

# P301 Pulse Height Analyzer

P301 is a pulse height analyzer equipped with one 18-bit A/D converter. P301 has two input connectors and can simultaneously obtain the pulse heights with the different shaping times. Users can create energy spectrum data (histogram of pulse height data) and the list data (timestamps and pulse heights for all events) from P301.

- P301 is equipped with one high-precision 18-bit successive approximation A/D converter. This achieves good linearity with practically used 10-bit (1024 steps) or 12-bit (4096 steps) data acquisition. 18-bit data is transferred to the host computer.
- Not only the easy bus power connection is available, but also the electrically isolated power supply with the host computer can be used. P301 is equipped with a built-in digital isolator IC.
- The control and the data readout of P301 is carried out using UART (Universal Asynchronous Receiver Transmitter) interface. Users take control of the P301 in preparing a serial interface on the host computer. The P301 can perform basic control and measurement using the included software. In addition, the P301 control commands are provided to users, and can be operated with applications created by users.
- The user can set the time from trigger to A/D conversion start. This implies that the timing can be set to match the shaping time of the input signal. The trigger level is easily set using an easy-to-operate, multi-turn potentiometer located on the front panel.
- Multiple A/D conversions for one event are performed in P301. This function reduces the noise (does not eliminate the noise in the input signal). This function also can be used to detect abnormality of the signal such as a pile-up. Specifically P301 sends the abnormality flag with the data when detecting the fluctuation in the multiple A/D conversion values.

