctly, make sure that:

- The device is correctly installed.
- The auxiliary power supply voltage indicated on the product is observed: 24 VDC \pm 6V.

Failure to respect these precautions could cause damage to the device

2.3 Liability

- Assembly, connection and use must be carried out in accordance with the installation standards currently in force.
- The device must be installed in accordance with the rules given in this manual.
- Failure to observe the rules for installing this device may compromise the device's intrinsic protection.
- The device must be positioned within an installation which complies with the standards currently in force.
- Any cable which needs to be replaced may only be replaced with a cable having the correct rating



3. PRELIMINARY OPERATIONS

To ensure the safety of personnel and the product, please carefully read the contents of these instructions before installation.

Check the following points as soon as you receive the package containing the device:

- The packaging is in good condition
- The device has not been damaged during transportation
- The device reference number conforms to your order

4. PREREQUISITES

Before commissioning your SMART module, make sure it operates under the latest firmware versions.

The latest firmware versions are available on the MERSEN website.

The firmware upgrade is done using the "SmartModbusModuleSoftwareSetup" software, by connecting a laptop to your SMART module. Have a look on the description done in the further chapter.



5. PRODUCT OVERVIEW

5.1 Overview of ProGrid equipped with Smart Module and sensor devices





5.2 Overview of Smart Module - Modbus RTU version





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5.3 Smart Module Focus



1 Modbus RTU connections

RJ45 plugs to connect the Smart Module on the Modbus RTU network or to use with a laptop to upload new software or make calibration.

Daisy chain functionality: 2 connection plugs are available to make a daisy chain for the Modbus RTU communication between modules, to the Master device (not in this scope). Daisy chain functionality can also be used for the power supply (see point n°2).

2 Smart Module Power Supply

24VDC connection to supply the Smart Module

Using the Daisy chain functionality, power supply can be distributed from one Module to another using the RJ45 connections/cables.

3 Status Communication LED

- Green Flashing : Module connected and functional
- Off : Module not functional
- Green/Red Flashing : Module without Modbus information

4 Reset button

- Short press : reset the parameters of Modbus communication links, thresholds, timeouts
- Long press (>5 s) : full reset including all calibration parameters (factory reset)
- \rightarrow LED becomes orange with these 2 actions.

5 Digital Outputs connections

Digital outputs to get alarm on fuse blown and temperature max thresholds / Normally opened

6 Dip Switch

- Allow presetting of slave address
- Activate termination resistance



5.4 Engineering Software installation

The module is delivered with a software to test, calibrate and set some parameters of the Smart Module using a laptop.

Once you got the last updated software under Mersen website, you should :

- → Unzip the file "SmartModbusModuleSoftwareSetup_X.X.XX_x64"
- → Launch "SmartModbusModuleSoftwareSetup_X.X.XX_x64" file using

5.5 Test & Programming using computer connection to the Smart module

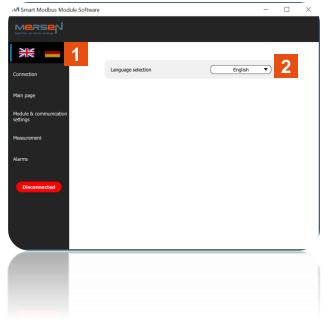
Computer connection is needed to update the firmware of the Smart Module, if it is necessary, or to use the Engineering software presented above. In order to connect the Smart Module to the computer, a specific Modbus cable USB $\leftarrow \rightarrow$ RJ45 is needed, as described in appendix.



To be able to use this cable, a driver should be installed : <u>HTTPS://FTDICHIP.COM/DRIVERS/VCP-DRIVERS/</u>

Instructions to connect the computer to the Smart Module :

You can should your language English or Deutsch, by selecting the right language at the flags area.

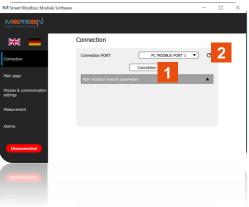


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5.5.1 Connection

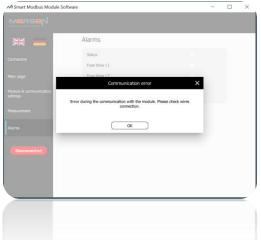
- → Connect the specific cable on the COM port number of the laptop peripheral and on the Smart module
- → On the opened Software, select "Connection". If the COM port number is not available, use the "Refresh" button.



If the connection is completed it is shown by the "Connected" button

M Smart Modbus Module Software			×
¥K 📕	Connection		
Connection	Connection PORT PC MODBUS PORT 1 Disconnection	G	
Main page	Main modbus module parameters		
Module & communication settings			
Measurement			
Alarms 3			

If there is an issue of the connection, a message will appear, you must check the module connection







8

- \rightarrow Module serial number: coming from the module directly for traceability
- ightarrow FSD ID: free space of 5 characters to identify the fusegear
- ightarrow Installation date: date of installation to be completed using the agenda
- \rightarrow Status of the module:
 - empty : no connection
 - Green : no issue
 - Red : issue, have a look on Alarms sheet

5 → Current transformer selection: should be selected following the current transformer installed at the back of the fusegear : several possibilities

- 250A/5A
- 300A/5A
- 400/1A
- 400/5A
- 600/1A
- 600/5A
- \rightarrow Temperature threshold value: to be selected between 60°C and 90°C
 - → Firmware version: coming from the module directly to follow the firmware versioning

→ Upload new firmware version: press "Start update", "Open" the new firmware version and "update" the firmware (*file*.bin)

M Smart Modbus Module Softwa	re		—		<
		C Refresh	App	ly	
	Main page			1	
Connection	Module serial number FSD ID	Error		2	
Main page	Installation date Status	14/07/2022		3	
Module & communication settings			4	5	
Measurement	Current transformer selection Temperature threshold value	(400A / 5A 60		6	
Alarms 🔴		518	-	7	
Connected	Upload new firmware version	Start update		8	
	Installation date Update firmwar				
Connected	File selection:	Open 4			
	Objesta u Update	pdate			
	Upload new firmware version	St			



1

 \rightarrow Before to change the page, don't forget to "Apply" your changes

2 \rightarrow otherwise, you will get an Error message

M Smart Modbus Mod	ule Software		-		×
		C Refresh		Apply	1
	Main page				
Connection	Module serial number FSD ID	Error			
Main page	Installation date	14/07/2022			
Module & communication settings	Modification without applying	×			
Measurement	Please, save or refresh datas.	2	•C		
Alarms 🔴		510			
Connected	Upload new firmware version	Start update			



5.5.3 Module & communication settings

On this page you have several subchapters to adjust the settings of the module and the Modbus communication

M Smart Modbus Module Softw	lare	- 🗆	X
	C Refresh	Apply	
	Module & communication settings		
Connection	General Settings		
Main page	CT phase visualization		
Module & communication settings	Voltage & current thresholds Others		
Measurement			
Module & communication settings		V	

This configuration tab is used to display "read" and to adjust "write", if needed, the different values available in the Smart Module



5.5.3.1 General

- ightarrow Password: could be used by the customer if needed
- ightarrow Last boot: given by the module
- \rightarrow Firmware version: given by the module
- 4 \rightarrow Hardware version: given by the module
 - → Synchronization: status of Synchronization: "No synchronization" in the last 24H or "Synchronized"
- \rightarrow Date / hour: update of the date of the last synchronization
- → Date / hour synchronization: press "Start" button
- \rightarrow Time duration for means: could be modified by the customer
- → Active power calculated on 2 possibilities : "Wideband" or "Fundamental", could be modified by the customer
- \rightarrow Frequency: 50Hz or 60Hz, could be modified by the customer

M Smart Modbus Module Software			-		×
		C Refresh		ply	
	Module & communicati	on settings			
Connection	General	0	•	4	
Main page 02/05/22 17:20	Last boot	03/10/22 18:19		1 2	
Module & communication settings	Firmware version	771		3	
Measurement	Hardware version	1024	-	4	
Alarms 🧲	Synchronization Date / hour	Synchronized 03/10/22 18:20	,	5 6	
Connected	Date / hour synchronization	Start	\supseteq	7	
	Time duration for means	1	m	8	
	Active power calculated on	Wideband Fundan	nental	9	
	Frequency	● 50Hz ○ 60Hz		10)
	Cottinge				
	Frequency	20Hz 06Hz			
		O Wideband () Funda			





5.5.3.2 Settings

1 → Slave address: 247 as max value and preset value, could be modified by the customer

2 → Baudrate: 19200 as preset value, could be modify by the customer Several possibilities : 19200 / 38400 / 57600 / 115200

3 \rightarrow Parity: Even as preset value, could be modified by the customer Several possibilities : none / even / odd

5.5.3.3 CT phase visualization

4 \rightarrow CT ratio: confirmation of the selection done on Main page of Current transformer

M Smart Modbus Module Software		— 🗆	×
		C Refresh	
	Nodule & communication se	ettings	
Connection	General		
	Settings	▼	
Main page	Slave address	247 1	
Module & communication settings	Baudrate	<u>19200</u> 2	
	Parity	Even	
Measurement	CT phase visualization	▼	
Alarms		Phase 1 Phase 2 Phase 3	
	CT ratio	400/5A 400/5A 400/5A 4	
Connected	Voltage & current thresholds		
	Others	▲	





5.5.3.4 Voltage & current threshold

1 \rightarrow Voltage threshold U< <lx-e: be="" by="" could="" customer<="" modified="" th="" the=""></lx-e:>
2 \rightarrow Voltage threshold U< <lx-e be="" by="" could="" customer<="" duration:="" modify="" th="" the=""></lx-e>
3 \rightarrow Over Current threshold I >: could be modify by the customer
4 \rightarrow Current threshold I > duration: could be modified by the customer
5 \rightarrow Noise reduction : could be modified by the customer?
6 \rightarrow Overcurrent threshold I>> :could be modified by the customer?
7 \rightarrow Overcurrent threshold I>> duration : could be modified by the customer?
8 \rightarrow Current nominal value I : could be modified by the customer?
9 \rightarrow Voltage nominal value U : could be modified by the customer?
10 \rightarrow Current hysteresis value : could be modified by the customer?
11 \rightarrow Voltage hysteresis value : could be modified by the customer?

✓ Smart Modbus Module Software			- 🗆 📐
		C Refresh	Apply
	Module & communication se	ettings	
Connection	Voltage & current thresholds		•
connection	Voltage threshold U< <lx-e< td=""><td>10</td><td>% 1</td></lx-e<>	10	% 1
Main page	Voltage threshold U< <lx-e duration<="" td=""><td>1</td><td>s 2</td></lx-e>	1	s 2
Module & communication	Overcurrent threshold I>	80	% 3
settings	Overcurrent threshold I> duration	1	s 4
Measurement	Noise reduction	2	‰ 5
	Overcurrent threshold I>>	100	% 6
Alarms	Overcurrent threshold I>> duration	0	s 7
	Current nominal value I	400	A 8
Disconnected	Voltage nominal value U	230	v 9
	Current hysteresis value	5	» 10
	Voltage hysteresis value	2	» 11
	Others		T
			A

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5.5.3.5 Others

- 1 → Call monitoring time: time to get a call of the master, could be modified by the customer
- 2 → Minimum time message: time minimum to get a message, could be modified by the customer
- 3 → Modbus Waiting time before answer : time to wait for having an answer from the module , could be modified by the customer

✓ Smart Modbus Module Software			- 0	×
		C Refresh	Apply	
	Module & communication set	tings		
Connection	General			
	Settings			
Main page	CT phase visualization			
Module & communication	Voltage & current thresholds			
settings	Others	10	s 1	
Measurement	Call monitoring time Minimum time message	2	s 2	
Alarms	Modbus waiting time before answer		ms 3	
Disconnected				



5.5.4 Measurement

On this page you have several subchapters to visualize the measured or calculated values

1 → Time and date of means values: date and time of the last mean calculation
 2 → Temperature Measurement: value of the temperature

M Smart Modbus Module Software		-	- 🗆	×
		C Refresh		
	Measurement		_	
Connection	Fuses status Current values		▲ ▲	
Main page	Voltage values Power Calculations		▲ ▲	
Module & communication settings			1	
Measurement	Time and date of mean values Temperature Measurement	02/05/22 17:32 Error	2	
Alarms				



5.5.4.1 Fuses status

1 \rightarrow Fuse status: status of the fuse for each phase

5.5.4.2 Current values

- 2 \rightarrow Current: values measured for each phase 1, 2, and 3
- 3 \rightarrow Current mean: mean calculated on current values for each phase
- $4 \rightarrow$ Current min: current value min found during current mean calculation
- 5 \rightarrow Current max: current value max found during current mean calculation
- 6 → Cosphi : cosphi calculated

