

The e.rack series is designed for industrial and experimental test systems requiring precise high speed measurement of electrical, thermal, and mechanical quantities in engine and component test beds.

The e.rack series is a modular rack mount design, and easily connects to the wide variety of field devices used in today's test beds. Sample rates up to 1000 Hz and resolutions up to 19 bit are possible depending on the plug-in and signal type used. Standardized communication protocols (Profibus-DP and Modbus-RTU) allow the e.rack family to work with a wide variety of application hardware and software (including e.bloxx).

An optional Touch Screen Display, e.gate R, and e.pac R provides the full power and flexibility of the e.series in a rack mounted package.

Plug-in modules for all common measurement and I/O signals

It is possible to plug 10 modules into the 19" rack or into the desktop version of 3 rack units. A mixture of all modules types is possible, but when a touch screen is built in the ONLY 5 plug-in slots are available.



Inputs and outputs of the plug-in modules

(The number of available analog and digital Inputs and Outputs are listed - e.g. 2 voltages or 2 current inputs)



e.rack A1	2	2	2	2	-	2	-	-	-	-	-	2	2	-	-	-
e.rack A3	8	8	-	-	-	-	-	-	-	-	-	2	2	-	-	-
e.rack A4	8	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-
e.rack A5	-	-	8	4/6	-	-	-	-	-	-	-	2	2	-	-	-
e.rack A6	-	-	-	-	-	2	2	2	2	2	2	2	2	-	-	-
e.rack A9	-	-	-	-	-	-	-	-	-	-	8	2	2	-	-	-
e.rack D1	-	-	-	-	-	-	-	-	-	-	-	16	16	8	8	8

Features

Precise and reliable

U, I, R, TC: 0.01 %; Pt 100: 0.05 °C; Bridges 0.05 %

High resolution and calculation accuracy

19 bit at up to 1000 samples/sec

Signal conditioning

Linearization, digital filter, averaging, scaling, min/max-storage, arithmetic and alarm each channel

RS 485 field bus interface 1,5 MBaud

Profibus-DP, Modbus-RTU, ASCII

AC or DC supply

selectable 10 to 30 VDC or 115/230 VAC

Optional

Profibus DP (12 MBaud)

Ethernet FTP, TCP/IP, UDP (10/100 MBaud)

Data Concentrator (e.gate R)

Optimization at high number of channels and high data rate, 16 MByte data memory

Programmable Automation Controller (e.pac R)

Complex functionality such as PID controller, state machine, arithmetic, numeric and logical operations, 16 MByte data memory

Touch Screen Display

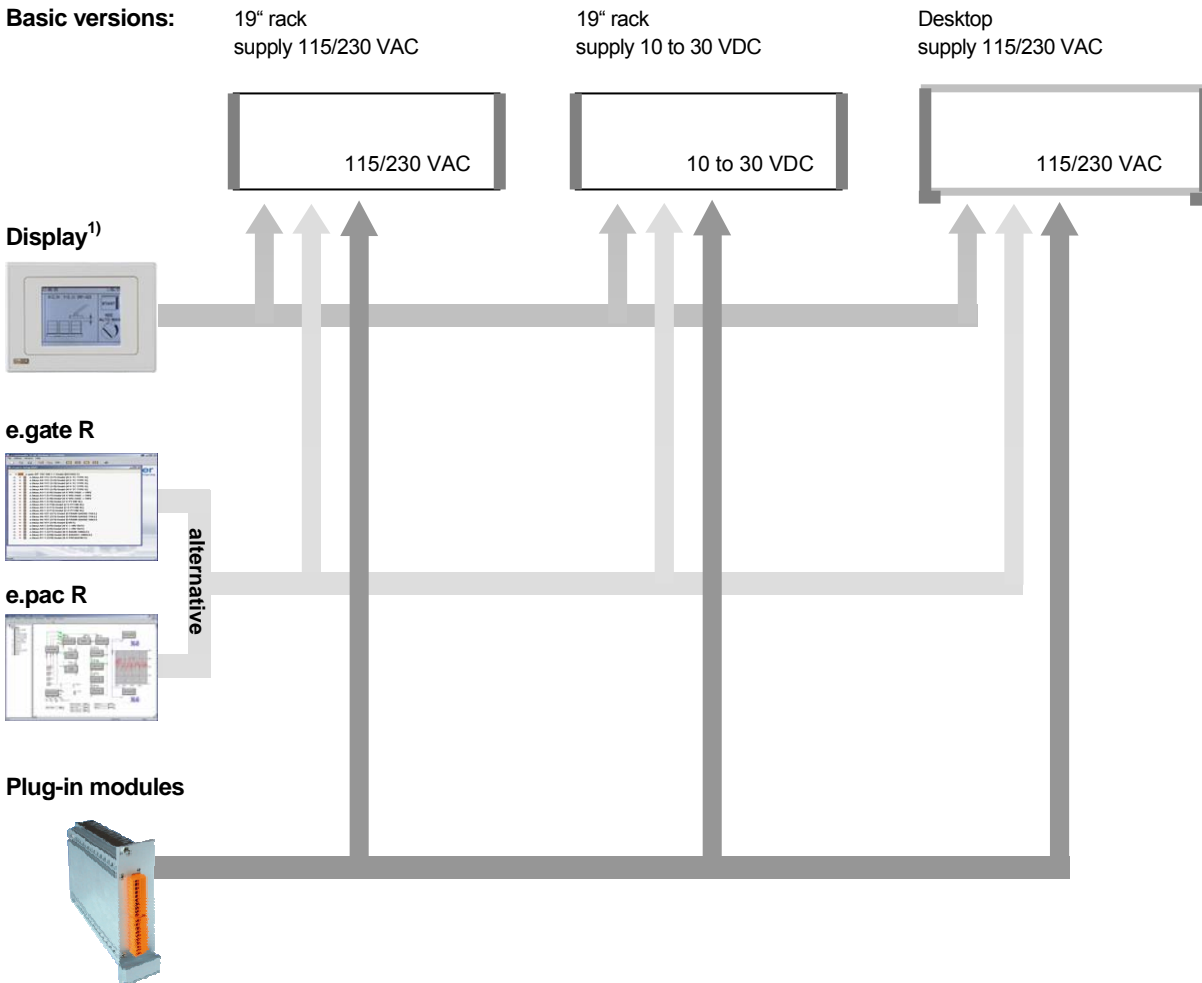
Monochrome 3.8", ¼ VGA (320 x 240), LED illuminated

