Power Measurement

AD-LU 320 GVD

Description

The digital power measuring transducer AD-LU 320 GVD measures all quantities of the power-network (current, voltage, energy, harmonics, phase angle, active power, reactive power, apparent power) and converts these measuring values onto two freely scalable analogue outputs. The unit is therefore optimal suitable for integration in energy management systems. For measuring of high voltages or high currents, external transformers can be connected in series at any time. All measuring ranges and outputs can be freely parameterized. This can be carried out via the optional operating modul AD-VarioControl or via the programming software AD-Studio. The LEDs at the front signals the operating condition. The compact type of construction and the high performance ability with simultaneous low energy consumption allows usage in almost any application.

Application

Typical usage in plant, machines or energy management systems for balancing and determination of energy distribution.



Specific characteristics

- Measurement of a phase
- Measuring quantities: active power, reactive power, apparent power, currents and voltages, frequency, power factor, harmonics (active power), energy metering
- current and voltage output
- Counters for active power (consuption and infeed), reactive power (inductive and capacitive) and apparent power
- 23 mm narrow housing with detachable terminal clamp
- Operating module AD-VarioControl as an accessory

Business data

Order number

AD-LU 320 GVD

Accessory (optional)

Operating module	AD-VarioControl
USB programming adapter	AD-VarioPass
Configuration software	AD-Studio

Information

Downloads

Operation manual VarioControl	man-variocontrol-ad-en.pdf
Tender text	lu320gvd.zip
Safety instructions	ad-safety-instructions.pdf

Technical specifications

Input current

Measuring ranges	0 ... 1 A AC; 0 ... 5 A AC
Max. measurable harmonic	40

Input voltage

Measuring range	10 ... 253 V AC
Input resistance	> 1 MOhm

Output current

Output range	0/4 ... 20 mA
Max. load	400 Ohm
Resolution	11 Bit
Residual ripple	25 µAss

Output voltage

Output range	0/2 ... 10 V
Min. load	10 kOhm
Resolution	11 Bit
Residual ripple	20 mVss

Supply

Voltage range AC	50 ... 253 V AC, 50/60 Hz
Nominal voltage AC / DC	230 V AC / 24 V DC
Voltage range DC	20 ... 253 V DC
Power consumption AC / DC	3,4 VA / 1,8 W
Power consumption with operating module AC / DC	3,6 VA / 2,0 W

Transmission behaviour

Basic accuracy	< 0,5 % (class 0.5)
Temperature influence	80 ppm/K
Response time	< 0,5 s (0...90 %, 100...10 %)

Subject to technical changes and printing errors.

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Technical specifications

Housing

Dimensions (WxHxD)	23x110x134mm
With operating module (bxhxt)	23x110x138 mm
Type of protection	IP 20
Connection method	detachable terminal clamp
Terminals, wire cross section	2,5 mm² flex wire / 4 mm² one wire
Bolting torque terminals	0,5 Nm
Skinning length	6 mm
Weight	~ 150 g
Manner of fastening	35 mm DIN rail 35mm

Environmental conditions

Ambient temperature	-10 ... 50 °C
Storage and transport	-10 ... 70 °C (no condensation)

EMC

Product family standard	EN 61326-1 [1]
Emitted interference	EN 55011, CISPR11 Cl. B, Gr. 1

[1] During checking, slight signal deviations are possible.

Electrical safety requirements

Product family standard	EN 61010-1
Overvoltage category	II
Pollution degree	2
Safety measurement	EN 61010-2-030
Measurement category	CAT III

Galvanic isolation, test voltages

Input to analog outputs / power-supply	4 kV, 50 Hz (1 min.)
Power-supply to analog out	3 kV, 50 Hz (1 min.)

