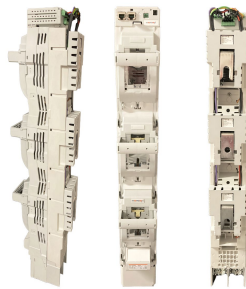


Smart MULTIVERT[®] i-Xtensio

Modbus RTU version for Energy monitoring in LV Smart Grids

IEC FUSE SWITCH DISCONNECTORS

NH VERTICAL FUSE SWITCH DISCONNECTOR



MERSEN Smart monitoring solution is key to answer to new challenges of the electrical power grid!

The development of smart Low voltage grids will enable better understanding of the behavior of local LV networks in the context of decentralization and volatility of renewable power sources and of EV charging stations, among others.

Instant monitoring of the network values and status allows a more efficient load & demand management and higher network availability. Critical or heavily loaded network sections can then be specifically monitored to perform preventive maintenance and high service continuity.

The most user-friendly and most compatible smart monitoring module for NH vertical fuse switch disconnectors !

The compact module designed by Mersen is by far the simplest to install monitoring device and adapts perfectly to the Multivert i-Xtensio ranges that are available today.

The product has been engineered to be fully compatible with Energy Monitoring systems existing on the market and has a very compact design for tremendous functionalities.

This device makes the data available for the end-user that can connect directly on the Modbus modules. The modules measures relevant data directly on the fuse switch disconnectors and enables the users to access instantaneously to main data of energy consumption.

FEATURES & BENEFITS

- Smart module, adapted to our Multivert design, ready to be connected and set-up
- High compatibility using open Industry-proven Modbus RTU communication protocol
- Daisy Chain of the communication and of the power supply between each module to the Modbus master controller, for reduction of the cabling
- Modules easy to install thanks to flexible Multivert solutions and to direct connection of field measurement in the back
- Easy configuration using free and user-friendly executable program and direct connection in the front of the product
- Neutral connection in the back of the device
- Compact dimensions to fit in most of customer cabinet designs
- Available data:
 - Current
 - Voltage (L-N, L-L by calculation)
 - Active power (fundamental or wideband on demand)
 - Reactive power
 - Apparent power (on request)
 - Reactive energy
 - Active energy (fundamental or wideband on demand)

APPLICATIONS

- Power monitoring in Utility, Industrial and Building environments

STANDARDS

- Modbus RTU version for Energy monitoring



SMART MODBUS MODULE

DESCRIPTION

- Measurement of 3-phase Current, 3-Phase voltage and calculation of neutral Voltage – minimum cabling effort
- Measurement of internal temperature using integrated sensor
- Calculation of P, Q, cos Phi ...
- Digital output for fuse status alerts
- Output communication on Modbus RTU protocol with 2x RJ45 connections, enabling daisy chain
- Power supply 24VDC required, can be daisy chained between each module
- Up to 247 slaves per Modbus master (limited by Modbus RTU protocol)
- High measurement precision and fast data transfer (upon request of master, up to 100ms)
- Severe installation conditions & compact dimensions
- Fits perfectly on the top of the Multivert i-Xtensio
- Setup of the device using Mersen free HMI software

TECHNICAL DATA

General	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
	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
Electrical characteristics	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
	Typical power consumption	1,2W / 24V - 50mA
	Internal resistance L - N	L - N: 3,0MΩ
	Measuring range L - N	AC400V (+/- 10%)
	Frequency	50/60 Hz (+/-5%) - parametrizable
	Current transformer secondary current	1A or 5A - parametrizable
Electromagnetic compatibility	Standard	EN 61000-6-2
	Impulse withstand voltage	2kV - 1,2/50µs
	Radio noise field strength	Class A, B
	Air discharge	8kV
	Contact discharge	4kV
	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.
Analog Inputs	Voltage connection	1 per phase, spring type
	Fuse control connection	1 per phase, spring type
	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 interface	ModBus RTU	APS V1.1b, Configurable via software
	Number of channels	1
	Physical connection type	2 x RJ45
	Max. Bus participants	up to 247
	Transmission speed	1200 - 115200 b/s (default = 57kb/s)
Mechanical characteristics	Mounting	Horizontal
	Housing	Classification V-2 according to UL 94
	Dimensions HxWxD	39,5x95x102 mm
	Weight	200g

Technical data of the Multivert i-Xtensio Fuse switch disconnectors available on the fusegear datasheet here :



Smart MULTIVERT® i-Xtensio

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PRODUCT RANGE



7.228.125

Smart MULTIVERT® i-Xtensio 400 A size 2 185 mm 3 x single pole switching - E.on type - Fixed handles

