

# OPERATING MANUAL



Calibration  
certificate

## AQ 200 *Air quality*

CE





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## Technical features

### Sensing elements

#### Air quality probe

**CO<sub>2</sub>** : NDIR infrared sensor (Non dispersive- infrared)

**CO** : Electrochemical sensor

**Temperature** : Pt100 class A

**Hygrometry** : capacitive hygrometry sensor

#### Climatic conditions module

**Hygrometry** : capacitive hygrometry sensor

**Temperature** : semiconductor temperature sensor

**Air pressure** : capacitive sensor














**Thermocouple probes** : type K, J and T class 1

**Pt100 Smart-plus probes** : Pt100 class 1/3 Din

### AQ200 connection (see p.6)

<b>Display</b> .....	Graphic display 128x128 pixels Dim. 50 x 54 mm, blue backlit, Display of 6 measurements (including 4 simultaneously)
<b>Housing</b> .....	IP54, ABS shock-proof
<b>Keypad</b> .....	Metal-coated, 5 keys, 1 joystick
<b>Conformity</b> .....	Electromagnetical compatibility (NF EN 61326-1 norm)
<b>Power supply</b> .....	4 alkaline batteries 1,5V LR6
<b>Operating environment</b> .....	Neutral gas
<b>Operating temperature</b> .....	from 0 to 50°C
<b>Storage temperature</b> .....	from -20 to +80°C
<b>Auto shut-off</b> .....	adjustable from 0 to 120 min
<b>Weight</b> .....	380g
<b>Languages</b> .....	French, English

## Specifications

	Measuring units	Measuring ranges	Accuracy*	Resolutions
<b>CURRENT / VOLTAGE</b>				
	V, mA	from 0 to 2,5 V from 0 to 10 V from 0 to 4/20 mA	±2mV ±10mV ±0.01mA	0.001 V 0.01 V 0.01 mA
<b>THERMOCOUPLE (See related datasheet)</b>				
	°C, °F	K : from -200 to 1300°C J : from -100 to 750°C T : from -200 to 400°C	±1,1°C ou ±0.4% Reading value*** ±0.8°C ou ±0.4% Reading value*** ±0.5°C ou ±0.4% Reading value***	0.1 °C 0.1 °C 0.1 °C
<b>CLIMATIC CONDITIONS</b>				
 Hygro.	%RH	from 5 to 95%RH	<b>Accuracy** (Repeatability, linearity, hysteresis) :</b> ±1,8%RH (from 15°C to 25°C) <b>Factory calibration uncertainty:</b> ±0,88 %RH <b>Temperature dependence :</b> ±0.04 x (T-20) %RH (if T<15°C or T>25°C)	0.1 %RH
 Temp.	°C, °F	from -20 to +80°C	±0.4% of reading ±0.3°C	0.1 °C
 Air pressure	hPa	from 800 to 1,100 hPa	±3 hPa	1 hPa
<b>CO / Temperature</b>				
 Temp.	°C, °F	from -20 to +80°C	±0.4% of reading ±0.3°C	0.1 °C
 CO	ppm	from 0 to 100 ppm from 101 to 1,000 ppm	±5 ppm ±3% of reading ±5ppm	1 ppm
<b>CO<sub>2</sub> / Temperature</b>				
 Temp.	°C, °F	from -20 to +80°C	±0.4% of reading ±0.3°C	0.1 °C
 CO <sub>2</sub>	ppm	from 0 to 5,000 ppm	± 3% of reading ±50 ppm	1 ppm
<b>CO<sub>2</sub> / Temperature / Hygrometry</b>				
 Temp.	°C, °F	from -20 to +80°C	±0.4% of reading ±0.3°C	0.1 °C
 CO <sub>2</sub>	ppm	from 0 to 5,000 ppm	±3% of reading ±50 ppm	1 ppm
 Hygro.	%RH	from 5 to 95%RH	See Climatic conditions module	0.1 %RH
<b>Pt100 Smart-plus or wireless probes (See related datasheet)</b>				
	°C, °F	from -50 to 250°C (According to model)	±0.3% of reading ±0.25°C (According to model)	0.01 °C

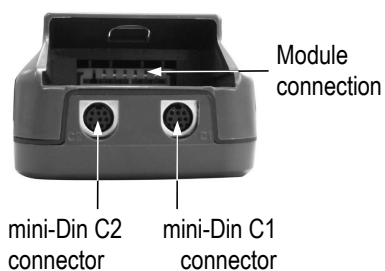
\*All accuracies indicated in this document were stated in laboratory conditions and can be guaranteed for measurements carried out in the same conditions, or carried out with required compensation.

