

Mains Monitoring

Mains Monitoring / Central Unit



Including
6 x S0 pulse
inputs

PQM 1588 Power Quality Manager

The functions of the Power Quality Manager are data acquisition and recording for the power quality management system. In addition, it identifies alarms, records them and transmits them. The PQM 1588 is provided with two RS-485 fieldbus interfaces to support Modbus RTU and FRAKO Starkstrombus (P-NET) protocols simultaneously. An RJ-45 connector also makes an Ethernet network connection possible. Integrated data transfer via the OPC UA interface is also a useful function.

Description

The PQM 1588 Power Quality Manager is a versatile all-rounder that even just as a gateway offers a variety of uses. Its integrated RS-485 and RJ45 interfaces and its built-in flexibility enable the PQM 1588 to interpret diverse protocols and access fieldbus instruments through the communications network.

Protocol options for connection to measuring instruments:

- FRAKO Starkstrombus
- Modbus RTU
- Modbus TCP

Using an external coupler:

- M-BUS

If additional system points are acquired, the Power Quality Manager 1588 will automatically activate its data collector function plus some other useful features:

- OPC UA server
- S0 pulse inputs (6x)
- Numerous alarm functions:
 - Alarm limits (lower/upper) for registered metering and analogue channels
 - Alarm function, individually or in groups via various alarm routes: contacts on the PQM 1588, e-mail, alarm report

User benefits:

- EMVIS 3000 visualization software (included with appropriate system points)
- Web interface for basic configuration
- Software updates to expand range of functions
- Simple data exchange via OPC UA
- IoT compatible, REST interface (machine to machine)

A specified number of system points are required for collecting data from the measuring instruments. These devices can be combined at will up to the limiting number for each type of device.

Your easy access to Power Quality Management 4.0

PQM as bus gateway:

- FRAKO Starkstrombus
- Modbus RTU

PQM as universal data acquisition system:

- Reception and collection of measurement readings and other data from connected devices via Modbus, M-Bus, S0 pulses and TCP/IP
- Monitoring of data with individually configurable alarm limits
- Alerting when variables go outside set limits using various media such as alarm relays or e-mail
- Optimum scalability, providing solutions for all, from the smallest applications right up to major businesses

PQM as remote monitoring unit:

- Monitoring
- Generating alarms

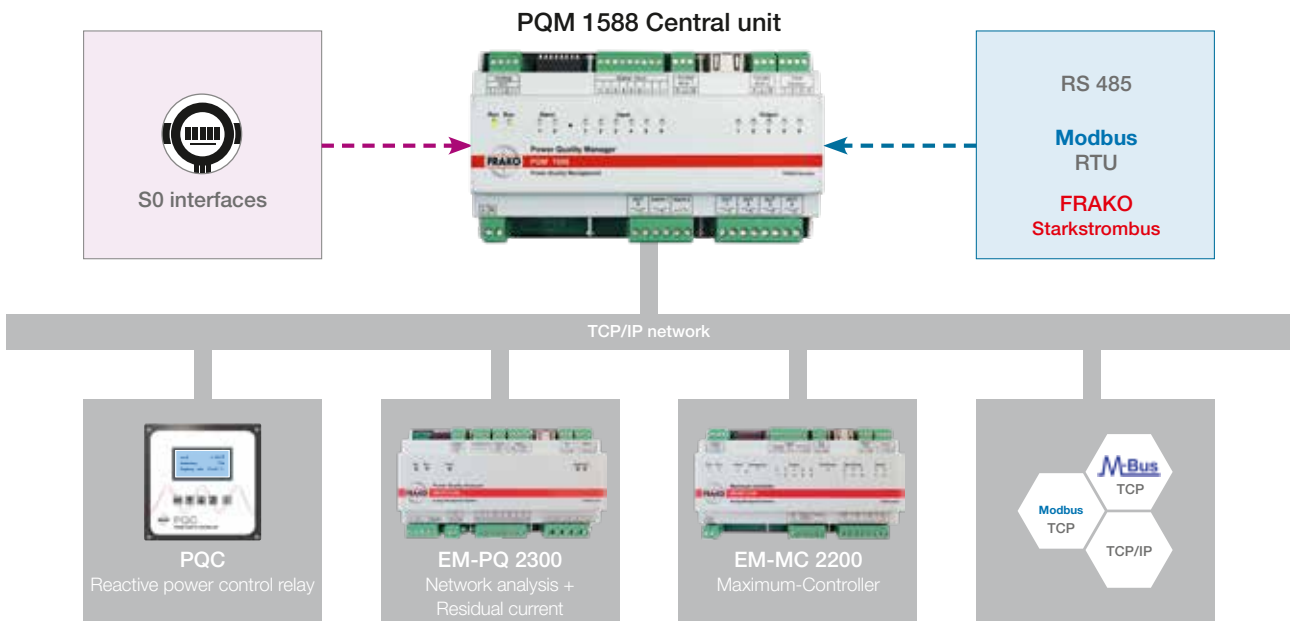
PQM as data collector incl. synchronization:

- Data transfer to third-party systems
- Collation of machine and energy data
- Visualization with any desired software

6 x S0 pulse inputs, freely programmable, can be used as/for:

- Meter
- Operating hours (seconds) counter
- Status channel
- Pulse input for time synchronization with utilities
- Collector of impulses from transducers which convert process variables into a frequency, for example, temperature, humidity mg/m² etc.
- Power calculation from meter pulses
- OPC UA Server (integrated in the device)
- To increase processing power – more stable data transfer via bus and Ethernet
- Gateway (ModBus/Ethernet + P-Net/Ethernet) – depending on the features
- Pulse acquisition (S0 pulse inputs) for another PQM 1588
- Complete small system incl. data collection of pulse meters

Interfaces such as OPC UA and REST



Software for the display/evaluation of the data:

- including EMVIS 3000 to enable total visualization
- Comprehensive data evaluation
- CSV export facility

New!

Now including
6 x S0 pulse inputs,
freely programmable



Interface for:

- Industry 4.0
- All types of data
- Free choice of database
- Free choice of visualization
- Customized solutions
- Third-party systems

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Technical Data

Power Supply	
Supply voltage	100 V AC – 253 V AC (absolute limits), 230 V DC (absolute limits)
Frequency	45 up to 65 Hz
Power consumption	Max. 7 W / 18 VA
Fuse protection	Max. 2 A (slow acting) external protection required
Interfaces	
Ethernet interface	10/100 MBit/s, RJ45 RS-485 Bus 1 Modbus RTU RS-485 Bus 2 FRAKO Starkstrombus
Outputs	
Relay contact	5 contacts – bistable, 250 V / 2 A AC or 30 V / 2 A DC
Alarm contact	1 contact - bistable, 250 V / 2 A AC or 30 V / 2 A DC 1 NC, 250 V / 2 A AC or 30 V / 2 A DC
Inputs	
6 pulse inputs	S0 pulse inputs (DIN 43864) for connecting to volt-free contacts, Open-contact voltage: 15 V, Max. line resistance: 800 Ohm, Short-circuit current: 18 mA, Pulse frequency: 0.1 to 20 Hz
Connections	
via plug-in type screw terminals	Conductor cross-section max. 1.5 mm ² , min. 0.14 mm ² , Relay-, alarm contacts and supply: Conductor cross-section max. 2.5 mm ² , min. 0.2 mm ² , Rated value insulation: 250 V AC, 80 °C
Control elements	
DIP switch	8 pieces
Display elements	
LED	15 pieces
Mechanical Construction	
Dimensions	296 mm × 260 mm × 133 mm (W x H x D)
Installation	On standard rail 35 mm according to DIN EN 50022
Weight	approx. 0.4 kg without packaging
Ingress protection	Enclosure IP30, terminals IP10 according to DIN EN 60529 pollution degree 2 according to EN 61010-1:2011-07
Version	Enclosure protection class II according to DIN EN 61010
Housing	Flammability according to UL 94 V0 as declared by the manufacturer

