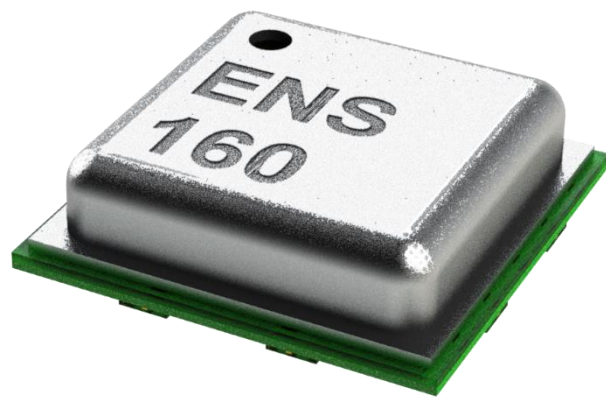




ENS160



iAQ-Core and CCS811 Migration Guide

ENS160 iAQ-Core and CCS811 Migration Guide

Version: 1.00

Release Date: 2022-02-14

Document Status: Production



Content Guide




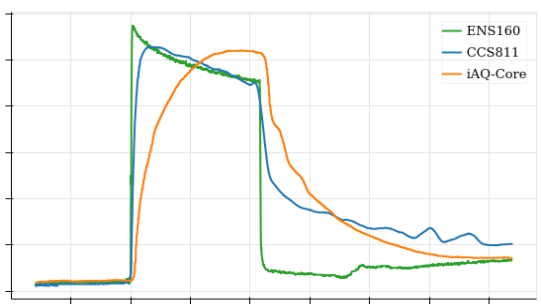
Content Guide.....	2
1. Introduction	3
2. Reference Table	3
3. Copyrights & Disclaimer	5
4. Revision Information	5

1) Introduction

This migration guide shall act as quick reference, helping migrating existing iAQ-Core or CCS811 designs to the ENS160.

Note: The herein stated product properties and diagrams are for information purposes only. Binding data may be obtained from the latest official datasheets.

2) Reference Table

Specification		CCS811	ENS160	iAQ-Core
Quick reference table for migration of iAQ-Core and CCS811 designs to the ENS160.				
General	Communication Options	I2C	I2C / SPI	I2C
	Oper. Temp. Range [C]	-40 - 85	-40 - 85	0 - 50
	Oper. Humidity Range [%]	10 - 95	10 - 95	5 - 95
	Input Voltage [V]		1.71 - 1.98	
	Communication Voltage (V _{DDIO}) [V]	1.8 - 3.3	1.71 - 3.6	3.2 - 3.4
	Avg. current @ nominal voltage [mA]	30	10 - 33 (1-4 sensors)	20
	Sleep Mode @ nominal [mA]	0.019	0.010	NA
	Warm-Up (Initial- / after re-power) [min]	60 / 20	60 / 3	8640 / 5
	Lifetime [a]	>5	10	8-10
	Package Dimensions [mm]	2.7 x 4 x 1.1	3 x 3 x 0.9	15.24 x 17.78 x 4.3
Features	Automatic baseline correction	Yes	Yes	Yes
	Baseline Store/Restore	Yes	Automatic	No
	Humidity-compensation	Yes	Yes	No
	Siloxane immunity	Yes	Yes, advanced	No
	Threshold Interrupt	Yes	Yes	No
Outputs	Qualitative comparison of TVOC signals			
	equivalent CO ₂ [ppm]	400 - 29206	400 - 65000	450 - 2000
	TVOC [ppb]	0 - 32768	0 - 65000	125 - 600
	Air Quality Index (AQI)	No	Yes	No
	Raw Resistance	Yes	Yes	Yes

