

# RS-AHR-001-01 / 01 Overview

## RS485 Attitude Sensor

Brand: ROGERSENSE

Model: RS-AHR-001-01

Document version: 1.0

Hardware / firmware revision: TBD



Product presentation. Delivered configuration: TBD.

### Key functions

| Parameter          | Value / conditions                                                                                             | Rev. |
|--------------------|----------------------------------------------------------------------------------------------------------------|------|
| Selected interface | RS485 variant<br>Do not combine TTL / RS232 / CAN specifications                                               | 1.0  |
| Sensor outputs     | Acceleration, angular rate, angle, magnetic field<br>Selected waterproof variant states no air-pressure output | 1.0  |
| Acceleration range | +/-16 g                                                                                                        | 1.0  |

### Delivery configuration

Configuration and delivery contents are confirmed in the integration project; no online sample offer.

### Application scope

Reference specifications for project evaluation. Final delivery is subject to the agreed hardware, firmware, accessories and acceptance conditions. Presentation imagery does not define manufacturing geometry.

## RS-AHR-001-01 / 02 Technical data

Documented values and operating conditions. Conflicting or unavailable values are marked TBD.

| Parameter                    | Value / conditions                                                                                                                                                | Rev. |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Selected interface           | RS485 variant<br>Do not combine TTL / RS232 / CAN specifications                                                                                                  | 1.0  |
| Sensor outputs               | Acceleration, angular rate, angle, magnetic field<br>Selected waterproof variant states no air-pressure output                                                    | 1.0  |
| Acceleration range           | +/-16 g                                                                                                                                                           | 1.0  |
| Angular-rate range           | +/-2000 deg/s                                                                                                                                                     | 1.0  |
| Static roll / pitch accuracy | 0.1 deg<br>Static condition; manufacturer claim, sample validation TBD                                                                                            | 1.0  |
| Heading accuracy             | 1 deg<br>After magnetic calibration and without magnetic-field interference                                                                                       | 1.0  |
| Supply, RS485 version        | TBD - V260209 table: 9-36 V; wiring picture: 5-36 V; v230620<br>warning: do not exceed 5 V<br>Contradictory revisions; confirm the actual unit before energising. | 1.0  |
| Output-rate range            | 0.2-200 Hz<br>Store notes RS485 polling mode; achievable rate depends on readout                                                                                  | 1.0  |

## RS-AHR-001-01 / 02 Technical data (continued)

| Parameter                       | Value / conditions                                                                          | Rev. |
|---------------------------------|---------------------------------------------------------------------------------------------|------|
| UART baud-rate range            | 4800-230400 bit/s<br>RS485 serial setting; protocol revision TBD                            | 1.0  |
| Nominal enclosure               | 55 x 36.8 mm; height TBD (text 24 mm, drawing 23 mm)<br>Published height conflict retained. | 1.0  |
| RS485 working current           | 8.5 mA at 12 V, V260209 table; supply conflict remains TBD                                  | 1.0  |
| Protocol / startup              | RS485 Modbus master/slave; startup 1000 ms                                                  | 1.0  |
| Operating / storage temperature | -40 to +85 / -40 to +100 deg C                                                              | 1.0  |
| Acceleration resolution / noise | 0.0005 g/LSB; 0.75-1 mg RMS at 100 Hz                                                       | 1.0  |
| Gyroscope resolution / noise    | 0.061 deg/s/LSB; 0.028-0.07 deg/s RMS at 100 Hz                                             | 1.0  |
| Magnetic range / resolution     | -400 to +400 uT; resolution 38 nT; noise 20 nT                                              | 1.0  |
| Angle range / resolution        | Roll +/-180 deg; pitch +/-90 deg; 0.0055 deg horizontal                                     | 1.0  |
| Heading condition               | 1 deg after calibration, without magnetic interference                                      | 1.0  |

## RS-AHR-001-01 / 03 Electrical interface

### Pin / terminal definitions

| Parameter | Value / conditions                                                                          | Rev. |
|-----------|---------------------------------------------------------------------------------------------|------|
| Red       | VCC; voltage TBD due source contradiction<br>Match delivered RS485 revision; supply is TBD. | 1.0  |
| Black     | GND<br>Match delivered RS485 revision; supply is TBD.                                       | 1.0  |
| Yellow    | RS485 A<br>Match delivered RS485 revision; supply is TBD.                                   | 1.0  |
| Green     | RS485 B<br>Match delivered RS485 revision; supply is TBD.                                   | 1.0  |

### Electrical conditions

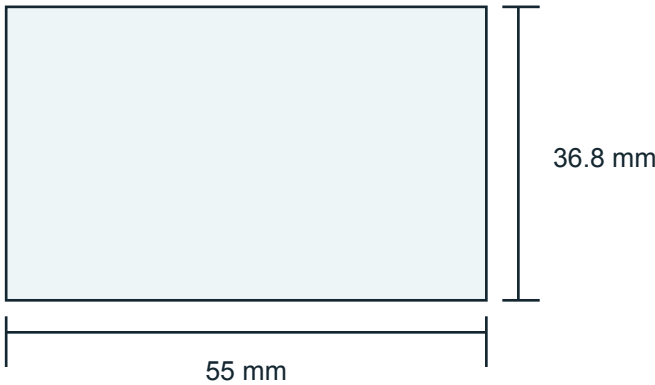
TBD - Published supply limits conflict: H3 table 9-36 V, H3 wiring 5-36 V, H4 legacy warning  $\leq 5$  V. Confirm hardware revision before connection.