Mechanical Construction

EMV	EN 55022 Class B : 2010 + AC : 2011 EN 61000-3-2 : 2014 EN 61000-3-3 : 2013 EN 61000-6-3 : 2007 + A1 : 2011 EN 61000-6-2 : 2005 EN 61000-4-2 : 2009 EN 61000-4-3 : 2006 + A1 : 2008 + A2 : 2010 EN 61000-4-4 : 2012 EN 61000-4-5 : 2014 EN 61000-4-6 : 2014 EN 61000-4-8 : 2010 EN 61000-4-11 : 2004
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Operating conditions

Temperature range	0 °C...45 °C
Installation height	Geographical height max. 2000 m above sea level
Article-No.	20-10090 without system points

PC requirements for FRAKO-NET software package

Hardware	<ul style="list-style-type: none"> • Min. Intel Core I5 • Main memory min. 4 GB RAM • 10 GB free hard drive space • Ethernet 10/100 Mbit/s network connection or/and one free serial interface • DVD drive • SVGA graphics adapter • Colour screen with minimum resolution of 1024 x 768
Software	<ul style="list-style-type: none"> • Microsoft® Windows®* 10 • Microsoft® Windows®* 7 (x32/x64) • Microsoft® Windows®* Server 2008 R2 • current browser for example, Mozilla Firefox <p>* Registered trademarks of Microsoft Corporation</p>

Optional accessories

Article-No.	Type	Description
20-10495	System points upgrading package	10 system points incl. system visualization EMVIS 3000
20-10496	PQM 1588	50 system points
20-10497		100 system points

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System points per integrated device	Upper limits
30 System points per EM-MC 2200	Max. 4 units EM-MC 2200 per PQM 1588
15 System points per EM-PQ 2300	Max. 32 units EM-PQ 2300 per PQM 1588 in Slavemode, or max. 8 in Mastermode
15 System points per PQA 1101	Max. 32 units PQA 1101 per PQM 1588
7 System points per PQC (single phase)	
10 System points per PQC (three phase)	
7 System points per EM-PQ 1500	Max. 32 units EM-PQ 1500 per PQM 1588
1 System point per channel of EM-MC 2200, PQA 1101, EM-PQ, EMF 1102 or PQM 1588	Max. 550 metering-, analogue-, status- or alarm channels per PQM 1588
10 System points to activate the S0 function of the PQM 1588	

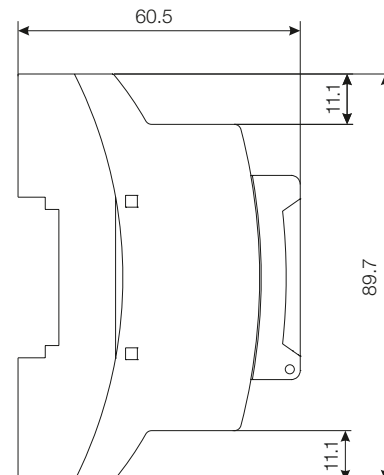
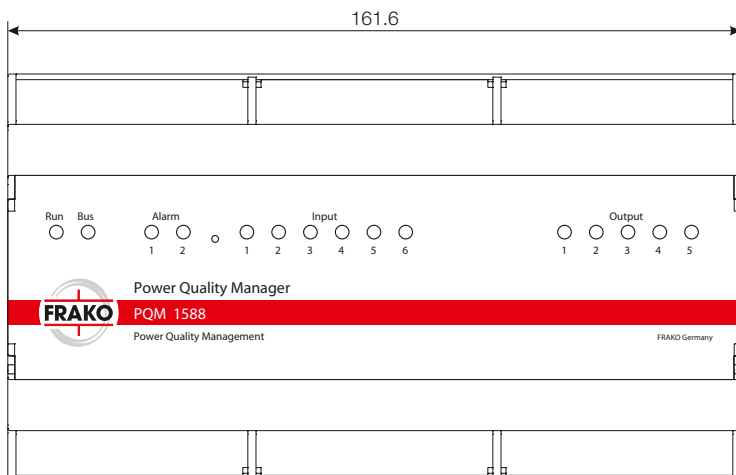
Web interface Start screen



