

Recessed Wall Humidity/Temperature

2 or 3% accuracy (NIST certification options)
0-5V/10VDC RH/Temp (thermistors optional)
Field-calibration potentiometer
Durable and attractive low-profile design



DESCRIPTION

The HR series is designed for use in energy management systems in buildings. They combine excellent stability with reliable operation, and LCD display for in-field calibration. Thermistor options accommodate any installation. Housing is offered in multiple color choices to match any decor.

APPLICATIONS

- HVAC room humidity and temperature measurement and control
- Energy management/building control

FEATURES

Attractive recessed design is attractive and durable

- Match colors and existing interior decor
- Fits in most standard wall plates
- No exposed screws; unobtrusive tamper resistant design
- Ideal for schools

Field calibration potentiometer

- Field calibration scaled adjustment allows easy adjustment of calibrated RH value as needed to maintain certification.
- 0-5V/0-10V output—jumper selectable

Choose from a range of accuracy and options

- Jumper selectable 5V/10V Rh/T transmitter outputs
- Options for complete control including set-point and override.
- Thermistor outputs for temperature optional

Superior RH sensing

- On-board temperature compensation for RH. Eliminates temperature coefficient errors and achieves an excellent measurement accuracy as well as high repeatability and offset stability.
- State of the art testing facilities. Certification options from 1-point, 2-point, and 8-point (NIST traceability—consult factory)



Field replaceable element

- Ideal for harsh environments
- Accurate dual RH/Temp IC sensing



NIST traceable

- Multi-point calibration certification options. Consult factory.

ORDERING

Accuracy

2 = 2%
3 = 3%

Temperature

A = None
B = Transmitter
C = 100Pt (385)
D = 1000Pt (385)
E = 10k type 2
F = 10k type 3
G = 10k type 3 w/11k shunt
H = 3k
I = 2k2
J = 1k8
K = 20k
L = 100k

