Datasheet

All-in-One LoRaWan Air Quality Sensor
Part Number: AEASHWAQx

1. Overview

AEASHWAQx is a family of integrated IAQ sensors. The selection of elements is customizable. A large selection is available ranging from CO2, PM1.0, PM2.5, PM1.0, H2S (Hydrogen Sulfide), NH3 (Ammonia) measurement, HCHO (formaldehyde), TVOC, SO2, NO2, temperature and humidity, etc. You are free to choose what to include in your custom-made IAQ sensor.

AEASHWAQx also has an optional display for easy and clear display of real time data.

The flexibility and convenience makes AEASHWAQx good for all scenarios ranging from airport, office, toilet, building automation, etc.

1.1   Features

- Support PM1.0, PM2.5, PM10 measurement
- Support H2S (Hydrogen Sulfide) measurement
- Support NH3 (Ammonia) measurement
- Support HCHO (formaldehyde) measurement
- Support TVOC measurement
- Support CO2 measurement
- Support temperature and humidity measurement
- Optional display for real time data display, content customizable depends on quantity

Item	Unit	Range	Resolution	Accuracy	Remark	Code
Temperature	°C	-40-80	0.1	±0.3	resistive	TH
Humidity	%RH	0-99.9	0.1	±3%@25°C (20%RH to 80%RH)	Semi-conductor	RH
CO2	ppm	400-5000	1	±(50+3%FS)	Electrochemical	C2
CO	ppm	0-500	0.5	±3%FS	Electrochemical	C0
CH4	ppm	0-10000	1	±10%FS	Semi-conductor	CH
O2	% VOL	0-30	0.1	±3%FS	Electrochemical	O2
HCHO	ppb	0-5000	1	±3%FS	Electrochemical	HC
TVOC	ppb	0-60000	1	±5%FS	Semi-conductor	TC
PM2.5	ug/m3	0-6000	1	±10%@100~500ug/m³	laser scattering	P2
PM10	ug/m3	0-6000	1	±10%@100~500ug/m³	laser scattering	P1
PM1.0	ug/m3	0-6000	1	±10%@100~500ug/m³	laser scattering	P0
NH3	ppm	0-10 or 0-100	0.01ppm@10ppm 0.5ppm@100ppm	±3%FS	Electrochemical	NL
NH3 - high resolution	ppb	10-10000	1	±3%FS	Electrochemical	NH
H2S	ppm	0-10	0.01	±3%FS	Electrochemical	HL
H2S - high resolution	ppb	10-10000	1	±3%FS	Electrochemical	HH
O3	ppm	0-10	0.01	±3%FS	Electrochemical	O3
SO2	ppm	0-10	0.01	±3%FS	Electrochemical	S2
NO	ppm	0-50	0.5	±3%FS	Electrochemical	NO
NO2	ppm	0-10	0.01	±3%FS	Electrochemical	N2
CL2	Ppm	0-10 / 0-100 / 0-1000	0.01 / 0.1 / 1	±3%FS	Electrochemical	CL
Radon	Bq/m³	0-1000	0.1	<±15%	Pulsed Ion Chamber	RA
Air pressure	Kpa	30-120	0.01	N/A	N/A	AP
Wind speed	m/s	0-30	0.1	±3%FS	N/A	WS
Wind direction	--	16 directions	1	N/A	N/A	WD
Noise	dB	30-130	0.1	±1	N/A	DB
Rainfall	mm/mm	0-30	0.2	N/A	N/A	RF
Benzene	ppm	0-10	0.01	N/A	Electrochemical	BN
Toluene	ppm	0-100	0.1	N/A	Electrochemical	TL
Acetaldehyde	ppm	0-100	0.2	N/A	Electrochemical	AC
Arcylonitrile	ppm	0-100	0.1	N/A	Electrochemical	AR
Naphthalene	ppm	0-100	0.1	N/A	Electrochemical	NA
Light Intensity	Lux	0-60000	1	±5%FS	Light	LU
Acetic Acid (CH3COOH)	ppm	0-10	0.01	0.05±0.03	Electrochemical	AA
Solar Radiation	W/m²	0-2000	1	±5	Thermoelectric	SR

Note: The life expectancy of electrochemical sensors, laser scattering sensors, RHT sensor are 2, 5, 10 years respectively. Depend on the onsite environment, the actual performance may vary.

