

# PAC-141X

- Max. 72 analogue / binary inputs
- Max. 36 TC- /18 RTD-inputs
- Max. 15 universal inputs (U, I, TC, RTD)
- Max. 12 counter (pulse, analogue)
- Max. 72 relay / 24 analogue outputs
- Graphic TFT 5,7", touchscreen
- Datalogging capabilities for max. 90 channels
- Interface RS-485/RS-232(Modbus RTU), Ethernet(Modbus TCP,Webserver, Java Applets)



## Properties

The PAC-141X is a powerful and versatile compact-multichannel-controller with a capability to record data, if the recording function is requested and activated. Thanks to that it is one of the first industrial devices which integrates advanced control functions (PID, ON/OFF, time & profiles etc.) and logging of setpoints, excitations and current state of controlled objects. Based on Linux firmware, is stable and the touch screen makes configuration easy and comfortable and data presentation also readable and attractive. Although the PAC-141X is build in a quite small housing, it can integrate up to 72 inputs, and its construction allows user almost free configuration by choosing up to 3 from 34 available input/output modules. The device can simultaneously record all build-in logical channels (90), and is capable to record data with maximum speed 10Hz (ten samples per second, 200 samples/second max.). 1.5 GB of internal data memory is enough for continuous recording of all channels with a speed of 1 sample per second (each channel) for over 35 days (250 000 000 samples in total!).

An operator can download stored data using a USB flash disk or via Ethernet.

## Technical data

**Power supply voltage:** 19...50V DC; 16...35V AC, or 85...260V AC/DC

**Power consumption:** 15 VA typical 20 VA max.

**Display:** 5.7" graphic TFT, 16-bit colour, 320 x 240 pixels, touchscreen

**Measuring inputs (max.):** 72x analogue, 72x binary, 36x thermocouple, 18x analogue (isolated), 18x RTD, 12x counter, 12x pulse (ratemeter, tachometer), 12x flowmeter, 15x universal

**Digital input:** 1x 24V DC

**Sensor supply:** 24 V DC  $\pm$  5%, 200 mA (not available with power supply voltage 19...50V DC; 16...35V AC in connection with UN3, UN5)

**Outputs (max.):** 24x analogue, 36x relay, 72x SSR

**Communication interface (max.):**

2 x RS-485 (Modbus RTU), 1 x RS-485/232, USB Host (front/rear), USB Device (service), 1 x Ethernet 10 Mbit/s (Modbus TPC, Java applets)

**Protection:**

standard: IP 65 (front foil); IP 20 (housing and connectors)

option 01: IP 65- with additional frame

option 0B: IP 40; IP 54 (with additional front door)

**Data memory:** internal 1,5 GB (max. 200mio samples)

**Working temperature:** 0...60°C

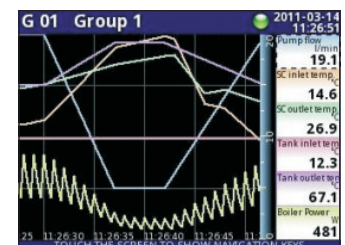
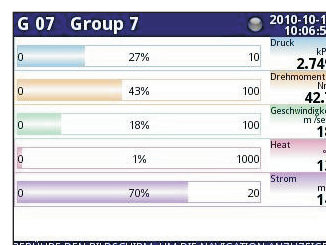
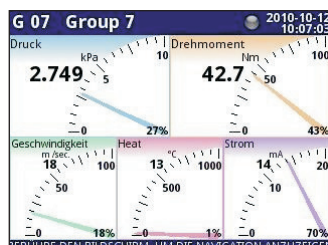
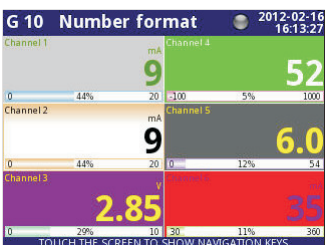
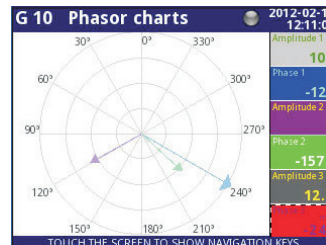
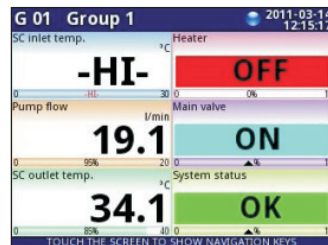
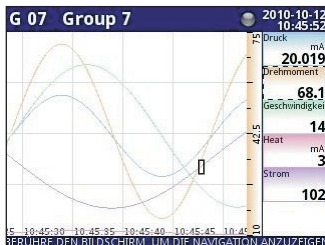
**Storage temperature:** -10...70°C