Color

1 = White
2 = Ivory
3 = Brown
4 = Light Almond
5 = Almond
6 = Black
7 = Gray

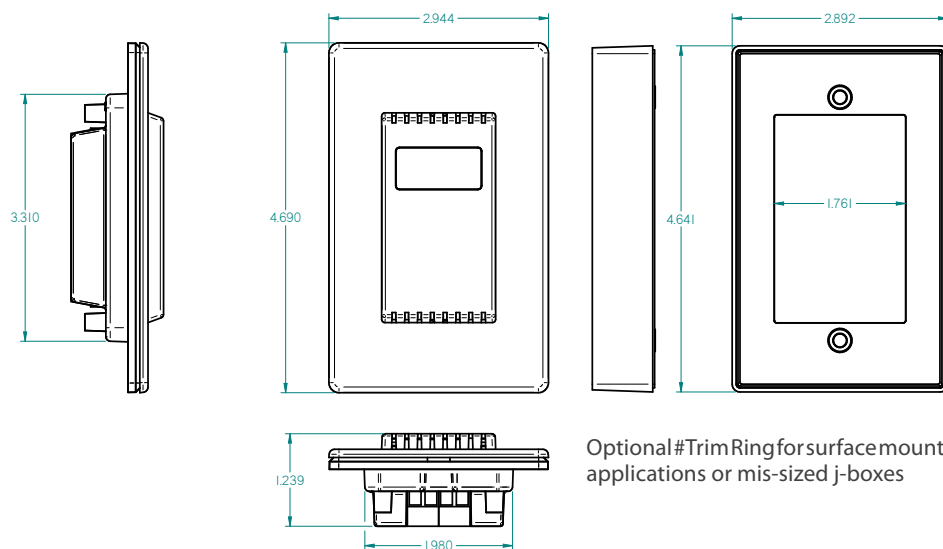


SPECIFICATIONS

| | | |
|--------------------------|----------------------------------|---|
| Power Supply | | 12-30VDC(1), 15mA max. |
| Outputs | RH% and Temperature | 3-wire 0-5/10VDC (jumper selectable) |
| Output scaling | RH% | 0-100% RH |
| | Temperature | 50-95° F (10-35° C) |
| Thermistor Options | | Yes, see ordering table below |
| Media filter | | PTFE membrane, IP54 protection |
| Relative Humidity | Accuracy | 2% models, +/-2% over 10 to 90%RH range |
| | | 3% models, +/-3% over 20 to 80%RH range |
| | Resolution | 0.05%RH |
| | Hysteresis | +/-1%RH |
| | Non-Linearity | factory linearized <1%RH |
| | Temperature coefficient | fully compensated by on-board temp sensor |
| | Response time (2) | 30s |
| | Output update rate | 2s |
| | Operating range | 0 to 100%RH |
| | Long term drift | <0.5%RH per year |
| Operating conditions (3) | -20° C to 60° C @ RH>90% | |
| | -20° C to 80° C @ RH=50% | |
| Temperature | Accuracy (-20° C to 70° C range) | 2% models, <+/-1° C; 0.5° C typ @ 25° C |
| | | 3% models, <+/-2° C; 0.5° C typ @ 25° C |
| | Resolution | 0.01° C |
| | Repeatability | +/-0.1° C |
| | Response time (2) | 30s |
| | Temperature Scaling | 50-95° F (10-35° C) |
| | Output update rate | 2s |
| | Operating range | -40° C to 120° C |

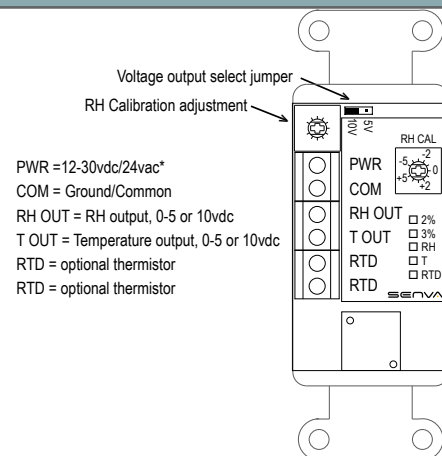
- (1) One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended.
(2) Time for reaching 63% of reading at 25° C and 1 m/s airflow
(3) Long term exposure to conditions outside normal range at high humidity may temporarily offset the RH reading (+3%RH after 60 hours.)

