Meter2SCADA

System overview

electricity, water, gas, heat, ...

Metering Systems

Protocols

- IEC 1107, VDEW (IEC 62056-21)
- DLMS (IEC 62056-46-53-61-62)
- ModBus RTU/ASCII/TCP
- M-Bus (EN 13757-3)
- SML (MUC and SyM^2)
- SCTM
- manufacturer specific

Meter2SCADA

grid-, power plant-, facility-

SCADA Systems

Protocols

- IEC 60870-5-101 Slave
- IEC 60870-5-104 Server
- OPC-DA
- ModBus RTU/ASCII/TCP
- File Export (with FTP)
- M2S Link
- SQL Database

Description

Meter2SCADA

Gateway for ***metering*** devices and systems to ***SCADA*** systems for easy integration of metering data in control and process automation systems

Available as ***device*** with high available hardware or as ***software*** (service) for MS Windows Operation systems

Features

Information collection
- Cyclic aquisition of metering and field devices
- Cyclic loading of files and SQL database access
- Target for IP-Telemetry push-messages

Information processing
- Live-table with process variables
- Calculation of new process variables via formulas
- Generation and transmission of change notifications

1	ACTIVE ENERGY IMPORT	1-1:1.8.0	11.01.2010 10:22:32.275	0,044	VALID	kWh
2	ACTIVE ENERGY EXPORT	1-1:2.8.0	11.01.2010 10:22:32.275	1253,473	VALID	kWh
3	REACTIVE ENERGY IMPORT	1-1:3.8.0	11.01.2010 10:22:32.275	32,609	VALID	kvarh
4	REACTIVE ENERGY EXPORT	1-1:4.8.0	11.01.2010 10:22:32.275	0,005	VALID	kvarh
5	ACTIVE POWER	1-1:16.7.0	11.01.2010 10:22:39.806	0,022	VALID	kW
6	REACTIVE POWER	1-1:131.7.0	11.01.2010 10:22:32.275	0,010	VALID	kvar
7	VOLTAGE L1	1-1:32.7.0	11.01.2010 10:22:32.275	0,0	VALID	V
8	VOLTAGE L2	1-1:52.7.0	11.01.2010 10:22:32.275	0,0	VALID	V
9	VOLTAGE L3	1-1:72.7.0	11.01.2010 10:22:39.806	228,1	VALID	V
10	CURRENT L1	1-1:31.7.0	11.01.2010 10:22:32.275	0,000	VALID	A
11	CURRENT L2	1-1:51.7.0	11.01.2010 10:22:32.275	0,000	VALID	A
12	CURRENT L3	1-1:71.7.0	11.01.2010 10:22:38.570	0,201	VALID	A
13	FREQUENCY	1-1:14.7.0	11.01.2010 10:22:32.275	49,99	VALID	Hz
14	COUNTER DISTURBED	0-0:F.F	11.01.2010 10:22:32.275	OFF	VALID	
15	COMMUNICATION DISTURBED		11.01.2010 10:22:32.275	OFF	VALID	

Information output
- Protocol specific transmission of notifications (e.g. IEC 60870-5)
- Protocol specific providing of informations (e.g. ModBus RTU)
- File export and SQL database insertions

Communication with devices

Device drivers and protocols

-„1107“, VDEW (IEC 62056-21)	(e.g. EMH LZQJ; Elster Axxxx; Landis+Gyr ZxD; Baer DLM6)
- DLMS (IEC 62056-46-53-61-62)	(e.g. EMH LZQJ; Landis+Gyr ZxD, ZxQ)
- ModBus RTU/ASCII/TCP Master	(e.g. Schneider ION7xxx; ABB RTU8)
- M-Bus (EN 13757-3)	(many electricity, gas ,water, heat and other devices)
- SML	(e.g. MUC, EMH SyM^2, Landis+Gyr F750)
- SCTM	(e.g. Baer DLX, 7FMS1; Landis+Gyr FAG)
- manufacturer specific protocols	(e.g. Baer FCS; CEWE Prometer)