Web interface Main Configuration – IP address



Dimensions



Dimensional drawing PQM 1588

All dimensions in mm

System visualization is INCLUDED if a PQM 1588 with system points is purchased!



suitable for evaluations according to EN 50001

EMVIS 3000 System-Visualization

In the Energy Management System, the measured variables, statuses and events in the entire in-house energy supply system are acquired, processed centrally and saved. They are presented graphically by the visualization facility and evaluated. The EMVIS 3000 software is a powerful tool for displaying and documenting all the measurement readings from the devices connected to the system. A client management function is available, which enables individual organizational system trees to be assigned to different users, who therefore receive exactly those data that they require for their separate purposes. There are two types of installation: either the single workstation or the server version, the latter with access to up to 5 clients simultaneously via a web browser, with no additional installation necessary in the client systems.

EMVIS 3000 comprises the following functional modules:

EMVIS 3000 Project

The project planning tool ...

- Unrestricted configuration and compilation of evaluations of all data processed by the system
- New functions such as alarm visualization, status, history, ranking
- Server version with access via browser
- User administration, the administrator defines user rights and accesses
- Calculation of **performance figures**
Performance figures are virtual data points calculated from other data points, an arithmetic computation from measured or imported data, e.g.: "Active energy A x factor + Water quantity B x factor + Compressed air volume C x factor / No. of items D"
- Creation of **benchmarking** charts
Benchmarking makes a direct comparison of measurement data or performance figures possible, e.g. energy costs of products or company sites
- Creation of **Sankey** diagrams
A Sankey diagram gives a clear overview of any type of flow, e.g. the flow of utilities. The width of each stream into and out

of a location is proportional to the quantity flowing, absolute and percentage values also being stated

- Easy Customizing - individual planning of views - simple and intuitive (the basic package includes 3 views with up to 20 online data points in total)

EMVIS 3000 Report

The reporting tool ...

- To simplify navigation, a clear overview of the entire system is displayed in two system trees, either of which can be selected:
 - **Physical:** standard evaluations of all the instruments and channels registered with the system
 - **Organizational:** all evaluations that have been compiled with EMVIS 3000 Project
- Presentation of historical data for analysis and comparison purposes, e.g. different locations or different periods of time
- For example diagrams showing the time course or diagrams without timeline such as **carpetplot, scatter diagram and heatmap**
- The historical data can be exported directly from the chart or consumption table for further processing. Possible export formats are CSV, Excel, Word and PDF
- Direct access to the momentary readings of the connected instruments

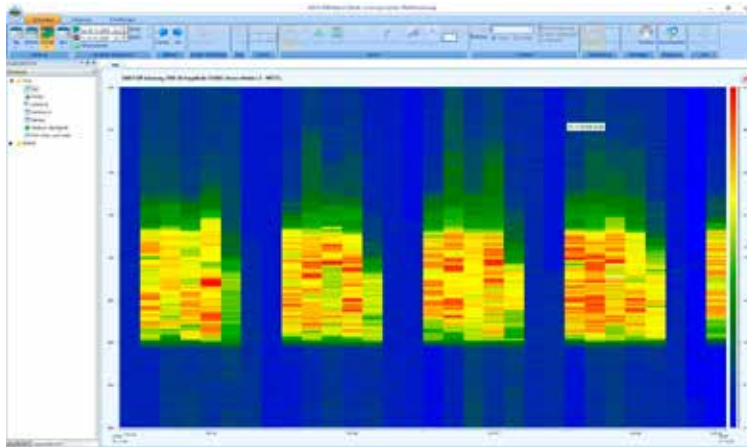
Software

Visualization Software

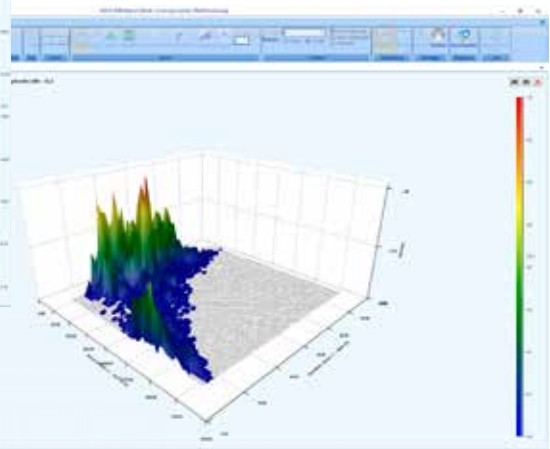
- Visualization of the alarms occurred is possible through display of the status, history and statistical evaluation in the ranking