DIMENSIONS



Optional #Trim Ring for surface mount applications or mis-sized j-boxes

TYPICAL WIRING



SENVA THERMISTOR CURVES

| TEMP | | C | D | E | F | G | H | I | J | K | L |
|------|-------|-------|---------|---------|---------|-------------|---------|---------|---------|-----------|-----------|
| | | 100Pt | 1000Pt | 10K T2 | 10K T3 | 10K T3 WITH | 3K | 2K2 | 1K8 | 20K | 100K |
| | | 385 | 385 | B=3890 | B=3675 | 11K SHUNT | B=3890 | B=3892 | B=3477 | B=4247 | B=4140 |
| C | F | | | | | | | | | | |
| -50 | -58 | 80.3 | 803.1 | 670,166 | 441,200 | 10,732 | 201,050 | 150,395 | 70,263 | 1,655,340 | 8,231,000 |
| -49 | -56.2 | 80.7 | 807.0 | 624,159 | 414,400 | 10,716 | 187,248 | 140,087 | 66,062 | 1,537,600 | 7,648,000 |
| -48 | -54.4 | 81.1 | 811.0 | 581,605 | 389,300 | 10,698 | 174,482 | 130,553 | 62,140 | 1,428,940 | 7,110,000 |
| -47 | -52.6 | 81.5 | 815.0 | 542,225 | 365,900 | 10,679 | 162,668 | 121,727 | 58,475 | 1,328,620 | 6,613,000 |
| -46 | -50.8 | 81.9 | 818.9 | 505,763 | 344,000 | 10,659 | 151,729 | 113,553 | 55,049 | 1,235,940 | 6,154,000 |
| -45 | -49 | 82.3 | 822.9 | 471,985 | 323,600 | 10,638 | 141,596 | 105,981 | 51,845 | 1,150,280 | 5,729,000 |
| -44 | -47.2 | 82.7 | 826.9 | 440,674 | 304,500 | 10,616 | 132,202 | 98,963 | 48,848 | 1,071,080 | 5,336,000 |
| -43 | -45.4 | 83.1 | 830.8 | 411,640 | 286,700 | 10,594 | 123,492 | 92,452 | 46,044 | 997,800 | 4,972,000 |
| -42 | -43.6 | 83.5 | 834.8 | 384,703 | 270,000 | 10,569 | 115,411 | 86,412 | 43,416 | 929,960 | 4,635,000 |
| -41 | -41.8 | 83.9 | 838.8 | 359,700 | 254,300 | 10,544 | 107,910 | 80,803 | 40,957 | 867,140 | 4,323,000 |
| -40 | -40 | 84.3 | 842.7 | 336,479 | 239,700 | 10,517 | 100,944 | 75,593 | 38,651 | 808,940 | 4,034,000 |
| -39 | -38.2 | 84.7 | 846.7 | 314,904 | 226,000 | 10,489 | 94,471 | 70,753 | 36,490 | 755,000 | 3,766,000 |
| -38 | -36.4 | 85.1 | 850.6 | 294,848 | 213,100 | 10,460 | 88,454 | 66,252 | 34,461 | 704,960 | 3,517,000 |
| -37 | -34.6 | 85.5 | 854.6 | 276,194 | 201,100 | 10,430 | 82,858 | 62,066 | 32,560 | 658,540 | 3,286,000 |
| -36 | -32.8 | 85.9 | 858.5 | 258,838 | 189,800 | 10,397 | 77,651 | 58,171 | 30,775 | 615,440 | 3,071,000 |
| -35 | -31 | 86.2 | 862.5 | 242,681 | 179,200 | 10,364 | 72,804 | 54,542 | 29,097 | 575,420 | 2,872,000 |
| -34 | -29.2 | 86.6 | 866.4 | 227,632 | 169,300 | 10,329 | 68,290 | 51,164 | 27,522 | 538,240 | 2,687,000 |
| -33 | -27.4 | 87.0 | 870.4 | 213,610 | 159,900 | 10,292 | 64,083 | 48,017 | 26,042 | 503,680 | 2,515,000 |
| -32 | -25.6 | 87.4 | 874.3 | 200,539 | 151,200 | 10,254 | 60,162 | 45,081 | 24,651 | 471,540 | 2,354,000 |
| -31 | -23.8 | 87.8 | 878.3 | 188,349 | 142,900 | 10,214 | 56,505 | 42,343 | 23,342 | 441,640 | 2,205,000 |
| -30 | -22 | 88.2 | 882.2 | 176,974 | 135,200 | 10,172 | 53,092 | 39,789 | 22,111 | 413,800 | 2,067,000 |
| -29 | -20.2 | 88.6 | 886.2 | 166,356 | 127,900 | 10,129 | 49,907 | 37,404 | 20,952 | 387,880 | 1,937,000 |
| -28 | -18.4 | 89.0 | 890.1 | 156,441 | 121,100 | 10,084 | 46,932 | 35,176 | 19,861 | 363,740 | 1,817,000 |