Specification		CCS811	ENS160	iAQ-Core
<p>Quick reference table for migration of iAQ-Core and CCS811 designs to the ENS160.</p>				
I2C Reference Pinout & Addressing	View			
	V _{CC} /V _{DD}	6	4	6
	V _{DDIO}		5	
	V _{SS} /GND	EP	8, 9	3
	CS _n	NA	7	NA
	SDA	9	1	4
	SCL	10	2	2
	(I2C) ADDR	1 low: 0x5A high: 0x5B	3 low: 0x52 high: 0x53	NA fixed 0x5A
	INT _n /nINT	3	6	NA
Reflow Soldering	Standard	JEDEC J-STD020	JEDEC J-STD020	JEDEC J-STD020
	Max. T-gradient pre-heating [K/s]	3	2.5	5
	Soak-time [min]	1-2	2-3	1-2
	T _{smax} [°C]	200	200	200
	T _{smin} [°C]	150	150	150
	T ₁ [°C]	217	217	<220
	T ₂ [°C]	NS	230	NS
	T ₃ [°C]	255	250	230
	t _{1max} [s]	60-150	60	150
	t _{2max} [s]	NS	50	NS
t _{3max} [s]	30	10	30	
T _{PEAK} [°C]	260	260	230	
Max. T-gradient in cooling [K/s]	-6	-5	-5	
Software Migration	Launch/readout eCO ₂ value			See "Interface Protocol" of iAQ-Core datasheet
	Launch/readout TVOC value	See "Programming Guide" sections 9, 10	See ENS160 SW Design Guidelines section 2	
	Launch/readout raw resistance value			
	Humidity Compensation	See "Programming Guide" section 16	See ENS160 SW Design Guidelines section 2.7	N/A
Baseline Restore	See AN370 "Baseline Save & Restore" and "Programming Guide" section 17	Multi-level high-speed baselining, making traditional baseline restore redundant	N/A	
Recommended Collateral	Important facts	CCS811 Datasheet	ENS160 Datasheet	iAQ-Core Datasheet
	HW Design Considerations	CCS811 Design Guidelines, CCS811 Datasheet	ENS160 HW Design Guidelines & Handling Instructions, ENS160 Datasheet	
	SW Design Considerations	CCS811 Programming and interfacing Guide, CCS811 Datasheet	ENS160 SW Design Guidelines, ENS160 Datasheet	
	Device Handling (Assembly)	CCS811 Assembly Guidelines, CCS811 Datasheet	ENS160 HW Design Guidelines & Handling Instructions, ENS160 Datasheet	

3) Copyrights & Disclaimer

Copyright SciSense B.V High Tech Campus 10, 5656 AE Eindhoven, The Netherlands. Trademarks Registered. All rights reserved. The material herein may not be reproduced, adapted, merged, translated, stored, or used without the prior written consent of the copyright owner.

Devices sold by SciSense B.V. are covered by the warranty and patent indemnification provisions appearing in its General Terms of Trade. SciSense B.V. makes no warranty, express, statutory, implied, or by description regarding the information set forth herein. SciSense B.V. reserves the right to change specifications and prices at any time and without notice. Therefore, prior to designing this product into a system, it is necessary to check with SciSense B.V. for current information. This product is intended for use in commercial applications. Applications requiring extended temperature range, unusual environmental requirements, or high reliability applications, such as military, medical life-support or life-sustaining equipment are specifically not recommended without additional processing by SciSense B.V. for each application. This product is provided by SciSense B.V. “AS IS” and any express or implied warranties, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose are disclaimed.

SciSense B.V. shall not be liable to recipient or any third party for any damages, including but not limited to personal injury, property damage, loss of profits, loss of use, interruption of business or indirect, special, incidental or consequential damages, of any kind, in connection with or arising out of the furnishing, performance or use of the technical data herein. No obligation or liability to recipient or any third party shall arise or flow out of SciSense B.V. rendering of technical or other services.

4) Revision Information

Revision	Date	Comment	Page
1.0	2020-02-20	Initial version	All
0.95	2020-12-03	Preliminary release	All

Note(s) and/or Footnote(s):

1. Page and figure numbers for the previous version may differ from page and figure numbers in the current revision.
2. Correction of typographical errors is not explicitly mentioned.

SciSense is a Joint Venture of ams AG

Headquarters: SciSense B.V.
High Tech Campus 10
5656 AE Eindhoven
The Netherlands

Contact: www.sciosense.com
info@sciosense.com

Sensing tomorrow's world