Communication lines to metering devices

- Point-to-point leased line (e.g. RS232/RS485/RS422/FO/M-Bus)
- Point-to-multipoint leased line (e.g. RS485/RS422/M-Bus)
- Serial over TCP/IP (LAN and GPRS static IP)
- LAN and GPRS dynamic IP with IP-Telemetry (DIN 43863-4)
- Push Target for IP-Telemetry (DIN 43863-4)
- Local SyM^2 bus (Ethernet)

Interfaces

Interfaces (upstream)

- IEC 60870-5-101 Slave (also multiple)
- IEC 60870-5-104 Server (also as Multi-Client-Service)
- ModBus RTU/ASCII/TCP Slave
- OPC DA Server
- M2S Link (cascading)
- SQL Database Push
- File Export (optional with FTP automation)

Interfaces (downstream)

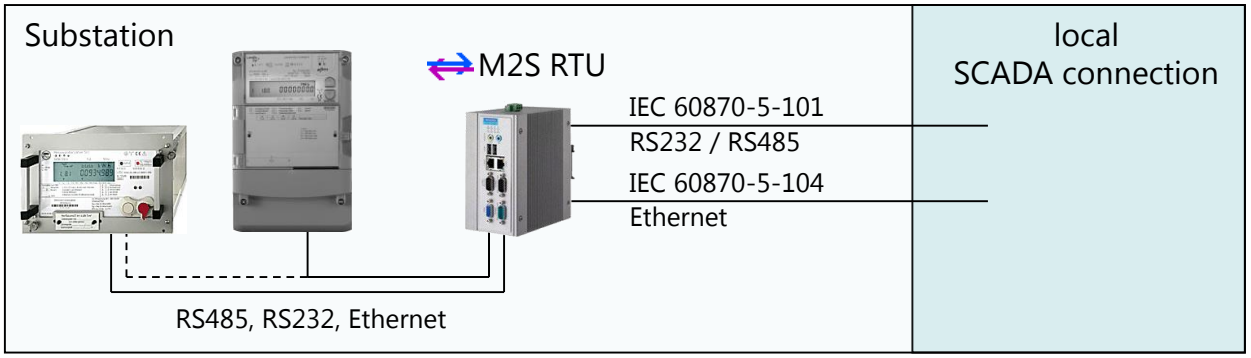
- OPC DA Client
- M2S Link (cascading)
- SQL Database Pull
- File Import (optional with FTP automation)

Service-Interfaces

- Parameterizing interface (serial and over TCP/IP)
- Web-Interface
- Interface for communication monitoring (ComLog – TCP/IP)