| -27 | -16.6 | 89.4 | 894.0 | 147,177 | 114,600 | 10,037 | 44,153 | 33,095 | 18,833 | 341,240 | 1,705,000 |
| -26 | -14.8 | 89.8 | 898.0 | 138,518 | 108,600 | 9,988 | 41,555 | 31,150 | 17,865 | 320,260 | 1,600,000 |
| -25 | -13 | 90.2 | 901.9 | 130,421 | 102,900 | 9,938 | 39,126 | 29,331 | 16,952 | 300,700 | 1,502,000 |
| -24 | -11.2 | 90.6 | 905.9 | 122,847 | 97,490 | 9,885 | 36,854 | 27,629 | 16,092 | 282,420 | 1,411,000 |
| -23 | -9.4 | 91.0 | 909.8 | 115,759 | 92,420 | 9,830 | 34,728 | 26,036 | 15,280 | 265,380 | 1,326,000 |
| -22 | -7.6 | 91.4 | 913.7 | 109,122 | 87,650 | 9,773 | 32,737 | 24,545 | 14,515 | 249,460 | 1,247,000 |
| -21 | -5.8 | 91.8 | 917.7 | 102,906 | 83,150 | 9,715 | 30,872 | 23,148 | 13,792 | 234,580 | 1,173,000 |
| -20 | -4 | 92.2 | 921.6 | 97,081 | 78,910 | 9,654 | 29,124 | 21,839 | 13,109 | 220,680 | 1,103,000 |
| -19 | -2.2 | 92.6 | 925.5 | 91,621 | 74,910 | 9,592 | 27,486 | 20,611 | 12,465 | 207,680 | 1,038,000 |
| -18 | -0.4 | 92.9 | 929.5 | 86,501 | 71,130 | 9,527 | 25,950 | 19,461 | 11,857 | 195,520 | 977,400 |
| -17 | 1.4 | 93.3 | 933.4 | 81,698 | 67,570 | 9,460 | 24,509 | 18,381 | 11,281 | 184,140 | 920,600 |
| -16 | 3.2 | 93.7 | 937.3 | 77,190 | 64,200 | 9,391 | 23,157 | 17,368 | 10,728 | 173,600 | 867,300 |
| -15 | 5 | 94.1 | 941.2 | 72,957 | 61,020 | 9,320 | 21,887 | 16,416 | 10,220 | 163,500 | 817,500 |
| -14 | 6.8 | 94.5 | 945.2 | 68,982 | 58,010 | 9,247 | 20,695 | 15,522 | 9,734 | 154,160 | 770,800 |
| -13 | 8.6 | 94.9 | 949.1 | 65,246 | 55,170 | 9,171 | 19,574 | 14,683 | 9,272 | 145,400 | 727,000 |
| -12 | 10.4 | 95.3 | 953.0 | 61,736 | 52,490 | 9,094 | 18,521 | 13,893 | 8,836 | 137,180 | 686,000 |
| -11 | 12.2 | 95.7 | 956.9 | 58,434 | 49,950 | 9,015 | 17,530 | 13,151 | 8,422 | 129,480 | 647,500 |
| -10 | 14 | 96.1 | 960.9 | 55,329 | 47,540 | 8,933 | 16,599 | 12,453 | 8,032 | 122,660 | 611,400 |
| -9 | 15.8 | 96.5 | 964.8 | 52,407 | 45,270 | 8,850 | 15,722 | 11,796 | 7,659 | 115,460 | 577,400 |
| -8 | 17.6 | 96.9 | 968.7 | 49,656 | 43,110 | 8,764 | 14,897 | 11,177 | 7,308 | 109,100 | 545,600 |
| -7 | 19.4 | 97.3 | 972.6 | 47,066 | 41,080 | 8,677 | 14,120 | 10,595 | 6,975 | 103,120 | 515,700 |
| -6 | 21.2 | 97.7 | 976.5 | 44,626 | 39,140 | 8,587 | 13,388 | 10,046 | 6,658 | 97,500 | 487,600 |
| -5 | 23 | 98.0 | 980.4 | 42,327 | 37,310 | 8,495 | 12,698 | 9,529 | 6,358 | 92,200 | 461,200 |
| -4 | 24.8 | 98.4 | 984.4 | 40,159 | 35,580 | 8,402 | 12,048 | 9,042 | 6,073 | 87,240 | 436,300 |
| -3 | 26.6 | 98.8 | 988.3 | 38,115 | 33,930 | 8,307 | 11,435 | 8,582 | 5,801 | 82,560 | 413,000 |
| -2 | 28.4 | 99.2 | 992.2 | 36,187 | 32,370 | 8,210 | 10,856 | 8,148 | 5,546 | 78,160 | 391,000 |
| -1 | 30.2 | 99.6 | 996.1 | 34,368 | 30,890 | 8,111 | 10,310 | 7,739 | 5,301 | 74,020 | 370,300 |
| 0 | 32 | 100 | 1,000 | 32,650 | 29,490 | 8,012 | 9,795 | 7,353 | 5,069 | 70,140 | 350,800 |
| 1 | 33.8 | 100.4 | 1,003.9 | 31,029 | 28,160 | 7,910 | 9,309 | 6,988 | 4,846 | 66,600 | 332,400 |
| 2 | 35.6 | 100.8 | 1,007.8 | 29,498 | 26,890 | 7,807 | 8,849 | 6,643 | 4,637 | 63,000 | 315,100 |
| 3 | 37.4 | 101.2 | 1,011.7 | 28,052 | 25,690 | 7,702 | 8,416 | 6,318 | 4,437 | 59,800 | 298,800 |