**Case style:** panel mounting

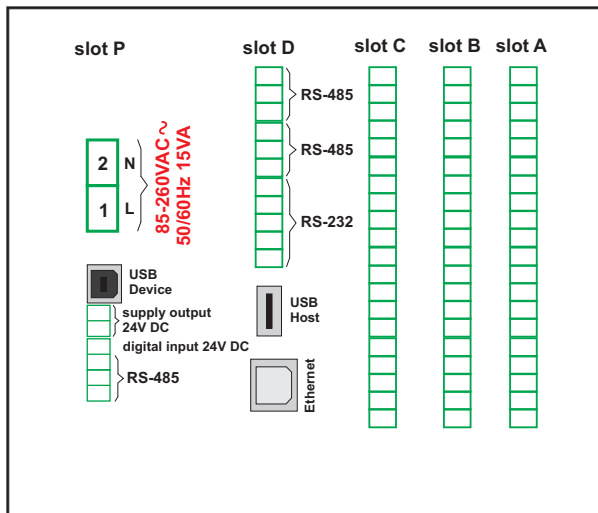
**Case material:** NORYL - GFN2S E1

**Case dimensions:** 96 x 96 x 100 mm

**Panel cut-out dimensions:** 90.5 x 90.5 mm (panel thickness: 5mm max.)



## Exemplary pin assignment



## Optional accessories


 converter USB/RS-485  
 or RS-232/RS-485


Mini USB Stick 2GB



lockable door



DIN rail holder

## Ordering

## PAC-141X-P/D/C/B/A-XX5-N1

**Slot P:**  
 PS3: 19...50V DC,  
 16...35V AC  
 PS4: 85...260V AC/DC

**Slot D:**  
 E (only for option 0B)  
 USB  
 ETU  
 ACM

**Options:**

00 : no options  
 01 : IP 65 - additional  
 frame  
 0B : front USB host

**Slot C:**

E  
 UN3  
 UN5  
 UI4  
 UI8  
 UI12  
 U16  
 U24  
 I16  
 I24  
 IS6  
 RT4  
 RT6  
 TC4  
 TC8  
 TC12  
 D8  
 D16  
 D24  
 CP4  
 FI2  
 FI4  
 FT2  
 FT4  
 R81  
 R121  
 R45  
 R65  
 S8  
 S16  
 S24  
 IO2  
 IO4  
 IO6  
 IO8

**Slot B:**

E  
 UN3  
 UN5  
 UI4  
 UI8  
 UI12  
 U16  
 U24  
 I16  
 I24  
 IS6  
 RT4  
 RT6  
 TC4  
 TC8  
 TC12  
 D8  
 D16  
 D24  
 CP4  
 FI2  
 FI4  
 FT2  
 FT4  
 R81  
 R121  
 R45  
 R65  
 S8  
 S16  
 S24  
 IO2  
 IO4  
 IO6  
 IO8

**Slot A:**

E  
 UN3  
 UN5  
 UI4  
 UI8  
 UI12  
 U16  
 U24  
 I16  
 I24  
 IS6  
 RT4  
 RT6  
 TC4  
 TC8  
 TC12  
 D8  
 D16  
 D24  
 CP4  
 FI2  
 FI4  
 FT2  
 FT4  
 R81  
 R121  
 R45  
 R65  
 S8  
 S16  
 S24  
 IO2  
 IO4  
 IO6  
 IO8

E : empty

UN3 : 3x universal inputs

UN5 : 5x universal inputs

UI4\* : 4x voltage inputs + 4x current inputs

UI8\* : 8x voltage inputs + 8x current inputs

UI12 : 12 voltage inputs + 12x current inputs

U16\* : 16x voltage inputs

U24\* : 24x voltage inputs

I16\* : 16x current inputs

I24\* : 24x current inputs

IS6 : 6x current inputs (isolated)

RT4 : 4x RTD inputs

RT6 : 6x RTD inputs

TC4 : 4x TC inputs

TC8 : 8x TC inputs

TC12 : 12x TC inputs

D8\* : 8x binary inputs

D16\* : 16x binary inputs

D24\* : 24x binary inputs

CP4 : 4x pulse inputs (universal counters)