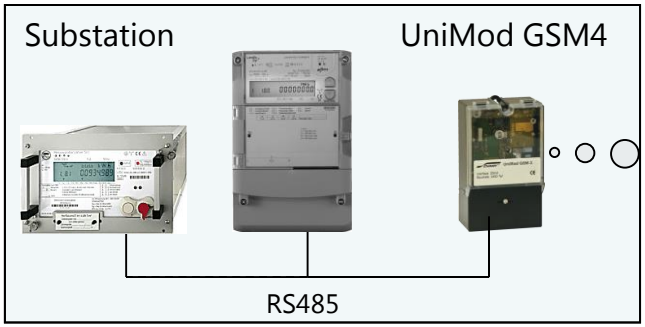
System structure - local

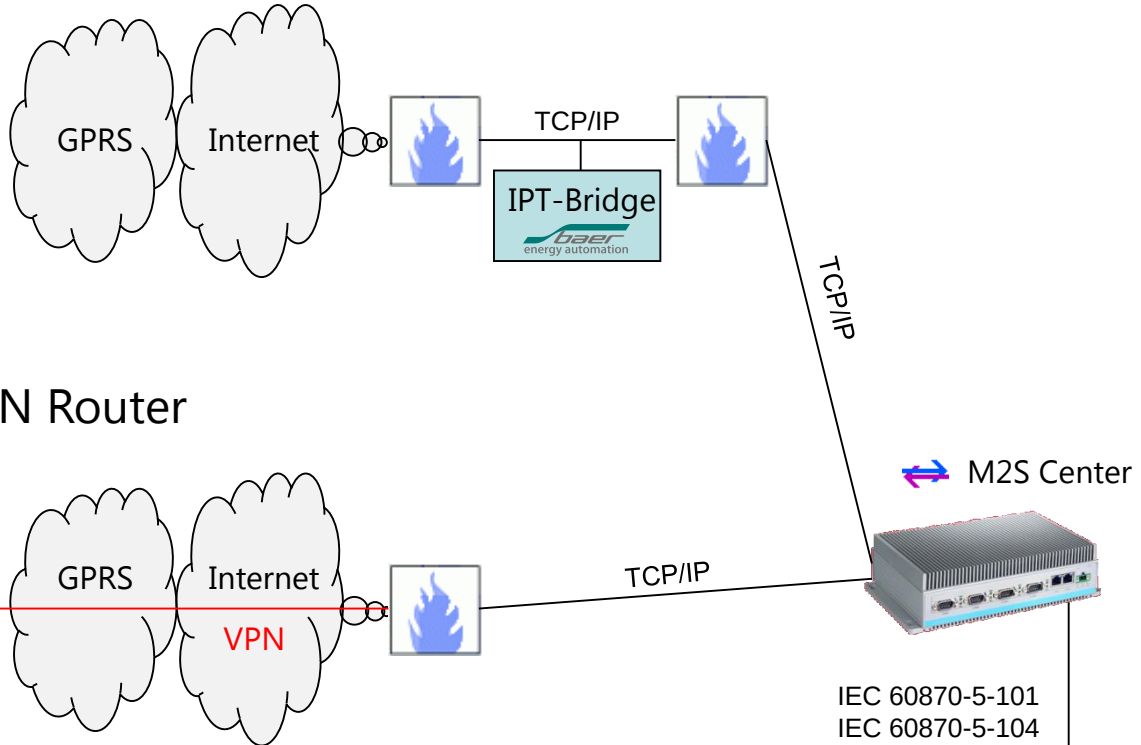
Not centered solution with local SCADA connection



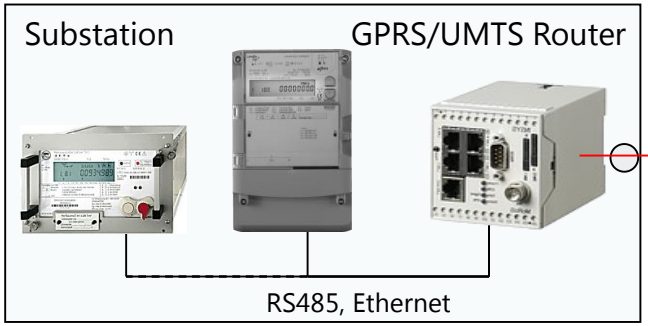
System structure - central

GPRS leased line via IP-Telemetry (DIN 43863-4)





