

## FEATURES

- Board mount pressure sensor series with digital I2C output
- Calibrated and temperature compensated
- Differential/relative, bidirectional differential, absolute and barometric sensor versions
- Wide variety of pressure ranges: from 2.5 mbar (250 Pa) up to 2.5 bar full scale
- Piezoresistive sensor with high precision digital signal conditioning
- Total accuracy < 0.5 %FSO at room temperature for standard pressure ranges
- TEB < 1.0 %FSO (0 ... 60 °C) for standard pressure ranges
- High long term stability
- Fast response time (typ. < 1 ms)
- Supply voltage: 3.3 V and 5 V models available
- Digital output via I<sup>2</sup>C interface: 14 bit for pressure and 11 bit for temperature values
- Programmable I<sup>2</sup>C-address
- Compact DIP-8 package (width: 0.6 inch)
- Substitute product for Honeywell's HSC series
- RoHS compliant

## TYPICAL APPLICATIONS

- Static and dynamic pressure measurement
- Industrial process control
- Barometric pressure measurement
- Vacuum monitoring
- Gas flow measurement
- Medical instrumentation
- Heating, Ventilation and Air Conditioning (HVAC)



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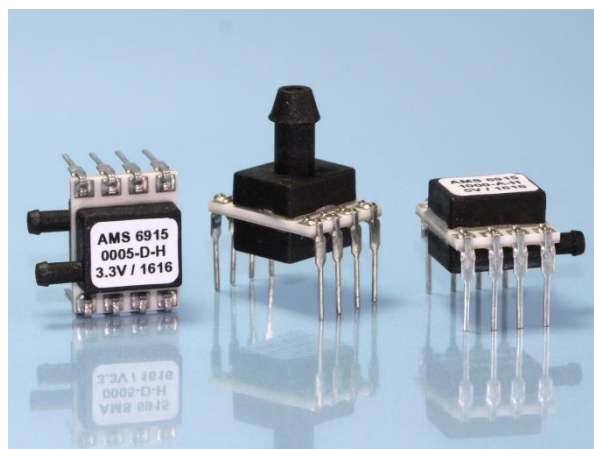
## GENERAL DESCRIPTION

The sensors in the AMS 6915 series are high precision OEM pressure sensors with a digital I<sup>2</sup>C-interface. They are calibrated and temperature compensated within an operating temperature range of -25 ... 85 °C. The I<sup>2</sup>C output and the selectable supply voltage of 3.3 V or 5 V make the AMS 6915 series ideal for microcontroller applications.

AMS 6915 combine a micromachined, high quality piezoresistive sensing element with a modern mixed-signal conditioning ASIC on a ceramic substrate. With the compact DIL package for assembly on printed circuit boards the series is especially suitable for low and medium differential pressure measurements in applications, which require consequent miniaturization.

AMS 6915 board mount pressure sensors are available in various pressure ranges for all types of pressure: differential pressure sensors in ranges from 0 ... 5 mbar up to 0 ... 2.5 bar, relative (gage) sensors from 0 ... 200 mbar up to 0 ... 2 bar, absolute pressure sensors from 0 ... 500 mbar up to 0 ... 2 bar and a 700 ... 1200 mbar variant for barometric measurements. Bidirectional differential sensor types are available in pressure ranges from -2.5 ... +2.5 mbar up to -1 ... +1 bar.

Custom specific pressure ranges or further modifications are available on request.



## PRESSURE RANGES AND TYPES

Pressure sensor code	Pressure type <sup>1)</sup>	Pressure range in mbar	Burst pressure <sup>2)</sup> in bar	Pressure range in PSI	Burst pressure in PSI
<b>Ultra low pressure</b>					
AMS 6915-0005-D-...	differential (relative)	0 ... 5	> 0.35	0 ... 0.0725	> 5
AMS 6915-0010-D-...	differential (relative)	0 ... 10	> 0.35	0 ... 0.145	> 5
AMS 6915-0002-D-B-...	bidirectional differential	-2.5 ... +2.5	> 0.35	-0.0363 ... +0.0363	> 5
AMS 6915-0005-D-B-...	bidirectional differential	-5 ... +5	> 0.35	-0.0725 ... +0.0725	> 5
AMS 6915-0010-D-B-...	bidirectional differential	-10 ... +10	> 0.35	-0.145 ... +0.145	> 5
<b>Low pressure</b>					
AMS 6915-0025-D-...	differential (relative)	0 ... 25	> 0.5	0 ... 0.363	> 7.5
AMS 6915-0050-D-...	differential (relative)	0 ... 50	> 1	0 ... 0.725	> 15
AMS 6915-0100-D-...	differential (relative)	0 ... 100	> 1	0 ... 1.450	> 15
AMS 6915-0025-D-B-...	bidirectional differential	-25 ... +25	> 0.5	-0.363 ... +0.363	> 7.5
AMS 6915-0050-D-B-...	bidirectional differential	-50 ... +50	> 1	-0.725 ... +0.725	> 15
AMS 6915-0100-D-B-...	bidirectional differential	-100 ... +100	> 1	-1.450 ... +1.450	> 15
<b>Standard pressure</b>					
AMS 6915-0200-D-...	differential (relative)	0 ... 200	> 5	0 ... 2.901	> 72
AMS 6915-0350-D-...	differential (relative)	0 ... 350	> 5	0 ... 5.076	> 72
AMS 6915-1000-D-...	differential (relative)	0 ... 1000	> 5	0 ... 14.50	> 72
AMS 6915-2000-D-...	differential (relative)	0 ... 2000	> 5	0 ... 29.01	> 72
AMS 6915-2500-D-...	differential (relative)	0 ... 2500	> 5	0 ... 36.25	> 72
AMS 6915-0200-G-...	relative	0 ... 200	> 5	0 ... 2.901	> 72
AMS 6915-0350-G-...	relative	0 ... 350	> 5	0 ... 5.076	> 72
AMS 6915-1000-G-...	relative	0 ... 1000	> 5	0 ... 14.50	> 72
AMS 6915-2000-G-...	relative	0 ... 2000	> 5	0 ... 29.01	> 72
AMS 6915-0200-D-B-...	bidirectional differential	-200 ... +200	> 5	-2.901 ... +2.901	> 72
AMS 6915-0350-D-B-...	bidirectional differential	-350 ... +350	> 5	-5.076 ... +5.076	> 72
AMS 6915-1000-D-B-...	bidirectional differential	-1000 ... +1000	> 5	-14.50 ... +14.50	> 72
AMS 6915-0500-A-...	absolute	0 ... 500	> 5	0 ... 7.250	> 72
AMS 6915-1000-A-...	absolute	0 ... 1000	> 5	0 ... 14.50	> 72
AMS 6915-2000-A-...	absolute	0 ... 2000	> 5	0 ... 29.01	> 72
AMS 6915-1200-B-...	absolute (barometric)	700 ... 1200	> 5	10.88 ... 17.40	> 72