The ChinoINT IAQ family is desinged for easy sensor head replacement. ChinoINT provide calibration and replacement services. Please contact us for further details.

Working Voltage	12 / 24V DC
Dimension	110*110*37mm (customizable)
Working Temperature	-10°C - 60°C
Communication	LoRaWan / RS485 / 4-20mA / 0-10V
Reporting Interval	10 - 65534 s, default 60s custom-option: 1 min to 24 hours, 10s step
Coverage Area	Up to 1000 sq ft (depends on site environment)

AEASHWAQ is the part number of the family.
To distinguish between RS485 and LoRaWan sensors, please follow the following coding.

AEASHWAQ0 - refers to LoRaWan sensors.
AEASHWAQR - refers to RS485 sesnors.
AEASHWAQG - refers to 4G sesnors.
AEASHWAQA - refers to 4-20mA sesnors.
AEASHWAQV - refers to 0-10V sesnors.

As the family is flexible in including different sensors into one integrated products
Below table shows some common models of the family.

Part Number	°C	RH	CO2	HCHO	TVOC	NH3	H2S	PM	O3	NO2	CO	SO2	CL2
AEASHWAQ0100	■	■			■	■	■	■					
AEASHWAQ0101	■	■				■	■						
AEASHWAQ0102	■	■				■							
AEASHWAQ0103	■	■					■						
AEASHWAQ0104	■	■	■										
AEASHWAQ0105	■	■	■		■								
AEASHWAQ0106	■	■	■	■									
AEASHWAQ0107	■	■	■	■	■								
AEASHWAQ010A	■				■	HR	HR						
AEASHWAQ010B	■	■	■						■	■	■	■	■
AEASHWAQ010C	■					■	■		■	■		■	■

The AEASHWAQx family is flexible enough to custom-made to include different sensor elements.
Those not included in the above table such as O3, NO, CO, etc can be added to the sensor.

To custom made with mix and match sensors, keep in mind for the following part number guide. The custom-made sensors starts with the family name (AEASHWAQ) followed by protocol code, and then different code names found in section 1.2.

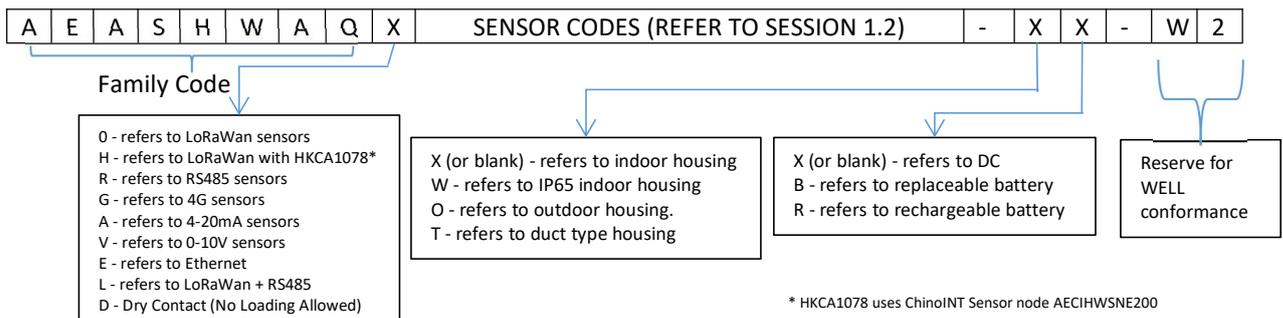For example, to order a high resolution H2S sensor, the part number is AEASHWAQ0HH.

As another example, to order a sensor with RHT, PM2.5, CL2 and TVOC, the part number is AEASHWAQ0THRHP2CLTC.