GPRS/TCP-IP leased line via VPN Router

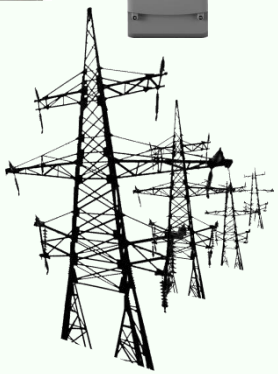


Example of use: power plant

Power plant

internal metering

settlement metering



Load dispatching center

power plant control system

IEC 60870-5-101 / -104

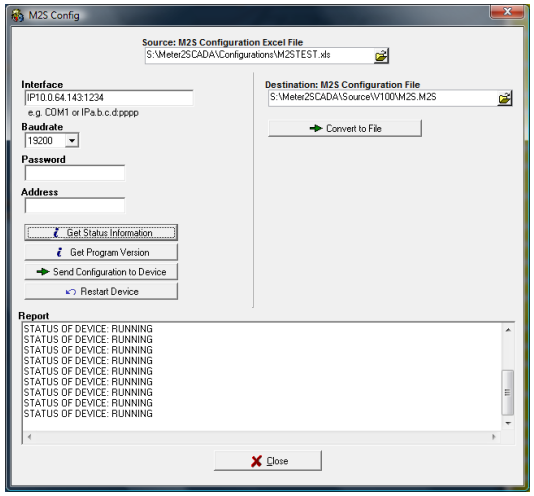
⇄ M2S RTU

IEC 60870-5-101 / -104

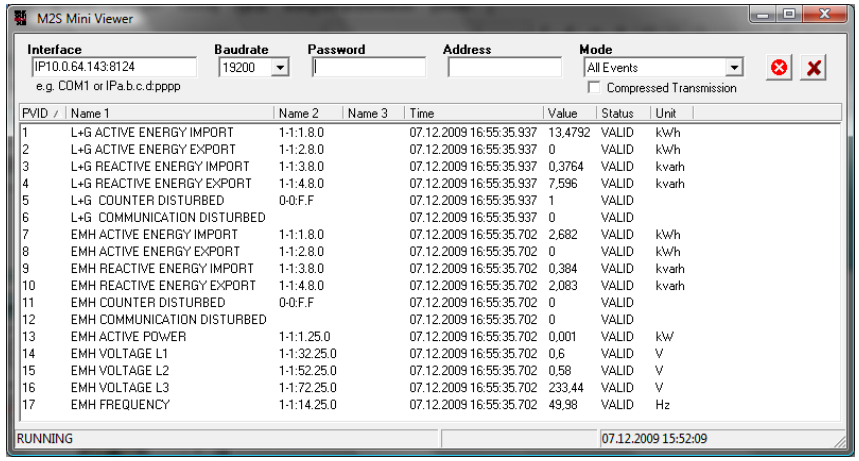
power system management

M2S-Tools

M2S Config: remote configuration (via COM or TCP/IP)

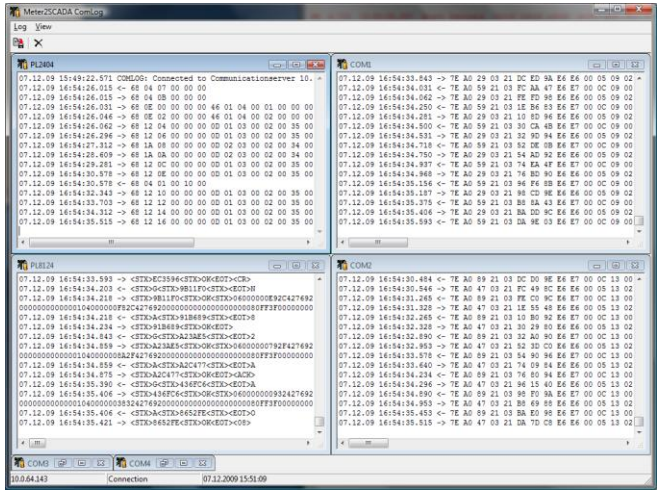


Mini Viewer: real time visualisation of process variables (via COM or TCP/IP)