**Table 1: AMS 6915 standard pressure ranges (other ranges on request)**

**Note:**

- 1) The offered pressure types are: differential, bidirectional differential, relative / gage and absolute pressure. Differential pressure types measure the pressure difference between the sensor's pressure ports. While sensors for differential pressure are only able to measure negative or positive pressure, bidirectional pressure sensors are capable of measuring both.

Relative or gage pressure sensors measure the pressure applied to their pressure port against atmospheric pressure. Differential pressure sensors can also be used for relative pressure measurements.

Absolute pressure sensors measure the applied pressure against vacuum. Barometric pressure sensors are a sub-type of absolute pressure sensors and are calibrated to cover a pressure range typically found in meteorological pressure measurements.

- 2) Burst pressure is defined as the maximum pressure that can be applied to one pressure port relative to the other port (or while only one pressure port is connected) without causing leaks in the sensor.

## MAXIMUM RATINGS

Parameter	Minimum	Typical	Maximum	Units
Maximum supply voltage: $V_{S,max}$			6.0	V
Operating temperature: $T_{op}$	-25		85	°C
Storage temperature: $T_{amb}$	-40		125	°C
Common mode pressure $p_{CM}$ <sup>1)</sup>			16	bar

Table 2: Maximum ratings

## Note:

- 1) Common mode pressure is defined as the maximum pressure that can be applied simultaneously on both pressure ports of a differential or bidirectional transmitter without causing damages while no further differential pressure is applied.

## SPECIFICATIONS

All parameters apply to  $T_{op} = 25\text{ °C}$  and  $V_S = 3.3\text{ V}$  (3.3 V models) or  $V_S = 5.0\text{ V}$  (5 V models), unless otherwise stated.

Parameter	Minimum	Typical	Maximum	Units
<b>Digital output signal (pressure)</b> <sup>1)</sup>				
@ specified minimum pressure (see "pressure range") <sup>2)</sup>		1638		counts
@ specified maximum pressure (see "pressure range") <sup>2)</sup>		14745		counts
Full span output (FSO) <sup>3)</sup>		13107		counts
Without pressure (bidirectional differential)		8192		counts
<b>Digital output signal (temperature)</b> <sup>4)</sup>				
@ minimum temperature $T = -25\text{ °C}$		256		counts
@ maximum temperature $T = 85\text{ °C}$		1382		counts
<b>Accuracy</b> <sup>5)</sup> (pressure measurement) @ $T = 25\text{ °C}$				
Ultra low pressure sensors ( $\leq 10\text{ mbar}$ )			$\pm 1.5$	%FSO
Low pressure sensors ( $10\text{ mbar} < p \leq 100\text{ mbar}$ )			$\pm 1.0$	%FSO
Standard pressure sensors ( $> 100\text{ mbar}$ )			$\pm 0.5$	%FSO
<b>TEB</b> <sup>6)</sup> (pressure measurement) @ $T = 0 \dots 60\text{ °C}$				
Ultra low pressure sensors ( $\leq 10\text{ mbar}$ )			$\pm 2.0$	%FSO
Low pressure sensors ( $10\text{ mbar} < p \leq 100\text{ mbar}$ )			$\pm 1.5$	%FSO
Standard pressure sensors ( $> 100\text{ mbar}$ )			$\pm 1.0$	%FSO
<b>Error temperature measurement @ <math>T = -25 \dots 85\text{ °C}</math></b>				
All types of AMS 6915 $T = -25 \dots 85\text{ °C}$			$\pm 3.0$	%FSO
Long term stability			$< 0.5$	%FSO/a
Resolution A/D converter		14		bits
Resolution pressure signal		12		bits
Resolution temperature signal			11	bits
Supply voltage range ( $V_S$ ) for 3.3 V model	3.0	3.3	3.6	V
Supply voltage range ( $V_S$ ) for 5 V model	4.75	5.00	5.25	V
Overall ratiometricity error (@ supply voltage range)		$\pm 0.025$	$\pm 0.1$	%FSO
Current consumption			4	mA
Reaction time (10 % .. 90 % rise time)		0.5	1	ms
Start-up time (Power up to data ready)			10	ms