▲ Smart Modbus Module Softw	are	- □ >
		C Refresh
	Measurement	
Connection	Fuses status	•
Main page	Fuses status	Phase 1 Phase 2 Phase 3
Module & communication	Current values	•
settings		L1 L2 L3 Neutral
Measurement	Current	0.00 A 0.00 A 0.00 A 2
	Current mean	0.00 A 0.00 A 0.00 A 0.00 A 3
Alarms 🧲	Current min Current max	0.08 A 0.00 A 0.08 A 0.00 A 4
		0.08 A 0.00 A 0.00 A 5
Connected		Phase 1 Phase 2 Phase 3
	Cosphi	111.13 73.13 107.13 6
	Voltage values	
		v







 $1 \rightarrow$ Voltage value: voltage value for each phase, phase -neutral and phase-phase

5.5.4.4 Power calculations

- 2 \rightarrow Active power: active power calculated for each phase 1, 2, and 3 and in total
- $3 \rightarrow$ Active power mean: active power calculated on active power values
- 4 → Active power min: active power value min found during active power mean calculation
- 5 → Active power max: active power value max found during active power mean calculation
- $6 \rightarrow$ Reactive power: reactive power calculated for each phase 1, 2, and 3 and in total
- $7 \rightarrow$ Reactive power mean: reactive power calculated on active power values
- 8 → Reactive power min: reactive power value min found during reactive power mean calculation
- 9 → Reactive power max: reactive power value max found during reactive power mean calculation

Smart Modbus Module Sof	tware				-		
			C	Refresh			
	Measurement						
	Voltage values				•		
nnection	V1N V2N	V3N	V12	V23	V31		
n page	VV	V	V	V	V	1	
page	Power Calculations				▼		
ule & communication ngs		ΣΡ	P1	P2	P3	2	ļ
	Active Power	W	W	W	W		_
surement	Active Power mean	W	W	W	W	3	
ns 🔴	Active Power min	W	W	W	W	4	
	Active Power max	W	W	W	W	5	_
Connected		ΣQ	Q1	Q2	Q3	6	
	Reactive Power	VAR	VAR	VAR	VAR		_
	Reactive Power mean	VAR	VAR	VAR	VAR	- 7	
	Reactive Power min	VAR	VAR	VAR	VAR	8	l
	Reactive Power max	VAR	VAR	VAR	VAR	9	_
	Reading Pringermax	ANRC //	1 198	NIK M	A98 //		
	REELERGERMONT				NIN M		
	R RESERVE POWER MEET						

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5.5.5 Alarms

1 \rightarrow Module status: coming from the module directly for traceability

- Green : no issue
- Red : issue, have a look on below data or master communication missing

2 \rightarrow Fuse status 1 / Fuse status 2 / Fuse status 3:

- Green : no issue
- Red : gap of voltage measurements per phase : Fuse blow or Fusegear opened

 $3 \rightarrow$ Temperature status:

- Green : no issue, temperature below the temperature threshold
- Red : temperature over the temperature threshold

M Smart Modbus Module Software		-	X
	Alarms		
Connection	Module status Fuse status L1	1	
Main page	Fuse status L2	2	
Module & communication settings	Fuse status L3 Temperature status	3	
Measurement			
Alarms			
Disconnected			
Disconnected			



6. TERMINAL CONNECTIONS

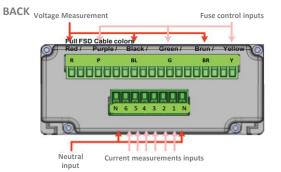
6.1 Back connections

Back connection,

Voltage connections

Terminal	Signal	Cable	Color
Т	L3 voltage input to get Fuse blown information	1,5 mm2 ~ Ø 1,3mm,690V	Red
W	L3 voltage input	1,5 mm2 ~ Ø 1,3mm,690V	Purple
S	L2 voltage input to get Fuse blown information	1,5 mm2 ~ Ø 1,3mm,690V	Black
V	L2 voltage input	1,5 mm2 ~ Ø 1,3mm,690V	Green
R	L1 voltage input to get Fuse blown information	1,5 mm2 ~ Ø 1,3mm,690V	Brown
U	L1 voltage input	1,5 mm2 ~ Ø 1,3mm,690V	Yellow

Voltage measurement inputs connections



Current measurement inputs connections

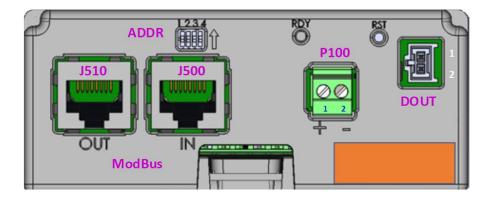
Back connection,

Current connections

Terminal	Signal	Cable	Number
N	Neutral input if needed (should be connected on master	1,5 mm2 ~ Ø 1,3mm	N
iR1	L1 Current sensing signal Positive	1,5 mm2 ~ Ø 1,3mm	1
iR2	L1 Current sensing signal Negative	1,5 mm2 ~ Ø 1,3mm	2
iS1	L2 Current sensing signal Positive	1,5 mm2 ~ Ø 1,3mm	3
iS2	L2 Current sensing signal Negative	1,5 mm2 ~ Ø 1,3mm	4
iT1	L3 Current sensing signal Positive	1,5 mm2 ~Ø1,3mm	5
iT2	L3 Current sensing signal Negative	1,5 mm2 ~Ø1,3mm	6
N	Neutral input if needed (should be connected on master	1,5 mm2 ~Ø1,3mm	N



6.2 Front connections



Front connection,

Current connections

Terminal	Signal	Cable
P100 +	24VDC power supply input	0,75 to 1,5 mm2
P100 -	24V GND (0V)	0,75 to 1,5 mm2
DOUT 1	D1 digital ouput 1, 30V/2A	0,75 to 1,5 mm2
DOUT 2	D0 digital output 0, 30V/2A	0,75 to 1,5 mm2
J510	Connection with the master	RJ45
	1 = Not connected	
	2 = GND (or 0V)	
	3 = Not connected	
	4 = D1 (A)	
	5 = D0 (B)	
	6 = 24V	
	7 = 24V	
	8 = GND	
J500	Connection daisy chain with other slaves	RJ45
	1 = Not connected	
	2 = GND (or 0V)	
	3 = Not connected	
	4 = D1 (A)	
	5 = D0 (B)	
	6 = 24V	
	7 = 24V	
	8 = GND	
ADDR	Dip switch 1234 position	/

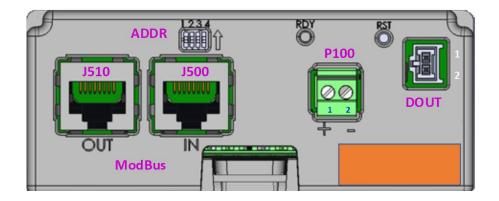




6.3 Slave address available

To help you to put the parameters the modules in a faster way into a cabinet :

- plug the daisy chain on 8 modules
- set manually the dip switch follow the below table with different address
- send the requested parameters for each module to one channel using the right module address
- If you have more than 8 modules, you can give another "hard" address of your module, the set address is the one recognized by the module, the address given by the dip switch is forgotten and you can reuse the dip switch address to pursue the parametrization of your daisy chain



dip switch position	address
0000	247
1000	111
0100	112
1100	113
0010	114
1010	115
0110	116
1110	117

1	2	3	4	position
				1 / top
				0 / bottom



6.3 Wiring and Termination resistance

The power supply should be connected at the first module, then the power supply is established via the RJ45 connection through the daisy chain using ethernet cable. No need to add additional supply of other module linked by the daisy chain.

If you have more than 8 modules a termination resistance is needed.

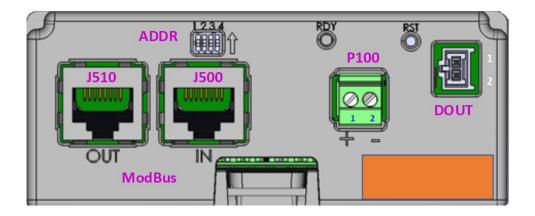
Using the dip switch you should put it at position 1, regardless of other positions of the dip switch pins.

The delivery position is always at 0.

1	2	3	4	position
				1 / top
			х	0 / bottom

Termination resistance position at 1

1	2	3	4	position
			х	1 / top
				0 / bottom





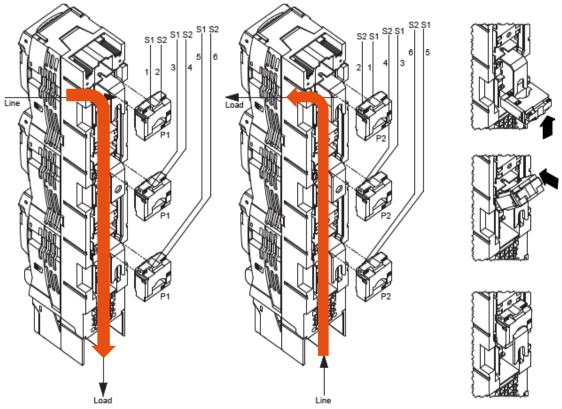
7. POWER DIRECTION SETTING

According to the load power direction of the fusegear, the value of the current could be positive or negative.

Below you will find the description by default values, when using standard load connection \rightarrow feeding side = Busbar side

STANDARD LOAD CONNECTION OTHER SIDE LOAD CONNECTION

Feeding side = Busbar side



If the product is connected at the load following the "Other side load connection", 2 options :

- Change current transformer side of installation as shown on the upper pictures
- Or reverse the connection of the module as shown below





8. TECHNICAL DATA

	Accuracy class	+/-1% on voltage and current for the module (to be added to the sensors tolerance) +/-1% on temperature (in range from 0°C to 60°C)
	Degree of protection	IP20
General	Visual displays	1 LED for Module status (RUN)
	Operating Temperature	-20 °C+70 °C
	Storage/Transportation Temperature	-40 °C+70 °C
	Humidity	Max. 95 %, without condensation
	Operating Voltage	DC24V (+/- 6V)
	Allowed interruptions of DC power supply, according to EN 61131-2	Interruption < 4 ms, time between 2 interruptions > 1 s
_	Protection against reverse polarity	Yes
Electrical characteristics	Typical power consumption	1,2W / 24V - 50mA
characteristics	Internal resistance L – N	L – Ν: 3,0ΜΩ
	Measuring range L – N	AC400V (+/- 10%)
	Frequency	50/60 Hz (+/-5%) - parametrizable
	Current transformer secondary current	1A or 5A - parametrizable
	Standard	EN 61000-6-2
	Impulse withstand voltage	2kV – 1,2/50µs
	Radio noise field strength	Class A
	Air discharge	8kV
Electromagnetic	Contact discharge	4kV
compatibility	Radio emitted disturbances	10V/m
	Conducted disturbances	1kV line to line, 2kV line to earth
	Creepage distances	The creepage distances and clearances meet the requirements of the overvoltage category II, pollution degree 2.
	Voltage connection	1 per phase, spring type
	Fuse control connection	1 per phase, spring type
Analog Inputs	Neutral connection	2 available, spring type
	Current transformer connections	2 per phase, spring type
	Potential separation	Yes
Digital Outputs	Digital output	Static relay 30V/2A
	ModBus RTU	APS V1.1b, Configurable via software
	Number of channels	1
Modbus RTU interface	Physical connection type	2 x RJ45
Interlate	Max. Bus participants	up to 247
	Transmission speed	1200 – 115200 b/s (default = 57kb/s)
	Mounting	Horizontal
Mechanical	Housing	Classification V-2 according to UL 94
characteristics	Dimensions HxWxD	39,5x95x102 mm
	Weight	200 g