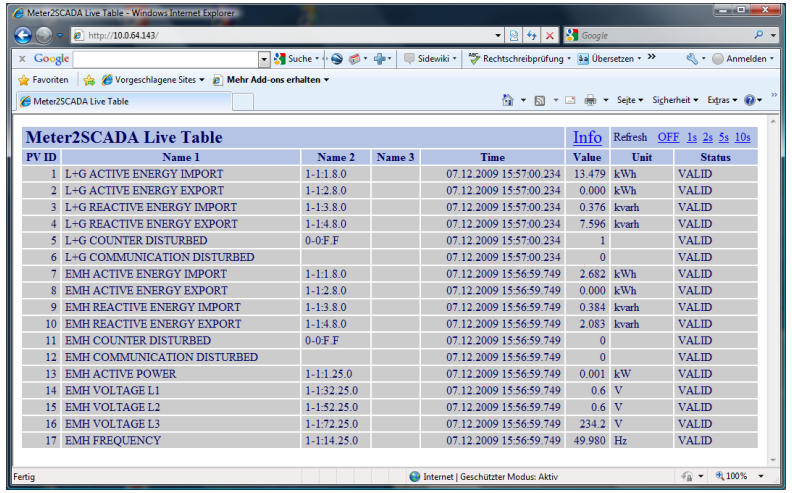


PVID	Name 1	Name 2	Name 3	Time	Value	Status	Unit
1	L+G ACTIVE ENERGY IMPORT	1-1:1.8.0		07.12.2009 16:55:35.937	13,4792	VALID	kWh
2	L+G ACTIVE ENERGY EXPORT	1-1:2.8.0		07.12.2009 16:55:35.937	0	VALID	kWh
3	L+G REACTIVE ENERGY IMPORT	1-1:3.8.0		07.12.2009 16:55:35.937	0,3764	VALID	kvarh
4	L+G REACTIVE ENERGY EXPORT	1-1:4.8.0		07.12.2009 16:55:35.937	7,596	VALID	kvarh
5	L+G COUNTER DISTURBED	0-0:F.F		07.12.2009 16:55:35.937	1	VALID	
6	L+G COMMUNICATION DISTURBED			07.12.2009 16:55:35.937	0	VALID	
7	EMH ACTIVE ENERGY IMPORT	1-1:1.8.0		07.12.2009 16:55:35.702	2,682	VALID	kWh
8	EMH ACTIVE ENERGY EXPORT	1-1:2.8.0		07.12.2009 16:55:35.702	0	VALID	kWh
9	EMH REACTIVE ENERGY IMPORT	1-1:3.8.0		07.12.2009 16:55:35.702	0,384	VALID	kvarh
10	EMH REACTIVE ENERGY EXPORT	1-1:4.8.0		07.12.2009 16:55:35.702	2,083	VALID	kvarh
11	EMH COUNTER DISTURBED	0-0:F.F		07.12.2009 16:55:35.702	0	VALID	
12	EMH COMMUNICATION DISTURBED			07.12.2009 16:55:35.702	0	VALID	
13	EMH ACTIVE POWER	1-1:1.25.0		07.12.2009 16:55:35.702	0,001	VALID	kW
14	EMH VOLTAGE L1	1-1:32.25.0		07.12.2009 16:55:35.702	0,6	VALID	V
15	EMH VOLTAGE L2	1-1:52.25.0		07.12.2009 16:55:35.702	0,58	VALID	V
16	EMH VOLTAGE L3	1-1:72.25.0		07.12.2009 16:55:35.702	233,44	VALID	V
17	EMH FREQUENCY	1-1:14.25.0		07.12.2009 16:55:35.702	49,98	VALID	Hz