If special housing is required, please specify the housing type at the end of the part number. Taking the above sensor AEASHWAQ0THRHP2CLTC as an example,
AEASHWAQ0THRHP2CLTC - refers to ordinary indoor housing.
AEASHWAQ0THRHP2CLTC-O - refers to outdoor housing.
AEASHWAQ0THRHP2CLTC-T - refers to duct type housing.

| A | E | A | S | H | W | A | Q | X | SENSOR CODES (REFER TO SESSION 1.2) | - | X | X | - | W | 2 |

Family Code

0 - refers to LoRaWan sensors
H - refers to LoRaWan with HKCA1078*
R - refers to RS485 sensors
G - refers to 4G sensors
A - refers to 4-20mA sensors
V - refers to 0-10V sensors
E - refers to Ethernet
L - refers to LoRaWan + RS485
D - Dry Contact (No Loading Allowed)

X (or blank) - refers to indoor housing
W - refers to IP65 indoor housing
O - refers to outdoor housing.
T - refers to duct type housing

X (or blank) - refers to DC
B - refers to replaceable battery
R - refers to rechargeable battery

Reserve for WELL conformance

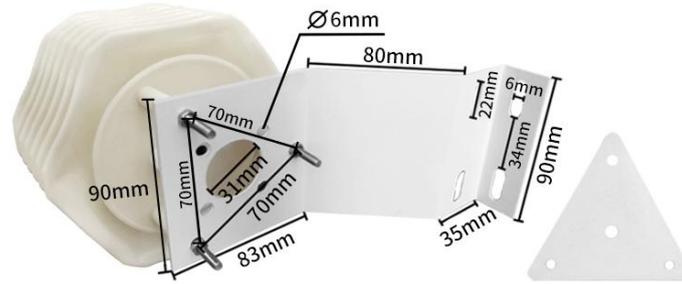* HKCA1078 uses ChinoINT Sensor node AECIHWSNE200

The common models of the family utilizes the housing shown below, as illustration only.
Showing on the right is an extended design for some models, such as analog output 0-10V, 4-20mA.

To accommodate to different needs and sensors, the follow optional housing can be employed.
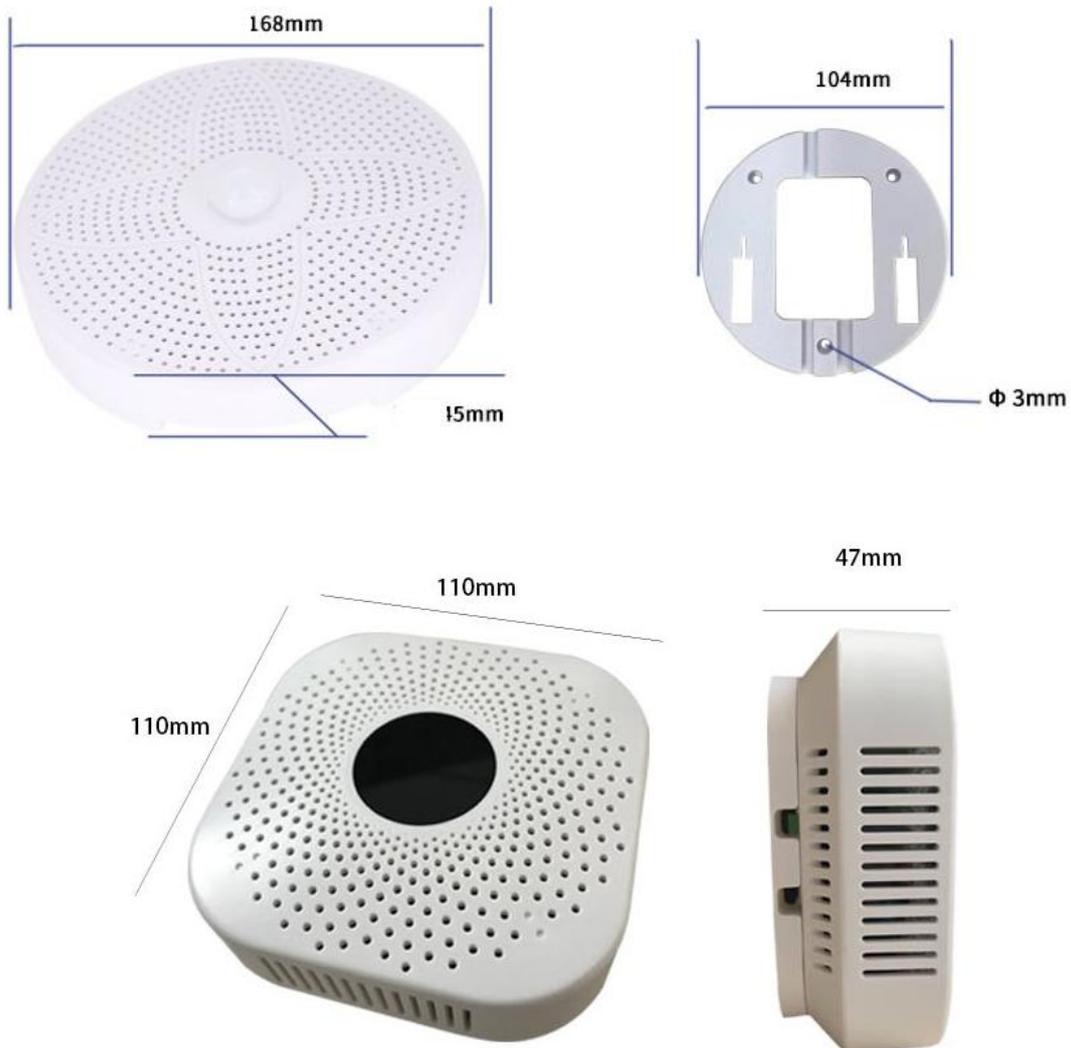
Outdoor Housing