| Item                            | Value / condition                                         | Rev. |
|---------------------------------|-----------------------------------------------------------|------|
| Pin viewing orientation         | TBD unless identified in the approved wiring drawing      | 1.0  |
| Harness / logic compatibility   | TBD; confirm against the delivered hardware before wiring | 1.0  |
| EMC / isolation / load derating | TBD; component ratings do not establish system ratings    | 1.0  |

RS-AHR-001-01 / 04 Mechanical & installation

Dimensions / unit: mm

TOP / DOCUMENTED OUTLINE



Unit: mm. Not to scale. Overall height / exact holes / datum: TBD.

| Item                            | Value / condition                              | Rev. |
|---------------------------------|------------------------------------------------|------|
| Overall length / width          | 55 / 36.8 mm                                   | 1.0  |
| Height                          | TBD: text 24 mm; drawing 23 mm                 | 1.0  |
| Hole diameter / drawing spans   | 4.2 mm / 47.9 and 28.7 mm; see original figure | 1.0  |
| Base thickness / datum approval | 4 mm as drawn / TBD                            | 1.0  |

Installation control

Confirm mounting datum, clearance, connector access and the exact delivered revision. Drawing spans listed in the table require an approved drawing to establish orientation. Unspecified geometry and tolerances: TBD.

## RS-AHR-001-01 / 05 Protocol & software

### Native interfaces and protocol

| Item                                 | Value / condition                                                                            | Rev. |
|--------------------------------------|----------------------------------------------------------------------------------------------|------|
| Selected variant                     | RS485 Modbus master/slave as listed in V260209                                               | 1.0  |
| Baud / schedule                      | 4800-230400 bit/s; default 9600; 0.2-200 Hz range; effective polling rate depends on payload | 1.0  |
| SDK reference                        | ROGERSENSE Modbus integration reference; applicability to delivered unit: TBD                | 1.0  |
| Registers / address / function codes | TBD; exact protocol document and firmware must match                                         | 1.0  |

### ROGERSENSE integration services

MQTT connectivity, OTA firmware updates, gateways and cloud platform are available for delivery. Model-specific controllers, interfaces and adaptation are agreed per project. These services do not imply native MQTT or OTA support inside every sensor.

Platform: <https://iot.rogersense.com>

| Item                                    | Value / condition | Rev. |
|-----------------------------------------|-------------------|------|
| Gateway / firmware build                | TBD               | 1.0  |
| MQTT topic / payload / credentials      | TBD               | 1.0  |
| OTA signing / rollback / access control | TBD               | 1.0  |

## RS-AHR-001-01 / 06 Delivery & verification

### Configuration and acceptance record

| Item                                | Value / condition                               | Rev. |
|-------------------------------------|-------------------------------------------------|------|
| Document version                    | 1.0                                             | 1.0  |
| Brand / model                       | ROGERSENSE / RS-AHR-001-01                      | 1.0  |
| Hardware / firmware revision        | TBD                                             | 1.0  |
| Serial number / calibration report  | TBD                                             | 1.0  |
| Approved mechanical drawing         | TBD                                             | 1.0  |
| Inspection / acceptance report      | TBD                                             | 1.0  |
| Packing / harness / accessories     | TBD; confirm the ordered configuration          | 1.0  |
| Certification / compliance evidence | TBD unless identified in the delivery agreement | 1.0  |

### Open items

Every TBD item and any conflicting supply, accuracy, dimensional or revision requirement must be resolved in the approved delivery configuration. Calibration conditions, wiring orientation, installation datum and application suitability require project verification.

### After-sales

After-sales follows the existing ROGERSENSE policy and the approved order. <https://rogersense.com/returns>

## RS-AHR-001-01 / 07 Appendix A

### Inertial performance and revision conditions

| Item                              | Value / condition                                                   | Rev. |
|-----------------------------------|---------------------------------------------------------------------|------|
| Acceleration bias stability       | X/Y 15 ug; Z 35 ug, 10 s smoothing                                  | 1.0  |
| Acceleration bias instability     | X/Y 10 ug; Z 30 ug, Allan method                                    | 1.0  |
| Gyro bias stability / instability | 8 deg/h, 10 s smoothing / 5 deg/h, Allan method                     | 1.0  |
| Acceleration zero / thermal drift | +/-20-40 mg static horizontal; +/-0.15 mg/deg C                     | 1.0  |
| Gyro zero / thermal drift         | +/-0.5-1 deg/s; +/-0.005-0.015 deg/s/deg C                          | 1.0  |
| Sensor bandwidth                  | Acceleration / gyro 5-256 Hz                                        | 1.0  |
| Magnetometer linearity            | 0.5% at +/-200 uT; sensitivity 26 nT as separately listed           | 1.0  |
| Angle temperature drift           | +/-0.5-1 deg over -40 to +85 deg C                                  | 1.0  |
| Supply conflict disposition       | TBD; historical and current source warnings are not interchangeable | 1.0  |

Reference information from the existing ROGERSENSE specification. Use the approved hardware, firmware, harness and calibration revision; unlisted implementation details remain TBD.