

Eltek TU1093 - GenII AQ112 comprehensive portable air quality monitor transmitter



AQ112

AQ112 is part of the Eltek GenII family of transmitters and can be used alongside any other Eltek GenII transmitter. AQ112 is a comprehensive portable air quality monitor for primarily indoor use. (For outdoor use a secondary enclosure (type WBT/AQ) must be used - P.O.A, refer to Eltek). The compact monitor is normally AC mains powered. A built-in Li-ion rechargeable back-up battery is included.

The internal sensors are:

1 x CO₂ 0/5000ppm

1 x CO

1 x O₃

1 x NO₂

1 x VOC

3 x Particulate sizes

1 x Temperature within the enclosure

In addition there is a case-mounted RH and temp sensor with renewable filter.

2 x auxiliary electrode voltages

2 x working electrode voltages

The particulate sensing module incorporates a pulsed fan unit to precisely control the volume of air per sample and ventilate the enclosure to ensure a flow of air across the various sensors.

The robust polycarbonate enclosure is fitted with left and right hand side ventilation (exhaust) apertures. Each ventilation hole is fitted with a non-renewable 100 micron stainless steel mesh filter. The ventilation holes should never be obscured - doing so can affect the measured values from the various sensors.

The unit should be located in a cool, dry, non-hostile place and away from any risk of water ingress. The unit environmental rating is IP20.

AQ112 is supplied with a miniature detachable antenna. The antenna should remain installed at all times.

AQ112 common Specification

Frequency:	434.225Mhz
Compliant to:	EN300 220-1
Operating temperature:	-10 to +55°C
Operating humidity:	0-90 %RH non condensing
Transmitter power:	10mW ERP
DC input voltage and connector type:	12VDC \pm 1V (reverse polarity protected)
Number of user physical inputs:	1 x 3.5mm jack for use with SPL
Number of parameters presented:	15
Dimensions (ex antenna and RH/Temp probe):	(H198 x W120 x D88)mm
Environmental rating:	IP20
Weight (excluding MP12U power supply/charger):	850g

Measuring Range and transmitter channel allocation

A	Temperature	-30.0 to 65.0°C	Resolution: 0.1°C Accuracy: \pm 0.2°C at 20°C \pm 0.4°C for -5 to 40°C \pm 1.0°C for -20 to 65°C
B	RH	0.0 to 100.0%	Resolution: 0.1% Accuracy: \pm 2% RH (0 to 90% RH) \pm 4% RH (0 to 100% RH)
C	CO ₂	0-5000ppm	Accuracy: < \pm 50 ppm, +3% from measured value Temperature dependence: typically 2ppm/°C for temp range 0 to 50°C Long term stability: 20ppm per year Operational range: -10 to 50°C, 5 to 95% RH non condensing.
D	Particulate PM1.0		0-1 μ m particle count (0.00 to 500.00 μ g/m ³)
E	Particulate PM2.5		0-2.5 μ m particle count (0.00 to 500.00 μ g/m ³)
F	Particulate PM10		0-10 μ m particle count (0.00 to 500.00 μ g/m ³)
G*	NO ₂		-0.1000 to 3.0000 ppm (For range 0.000 to 3.0000 ppm refer to Eltek)
H	O ₃		Selectable from 0-250ppb to 0-20ppm
I*	CO		-5.00 to 500.00 ppm (For range 0.00 to 500.00 ppm refer to Eltek)
J	VOC		0.00 to 50.00 ppm
K	Digital Temperature		-55.00 to 125.00°C
L	Voltage		-2048.0 to 2048.0 mV (NO ₂ working)
M	Voltage		-2048.0 to 2048.0 mV (NO ₂ auxiliary)
N	Voltage		-2048.0 to 2048.0 mV (O ₃ working)
O	Voltage		-2048.0 to 2048.0 mV (O ₃ auxiliary)

Principle of operation: Sensors are read sequentially, typically every 18 seconds and the resulting values are stored. These values are then sent in the next transmission. Note that the CO₂ sensor value is updated every 15 seconds irrespective of the 18 second cycle. For GenII principle of operations see section 2 of the GenII manual, which can be found on the Eltek website.

*Settle time is 24 to 48 hours after power-up. Please allow for this if the unit has been in storage.



← RH and temp probe with renewable filter. Eltek part no. FIL005

← Ventilation aperture with 100 micron stainless steel mesh filter. An identical ventilation aperture is installed on the AQ112 left hand side.

← External 12VDC input. Use only MP12U power supply provided. Outer is +12VDC, inner is negative.

