Humidity Sensors Humidity Sensor Units

CHS Series CHS-U, -SS, -C Types

TDK's CHS series humidity sensors are compact and extremely simple to apply. Because they contain the necessary circuitry, there is no need to provide additional control circuitry or perform time-consuming calibration. With simple connection to a power supply, they will output DC at 100% relative humidity. This makes it possible to read RH directly with a voltmeter.

CHS-U TYPE

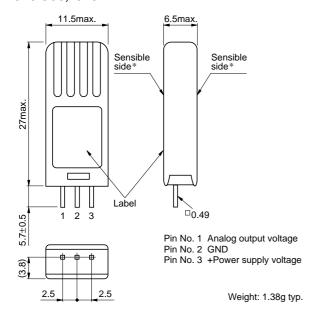
For industrial use and measuring equipment

FEATURES

- These sensors can measure a wide range of humidity from 5(%) to 95(%)RH.
- They are highly accurate. The nominal accuracy for the CHS-UPR and CHR-UPS is within ±3(%) RH.

| Time | CHS-UGS | CHS-UPS |
|----------------------|---------|---------|
| Туре | CHS-UGR | CHS-UPR |
| Nominal | ±5 | ±3 |
| accuracy(%)RH | ±3 | ±3 |
| Measuring range(%)RH | 5 to 95 | 5 to 95 |

SHAPES AND DIMENSIONS SQUARE TYPE CHS-UGS, -UPS

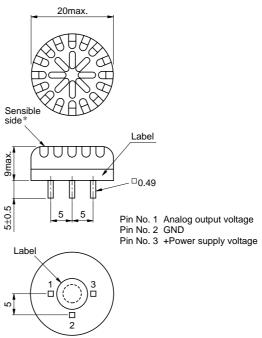


MAXIMUM RATINGS (Ta=25°C)

| MAXIMOM NATINGS (1a=25 C) | | |
|---------------------------|---|--|
| Power supply voltage Edc | 7V max. | |
| Operating conditions | 0 to +50°C, power supply voltage 5V, without dewing | |
| Storage conditions | -20 to +60°C, without dewing | |

- Characteristics are stable over a wide temperature range.
- Humidity sensing characteristics exhibit virtually no hysteresis.
- Highly cost-effective and compact, requiring extremely little mounting space.
- · Low current consumption.
- Outputs DC.1V at 100(%)RH; relative humidity can be read directly with a voltmeter.
- All-in-one construction integrates sensor with support circuitry.
 The entire module operates off a 5V power supply.
- Generated ripple at low humidity levels will not exceed 2.5mV.

ROUND TYPE CHS-UGR, -UPR



*When installing the device, ensure that the humidity sensing surface is not obstructed.

Weight: 1.68g typ.

Dimensions in mm Tolerance: ±0.2



CHS Series CHS-U, -SS, -C Types

Humidity Sensors Humidity Sensor Units

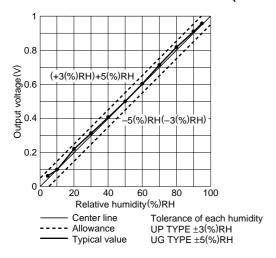
CHS-U TYPE

ELECTRICAL CHARACTERISTICS

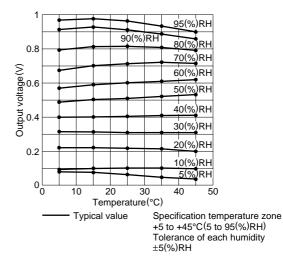
| Item | | Specifications | | | Conditions |
|---------------------|------------------------|----------------|----------|---------|---|
| | | Minimum | Standard | Maximum | |
| Operating voltage E | dc (V) | 4.75 | 5 | 5.25 | |
| Operating current(n | nA) | | | 0.6 | Edc=5V, 25°C |
| Output voltage(mV) | /(%)RH | | 10 | | Edc=5V, 25°C, 5 to 95(%)RH |
| Output impedance(| kΩ) | | (200)* | | at DC |
| Accuracy(%)RH | CHS-UPS, -UPR | -3 | | +3 | Edc=5V, 25°C, 5 to 95(%)RH |
| | CHS-UGS, -UGR | - 5 | | +5 | (For details, please refer to typical characteristics) |
| Hysteresis(%)RH | | | ≈0 | | Stable time: 20min |
| Temperature depen | dency(%)RH | - 5 | | +5 | Edc=5V, 25°C standard, +5 to +45°C, 5 to 95(%)RH |
| Response time(min) | | | 1 | | Response time to reach 90% of actual humidity as for from 30 to |
| | | | ' | | 85(%)RH |
| Recommended ope | rating temperature(°C) | +5 | | +45 | Edc=5V |