\*\* As per NFX 15-113 and the Charter 2000/2001 HYGROMETERS, GAL (Guaranteed Accuracy Limit) which has been calculated with a coverage factor value of 2 is ±2.88%RH between 18 and 28°C on the measuring range from 5 to 95%RH. Sensor drift is less than 1%RH/year.

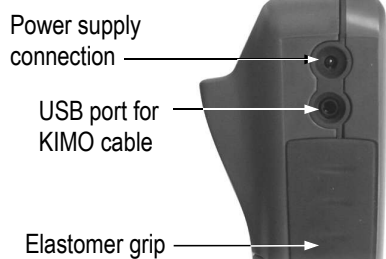
\*\*\*The accuracy is expressed either by a deviation in °C, or by a percentage of the value concerned. Only the bigger value is considered.

### Description

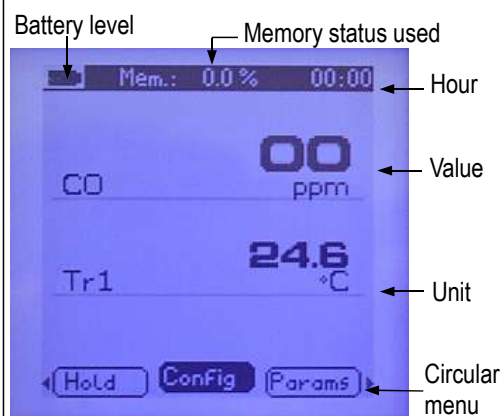
#### Top view



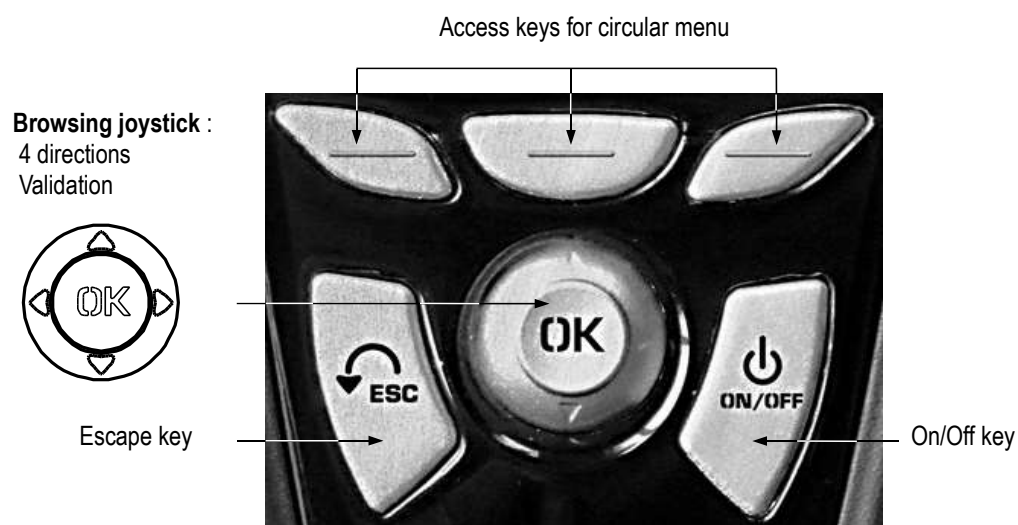
#### Side view



#### Graphic display



#### Keypad



## Connections



### Interchangeable measurement modules

Interchangeable modules with Smart-plus system are automatically recognized when connected to the instrument.

#### 1. Current / voltage module



It allows current or voltage measurements on **V/A1** or **V/A2** channels with current/voltage input cables or ammeter clamps.

#### 2. Thermocouple module



It allows thermocouple temperature measurement on **Tc1**, **Tc2**, **Tc3** and **Tc4** channels with type **K**, **J** or **T** with wire thermocouple probes equipped with a miniature male connector.

#### 3. Climatic conditions module



It allows hygrometry measurement on **Hygro** channel, ambient temperature measurement on **Ptx** channel and air pressure on **PATM** channel.



