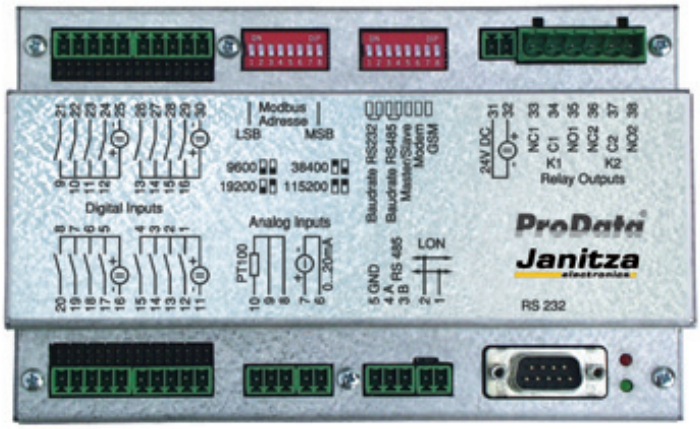


ProData® data logger

Data collection and recording

ProData® data loggers are used for the collection of any physical measurement data (temperature, pressure, operating period...) or any consumption values (electricity, water, gas, coolant...). ProData® data loggers consist of a programmable microprocessor, storage media, several interfaces and 16 channels for connecting sensors or pulse generators. External sensors are used to collect the measurement data and convert it with analogue-digital converters into “memory-safe” data in order to be able to be stored by the ProData® storage media. The collected data is read out through an interface and is analysed with suitable software. The ProData® can also be configured for the application through one of these interfaces (e.g. start and stop time for measurement, measurement intervals etc). Data loggers are indispensable for energy management systems e.g. for cost centre management. ProData® data loggers are also indispensable in the field of status monitoring e.g. number of switching cycles of circuit breakers or operating times for equipment which requires intensive maintenance.

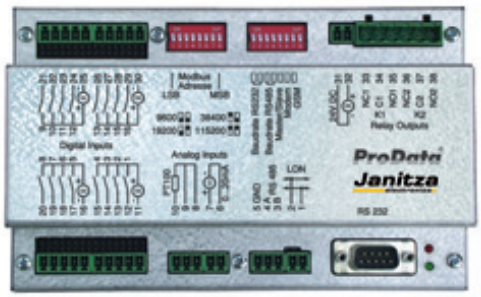
Areas of application

- Data collection and recording of meter values and operational conditions
- Electricity cost data collection and cost centre management
- Analysis of process data
- Remote monitoring
- Condition monitoring
- Alarm signal when a meter reading or condition is reached

Data collection instrument

ProData® data logger

The ProData® data logger is suitable for collecting data and recording meter values, operating conditions and process data. The data can be used for analysing energy consumption, operating hours or for monitoring switch conditions and faults in buildings and companies etc. The alarm for faults or limit value violations takes place through the relay outputs, the analogue modem or field bus.