^{*():} Reference value

TYPICAL CHARACTERISTICS SENSOR LINEARITY CHARACTERISTICS (Ta=25°C Edc=5V)



TEMPERATURE DEPENDENCY CHARACTERISTICS









Humidity Sensors Humidity Sensor Units

CHS Series CHS-U, -SS, -C Types

CHS-SS TYPE

For consumer and office equipment

FEATURES

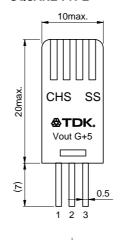
- Humidity sensing characteristics exhibit virtually no hysteresis.
- · Compact size.
- Low current consumption.
- Outputs DC.1V at 100(%)RH; relative humidity can be read directly with a voltmeter.
- All-in-one construction integrates sensor with support circuitry. The entire module operates off a 5V power supply.
- Generated ripple at low humidity levels will not exceed 2.5mV.

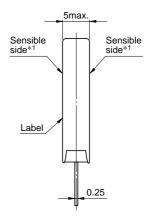
| Туре | CHS-GSS | CHS-MSS |
|-----------------------|---------|----------|
| Nominal accuracy(%)RH | ±5 | ±5 |
| Measuring range(%)RH | 5 to 90 | 20 to 85 |

MAXIMUM RATINGS (Ta=25°C)

| Power supply voltage Edc | 7V max. |
|--------------------------|---|
| Operating conditions | 0 to +50°C, power supply voltage 5V, without dewing |
| Storage conditions | −20 to +60°C, without dewing |

SHAPES AND DIMENSIONS SQUARE TYPE





Pin No. 1 Analog output voltage Pin No. 2 GND

Pin No. 3 +Power supply voltage

*1When installing the device, ensure that the humidity sensing surface is not obstructed. *2 The three leads are parallel to within 0.2mm.

Weight: 1.1g typ.

Dimensions in mm Tolerance: ±0.2

ELECTRICAL CHARACTERISTICS

| Item | | Specification | Specifications | | Conditions |
|------------------------------|-------------|--------------------------|----------------|---------|---|
| | | Minimum | Standard | Maximum | _ |
| Operating voltage | Edc (V) | 4.75 | 5 | 5.25 | |
| Operating current(| mA) | | | 0.6 | Edc=5V, 25°C |
| Output voltage(mV |)/(%)RH | | 10 | | Edc=5V, 25°C |
| Output impedance | (kΩ) | | (200)* | | at DC |
| Accuracy(%)RH | CHS-GSS | -5 | | +5 | Edc=5V, 25°C, 5 to 90(%)RH(For details, please refer to typical characteristics) |
| | CHS-MSS | -5 | | +5 | Edc=5V, 25°C, 20 to 85(%)RH(For details, please refer to typical characteristics) |
| Hysteresis(%)RH | | | ≈0 | | Stable time: 20min |
| Temperature deper | ndency(%)RH | - 5 | | +5 | Edc=5V, 25°C standard |
| Response time(mir | n) | | 1 | | Response time to reach 90% of actual humidity as for from 30 to 85(%)RH |
| Recommended CHS-GSS +5 +45 | | - Edc=5V, without dewing | | | |
| operating temperature(°C) | CHS-MSS | +15 | | +35 | (For details, please refer to typical characteristics) |

^{*():} Reference value



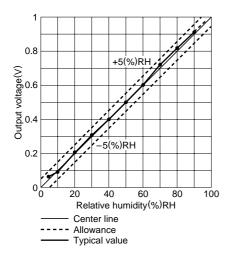




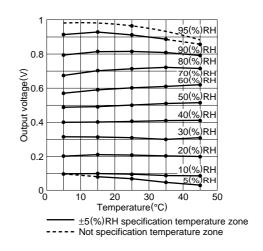
CHS Series CHS-U, -SS, -C Types

Humidity Sensors Humidity Sensor Units

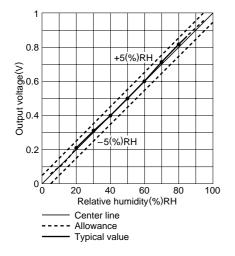
CHS-SS TYPE TYPICAL CHARACTERISTICS SENSOR LINEARITY CHARACTERISTICS (Ta=25°C Edc=5V) CHS-GSS TYPE