Catalog number	Item number	Design	Package	Weight
7.228.125	V1203424	MULTIVERT® 7.228.025 with V-terminals, pre-cabled with 3x CTs 400/1A, 5 VA, class 1, 3-Phase voltage measurements and Smart module SM-RTU/1. Fully compliant with E.on Specification	1 piece	5.5 kg

Smart MULTIVERT® i-Xtensio 630 A size 3 185mm 3 x single pole switching - E.on type - Fixed handles

Catalog number	Item number	Design	Package	Weight
7.328.125	W1203425	MULTIVERT® 7.328.025 with V-terminals, pre-cabled with 3x CTs 600/1A, 5 VA, class 1, 3-Phase voltage measurements and Smart module SM-RTU/1. Fully compliant with E.on Specification	1 piece	6.3 kg

Smart Module for MULTIVERT® i-Xtensio, Modbus RTU, E.on compliant



SM-RTU/1

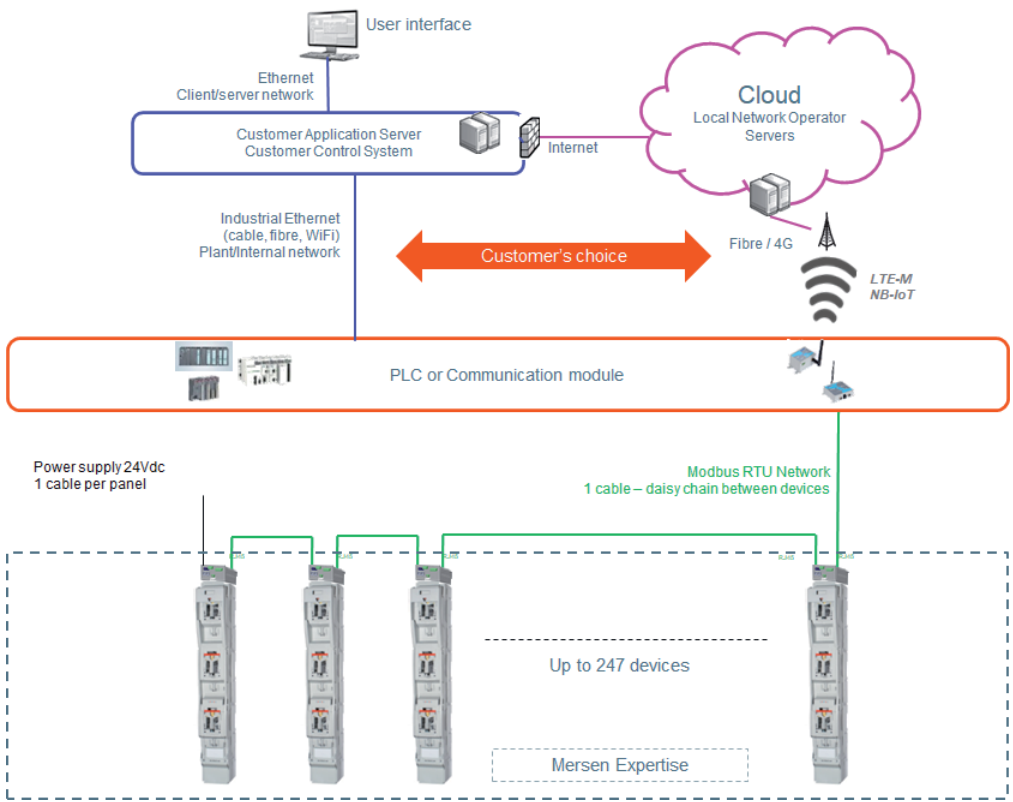
Catalog number	Item number	Design	Package	Weight
SM-RTU/1	Z1204118	Module Modbus RTU compatible with MV iXtensio	1 piece	0.2 kg

*Other variants of Smart Multivert i-Xtensio available upon request.