Parameter	Minimum	Typical	Maximum	Units
<b>I<sup>2</sup>C-interface</b>				
Input high level	80		100	% V <sub>S</sub>
Input low level	0		20	% V <sub>S</sub>
Output low level	0		10	% V <sub>S</sub>
Load capacitance @ SDA			200	pF
Clock frequency SCL		100	400	kHz
Pull-up resistor	500			Ω
Pressure changes	10 <sup>6</sup>			
Compensated temperature range	0		60	°C
Weight		1.5		g
Media compatibility	See „Specification notes“ <sup>7) 8)</sup>			

**Table 3: Specifications**

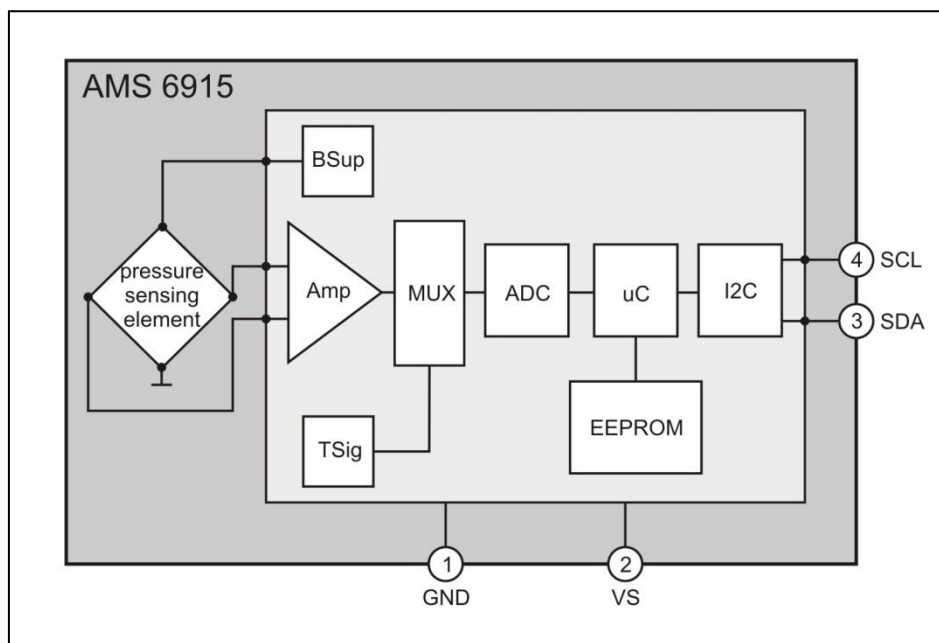
## SPECIFICATION NOTES

- 1) The digital pressure output signal is not ratiometric to the supply voltage.
- 2) The pressure ranges with specified minimum and maximum pressure are listed in *Table 1*.
- 3) The Full Span Output (FSO) is the algebraic difference between the output signal at the specified maximum pressure and the output signal at the specified minimum pressure (see *Table 1*).
- 4) The digital temperature output signal is not ratiometric to the supply voltage. The temperature output value is the overall sensor temperature. It is measured at the sensor's signal conditioning ASIC and is influenced by the measurement media's temperature, the ambient temperature, the sensor's self-heating and the thermal conductivity of the material in contact to the sensor (e.g. PCB, mounting assembly, pressure hoses).
- 5) Accuracy is defined as the maximum deviation of the measurement value from the ideal characteristic curve at room temperature (RT) in %FSO including the adjustment error (offset and span), nonlinearity, pressure hysteresis and repeatability. Nonlinearity is the measured deviation from the best fit straight line (BFSL) across the entire pressure range. Pressure hysteresis is the maximum deviation of the output value at any pressure within the specified range when the pressure is cycled to and from the minimum or maximum rated pressure. Repeatability is the maximum deviation of the output value at any pressure within the specified range after 10 pressure cycles.
- 6) The TEB (total error band or overall error) is defined as the maximum deviation of the measurement value from the ideal characteristic curve in %FSO across the entire temperature range.
- 7) Media compatibility of pressure port 1 (for a description of port 1 see *Figure 5*): fluids and gases non-corrosive to LCP, silicon, Pyrex, RTV silicone rubber and epoxy.
- 8) Media compatibility of pressure port 2 (for a description of port 2 see *Figure 5*): clean, dry gases, non-corrosive to LCP, silicon, RTV silicone rubber, epoxy, gold (alkaline or acidic liquids can destroy the sensor).

## FUNCTIONAL DESCRIPTION

The pressure sensors in the AMS 6915 series combine a membrane based piezoresistive silicon sensing element with a modern mixed-signal CMOS ASIC for signal-conditioning on a ceramic substrate. This enables high precision measurements and excellent drift and long-term stability.

The functional principle of the AMS 6915 sensors is explained using *Figure 1*.



**Figure 1: Functional principle**

The physical pressure is measured at AMS 6915's piezoresistive pressure sensing element, where the pressure is converted into a differential voltage signal, which is almost proportional to the pressure. This differential voltage signal is corrected and conditioned by the ASIC in multiple steps.

First, the differential voltage signal from the sensing element is pre-amplified by the ASIC's amplifier stage and transmitted to the A/D converter stage (ADC) by the multiplexer stage. The ADC stage converts this voltage signal into digital values with a resolution of 14 bits. The digitized signal is corrected and calibrated in the subsequent ASIC microcontroller block.

During AMS 6915's factory calibration, sensor-specific correction coefficients are determined and stored in the respective sensor's EEPROM. This permits sensor-specific calibration and correction (i.e. temperature compensation and linearization) of the digitized pressure signal. The temperature signal required for temperature compensation is generated at the ASIC's temperature reference block and is transmitted by the multiplexer stage to the ADC stage, where it is digitized. The ASIC's microcontroller block runs a cyclic program, which continuously calculates the current standardized and corrected digital pressure value using the current digitized pressure and temperature values as well as the stored correction coefficients. In addition, a standardized current digital temperature value is calculated. These calculated and corrected digital values (14 bit pressure value and 11 bit temperature value) are written to the ASIC's output registers and continuously updated (typically every 0.5 ms).

