



The e.wave series is designed for industrial and experimental measurement and test systems, especially for measurement of electrical, thermal and mechanical quantities in the field of component testing.

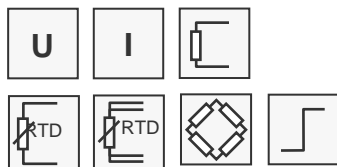
The compact stackable housing can contain up to 8 measuring channels. The wide variety of connection possibilities, as well as a precise and powerful signal conditioning characterises the e.wave series. All measuring channels are galvanically isolated.

With the PAC-versions comprehensive data memory are available, as well as mathematical calculations, Boolean connections, sequencing and control functions.

Standardized interfaces RS485 or Ethernet TCP/IP allow the configuration of networks with several devices.



Front and back view e.wave A1-8



### 8 general purpose analog input channels

Voltage, current, resistance, Pt100, Pt1000, bridges

### 1 digital input and 1 digital output per channel

Status, tare, memory reset, alarm, limit value

### High resolution

ADC and conditioning 19 bit, internal 24 bit

### Signal conditioning

Linearization, digital filtering, averaging, scaling, minimum/maximum store, arithmetic, alarm

### RS 485 fieldbus interface

Profibus-DP, Modbus-RTU, ASCII

#### Order information:

Product	Article No.
e.wave A1-8	614680
Accessories	
Configuration Software	
ICP 100	633214
Interface Converter	
RS232 / RS485	
ISK 200	229682
ISK 101	689326

#### Additional features

- Accuracy 0.01 %
- ADC resolution and calculation accuracy of 19 bit /1000 Hz
- Data rate over serial interface up to 50 measurements/s per channel
- Linearization, scaling and data formatting
- Data transmission up to 1,5 Mbps
- Several devices cascable
- PC-Software ICP 100 for easy configuration of the devices
- Galvanic isolation of I/O signals, power supply and communication interface
- Power supply 10...30 VDC
- Sensor connection over 15 pin D-Sub plug
- Electromagnetic Compatibility according to EN 61000-4 and EN 55011

# e.wave A1-8 Technical Data

## Analog Inputs

Number	8		
Accuracy	0.01 % typical 0.02 % in controlled environment <sup>1</sup> 0.05 % in industrial area <sup>2</sup>		
Repeatability	0.003 % typical (within 24 h)		
<b>Measurement</b>	<b>Range</b>	<b>Accuracy</b>	<b>Resolution</b>
Voltage	±10 V	±2 mV	40 µV
	±1 V	±0,2 mV	4 µV
	±100 mV	±20 µV	0.4 µV
	±10 mV	±10 µV	0.04 µV
	4-20 mA	±4 µA	80 nA
Current (internal Shunt 100 Ω)	±20 mA	±4 µA	80 nA
Resistance (2-, 3- und 4-wire)	4 kΩ	±1 Ω	0.05 Ω
Bridge (Supply 5 VDC/120Ω)	±1000 mV/V	±1 mV/V	50 µV/V
	±200 mV/V	±200 µV/V	10 µV/V
	±20 mV/V	±20 µV/V	1 µV/V
	±8 mV/V	±8 µV/V	0.4 µV/V
	±2 mV/V	±2 µV/V	0.1 µV/V
RTD (2-, 3- and 4-wire)	Pt100 (-200 to +850 °C)	±0.5 °C	0.1 °C
	Pt100 (-200 to +250 °C)	±0.2 °C	0.01 °C
	Pt1000 (-200 to +850 °C)	±1 °C	0.1 °C
	Pt1000 (-200 to +140 °C)	±0.3 °C	0.01 °C
	Input resistance	> 10 MΩ	
Common mode voltage	500 V permanent		
Linearity deviation	0.01 % of the final value		
Signal to noise ratio	voltage measurement		
	1 kHz	90 dB	
	1 Hz	120 dB	
Temperature influence	on zero		
	on sensitivity		
	1 µV / 10 K	0.02 % / 10 K	
Long-time drift	1 µV / 24 h; 0.1 µA / 24 h		

## Analog/Digital Conversion

Resolution	19 bit
Sample rate	1000 samples/sec for voltage, current potentiometer, bridge 10 samples/sec for resistance, RTD, Sigma-Delta
Conversion method	Anti-aliasing Bessel filter 4 <sup>th</sup> ord. 200 Hz variable digital low pass filter 1 <sup>st</sup> order averaging, sliding averaging
Filter	

## Digital In-/Output

Input	Status, tare, reset
Input voltage	max. 30 VDC
Input current	max. 1.5 mA
Upper switching threshold	> 10 V (high)
Lower switching threshold	< 2.0 V (low)
Output	Relay output
Contact	Opto – MOSFET
Nominal load	60 VDC / 100 mA (ohmic load)
Galvanic isolation	500 V

<sup>1</sup> according to EN 61326: 1997, appendix B

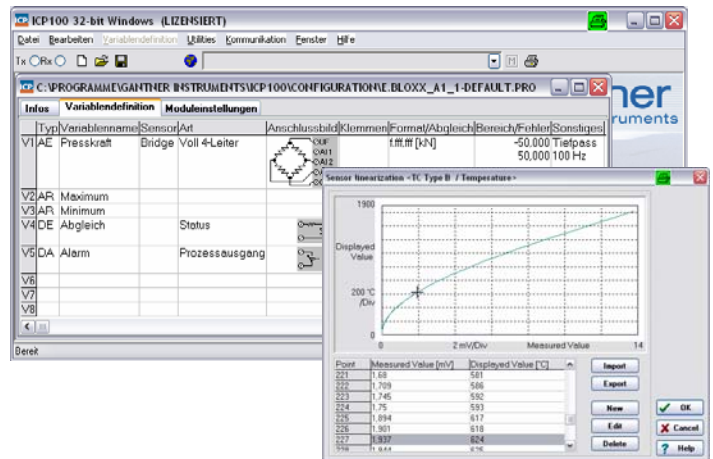
<sup>2</sup> according to EN 61326: 1997, appendix A

## Communication Interface

Standard	RS 485, 2-wire
Data format	8E1
Protocols	ASCII, Modbus-RTU, Profibus-DP Local-Bus
Baud rate	19.2; 38.4; 57.6; 93.75; 115.2 kBaud
ASCII and ModBus-RTU	19.2; 93.75; 187.5; 500; 1500 kBaud
Profibus-DP	19.2; 38.4; 57.6; 93.75; 115.2; 187.5; 500; 1500 kBaud
Local-Bus	50 values/s per channel
Data rate	500 V
Galvanic isolation	

## Configuration

Configuration Software	ICP 100
	all channels are individual configurable
	Individual sensor data base



## Power Supply

Power Supply	10 to 30 VDC
	Overvoltage and overload protection
Power consumption	approx. 12 W
Influence of the voltage	0.001 %/V

## Mechanical

Case	Aluminium
Dimensions (B x H x T)	(330 x 142 x 270) mm
Protective system	IP20

## Environmental

Operating temperature	-20 °C to +40 °C
Storage temperature	-30 °C to +60 °C
Relative humidity	0 % to 95 % at 40 °C non condensing

## Warm Up Time

All declarations are valid after a warm up time of 45 minutes.

Valid from October 2007. Specification subject to change without notice.

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