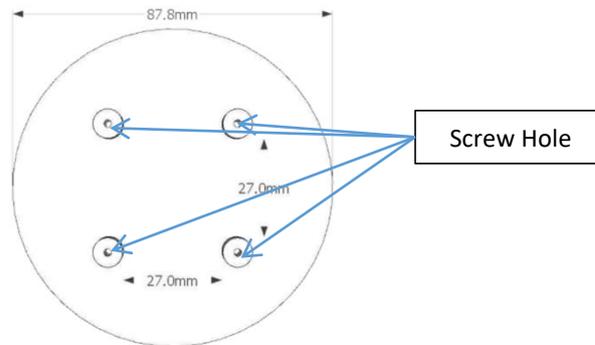Duct Type Housing.

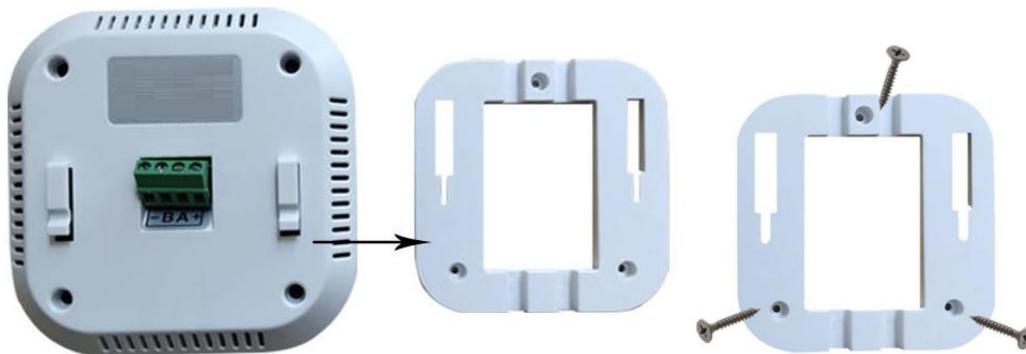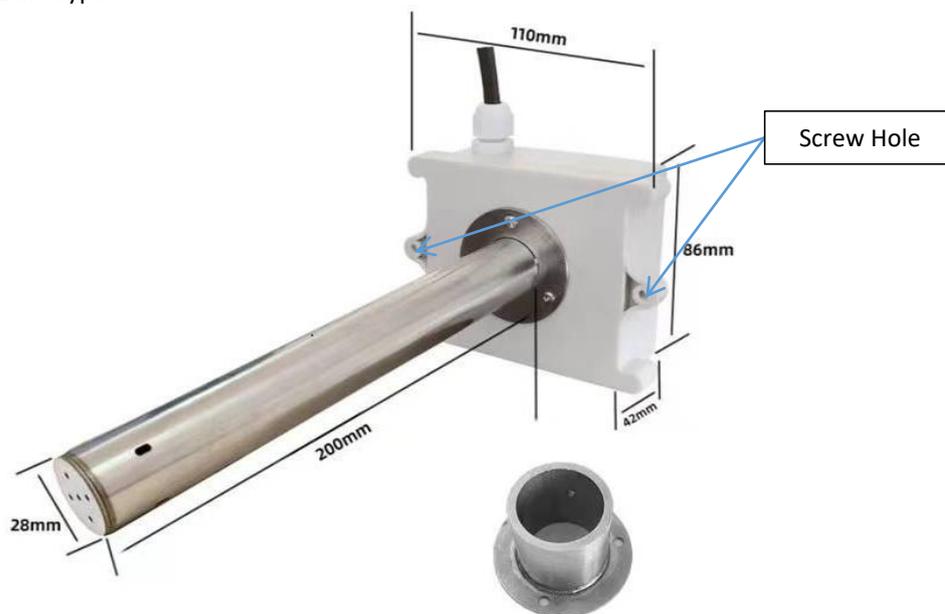IP65 indoor housing Dimension:

Rainfall Bucket

Installation for typical model.

Another Common model.

Duct Type

1.6   Effects of various H2S levels

H2S level (ppm)	Resulting Conditions on Humans
<1.3	Minimal perceptible odor
5	Easily detected, moderate odor
10	Beginning eye irritation
30	Strong, unpleasant odor, but not intolerable
100	Coughing, eye irritation, loss of sense of smell after 2 to 5 minutes
200-300	Marked conjunctivitis (eye inflammation) and respiratory tract irritation after one hour of exposure

1.7   Effects of various NH3 levels

| NH_3 level (ppm)	Resulting Conditions on Humans
>5	Can be recognized by odor
~17	An average person detects ammonia by odor
0-25	Minor irritation of the eyes and respiratory tract
25	Permissible Exposure Limit (OSHA)
50-100	Swelling of the eyelids, conjunctivitis, vomiting, irritation of the throat
100-500	Concentrations are dangerously high, irritation becomes more intense. Death can result from highly concentrated, prolonged exposure

1.8   Software Platform

The Software Platform consists of Data Broker, ETL tool, Database, Dashboard and notification modules. For easy deployment, both Cloud Saas and on-premise version is available.
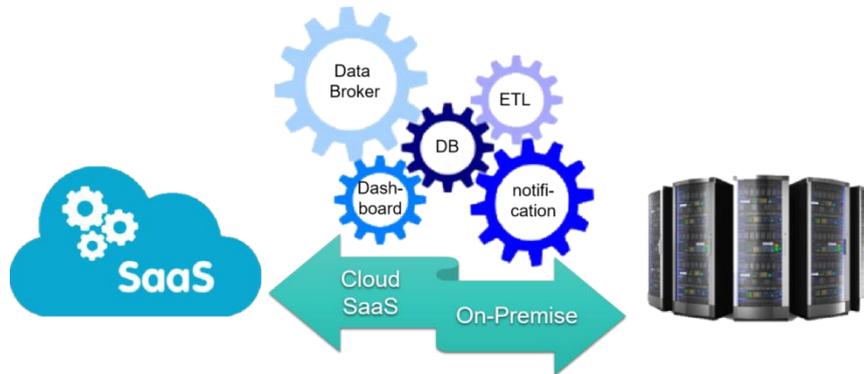
Clean and clear dashboarding, with analytic ability, is one of the key element in an IoT system. The Smart Software platform provides easy to use dashboard, with multi-layer user account settings. GUI Maintenance Portal is provided with the platform. Both desktop and mobile version (Android and IOS) are available.
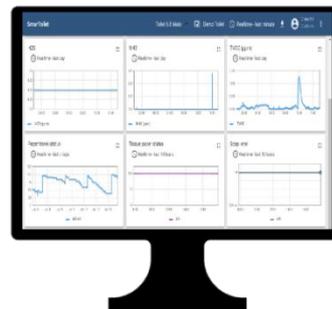