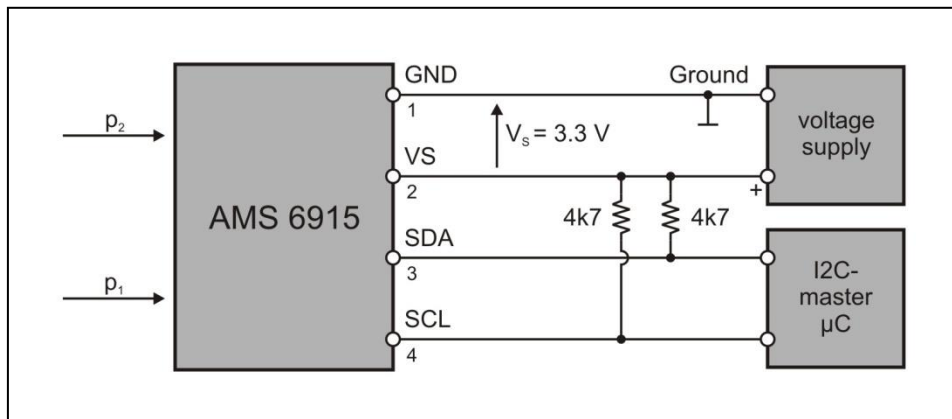
The readout of the standardized digital output values for pressure and temperature from the output registers is done via the sensor's I<sup>2</sup>C interface at PIN3 (SDA) and PIN4 (SCL). The AMS 6915's digital output values (for pressure and temperature) are not ratiometric to the supply voltage.

## INITIAL OPERATION

### Electrical Connection

The electrical connection of AMS 6915 sensors is typically made by soldering them directly on a printed circuit board or by mounting them on a suitable socket. The basic circuit of the AMS 6915 sensor is shown in *Figure 2*. To read data from the digital output, it is enough to connect PIN1 (GND), PIN2 (VCC) and the I2C-bus lines to PIN3 (SDA) and PIN4 (SCL). Pins 5 to 8 are internally not connected and can be left unconnected.

**Important:** For I2C-bus communication, each bus line (SCL and SDA) has to be connected to the positive supply voltage (pin Vcc or +3.3 V) via a pull-up resistor. Please add pull-up resistors (4.7 kΩ are recommended) to your bus line if they are not integrated in the I2C-master.



**Figure 2: Principle electric circuitry**

### Pressure Connection

The pressure connection is established by mounting hoses / flexible tubing on the sensor's barbed pressure port(s). Depending on the sensor type and the type of measuring pressure, one or two of the pressure ports are connected to the measuring medium / volume, as described in the table below:

Sensor type	Pressure type to measure	Port 1	Port 2	Requirement
AMS 6915-xxxx-D	Differential	connected to $p_1$	connected to $p_2$	$p_1 \geq p_2$
	positive gage	connected to $p_1$	open	$p_1 \geq p_{\text{ambient}}$
	negative gage (vacuum)	open	connected to $p_2$	$P_2 \leq p_{\text{ambient}}$
AMS 6915-xxxx-D-B	differential (bidirectional)	connected to $p_1$	connected to $p_2$	$p_1 \geq p_2$ or $p_1 \leq p_2$
AMS 6915-xxxx-G	positive gage	connected to $p_1$	not available	$P_1 \geq p_{\text{ambient}}$
AMS 6915-xxxx-A	absolute pressure	not available	connected to $p_2$	$p_2 = \text{meas. Pressure}$
AMS 6915-xxxx-B	barometric pressure	not available	connected to $p_2$	$P_2 = \text{meas. Pressure}$

wherein  $p_1$  = pressure at port 1 and  $p_2$  = pressure at port 2. For port declaration see *Figure 5*. The media compatibility of pressure port 1 and port 2 can be found in "Specification notes", 7 and 8.

#### Notes:

- For horizontal pressure port configuration Analog Microelectronics recommends a silicone hose tubing with inner diameter  $\varnothing = 1.6$  mm, outer diameter  $\varnothing = 3.2$  mm and for vertical pressure port configuration a silicone hose tubing with inner diameter  $\varnothing = 2$  mm, outer diameter  $\varnothing = 6$  mm. Suitable tubing can be found on [AMS 6915's product page](#).
- ESD precautions are necessary, it is essential to ground machines and personnel properly during assembly and handling of the device.