### Wire probes with Smart plus system

Wire probes with Smart-plus system are automatically recognized when connected to the instrument.



Mini-Din **C2** connector  
Mini-Din **C1** connector



Probes are connected on min-DIN connectors **C1** and / or **C2**



Secured Mini-Din Connector



Pt100 Temperature



CO / Temperature



CO<sub>2</sub> / Temperature



CO<sub>2</sub> / Temperature / Hygrometry



### Wireless probe/instrument communication

Wireless communication between probe and instrument with automatic recognition after power-up.



Pt100 probes are displayed on **Tr1** or **Tr2** channels followed by wireless communication



**Wireless probes shall be located near the instrument for initial recognition. Connection between AQ200 and wireless probes must be established. See submenu "Wireless probes" p 8.**

## Power-up



Enter key code with directional pad.  
(if the locking is activated)

◀ ▶ and ▲ ▼

OK

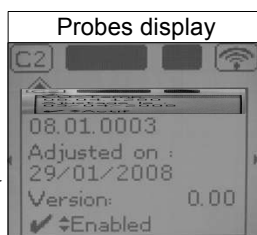


Infos ↔ Probe ↔ Params

Select a sub menu with access keys  
or with arrow keys ◀ ▶

OK

## Probe connection



Select a connection with right and left keys ◀ ▶

Connections can be activated or deactivated with ▲ or ▼

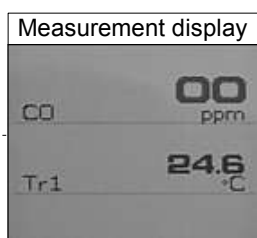
Infos ↔ Measure ↔ Params

Select a sub menu with access keys  
or with arrow keys ◀ ▶



## Measurement

Return to  
previous screen



Hold ↔ Config ↔ Params  
Probe ↔ Rec. ↔ Alarms ↔ Delta T

Select a sub menu with access keys  
or with arrow keys ◀ ▶

OK

## Communication interrupted



Check probes connection

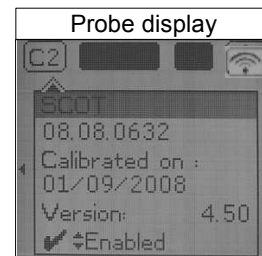
## Probe menu

### 1. Using wire probes and modules

Wire probes and modules with Smart-plus system are automatically recognized from first connection. The **"Probe"** menu only appears when probes or module are connected. This menu allows to view probe information plugged to **C2**, **Module**, **C1** or **wireless connections**. (See « Connections » p 6 for more information about connections).

#### Available information are :

Sensor type, Serial number, Date of last calibration or ajustement, Probes Status (enabled ou disabled). On enabled mode, the probe is connected, the measurement is carried out and the value is displayed. On disabled mode, the probe is connected, the measurement is not carried out and the value is not displayed.



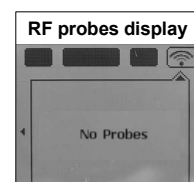
Infos ↔ Measure ↔ Params

### 2. Using wireless communication

#### A- Add a wireless probe

- A1. Go to probe menu by pressing **"Probe"** access key.
  - A2. With arrow keys ◀ and ▶, go to **"RF probes"** display.
  - A3. Select **New** with access key.
  - A4. Power up the probe and press multifunction button until LED blinks. Once the probe is recognized, information appears.
- Left button ◀ allows to return to the wireless probes display and to access all wireless probes already recognized by the instrument. With access keys, it is possible to delete a wireless probe.

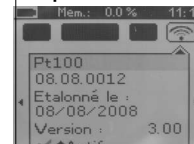
Del



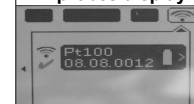
#### RF probes searching



#### RF probes detected



#### RF probes display



#### B- Select a wireless probe already created.

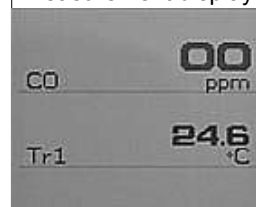
- B1. Power up the wireless probe (short press on Multifunction button).
- B2. Go to **"Probe"** menu.
- B3. With arrows keys ◀ and ▶, go to **"RF probes"** display. All the wireless probes already recognized appear.
- B4. Select the suitable wireless probe with ▲ or ▼.
- B5. Go to probe informations using arrow key ▶.
- B6. Enable the wireless probe with arrows keys ▲ and ▼ and confirm with **OK**.