9. MODBUS PARAMETERS

Modbus PDU Address (16bit)	Modbus-Model of							
	data	Designation			Access			
	DI = Digital inputs/	(note: with float32 -> HW = high word; LW = low	Status	Data type	(R = read;	Min/Max-value	Preset value	Comments
<u> "</u>	IP= Input registers)	word)			W = write)			
	ir-input registers)							1= no error
30000 DI	N	Status	0/1	BS1	P			
30000 DI 30001 DI		Status Reserve	0/1	D31	ĸ	-	-	0 = error
50001 DI	Л	Reserve						1 - No supervised in the last 240
20002		Construction for the second	0/1	0.04	R			1 = No synchronization in the last 24H
30002 DI		Synchronization	0/1	BS1	ĸ	-	-	0 = Synchronized
30003 to 30499 DI		Reserve						
30501 Co		Password	-	BS1	w	-	-	1 = Password is reset to the default value
	Coil	Resreve						
31000 IR		Last Boot Millis	ms	ulnt16	R	0 to 59999	0	
31001 IR		Last Boot Minute	min	ulnt16	R	0 to 59	0	
31002 IR		Last Boot Hour	Hour	ulnt16	R	0 to 23	0	
31003 IR	R	Last Boot Day	Day	ulnt16	R	1 to 31	1	
31004 IR	R	Last Boot Month	Month	ulnt16	R	1 to 12	1	
31005 IR	R	Last Boot Year	Year	ulnt16	R	20 to 99	20	
31006 IR	R	Firmware version		ulnt16	R	0 to 65535	-	MSB = major / LSB = minor (0x0103 = 1.3)
31007 IR	R	Hardware version		ulnt16	R	0 to 65535	-	MSB = major / LSB = minor
31008 to 31499 IR	R	Reserve						
31500 HI		Date/Hour			W/R			
31501 HI		Date/Hour			W/R			
31501 H		Date/Hour			W/R			
31502 H		Date/Hour			W/R		-	
31503 HI 31504 HI			min	ulnt8	W/R W	1 to 60	-	1 E or 10 min; t applies to all mean value-
31504 HI	IN	Time Duration for mean		ullito	vv	1 to 60	5	1, 5 or 10 min; t applies to all mean values
						0= none		
						1= even		
31505 HI	1K	Modbus Parity	-		W/R	2=odd	1	
						19200		
						38400		
						57600		
31506 HI	łR	Modbus Baudrate (HW)	Bit/s		W/R	115200	19200	
						19200		
						38400		
						57600		
31507 HI	IR	Modbus Baudrate (LW)	Bit/s		W/R	115200	19200	
31508 HI		Modbus Slave address	-		W/R	1 to 247	247	
	IR	Reserve			,			
								//choice 0 = wideband active power or 1 =
50000 DI	N	ADDR_FCT_PRIVATE_WIDEBAND_FUNDAMENTAL	0/1	BS1	W/R	0 to 1	0	fundamental
50001 DI		ADDR_FCT_PRIVATE_50HZ_60HZ	0/1	BS1	W/R	0 to 1		//choice 0 = 50H or 1 = 60Hz
5000101		ADDR_FCT_FRIVATE_JOII2_0012	0/1	531	WV/R	0101	0	//CT value = I primary / I secondary x 10 (see CT
50501	ID	ADDR_FCT_PRIVATE_CT_A_PHASE_1	-	UINT16	W/R	1 to 65525		parameter sheet as reference)
50501 HI						1 to 65535	-	
50502 HI	1K	ADDR_FCT_PRIVATE_CT_B_PHASE_1	-					//not use
		ADDR_FCT_PRIVATE_CT_A_PHASE_2	-	UINT16	W/R			//CT value = I primary / I secondary x 10 (see CT
50503 HI					,	1 to 65535	-	parameter sheet as reference)
50504 HI	IR	ADDR_FCT_PRIVATE_CT_B_PHASE_2	-					//not use
		ADDR_FCT_PRIVATE_CT_A_PHASE_3		UINT16	W/R			//CT value = I primary / I secondary x 10 (see CT
50505 HI				0		1 to 65535	-	parameter sheet as reference)
50506 HI	łR	ADDR_FCT_PRIVATE_CT_B_PHASE_3	-					//not use
		//customer configuration						
50507 HI	IR	ADDR_FCT_PRIVATE_LIMITE_V	V	UINT16	W/R	0 to 65535	65535	voltage threshold
50508 HI	IR	ADDR_FCT_PRIVATE_LIMITE_V_DURATION	s	UINT16	W/R	0 to 65535		duration voltage threshold
50509 HI		ADDR_FCT_PRIVATE_LIMITE_I	A	UINT16	W/R	0 to 65535		current threshold
50510 HI		ADDR_FCT_PRIVATE_LIMITE_I_DURATION	s	UINT16	W/R	0 to 65535		duration current threshold
			_					
50511 HI	IR	ADDR_FCT_PRIVATE_MINIMUM_TIME_MESSAGE	s	UINT16	W/R	1 to 6000	2	minimum duration time to display alerte message
		ADDR FCT PRIVATE CALL MONITORING TIME	s	UINT16	W/R	1 to 3600		Modbus message missing alerte time
50512 H		//Firmware update settings					10	g dici te time
50512 HI								0 = application
50512 H		ADDR FCT DRIVATE ROOTLOADER STATUS	0/1	BS1	R	0 to 1		1 = bootloader
)	ADDR_FCT_PRIVATE_BOOTLOADER_STATUS		1				1 = to launch bootloader
50521 DI			1	BS1	w	1		
50521 DI 50522 DI	DI	ADDR_FCT_PRIVATE_BOOTLOADER_RESET	1	BS1	w	1 0 to 65535		
50521 DI 50522 DI 50523 HI	DI IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB	-	UINT16	w	0 to 65535		firmware size MSB
50521 DI 50522 DI 50523 HI 50524 HI	DI IR IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB ADDR_FCT_PRIVATE_APP_LENGTH_LSB	-	UINT16 UINT16	w w	0 to 65535 0 to 65535		firmware size MSB firmware size LSB
50521 DI 50522 DI 50523 HI 50524 HI 50524 HI 50525 HI	DI IR IR IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB ADDR_FCT_PRIVATE_APP_LENGTH_LSB ADDR_FCT_PRIVATE_APP_CHECKSUM_MSB	-	UINT16 UINT16 UINT16	w w w	0 to 65535 0 to 65535 0 to 65535		firmware size MSB firmware size LSB firmware CRC32 MSB
50521 DI 50522 DI 50523 HI 50523 HI 50524 HI 50525 HI 50526 HI	DI IR IR IR IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_LSB	- - - -	UINT16 UINT16 UINT16 UINT16	w w w w	0 to 65535 0 to 65535 0 to 65535 0 to 65535		firmware size MSB firmware size LSB firmware CRC32 MSB firmware CRC32 LSB
50521 DI 50522 DI 50523 HI 50524 HI 50524 HI 50525 HI 50526 HI 50527 HI	DI IR IR IR IR IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB ADDR_FCT_PRIVATE_APP_LENGTH_LSB ADDR_FCT_PRIVATE_APP_CHECKSUM_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_LSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_MSB	- - - - -	UINT16 UINT16 UINT16 UINT16 UINT16	w w w w w	0 to 65535 0 to 65535 0 to 65535 0 to 65535 0 to 65535 0 to 65535		firmware size MSB firmware Size LSB firmware CRC32 MSB firmware CRC32 LSB write offset MSB
50521 DI 50522 DI 50523 HI 50524 HI 50526 HI 50527 HI 50527 HI	DI IR IR IR IR IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB ADDR_FCT_PRIVATE_APP_LENGTH_LSB ADDR_FCT_PRIVATE_APP_CHECKSUM_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_LSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_MSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_LSB	1 - - - - -	UINT16 UINT16 UINT16 UINT16 UINT16 UINT16	w w w w w	0 to 65535 0 to 65535 0 to 65535 0 to 65535 0 to 65535 0 to 65535 0 to 65535		firmware size MSB firmware size LSB firmware CRC32 MSB firmware CRC32 LSB write offset MSB write offset LSB
50521 DJ 50522 DJ 50523 HI 50524 HI 50525 HI 50526 HI 50527 HI 50528 HI 50528 HI	DI IR IR IR IR IR IR IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB ADDR_FCT_PRIVATE_APP_LENGTH_LSB ADDR_FCT_PRIVATE_APP_CHECKSUM_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_LSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_MSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_LSB ADDR_FCT_PRIVATE_APP_DATA1	- 1 	UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16	W W W W W W	0 to 65535 0 to 65535		firmware size MSB firmware Size LSB firmware CRC32 MSB firmware CRC32 LSB write offset MSB write offset LSB firmware data
50521 DI 50522 DI 50523 HI 50523 HI 50526 HI 50526 HI 50527 HI 50528 HI 50529 HI 50529 HI	DI IR IR IR IR IR IR IR IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB ADDR_FCT_PRIVATE_APP_LENGTH_LSB ADDR_FCT_PRIVATE_APP_CHECKSUM_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_LSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_MSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_LSB ADDR_FCT_PRIVATE_APP_DATA1 ADDR_FCT_PRIVATE_APP_DATA1	1 	UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16	W W W W W W W	0 to 65535 0 to 65535 0 to 65535 0 to 65535 0 to 65535 0 to 65535 0 to 65535		firmware size MSB firmware size LSB firmware CRC32 MSB firmware CRC32 LSB write offset MSB write offset LSB
50521 DJ 50522 DJ 50523 HI 50524 HI 50525 HI 50526 HI 50527 HI 50528 HI 50528 HI 50529 HI 50530 HI	DI IR IR IR IR IR IR IR IR IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB ADDR_FCT_PRIVATE_APP_LENGTH_LSB ADDR_FCT_PRIVATE_APP_CHECKSUM_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_LSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_MSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_LSB ADDR_FCT_PRIVATE_APP_DATA1	1 	UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16	W W W W W W	0 to 65535 0 to 65535		firmware size MSB firmware Size LSB firmware CRC32 MSB firmware CRC32 LSB write offset MSB write offset LSB firmware data
50521 DI 50522 DI 50523 HI 50523 HI 50526 HI 50526 HI 50527 HI 50528 HI 50529 HI 50529 HI	DI IR IR IR IR IR IR IR IR IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB ADDR_FCT_PRIVATE_APP_LENGTH_LSB ADDR_FCT_PRIVATE_APP_CHECKSUM_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_LSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_MSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_LSB ADDR_FCT_PRIVATE_APP_DATA1 ADDR_FCT_PRIVATE_APP_DATA1	1 	UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16	W W W W W W W	0 to 65535 0 to 65535		firmware size MSB firmware Size LSB firmware CRC32 MSB firmware CRC32 LSB write offset MSB write offset LSB firmware data firmware data
50521 DJ 50522 DJ 50523 HI 50524 HI 50525 HI 50526 HI 50527 HI 50528 HI 50528 HI 50529 HI 50530 HI	DI IR IR IR IR IR IR IR IR IR IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_LSB ADDR_FCT_PRIVATE_APP_OATA_OFFSET_MSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_LSB ADDR_FCT_PRIVATE_APP_DATA2 ADDR_FCT_PRIVATE_APP_DATA2 ADDR_FCT_PRIVATE_APP_DATA2 ADDR_FCT_PRIVATE_APP_DATA3	1 	UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16	W W W W W W W W W	0 to 65535 0 to 65535		firmware size MSB firmware CS2 MSB firmware CRC32 MSB write offset MSB write offset USB firmware data firmware data firmware data
50521 DJ 50522 DJ 50523 HI 50524 HI 50526 HI 50527 HI 50527 HI 50529 HI 50530 HI 50530 HI 50531 HI 50533 HI	DI IR IR IR IR IR IR IR IR IR IR IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_LSB ADDR_FCT_PRIVATE_APP_OATA_OFFSET_MSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_LSB ADDR_FCT_PRIVATE_APP_DATA1 ADDR_FCT_PRIVATE_APP_DATA1 ADDR_FCT_PRIVATE_APP_DATA3 ADDR_FCT_PRIVATE_APP_DATA3 ADDR_FCT_PRIVATE_APP_DATA4 ADDR_FCT_PRIVATE_APP_DATA4 ADDR_FCT_PRIVATE_APP_DATA5	1 	UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16	W W W W W W W W W W W W	0 to 65535 0 to 65535		firmware size MSB firmware RC32 MSB firmware RC32 MSB firmware CRC32 LSB write offset MSB write offset MSB firmware data firmware data firmware data firmware data firmware data
50521 DJ 50522 JJ 50523 HI 50525 HI 50525 HI 50526 HI 50527 HI 50528 HI 50528 HI 50530 HI 50531 HI 50533 HI 50533 HI 50533 HI	DI IR IR IR IR IR IR IR IR IR IR IR IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_KSB ADDR_FCT_PRIVATE_APP_OATA_OFFSET_MSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_LSB ADDR_FCT_PRIVATE_APP_DATA2 ADDR_FCT_PRIVATE_APP_DATA2 ADDR_FCT_PRIVATE_APP_DATA3 ADDR_FCT_PRIVATE_APP_DATA3 ADDR_FCT_PRIVATE_APP_DATA3 ADDR_FCT_PRIVATE_APP_DATA5 ADDR_FCT_PRIVATE_APP_DATA5 ADDR_FCT_PRIVATE_APP_DATA5 ADDR_FCT_PRIVATE_APP_DATA5	1 - - - - - - - - - - - - - - - - -	UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16	W W W W W W W W W W W W W W W	0 to 65535 0 to 65535		firmware size MSB firmware CS2 MSB firmware CRC32 LSB write offset MSB write offset LSB firmware data firmware data firmware data firmware data firmware data firmware data firmware data
50521 DJ 50522 DJ 50523 HI 50524 HI 50525 HI 50526 HI 50528 HI 50528 HI 50528 HI 50530 HI 50531 HI 50531 HI 50532 HI 50533 HI 50533 HI) IR IR IR IR IR IR IR IR IR IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_LSB ADDR_FCT_PRIVATE_APP_CHECKSUM_LSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_MSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_LSB ADDR_FCT_PRIVATE_APP_DATA1 ADDR_FCT_PRIVATE_APP_DATA2 ADDR_FCT_PRIVATE_APP_DATA3 ADDR_FCT_PRIVATE_APP_DATA3 ADDR_FCT_PRIVATE_APP_DATA4 ADDR_FCT_PRIVATE_APP_DATA5 ADDR_FCT_PRIVATE_APP_DATA5 ADDR_FCT_PRIVATE_APP_DATA5 ADDR_FCT_PRIVATE_APP_DATA5 ADDR_FCT_PRIVATE_APP_DATA6 ADDR_FCT_PRIVATE_APP_DATA5	1 	UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16	W W W W W W W W W W W W W W W W	0 to 65535 0 to 65535		firmware size MSB firmware CS2 MSB firmware CR232 MSB firmware CR232 LSB write offset MSB write offset LSB firmware data firmware data firmware data firmware data firmware data firmware data firmware data
50521 DJ 50522 JJ 50523 HI 50525 HI 50525 HI 50526 HI 50527 HI 50528 HI 50528 HI 50530 HI 50531 HI 50533 HI 50533 HI 50533 HI) IR IR IR IR IR IR IR IR IR IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_LSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_MSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_LSB ADDR_FCT_PRIVATE_APP_DATA1 ADDR_FCT_PRIVATE_APP_DATA2 ADDR_FCT_PRIVATE_APP_DATA3 ADDR_FCT_PRIVATE_APP_DATA3 ADDR_FCT_PRIVATE_APP_DATA5 ADDR_FCT_PRIVATE_APP_DATA5 ADDR_FCT_PRIVATE_APP_DATA5 ADDR_FCT_PRIVATE_APP_DATA6 ADDR_FCT_PRIVATE_APP_DATA7 ADDR_FCT_PRIVATE_APP_DATA7	1 	UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16	W W W W W W W W W W W W W W W	0 to 65535 0 to 65535		firmware size MSB firmware Size LSB firmware CRC32 MSB firmware CRC32 LSB write offset MSB write offset LSB firmware data firmware data firmware data firmware data firmware data firmware data firmware data
50521 DJ 50522 DJ 50523 HI 50524 HI 50525 HI 50526 HI 50528 HI 50528 HI 50528 HI 50530 HI 50531 HI 50531 HI 50532 HI 50533 HI 50533 HI) IR IR IR IR IR IR IR IR IR IR	ADDR_FCT_PRIVATE_BOOTLOADER_RESET ADDR_FCT_PRIVATE_APP_LENGTH_MSB ADDR_FCT_PRIVATE_APP_CHECKSUM_LSB ADDR_FCT_PRIVATE_APP_CHECKSUM_LSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_MSB ADDR_FCT_PRIVATE_APP_DATA_OFFSET_LSB ADDR_FCT_PRIVATE_APP_DATA1 ADDR_FCT_PRIVATE_APP_DATA2 ADDR_FCT_PRIVATE_APP_DATA3 ADDR_FCT_PRIVATE_APP_DATA3 ADDR_FCT_PRIVATE_APP_DATA4 ADDR_FCT_PRIVATE_APP_DATA5 ADDR_FCT_PRIVATE_APP_DATA5 ADDR_FCT_PRIVATE_APP_DATA5 ADDR_FCT_PRIVATE_APP_DATA5 ADDR_FCT_PRIVATE_APP_DATA6 ADDR_FCT_PRIVATE_APP_DATA5	1 	UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16 UINT16	W W W W W W W W W W W W W W W W	0 to 65535 0 to 65535		firmware size MSB firmware Size LSB firmware CRC32 MSB firmware CRC32 LSB write offset MSB write offset LSB firmware data firmware data firmware data firmware data firmware data firmware data firmware data firmware data