← 3.5mm jack socket - not used

← Particulate sampling input - do not obscure or insert any object

Back-up battery endurance and charging

The battery type is ELAQ110 Li-ion and is available only from Eltek Ltd. Use only charger type MP12U provided with the AQ112. Do not attempt to use any other charger or car battery adaptor as this may cause damage to either the AQ112 or the charging device itself. A fully charged battery will provide 24 hours of operation. Charge time is approximately 8 hours and is automatic. The LCD battery gauge indicates the state of charge of the battery.

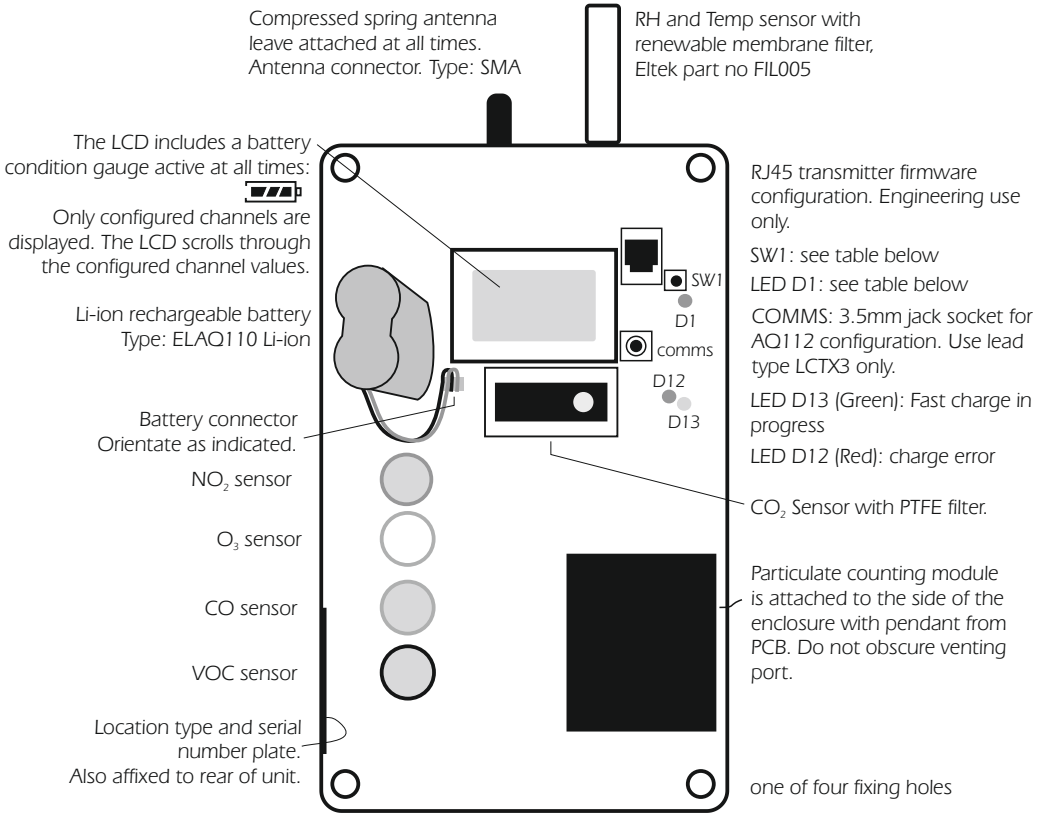
AQ112 right hand side



Battery disposal

Batteries should be disposed of responsibly and in accordance with local regulations.

AQ112 Main components - top cover removed



The front cover is retained by 4 semi-captive fixing screws.

The front cover must be securely fitted to ensure the rubber seal is effective. The AQ112 can be free standing (portrait mode only) or wall mounted using the 4 fixing holes obscured when the front cover is fitted.

The front cover must be fitted during sustained operation.

There are no user adjustments for AQ112

Function of SW1 and D1

Function	Activate SW1 for:	D1: Led flash rate	LCD
Tx disable	5 seconds	5 x fast flashes	After 5 seconds display OFF
Tx enable	5 seconds	1 x continuous 5 second flash	After 5 seconds displays sensor information
Test: transmits approximately every 5 sec for 2 minutes	1 to 2 seconds	No indication	No change

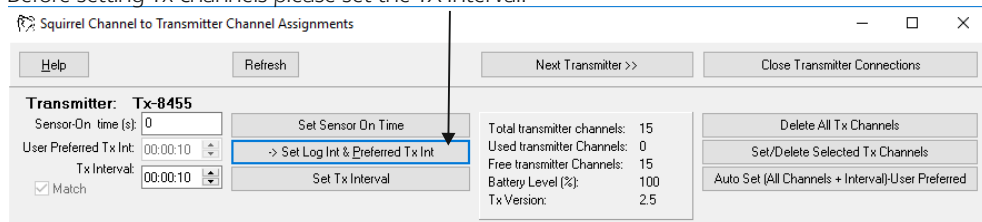
AQ112 configuration using Darca software

Refer to the GenII Quick start guide (ref TU1008).