## Functions

The following functions are enabled only if at least one probe is connected. You can access to the following sub-functions :

- Hold - Min/Max
- Configuration
- Delta T
- Parameters
- Calculation
- Recording

#### Measurement display



Hold ↔ Config ↔ Params  
Probe ↔ Rec. ↔ Alarms ↔ Delta T



Use warnings for CO<sub>2</sub> measuring probes:

Do not let the probe exposed to high concentrations (>5000 ppm) for a long period.

Do not directly blow on the probe.

After an exposure with high concentration, wait a few minutes, until the device displays a stable measurement.

Device shall be adjusted regularly. We recommend a yearly adjustment and calibration.



### Hold- Min./Max.

Press 1x in order to select **HOLD** function : measurement holding on display.  
Press 2x in order to select **Min-Max** function : display of minimum and maximum values.  
Press 3x : back to the continuous measurement.

### U coefficient

**U coefficient** is a thermal coefficient which allows to determine the variation between 2 ambient temperatures, taking into account the separation element between these 2 ambiances (a wall for instance).

Physics unit of **U** value is Watt per square meter and Kelvin degree :  $W/(m^2.K)$ .

A low U value means that thermal isolation is good. When U value decreases, energy needs for heating **decrease** proportionately, and superficial temperatures **increase**. Therefore, indoor comfort is improved, and there is less risk of condensation on elements and items, which can generally be recognized by greyish stains, fungus, mouldy smell.

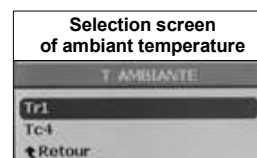
To activate **U coefficient** :

thermocouple module shall be connected and active with at least one thermocouple probe on T1, T2 or T3 channel for contact temperature.  
at least one wire temperature probe, hygrometry, CO or CO2 on C1 or C2 channel, or one thermocouple probe on T4 channel for the ambient temperature

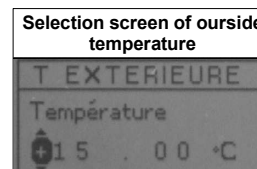
To calculate this coefficient, the device takes into account several parameters:

**For contact temperature**, if several thermocouple probes are connected, the device will make the average of T1, T2 and T3 channels for U coef calculation.

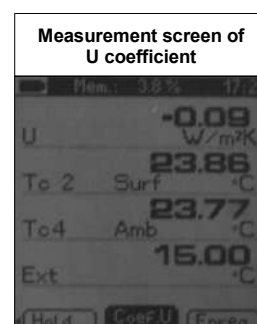
**For ambient temperature**, if several probes are connected, the device will display a selection screen, allowing to choose the probe for U coef calculation.



**For outside temperature**, if no wireless probe is connected, the device will display a screen, allowing to enter manually an outside temperature. Conversely, if several wireless probes are connected, the device will display a selection screen, allowing to choose the wireless probe for U coef calculation.



U coef measuring screen appears when no probe or outside temperature has to be determined and probes and temperature are chosen.



You can record values of the measuring screen of U coefficient :

- Press on Enreg button.
- Enter a name for the recording.
- Validate.

## Configuration



If you use thermocouple probes, you must enter type into the Configuration sub-function.

### Configuration sub-function allows to:

#### Select thermocouple

Click on **OK** or **►** to enter into sub function : a list of thermocouple available ( K, J or T type) appears.

Select type with **▲** and **▼**. Confirm with **OK**.

#### Select display

Click on **OK** or **►** to enter into sub function. Select channel required with arrow keys **▲** and **▼** and confirm with **OK**. Select respectively **ON** or **OFF** with **▲** and **▼** in order to enable or disable this function. Confirm with **OK**.

#### Select units

Click on **OK** or **►** to enter into sub function : a list of units available appears. For each channel, select unit required with **▲** and **▼**. Confirm with **OK**.

Click on **Esc** to return to previous screen.

## Delta T

When two PT100 probes or 2 thermocouple temperature probes are connected, AQ200 can calculate Delta temperature value : the temperature difference between **C2** and **C1**, or **T2** and **T1**, or **T4** and **T3**.

