		41765 -		50445				
		41827	nergy mor	nitoring				
			_16201					
		42012	125			0272		
		42015	941				62776	
		42075					62927	
		42137		500 7				
		42199	46601	50041	0.9.1	50		
					55242	50682		
		42325	40003	51005				
		42303						
		42500			55520			
		42503						
		42095	47055	31373	55715			
		42707				60170		
		42813	22		5 01	00175		
		42001	17283			50202		
					70			
	391							
	391							
	39	4000/				0985		
	39	100%				1047		
	39					1109		
	39					1171		
	39							
	395							
	3965							
		44493	48833	5317.3		61853		
		44555 r	ntellige	nt ener	rgy moi	nitoring	66255	
		44617	or fund	ctional	and co	mmerc	cial	
		44679					14 6379	
		44741 🖸	ouliaing	JS 53421				
			49701					
		45423			08443			
		45485			58505			
		45547	4500n		58567			



One system. **All-encompassing** effect.

Since DIN VDE 0100-801 entered force in October 2015, increasing focus has been placed on energy efficiency in functional and commercial buildings, too. This is due not least to the targets set at the UN World Climate Conference (Kyoto 2020). Much of the efforts made in this area involve utilising electrical energy in the best-possible and most efficient manner. And this is exactly where our energy monitoring system comes in. It displays and clarifies. It provides information. It helps to interpret this data. And it helps you make better decisions when it comes to the planning, installation and day-to-day operation of low-voltage installations.

Read on to find out how simple the system is to use and what benefits it offers. Also visit hager.de/agardio

special systems



DIN VDE 0100 is the "Bible" when it comes to installing low-voltage installations. The new group 800 currently contains only part 801 and explicitly describes for the first time the energy efficiency requirements applicable during the planning of such systems.

		DIN VDE 0100 – E	rection of low-vo	Itage installations	S	
Group 100	Group 200	Group 400	Group 500	Group 600	Group 700	Group 800
Application areas and fundamentals	Terms	Protective measures	Choosing and installing electrical equipment	Tests	Requirements for industrial premises, rooms and	Energy efficiency

3



Small, intelligent – and always up to date with the current activity of up to 31 Modbus devices: our new energy monitoring server agardio.manager.

The difference between guesswork and knowledge.

The real heart of the system – the **agardio.manager** – is rather unassuming. This tiny piece of highly intelligent technology is just six modules wide. But it packs a real punch: it records and queries the current activities of up to 31 Modbus-connected devices – and tells you precisely where there is potential for optimisation. And you? You can see instantly where efficiency gains are possible.

> Stay standards-compliant, work efficiently, cut operating costs – replace guesswork with knowledge.

Expanding intelligence.

Hidden money-wasters, limits being exceeded without your knowledge, sub-optimal operating conditions – in functional buildings, it's worth taking a closer look. We show you where potential problems lie by measuring current and output in order to localise expensive consumption peaks. Or by showing the power factor $\cos \varphi$ in order to introduce targeted reactive power compensation measures. And what about the network quality? A detailed look at the voltage and frequency provides valuable information – permanently.



We ensure energy transparency and safeguard network quality by supplying relevant data from up to 31 connected Modbus devices.



Clearly presented consumption diagrams reveal expensive consumption peaks. You can see at a glance how you can save money by simply changing your usage habits without reducing overall energy consumption.





Measuring where it's worth it.

Our energy monitoring system keeps a close eye on the status of all the connected devices: in the main distributors, the floor distributors and the small distributors. This means that you are always in a position to make informed decisions. And you can respond more quickly. For example, you can set the system to send you e-mail notifications when limits are exceeded. You have a range of options to help you when, for example, grouping applications according to energy efficiency classes (EIEC) as per DIN VDE 0100-801.

> Simply "plug and play" to integrate the appropriate Hager measurement devices.







Click and go.



Unpack, connect, start your browser, go.