FI2\* : 2x current inputs (flowmeter)+2x current inputs

FI4\* : 4x current inputs (flowmeter)+4x current inputs

FT2\* : 2x pulse inputs (flowmeter/ratemeter)+  
2x current inputsFT4\* : 4x pulse inputs (flowmeter/ratemeter)+  
4x current inputs

R81 : 8x SPST relay 1A

R121 : 12x SPST relay 1A

R45 : 4x SPDT relay 5A

R65 : 6x SPDT relay 5A

S8 : 8x SSR relay

S16 : 16x SSR relay

S24 : 24x SSR relay

IO2 : 2x 4...20mA outputs

IO4 : 4x 4...20mA outputs

IO6 : 6x 4...20mA outputs

IO8 : 8x 4...20mA outputs

USB : USB Host (rear)

ETU : USB Host (rear), Ethernet

ACM : USB Host (rear), Ethernet, RS-485, RS-485/232

\*input module with common ground

V.09/2012



|                                                     |                                                                                                                                                                                                              |                                  |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| UI4, UI8, UI12, UI16, UI24, I24                     |                                                                                                                                                                                                              |                                  |
| Description                                         | 4/8/12/16/24 current/voltage inputs with common ground                                                                                                                                                       |                                  |
| Input range/Resolution                              | -2...13V / 1mV                                                                                                                                                                                               | -2...30mA / 1µA                  |
| Measurement ranges                                  | 0...5V, 1...5V, 0...10V, 2...10V                                                                                                                                                                             | 0...20mA, 4...20mA               |
| Accuracy                                            | 0,1% @25°C                                                                                                                                                                                                   | 0,1% @25°C                       |
| Overload/Impedance                                  | 20% / 100kΩ                                                                                                                                                                                                  | 20%, 50mA-resettable fuse / 100Ω |
| IS6                                                 |                                                                                                                                                                                                              |                                  |
| Description                                         | 6 current inputs, isolated                                                                                                                                                                                   |                                  |
| Input range/Resolution                              | 3...30mA / 1µA                                                                                                                                                                                               |                                  |
| Measurement ranges                                  | 4...20mA                                                                                                                                                                                                     |                                  |
| Accuracy                                            | 0,25% @25°C                                                                                                                                                                                                  |                                  |
| Overload/Impedance                                  | 50mA-resettable fuse / 1750Ω@4mA, 400Ω@20mA                                                                                                                                                                  |                                  |
| TC4, TC8, TC12*                                     |                                                                                                                                                                                                              |                                  |
| Description                                         | 4/8/12 thermocouple inputs                                                                                                                                                                                   |                                  |
| Input range/Resolution                              | -30...30mV / 1µV                                                                                                                                                                                             | -120...120mV / 4µV               |
| Overload/Impedance                                  | 20% / 1MΩ                                                                                                                                                                                                    | 20% / 1MΩ                        |
| Measurement ranges                                  | Typ: K, S, J, T, N, R, B, E, L(GOST), -25...25mV, -100...100mV                                                                                                                                               |                                  |
| RT4, RT6*                                           |                                                                                                                                                                                                              |                                  |
| Description                                         | 4/6 RTD inputs (resistance thermometer)                                                                                                                                                                      |                                  |
| Input range/Resolution                              | 0...325Ω / 0,01Ω                                                                                                                                                                                             | 0...3250Ω / 0,1Ω                 |
| Measurement ranges                                  | Pt100, Pt500, Pt1000, Pt'50, Pt'100, Pt'500, Cu50, Cu100, Cu'50, Cu'100, Ni100, Ni500, Ni1000, 0...300 Ω, 0...3kΩ, 2/3/4-wire                                                                                |                                  |
| UN3, UN5                                            |                                                                                                                                                                                                              |                                  |
| Description                                         | 3/5 universal inputs with galvanically isolation for current, voltage, thermocouples and RTDs                                                                                                                |                                  |
| Current/voltage inputs                              |                                                                                                                                                                                                              |                                  |
| Input range/Resolution                              | -1...12V / 1mV                                                                                                                                                                                               | -2...30mA / 1µA                  |
| Measurement ranges                                  | 0...5V, 1...5V, 0...10V, 2...10V                                                                                                                                                                             | 0...20mA, 4...20mA               |
| Accuracy                                            | 0,1% @25°C                                                                                                                                                                                                   | 0,1% @25°C                       |
| Overload/Impedance                                  | 20% / >100kΩ                                                                                                                                                                                                 | 20% / <65Ω                       |
| Thermocouple inputs*                                |                                                                                                                                                                                                              |                                  |
| Input range/Resolution                              | -10...30mV / 2µV                                                                                                                                                                                             | -10...120mV / 4µV                |
| Measurement ranges                                  | Typ: K, S, J, T, N, R, B, E, L(GOST), -25...25mV, -100...100mV                                                                                                                                               |                                  |
| Overload/Impedance                                  | 20% / >1,5MΩ                                                                                                                                                                                                 | 20% / >1,5MΩ                     |
| RTD inputs*                                         |                                                                                                                                                                                                              |                                  |