Smart MULTIVERT® i-Xtensio

Modbus RTU version for Energy monitoring in LV Smart Grids

SYSTEM ARCHITECTURE

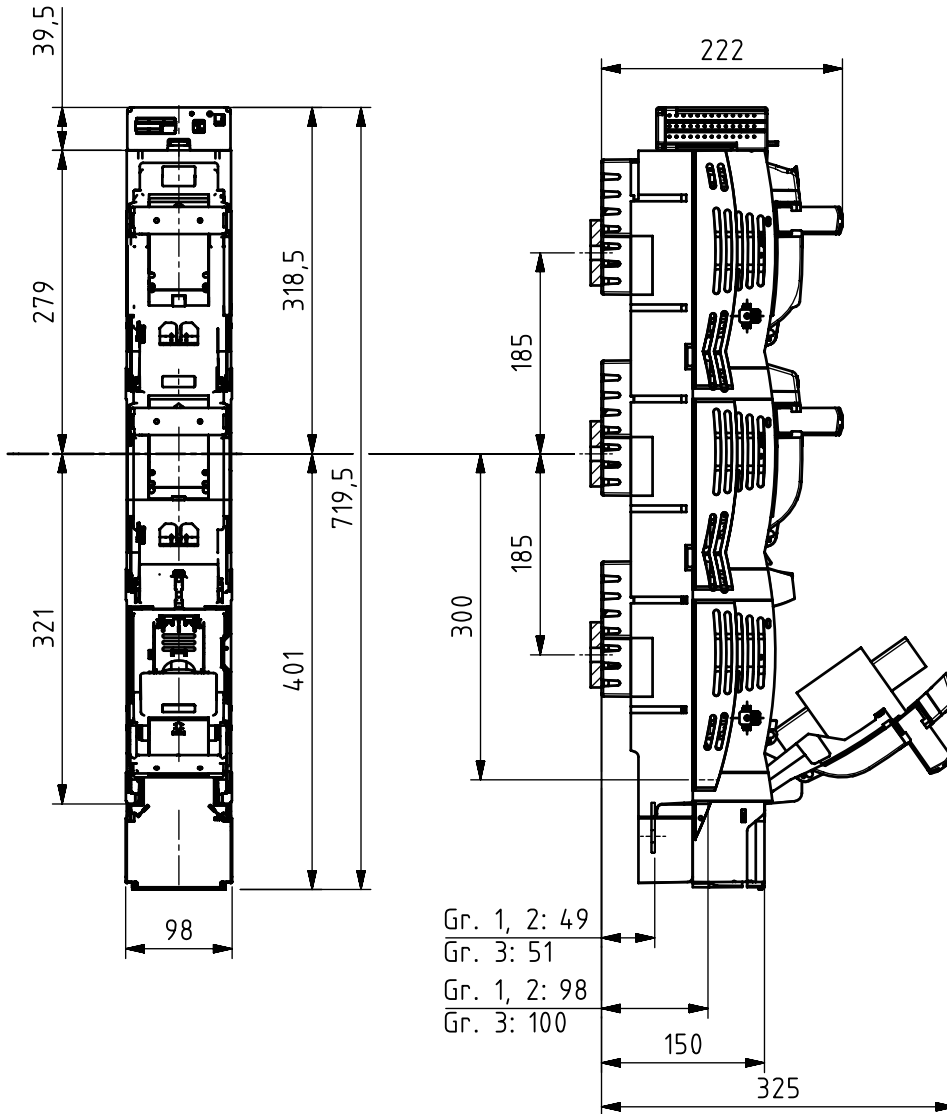


Smart MULTIVERT® i-Xtensio

Modbus RTU version for Energy monitoring in LV Smart Grids

DIMENSIONS

MULTIVERT® i-Xtensio 400 A size 2 and 630 A size 3 185 mm 3 x single pole switching



Dimensions in mm

Smart MULTIVERT® i-Xtensio

Modbus RTU version for Energy monitoring in LV Smart Grids

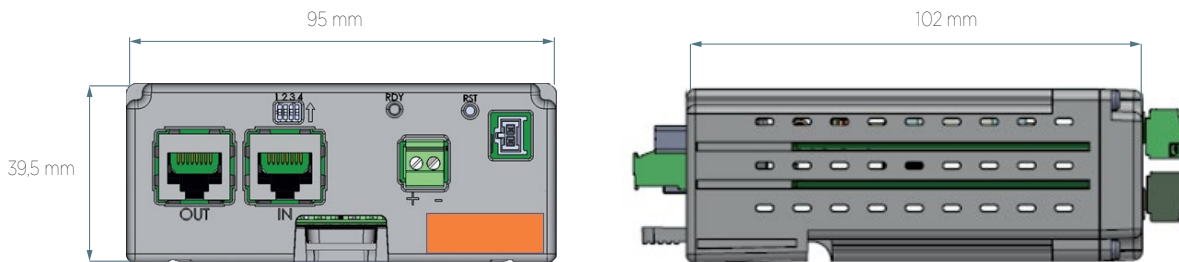
DIMENSIONS

Cable termination MULTIVERT® 250A, 400A, 630A & i-Xtensio 400A, 630A (M01105b)

reference	B	E	V	
type of terminal	bolt	insert nut	V-terminal	
accessory	cable lug max. width 45 mm	cable lug max. width 45 mm	V-clamp (accessory)	
cross section [mm²]	max. 300	max. 300	22SZVK4 50 - 240 sectoral solid 50 - 185 sectoral stranded 35 - 70 round stranded 35 - 50 round solid	22SZVK41 95 - 300 sectoral solid 70 - 240 sectoral stranded 50 - 185 round stranded 70 - 240 round solid
M [Nm]	35 ±3	35 ±3	25 ±2	25 ±2