Energy monitoring is simple. Instead of spending entire days programming your system, you can carry out configuration on a laptop or tablet – directly in a web browser, without the need for extra software or Modbus mapping tables. In other words, you don't need any programming skills or expensive third-party providers. All compatible measurement devices can be found in the product catalogue of the energy monitoring server and can be easily added to the project. All you have to do is enter the Modbus address in the server, configure it in the measurement device – and you're ready to go!.



One, two, three – Hager delivers results faster than you can count.



It's all about making the right settings.

A few steps and your energy monitoring system is ready to go: first define your logical structure – building, floor, room and application. Group your applications. And you can manage all the connected measurement devices with just a few clicks.



Create your project

Specify the required location/building details.

Select zones

02

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Standort - Zonen	the Forum		
Anwendungen Anwendungen Eg Unterge Eg Verteilungen Anwendungen Eg Verteilungen	nchosa hosa	Tat New	1. Obergeschoss
Produkte A PV Daci Ereignisse		100 A	intergeschoss
EIEC	Your loca	al informatio	ON - Zonen s
Datenmanagement	to be ir	nserted here	Zonen > New Forum
		4 Anwer	Untergeschoss
		D Vertell	lungen Haupteinspeisung
		Produkte	PV Dach
		Ereigniss	ie
		e	

The building structure and its different areas can be represented in the form of zones.

Manage your applications

 What do you want to measure?

 Image: Constraint of the standart
 Image: Constraint of the standard
 Image: Constrat



It's all about making the right settings.

Manage your low-voltage distribution systems

Here you can create the different distribution systems and assign them to a zone.



05

	Name		Multifunktionsmossage	A CANADO F	Túrainhau		
覗	Impulszähler	1	Multionkoonsmessger	at Smilose iui	Turembau		
3	Temperatursensor						
п	Binäreingang						
	EC700						
61	ARXXX	Services MOD	BUSRTU				
Ð	SM101C	Name	Beschreibu	Einheit	Autiosung	Offset	Spei
	SM103E	E charge d 0/1	24 (fame)			1	
	SM102E	U12 YOL	ur local ii	nforr	natio	n,	
100	E037X	U23	Phase-Pha	V	0.01	0	
	EC3/A	U31	he inee	rted	hare	0	
\sim	Analogeingang	V1	Phase-Neu	v	0.01	0	
	EC36X	V2	Phase-Neu	v	0,01	0	
		V3	Phase-Neu	V	0.01	0	
		F	Frequenz: F	Hz	0,01	0	
		11	Strom: 11	mA	1,00	0	
		12	Strom: 12	mA	1,00	0	
		13	Strom: 13	MA	1,00	0	
		In	Neutralleite	mA	1,00	0	
		P	Σ Wirkleist	kW	0,01	0	
		Q	Σ Blindleist	kVAr	0,01	0	
		S	Σ Scheinlei	kVA	0,01	0	
		PF	Σ Leistung	N/U	0,00	0	
		P1	Wirkleistun	KW	0.01	0	
		P2	Wirkleistun	kW	0,01	0	
		P3	Wirkleistun	kW	0,01	0	
		Q1	Blindleistun	kVAr	0,01	0	
		02	Blindleistun	kVAr	0.01	0	

Add measurement devices to the project

Choose the devices from the integrated product catalogue. Zone management allows you to integrate every added measurement device into the building structure.

06



Carry out Modbus addressing

This just has to be set in the device.

Start energy monitoring

Finally, define the measurement interval – and you're ready to go.





Shows you what counts.

How exactly is energy consumption distributed within the building? What are the current measured values? Where are there harmonics? When are the consumption peaks? What differences are there with respect to the measurements taken over the previous weeks? How does my building perform in terms of the selected energy efficiency class (EIEC)?

EIEC 4	Optimal
EIEC 3	High
EIEC 2	Standard
EIEC 1	Low
EIEC 0	N/A

Since October 2015, the energy efficiency of electrical installations has to be evaluated according to the classification procedure laid down in DIN VDE 0100-801. This yields an energy efficiency class for the entire electrical installation – EIEC 0 to 4.



