5 I2C PROTOCOL

In practice use of the I2C protocol is limited to HC2 probes and to some OEM products. Use of the I2C protocol is limited to reading measurement data from the AirChip 3000 device. Functions such as device configuration, humidity and temperature adjustment, etc. are not supported by the I2C protocol.

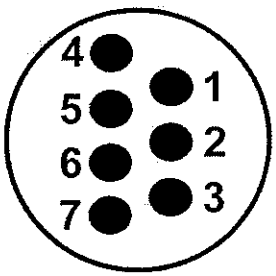
The I2C mode of the AirChip 3000 has the following limitations:

- The communication is a monologue: the AirChip 3000 device sends the measurement data automatically with each data refresh cycle, as opposed to waiting for a data request. To get the data, the receiving device must be listening at all times
- Communication with a single device only: the communication does not include a device address and no networking of devices is possible.

5.1 Physical interface

The probe can be connected directly to the I2C input of another device. When configured to use the I2C communication protocol, the function of the 7 pins of the HygroClip 2 probe connector is changed as follows:

Pin-out diagram: Probe connector (7-pin male – looking at probe)



RO-ASCII mode

Pin #	Name	Function
1	VDD (+)	3.2 to 5 VDC
2	**GND**	**Power ground and digital signal ground**
3	**RXD**	**UART**
4	**TXD**	**UART**
5	Out 1 analog (+)	Humidity 0…100%RH (default)
6	Out 2 analog (+)	Temperature -40…60°C (default)
7	AGND	Analog signal ground

I2C mode

Pin #	Name	Function
1	VDD (+)	3.2 to 5 VDC
2	**GND**	**Power ground and digital signal ground**
3	**SDA**	**I2C**
4	**CLK**	**I2C**
5	Out 1 analog (+)	Humidity 0…100%RH (default)
6	Out 2 analog (+)	Temperature -40…60°C (default)
7	AGND	Analog signal ground

ARDUINO PIN
3.3V
GND
A4
5
N.C

5.2 Data string structure and data encoding

STR	HMSB	HLSB	TMSB	TLSB	CMSB	CLSB	STP

STR I2C Start Condition
HMSB Humidity MSB
HLSB Humidity LSB
TMSB Temperature MSB
TLSB Temperature LSB
CMSB Calculated parameter MSB – DEWPOINT MSB
CLSB Calculated parameter LSB – DEWPOINT LSB
STP I2C Stop Condition

Please note that the user cannot select which parameters are transmitted by the data string and cannot modify the sequence of the parameters. The unit system used for both temperature and the dew or frost point is also set with HW4 as part of the device configuration.

The data are transmitted in the Hex format and are numerically scaled as follows in the decimal format:

Humidity : 0...100% = 0...1000
Temperature und calculated parameter : -100...600°C = 0...7000

5.3 Configuration with the HW4 software

The HW4 software (Device Manager) is required to set the AirChip 3000 device to use the I2C protocol. For a list of the HW4 manuals corresponding to the different AirChip 3000 devices, please consult the following document:

E-M-HW4v2-DIR This document can be downloaded from several of the ROTRONIC websites.