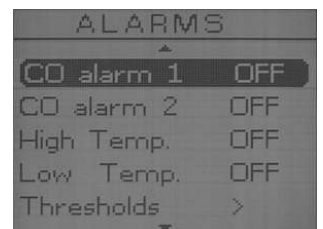
Select **Delta T** in order to view the temperature difference.

If you select **Delta T** again, Delta T function is disabled.

## Alarms

Select respectively **ON** or **OFF** with **▲** and **▼** in order to enable or disable the alarm. Choose your setpoint : CO Limit 1 (first CO setpoint), CO Limit 2 (second CO setpoint), low temperature setpoint and high temperature setpoint. Confirm with **OK** or **►**.

Select thresholds with **OK** or **►** to enter CO and temperature setpoints. Select + or – signs with **▲** and **▼** then pass on the first digit with **►**. Low and high **thresholds** entered, confirm with **OK**.



## Recording

The Recording menu allows a measurement dataset. You can choose between a planned or a continuous dataset. Memory capacity of the instrument is up to **8,000** points or **50** datasets.

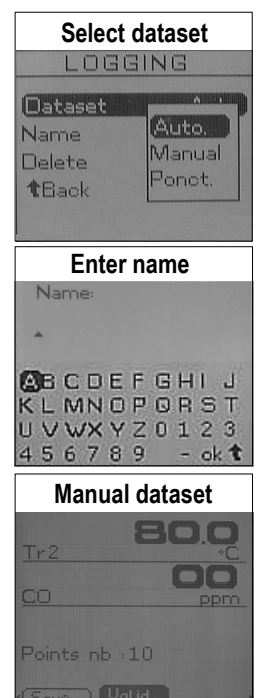
### 1. Create or launch a continuous dataset

A continuous dataset can be carried out using AQ200 and is composed of several dated measuring points. The operator can choose an automatic or a manual dataset, with an instant value or an average. This datasets can't be set using Datalogger-10 Software.

#### 1.1 Manual dataset

A **manual dataset** is composed of measuring points selected by the operator.

- Click on **OK** or **►** to enter into sub function.
- Select **Manual** with **▲** and **▼**. Confirm with **OK**.
- Select **Name** with **▲** and **▼**. Confirm with **OK** or **►**. Enter dataset name with arrow keys **◀** **▶** and **▲** **▼**. Confirm with **OK**.
- For measurement launching, click on **OK** with the access key. The number of points selected and the parameter are displayed.
- To save your dataset click on **Save** with the access key.



### 1.2 Automatic dataset

An **automatic dataset** is composed of measuring points with interval of time.

- Click on **OK** or **►** to enter sub function.
- Select **Auto.** with **▲** and **▼**. Confirm with **OK**.
- Select **Name** with **▲** and **▼**. Confirm with **OK** or **►**. Enter dataset name with the arrow keys **◀** **▶** and **▲** **▼**.

Confirm with **OK**.

- Enter dataset time and interval of time between 2 measurements by selecting **Period** with access key. Select **Duration** or **Interval** with **▲** and **▼**. Confirm with **OK**. Enter minutes and seconds with arrow keys **▲** and **▼** (from 1 minute to 24 hours for the duration and from 5 seconds to 10 minutes for the interval). Confirm with **OK**.
- Select **Start** for dataset launching.



### 2. Launch a planned dataset

A planned dataset is composed of several locations. For each location, the operator can enter a theoretical value and a tolerance for the parameter to be controlled. Planification must be made via the software.

- Click on **OK** or **►** to enter into sub function.
- Select **Planned** with **▲** and **▼**. Confirm with **OK**.
- Choose dataset name with **▲** and **▼**. Confirm with **OK**.
- Select the location with **▲** and **▼**. Confirm with **OK**.

### 3. Preview of tables of points of datasets

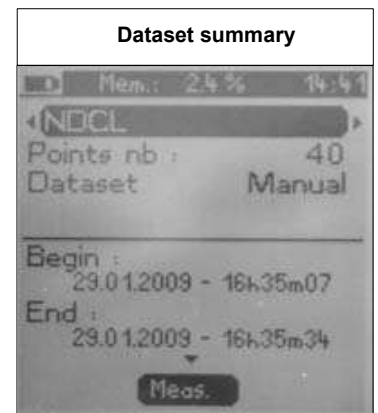
You can display tables of points of datasets performed on the device.