*Excel file of Modbus communication table available on request

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10. MODBUS MEASUREMENT PROVIDED

(16bit) (DI =	և Լ	Designation (note: with float32 -> HW = high word; LW = low word)			Access	
(16bit) [D = IP= I Note: Up to 2000 DI can be reg 322000 to 32299 DI 32300 DI 32301 DI 32302 DI 32303 DI 32304 DI 32305 DI 32306 DI 32307 DI 32308 DI	= Digital inputs/ = Input registers) equested with a que L L L	(note: with float32 -> HW = high word; LW =				
IDI = IP = I 32000 to 32299 DI 32300 DI 32301 DI 32302 DI 32303 DI	Input registers) equested with a que l l l l		Status	Data type	(R = read;	Comments
Note: Up to 2000 DI can be ret 32000 to 32299 DI 32300 DI 32301 DI 32302 DI 32303 DI	equested with a que L L		Status	Dutu type	W = write)	connents
32000 to 32299 DI 32300 DI 32301 DI 32302 DI 32303 DI	և Լ					
32300 DI 32301 DI 32302 DI 32303 DI	l	ery telegram. 8 DI fit into one byte in the respor	ise telegram			
32301 DI 32302 DI 32303 DI	l					
32302 DI 32303 DI	L	J> addressed	0/1	BS1	R	always "0"
32303 DI		J>> addressed	0/1	BS1	R	always "O"
	1	J< addressed	0/1	BS1	R	always "0"
32304 DI		J<< addressed	0/1	BS1	R	always "0"
32304 DI						1= V< 0,1 x voltage threshold & duration
32304 DI						voltage measurement > duration voltage
	ľ	J<< L1-E addressed	0/1	BS1	R	threshold
1 1						0 = V> 0,1 x voltage threshold
						1= V< 0,1 x voltage threshold & duration
						voltage measurement > duration voltage
32305 DI	L	J<< L2-E addressed	0/1	BS1	R	threshold
						0 = V> 0,1 x voltage threshold
						1= V< 0,1 x voltage threshold & duration
32306 DI	L L	J<< L3-E addressed	0/1	BS1	R	voltage measurement > duration voltage
						threshold
						0 = V> 0,1 x voltage threshold
32307 DI		New mean available	0/1	BS1	R	Bit must be reset by the slave after querying
			-/-		~	the mean values
						1= I> 0,8 x current threshold & duration
32308 DI		> addressed	0/1	BS1	R	current measurement > duration current
22.00	ľ		0,1			threshold
						0 = I< 0,8 x current threshold
				1		1= I> current threshold & duration current
32309 DI	1	>> addressed	0/1	BS1	R	measurement > duration current threshold
						0 = I< current threshold
32310 DI		/oltage quality	0/1	BS1	R	Always "0" Wiper message
			-, -			
32311 DI	F	use L1	0/1	BS1	R	1= fuse blown
L						0 = fuse functional
32312 DI	F	use L2	0/1	BS1	R	1= fuse blown
			.,	-		0 = fuse functional
32313 DI	F	use L3	0/1	BS1	R	1= fuse blown
		u3e L5	0/1	001	ĸ	0 = fuse functional
32314 bis 36811	F	Reserve			R	
Note: Up to 125 IR can be requ	quested with one qu	uery telegram				
36812 to 36819 IR	1	ntensity	A	float32	R	
36820 to 36835 IR	F	Active and reactive power	kW / kVAR	float32	R	
36836 to 36859 IR		Reserve instantaneous value		float32	R	
36860 to 36863 IR		ime and date of the mean values	•	*	R	Allocation according to time telegram structure
36864 to 36875 IR						88
		Reserve	٨	float32	R	
		ntensity mean				
36884 to 36899 IR		Active/ Reactive power mean	kW / kVAR	float32	R	
36900 to 36923 IR		Reserve		G		
36924 to 36939 IR		ntensity mean max and min	A	float32	R	
36940 to 36971 IR		Active/Reactive power max and min	kW / kVAR	float32	R	
36972 to 49999 IR		Reserve			R	
		/display voltage V1N				
	ŕ	ADDR_FCT_PRIVATE_VOLTAGE_1_MSB	V	float32	R	
50540 IR	A	ADDR_FCT_PRIVATE_VOLTAGE_1_LSB	V			V1N value
50540 IR 50541 IR	4			float32	R	V1N value V1N value
50541 IR	4 4 /	/display voltage V2N			R	V1N value
	4 4 / 4	//display voltage V2N ADDR_FCT_PRIVATE_VOLTAGE_2_MSB	v	float32 float32	R R	
50541 IR	4 4 / 4	/display voltage V2N	v v			V1N value
50541 IR 50542 IR	4 	//display voltage V2N ADDR_FCT_PRIVATE_VOLTAGE_2_MSB	•	float32	R	V1N value V2N value
50541 IR 50542 IR	4 4 7 4 7 7	//display voltage V2N ADDR_ECT_PRIVATE_VOLTAGE_2_MSB ADDR_ECT_PRIVATE_VOLTAGE_2_LSB	•	float32	R	V1N value V2N value
50541 IR 50542 IR 50543 IR	4 4 4 4 4 4 4 4	/display voltage V2N ADDR_FCT_PRIVATE_VOLTAGE_2_MSB ADDR_FCT_PRIVATE_VOLTAGE_2_LSB /display voltage V3N	v	float32 float32	R	V1N value V2N value V2N value
50541 IR 50542 IR 50543 IR 50544 IR	4 4 7 4 4 4 4 4	/display voltage V2N ADDR_FCT_PRIVATE_VOLTAGE_2_MSB ADDR_FCT_PRIVATE_VOLTAGE_2_LSB //display voltage V3N ADDR_FCT_PRIVATE_VOLTAGE_3_MSB	v	float32 float32 float32	R R R	VIN value V2N value V2N value V3N value
50541 IR 50542 IR 50543 IR 50544 IR	4 4 4 4 4 4 4 4 4 4 4 4 4 1 4	/display voltage V2N NDOR_FCT_PRIVATE_VOLTAGE_2_MSB NDDR_FCT_PRIVATE_VOLTAGE_2_LSB //display voltage V3N NDOR_FCT_PRIVATE_VOLTAGE_3_MSB NDOR_FCT_PRIVATE_VOLTAGE_3_LSB //display.current 11 (Available 36812 to 36819)	v	float32 float32 float32	R R R	V1N value V2N value V2N value V3N value V3N value V3N value
50541 IR 50542 IR 50543 IR 50544 IR 50544 IR 50545 IR	4 4 4 4 4 4 4 4 1 1 4 4 4 4 4 4 4 4 4 4	/display voltage V2N DDR_FCT_PRIVATE_VOLTAGE_2_MSB DDR_FCT_PRIVATE_VOLTAGE_2_LSB /display voltage V3N DDR_FCT_PRIVATE_VOLTAGE_3_MSB DDR_FCT_PRIVATE_VOLTAGE_3_LSB	v	float32 float32 float32 float32 float32	R R R R	VIN value V2N value V2N value V3N value
50541 IR 50542 IR 50543 IR 50544 IR 50545 IR 50546 IR	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	/display voltage V2N JDDR, FCT, PRIVATE_VOLTAGE_2_MSB JDDR, FCT, PRIVATE_VOLTAGE_2_LSB /display voltage V3N JDDR, FCT, PRIVATE_VOLTAGE_3_LSB JDDR, FCT, PRIVATE_VOLTAGE_3_LSB JDDR, FCT, PRIVATE_CURRENT_1 JDDR, FCT, PRIVATE_CURRENT_1_LSB	v	float32 float32 float32 float32 float32 float32	R R R R	V1N value V2N value V2N value V3N value V3N value Current 1 value
S0541 IR 50542 IR 50543 IR 50544 IR 50545 IR 50546 IR 50547 IR	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 1 1 1 4 4 1	/display.voltage.V2N NDDR_FCT_PRIVATE_VOLTAGE_2_MSB NDDR_FCT_PRIVATE_VOLTAGE_2_ISB /display.voltage.V3N NDDR_FCT_PRIVATE_VOLTAGE_3_MSB NDDR_FCT_PRIVATE_VOLTAGE_3_LSB /display.ucrreat(I_Available 36812 to 36819) NDDR_FCT_PRIVATE_CURRENT_1_MSB NDDR_FCT_PRIVATE_CURRENT_1_LSB /display.ucrre112	v	float32 float32 float32 float32 float32 float32	R R R R	V1N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value
50541 R 50542 IR 50543 IR 50544 IR 50544 R 50545 IR 50546 IR 50546 IR 50547 IR 50548 IR	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	//display.voltage.V2N JADDR, FCT, PRIVATE_VOLTAGE_2_MSB JADDR, FCT, PRIVATE_VOLTAGE_2_LSB //display.voltage.V3N JADDR, FCT, PRIVATE_VOLTAGE_3_MSB JADDR, FCT, PRIVATE_VOLTAGE_3_LSB //display.current11_(Available: 36812 to 36819) JADDR, FCT, PRIVATE_CURRENT_1_MSB JADDR, FCT, PRIVATE_CURRENT_1_LSB //display.current12 JADDR, FCT, PRIVATE_CURRENT_2_MSB	v	float32 float32 float32 float32 float32 float32 float32 float32	R R R R	VIN value V2N value V2N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 2 value
S0541 IR 50542 IR 50543 IR 50544 IR 50545 IR 50546 IR 50547 IR	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	//display.voltage.V2N DDR, FCT, PRIVATE_VOLTAGE_2_MSB NDDR, FCT, PRIVATE_VOLTAGE_2_LSB //display.voltage.V3N DDR, FCT, PRIVATE_VOLTAGE_3_MSB DDR, FCT, PRIVATE_VOLTAGE_3_LSB //display.voltage.V3L NDR, FCT, PRIVATE_URRENT_1_MSB NDR, FCT, PRIVATE_CURRENT_1_SB //display.voltage.V3L NDR, FCT, PRIVATE_CURRENT_2_MSB DDR, FCT, PRIVATE_CURRENT_2_SB NDR, FCT, PRIVATE_SC NDR, FCT	v	float32 float32 float32 float32 float32 float32 float32	R R R R R R R	V1N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0548 IR S0548 IR S0549 IR	4 1 1 4 4 1 1 4 4 4 1 1 4 4 1 1 1 1 1 1	//display.voltage.V2N JADDR, FCT, PRIVATE_VOLTAGE_2_MSB JADDR, FCT, PRIVATE_VOLTAGE_2_LSB //display.voltage.V3N JADDR, FCT, PRIVATE_VOLTAGE_3_MSB JADDR, FCT, PRIVATE_VOLTAGE_3_LSB //display.ourrent11_(Available 36812 to 36819) JADDR, FCT_PRIVATE_CURRENT_1_MSB JADDR, FCT_PRIVATE_CURRENT_1_MSB JADDR, FCT_PRIVATE_CURRENT_1_SB JADDR, FCT_PRIVATE_CURRENT_2_MSB JADDR, FCT_PRIVATE_CURRENT_2_LSB //display.corrent13	v	float32 float32 float32 float32 float32 float32 float32 float32	R R R R R R R R R	VIN value V2N value V2N value V2N value V3N value Current 1 value Current 1 value Current 2 value Current 2 value Current 2 value Current 2 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0549 IR S0550 IR	4 9 9 4 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	/display.voltage.V2N DDR, FCT, PRIVATE_VOLTAGE_2_MSB NDDR, FCT, PRIVATE_VOLTAGE_2_LSB /display.voltage.V3N DDR, FCT, PRIVATE_VOLTAGE_3_MSB DDR, FCT, PRIVATE_VOLTAGE_3_LSB /display.corrent11 (Available 36812 to 36812 to DDR, FCT, PRIVATE_CURRENT_1_MSB DDR, FCT, PRIVATE_CURRENT_3_LSB /display.corrent12 DDR, FCT, PRIVATE_CURRENT_2_LSB /display.corrent13 DDR, FCT, PRIVATE_CURRENT_3_MSB	v	float32 float32 float32 float32 float32 float32 float32 float32 float32 float32	R R R R R R R R R	V1N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 2 value Current 2 value Current 2 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0548 IR S0548 IR S0549 IR	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	//display.voltage.V2N NDDR, FCT_PRIVATE_VOLTAGE_2_KSB NDDR, FCT_PRIVATE_VOLTAGE_2_LSB //display.voltage.V3N NDDR, FCT_PRIVATE_VOLTAGE_3_MSB NDDR, FCT_PRIVATE_VOLTAGE_3_KSB NDDR, FCT_PRIVATE_URRENT_1_KSB NDDR, FCT_PRIVATE_URRENT_1_KSB NDDR, FCT_PRIVATE_URRENT_2_MSB NDDR, FCT_PRIVATE_URRENT_2_KSB //display.current13 NDDR, FCT_PRIVATE_URRENT_3_KSB NDDR, FCT_PRIVATE_URRENT_3_KSB NDDR, FCT_PRIVATE_URRENT_3_KSB NDDR, FCT_PRIVATE_URRENT_3_KSB NDR, FCT_PRIVATE_URRENT_3_KSB NDR, FCT_PRIVATE_URRENT_3_KSB NDR, FCT_PRIVATE_URRENT_3_KSB NDR, FCT_PRIVATE_URRENT_3_KSB NDR, FCT_PRIVATE_URRENT_3_KSB NDR, FCT_PRIVATE_URRENT_3_KSB NDR, FCT_PRIVATE_URRENT_3_KSB NDR, FCT_PRIVATE_URRENT_3_KSB NDR, FCT_PRIVATE_URRENT_3_KSB	v	float32 float32 float32 float32 float32 float32 