EMVIS 3000 Live

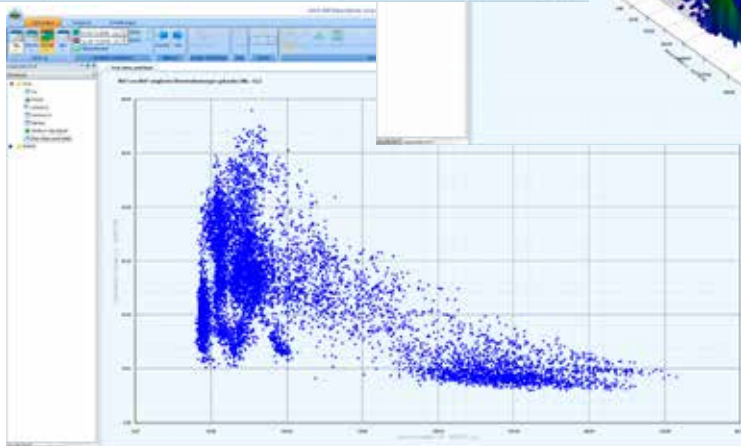
- Views created individually - from site layout drawings right down to the distribution board
 - Display of the momentary measurement readings and statuses
- The EMVIS 3000 license enables the software to be installed on several PCs (server and clients). It allows access to the Power Quality Manager PQM 1588 and the Central Unit EMIS1500.



Carpetplot



Heatmap 3-D



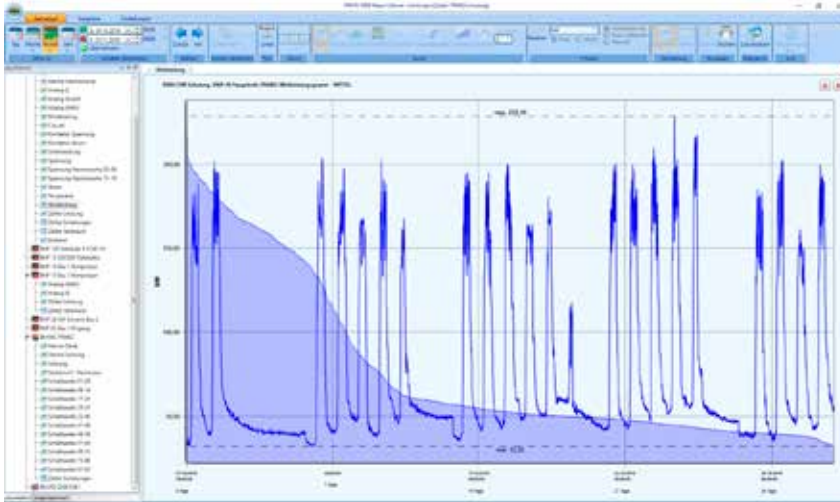
Scatter diagram 2-D



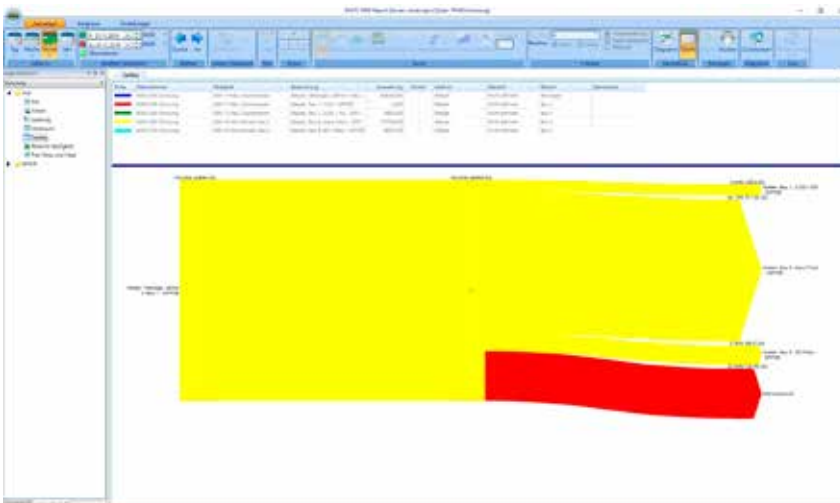
In the physical system tree prepared standard evaluations are deposited for all Energy Management devices. This allows the user to visualize the recorded historical data.