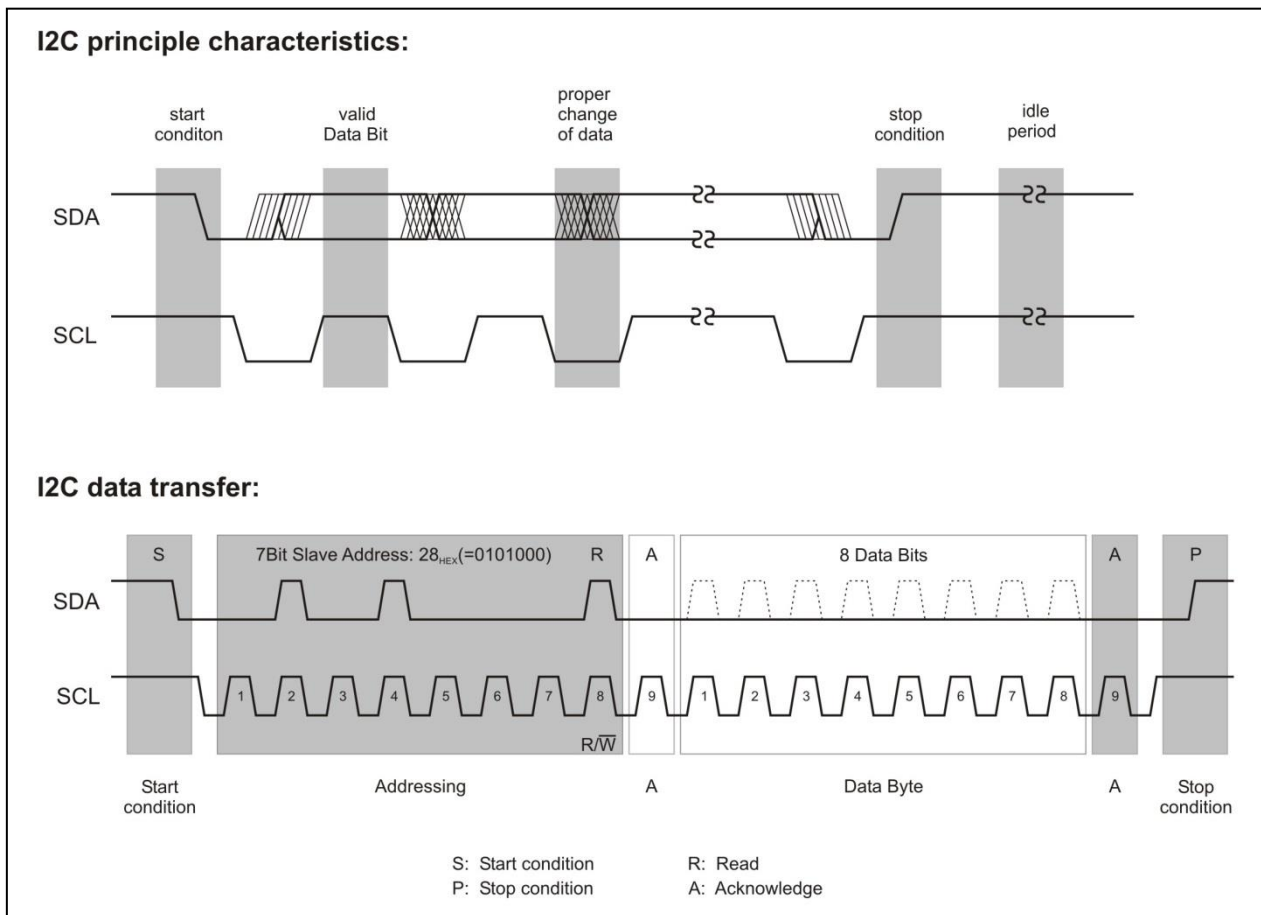
## I2C-INTERFACE

AMS 6915 pressure sensors have a digital output (I<sup>2</sup>C-interface). When connected to a bidirectional I<sup>2</sup>C-bus, the current corrected digital pressure and temperature values can be read from AMS 6915's output register via the I<sup>2</sup>C-interface.

Communication via the I<sup>2</sup>C-bus follows a simple master-slave principle. Data transfer is always initialized by a master (such as a microcontroller), which sends a data request to the sensor; the AMS 6915 sensor – which always operates as slave – answers then.

The I<sup>2</sup>C-bus requires just two bus lines: a serial data line (SDA) and a serial clock line (SDL). SDA and SCL are bidirectional lines, which are connected to the positive supply voltage using pull-up resistors.

AMS 6915 communication protocol adheres to a standard I<sup>2</sup>C communication protocol (given in *Figure 3*)<sup>1</sup>.



**Figure 3: Standard I<sup>2</sup>C protocol**

<sup>1</sup> There are three differences of AMS 6915's communication protocol compared to the original I<sup>2</sup>C communication protocol:

1. A stop condition directly after a start condition without clock pulses in between is not allowed. This creates a communication error for the next communication.
2. A second start condition (restart) during data transmission when SCL is still high is not allowed.
3. Between the start condition and the first rising SCL edge a falling SDA edge is not allowed.

The I<sup>2</sup>C communication phases are as follows:

**Idle period** (bus is free)

When the bus is free, both I<sup>2</sup>C-bus lines (SDA and SCL) are pulled up to supply voltage level ("high level").

**Start S** (start condition)

Prior to any data transfer on the bus a start condition has to be generated. The start condition is always sent by the I<sup>2</sup>C-master. The start condition is defined as a transition from "high level" to "low level" on the SDA line while the SCL line is still on "high level". The digital data readout from the AMS 6915 is always initiated by a start condition.

**Stop P** (stop condition)

The stop condition is always generated by the I<sup>2</sup>C-master after a data transfer has been completed. The stop condition is defined as a transition from "low level" to "high level" on the SDA line while the SCL line is still on "high level". The digital data readout from the AMS 6915 is always terminated by a stop condition.

**Valid data**

Data is transmitted in bytes (8 bits), starting with the most significant bit (MSB). One data bit is transmitted with each clock pulse. The transmitted bits are only valid when, following a start condition, the level on the SDA line is constant as long as the SCL line is on "high level". Changes to the SDA level must be made while the SCL line is on "low level".

**Acknowledge A**

After a byte has been transmitted the respective receiver (master or slave) has to send an acknowledge (additional acknowledge bit) confirming the correct receipt of the data. For this purpose the master generates an extra acknowledge-related clock pulse. The receiver sends the acknowledge bit by pulling the SDA line down to "low level" during the additional clock pulse.

