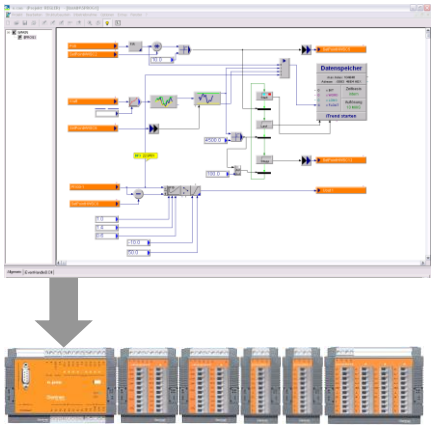
# e.pac IP / DP / EC / CO / DL

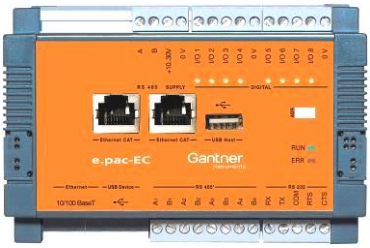
Programmable Automation Controller (PAC)



*The time synchronized acquisition of measurement data is only part of the needs of today's demanding testing applications. Supervisory Control Functions, Signal Analysis, and more are needed to make a reliable and cost effective system. When an e.series Programmable Automation Controller (PAC) is added to an e.bloxx system all of these capabilities and more can easily be achieved without a permanent Personal Computer involved.*

*With e.con, the needed PAC control algorithms and functionality can be defined graphically in an intuitive and visually appealing way. The e.con programming environment comes with a large library of predefined algorithms, functions, and User Interface widgets to make any application development fast and easy.*


*e.pac IP / DP*




*e.pac EC*

## Extensive function block library

Sequences, data archive, PID-controller and further transfer functions, mathematic, numeric, Boolean combinations, function generator

## Data memory 16 Mbytes (DL-version 128 Mbytes Flash)

Configurable memory for measurements, I/Os and conditioned variables

## Synchronizing

Synchronized data acquisition and PAC functionality up to 1 kHz

## Open file structure

Total integration in OEM automation systems, access to all configuration parameters and variables via text files and FTP

## Different interfaces

Ethernet TCP/IP (all versions),
Profibus-DP (DP-version), EtherCAT (EC-version),
CANopen (CO version), USB Host (DL-version)

### Order Information:

| Product | Article No. |
|---|---|
| e.pac IP | 439988 |
| e.pac DP | 439786 |
| e.pac EC | 637685 |
| e.pac CO | 722074 |
| e.pac DL | 152677 |
| | |
| Accessories | |
| USB Memory 1 GByte | 636886 |
| Graphic Programming system | |
| e.con - Advanced | 304373 |
| e.con - Lite | 438987 |
| | |
| Configuration software | |
| e.commander | 234476 |
| | |
| Patch cable Ethernet cross | 496524 |

### Additional Features

- Profibus-DP with up to 12 Mbps
- EtherCAT according specification ETG
- CANopen according ISO 11898
- Ethernet with 10/100 Mbps, FTP, TCP/IP, UDP
- 4 x RS 485 slave interface for connection of e.bloxx modules
- RS 232 and RS 485 host interface

- Divisible measurement storage (8 x 2 MByte)
- 128 MByte non-volatile flash memory, extendable by USB
- Time stamp for all measurement values
- Synchronized measurement (maximal 20 µs Jitter)
- Synchronization between data acquisition and PAC function

- Galvanic isolation of I/O-signals, power supply, and communication interface
- Power supply 10 to 30 VDC
- DIN rail mounting (DIN EN 50022 rail)
- Electromagnetic compatibility according to EN 61000-4 and EN 55011

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# e.pac IP / DP / EC / CO / DL Technical Data

## Host-Interface RS 232

| | |
|---|---|
| Data format | 8E1, 8O1, 8N1 |
| Protocols | ASCII, Modbus RTU (parts) |
| Baud rate | 9.6 kbps up to 115.2 kbps |
| Connection | RX, TX, COM, RTS, CTS |

## Host-Interface RS 485

| | |
|---|---|
| Data format | 8E1, 8O1, 8N1 |
| Protocols | ASCII, Modbus RTU (pieces) |
| Baud rate | 9.6 kbps up to 115.2 kbps |
| Connectable devices | max. 32 at one line |

## Host-Interface Ethernet

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

## Host-Interface EtherCAT (e.gate EC only)

| | |
|---|---|
| Standard | Ethernet |
| Number of channels | max. 256 Byte data |
| Baud rate | 100 Mbps |
| Cycle time | >= 100µs |
| Isolation voltage | 500 V |

## Host-Interface Profibus-DP (e.pac DP only)

| | |
|---|---|
| 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 CANopen (e.gate CO only)

| | |
|---|---|
| Standard | CAN 2.0B, CANopen acc. ISO11898<br>1 SDO Client, 2 SDO Server |
| DS404 basic frame | number PDOs by DS404 |
| Baud rates | 20 kbps to 1 Mbps |
| Isolation voltage | 500 V |

## Host-Interface USB (e.pac DL only)

| | |
|---|---|
| Version | USB 2.0 |
| Data rate | typ. 100 kByte/s |

## Slave-Interface RS 485 (4 per e.pac)

| | |
|---|---|
| Standard | RS 485, 2-wire |
| Data format | 8E1 |
| Protocols | Gantner Local-Bus |
| Baud rate | 9.6 kbps up to 6 Mbps |
| Connectable devices | max. 32 at one line |
| Isolation Voltage | 500 V |

## Data memory

| | |
|---|---|
| RAM | 16 MByte, 8 Data archives each 2 MByte |
| Flash (e.pac DL only) | 128 MByte |

## Digital In/Output

Inputs

| | |
|---|---|
| Function | fixed definition<br>synchronization |
| Input voltage | max. 30 VDC |
| Input current | max. 1.5 mA |
| Upper switching threshold | >3.5 V (high) |
| Lower switching threshold | <1.0 V (low) |

Outputs

| | |
|---|---|
| Function | fixed definition<br>synchronization, monitoring |
| Type of output | Open-Collector |
| Output voltage | max. 30 VDC |
| Output current | max. 100 mA |

## Power Supply

| | |
|---|---|
| Power supply | 10 to 30 VDC<br>over voltage and overload protection |
| Power consumption | approx. 5 W |

## Mechanical

| | |
|---|---|
| Case | Aluminium and ABS |
| Dimensions (W x H x D) and weight | 129 x 90 x 83 mm (5.08 x 3.54 x 3.27 in), 500 g (1.10 lb) |
| Protection system | IP20 |
| Mounting | DIN EN rail |

## Connection

| | |
|---|---|
| Plug-in screw terminals | wire cross-section up to max. 1.5 $mm^2$ |
| Profibus-DP | Sub-D9 plug |
| Ethernet | RJ 45 plug |

## Environmental

| | |
|---|---|
| Operating temperature | -20 °C to +60 °C |
| Storage temperature | -40 °C to +85 °C |
| Relative humidity | 5 % to 95 % at 50 °C<br>non condensing |

## Operating system independent

| | |
|---|---|
| Standardized Interface | Ethernet (FTP/Berkeley-Socket) |

## Performance Examples (no. of channels at data rate)

In each case: Read variables - run function - write variables

| Function | Rate 1000/s | Rate 500/s |
|---|---|---|
| Controller type PID | 20 | 44 |
| FIR Filter, 100 coefficients | 4 | 20 |
| Alarm and limit control | 30 | 60 |
| Linearization, 16 pole interpolation | 20 | 40 |
| Arithmetic | 90 | 180 |

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