

Eltek TU1106 - GenII AQ211 comprehensive portable air quality logger with internet connectivity

AQ211 is part of the Eltek family loggers and can be used alongside any other Eltek GenII logger. AQ211 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 NO₂
- 1 x VOC
- 3 x Particulate sizes
- 1 x Temperature within the enclosure
- 1 x case-mounted RH and temperature sensor
- 2 x auxiliary electrode voltages

The particulate sensing module incorporates a fan unit to control a continuous volume of air for sampling.

The robust polycarbonate enclosure is fitted with left hand side ventilation (exhaust) apertures. 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.

AQ211 is supplied with a detachable antenna. The antenna should remain installed at all times.



AQ211 common Specification

Transmission Frequency:	LTE CATM-1/NB-IoT locale specific
Bands:	1,2,3,4,5,8,12,13,14,18,19,20,25,26,27,28,66,85
Compliant to:	EN301 489-1, EN301 908-1
Operating temperature:	-10 to +55°C
Operating humidity:	0-90 %RH non condensing
DC input voltage and connector type:	12VDC \pm 1V (reverse polarity protected)
Number of parameters presented:	13
Dimensions (excl. antenna & RH/Temp probe):	(H198 x W120 x D88) mm
Environmental rating:	IP20
Weight (ex. MP12U power supply/charger):	820g

Measuring Range and channel allocation

A	Temperature (external probe)	-30.0 – 65.0 °C	Resolution: 0.1°C Accuracy: \pm 0.1°C for 20 to 50°C \pm 0.3°C for -20 to 70°C
B	RH (external probe)	0.0 – 100.0 % RH	Resolution: 0.1% Accuracy: \pm 1.5% RH (0 to 80% RH) \pm 2% RH (80 to 100% RH)
C	Particulate PM1	0.3 – 1 μ m particle count (0 to 500 μ g/m ³)	
D	Particulate PM2.5	1.0 – 2.5 μ m particle count (0 to 500 μ g/m ³)	
E	Particulate PM10	2.5 – 10 μ m particle count (0 to 500 μ g/m ³)	
F	CO ₂	0 – 5000 ppm Accuracy: < \pm 50 ppm, +3% from measured value Temperature dependence: typically 2ppm/°C for temp range 0 to 50°C Operational range: -40 to 60°C, 5 to 95% RH non condensing	
G	NO ₂	-0.1000 – 3.0000 ppm	(for range 0.0000 to 3.0000 ppm refer to Eltek)
H	CO	-5.00 – 500.00 ppm	(for range 0.00 to 500.00 ppm refer to Eltek)
I	VOC	0.00 – 50.00 ppm	
J	Digital (internal) Temperature	-55.00 – 125.00 °C	
K	Input Voltage	0 – 20.0 V	External input (mains transformer) voltage
L	Electrode Voltage	-2048.0 – 2048 mV	NO ₂ working
M	Electrode Voltage	-2048.0 – 2048 mV	NO ₂ auxiliary

Principle of operation: Sensors are read sequentially, at a frequency up to 30 seconds and the resulting values are stored. These values are logged and optionally uploaded via an LTE connection. Note that the CO₂ sensor value is measured as an average of 10 measurements in a 120 second period.

When logging all 13 channels of data the logger has capacity to store 1,005,000 readings at a minimum logging interval of 30 seconds. Each log interval will record 1 reading per configured channel. Using Darca Plus the logger may be operated in two modes, either 'Stop when full' or 'Continuous'. In continuous mode once the logger memory is filled the oldest 2000 readings are discarded and logging continues. In 'stop when full' mode the logger will cease recording new data once 1,005,000 readings have been saved.

Data is optionally uploaded to Darca Connect by an LTE-M/NB-IoT modem. The frequency of data upload may be configured by the user, using Darca Plus to set the upload interval parameter. If the upload interval is set to 0 the modem is powered off and unused. The upload feature does not delete data from the logger.

In operation the LCD display will indicate battery charge capacity and memory available capacity. The storage in use is indicated by up to 16 indicators at the bottom of the display. The image below indicates the memory is almost full.