float32 float32	R R R R R R R R R	VIN value V2N value V2N value V2N value V3N value Current 1 value Current 1 value Current 2 value Current 2 value Current 2 value Current 2 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	//display.voltage.V2N JADDR, FCT, PRIVATE_VOLTAGE_2_MSB JADDR, FCT, PRIVATE_VOLTAGE_2_LSB //display.voltage.V3N JADDR, FCT, PRIVATE_VOLTAGE_3_MSB JADDR, FCT, PRIVATE_VOLTAGE_3_LSB //display.current11_(Available 36812 to 36819) JADDR, FCT, PRIVATE_CURRENT_1_MSB JADDR, FCT, PRIVATE_CURRENT_1_SB JADDR, FCT, PRIVATE_CURRENT_2_MSB JADDR, FCT, PRIVATE_CURRENT_2_LSB //display.current13 JADDR, FCT, PRIVATE_CURRENT_3_MSB JADDR, FCT, PRIVATE_CURRENT_3_LSB //display.current13_1SB //display.current13_1SB //display.current13_1SB //display.current143_1SB	v	float32 float32 float32 float32 float32 float32 float32 float32 float32 float32 float32	R R R R R R R R R R R	VIN value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value Current 3 value Current 3 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0549 IR S05541 IR S0551 IR S0552 IR	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	/display.voltage.V2N JODR, FCT, PRIVATE_VOLTAGE_2_MSB JDDR, FCT, PRIVATE_VOLTAGE_2_LSB /display.voltage.V3N JDDR, FCT, PRIVATE_VOLTAGE_3_MSB JDDR, FCT, PRIVATE_VOLTAGE_3_LSB /display.vortent1 (Available 368212 to 36819) JDDR, FCT, PRIVATE_CURRENT_1_MSB JDDR, FCT, PRIVATE_CURRENT_2_MSB JDDR, FCT, PRIVATE_CURRENT_3_MSB JDDR, FCT, PRIVATE_CURRENT_3_LSB /display.vortent13 JDDR, FCT, PRIVATE_CURRENT_3_LSB JDDR, FCT, PRIVATE_PH1_1_MSB	v	float32 float32 float32 float32 float32 float32 float32 float32 float32 float32 float32 float32 float32	R R R R R R R R R R R R R R	V1N value V2N value V2N value V2N value V3N value U3N value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value Current 3 value PHI 1 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	//display.voltage.V2N JADDR, FCT, PRIVATE_VOLTAGE_2_MSB JADDR, FCT, PRIVATE_VOLTAGE_2_LSB //display.voltage.V3N JADDR, FCT, PRIVATE_VOLTAGE_3_MSB JADDR, FCT, PRIVATE_VOLTAGE_3_MSB JADDR, FCT, PRIVATE_URRENT_1_MSB JADDR, FCT, PRIVATE_URRENT_1_MSB JADDR, FCT, PRIVATE_URRENT_1_SB //display.urrent12 JADDR, FCT, PRIVATE_URRENT_2_KSB JADDR, FCT, PRIVATE_URRENT_3_KSB JADDR, FCT, PRIVATE_VITE_1_SB	v	float32 float32 float32 float32 float32 float32 float32 float32 float32 float32 float32	R R R R R R R R R R R	VIN value V2N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value Current 3 value Current 3 value Current 3 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0549 IR S0550 IR S0551 IR S0552 IR S0553 IR	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	/display.voltage.V2N JOBR, FCT, PRIVATE_VOLTAGE_2_MSB NDDR, FCT, PRIVATE_VOLTAGE_2_LSB //display.voltage.V3N DDDR, FCT, PRIVATE_VOLTAGE_3_MSB DDDR, FCT, PRIVATE_VOLTAGE_3_LSB //display.corrent11 (Available 368212 to 38612) DDDR, FCT, PRIVATE_CURRENT_1_MSB DDDR, FCT, PRIVATE_CURRENT_2_MSB DDDR, FCT, PRIVATE_CURRENT_3_LSB //display.corrent13 DDDR, FCT, PRIVATE_CURRENT_3_LSB //display.corrent13 DDDR, FCT, PRIVATE_CURRENT_3_LSB //display.corrent13 DDDR, FCT, PRIVATE_CURRENT_3_LSB //display.corrent13 DDDR, FCT, PRIVATE_CURRENT_3_LSB //display.corrent14 DDDR, FCT, PRIVATE_URRENT_3_LSB //display.corrent14 DDR, FCT, PRIVATE_URRENT_3_LSB //display.corrent14 DDR, FCT, PRIVATE_PHI_1_LSB //display.correntPHI2	v	float32 float32 float32 float32 float32 float32 float32 float32 float32 float32 float32 float32 float32 float32 float32	R R R R R R R R R R R R R R R R R	V1N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value PHI 1 value PHI 1 value PHI 1 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR S0552 IR S0553 IR S0553 IR S0553 IR S0554 IR S0553 IR S0554 IR	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	//display.voitage.V2N NDDR, FCT_PRIVATE_VOLTAGE_2_MSB NDDR, FCT_PRIVATE_VOLTAGE_3_LSB //display.voitage.V3N NDDR, FCT_PRIVATE_VOLTAGE_3_MSB NDDR, FCT_PRIVATE_VOLTAGE_3_MSB NDDR, FCT_PRIVATE_CURRENT_1_MSB NDDR, FCT_PRIVATE_CURRENT_1_LSB //display.current13 NDDR, FCT_PRIVATE_CURRENT_2_MSB NDDR, FCT_PRIVATE_CURRENT_3_MSB NDDR, FCT_PRIVATE_CURRENT_3_LSB //display.current19 NDDR, FCT_PRIVATE_CURRENT_3_LSB //display.currentPHI1 NDDR, FCT_PRIVATE_CURRENT_3_LSB //display.currentPHI1 NDDR, FCT_PRIVATE_PHI_1_LSB //display.currentPHI2 NDR, FCT_PRIVATE_PHI_1_LSB //display.currentPHI2 NDR, FCT_PRIVATE_PHI_1_LSB //display.currentPHI2 NDR, FCT_PRIVATE_PHI_1_LSB //display.currentPHI2 NDR, FCT_PRIVATE_PHI_1_LSB //display.currentPHI2 NDR, FCT_PRIVATE_PHI_2_MSB	v	float32	R R R R R R R R R R R R R R R R R	VIN value V2N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 3 value PHI 1 value PHI 1 value PHI 1 value PHI 1 value PHI 2 value PHI 2 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR S0552 IR S0553 IR	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	/display.voltage.V2N DDR, FCT, PRIVATE_VOLTAGE_2_MSB NDDR, FCT, PRIVATE_VOLTAGE_2_LSB /display.voltage.V3N DDR, FCT, PRIVATE_VOLTAGE_3_MSB DDR, FCT, PRIVATE_VOLTAGE_3_LSB /display.current11 (Available 368212 to 36812 to DDR, FCT, PRIVATE_CURRENT_1_MSB DDR, FCT, PRIVATE_CURRENT_3_MSB DDR, FCT, PRIVATE_CURRENT_3_MSB DDR, FCT, PRIVATE_CURRENT_3_MSB DDR, FCT, PRIVATE_CURRENT_3_MSB DDR, FCT, PRIVATE_CURRENT_3_LSB /display.current13 DDR, FCT, PRIVATE_CURRENT_3_LSB /display.current13 DDR, FCT, PRIVATE_CURRENT_3_LSB /display.current14 DDR, FCT, PRIVATE_CURRENT_3_LSB /display.currentPH11_ NDR, FCT, PRIVATE_VILL_SB DDR, FCT, PRIVATE_VILL_SB DDR, FCT, PRIVATE_PH1_2_MSB DDR, FCT, PRIVATE_PH1_2_LSB	v	float32 float32 float32 float32 float32 float32 float32 float32 float32 float32 float32 float32 float32 float32 float32	R R R R R R R R R R R R R R R R R	V1N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value PHI 1 value PHI 1 value PHI 1 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR S0552 IR S0553 IR S0554 IR S0555 IR S0555 IR S0555 IR S0555 IR		/display.voltage.V2N NDDR, FCT_PRIVATE_VOLTAGE_2_KSB NDDR, FCT_PRIVATE_VOLTAGE_2_LSB /display.voltage.V3N NDDR, FCT_PRIVATE_VOLTAGE_3_KSB NDDR, FCT_PRIVATE_VOLTAGE_3_KSB NDDR, FCT_PRIVATE_VOLTAGE_3_KSB NDDR, FCT_PRIVATE_URRENT_1_LSB /display.current12 NDDR, FCT_PRIVATE_CURRENT_2_KSB NDDR, FCT_PRIVATE_CURRENT_3_KSB NDDR, FCT_PRIVATE_CURRENT_3_LSB /display.currentPH11 NDDR, FCT_PRIVATE_CURRENT_3_LSB NDDR, FCT_PRIVATE_CURRENT_3_LSB NDDR, FCT_PRIVATE_CURRENT_3_LSB NDDR, FCT_PRIVATE_CURRENT_3_LSB NDDR, FCT_PRIVATE_CURRENT_3_LSB NDDR, FCT_PRIVATE_CURRENT_3_LSB NDDR, FCT_PRIVATE_VIL_3 NDDR, FCT_PRIVATE_VIL_3 NDR, FCT_PRIVATE_VIL_3 NDR, FCT_PRIVATE_VIL_3 NDR, FCT_PRIVATE_VIL_3 NDR, FCT_PRIVATE_VI	v	float32	R R R R R R R R R R R R R R R R R R R	VIN value V2N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 3 value PHI 1 value PHI 1 value PHI 1 value PHI 1 value PHI 2 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR S0553 IR S0553 IR S0553 IR S0555 IR		//display.vorltage V2N //display.vorltage V2N //display.vorltage V2N //display.vorltage V3N //display.vorlta	v	float32	R R R R R R R R R R R R R R R R R R R	VIN value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value PHI 1 value PHI 2 value PHI 3 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0546 IR S0547 IR S0546 IR S0551 IR S0551 IR S0552 IR S0553 IR S0554 IR S0555 IR S0553 IR S0554 IR S0555 IR S0555 IR		/display.voltage.V2N JODR, FCT, PRIVATE_VOLTAGE_2_MSB JDDR, FCT, PRIVATE_VOLTAGE_2_LSB /display.voltage.V3N JDDR, FCT, PRIVATE_VOLTAGE_3_MSB JDDR, FCT, PRIVATE_VOLTAGE_3_LSB /display.ucrent11 (Available 368212 to 36819) JDDR, FCT, PRIVATE_CURRENT_1_MSB JDDR, FCT, PRIVATE_CURRENT_2_MSB JDDR, FCT, PRIVATE_CURRENT_3_MSB JDDR, FCT, PRIVATE_CURRENT_3_LSB /display.ucrent13 JDDR, FCT, PRIVATE_CURRENT_3_LSB JDDR, FCT, PRIVATE_CURRENT_3_LSB JDDR, FCT, PRIVATE_CURRENT_3_LSB JDDR, FCT, PRIVATE_CURRENT_3_LSB JDDR, FCT, PRIVATE_CURRENT_3_LSB JDDR, FCT, PRIVATE_CURRENT_3_LSB JDDR, FCT, PRIVATE_VIL_2_MSB JDDR, FCT, PRIVATE_VIL_2_MSB JDDR, FCT, PRIVATE_PHI_1_SB JDDR, FCT, PRIVATE_PHI_2_LSB JDDR, FCT, PRIVATE_PHI_2_LSB JDDR, FCT, PRIVATE_PHI_3_LSB JDDR, FCT, PRIVATE_PHI_3_LSB JDDR, FCT, PRIVATE_PHI_3_LSB	v	float32	R R R R R R R R R R R R R R R R R R R	VIN value V2N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 3 value PHI 1 value PHI 1 value PHI 1 value PHI 1 value PHI 2 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR S0553 IR S0553 IR S0553 IR S0555 IR	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	//display.voltage.V2N JDDR, FCT_PRIVATE_VOLTAGE_2_MSB JDDR, FCT_PRIVATE_VOLTAGE_3_LSB //display.voltage.V3N JDDR, FCT_PRIVATE_VOLTAGE_3_MSB JDDR, FCT_PRIVATE_VOLTAGE_3_MSB JDDR, FCT_PRIVATE_CURRENT_1_MSB JDDR, FCT_PRIVATE_CURRENT_1_KSB JDDR, FCT_PRIVATE_CURRENT_1_SB JDDR, FCT_PRIVATE_CURRENT_2_MSB JDDR, FCT_PRIVATE_CURRENT_3_MSB JDDR, FCT_PRIVATE_CURRENT_3_MSB JDDR, FCT_PRIVATE_CURRENT_3_LSB //display.ourrent.PHI1 JDDR, FCT_PRIVATE_ULSB //display.ourrent.PHI2 JDDR, FCT_PRIVATE_ULSB //display.ourrent.PHI2 JDDR, FCT_PRIVATE_PHI_1_SSB JDDR, FCT_PRIVATE_PHI_1_SSB JDDR, FCT_PRIVATE_PHI_3_MSB JDDR, FCT_PRIVATE_PHI_3_SSB JDDR, FCT_PRIVATE_PRIVATE_PHI_3_SSB JDDR, FCT_PRIVATE_PRIVA	v	float32	R R R R R R R R R R R R R R R R R R R	VIN value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value PHI 1 value PHI 2 value PHI 3 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR S0553 IR S0553 IR S0553 IR S0555 IR	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	/display.voltage.V2N JODR, FCT, PRIVATE_VOLTAGE_2_MSB JDDR, FCT, PRIVATE_VOLTAGE_2_LSB /display.voltage.V3N JDDR, FCT, PRIVATE_VOLTAGE_3_MSB JDDR, FCT, PRIVATE_VOLTAGE_3_LSB /display.ucrent11 (Available 368212 to 36819) JDDR, FCT, PRIVATE_CURRENT_1_MSB JDDR, FCT, PRIVATE_CURRENT_2_MSB JDDR, FCT, PRIVATE_CURRENT_3_MSB JDDR, FCT, PRIVATE_CURRENT_3_LSB /display.ucrent13 JDDR, FCT, PRIVATE_CURRENT_3_LSB JDDR, FCT, PRIVATE_CURRENT_3_LSB JDDR, FCT, PRIVATE_CURRENT_3_LSB JDDR, FCT, PRIVATE_CURRENT_3_LSB JDDR, FCT, PRIVATE_CURRENT_3_LSB JDDR, FCT, PRIVATE_CURRENT_3_LSB JDDR, FCT, PRIVATE_VIL_2_MSB JDDR, FCT, PRIVATE_VIL_2_MSB JDDR, FCT, PRIVATE_PHI_1_SB JDDR, FCT, PRIVATE_PHI_2_LSB JDDR, FCT, PRIVATE_PHI_2_LSB JDDR, FCT, PRIVATE_PHI_3_LSB JDDR, FCT, PRIVATE_PHI_3_LSB JDDR, FCT, PRIVATE_PHI_3_LSB	v	float32	R R R R R R R R R R R R R R R R R R R	VIN value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value PHI 1 value PHI 2 value PHI 3 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0551 IR S0552 IR S0555 IR S0556 IR S0557 IR S0557 IR S0567 IR		//display.voltage.V2N JDDR, FCT_PRIVATE_VOLTAGE_2_MSB JDDR, FCT_PRIVATE_VOLTAGE_3_LSB //display.voltage.V3N JDDR, FCT_PRIVATE_VOLTAGE_3_MSB JDDR, FCT_PRIVATE_VOLTAGE_3_MSB JDDR, FCT_PRIVATE_CURRENT_1_MSB JDDR, FCT_PRIVATE_CURRENT_1_KSB JDDR, FCT_PRIVATE_CURRENT_1_SB JDDR, FCT_PRIVATE_CURRENT_2_MSB JDDR, FCT_PRIVATE_CURRENT_3_MSB JDDR, FCT_PRIVATE_CURRENT_3_MSB JDDR, FCT_PRIVATE_CURRENT_3_LSB //display.ourrent.PHI1 JDDR, FCT_PRIVATE_ULSB //display.ourrent.PHI2 JDDR, FCT_PRIVATE_ULSB //display.ourrent.PHI2 JDDR, FCT_PRIVATE_PHI_1_SSB JDDR, FCT_PRIVATE_PHI_1_SSB JDDR, FCT_PRIVATE_PHI_3_MSB JDDR, FCT_PRIVATE_PHI_3_SSB JDDR, FCT_PRIVATE_PRIVATE_PHI_3_SSB JDDR, FCT_PRIVATE_PRIVA	v	float32	R R R R R R R R R R R R R R R R R R R	VIN value V2N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value PHI 1 value PHI 1 value PHI 2 value PHI 2 value PHI 2 value PHI 2 value PHI 3 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0551 IR S0552 IR S0555 IR S0556 IR S0557 IR S0557 IR S0567 IR		<pre>//display.voltage.V2N //display.voltage.V2N NDR, FCT, PRIVATE_VOLTAGE_2_LSB //display.voltage.V3N NDDR, FCT, PRIVATE_VOLTAGE_3_LSB //display.voltage.V3N NDDR, FCT, PRIVATE_VOLTAGE_3_LSB NDDR, FCT_PRIVATE_UNRENT_1_MSB NDDR, FCT_PRIVATE_CURRENT_1_MSB NDDR, FCT_PRIVATE_CURRENT_3_LSB //display.current13 NDDR, FCT_PRIVATE_CURRENT_3_LSB //display.current13 NDDR, FCT_PRIVATE_UNRENT_3_LSB //display.current13 NDDR, FCT_PRIVATE_UNRENT_3_LSB //display.current14 NDDR, FCT_PRIVATE_UNRENT_3_LSB //display.current14 NDDR, FCT_PRIVATE_UNRENT_3_LSB //display.currentPH11 NDDR, FCT_PRIVATE_PH1_1_LSS //display.currentPH13 NDDR, FCT_PRIVATE_PH1_2_MSB NDDR, FCT_PRIVATE_PH1_3_MSB NDDR, FCT_PRIVATE_PH1_3_LSB //display.voltage.V12</pre>	v	float32	R R R R R R R R R R R R R R R R R R R	V1N value V2N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value PHI 2 value PHI 2 value PHI 2 value PHI 2 value PHI 3 value PHI 3 value V12 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR S0552 IR S0553 IR S0554 IR S0555 IR S0555 IR S0555 IR S0556 IR S0557 IR S0556 IR S0557 IR S0556 IR S0556 IR S0556 IR S0556 IR S0557 IR S0567 IR S0568 IR S0568 IR		<pre>//display.voltage V2N JOBR, FCT, PRIVATE_VOLTAGE_2_MSB JODR, FCT, PRIVATE_VOLTAGE_2_LSB //display.voltage V3N JODR, FCT, PRIVATE_VOLTAGE_3_MSB JODR, FCT, PRIVATE_VOLTAGE_3_LSB //display.current11 (Available 368212 to 36812 to JODR, FCT, PRIVATE_CURRENT_1_MSB JODR, FCT, PRIVATE_CURRENT_3_MSB JODR, FCT, PRIVATE_CURRENT_3_MSB JODR, FCT, PRIVATE_CURRENT_3_MSB JODR, FCT, PRIVATE_CURRENT_3_MSB JODR, FCT, PRIVATE_CURRENT_3_MSB JODR, FCT, PRIVATE_CURRENT_3_LSB //display.current13 JODR, FCT, PRIVATE_CURRENT_3_LSB JODR, FCT, PRIVATE_CURRENT_3_LSB //display.current PH13 JODR, FCT, PRIVATE_VOLTAGE_3 JODR, FCT, PRIVATE_VOLTAGE_3 JODR, FCT, PRIVATE_PH1_3_LSB //display.current PH13 JODR, FCT, PRIVATE_PH1_3_LSB //display.current PH13 JODR, FCT, PRIVATE_PH1_3_LSB //display.current PH13 JODR, FCT, PRIVATE_PH1_3_LSB //display.current PH13 JODR, FCT, PRIVATE_VOLTAGE_12_MSB JODR, FCT, PRIVATE_VOLTAGE_12_MSB JODR, FCT, PRIVATE_VOLTAGE_12_LSB //display.voltage V13</pre>	v	float32 float32	R R R R R R R R R R R R R R R R R R R	VIN value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value PHI 1 value PHI 2 value PHI 2 value PHI 2 value VI2 value V12 value V12 value V12 value V12 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0551 IR S0552 IR S0555 IR S0556 IR S0557 IR S0557 IR S0567 IR		/display.voltage.V2N JDDR, FCT_PRIVATE_VOLTAGE_2_KSB JDDR, FCT_PRIVATE_VOLTAGE_2_LSB /display.voltage.V3N JDDR, FCT_PRIVATE_VOLTAGE_3_KSB JDDR, FCT_PRIVATE_VOLTAGE_3_KSB JDDR, FCT_PRIVATE_VOLTAGE_3_KSB JDDR, FCT_PRIVATE_URRENT_1_LSB JDDR, FCT_PRIVATE_URRENT_2_KSB JDDR, FCT_PRIVATE_CURRENT_3_KSB JDDR, FCT_PRIVATE_CURRENT_3_LSB /display.current13 JDDR, FCT_PRIVATE_CURRENT_3_LSB JDDR, FCT_PRIVATE_CURRENT_3_LSB JDDR, FCT_PRIVATE_CURRENT_3_LSB JDDR, FCT_PRIVATE_CURRENT_3_LSB JDDR, FCT_PRIVATE_CURRENT_3_LSB JDDR, FCT_PRIVATE_CURRENT_3_LSB JDDR, FCT_PRIVATE_VIL_3 JDDR, FCT_PRIVATE_VIL_3 JDDR, FCT_PRIVATE_VIL_3 JDDR, FCT_PRIVATE_VIL_3 JDDR, FCT_PRIVATE_VIL_3 JDDR, FCT_PRIVATE_VIL_3 JDDR, FCT_PRIVATE_VIL_3 JDDR, FCT_PRIVATE_VIL_3 JDDR, FCT_PRIVATE_VIL_3 JSB JDDR, FCT_PRIVATE_VIL_3 JSB	v	float32	R R R R R R R R R R R R R R R R R R R	V1N value V2N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value PHI 2 value PHI 2 value PHI 2 value PHI 2 value PHI 3 value PHI 3 value V12 value
S0541 R S0542 R S0543 IR S0544 IR S0545 IR S0546 R S0547 R S0548 IR S0549 IR S0550 IR S0551 IR S0552 IR S0553 IR S0555 IR S0555 IR S0555 IR S0555 IR S0556 IR S0557 IR S0556 IR S0557 IR S0556 IR S0557 IR S0556 IR S0568 IR S0569 IR S0569 IR		<pre>//display.voltage V2N //display.voltage V2N NDR, FCT, PRIVATE_VOLTAGE_2_MSB NDDR, FCT, PRIVATE_VOLTAGE_2_LSB //display.voltage V3N NDDR, FCT, PRIVATE_VOLTAGE_3_KSB NDDR, FCT, PRIVATE_VOLTAGE_3_LSB //display.voltage.voltage NDDR, FCT, PRIVATE_CURRENT_1_MSB NDDR, FCT, PRIVATE_CURRENT_2_KSB NDDR, FCT, PRIVATE_CURRENT_3_KSB NDDR, FCT, PRIVATE_CURRENT_3_LSB //display.voltage_V2N NDDR, FCT, PRIVATE_CURRENT_3_KSB NDDR, FCT, PRIVATE_CURRENT_3_LSB //display.voltage_V2N NDDR, FCT, PRIVATE_CURRENT_3_LSB //display.voltage_V2N NDDR, FCT, PRIVATE_CURRENT_3_LSB //display.voltage_V2N //display.voltage_V2N NDDR, FCT, PRIVATE_V11_3_KSB NDDR, FCT, PRIVATE_V11_4_4S_3_3_5B NDR, FCT, PRIVATE_V11_4_4S_3_3_5B NDR, FCT, PRIVATE_V11_4_4S_3_3_5B</pre>	V V V V V V A A A A A A A A A A C C C C	float32	R R R R R R R R R R R R R R R R R R R	VIN value V2N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 3 value PHI 1 value PHI 1 value PHI 2 value PHI 2 value PHI 2 value PHI 2 value V12 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0551 IR S0552 IR S0555 IR S0555 IR S0555 IR S0555 IR S0556 IR S0557 IR S0558 IR S0559 IR S0559 IR S0559 IR S0559 IR S0559 IR S0567 IR S0569 IR S0570 IR		<pre>//display.voltage V2N JOBR, FCT, PRIVATE_VOLTAGE_2_KSB JODR, FCT, PRIVATE_VOLTAGE_2_LSB //display.voltage V3N JODR, FCT, PRIVATE_VOLTAGE_3_KSB JODR, FCT, PRIVATE_VOLTAGE_3_LSB //display.voltage V3N JODR, FCT, PRIVATE_UDRENT_1_KSB JODR, FCT, PRIVATE_CURRENT_1_KSB //display.voltage V3L JODR, FCT, PRIVATE_CURRENT_3_KSB JODR, FCT, PRIVATE_CURRENT_3_KSB JODR, FCT, PRIVATE_CURRENT_3_KSB JODR, FCT, PRIVATE_CURRENT_3_KSB JODR, FCT, PRIVATE_CURRENT_3_KSB JODR, FCT, PRIVATE_CURRENT_3_KSB JODR, FCT, PRIVATE_UTRENT_3_KSB JODR, FCT, PRIVATE_CURRENT_3_KSB JODR, FCT, PRIVATE_VIL1_SS //display.voltage V3L JODR, FCT, PRIVATE_PHI_1_SS JODR, FCT, PRIVATE_PHI_2_KSB JODR, FCT, PRIVATE_PHI_2_KSB JODR, FCT, PRIVATE_PHI_3_KSB JODR, FCT, PRIVATE_PHI_3_KSB JODR, FCT, PRIVATE_PHI_3_KSB JODR, FCT, PRIVATE_PHI_3_KSB JODR, FCT, PRIVATE_PHI_3_KSB JODR, FCT, PRIVATE_PHI_3_KSB JODR, FCT, PRIVATE_VOLTAGE_12_KSB //display.voltage V32 JODR, FCT, PRIVATE_VOLTAGE_12_KSB //display.voltage V33</pre>	V V V V V V A A A A A A A A A A C C C C	float32 float3	R R R R R R R R R R R R R R R R R R R	V1N value V2N value V2N value V2N value V3N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value PHI 2 value PHI 3 value V12 value V12 value V12 value V23 value V23 value V23 value V23 value V23 value V23 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR S0552 IR S0553 IR S0554 IR S0555 IR S0556 IR S0557 IR S0558 IR S0557 IR S0556 IR S0557 IR S0568 IR S0569 IR S0567 IR S0569 IR S0570 IR S0569 IR S0570 IR S0570 IR S0571 IR		//display.voltage V2N //display.voltage V2N NDR, FCT, PRIVATE_VOLTAGE 2_ MSB NDDR, FCT, PRIVATE_VOLTAGE 2_ LSB //display.voltage V3N NDDR, FCT, PRIVATE_VOLTAGE 3_ MSB NDDR, FCT, PRIVATE_VOLTAGE 3_ LSB //display.current11 (Available 368212 to 36812) NDR, FCT, PRIVATE_URRENT 1_ MSB NDDR, FCT, PRIVATE_URRENT 1_ LSB //display.current12 NDDR, FCT, PRIVATE_URRENT 2_ LSB //display.current13 NDDR, FCT, PRIVATE_URRENT 3_ LSB //display.current13 NDDR, FCT, PRIVATE_URRENT 3_ LSB //display.current13 NDDR, FCT, PRIVATE_URRENT 3_ LSB //display.current PH11 NDDR, FCT, PRIVATE_URRENT 3_ LSB //display.current PH12 NDDR, FCT, PRIVATE_URRENT 3_ LSB //display.current PH13 NDDR, FCT, PRIVATE_PH1_2_MSB NDDR, FCT, PRIVATE_PH1_2_MSB NDDR, FCT, PRIVATE_PH1_3_LSB //display.current PH13 NDDR, FCT, PRIVATE_PH1_3_LSB //display.current PH13 NDDR, FCT, PRIVATE_PH1_3_LSB //display.current PH13 NDDR, FCT, PRIVATE_VOLTAGE_12_MSB NDDR, FCT, PRIVATE_VOLTAGE_13_MSB NDDR, FCT, PRIVATE_VOLTAGE_13_MSB	V V V V V V A A A A A A A A A A C C C C	float32	R R R R R R R R R R R R R R R R R R R	VIN value V2N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value PHI value PHI 2 value PHI 2 value PHI 2 value PHI 2 value V12 value V13 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR S0552 IR S0553 IR S0554 IR S0555 IR