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Xplorer Anemometers

Operating Instructions

Xplorer Anemometers

Instruction Manual

I. GENERAL INFORMATION
You have just acquired a piece of high precision equipment which has been created using the most modern technology. It has been designed to stand up to intensive use. However, in order to maintain its appearance and precision, we recommend that you treat it with care and pay careful attention to these operating instructions.

The Skywatch Xplorer is fitted with an impeller and with sensors which allow it to carry out measurements in the open air. It will give you all the information essential for your open air activities such as hang-gliding, rambling, climbing or water sports. It will give you the instant wind speed and the maximum wind speed (Xplorer 1, 2, 3 and 4), ambient temperature and wind chill temperature (Xplorer 2, 3 and 4) an electronic compass (Xplorer 3 and 4) as well as altitude, pressure and trends in the weather (Xplorer 4).

The Skywatch Xplorer range has been designed to withstand short-term immersion in water at a depth up to one metre.

IMPORTANT!
This instrument is designed as an aid to users who are in an open air environment, but it CANNOT replace advice and warnings put out by the local weather station.

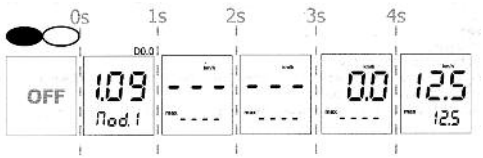
Open-air climatic conditions can sometimes change quite dramatically and this can happen very quickly indeed. Sunny weather can, for example, change to thunderstorm conditions in the space of half an hour and sometimes less. You should therefore always follow basic safety rules whenever you undertake open air activity

York Survey Supply Centre can in no way be held responsible for any consequences, direct or indirect, or for any prejudice, which might result from the use of this instrument.

Technical specifications:
Size: 41 x 93 x 17mm
Weight: 51g (Xplorer 1), 52g (Xplorer 2 and 3), 53g (Xplorer 4)
Operating temperatures: -30°C to +60°C

II. MAINTENANCE (Xplorer 1, 2 , 3 and 4)
The design and manufacture of this instrument has been the subject of of a great deal of care. In order to make best use of the proposed functions you are advised to use the instrument in accordance with the following observations:
• Avoid at all costs items such as hair, thread, sand and other dust materials getting into the impeller, as they could cause defective rotation of the impeller and therefore a loss of precision. If a hair or a piece of thread should get into the impeller, extract it gently using tweezers; in the case of dust or sand, you can run clean water over the impeller.
• Avoid exposing the instrument to extreme climatic conditions for over-long periods. While it uses components resistant to such temperatures, we recommend that you do not expose your instrument to strong sources of heat, for example under the windscreen of a vehicle.
• Avoid careless use or sharp impacts.
• DO NOT EXPOSE the instrument to powerful chemicals. Such products could damage it.

III. Switching on (Xplorer 1, 2, 3 and 4)
To switch on your Skywatch Xplorer, all that you need to do is press briefly on the button (represented by: on the diagram below), after which the instrument switches on and displays the software version and the instrument model (see fig. D0.0 on the diagram below), after which the instrument moves into the mode for measuring the current wind speed (Xplorer 1) or to the last mode displayed before the instrument was switched off (Xplorer 2, 3 and 4).



IV. Switching off (Xplorer 1, 2, 3 and 4)
Switching off automatically (auto-off)
Your Skywatch Xplorer goes off automatically 1 minute after the last button press or wind measurement. This means that it does not stop while the impeller is still turning (more than ten seconds).

Switching off manually
In order to switch your Xplorer off manually (valid in every mode), hold the button down until it switches off, then release.

IMPORTANT! Permanent operation possible
Either at the time of the manual switching off by releasing the button during the flashing of the large digits, or at the time of automatic switching off by pressing briefly on the button during the flashing.
During permanent operation, any pressure on the button returns Xplorer into automatic off mode.
Note: If the instrument is on permanently the battery discharges rapidly (400 to 500 hours according to the model).