Software

Visualization Software



Continuous line graphic - shows the frequency of the variables within a period of time



Sankey graphic - shows the flow of energy

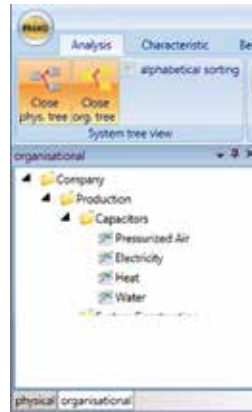
The screenshot shows a software window with a toolbar and a sidebar on the left. The main area contains a table for user administration authorization. The table has columns for 'Berechtigung', 'FRAKO/Schulung', 'SCHULUNGSRV\User1', and 'SCHULUNGSRV\User2'. The rows are 'Freigelesen', 'Phys. SB', 'OrgSystembaum', and 'Schulung'. Each cell contains a checkbox.

Berechtigung	FRAKO/Schulung	SCHULUNGSRV\User1	SCHULUNGSRV\User2
Freigelesen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Phys. SB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
OrgSystembaum	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Schulung	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Authorization graphic - table showing user administration authorization



Standard evaluations for each energy management device are stored in the physical system tree, enabling the user to visualize the recorded and momentary measurement data without the need for individual configuration.



Within the organizational system tree business specific structures are deposited. The business specific structures are projected in form of individual evaluation in the organizational system tree by the customer.

Technical Data

PC requirements for small and medium systems	
Hardware	<ul style="list-style-type: none"> • Min. Intel Core I3-Processor • User memory: 4 GB RAM • 1 GB free hard disk space • Graphics adapter: min. DirectX 9.0c support and 512 MB video memory
Software	<ul style="list-style-type: none"> • Microsoft® Windows® 7 • Microsoft® Windows® 8 • Microsoft® Windows® 10 • Microsoft® Windows® Server 2008 R2 • Microsoft® Windows® Server 2012 R2 • Microsoft® Windows® Server 2016 • Microsoft® .NET Framework 3.5 • Microsoft® .NET Framework 4.5 • FRAKO-NET (min. V1.40.0056 or higher) • Firebird V2.5.0 (included in FRAKO-NET) <p>* Registered trademark of Microsoft Corporation</p> <p>Please note: the server variant will only work with a 64-bit system</p>
Article-No.	20-10649

EMVIS 3000 Extension packages

Article-No.	Type	Description
20-10650	EasyCustomizing-S	Individually designed views with up to 100 data points
20-10651	EasyCustomizing-M	Individually designed views with up to 200 data points
20-10652	EasyCustomizing-L	Individually designed views with up to 350 data points
20-10653	EasyCustomizing-XL	Individually designed views with up to 550 data points
20-10654	EasyCustomizing-XXL	Individually designed views with up to 1000 data points