**Addressing / Slave address (I<sup>2</sup>C-address AMS 6915)**

After the start condition the master sends an addressing byte (the first byte after the start condition) which determines which slave is selected. The addressing byte contains the individual 7-bit slave address of the selected slave (AMS 6915) and a data direction bit ( $\overline{R/\overline{W}}$ ). A "0" for the  $\overline{R/\overline{W}}$  bit indicates a transmission from master to slave (W: write; the master wishes to transmit data to the selected slave), a "1" a data request (R: read; the master requests data from the slave).

The pressure sensors in the AMS 6915 series have a factory-programmed 7-bit slave address of 0x28<sub>Hex</sub> (0101000<sub>bin</sub>), which is stored in the sensor's EEPROM.

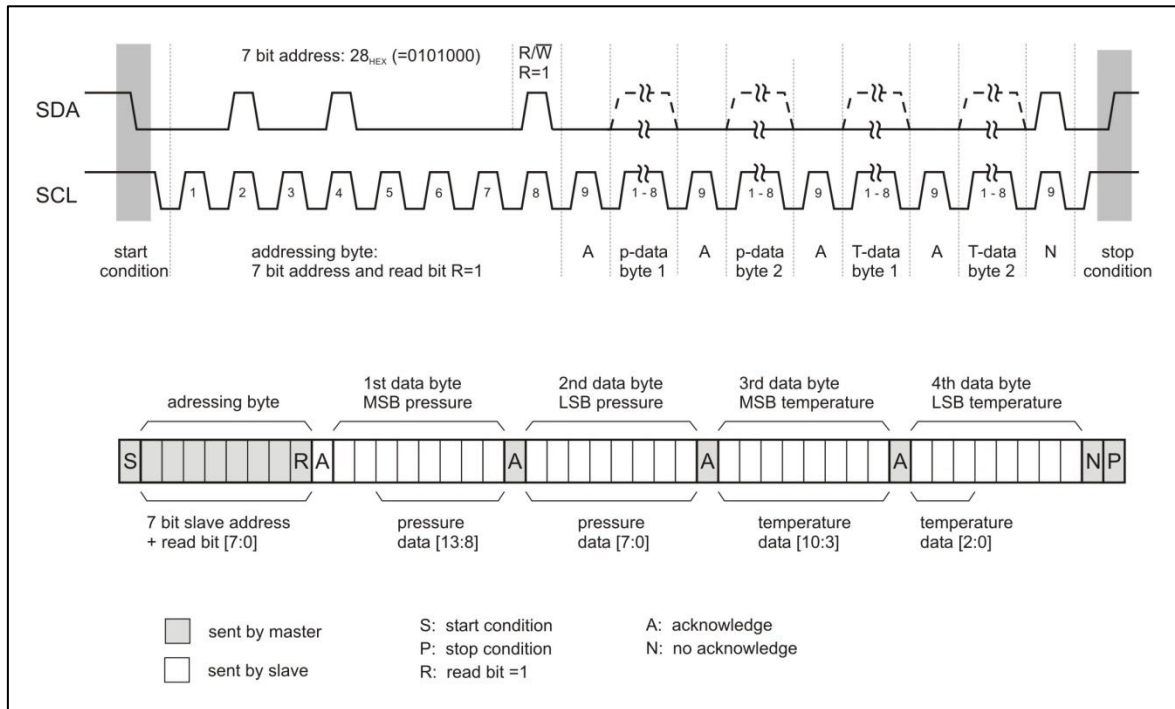
On request each AMS 6915 can be ordered with an individual 7-bit slave address programmed at the factory. Using [AMS 6915's USB starter kit](#) the customer can program the individual slave address himself.

In general 7-bit addressing allows 128 different addresses. If more than one AMS 6915 should be connected to the same I<sup>2</sup>C-bus, each pressure sensor requires an individual slave address.



## DATA READOUT VIA THE I2C-INTERFACE

The digital output values for pressure (14-bit value) and temperature (11-bit value) are read from AMS 6915's output register via AMS 6915's I<sup>2</sup>C-interface. The data readout, which is illustrated in *Figure 4*, is done byte by byte.



**Figure 4: Data readout of the digital pressure and temperature values**

A data request from the I<sup>2</sup>C-master always initializes the data transfer via the I<sup>2</sup>C-bus. For this purpose the I<sup>2</sup>C-master generates a start condition on the I<sup>2</sup>C-bus lines. Following the start condition the I<sup>2</sup>C-master then sends the addressing byte containing the 7-bit slave address of the AMS 6915 (programmed to 0x28<sub>HEX</sub> = 0101000<sub>bin</sub> at the factory) and the data direction bit R = 1 which indicates a data request. The selected pressure sensor first answers with an acknowledge bit. The selected sensor then starts the data transfer from the output register.

For pressure and temperature value readout four data bytes are transmitted from the pressure sensor to the I<sup>2</sup>C-master. The two bytes for the current digital pressure value are sent first, followed by the two bytes for the current digital temperature value, always beginning with the most significant byte. On each transferred data byte the I<sup>2</sup>C-master sends an acknowledge bit confirming the correct receipt of data. After the fourth data byte, the receiving master generates a no acknowledge bit and the pressure sensor is set to inactive. The I<sup>2</sup>C-master shuts down the data transfer by sending a stop condition.

The last 6 bits of the first data byte and the 8 bits of the second data byte always beginning with the most significant bit give the 14-bit pressure value. The 8 bits of the third data byte and the first 3 bits of the fourth data byte give the 11-bit temperature value.

For pressure value readout only it is possible to stop the data transfer after two data bytes. In this case the I<sup>2</sup>C-master sends a no acknowledge bit after the second data byte and shuts down the data transfer by sending a stop condition.

### Calculating the current pressure and temperature value

The digital output values for pressure (14-bit value) and temperature (11-bit value) have to be converted in order to generate the desired information on pressure and temperature in physical units.