| Input range/Resolution                              | 0...325Ω / 0,01Ω                                                                                                                                                                                             | 0...3250Ω / 0,1Ω                 |
| Measurement ranges                                  | Pt100, Pt500, Pt1000, Pt'50, Pt'100, Pt'500, Cu50, Cu100, Cu'50, Cu'100, Ni100, Ni500, Ni1000, 0...300 Ω, 0...3kΩ, 2/3/4-wire                                                                                |                                  |
| D8, D16, D24                                        |                                                                                                                                                                                                              |                                  |
| Description                                         | 8/16/24 binary inputs, each 4 inputs with common ground                                                                                                                                                      |                                  |
| Input range                                         | 0...30V, Uin<1V = LOW, Uin>4V =HIGH                                                                                                                                                                          |                                  |
| Curr. consumption/Isolation                         | 15mA(24V), 5mA(10V), 2mA(5V) / 500V                                                                                                                                                                          |                                  |
| Processing                                          | 8bit/2nibbles/1byte(D8), 16bit/4nibble/1integer(D16) , 24bit/6nibble/1integer(D24)                                                                                                                           |                                  |
| FI2, FI4                                            |                                                                                                                                                                                                              |                                  |
| Description                                         | 2/4 current inputs with balance counter(flowmeter) + 2/4 standard-current inputs with common ground                                                                                                          |                                  |
| Input range/Resolution                              | -2...30mA / 1µA                                                                                                                                                                                              |                                  |
| Measurement ranges                                  | 0...20mA, 4...20mA                                                                                                                                                                                           |                                  |
| Accuracy                                            | 0,1% @25°C                                                                                                                                                                                                   |                                  |
| Overload/Impedance                                  | 20%, 50mA-resettable fuse / 100Ω                                                                                                                                                                             |                                  |
| Processing                                          | Reset of counter: internal/external/autoreset                                                                                                                                                                |                                  |
| FT2, FT4                                            |                                                                                                                                                                                                              |                                  |
| Description                                         | 2/4 tachometer/flowmeter inputs(quadrature pulse inputs) or 2/4 tachometer/flowmeter inputs( each with one pulse input and one programmable function input) + 2/4 standard-current inputs with common ground |                                  |
| Pulse inputs                                        |                                                                                                                                                                                                              |                                  |
| Input range                                         | 0...30V, Uin<1V = LOW, Uin>5V =HIGH, 0,1Hz... 50kHz                                                                                                                                                          |                                  |
| Curr. consumption/Isolation                         | 12mA(24V) / 2kV                                                                                                                                                                                              |                                  |
| Processing                                          | Operation modes: tachometer + counter(up/down), reset of counter: internal/external/autoreset                                                                                                                |                                  |
| Current inputs                                      |                                                                                                                                                                                                              |                                  |
| Input range/Resolution                              | -2...30mA / 1µA                                                                                                                                                                                              |                                  |
| Accuracy                                            | 0,1% @25°C                                                                                                                                                                                                   |                                  |
| Overload/Impedance                                  | 20%, 50mA-resettable fuse / 100Ω                                                                                                                                                                             |                                  |
| CP4 - 4 Counting-Inputs with galvanically Isolation |                                                                                                                                                                                                              |                                  |
| Description                                         | 4 counters each with two pulse inputs with galvanically isolation, one programmable input and one reset input                                                                                                |                                  |
| Input range                                         | 0...30V, Uin<1V = LOW, Uin>10V =HIGH, max. 5kHz                                                                                                                                                              |                                  |
| Curr. consumption/Isolation                         | 14mA(24V), 6mA(10V), 50mA-resettable fuse / 2kV                                                                                                                                                              |                                  |
| Processing                                          | Operation modes: A+B/A-B/ counter(up/down)/quadrature counter, reset of counter: internal/external/autoreset                                                                                                 |                                  |
| S8, S16, S24                                        |                                                                                                                                                                                                              |                                  |
| Description                                         | 8/16/24 solid state relay outputs(SSR) with PWM-function, each 8 outputs(one group) with separate supply(internal/external)                                                                                  |                                  |
| Max. current                                        | Powered internally: 10mA, max. 50mA each group, powered externally: 100mA, max. 500mA each group                                                                                                             |                                  |
| Max. voltage                                        | Powered internally: >8V, powered externally: >Uext.-0,5V                                                                                                                                                     |                                  |
| External supply                                     | 10...30V                                                                                                                                                                                                     |                                  |
| PWM-Period/-resolution                              | 0,1...1600s / 0,1s                                                                                                                                                                                           |                                  |
| PWM-Frequency/duty factor                           | 5kHz(internally), 20us(output quantization) / 0...100%, resolution 15bit                                                                                                                                     |                                  |