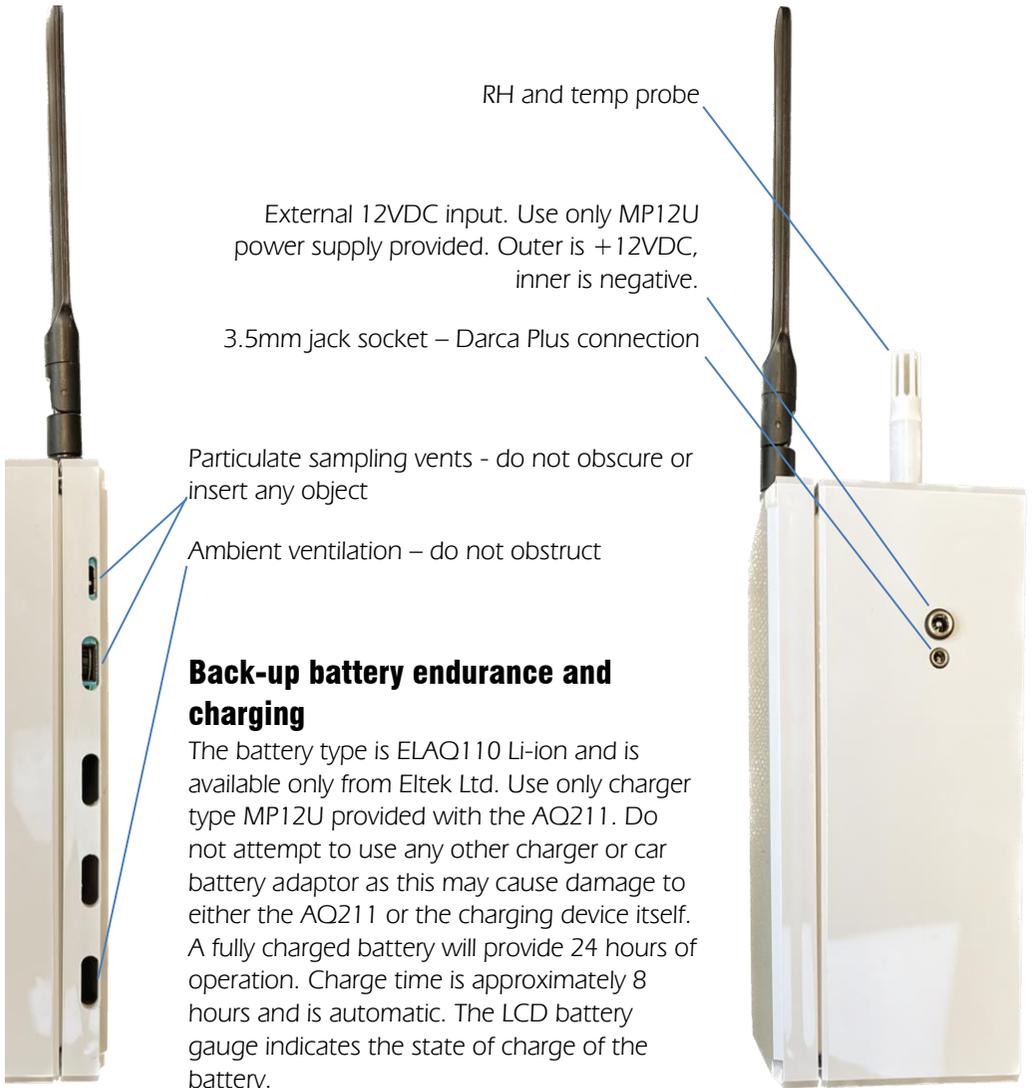


The display will cycle through values for each configured channel, then display the current logger time and either the letter L, N or R.

- L: logging
- N: not logging, data in memory
- R: reset not logging, no data in memory

If the battery runs out of power data will remain stored on the logger.