This is supplied with the RX250AL or can be downloaded from the Eltek website.

Connect the LCTX3 to the “Comms” socket located inside the unit. Don't forget to set up the logger interval first!

Before setting Tx channels please set the TX Interval:



AQ112 channels:

Sensirion Temperature	-30.0 to 65.0	Off	°C	A
Sensirion Humidity	0.0 to 100.0	Off	% RH	B
Co2	0 to 5000	Off	ppm	C
0-1um Particle count	0.00 to 500.00	Off	ug/m3	D
1-2.5um Particle count	0.00 to 500.00	Off	ug/m3	E
2.5-10um Particle count	0.00 to 500.00	Off	ug/m3	F
NO2	-0.1000 to 3.0000	Off	ppm	G
O3	-0.1000 to 3.0000	Off	ppm	H
CO	-5.00 to 500.00	Off	ppm	I
VOC	0.00 to 50.00	Off	ppm	J
Digital Temperature	-55.00 to 125.00	Off	°C	K
Voltage	-2048.0 to 2048.0	Off	NO2WmV	L
Voltage	-2048.0 to 2048.0	Off	NO2AmV	M
Voltage	-2048.0 to 2048.0	Off	O3WmV	N
Voltage	-2048.0 to 2048.0	Off	O3AmV	O

All Tx channels A to O have fixed ranges. Select as appropriate, set the channel and then meter to check readings. Note Alarms cannot be configured in Tx Set up for AQ112. If required Alarms can be configured in the Darca software.

Channels A and B are external temperature and humidity, Channel K is internal temperature.

Notes:

Channels when set to active are assigned to the next available channel of the logger. (Channel allocations can be reassigned using Darca software)

Once the AQ112 is configured, to close, click on **Next transmitter** or **Send to Squirrel** and follow the on-screen prompts.

If all 15 channels are used, the AQ112 will only work with SRV250 and RX250AL units serial numbers after EL-12192. For use with SRV250 or RX250AL prior to this serial number, 14 or less channels should be enabled on the AQ112. If required SRV250 or RX250AL can be upgraded - P.O.A from Eltek Ltd.

Powering down AQ112 if to be stored for less than one month

It is recommended that after each period of use or if the unit is to be stored for less than one month, the following power down procedure should be used:

1. Put AQ112 on charge for at least one hour (to ensure battery 20% charged)
2. Remove front cover. Remove the charger lead (AQ112 will not switch off if external power is applied)
3. Press SW1 for 5 seconds. DI will flash 5 times.
4. Check LCD displays OFF
5. Refit front cover.

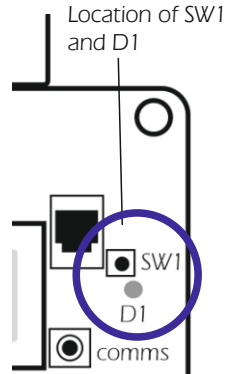


Battery connector

Powering down AQ112 if to be stored for more than one month

It is recommended for extended storage (no use for more than one month), the following power down procedure should be used:

1. Put AQ112 on charge for at least two hours (to ensure battery is reasonably charged)
2. Remove front cover. Remove the charger lead (AQ112 will not switch off if external power is applied)
3. Unplug battery connector from motherboard.
4. Refit front cover.



Next time the AQ112 is to be used

Remove front cover, then do the following:

If battery is disconnected:

1. Reconnect battery - please observe polarity! AQ112 will immediately boot up.
2. Connect MP12U charger
3. Check LCD runs through self check, serial number and version number before cycling through sensor values. Note that only channels previously set up in Darca will be displayed.
4. Securely refit front panel.

If battery is already connected and partially charged

1. Plug in charger
2. Press SW1 for 5 seconds (D1 will illuminate for 5 seconds)
3. Check LCD runs through self check, serial number and version number before *cycling through sensor values. Note that only channels previously set up in Darca will be displayed.
4. Securely refit front panel.

If battery is connected but discharged

1. Plug in charger and wait - in about 20 seconds, the AQ112 will then boot up where LCD runs through self check, serial number and version number before cycling through sensor values. Note that only channels previously set up in Darca will be displayed.
2. Reconnect battery - please observe polarity!
3. Securely refit front panel.

Note: Do not connect charger if the battery is disconnected.

(End of User Instructions)