M2S ComLog: real time trace of data on serial and network interfaces



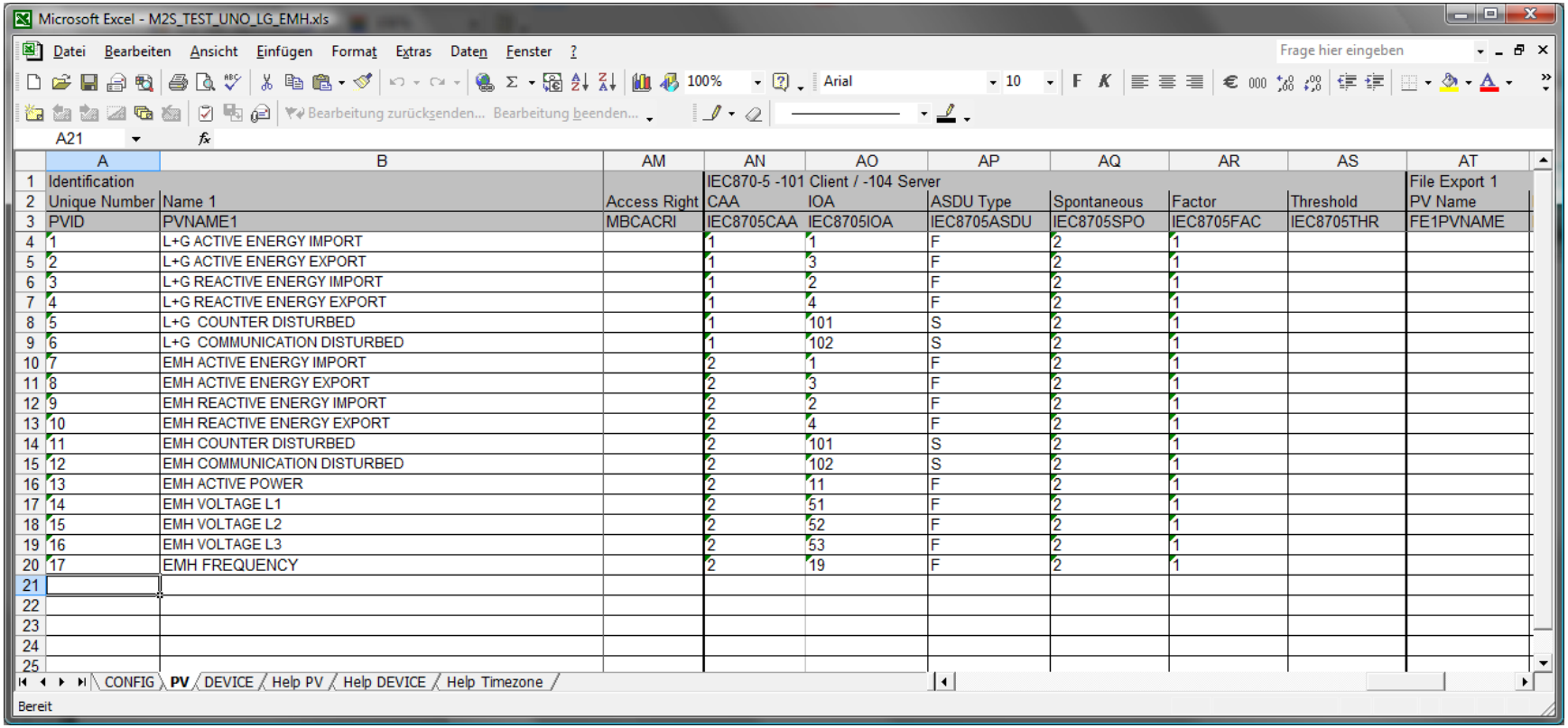
WEB-Server: visualisation of process variables and states