- Go to **Recording** menu.
- Select **Display**. Click on **OK** to validate.
- Select **dataset name** with arrow keys **▲** et **▼**. Click on **OK** to validate.

Summary screen of selected dataset is displayed. From this screen, you can :

Select other dataset using arrow keys **◀** and **▶**.

Display data of other channels using arrow keys **▲** and **▼**.



- Click on **Mesure** to display values table of selected dataset.

From this screen you can :

Browse values table of points of the same channel pressing **Prev.** or **Next**.

Change of channel with arrow keys **◀** and **▶**.

Back to dataset summary screen pressing **Visu**.

VA	m3/h
01 -250.00	11 -250.00
02 -250.00	12 -250.00
03 -250.00	13 -250.00
04 -250.00	14 -250.00
05 -250.00	15 -250.00
06 -250.00	16 -250.00
07 -250.00	17 -250.00
08 -250.00	18 -250.00
09 -250.00	19 -250.00
10 -250.00	20 -250.00

### 4. Delete all datasets

Select **Delete** with **▲** and **▼**. Confirm with **OK**.

**Parameters****• Language**

Click on **OK** or ► to enter and a list of languages available appears.  
Select language with arrow keys ▲ and ▼ and Confirm with **OK**.

**• Date / time**

Click on **OK** or ► to enter into sub function. Enter the day with ▲ and ▼ then move to the next digit with ►. Repeat this operation for the month, year, hour and minute. Confirm with **OK**.

**• Beep**

This sub-function allows to enable or disable the keypad beep. Click on **OK** or ► to enter into the sub function. Select respectively **ON** or **OFF** with ▲ and ▼ in order to enable or disable the beep.  
Confirm with **OK**.

**• Extinction**

This sub-function allows to enable the automatic shut-off and to select the delay in minute. Click on **OK** or ► to enter into the sub function. Select, with ▲ and ▼, **OFF** in order to disable the automatic shut-off or enter the delay (from 15 to 120 minutes).  
Confirm with **OK**.

**• RF logging**

This sub-function allows to enable or disable the **RF logging**. Click on **OK** or ► to enter into the sub function. Select respectively **ON** or **OFF** with ▲ and ▼ in order to enable or disable this function.  
Confirm with **OK**.

**• Contrast**

This sub-function allows to modify the contrast. Click on **OK** or ► to enter. Select your contrast level (from 0 to 9 or **AUTO**) with ▲ and ▼.  
Confirm with **OK**.

**• Backlit**

This sub-function allows to modify the backlit. Click on **OK** or ► to enter. Select your backlit level (from 0 to 9 or **AUTO**) with ▲ and ▼.  
Confirm with **OK**.

If you select **AUTO**, the AQ200 adjusts automatically the backlit according to the room brightness.

**• Key locking**

This sub-function allows to enable or disable the **key lock**. Click on **OK** or ► to enter into sub function. Select respectively **ON** or **OFF** with ▲ and ▼ in order to enable or disable this function.  
Confirm with **OK**.  
If the locking is enabled, the code menu appears

**• Code**

This sub-function allows to enter the **security code**. Click on **OK** or ► and the code appears. Enter the first digit of the code with ▲ and ▼ then move to the next one with ►. Confirm with **OK**.

**Downloading data**

see DataLogger-10 user manual chapter III – Read device page 6.

### Info menu

This menu allows to view the serial number of instrument and firmware version.

### Battery

When battery indicator flashes it is recommended to change the batteries:

1. Remove the front part at the back of the instrument.
2. Remove batteries
3. Insert new batteries (AA-LR6 1,5V) in accordance with proper polarity drew inside the housing.
4. Replace the front.



### Maintenance

KIMO performs calibration, adjustment and maintenance of all your instruments to guarantee a constant level of quality of your measurements. In regards of Quality insurance norms, we recommend that the instruments are checked once a year.

### Warranty

KIMO Instruments have 1-year guarantee for any manufacturing defect (return to our After-Sales Service required for appraisal).







Once returned to KIMO, required waste collection will be assured in the respect of the environment in accordance to 2002/96/CE guidelines relating to WEEE.