We'll show you what's important. Clear and understandable.

	<u>□</u> ≪	5				:hager			💄 Admin 🗸
4	Überblick		>	Grafix Tabellenansicht					
*	Netzgualität	0	>	Parameter	Ð	1	2	3	4
100		8		Festlegung des Lastprofils in kWh	Keine Betrachtung	Lastprofil der Anlage für einen Tag	Lastprofil der Anlage für jeden Tag der Woche	Lastprofil der Anlage für jeden Tag des Jahres	Permanente Datenerfassung des Lastprofils der Anlage
4	Messwerte		,	Anordnung der Haupteinspeisung	Keine Betrachtung	Die Position der Haupteinspeisung liegt innerhalb 60 % der Entfernung von der optimalen Position zur am weitesten entfernten Last	Die Position der Haupteinspeisung liegt innerhalb 40 % der Entfernung von der optimalen Position zur am weitesten entfernten Last	Die Position der Haupteinspeisung liegt innerhalb 25 % der Entfernung von der optimalen Position zur am weitesten entfernten Last	Die Position der Haupteinspeisung liegt innerhalb 10 % der Entfernung von der optimalen Position zur am weitesten entfernten Last
da	EIEC			Erforderliche Optimierungsanalyse für Motoren	Keine Betrachtung	Analyse und Optimierung der Motor- Effizierzklasse oder Antriebe für 50 % der installierten Leistung	Analyse und Optimierung der Motor- Effizienzklasse oder Antriebe für 50 % der installierten Leistung	Analyse und Optimierung der Motor- Effizienzklasse oder Antriebe für 70 % der installierten Leistung	Analyse und Optimierung der Motor- Effizienzklasse oder Antriebe für 90 % der installierten Leistung
				Your local informati	Keine Betrachtung	Betrachtung des Lampentyps und der Position	Setrachtung des Lampentyps und der Position mit natürlichem Licht	Steuerung entsprechend der natürlichen Lichtquelle oder der Gebäudeanwendung oder des Lampentyps	Steuerung entsprechend der natürlichen Lichtqueile und der Gebäudeanwendung und des Lampentyps
				Enforder sche Optimiserungsanstyse für HVAC	Keine Betrachtung	Temperatur-Regelung	Temperatur-Regelung auf Zonen- Niveau	Zeit- und Temperatur-Regelung in den Zonen	Zeit- und vollständige Sensoren- Regelung je Zone
					Reine Betrachtung	Keine Betrachtung	Auswahl aller Transformatoren entsprechend der Abschätzung der magnetischen und der Kupferverluste oder der Arbeitspunktverluste	Auswahl aller Transformatoren entsprechend der Abschätzung der magnetischen und der Kupferverluste oder der Arbeitspunktverluste	Auswahl aller Transformatoren entsprechend der Abschätzung der magnetischen und der Kupferverluste und der Arbeitspunktverluste
				Erforderliche Optimierungsanalyse für das Kabel- und Leitungssystem	Keine Betrachtung	Kabei- und Leibungssystem wurde mit der in 6.3 oder 6.7 beschriebenen Methode optimiert	Kabel- und Leitungssystem wurde mindestens mit der in 6.3 oder 6.7 beschriebenen Methode optimiert	Kabel- und Leitungssystem wurde mit der in 7.3 beschriebenen Methode optimiert	Kabel- und Leitungssystem wurde mit der in 6.3, 6.7 und 7.3 beschriebenen Methode optimiert
				Erforderliche Optimierungsanalyse für die Elindialstungskompensation	Keine Betrachtung	Maximaler Bindleistungswert ist definiert	Zentrale Kompensation	Zentrale Kompensation (Kiein-Gewerbe) oder Kompensation in den Zonen (mit Automatisierung) (bei Groß-Gewerbe)	Kompensation je Zone (mit Automatislerung) und individuelle Kompensation
				Anforderung für die Messung des Leistungsfaktors (PF, en: power factor)	Keine Betrachtung	Periodische Messung an der Hauptverteilung	Permanente Messung im Hauptschaltschrank	Permanente Messung im Hauptschaltschrank und im Verteilerschaltschranklin den Verteilerschaltschranken	Permanente Messung im Hauptschaltschrank, in den Verteilerschaltschränken und bei den Hauptlasten
				Anforderung für die Messung der elektrischen Energie (kWh) und Leistung (kW)	Keine Betrachtung	Messung bei großen Betriebsmitteln	Messung bei großen Betriebsmitteln und Messung je Zone oder Ammendung	Messung bei großen Betriebsmitteln und Messung je Zone und Arwendung	Messung bei großen Betriebsmitteln und Messung je Zone, Anwendung und Masche
				Voraussetzung zur Spannungsmessung (V)	Keine Betrachtung	Periodische Messung an der Häuptverteitung	Permanente Messung im Hauptschaftschrank	Permanente Messung im Hauptschaltschrank und im Materiaeschaltschrank und im	Permanente Messung im Hauptschaftschrank, in den

