

CPE-SN2007

Sensor Application Trainer



FEATURES

- Consists of 10 experimental modules and 16 types of sensors
- Electronic circuit practices such as signal detection, signal amplification and signal conversion
- Helps learn the principles of A/D and D/A conversion for signal processing
- Enhances the signal amplification and processing skills through various sensors

EXPERIMENTAL CONTENTS

- Various electronics circuits for signal detection, signal amplification and signal conversion
- Sensor amplification (inverting, non-inverting, differential, DC offset and comparator)
- A/D and D/A conversion for signal processing
- Principles of thermocouple and thermistor
- Principles of photo sensor (LED, photo transistor and Cds)
- Principles of rotary encoder
- Ultrasonic wave's transmission and reception
- Magnetic sensor, pressure sensor and proximity sensor



SPECIFICATIONS

OP-AMP UNIT (CPE-SN2007-M1)

- Coupling : AC and DC
- Amplifier mode : Inverting, non-inverting, differential, DC offset, comparator
- DC offset : -15V ~ 0 ~ +15V
- DC output : $\pm 15V$ 0.3A
- Power source : AC220V 50/60Hz
- Dimension : 345(W) \times 220(D) \times 120(H) mm

SIGNAL CONVERTER UNIT (CPE-SN2007-M2)

- A/D conversion : Successive type
- Analog input : DC 0 ~ 10V
- Digital output : 8-bit TTL level
- D/A conversion : Current summing type
- Digital input : 8-bit TTL level
- Analog output : DC 0 ~ 10V
- Conversion rate : 100 μ s (analog to digital)
50 μ s (digital to analog)
- DC output : $\pm 15V$ 0.3A
- Power source : AC220V 50/60Hz
- Dimension : 345(W) \times 220(D) \times 120(H) mm

TEMPERATURE SENSOR (CPE-SN2007-01)

- Detectable circuit : Wheatstone Bridge and Amplifier
- Temperature source : Heater and Cooler
- Resistance : 500 Ω ~ 5k Ω
- Heater & Fan : DC 5 ~ 15V
- Sensor : Thermocouple and thermistor
- Power source : DC $\pm 15V$ 1A

PHOTO SENSOR (CPE-SN2007-02)

- Source bias : DC 0 ~ 30mA
AC 100Hz ~ 10kHz (Digital Counter)
- Sensing range : 0 ~ 200mm
- Sensor : LED, photo transistor and Cds
- Power source : DC $\pm 15V$ 1A

ROTATION SENSOR (CPE-SN2007-03)

- Input voltage : DC 5V
- Output waveform : Square wave
- Output phase : A and B
- Resolution : 100 pulses per revolution
- Response : 25kHz
- Power source : DC $\pm 15V$ 1A

ULTRASONIC SENSOR (CPE-SN2007-04)

- Nominal frequency : 40kHz
- Sensitivity : Over -67dB
- Receiver bandwidth : 6kHz (-74dB)
- Transmitter level : Over 110dB

VIBRATION

- Frequency : 10Hz ~ 1kHz
- Sensor Output : 40mV/1G

GAS SENSOR (CPE-SN2007-05)

- Type of gas : LPG, LNG and Methane
- Sensing range : 500 ~ 10,000 ppm
- Circuit voltage : Max. 24V (AC or DC)
- Heater voltage : 5V (AC or DC)
- Power source : DC $\pm 15V$ 1A

HUMIDITY SENSOR (CPE-SN2007-06)

- Humidity : 30% ~ 90% RH
- Temperature : 0 $^{\circ}$ C ~ 60 $^{\circ}$ C
- Sensor output : DC 1 ~ 3V (at 30% ~ 90% RH)
- Power source: DC $\pm 15V$ 1A

HALL SENSOR (CPE-SN2007-07)

- Material : GaAs
- Voltage : 55 ~ 140 mV
- Input resistance : 450 ~ 900 Ω

Proximity Sensor

- Sensing distance : 0 ~ 5 mm
- Detectable object : Magnetic substance
- Frequency : 500 Hz

Pressure Sensor

- Measuring Range : 0 ~ 1 kg/cm² (Max. 2kg/cm²)
- Output : 1 ~ 5V
- Compressor : Handy type

SENSOR SWITCH (CPE-SN2007-08)

- Reed switch, mercury switch and limit switch
- Contact : SPST
- Contact current : 0.1A (24V)
- Travel distance : 80mm
- Driving motor : 0 ~ 60 RPM
- Power source : DC $\pm 15V$ 1A

STANDARD ACCESSORIES

- Power cord : 2ea
- Connection cable : 1set
- Data cable : 1ea
- Shock sensor unit : 1ea
- Alcohol thermometer : 1ea
- Thermocouple probe : 1ea
- CdS probe : 1ea
- Thermistor probe : 1ea
- LED probe : 1ea
- Lamp probe : 1ea
- Ultrasonic TX probe : 1ea
- Photo transistor probe : 1ea
- Handy air compressor : 1ea
- Experimental manual : 1ea