**R45, R65, R81, R121**

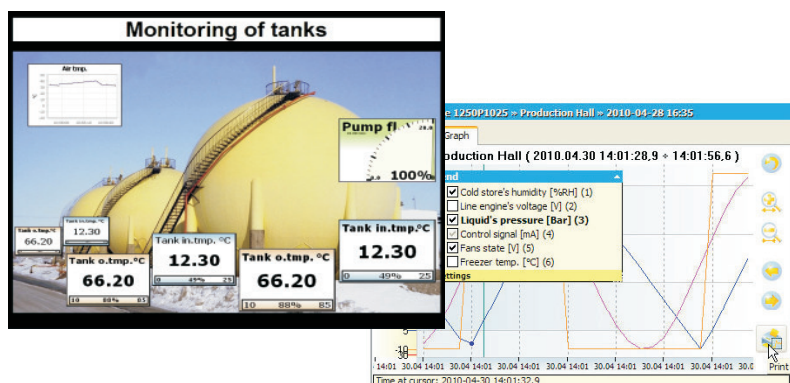
|                      |                                               |                                                  |
|----------------------|-----------------------------------------------|--------------------------------------------------|
| Description          | 4/6 SPDT-relay outputs(SinglePoleDoubleThrow) | 8/12 SPST- relay outputs (SinglePoleSingleThrow) |
| Max. current/voltage | 5A, $\cos\phi = 1$ each output / 250VAC       | 1A, $\cos\phi = 1$ each output / 250VAC          |
| Isolation strength   | >1kV for 60s                                  | >1kV for 60s                                     |

**IO2, IO4, IO6, IO8**

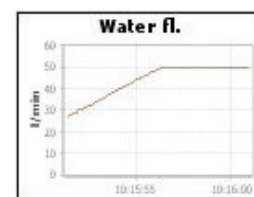
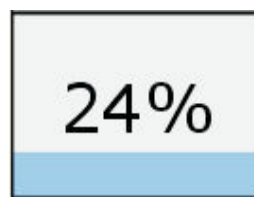
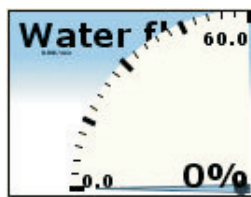
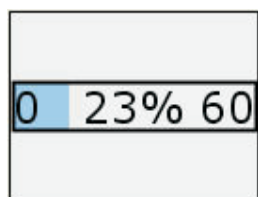
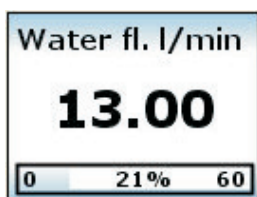
|                             |                                          |
|-----------------------------|------------------------------------------|
| Description                 | 2/4/6/8 passive current outputs 4...20mA |
| Output range/Resolution     | 3...22mA, 50mA-resettable fuse / 12bit   |
| Accuracy                    | 0,1% @25°C                               |
| Voltage dropout/ext. supply | Max. 9V / 9...30V                        |

\*Accuracy depends on selected measurement range, please check manual of device

## Software DAQ Manager



The software allows visualization, archiving and printing of recorded measurements. The whole measurement data is stored in special database on hard drive. Graphical presentation simplifies further analysis of the data. Import of recorded measurements is done by USB flash drives or Ethernet. If ACM is installed user can view current data of all channels in table or graphics. Software can be downloaded from our website or ordered as a payable CD-ROM version.



## Typical application

- central temperature measurement and control system, multi zone heater controller, intermediate pumping station control system, spraying and heating control system for glasshouse