Notification is one of the crucial feature for Smart systems. Notification can be done through app, notification bar alert, SMS and through e-mail. App message notification can be configured as group alert, and individual alert.
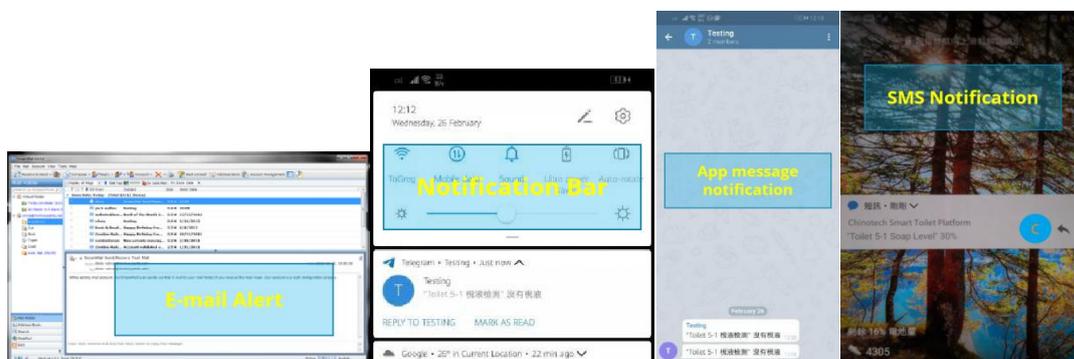
ChinoINT IAQ has been widely deployed in governmental buildings, public palces and commercial buildings. These include the Hong Kong International Airport, universities in Hong Kong, Switch Rooms in governmental buildings and commercial estates.

Below is one classic example for the reference.
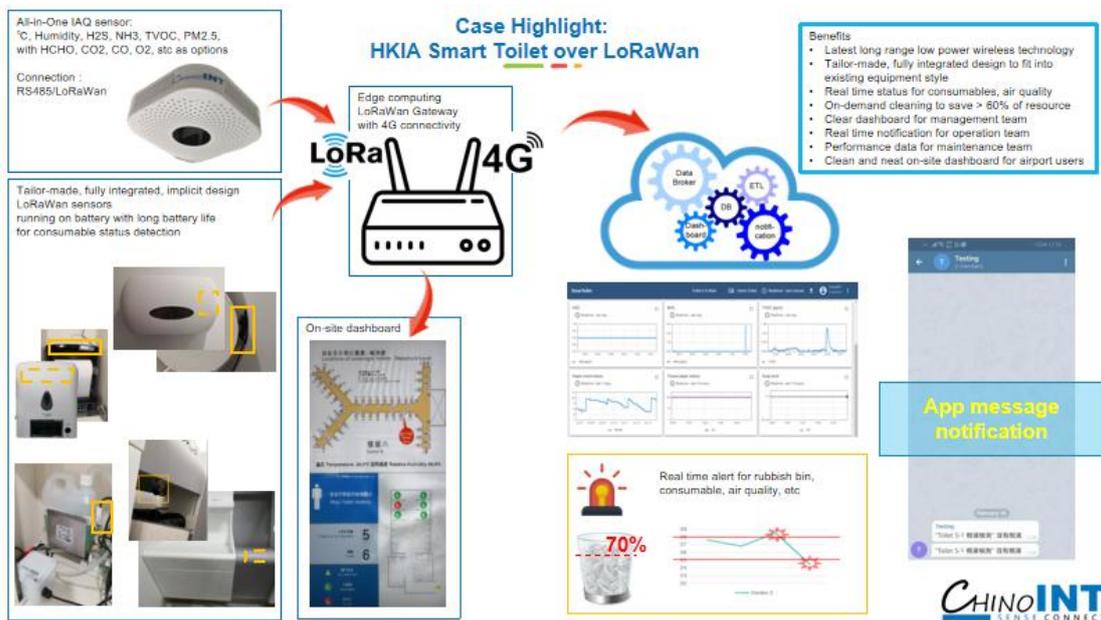
2. Warning

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3. Product Warranty and Customer support

ChinoINT warrants all products free from defects in material and workmanship for a period of one year from the date of shipping. During the warranty period, we will, at our position, either repair or replace any product that proves to be defective. To report any defect, please inquiry sales@chinoint.com

Unauthorized opening and improper repairs on the device may result in substantial damage to equipment or endanger the user. The product described in this documentation may be operated only by personnel qualified. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products. Always disconnect the power plug before you open the device.

Please have the model, serial number and a detailed problem description available when you call. If the problem concerns a particular reading, please have all meter readings available.

This warranty does not apply to defects resulting from unauthorized modification, misuse. If you install or exchange system expansion and damage your device, the warranty becomes void.

4. Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.