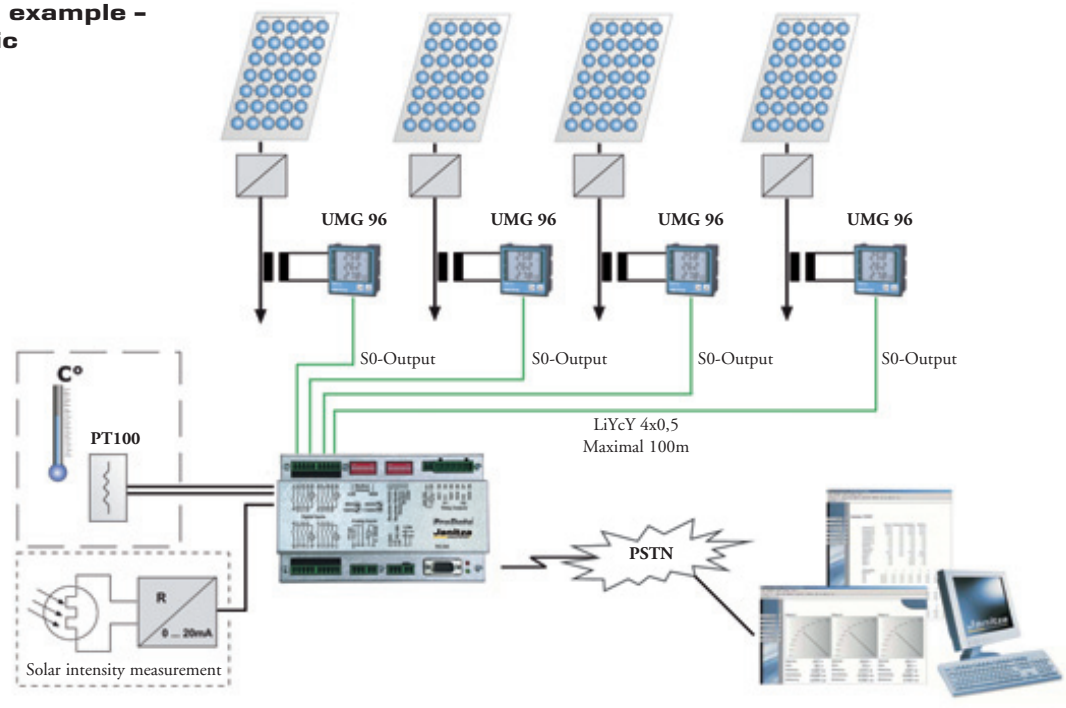
Main features

- The collection and recording of meter values, operating conditions and process data
- 16 digital inputs
- 64 bit counter
- 128 programmable comparators
- RS232, RS485, modem, LON, Modbus or Modbus-master
- 1 analogue input
- 1 temperature input
- 2 relay outputs
- Including PSW basic software

Data recording

The analogue measurement values can be recorded in set time intervals (1 sec ...12h) as minimum, average and maximum values. In the set time intervals (1 sec ...12h), the difference between the overall meter readings and the meter reading at the last recording time is shown. Condition changes to the inputs can be provided with a time stamp (1 sec resolution) and collected. Various internal events (e.g. failure and return of the electricity supply) are registered. Condition changes to the programmable limit values/alarm triggers can be recorded as an event with a time stamp. All recorded values and events are recorded in a ring buffer. This consists of 430KB and is sufficient for 3 months if the digital counters are recorded every 15 minutes.

Application example – photovoltaic



Analogue inputs

- 1 analogue input 0 (4) – 20mA, -20/20mA programmable
- 1 input for temperature sensor: PT100, PT200, PT500, PT1000, NTC10k or KTY83

The measurement values can be read through Modbus. The temperature measurement value and the scaled 20mA measurement values are available through LON.

Relay outputs

- 2 internal relay outputs (change over contact)
- 31 decentralised relay outputs (optional)

The relay outputs can be used as: Threshold monitoring, alarm contact and annual time switch. The ProData® can handle in Modbus-master operation up to 31 de-centralized outputs.

Digital inputs

16 digital inputs can be used as:

- An overall pulse counter at each input – maximum frequency 50Hz, 64 bit counter
- Pulse meter with automatic resetting in set time intervals between 1 sec and 12 hours or external synchronisation with automatically saved meter reading at the last reset
- Collection of all switch-on and shutdown times for each input e.g. operating hour meter/service intervals. Resolution: 1 sec, maximum time >100 years
- Monitoring function for switch-on and shutdown times
- Frequency measurement on each input for monitoring flow quantities, power etc.

The stated measurement values can be read through the Modbus. The overall meter readings are available as 32 bit values through LON. The digital inputs (4x4) can be set as pulse (S0 interface) or as signal inputs using jumpers.

Threshold comparator

The **ProData®** has 128 programmable comparators. These compare the input value with the upper and lower thresholds (with hysteresis) and check whether the value is within or beyond of the two threshold levels. The result can be linked to another comparator result using a logical link (AND, OR, NOT). Various actions can be taken depending upon the result. Switch-on and shutdown delays can be programmed separately.

Every internal available measurement value or register contents can be used as an input value for a comparator. In the Modbus-master operation, a measurement value or register of a slave unit can be read and used as an input value.

The following actions are possible:

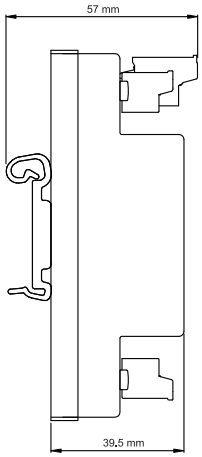
- Switch on or switch off relay output or LED
- Set internal status marker
- Record event in the ring buffer
- Switch on relay output or LED for a programmable time
- Write the comparator result in a register of a Modbus slave
- Alarm through an analogue modem, text message through a GSM modem

The internal status flags (4 pcs) can be read out through LON. The relays and LEDs can be switched through LON as well.