The current pressure in mbar (or PSI) is calculated from the digital pressure value using the following equations:

$$p = \frac{Digoutp(p) - Digoutp_{min}}{Sensp} + p_{min} \quad \text{with} \quad sensp = \frac{Digoutp_{max} - Digoutp_{min}}{p_{max} - p_{min}} \quad (1)$$

wherein  $p$  is the current pressure in mbar<sup>2</sup>,  $p_{min}$  is the specified minimum pressure and  $p_{max}$  is the specific maximum pressure in mbar; depending on the specified pressure range,  $Digoutp(p)$  is the current digital 14-bit pressure value in counts,  $Digoutp_{min}$  and  $Digoutp_{max}$  are the digital pressure values at minimum and maximum specified pressure in counts and  $Sensp$  is the sensitivity of the pressure sensor in counts/mbar.

The current sensor temperature in °C is calculated from the digital temperature output value using the following equation:

$$T = \frac{DigoutT(T)}{2048} * 200 \text{ °C} - 50 \text{ °C} \quad (2)$$

Therein  $T$  is the current sensor temperature in °C and  $DigoutT(T)$  is the current 11-bit digital temperature output value in counts.

#### Example:

At the digital output of an AMS 6915-0005-D-B (-5 ... 5 mbar bidirectional differential sensor) the following data bytes 1 ... 4 are read:

Byte 1: 00101100      Byte 2: 11001101      Byte 3: 01011100      Byte 4: 11100000

Taking the last 14 bits of byte 1 and byte 2 the current 14 bit digital pressure value is:

$$Digoutp(p) = 10110011001101_{\text{bin counts}} = 2CCD_{\text{Hex counts}} = 11469_{\text{Dec counts}}$$

and with the first 11 bits of byte 3 and byte 4 the digital temperature value is:

$$DigoutT(T) = 01011100111_{\text{bin counts}} = 2E7_{\text{Hex counts}} = 743_{\text{Dec counts}}.$$

For AMS 6915-0005-D-B the following values are specified:

$p_{min} = -5$  mbar,  $p_{max} = 5$  mbar and  $Digoutp_{min} = 1638$ ,  $Digoutp_{max} = 14745$

Using these values and equation (1) the current pressure in mbar can be calculated:

$$p = \frac{(11469 - 1638) \text{ counts}}{(13107 / 10) \text{ counts / mbar}} + (-5) \text{ mbar} = 2.501 \text{ mbar}$$

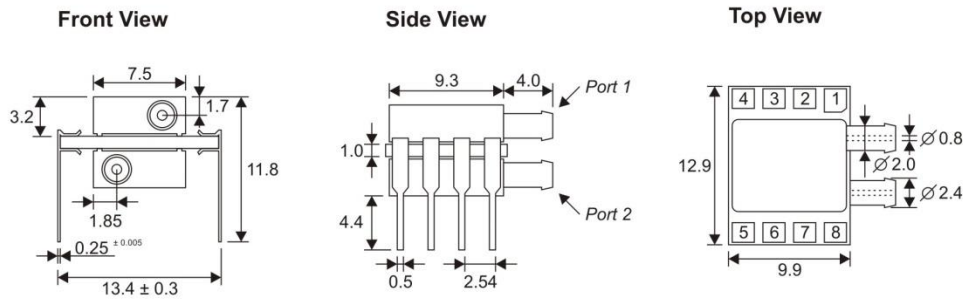
Using equation (2), the current sensor temperature in °C is calculated as:

$$T = \frac{(743 \cdot 200) \text{ counts} \cdot \text{°C}}{2048 \text{ counts}} - 50 \text{ °C} = 22.6 \text{ °C}$$

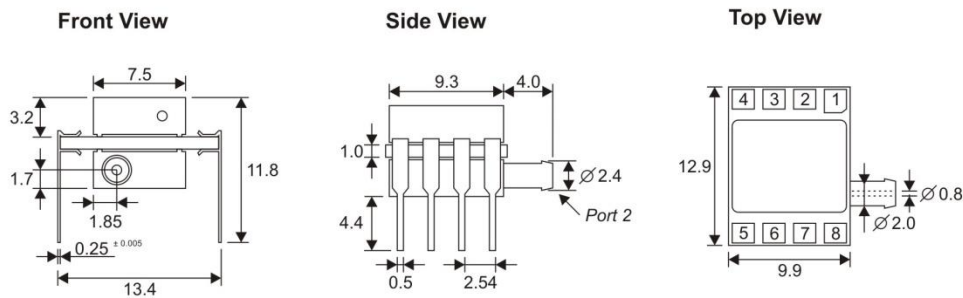
<sup>2</sup> If the current pressure is required in another physical unit, we suggest calculating the current pressure value in mbar as described above and converting the value into the required physical unit then.