S0556 IR S0557 IR S0558 IR S0557 IR S0556 IR S0557 IR S0568 IR S0569 IR S0567 IR S0569 IR S0570 IR S0569 IR S0570 IR S0570 IR S0571 IR		/display.voltage.V2N JOBR, FCT, PRIVATE_VOLTAGE_2_KSB JODR, FCT, PRIVATE_VOLTAGE_2_LSB //display.voltage.V3N JODR, FCT, PRIVATE_VOLTAGE_3_KSB JODR, FCT, PRIVATE_VOLTAGE_3_LSB //display.corrent11 (Available 368212 to 36810) ADDR, FCT, PRIVATE_CURRENT_1_KSB //display.corrent12 JODR, FCT, PRIVATE_CURRENT_3_KSB JODR, FCT, PRIVATE_VIL1_SS //display.current PHI3 JODR, FCT, PRIVATE_VIL1_SS //display.current PHI3 JODR, FCT, PRIVATE_PHI_1_SS JODR, FCT, PRIVATE_PHI_2_KSB JODR, FCT, PRIVATE_PHI_3_KSB JODR, FCT, PRIVATE_PHI_3_KSB JODR, FCT, PRIVATE_PHI_3_KSB JODR, FCT, PRIVATE_VILTAGE_12_KSB //display.voltage.V23 JODR, FCT, PRIVATE_VOLTAGE_12_LSB //display.voltage.V23 JODR, FCT, PRIVATE_VOLTAGE_23_KSB JODR, FCT, PRIVATE_VOLTAGE_23_LSB //display.voltage.V31	V V V V A A A A A A A A A A A C C C C C	float32 float3	R R R R R R R R R R R R R R R R R R R	V1N value V2N value V2N value V2N value V3N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value PHI 2 value PHI 3 value V12 value V12 value V12 value V23 value V23 value V23 value V23 value V23 value V23 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR S0552 IR S0553 IR S0554 IR S0555 IR S0556 IR S0557 IR S0558 IR S0557 IR S0556 IR S0557 IR S0568 IR S0569 IR S0567 IR S0569 IR S0570 IR S0569 IR S0570 IR S0570 IR S0571 IR		<pre>//display.voltage V2N JDDR, FCT_PRIVATE_VOLTAGE 2_MSB JDDR, FCT_PRIVATE_VOLTAGE 2_LSB //display.voltage V3N JDDR, FCT_PRIVATE_VOLTAGE 3_MSB JDDR, FCT_PRIVATE_VOLTAGE 3_LSB //display.ucrent11 (Available 36812 to 36812) JDDR, FCT_PRIVATE_URRENT_1_LSB JDDR, FCT_PRIVATE_URRENT_2_MSB JDDR, FCT_PRIVATE_URRENT_2_MSB JDDR, FCT_PRIVATE_URRENT_3_MSB JDDR, FCT_PRIVATE_URRENT_3_LSB //display.ucrent13 JDDR, FCT_PRIVATE_URRENT_3_LSB JDDR, FCT_PRIVATE_URRENT_3_LSB JDDR, FCT_PRIVATE_URRENT_3_LSB JDDR, FCT_PRIVATE_URRENT_3_LSB JDDR, FCT_PRIVATE_URRENT_3_LSB JDDR, FCT_PRIVATE_URRENT_3_LSB JDDR, FCT_PRIVATE_URRENT_3_LSB JDDR, FCT_PRIVATE_PHI_1_LSB //display.ucrentPHI3 JDDR, FCT_PRIVATE_PHI_2_LSB JDDR, FCT_PRIVATE_PHI_3_SSB JDDR, FCT_PRIVATE_PHI_3_SSB JDDR, FCT_PRIVATE_PHI_3_SSB JDDR, FCT_PRIVATE_VOLTAGE_12_LSB //display.uortage V33 JDDR, FCT_PRIVATE_VOLTAGE_23_MSB JDDR, FCT_PRIVATE_VOLTAGE_23_LSB //display.uortage V31 JDDR, FCT_PRIVATE_VOLTAGE_31_LSB JDDR, FCT_PRIVATE_VOLTAGE_31_LSB JDDR, FCT_PRIVATE_VOLTAGE_31_LSB JDDR, FCT_PRIVATE_VOLTAGE_31_LSB JDDR, FCT_PRIVATE_VOLTAGE_31_LSB JDDR, FCT_PRIVATE_VOLTAGE_31_LSB JDDR, FCT_PRIVATE_VOLTAGE_31_LSB JDDR, FCT_PRIVATE_VOLTAGE_31_LSB</pre>	V V V V A A A A A A A A A A A C C C C C	float32	R R R R R R R R R R R R R R R R R R R	VIN value V2N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value PHI value PHI 2 value PHI 2 value PHI 2 value PHI 2 value V12 value V13 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR S0552 IR S0553 IR S0554 IR S0555 IR S0556 IR S0557 IR S0558 IR S0557 IR S0556 IR S0557 IR S0568 IR S0569 IR S0567 IR S0569 IR S0570 IR S0569 IR S0570 IR S0570 IR S0571 IR		//display.voltage V2N JOBR, FCT, PRIVATE_VOLTAGE_2_KSB JODR, FCT, PRIVATE_VOLTAGE_2_LSB //display.voltage V3N JODR, FCT, PRIVATE_VOLTAGE_3_KSB JODR, FCT, PRIVATE_VOLTAGE_3_LSB //display.current11 JODR, FCT, PRIVATE_CURRENT_1_KSB JODR, FCT, PRIVATE_CURRENT_2_LSB //display.current12 JODR, FCT, PRIVATE_CURRENT_3_KSB JODR, FCT, PRIVATE_PHI_1_SKS JODR, FCT, PRIVATE_PHI_1_SKS JODR, FCT, PRIVATE_PHI_3_KSB JODR, FCT, PRIVATE_PHI_3_KSB JODR, FCT, PRIVATE_PHI_3_KSB JODR, FCT, PRIVATE_PHI_3_LSB //display.voltage V12 JODR, FCT, PRIVATE_VOLTAGE_12_KSB JODR, FCT, PRIVATE_VOLTAGE_12_LSB //display.voltage V23 JODR, FCT, PRIVATE_VOLTAGE_23_KSB JODR, FCT, PRIVATE_VOLTAGE_23_LSB //display.voltage V31 JODR, FCT, PRIVATE_VOLTAGE_31_LSB //display.voltage V31 JODR, FCT, PRIVATE_VOLTAGE_31_LSB //display.voltage V31 JODR, FCT, PRIVATE_VOLTAGE_31_LSB //display.voltage V31 JODR, FCT, PRIVATE_VOLTAGE_31_LSB //temperature	V V V V A A A A A A A A A A A C C C C C	float32	R R R R R R R R R R R R R R R R R R R	VIN value V2N value V2N value V2N value V3N value V3N value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value PHI value PHI 2 value PHI 2 value PHI 2 value PHI 2 value V12 value V13 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR S0552 IR S0553 IR S0554 IR S0555 IR S0556 IR S0557 IR S0558 IR S0557 IR S0556 IR S0557 IR S0568 IR S0569 IR S0567 IR S0569 IR S0570 IR S0569 IR S0570 IR S0570 IR S0571 IR		<pre>//display.voltage V2N JDDR, FCT_PRIVATE_VOLTAGE 2_MSB JDDR, FCT_PRIVATE_VOLTAGE 2_LSB //display.voltage V3N JDDR, FCT_PRIVATE_VOLTAGE 3_MSB JDDR, FCT_PRIVATE_VOLTAGE 3_LSB //display.ucrent11 (Available 36812 to 36812) JDDR, FCT_PRIVATE_URRENT_1_LSB JDDR, FCT_PRIVATE_URRENT_2_MSB JDDR, FCT_PRIVATE_URRENT_2_MSB JDDR, FCT_PRIVATE_URRENT_3_MSB JDDR, FCT_PRIVATE_URRENT_3_LSB //display.ucrent13 JDDR, FCT_PRIVATE_URRENT_3_LSB JDDR, FCT_PRIVATE_URRENT_3_LSB JDDR, FCT_PRIVATE_URRENT_3_LSB JDDR, FCT_PRIVATE_URRENT_3_LSB JDDR, FCT_PRIVATE_URRENT_3_LSB JDDR, FCT_PRIVATE_URRENT_3_LSB JDDR, FCT_PRIVATE_URRENT_3_LSB JDDR, FCT_PRIVATE_PHI_1_LSB //display.ucrentPHI3 JDDR, FCT_PRIVATE_PHI_2_LSB JDDR, FCT_PRIVATE_PHI_3_SSB JDDR, FCT_PRIVATE_PHI_3_SSB JDDR, FCT_PRIVATE_PHI_3_SSB JDDR, FCT_PRIVATE_VOLTAGE_12_LSB //display.uortage V33 JDDR, FCT_PRIVATE_VOLTAGE_23_MSB JDDR, FCT_PRIVATE_VOLTAGE_23_LSB //display.uortage V31 JDDR, FCT_PRIVATE_VOLTAGE_31_LSB JDDR, FCT_PRIVATE_VOLTAGE_31_LSB JDDR, FCT_PRIVATE_VOLTAGE_31_LSB JDDR, FCT_PRIVATE_VOLTAGE_31_LSB JDDR, FCT_PRIVATE_VOLTAGE_31_LSB JDDR, FCT_PRIVATE_VOLTAGE_31_LSB JDDR, FCT_PRIVATE_VOLTAGE_31_LSB JDDR, FCT_PRIVATE_VOLTAGE_31_LSB</pre>	V V V V A A A A A A A A A A A C C C C C	float32	R R R R R R R R R R R R R R R R R R R	VIN value V2N value V2N value V2N value V2N value V3N value V3N value Current 1 value Current 2 value Current 2 value Current 3 value Current 3 value PHI 1 value PHI 2 value PHI 2 value PHI 2 value PHI 2 value V12 value V12 value V12 value V12 value V12 value V13 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR S0553 IR S0553 IR S0555 IR S0555 IR S0556 IR S0557 IR S0556 IR S0557 IR S0556 IR S0557 IR S0550 IR S0557 IR S0566 IR S0570 IR S0571 IR S0572 IR S0571 IR S0572 IR S0571 IR S0572 IR S0571 IR S0572 IR		//display.voltage V2N JODR, FCT, PRIVATE_VOLTAGE_2_KSB JODR, FCT, PRIVATE_VOLTAGE_2_LSB //display.voltage V3N JODR, FCT, PRIVATE_VOLTAGE_3_KSB JODR, FCT, PRIVATE_VOLTAGE_3_LSB //display.current11 JODR, FCT, PRIVATE_CURRENT_1_KSB JODR, FCT, PRIVATE_CURRENT_2_LSB //display.current12 JODR, FCT, PRIVATE_CURRENT_3_KSB JODR, FCT, PRIVATE_PHI_1_SKS JODR, FCT, PRIVATE_PHI_1_SKS JODR, FCT, PRIVATE_PHI_3_KSB JODR, FCT, PRIVATE_PHI_3_KSB JODR, FCT, PRIVATE_PHI_3_KSB JODR, FCT, PRIVATE_PHI_3_LSB //display.voltage V12 JODR, FCT, PRIVATE_VOLTAGE_12_KSB JODR, FCT, PRIVATE_VOLTAGE_12_LSB //display.voltage V23 JODR, FCT, PRIVATE_VOLTAGE_23_KSB JODR, FCT, PRIVATE_VOLTAGE_23_LSB //display.voltage V31 JODR, FCT, PRIVATE_VOLTAGE_31_LSB //display.voltage V31 JODR, FCT, PRIVATE_VOLTAGE_31_LSB //display.voltage V31 JODR, FCT, PRIVATE_VOLTAGE_31_LSB //display.voltage V31 JODR, FCT, PRIVATE_VOLTAGE_31_LSB //display.voltage V31 JODR, FCT, PRIVATE_VOLTAGE_31_LSB //temperature	V V V V A A A A A A A A A A A C C C C C	float32	R R R R R R R R R R R R R R R R R R R	VIN value Current 1 value Current 1 value Current 2 value Current 2 value Current 3 value PHI 2 value V12 value V13 value V13 value V13 value V14 value V15 value
S0541 R S0542 IR S0543 IR S0544 IR S0545 IR S0546 IR S0547 IR S0548 IR S0549 IR S0550 IR S0551 IR S0552 IR S0553 IR S0554 IR S0555 IR S0556 IR S0557 IR S0558 IR S0557 IR S0556 IR S0557 IR S0568 IR S0569 IR S0567 IR S0569 IR S0570 IR S0569 IR S0570 IR S0570 IR S0571 IR		<pre>//display.voltage V2N //display.voltage V2N NDR, FCT, PRIVATE_VOLTAGE_2_LSB //display.voltage V3N NDDR, FCT, PRIVATE_VOLTAGE_3_LSB //display.voltage V3N NDDR, FCT_PRIVATE_VOLTAGE_3_LSB //display.voltage.V3N NDDR, FCT_PRIVATE_UNRENT_1_MSB NDDR, FCT_PRIVATE_CURRENT_3_MSB NDDR, FCT_PRIVATE_CURRENT_3_LSB //display.voltage_V3N NDDR, FCT_PRIVATE_UNRENT_3_LSB //display.voltage_V3N NDDR, FCT_PRIVATE_UNRENT_3_LSB //display.voltage_V3N NDDR, FCT_PRIVATE_UNRENT_3_LSB //display.voltage_V3N NDDR, FCT_PRIVATE_UNRENT_3_LSB //display.voltage_V3L NDDR, FCT_PRIVATE_UNRENT_3_LSB //display.voltage_V3L NDDR, FCT_PRIVATE_PHI_1_LSB //display.voltage_V3L NDDR, FCT_PRIVATE_PHI_3_MSB NDDR, FCT_PRIVATE_PHI_3_MSB NDDR, FCT_PRIVATE_PHI_3_SB NDDR, FCT_PRIVATE_PHI_3_SB NDDR, FCT_PRIVATE_PHI_3_SB NDDR, FCT_PRIVATE_PHI_3_SB NDDR, FCT_PRIVATE_VOLTAGE_12_LSB //display.voltage_V32 NDDR, FCT_PRIVATE_VOLTAGE_23_LSB //display.voltage_V33 NDDR, FCT_PRIVATE_V0LTAGE_31_MS8 NDDR, FCT_PRIVATE_V0LTAGE_31_LSB //display.voltage_V31 NDDR, FCT_PRIVATE_V0LTAGE_31_LSB //Temperature //Temperature //Temperature alert</pre>	V V V V V A A A A A A A A V V V V V V V	float32 float33 float34 <td< td=""><td>R R R R R R R R R R R R R R R R R R R</td><td>VIN value V2N value V2N value V2N value V2N value V3N value V3N value Current 1 value Current 2 value Current 2 value Current 3 value Current 3 value PHI 1 value PHI 2 value PHI 2 value PHI 2 value PHI 2 value V12 value V12 value V12 value V12 value V12 value V13 value</td></td<>	R R R R R R R R R R R R R R R R R R R	VIN value V2N value V2N value V2N value V2N value V3N value V3N value Current 1 value Current 2 value Current 2 value Current 3 value Current 3 value PHI 1 value PHI 2 value PHI 2 value PHI 2 value PHI 2 value V12 value V12 value V12 value V12 value V12 value V13 value