You can define and display this classification in agardio. manager, either in the form of spider web diagrams or in tables, like in DIN VDE 0100-801.



Score points: Hager helps you achieve the right efficiency class.

Seeing more leads to better decisions.

This is what it's like to be in the know: Visualisations by practitioners for practitioners. Clear, straightforward, informative. Regardless of where you are, you obtain valuable information about energy development and network quality. Compare current trends with your history – and only ever rely on data that is reliable and up to date. All values can be exported in CSV format for further processing in, for example, Microsoft Excel.



Now you'll always be in the picture: thanks to different visualisation methods for all the different applications.





What used to be hidden, is now visible: through analysis of the network quality, you can increase system security and availability. And you can localise the source of increased harmonic distortion quickly and easily. Seeing more leads to better decisions.



Overview

You can see at a glance how energy is being used within a building.



The network quality can be presented as an overview or in a table containing all the measured values.



Measured values and harmonics can be displayed any way you wish.

04

Visualisation of historic measured values.



Advantages everywhere.

- Plug-and-play installation
- Clear, detailed presentation of current and past measured values
- Highlighting of expensive consumption peaks
- Assistance with EIEC grouping
- Improved network quality

The difference between clear and unclear, guesswork and precision, waste and efficiency, somehow and precisely - they now have a name: **agardio.manager.** It displays facts that might once have remained undetected.

And anyone who works with functional building applications benefits from this: current standards can be fulfilled right from the outset, customers can be given more targeted 'support – and buildings can be managed more cost-effectively.

More information, more efficiency, more building value: our energy monitoring solution bundles all the benefits into one system.



Systematic piece by piece





agardio.manager energy monitoring server

Ideal: for up to 31 Modbus devices from Hager – open circuit breakers, multifunction measurement devices, energy meters and more

Transparent: consumption recording over time or in real time, for displaying monthly curves or daily peaks when PV systems are used. Display of EIEC category. Visualisation directly in the browser.

Open: integration of third-party devices such as gas, water or energy meters thanks to two pulse inputs. E-mail alerts if limits are exceeded by floating contact.

Practical: data and system configuration are saved on an integrated micro SD card. Measured values can be easily exported in CSV format for further processing in, for example, Microsoft Excel





HTG411H

Energy monitoring server

Operating voltage:	24 V
Current type:	DC
Power consumption:	7 VA
Operating temperature:	-25/70°C
Storage/transportation temperature:	-55/85°C
Max. relative humidity during storage:	95% / 55°C
No. of USB interfaces:	2
USB connection type:	USB 2.0 type A socket

Features and characteristics:

- 2 digital inputs (for pulse counter)

- 2 analogue inputs 4–20 mA- Connection for temperature sensor (PT100)
- 1 floating relay contact (warning contact)
- E-mail alert