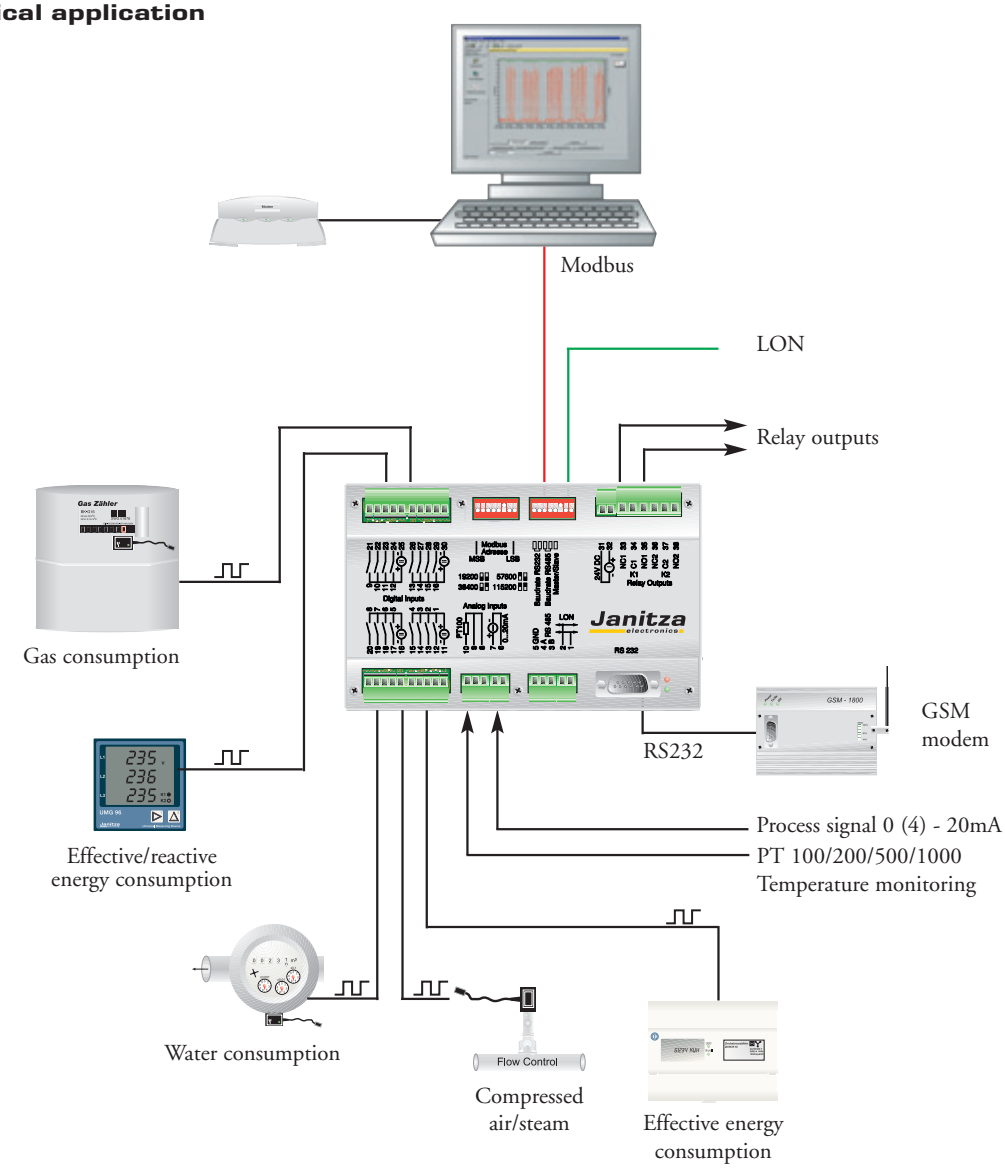
Modbus-master

The RS485 interface can be switched in the master mode. In this mode, the ProData® registers from other Modbus units can be read (e.g. additional ProData® or UMG 503). The ProData® can also write the results of the programmable comparators in the registers of other units.
For example, this means that the number of relay outputs can be increased by connecting a corresponding module to the Modbus as a slave. In the Modbus-master mode, Modbus telegrams which enter the RS232 interface and are not intended for the ProData® are transferred to the connected slaves on the RS485 bus.

Dimensional drawing



Typical application



Overview of product variants		
Description	**Type**	**Item number**
Data logger	**ProData®**	52.11.001
External power supply	24VDC	16.05.002

General technical data		
Supply voltage	External power supply is necessary	24VDC (+15/-35%)
Overvoltage category		CAT II
Weight		660g
Dimensions		W=174mm x H=110mm x D=57mm
Mounting		DIN rail
Working temperature		-10…55 °C
Storage temperature		-20…60°C
Protection class	According EN60529	IP 20

Measurement range		
Effective energy (kWh) purchase/supply	Through the pulse input	Yes
Reactive energy (Karh), inductive/capacitive	Through the pulse input	Yes
Apparent energy	Through the pulse input	Yes
Temperature measurement input	-150…400°C	Accuracy: ± 1°C
Analogue input	-20…20mA	Accuracy: ± 0.3mA

Features		
Consumption data collection		
Memory size		430kB
Clock		± 1 minute per month
Integrated logic	128 programmable comparators	Yes
Event recording		Yes

Periphery		
Digital inputs	As status or pulse input	16 (max. 50Hz, 64 bit counter)
Relay outputs	As switch output, change over	2 (2A, 250VAC)
Temperature measurement input	Pt100, Pt200, Pt500, Pt1000, NTC10k, KTY83	1
Analogue input	-20…20mA, scaleable	1
Software PSW basic/professional		**Yes**

Communication		
Interfaces		
RS 232	9.6, 19.2, 38.4, 115.2 kbps	Yes
RS 485	9.6, 19.2, 38.4, 115.2 kbps	Yes
LON	FTT-10A	Yes
Protocols		
Modbus RTU		Yes
LonTalk		Yes