PV ID	Name 1	Name 2	Name 3	Time	Value	Unit	Status
1	L+G ACTIVE ENERGY IMPORT	1-1:1.8.0		07.12.2009 15:57:00.234	13.479	kWh	VALID
2	L+G ACTIVE ENERGY EXPORT	1-1:2.8.0		07.12.2009 15:57:00.234	0.000	kWh	VALID
3	L+G REACTIVE ENERGY IMPORT	1-1:3.8.0		07.12.2009 15:57:00.234	0.376	kvarh	VALID
4	L+G REACTIVE ENERGY EXPORT	1-1:4.8.0		07.12.2009 15:57:00.234	7.596	kvarh	VALID
5	L+G COUNTER DISTURBED	0-0:F.F		07.12.2009 15:57:00.234	1		VALID
6	L+G COMMUNICATION DISTURBED			07.12.2009 15:57:00.234	0		VALID
7	EMH ACTIVE ENERGY IMPORT	1-1:1.8.0		07.12.2009 15:56:59.749	2.682	kWh	VALID
8	EMH ACTIVE ENERGY EXPORT	1-1:2.8.0		07.12.2009 15:56:59.749	0.000	kWh	VALID
9	EMH REACTIVE ENERGY IMPORT	1-1:3.8.0		07.12.2009 15:56:59.749	0.384	kvarh	VALID
10	EMH REACTIVE ENERGY EXPORT	1-1:4.8.0		07.12.2009 15:56:59.749	2.083	kvarh	VALID
11	EMH COUNTER DISTURBED	0-0:F.F		07.12.2009 15:56:59.749	0		VALID
12	EMH COMMUNICATION DISTURBED			07.12.2009 15:56:59.749	0		VALID
13	EMH ACTIVE POWER	1-1:1.25.0		07.12.2009 15:56:59.749	0.001	kW	VALID
14	EMH VOLTAGE L1	1-1:32.25.0		07.12.2009 15:56:59.749	0.6	V	VALID
15	EMH VOLTAGE L2	1-1:52.25.0		07.12.2009 15:56:59.749	0.6	V	VALID
16	EMH VOLTAGE L3	1-1:72.25.0		07.12.2009 15:56:59.749	234.2	V	VALID
17	EMH FREQUENCY	1-1:14.25.0		07.12.2009 15:56:59.749	49.980	Hz	VALID

M2S-Tools

Complete system parameterization and (=) documentation using EXCEL document



Microsoft Excel - M2S_TEST_UNO_LG_EMH.xls

Datei Bearbeiten Ansicht Einfügen Format Extras Daten Fenster ?

Frage hier eingeben

A21

	A	B	AM	AN	AO	AP	AQ	AR	AS	AT
1	Identification			IEC870-5 -101 Client / -104 Server						File Export 1
2	Unique Number	Name 1	Access Right	CAA	IOA	ASDU Type	Spontaneous	Factor	Threshold	PV Name
3	PVID	PVNAME1	MBCACRI	IEC8705CAA	IEC8705IOA	IEC8705ASDU	IEC8705SPO	IEC8705FAC	IEC8705THR	FE1PVNAME
4	1	L+G ACTIVE ENERGY IMPORT		1	1	F	2	1		
5	2	L+G ACTIVE ENERGY EXPORT		1	3	F	2	1		
6	3	L+G REACTIVE ENERGY IMPORT		1	2	F	2	1		
7	4	L+G REACTIVE ENERGY EXPORT		1	4	F	2	1		
8	5	L+G COUNTER DISTURBED		1	101	S	2	1		
9	6	L+G COMMUNICATION DISTURBED		1	102	S	2	1		
10	7	EMH ACTIVE ENERGY IMPORT		2	1	F	2	1		
11	8	EMH ACTIVE ENERGY EXPORT		2	3	F	2	1		
12	9	EMH REACTIVE ENERGY IMPORT		2	2	F	2	1		
13	10	EMH REACTIVE ENERGY EXPORT		2	4	F	2	1		
14	11	EMH COUNTER DISTURBED		2	101	S	2	1		
15	12	EMH COMMUNICATION DISTURBED		2	102	S	2	1		
16	13	EMH ACTIVE POWER		2	11	F	2	1		
17	14	EMH VOLTAGE L1		2	51	F	2	1		
18	15	EMH VOLTAGE L2		2	52	F	2	1		
19	16	EMH VOLTAGE L3		2	53	F	2	1		
20	17	EMH FREQUENCY		2	19	F	2	1		
21										
22										
23										
24										
25										

CONFIG | PV | DEVICE | Help PV | Help DEVICE | Help Timezone

Bereit

Thank you for your kind attention!