- Analogue output 0–10 V

Designation	PLE	VPE	PrGr	Price	Order no.
Energy monitoring server + micro SD card	6	1	H41	€1,990.00/each	HTG411H

Accessories for energy monitoring server

Designation	VPE	PrGr	Price	Order no.
Voltage supply 24 V DC 1A	1	H50	€146.92/each	TGA200
Temperature sensor PT100 with holder	1	H41	€51.50/each	HTG445H
Industrial MicroSD card, 4 GB	1	H41	€156.90/each	HTG450H
USB to ethernet interface adapter	1	H41	€109.50/each	HTG457H
USB Wi-Fi dongle with extension	1	H41	€79.00/each	HTG460H
Modbus cable, 3 m, with RJ45 connector	1	H41	€68.70/each	HTG465H
Modbus cable, 25 m	1	H41	€100.66/each	HTG485H

Energy meter, calibrated, 3-phase, Modbus

Features and characteristics:

- Supply voltage: 230/400 V AC +/- 15%

- Frequency: 50/60 Hz +/- 2 Hz

- Overview of display: see the technical appendix to the catalogue
- Display of different measured values
- Accuracy class C of MID meter, as per EN50470-3
- Illuminated LCD display
- 7-character display 000000.0 kWh
- Wiring problems are displayed

Designation	PLE	VPE PrGr	Price	Order no.
Energy meter, 3ph,100 A, direct, Modbus, MID	7	1 H41	€561.00/each	EC367M
Energy meter, 3ph, converter, Modbus, MID	4	1 H41	€489.60/each	EC377M



Energy meter, 3-phase, Modbus

Features and characteristics:

- Supply voltage: 230/400 V AC +/- 15%

- Frequency: 50/60 Hz +/- 2 Hz

- Overview of display: see the technical appendix to the catalogue
- Display of different measured values

- Illuminated LCD display

- 7-character display 000000.0 kWh
- Wiring problems are displayed

Designation	PLE	VPE	PrGr	Price	Order no.
Energy meter, 3ph, 100 A direct, Modbus	7	1	H41	€479.40/each	EC366
Energy meter, 3ph, converter, Modbus	4	1	H41	€408.00/each	EC376

-	15000
_	

TGA200

EC367M



Multifunction measurement devices for top hat rail

Features and characteristics: - Multimeasurement of currents					
 Current voltages Current outputs Metering of active/reactive power Operating hours counter Harmonics up to 51st order Configurable inputs/outputs Accurracy: 0.2% for voltages + currents: 0.5% for 	or outputs				
Designation	PLE	VPE PrGr	Price	Order no.	SM101C
Multifunction measurement device, 3-phase,	4	1 H41	€617.90/each	SM101C	

Multifunction measurement device, 3-phase, 4 1 converter, RS485

Multifunction measurement device SM102E for door installation

Features and characteristics:

- Multimeasurement of currents
- Current voltage, frequencies, outputs
- Metering of active energy, reactive energy, operating hours
- Analysis of harmonics (51st order)
- Extendable measurements: events, communication, inputs/outputs

Designation	PLE	VPE	PrGr	Price	Order no.
Multifunction measurement device	5	1	H41	€383.20/each	SM102E
Module RS485 Jbus/Modbus for SM102E		1	H41	€175.90/each	SM210

Multifunction measurement device SM103E for door installation

Features and characteristics:

- Multimeasurement of currents - Current voltage, frequencies, outputs
- Metering of active energy, reactive energy, apparent energy, operating hours
- Analysis of harmonics (63rd order)
- Extendable measurements: load curve, events, communication, inputs/outputs

Designation	PLE	VPE	PrGr	Price	Order no.
Multifunction measurement device Komfort	5	1	H41	€603.90/each	SM103E
Module RS485 Jbus/Modbus for SM103E		1	H41	€198.40/each	SM211

Pulse input

Features and characteristics:

- 7 digital pulse inputs (logic or pulse)
- RS485 interface
- Backlit LCD display

Designation	PLE	VPE	PrGr	Price	Order no.
Pulse input, 7-way, Jbus/Modbus	4	1	H41	€816.50/each	EC700



SM103E



EC700



SM102E



SRA00505

Current converter for busbars

Features and characteristics:

- Large sec. terminal connections
 Protection against contact as per BGV A2
 Impact-proof plastic housing
 Class 1

Secondary current 5 ATop hat rail adapter SRZH01 can be used for the current converters in the BG113 assembly.