Sensor and I/O connectors front or rear panel

e.rack System Setup and Technical Data

System setup

The e.rack system is a 19" rack based modular system. It consists basically of 3 different housings, which can be configured according the applications requirements with different measurement and I/O plug-in modules, display, and controller. Other housing types on request.



Housing without options
max. 10 plug-in modules

Housing without Display, with e.gate R or e.pac R
max. 10 plug-in modules

Housing with display ¹⁾
max. 5 plug-in modules



¹⁾ When a display is selected an e.gate R or an e.pac R MUST be selected as well.

Possible Versions

version	plug-in modules	e.g. TC / DIO ²⁾	Display	e.gate R	e.pac R	Interfaces
A	max. 12	80 / 160				Profibus-DP, Modbus-RTU
B	max. 10	80 / 160		■		Profibus-DP, Ethernet TCP/IP
C	max. 10	80 / 160			■	Profibus-DP, Ethernet TCP/IP
D	max. 7	40 / 80	■	■		Profibus-DP, Ethernet TCP/IP
E	max. 7	40 / 80	■		■	Profibus-DP, Ethernet TCP/IP

²⁾ TC = galvanically isolated thermocouple inputs; DIO = digital in/outputs

e.rack System Setup and Technical Data

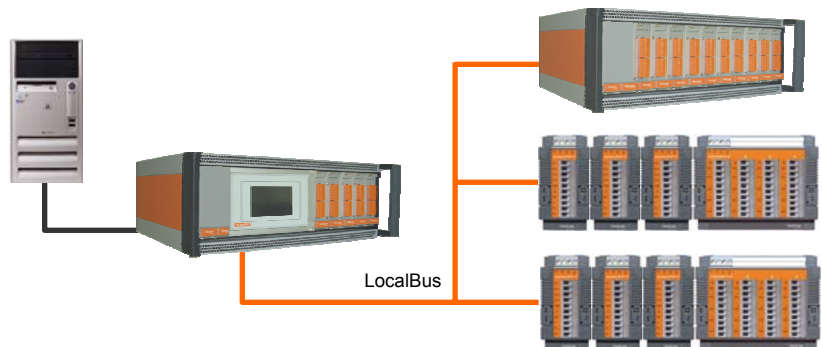
Network structure

It is possible to easily build up a extensive testing network with the e.rack series, and this network can be made up of e.rack and e.bloxx family products.

