

Multi-channel carrier frequency amplifier



PICAS

The CF amplifier PICAS made by Peekel is a high-precision measuring system for a wide sensor sensitivity range. Well-designed operations and various data interfaces allow easy stand-alone and networked-amplifier configurations.

- ↙ 2- or 4-channel version in compact, rugged desktop case
- ↙ 19" version with up to 26 CF channels
- ↙ for inductive, resistive (DMS) and capacitive sensors ($\frac{1}{4}$, $\frac{1}{2}$ or full bridge)
- ↙ range $100\mu\text{V/V}$... 1 V/V , 2000 Hz bandwidth
- ↙ LCD display or control LEDs, PC-software operation
- ↙ Optional: Fast Controller with data logger-function and USB interface
- ↙ NEW: 4- or 8-channel-universal (DC) amplifiers available

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Functional description

PICAS combines a 2- or 4-CF channels amplifier and a micro-controller.

Inductive, resistive (e.g. DMS) and capacitive 2-, 3-, 4- or 6-wire sensors are D-Sub connected with galvanic isolation. The carrier frequency technique eliminates sensor signal noise and allows easy filtering.

The analogue amplifier part generates the 5 kHz excitation, adjustable from 0,5 ... 5 V. The sensor return signal is - galvanically isolated - acquired, filtered, demodulated and converted to +/-10V DC output.

The integrated processor controls all settings (e.g. excitation amplitude, gain, zero, R/C compensation) of the analogue amplifier. Connected sensors can be auto-calibrated. The amplifier output is provided on analogue BNC or digital interfaces (RS232/RS485).

The PICAS can be operated via front-panel keyboard / illuminated display (LCD version only) or via supplied PC-Software (Win 95/98/NT, via RS 232). ActiveX Controls are supplied for integration into Windows-Software. Several PICAS can be operated in a network on the RS 485 interface, with a synchronisation capability to avoid interference. A PICAS version is available with control LEDs and without display.

A Fast-Controller is available as an option for the LCD version, with a Data logger function and a USB interface. This option can be re-fitted (at works).

MESSOTRON sensors can be fitted with the appropriate D-Sub cable connector and the amplifier be pre-adjusted.

New: PICAS can be equipped with universal-(DC)-amplifier channels (4-channel cards) for DC applications (e.g. DCV / DCI, thermistors).

Model overview

PICAS-LCD-2	2-channel CF amplifier with display
PICAS-LCD-4	4-channel CF amplifier with display
PICAS-LCD-2F	2-channel CF amplifier with display and Fast Controller, USB
PICAS-LCD-4F	4-channel CF amplifier with display and Fast Controller, USB
PICAS-LED-2	2-channel CF amplifier with control LEDs
PICAS-LED-4	4-channel CF amplifier with control LEDs

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PICAS-LCD-8UN	8-channel universal amplifier with display
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Technical data

General

Channels (depending on model)

Carrier frequency amplifier	2 or 4 channels
Universal amplifier	4 or 8 channels

Housing

Case dimensions	250 x 350 x 110 mm (W x D x H)
Power supply	230 VAC \pm 10% / 50 Hz

On-board micro controller

A/D-converter	16 Bit
Amplifier calibration	Via Software and D/A-converter
Synchronisation	Digital (between amplifiers)
Interfaces	1 x RS232 1 x RS485
Digital outputs	For alarm control
Transistor switches	Max. 48 VAC/DC / 300mA

Outputs

Full-scale	\pm 10 V
Protection	Continuous short circuit
Maximum capacitive load	10 nF
Maximum cable length	100 m (at 100 pF/m)

Fast-Controller (Option)

Resolution	16 Bit
Sampling rate	Up to 20 kHz
Memory	2 MByte (approx. 500.000 data)
Interface (additional)	1 x USB

CF amplifier

General

Accuracy (typical)	0.1%
Band width (-3 dB)	2000 Hz
Operating temperature	0....+40°C
Maximum cable length (input)	Up to 500m
Sensor connection	2-, 3-, 4-, or 6-wire configuration

Excitation (galvanically isolated)

Excitation level	0,5... 5V (continuously adjustable)
Level accuracy	± 0.05%
Carrier frequency	5 kHz
Frequency accuracy	± 1%
Load	60....1000 Ohm ≤ 0,1% 1000 ... 3000 Ohm > 0,1%
Internal bridge complement	1/2 - bridge: 240 Ohm 1/4 - bridge: 120 Ohm or 350 Ohm

Input (galvanically isolated)

Range (at 5V excitation)	± 100 µV/V.... ± 1 V/V
Input filter (high pass)	> 500 Hz
Max. common mode voltage	200V
Common mode suppression	> 120 dB at 50 Hz
Serial mode suppression	> 65 dB
Capacitive overload max. 7 x meas.	
Range	

Zero compensation (automatic)

R-compensation	± 60 mV/V
C-compensation	Up to 10nF (for 120 Ohm bridge)

Output (via low pass filter)

Frequency (-3 dB)	< 2000 Hz
Filter characteristics	7-stage Butterworth (-42 dB/Octave)

Universal amplifier

Precision (typical)	0.1%
Channels	4
Sensor supply	5V for Potentiometer 1 mA for resistive sensor
Operating temperature	0....+40°C
Processes	DC voltage / current Resistive sensor Potentiometer Thermistor Pt100

Subject to change without prior notice