*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

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

3.5mm jack socket – Darca Plus connection

Particulate sampling vents - do not obscure or insert any object

Ambient ventilation – do not obstruct

Back-up battery endurance and charging

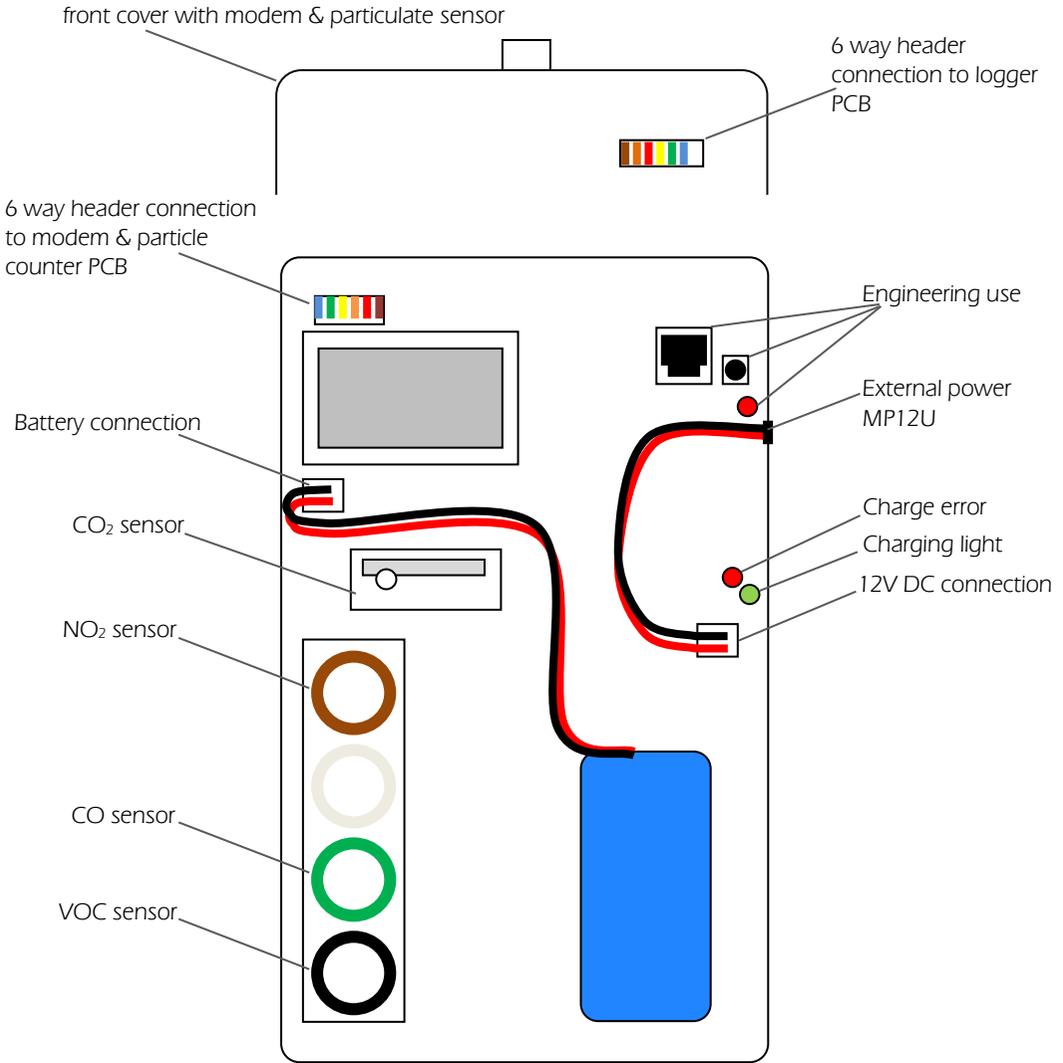
The battery type is ELAQ110 Li-ion and is available only from Eltek Ltd. Use only charger type MP12U provided with the AQ211. Do not attempt to use any other charger or car battery adaptor as this may cause damage to either the AQ211 or the charging device itself. A fully charged battery will provide 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.

AQ211 Right side



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

AQ211 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 AQ211 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.