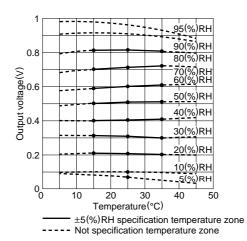
TEMPERATURE DEPENDENCY CHARACTERISTICS CHS-GSS TYPE



CHS-MSS TYPE



CHS-MSS TYPE



CHS Series CHS-U, -SS, -C Types

Humidity Sensors Humidity Sensor Units

CHS-CTYPE

For consumer and office equipment

FEATURES

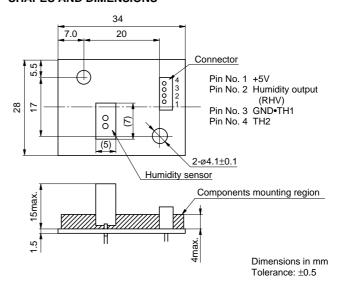
- Temperature detection thermistor can be added.
- · Humidity sensing characteristics exhibit virtually no hysteresis.
- · Low current consumption.
- Absolute humidity can be read directly with DC. 1V voltmeter.
- All-in-one construction incorporates circuits and 5V power supply operation.
- Generated ripple at low humidity levels will not exceed 2.5mV.

| Туре | CHS-CMC |
|-----------------------|------------|
| Nominal accuracy(%)RH | ±5 |
| Measuring range(%)RH | 30, 50, 80 |

MAXIMUM RATINGS (Ta=25°C)

| - | |
|--------------------------|---|
| Power supply voltage Edc | 7V max. |
| Operating conditions | 0 to +50°C, power supply voltage 5V, without dewing |
| Storage conditions | -20 to +60°C, without dewing |

SHAPES AND DIMENSIONS



ELECTRICAL CHARACTERISTICS

| Item | | Specifications | | | Conditions |
|---------------------------------------|---------|----------------|----------|---------------|--|
| | | Minimum | Standard | Maximum | |
| Operating voltage Edc (V) | | 4.75 | 5 | 5.25 | |
| Operating current(mA) | | | | 0.6 | Edc=5V, 25°C |
| Output impedance(kΩ) | | | (200) | | at DC |
| | 30(%)RH | -5 (0.5V) | (0.6V) | +5 (0.7V) | |
| Accuracy(%)RH | 50(%)RH | -5 (0.86V) | (0.96V) | +5 (1.06V) | Edc=5V, 25°C (For details, please refer to typical characteristics) |
| | 80(%)RH | -5 (1.5V) | (1.6V) | +5 (1.7V) | |
| Hysteresis(%)RH | | | ≈0 | | Stable time: 20 min |
| Temperature dependency(% | 6)RH | -5 | | +5 | Edc=5V, 25°C standard (For details, please refer to typical characteristics) |
| Response time(min) | | | 1 | | Response time to reach 90% of actual humidity as for from 30 to 85(%)RH |
| Recommended operating temperature(°C) | | +15 | | +35 | Edc=5V |

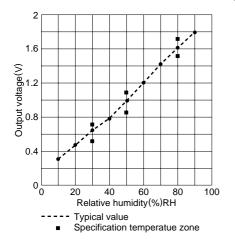
RECOMMENDED CHARACTERISTICS OF TEMPERATURE DETECTION THERMISTOR

| Part No. | NTCCM16084BH103JC |
|---------------------------------------|-------------------|
| Resistance value(Between TH1 and TH2) | 10kΩ±5% |
| Constant B | 4100K±3% |
| Maximum rated power | 230mW |

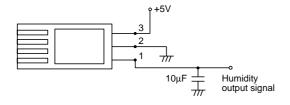
CHS Series CHS-U, -SS, -C Types

Humidity Sensors Humidity Sensor Units

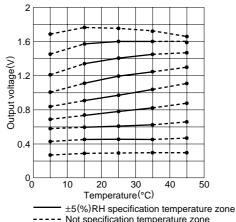
CHS-C TYPE TYPICAL CHARACTERISTICS SENSOR LINEARITY CHARACTERISTICS(Ta=25°C, Edc=5V)



TYPICAL APPLICATIONS HUMIDITY MONITOR

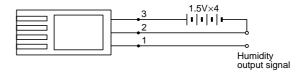


TEMPERATURE DEPENDENCY CHARACTERISTICS



---- Not specification temperature zone

BATTERY POWERED SYSTEM



公TDK