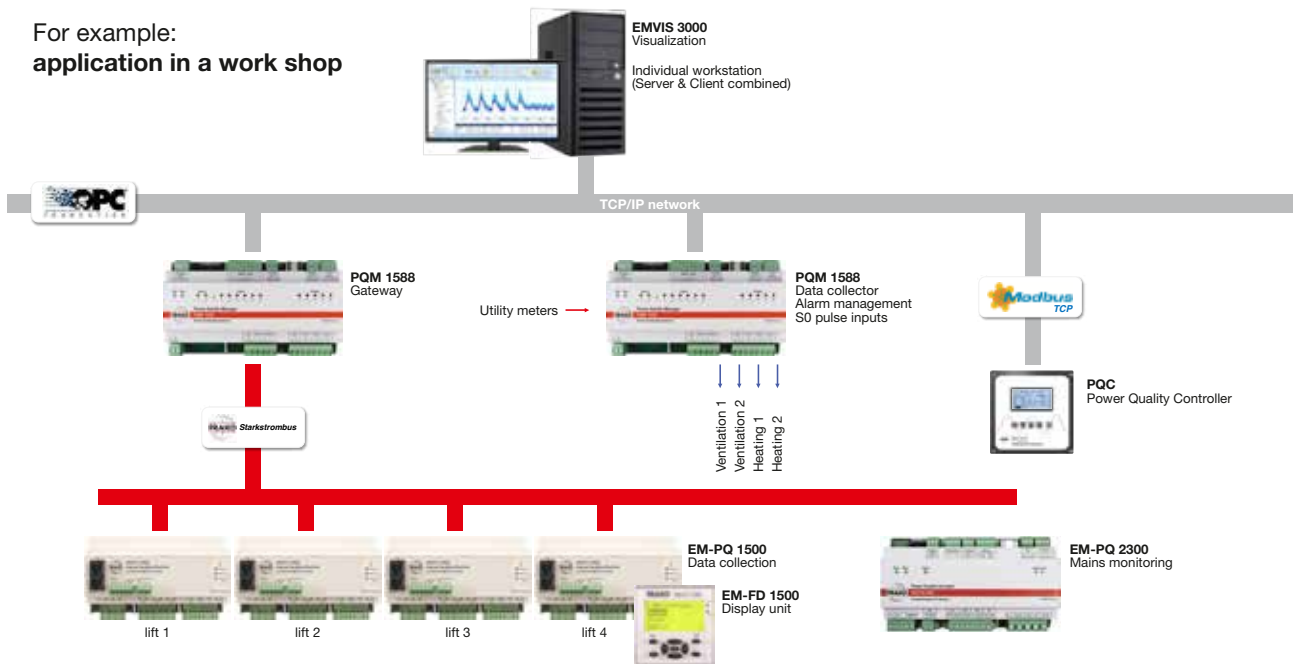
EMVIS 3000 Software-Update

Article-No.	Type	Description
20-10555	EMVIS 3000 Software-Update	from version 3.0 to the latest version up to V3.XXX