*Excel file of Modbus communication table available on request

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11. TROUBLE SHOOTING

Fault Description	Fault Analysis	Trouble shooting method
Off LED	Module not functional	Check the supply of the module
Detected current value cannot match to actual current	Switch rated current may not be set correctly	Check rated current setting in the software in the <u>Module &</u> <u>communication settings</u> page, CT phase visualization. If not compliant, the settings should be updated in the software in the <u>Main page</u>
No voltage data shown	Failure of the module connection	Check the connector position at the back of the module
Voltage data partially shown	Failure of the module connection	Check the connector position at the back of the module



12. CYBER SECURITY

12.1 Disclaimer

It is the sole responsibility of the customer to provide and continuously ensure a secure connection between the product and the customer network or any other network. The customer is required to establish and maintain any appropriate measures (including but not limited to the installation of firewalls, application of authentication measures, encryption of data, installation of anti- virus programs, etc.) to protect the product, the network, its system and the interface against any kind of security breach, unauthorized access, interference, intrusion, leakage and/or theft of data or information. MERSEN and its affiliates are not liable for damage and/or losses related to such security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information.

12.2 Secure Deployment

The user of the product should be aware that the unsecure nature of the serial Modbus protocol exposes the communication between the product and the control system. Encryption, authentication or integrity of transmitted data are not provided by the protocol. To prevent equipment to operate in an unsafe or undesirable manner due to malicious activities the product must be positioned in a trusted network, strictly limited and in a hosted portion of a network or control system. The recommendation is also to restrict physical access to the product/system to only allow authorized people to make changes to the system. Besides, the user can setup system to trigger alarm when communication is interrupted (device stops responding) and check if there are any unsafe condition.



13. APPENDIX – Modbus cable USB $\leftarrow \rightarrow$ RJ45



TECHNICAL DATA

Isolated USB - Modbus / RS485 converter

This cable is a 2 wire RS485 adapter, with automatic receive / transmit switching, and RJ45 connection according to the Modbus specifications.

The cable have a 2.5kV isolation barrier that ensures a high quality electrically separation between the PC and remote device, thus offering excellent protection of the PC if the remote device should fail.

Just connect it and use it like any other COM port in the PC having the needed driver.

Com-port specs Baud rates : 19200, 38400, 57600,115200Bps Start bits : 1 Data bits: 7, 8 Parity: None, even, odd, mark, space Stop bits: 1, 2 Flow control: Auto switching Buffers: 128 bytes Rx and 256 bytes Tx fifo.

RS485 specifications Powerful RS485, able to drive 256 nodes ±15 kV ESD protection on RS485 pins No termination resistor Fail safe

Modbus connections - RJ45 According to Modbus specification "Modbus over serial line" - Pin 4 : B (D-) - Pin 5 : A (D+) - Pin 8 : Gnd.



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