## DIMENSIONS AND PINOUT

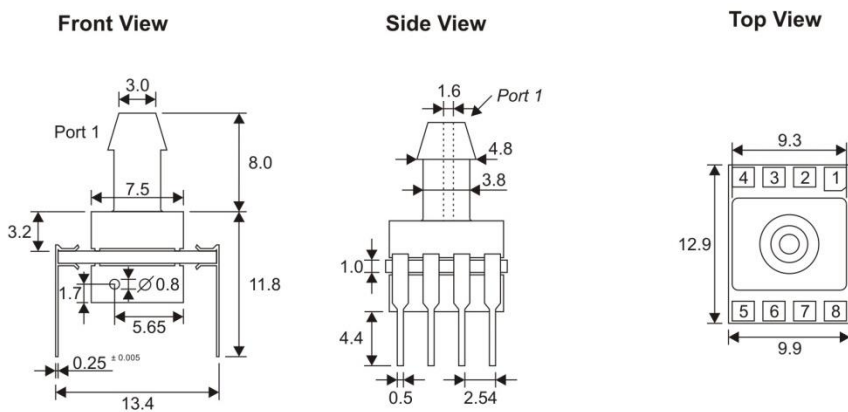
### AMS 6915-xxxx-D-H-x-DIL & AMS 6915-xxxx-D-B-H-x-DIL (horizontal pressure port configuration):



### AMS 6915-xxxx-A-H-x-DIL & AMS 6915-1200-B-H-x-DIL (horizontal pressure port configuration):



### AMS 6915-xxxx-G-V-x-DIL (vertical pressure port configuration):



#### Pinout:

Pin	Description
1	GND
2	VS
3	SDA
4	SCL
5 - 8	N.C.

All dimensions in mm, tolerances: ±0.1 mm unless otherwise noted

Figure 5: Dimensions and pinout

## INFORMATION FOR ORDERING

### Horizontal pressure port configuration (DIL package)

With x = 3 for 3.3 V supply voltage models and x = 5 for 5 V supply voltage models.

Ordering Code	mbar	kPa	PSI
<b>Differential pressure types (-D)</b>			
AMS 6915-0005-D-H-x-DIL	0 ... 5	0 ... 0.5	0 ... 0.0725
AMS 6915-0010-D-H-x-DIL	0 ... 10	0 ... 1	0 ... 0.145
AMS 6915-0025-D-H-x-DIL	0 ... 25	0 ... 2.5	0 ... 0.363
AMS 6915-0050-D-H-x-DIL	0 ... 50	0 ... 5	0 ... 0.725
AMS 6915-0100-D-H-x-DIL	0 ... 100	0 ... 10	0 ... 1.450
AMS 6915-0200-D-H-x-DIL	0 ... 200	0 ... 20	0 ... 2.901
AMS 6915-0350-D-H-x-DIL	0 ... 350	0 ... 35	0 ... 5.076
AMS 6915-1000-D-H-x-DIL	0 ... 1000	0 ... 100	0 ... 14.50
AMS 6915-2000-D-H-x-DIL	0 ... 2000	0 ... 200	0 ... 29.01
AMS 6915-2500-D-H-x-DIL	0 ... 2500	0 ... 250	0 ... 36.25
<b>Bidirectional differential pressure types (-D-B)</b>			
AMS 6915-0002-D-B-H-x-DIL	-2.5 ... +2.5	-0.25 ... +0.25	-0.0363 ... +0.0363
AMS 6915-0005-D-B-H-x-DIL	-5 ... +5	-0.5 ... +0.5	-0.0725 ... +0.0725
AMS 6915-0010-D-B-H-x-DIL	-10 ... +10	-1 ... +1	-0.145 ... +0.145
AMS 6915-0025-D-B-H-x-DIL	-25 ... +25	-2.5 ... +2.5	-0.363 ... +0.363
AMS 6915-0050-D-B-H-x-DIL	-50 ... +50	-5 ... +5	-0.725 ... +0.725
AMS 6915-0100-D-B-H-x-DIL	-100 ... +100	-10 ... +10	-1.450 ... +1.450
AMS 6915-0200-D-B-H-x-DIL	-200 ... +200	-20 ... +20	-2.901 ... +2.901
AMS 6915-0350-D-B-H-x-DIL	-350 ... +350	-35 ... +35	-5.076 ... +5.076
AMS 6915-1000-D-B-H-x-DIL	-1000 ... +1000	-100 ... +100	-14.50 ... +14.50
<b>Absolute pressure types (-A)</b>			
AMS 6915-0500-A-H-x-DIL	0 ... 500	0 ... 50	0 ... 7.250
AMS 6915-1000-A-H-x-DIL	0 ... 1000	0 ... 100	0 ... 14.50
AMS 6915-2000-A-H-x-DIL	0 ... 2000	0 ... 200	0 ... 29.01
<b>Barometric (absolute) pressure types (-B)</b>			
AMS 6915-1200-B-H-x-DIL	700 ... 1200	70 ... 120	10.88 ... 17.40

### Vertical pressure port configuration (DIL package)

With x = 3 for 3.3 V supply voltage models and x = 5 for 5 V supply voltage models.

Ordering Code	mbar	kPa	PSI
<b>Relative (Gage) pressure types (-G)</b>			
AMS 6915-0200-G-V-x-DIL	0 ... 200	0 ... 20	0 ... 2.901
AMS 6915-0350-G-V-x-DIL	0 ... 350	0 ... 35	0 ... 5.076
AMS 6915-1000-G-V-x-DIL	0 ... 1000	0 ... 100	0 ... 14.50
AMS 6915-2000-G-V-x-DIL	0 ... 2000	0 ... 200	0 ... 29.01

## ADDITIONAL EQUIPMENT

Ordering code	Description
USB starter kit AMS 6915	A USB starter kit interfacing AMS 6915 to a Windows PC (Windows XP, 7 or 10) via a USB port. It consists of two PCBs and software. The kit can be used for quick and easy evaluation of AMS 6915, data readout, data logging and to change AMS 6915's I2C address.

For more information on additional equipment see [AMS 6915's product page](#)



**Analog Microelectronics GmbH**  
 An der Fahrt 13  
 55124 Mainz  
 Germany

**Phone: +49 (0) 6131/91 073-0**  
**Fax: +49 (0) 6131/91 073-30**  
**Internet: [www.analog-micro.com](http://www.analog-micro.com)**  
**E-Mail: [info@analogmicro.de](mailto:info@analogmicro.de)**

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