Designation	VPE	PrGr	Price	Order no.
Converter BG 213 50/5 1.5 VA class 1	1	H41	€36.10/each	SRA00505
Converter BG 113 60/5 1VA class 1	1	H41	€36.10/each	SRA00605
Converter BG 113 75/5 1.5 VA class 1	1	H41	€38.40/each	SRA00755
Converter BG 113 100/5 2.5VA class 1	1	H41	€36.10/each	SRA01005
Converter BG 113 125/5 2.5VA class 1	1	H41	€38.40/each	SRA01255
Converter BG 113 150/5 2.5VA class 1	1	H41	€36.10/each	SRA01505
Converter BG 113 200/5 2.5VA class 1	1	H41	€36.10/each	SRA02005
Converter BG 113 250/5 2.5VA class 1	1	H41	€36.10/each	SRA02505
Converter BG 115 60/5 1.5VA class 1	1	H41	€36.10/each	SRB00605
Converter BG 115 75/5 2.5VA class 1	1	H41	€36.10/each	SRB00755
Converter BG 413 300/5 5VA class 1	1	H41	€36.10/each	SRI03005
Converter BG 113 400/5 5VA class 1	1	H41	€36.10/each	SRC04005
Converter BG 413 400/5 5VA class 1	1	H41	€36.10/each	SRI04005
Converter BG 113 600/5 5VA class 1	1	H41	€36.10/each	SRC06005
Converter BG 413 600/5 5VA class 1	1	H41	€36.10/each	SRI06005
Converter BG 513 600/5 5VA class 1	3	H41	€36.10/each	SRJ06005
Converter BG 613 800/5 5VA class 1	1	H41	€39.50/each	SRD08005
Converter BG 613 1000/5 5VA class 1	1	H41	€44.00/each	SRD10005
Converter BG 613 1500/5 5VA class 1	1	H41	€47.30/each	SRD15005
Converter BG 417.1 1000/5 5VA class 1	1	H41	€47.30/each	SRE10005
Converter BG 814 1250/5 15VA class 1	1	H41	€56.40/each	SRE12505
Converter BG 814 1600/5 15VA class 1	1	H41	€59.80/each	SRE16005
Converter BG 814 2000/5 15VA class 1	1	H41	€65.50/each	SRE20005
Converter BG 1034 1250/5 15VA class 1	1	H41	€81.20/each	SRF12505
Converter BG 1034 1600/5 30VA class 1	1	H41	€84.70/each	SRF16005
Converter BG 1034 2000/5 30VA class 1	1	H41	€85.70/each	SRF20005
Converter BG 1034 2500/5 30VA class 1	1	H41	€95.90/each	SRF25005
Converter BG 1254 3000/5 15VA class 1	1	H41	€118.40/each	SRG30005
Converter BG 1254 4000/5 15VA class 1	1	H41	€131.90/each	SRG40005
Converter BG 1274 3000/5 15VA class 1	1	H41	€135.30/each	SRH30005
Converter BG 1274 4000/5 15VA class 1	1	H41	€141.00/each	SRH40005

Top hat rail adapter for current converter

Features and characteristics:

- Top hat rail adapter SRZH01 can be used for the current converters in the BG113 assembly.

Designation	VPE	PrGr	Price	Order no.
Top hat rail attachment of converter	1	H41	€6.90/each	SRZH01

SRZH01



Company name Street City, Postal code Country

Telephone hager.xx