| 4 | 39.2 | 101.6 | 1,015.6 | 26,685 | 24,540 | 7,595 | 8,006 | 6,010 | 4,248 | 56,800 | 283,400 |
| 5 | 41 | 102.0 | 1,019.5 | 25,392 | 23,460 | 7,489 | 7,618 | 5,719 | 4,068 | 53,800 | 268,900 |
| 6 | 42.8 | 102.3 | 1,023.4 | 24,170 | 22,430 | 7,380 | 7,251 | 5,444 | 3,895 | 51,000 | 255,300 |
| 7 | 44.6 | 102.7 | 1,027.3 | 23,013 | 21,440 | 7,270 | 6,904 | 5,183 | 3,733 | 48,600 | 242,300 |
| 8 | 46.4 | 103.1 | 1,031.2 | 21,918 | 20,510 | 7,160 | 6,575 | 4,937 | 3,577 | 46,000 | 230,200 |
| 9 | 48.2 | 103.5 | 1,035.1 | 20,882 | 19,620 | 7,048 | 6,265 | 4,703 | 3,429 | 43,800 | 218,600 |
| 10 | 50 | 103.9 | 1,039.0 | 19,901 | 18,780 | 6,937 | 5,970 | 4,482 | 3,289 | 41,560 | 207,800 |
| 11 | 51.8 | 104.3 | 1,042.9 | 18,971 | 17,980 | 6,825 | 5,691 | 4,273 | 3,152 | 39,520 | 197,500 |
| 12 | 53.6 | 104.7 | 1,046.8 | 18,090 | 17,210 | 6,711 | 5,427 | 4,075 | 3,024 | 37,560 | 187,800 |
| 13 | 55.4 | 105.1 | 1,050.7 | 17,255 | 16,480 | 6,597 | 5,177 | 3,886 | 2,902 | 35,740 | 178,600 |
| 14 | 57.2 | 105.5 | 1,054.6 | 16,463 | 15,790 | 6,483 | 4,939 | 3,708 | 2,785 | 34,000 | 169,900 |
| 15 | 59 | 105.8 | 1,058.5 | 15,712 | 15,130 | 6,369 | 4,714 | 3,539 | 2,673 | 32,340 | 161,700 |
| 16 | 60.8 | 106.2 | 1,062.4 | 14,999 | 14,500 | 6,255 | 4,500 | 3,378 | 2,567 | 30,800 | 153,900 |
| 17 | 62.6 | 106.6 | 1,066.3 | 14,323 | 13,900 | 6,141 | 4,297 | 3,226 | 2,466 | 29,320 | 146,600 |
| 18 | 64.4 | 107.0 | 1,070.2 | 13,681 | 13,330 | 6,027 | 4,104 | 3,081 | 2,369 | 27,920 | 139,600 |
| 19 | 66.2 | 107.4 | 1,074.1 | 13,072 | 12,780 | 5,912 | 3,922 | 2,940 | 2,275 | 26,600 | 133,000 |
| 20 | 68 | 107.8 | 1,077.9 | 12,493 | 12,260 | 5,798 | 3,748 | 2,814 | 2,189 | 25,340 | 126,800 |
| 21 | 69.8 | 108.2 | 1,081.8 | 11,942 | 11,770 | 5,686 | 3,583 | 2,690 | 2,102 | 24,160 | 120,800 |
| 22 | 71.6 | 108.6 | 1,085.7 | 11,419 | 11,290 | 5,572 | 3,426 | 2,572 | 2,021 | 23,040 | 115,200 |
| 23 | 73.4 | 109.0 | 1,089.6 | 10,922 | 10,840 | 5,460 | 3,277 | 2,460 | 1,944 | 21,980 | 109,900 |
| 24 | 75.2 | 109.3 | 1,093.5 | 10,450 | 10,410 | 5,348 | 3,135 | 2,353 | 1,870 | 20,960 | 104,800 |
| 25 | 77 | 109.7 | 1,097.4 | 10,000 | 10,000 | 5,238 | 3,000 | 2,252 | 1,800 | 20,000 | 100,000 |
| 26 | 78.8 | 110.1 | 1,101.2 | 9,572 | 9,602 | 5,127 | 2,871.6 | 2,155.6 | 1,732.3 | 19,090 | 95,480 |
| 27 | 80.6 | 110.5 | 1,105.1 | 9,165 | 9,226 | 5,018 | 2,749.5 | 2,063.9 | 1,667.7 | 18,226 | 91,160 |

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(except evaluation orders) can be returned to stock subject to a charge of 15% for up to 90 days from original shipment. Items opened, or held for 90 to 180 days, may be accepted for return subject to a 30% restocking charge. Products returned for credit must be in saleable condition. If the product has been modified, damaged, or installed, we cannot accept return for credit. Non-standard products (including those having electrical modifications or private labeling) may not be returned, except for warranty service.

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