Dimensions in mm

Smart Module for Multivert i-Xtensio, Modbus RTU, E.on compliant



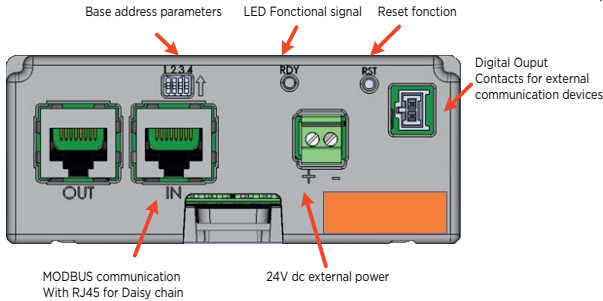
Dimensions in mm

Smart MULTIVERT® i-Xtensio

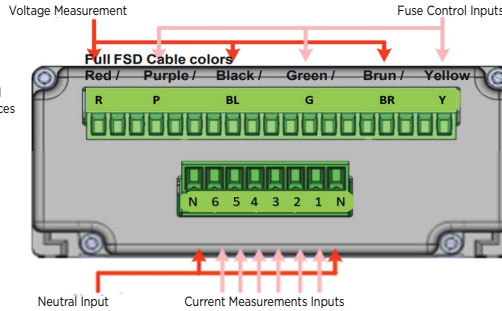
Modbus RTU version for Energy monitoring in LV Smart Grids

CONNECTIONS & CABLING INSTRUCTION

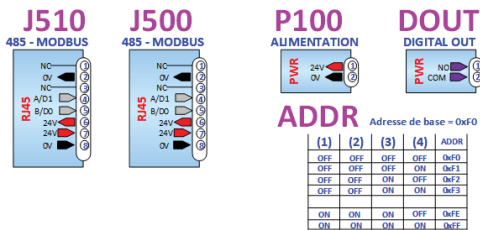
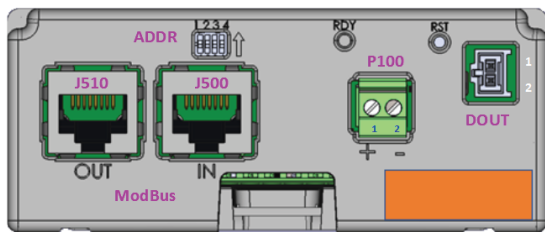
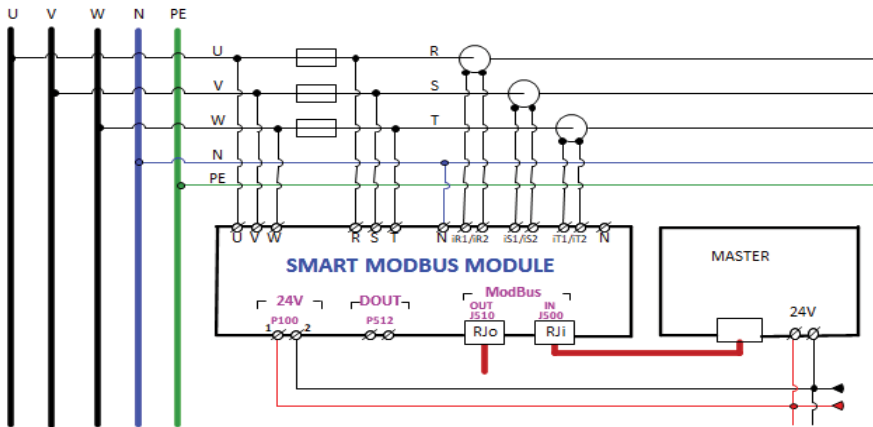
FRONT



BACK



WIRING DIAGRAM



Smart MULTIVERT® i-Xtensio

Modbus RTU version for Energy monitoring in LV Smart Grids

SETTINGS

Modbus RTU communication

MODBUS RTU is a standard protocole widely spread thanks to ease of use and reliability. Modbus RTU is an open, serial (RS-485) protocol derived from the Master/Slave architecture exchanging information in half duplex mode. The Modbus functionality can be configured on the RJ45 port of the module. The module supports slave mode.

