

Senseair Sunrise



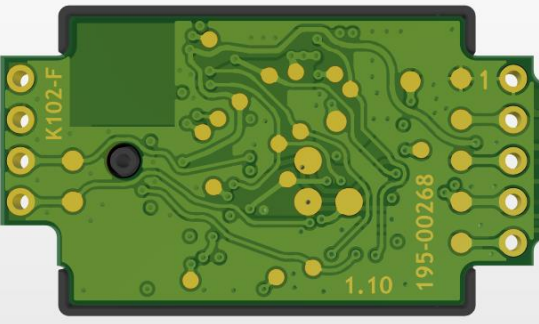
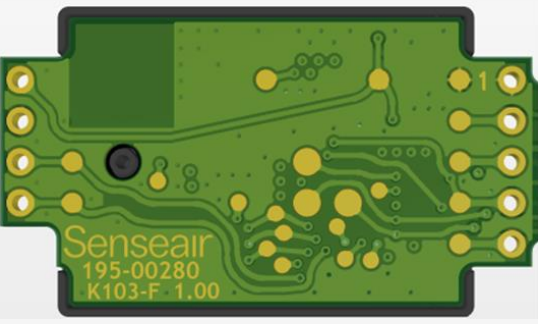
A.N. 006-0-0008

Sunrise A.N.006-0-0008 – preliminary Specifications

Item	Senseair Sunrise Article No. 006-0-0008	
Target gas	Carbon dioxide (CO ₂)	
Operating principle	Non-dispersive infrared (NDIR)	
Operating range	0 – 50°C, 0 – 85% RH (non-condensing)	
Measurement range	400 – 5000 ppm; extended range up to 10000 ppm ¹	
Accuracy [CO ₂] [Under testing]	±(30 ppm +3% of reading) (extended range ±10% of reading)	
Pressure dependence	1.6% reading per kPa deviation from normal pressure	
RMS noise, Typ. [CO ₂] [Under testing]	<u>Filtered:</u> 0.7 ppm @ 400 ppm, 25°C 1.8 ppm @ 3000 ppm, 25°C	<u>Unfiltered:</u> 7 ppm @ 400 ppm, 25°C 20 ppm @ 3000 ppm, 25°C
Power supply	3.05 – 5.5 V	
Peak current [Under testing]	<125 mA	
Steady state current during sampling [Under testing]	99 mA	
Average current, typical [Under testing]	45 µA	
Measurement setting	Default: 16 s, 8 samples (adjustable by host) ⁷	
Dimensions (L x W x H)	33.5 x 19.7 x 11.5 mm	
Life expectancy	>15 years	
Storage temperature	-40 – 70°C	
Weight	5 g	
Communication interface	UART / I ² C	

Sunrise A.N. 006-0-0008 – Appearance



Item	Article No. 006-0-0007	Article No. 006-0-0008
<p>Product Top side (are exactly the same)</p>		
<p>Product Bottom side</p>		
<p>PCB</p>	<p>K102-F</p>	<p>K103-F</p>
<p>PCB A.N.</p>	<p>195-00268</p>	<p>195-00280</p>

Sunrise sensor A.N. 006-0-0008 FW and communication

Item	Article No. 006-0-0008	Comments
Modbus registers	https://rmtplusstoragesenseair.blob.core.windows.net/docs/Dev/publicerat/TDE5514.pdf	Registers are backwards compatible to the current Sunrise sensor
I2C registers	https://rmtplusstoragesenseair.blob.core.windows.net/docs/Dev/publicerat/TDE5531.pdf	Registers are backwards compatible to the current Sunrise sensor
Number of samples per one measurement	Can be in range of 2 to 1024 samples. <i>Odd numbers will be adjusted automatically to closet lowest even digit.</i>	Changes from the current Sunrise. Number of samples can be in range of 1 to 1024 samples.

Sunrise senser A.N. 006-0-0008 Electrical

Blue coloured texts are changes from the current Sunrise

Absolute maximum ratings

Symbol	Description	Min	Typ	Max	Unit	Comment
Voltage						
VDDIO	I/O supply voltage	-0.3		6.5	V	Sunrise A.N. 006-0-0007 it is max 6V
EN	Enable	-0.3		$V_{BB}+0.3 \leq 6$	V	
RXD/SDA	UART/I2C	-0.3		6.5	V	Acc. to the new MCU supplier datasheet for Sunrise 006-0-0008 do not input signals or an I/O pull-up power supply while the device is not powered (Enable = low). During the comparison testing between the 2 Sunrise versions, the same behaviour has been noticed at the current Sunrise A.N. 006-0-0007 even though its MCU supplier do not define it at the component specification.
TXD/SCL	UART/I2C	-0.3		6.5	V	Acc. to the new MCU supplier datasheet for Sunrise 006-0-0008 do not input signals or an I/O pull-up power supply while the device is not powered (Enable = low). During the comparison testing between the 2 Sunrise versions, the same behaviour has been noticed at the current Sunrise A.N. 006-0-0007 even though its MCU supplier do not define it at the component specification.
Current						
COMSEL, RXD/SDA, TXD/SCL	Instantaneous maximum current limit			15	mA	Sunrise A.N. 006-0-0007 it is max 25 mA

Electrical characteristics

V_{DVCC}	Supply voltage output	2.70		2.91	V	Sunrise A.N. 006-0-0007 has Min 2.74V
V_{IH}	COMSEL	2.32			V	Sunrise A.N. 006-0-0007 COMSEL & RXD Min 2.0V
	RXD (UART)	2.32			V	When RXD/SDA pin is used as RXD (UART)
	SDA (I2C)	2.0			V	No change, value stated for clarification. When RXD/SDA pin is used as SDA (I2C).
	SCL (I2C)	2.0			V	No change, value stated for clarification. When TXD/SCL pin is used as SCL (I2C).
V_{IL}	COMSEL			0.54	V	Sunrise A.N. 006-0-0007 COMSEL, RXD, SDA & SCL Max 0.82V
	RXD (UART)			0.54	V	When RXD/SDA pin is used as RXD (UART)
	SDA (I2C)			0.81	V	When RXD/SDA pin is used as SDA (I2C).
	SCL (I2C)			0.81	V	When TXD/SCL pin is used as SCL (I2C).
V_{HYS}	Input hysteresis	270			mV	Sunrise A.N. 006-0-0007 has Min 164mV
I_{IN}	Input leakage current (RXD/SDA, TXD/SCL)			10	uA	Sunrise A.N. 006-0-0007 has Max 1uA

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