The following examples are possible:

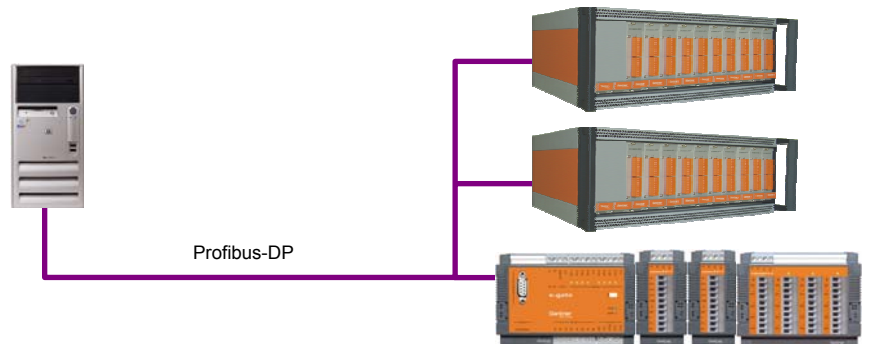
An e.rack with Display and e.gate/e.pac, further e.rack systems and/or e.bloxx modules are connected via the serial LocalBus of the RS485 interface to e.rack. An external e.pac or an e.gate is not required.

This configuration is fine for a typical application.



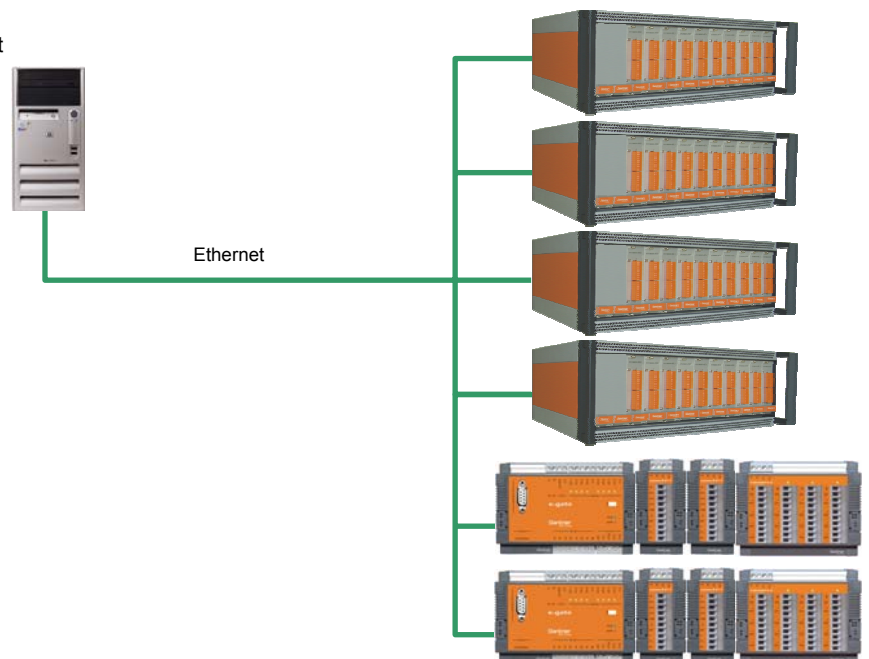
An e.rack systems and e.bloxx groups are linked via profibus-DP. Each line contains an e.gate/e.pac.

This configuration is good for maximum data throughput.



Similar to above, the e.rack systems and e.bloxx groups are connected by an Ethernet network. Each line contains an e.gate/e.pac.

This configuration is good for high throughput and maximum number of channels.



Communication Interface without e.gate R or e.pac R

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

Host Interface Profibus-DP

Standard	RS 485
Data format	8E1
Baud rate	9.6 kbps up to 12 Mbps
Connectable devices	max. 32 without repeater, max. 127 with repeater
Isolation voltage	500 V

Host Interface Ethernet

Protocols	TCP/IP, UDP, PING, ASCII, Modbus TCP/IP
Services	DHCP, FTP-Server
Baud rate	10/100Mbps
Number of simult. clients	max. 10
Isolation voltage	500 V

Operating System Independent

Standardized interface	Ethernet (FTP/Berkeley-Socket)
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Display

Type	UniOP eTOP03
Display	Monochrome
Resolution	320 x 240
Rows/column	16 x 40
Illumination	LED white
Active display area	77 x 58 mm (3.8" diagonal)

Power Supply DC

Power supply	10 to 30 VDC overvoltage and overload protection
Power consumption	approx. 4 W each plug-in module
Influence of the voltage	0.001 %/V

Power Supply AC

Power supply	85 to 264 VAC
Nominal input current	max. 1.1 A at 230 VAC Max. 2 A at 115 VAC
Start delay	typical 0.1 s
Setup time	approx. 5-30 ms, depends on load
fuse	internal thermal fuse smelting fuse 10 A inert

Environmental

Operating temperature	-20 °C to +60 °C
Display	0 °C to +50 °C
Storage temperature	-30 °C to +60 °C
Relative humidity	5 % to 95 % at 50 °C non condensing