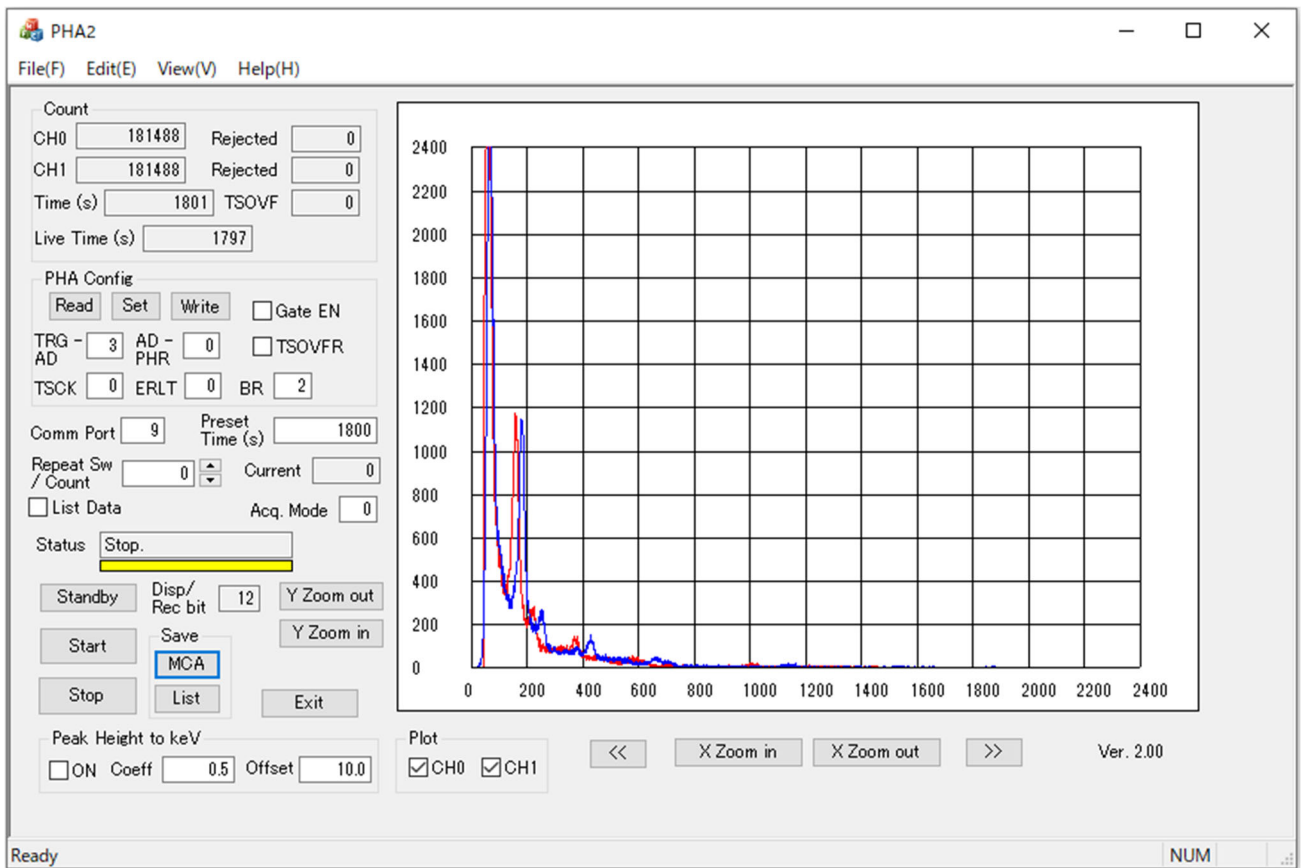


Front view



Rear view

## Software screen attached with P301



## Specifications

Category	Item	Specification	Remarks
A/D conversion section	Resolution	18-bit	Resolution and linearity are the specifications of the A/D conversion chip.
	DNL	+/- 0.8 LSB	
	INL	+/- 3.2 LSB	
	Reference voltage	+4.1 V	-
	A/D conversion time	Approx. 12 $\mu$ s	Total time of 8 times conversions for one event
	Time from trigger to A/D conversion start	0) 1.4 $\mu$ s 1) 3 $\mu$ s 2) 5 $\mu$ s 3) 10 $\mu$ s 4) 20 $\mu$ s	Factory default setting: 5 $\mu$ s
Time stamp	Length	32-bit (0~4294967295)	The count of overflows can be added to the list data.
	Clock	0) 96 MHz (10.4 ns) 1) 1.5 MHz (0.667 $\mu$ s) 2) 93.75 kHz (10.7 $\mu$ s)	Factory default setting: 96 MHz
Serial communication	Baud rate	0) 115.2 kbps 1) 2 Mbps	Factory default setting: 115.2 kbps

section		2) 3 Mbps 3) 12 Mbps	
	Maximum throughput	At 115.2 kbps: 1 kcps At 2 Mbps: 16 kcps At 3 Mbps: 25 kcps At 12 Mbps: 33 kcps	Under the following conditions: Time setting from trigger to A/D conversion: 5 $\mu$ s Measurement mode: Simultaneous A/D conversions from two inputs
Signal input section	Input voltage range	0 V ~ +4.1 V	Tolerable voltage range: -0.5 V to +5.25 V
	Input impedance	10 k $\Omega$	-
	Trigger level range:	0 V to +1.2 V	-
	Rise time requirement for input signal	More than 0.5 $\mu$ s	-
Gate control	Logic	PHA ON when High level	At gating mode
Protection	Input voltage	Protected by TVS	-
	Power supply over voltage	Protected by voltage regulator and TVS	-
	Voltage protection for serial communication	Protected by TVS	-
	Power supply over current	Analog system: 1 A Digital system: 0.40 A	Trip current of PTC resettable fuses
	Over temperature	Voltage regulators are shutdown at approx. 65 degrees C at the PCB	Excluding regulator for power management MCU
Power supply	Ratings	DC 5 V 100 mA	Voltage range: Within $\pm$ 5 %
Environment for use	Ambient temperature and humidity	0 to 35 degrees C Less than 80 % RH	-
Dimensions and weight	Dimensions	100 mm x 30 mm x 130 mm	Excluding connectors and a knob
	Weight	340 g	Typical

### Manufacturing and Sales

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