AQ211 Configuration using Darca Plus

The AQ211 will be provided with all channels configured. Using Darca Plus you may disable any channels that are not required

Tx Channels: Tx-9995

Transmitter:

Set Preferred Tx Interval of 0:20

Tx Interval: 00:05:00 Set Tx Interval

Sensor-On time (s): 0 Set Sensor On Time

Tx Total Channels: 13
Tx Used Channels: 13
Tx Free Channels: 0
Tx Version: 2.5
Ranges (FW + EU): 28
Bat Level (%): 100

Delete All Tx Channels

Set All Tx Channels

Test Setup Clear Setup

Meter All

Channel:

Tx Chan:	Range:	Sq Chan:				Alarms:	Hi:	Lo:
A	Temperature SHT (-30.0 to 65.0 °C)	256	Set Channel	Delete Channel	Calibrate			
B	Humidity SHT (0.0 to 100.0 % RH)	256	Set Channel	Delete Channel	Calibrate			
C	0-1um Particle count (0.00 to 500.00 ug/m3)	256	Set Channel	Delete Channel	Calibrate			
D	1-2.5um Particle count (0.00 to 500.00 ug/m3)	256	Set Channel	Delete Channel	Calibrate			
E	2.5-10um Particle count (0.00 to 500.00 ug/m3)	256	Set Channel	Delete Channel	Calibrate			
F	Co2 (0 to 5000 ppm)	256	Set Channel	Delete Channel	Calibrate			
G	NO2 (-0.1000 to 3.0000 ppm)	256	Set Channel	Delete Channel	Calibrate			
H	CO (-5.00 to 500.00 ppm)	256	Set Channel	Delete Channel	Calibrate			
I	VOC (0.00 to 50.00 ppm)	256	Set Channel	Delete Channel	Calibrate			
J	Temperature DS1820 (-55.00 to 125.00 °C)	256	Set Channel	Delete Channel	Calibrate			
K	Voltage (0.000 to 20.000 V.Ext)	256	Set Channel	Delete Channel	Calibrate	Edit EU Range		
L	Voltage (-2048.0 to 2048.0 NO2v/mV)	256	Set Channel	Delete Channel	Calibrate	Edit EU Range		
M	Voltage (-2048.0 to 2048.0 NO2AmV)	256	Set Channel	Delete Channel	Calibrate	Edit EU Range		

Refresh Close

Darca Plus will allow you to stop, start logging, clear existing data and set the log interval. To use the modem, enter a Darca Connect Upload Interval. Dependant on your SIM provider you may also need to enter APN address, user and password. All of these settings may be configured using Darca Plus software after connecting the logger to your computer via an LC-TX3 lead, in the options available under Squirrel Settings. The minimum update interval is 60 seconds.

Squirrel Settings

Time and Date Intervals Memory Advanced Special GPRS

Note: GPRS settings cannot be modified over a GPRS connection.

Domain Name or IP Address: e.g. 210.9.8.7 or location.co.uk

Server Port: Default 10683 Get SSL

APN:

Username:

Password:

OK Cancel Help

Squirrel Settings

Time and Date Intervals Memory Advanced Special GPRS

Log Interval: 00:01:00 Sample Interval: 00:00:00 Set to Minimum

Darca Connect Upload Interval: 00:10:00 Use Fast Interval Mode

Log Mode: Interval (selected), Average, Event, Interval + Event, Average + Event

External Trigger: Trigger Records (selected), Trigger Runs, Alarm Triggers Record, Alarm Triggers Run

OK Cancel Help

Powering down AQ211 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 AQ211 on charge for at least one hour (to ensure battery 20% charged)
2. Using Darca Plus ensure logger is not logging and upload interval is set to 0
3. Remove the external power plug

Powering down AQ211 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 AQ211 on charge for at least two hours (to ensure battery is reasonably charged)
2. Remove the external power plug
3. Remove front cover
4. Unplug battery connector from motherboard.
5. Refit front cover

Next time the AQ211 is to be used

Remove front cover, then do the following:

If battery is disconnected:

1. Reconnect battery - please observe polarity! AQ211 will immediately boot up
2. Connect MP12U charger
3. Check LCD runs through self check, version number and serial 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 external power
2. Check LCD cycles through sensor values. Note that only channels previously set up in Darca will be displayed.
3. Securely refit front panel

If battery is connected but discharged

1. Plug in external power and wait. In about 20 seconds the AQ211 will initialise

2. LCD runs through self check, version number and serial number before cycling through sensor values. Note that only channels previously set up in Darca will be displayed.
3. Securely refit front panel

Note: Do not connect external 12V DC power if the battery is disconnected.