Protection circuits

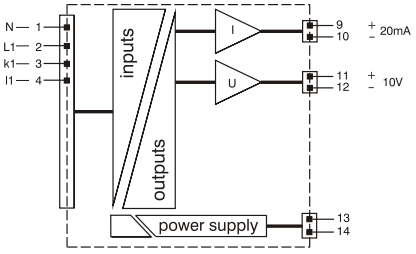
Input	electrical surge protection
Power supply	protection against over-temperature, over-voltage and over-current
Analog outputs	electrical surge protection

Display and operating elements

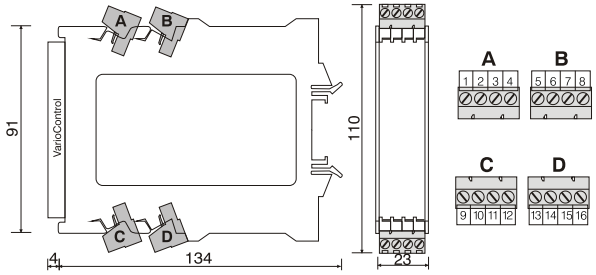


On: LED for operating display in green
on - normal operation
flashing - Signal failure, signal outside range limits

Block and wiring diagram



Dimensions



Circuit examples

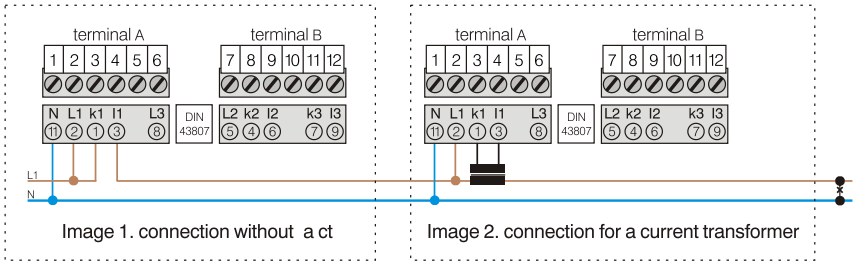


Image 1. connection without a ct

Image 2. connection for a current transformer

SALES & ADVICE

GRUBATEC MESS- UND REGELTECHNIK

MANUFACTURER

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Subject to technical changes and printing errors.

Modbus Communication

The optional AD-VarioConnect operating module has an RS-485 interface. The data is transferred via the Modbus RTU protocol, the AD-VarioConnect operating module represents a Modbus slave. Communication takes place according to the master-slave procedure and starts with a request from the master, e.g. from a PLC or a PC. Each bus participant must have a unique address. If a slave detects that its address has been addressed by the master, the slave always sends an answer. The slaves never communicate with each other. They are also not able to start a communication with the master.
The Modbus master can read out the individual registers of the AD-LU 320 GVD via the addresses.
The default standard data format is 19200,e,8,1 with slave address 1. These settings can be changed via the AD-VarioConnect operating module.

Start address	Number of registers	Name	Unit	Data type	read	write
Measured values:						
40202	1	digital output A		3	1	1
40203	1	digital output B		3	1	1
40204	1	digital output A LED		3	1	1
40205	1	digital output B LED		3	1	1
40501	2	active power total	kW	7	1	0
40503	2	active power total L1	kW	7	1	0
40509	2	total reactive power	kvar	7	1	0
40511	2	reactive power L1	kvar	7	1	0
40517	2	total apparent power	kVA	7	1	0
40519	2	apparent power L1	kVA	7	1	0
40525	2	total power factor		7	1	0
40527	2	power factor in L1		7	1	0
40533	2	total active fundamental power	kW	7	1	0
40535	2	active fundamental power L1	kW	7	1	0
40541	2	total active harmonic power	kW	7	1	0
40543	2	active harmonic power L1	kW	7	1	0
40549	2	voltage L1 / N	V	7	1	0
40555	2	current N line (calculated)	A	7	1	0
40557	2	current in L1	A	7	1	0
40563	2	voltage peak L1	V	7	1	0
40569	2	current peak L1	A	7	1	0
40575	2	frequency	Hz	7	1	0
40585	2	phase angle Psi L1	°	7	1	0
40801	2	output current	mA	7	1	0
40803	2	output voltage	V	7	1	0
Counter:						
44003	2	counter kWh - consuption	kWh	5	1	1
44005	2	counter kWh - infeed	kWh	5	1	1
44007	2	counter kVarh - inductiv	kVarh	5	1	1
44009	2	counter kVarh - capacitiv	kVarh	5	1	1
44011	2	counter kVAh - apparent energy	kVAh	5	1	1

Legend of the datatypes:

U08: 1	**S08:** 2	**U16:** 3	**S16:** 4	**U32:** 5	**S32:** 6	**float:** 7