Possible settings for measurements:

Current Transformer ratio

Current gain

Voltage gain

Limit values of "Voltage" and "Overcurrent"

Type of Power and Energy (Fundamental or wideband)

Frequency (50Hz or 60Hz)

Time for average calculation

Possible settings for System and Modbus RTU communication

Date and hour

Speed (baud rate)

Slave number

Minimum Time for Messages

ACCESSORIES



1.002.095



1.002.458

Covers/shrouds for cable termination

Catalog number	Item number	Application	Design	Package	Weight
1.002.095	J1002279	bottom terminal	cover shroud for extended cover length 70 mm	1 piece	0.12 kg
1.002.458	N1023305	bottom terminal	cover shroud for multiple termination length 205,5mm	1 piece	0.16 kg



1.001.510



MZA W

Covers/level & system adjustment covers

Catalog number	Item number	Design	Package	Weight
1.001.510	K1002280	cover shield to support central cover 1 set = 2 pieces	1 set	0.15 kg
MZA W	D218687	support angle for support of cover plate 1 set = 4 pieces	1 set	27 g

ACCESSORIES



1.002.492

MZ01LPAP

MZLPAP

Covers/spare way covers

Catalog number	Item number	Application	Design	Package	Weight
1.002.492	M1002282	bus bar system 185 mm	spare way cover width 100 mm, length 630 mm for covering of open installation spaces in distribution units with central cover	1 piece	0.20 kg
MZ01LPAP	C1023410	bus bar system 185 mm	spare way cover without level adjustment width 50 mm, length 500 mm including fixing material	1 piece	60 g
MZLPAP	D1023411	bus bar system 185 mm	spare way cover width 100 mm, length 612 mm including 2 pieces M12 fixing screws (distance of fixing holes 185 mm)	1 piece	0.56 kg



1.002.648

Installation devices/bus bar installation

Catalog number	Item number	Design	Package	Weight
1.002.648	T1023448	M12 insert nut, size 2 and 3 1 set = 30 pieces	1 set	0.28 kg



1.000.852

Indication facilities

Catalog number	Item number	Design	Package	Weight
1.000.852	Q1002285	indicator for switch door position micro switch, 1 change-over contact 5 A, 250 V	1 piece	90 g

ACCESSORIES



1.005.085



1.005.090



1.005.116

Current transformers/external current transformers

Catalog number	Item number	Application	Design	Package	Weight
1.005.085	X1200183	Multivert i-Xtensio Size 2/3	CT Cover - accessory to increase Touch Protection and to maintain the Current Transformers in position in the back of Multivert i-Xtensio Size 2/3 - 1 set of 3pcs	1 set	0.2 kg
1.005.087	Y1200184	Multivert i-Xtensio Size 2/3	Set of 3 Current transformers up to 250/5A, 5VA, class 1, for Multivert i-Xtensio Size 2/3	1 set	0.4 kg
1.005.088	Z1200185	Multivert i-Xtensio Size 2/3	Set of 3 Current transformers up to 400/5A, 5VA, class 1, for Multivert i-Xtensio Size 2/3	1 set	0.4 kg
1.005.089	A1200186	Multivert i-Xtensio Size 2/3	Set of 3 Current transformers up to 600/5A, 5VA, class 1, for Multivert i-Xtensio Size 2/3	1 set	0.4 kg
1.005.090	B1200187	Multivert i-Xtensio Size 2/3	Set of 3 Current transformers up to 400/1A, 5VA, class 1, for Multivert i-Xtensio Size 2/3	1 set	0.4 kg
1.005.091	C1200188	Multivert i-Xtensio Size 2/3	Set of 3 Current transformers up to 600/1A, 5VA, class 1, for Multivert i-Xtensio Size 2/3	1 set	0.4 kg
1.005.095	D1200189	Multivert i-Xtensio Size 2/3	Set of 3 Current transformers up to 300/5A, 2,5VA, class 0,5s for Multivert i-Xtensio Size 2/3	1 set	0.4 kg
1.005.096	E1200190	Multivert i-Xtensio Size 2/3	Set of 3 Current transformers up to 400/5A, 2,5VA, class 0,5s for Multivert i-Xtensio Size 2/3	1 set	0.4 kg
1.005.097	F1200191	Multivert i-Xtensio Size 2/3	Set of 3 Current transformers up to 600/5A, 5VA, class 0,5s for Multivert i-Xtensio Size 2/3	1 set	0.4 kg
1.005.116	W1200182	Multivert i-Xtensio Size 2/3	CT Wiring kit - Wiring set for 3 Current transformers in the back of Multivert i-Xtensio Size 2/3	1 set	0.1 kg