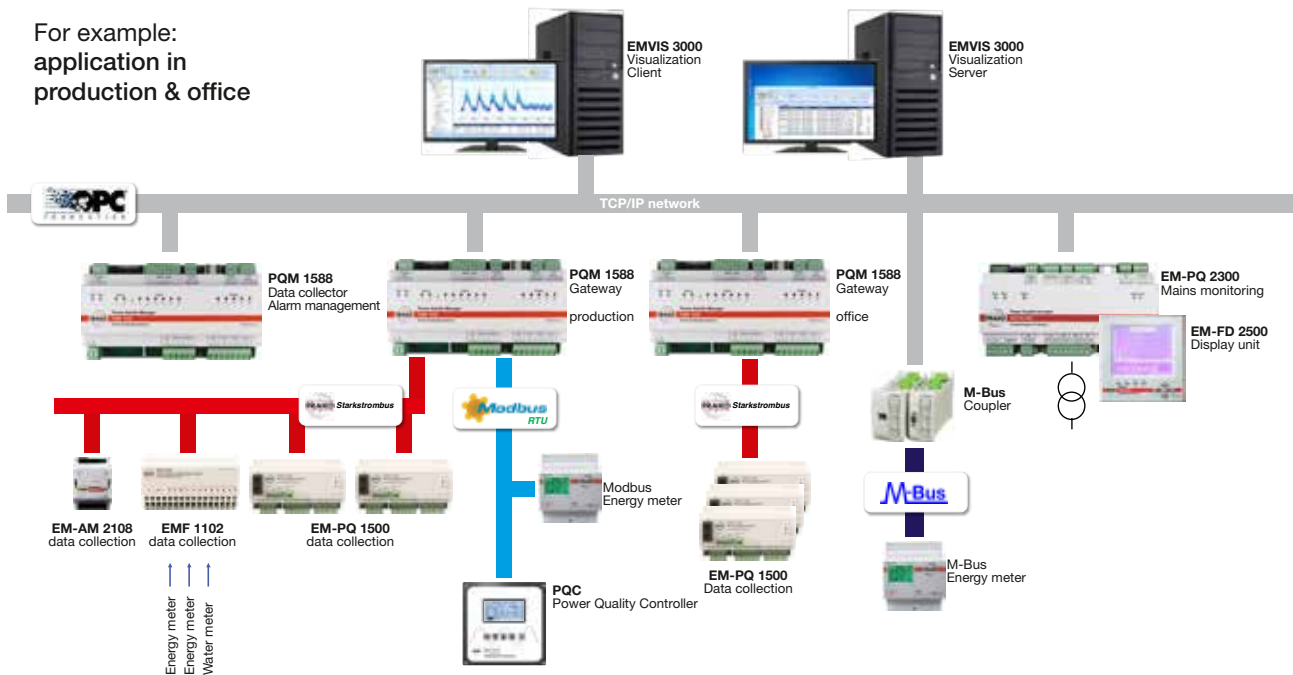
Software

Visualization Software

For example:
application in a work shop



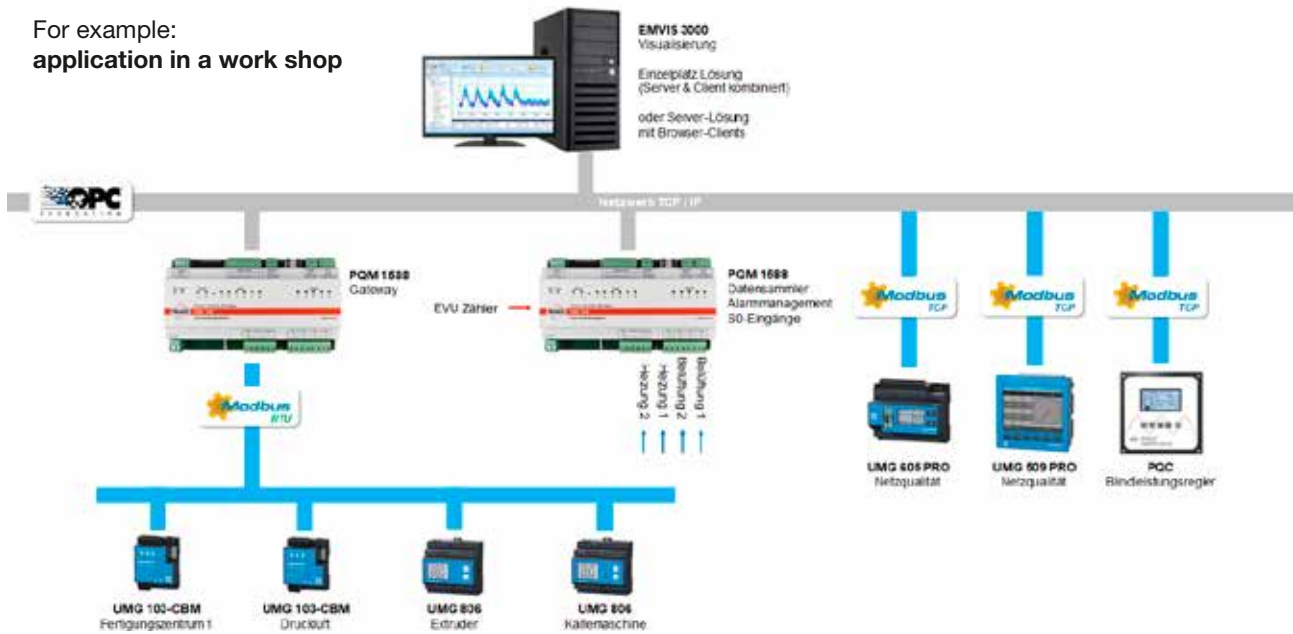
For example:
application in production & office



Software

Visualization Software

For example:
application in a work shop



For example:
application in
production & office