V. Supply (Xplorer 1, 2, 3 and 4)
Your Skywatch Xplorer gets it's power supply froma replaceable lithium battery 3V type CR2032. To change the battery:

IMPORTANT: This operation must be carried out with care! ANY DEFECTIVE MANIPULATION DURING THE REPLACEMENT OF THE BATTERY CAN CAUSE LASTING DAMAGE TO YOUR INSTRUMENT. IN CASE OF DOUBT CONSULT YOUR WATCH DEALER OR REPAIRER.
1. Unscrew the metal back (6 screws).
2. Unscrew the screw of the battery cover.
3. Gently remove the cover in order to extract the battery.
4. Put in the new battery observing the polarity (+ upwards), then screw back the battery cover. Make sure that the tiny tongue in the centre of the top is raised so that it touches the metal back.
5. Before refitting the back, make sure that the seal is clean and securely positioned in it's slot.
6. Refit the back and the six screws.

Normal battery life:
Xplorer 1, 2 and 3: approx. 30,000 measurements of 1 minute (auto-off) and more than 20 years when off.
Xplorer 4: without records: same as Xplorer 1, 2 and 3.
with records: approx. 25,000 measurements of 1 minute (auto-off) but 7 years maximum when off.

1. Backlight (Xplorer 1, 2, 3 and 4)
To get the backlight to light up keep the button pressed for 1 second and as soon as the backlight lights up, release the button. The backlight remains illuminated for 3 seconds. If within the 5 seconds which follow you re-illuminate the backlight, it stays lit for 15 seconds. Beyond these 5 seconds it lights up again for 3 seconds.
IMPORTANT: Intensive use of the backlight reduces the life of the battery consumption approx. 100x greater than without backlight.

2. Modes and mode changing (Xplorer 1, 2, 3 and 4)
Brief pressure on the button allows you to move to the following mode.

MODES:
Xplorer 1 (1 mode)
1. wind + max. wind
Xplorer 2 (3 modes)
1. wind + max. wind
2. wind + temperature
3. wind + wind chill temperature
Xplorer 3 (4 modes)
1. wind + max. wind
2. wind + temperature
3. wind + wind chill temperature
4. wind + compass
Xplorer 4 (9 modes)
1. wind + max. wind
2. wind + temperature
3. wind + wind chill temperature
4. wind + compass
5. wind + altitude and max. altitude
6. wind + relative and absolute pressure
7. record of pressure trends
8. record of relative pressure
9. record of altitude

3. Measuring the instant wind speed w/ max. (Xplorer 1, 2, 3 and 4)
Choice of unit of measurement:
By keeping the button pressed for approx. 4 seconds, the units start to go past. You can choose between the following units: km/h (kilometers per hour), mph (miles per hour), knots, m/s (metres per second) and fps (feet per second). When the unit of your choice appears, release the button and the unit of measurement is thereby selected.

Measurement of speed:
For the measurement to be as exact as possible it is necessary to align the instrument along the axis of the wind.
Precision: ±3%
Measuring range: from 0 to 150km/h (42m/s, 81 knots, 93mph, 136fps)
Measuring cycle: 2 measurements per second

Display:
The display of the current speed is done on the large digits and the maximum speed reached on the small digits with the indication max.
Resolution: to one decimal place up to 99.9, then in whole units.

Deletion of the maximum:
The maximum is retained even when the instrument is off. In order to reset it to zero keep the button pressed for at least 2 seconds, then release it.

4. Measuring the instant wind speed w/ ambient temp. (Xplorer 2, 3 and 4)
Choice of unit of measurement:
By keeping the button pressed down for at least 2 seconds the 2 units start to go past. You have the possibility to choose between: °C (degrees Celsius) and °F (degrees Fahrenheit). When the unit of your choice appears, release the button and the unit of measurement is thereby selected.

Measuring ambient temperature:
Note: the temperature sensor is integrated with the metal back of the casing, and therefore it is the temperature of the back of the casing which is displayed. This special feature makes it possible to measure very accurately the temperature of milleu such as:
• Water (springs, streams, etc.) by immersing the instrument several centimetres;
• Surfaces (ground, metal parts, refrigerator interiors, etc.) by laying as closely as possible the back of the instrument on the surface to be measured;
• Ambient air, either by allowing the instrument to reach the air temperature, which can take several minutes, or even several dozens of minutes according to the wind speed (avoid direct sun rays and contact of the back of the casing with your fingers). Otherwise, to get a rapid and precise measurement, put the back of the casing into contact with an object which is the same temperature as the air (vehicle bodywork, metal barrier, smooth walls, etc.) avoiding surfaces in dark colours and exposed to sunlight.
Measuring range of the sensor: from -50°C to 100°C
Measuring cycle: one measurement every 0.5 seconds

Display:
The display of the instant wind speed is done on the large digits while the ambient temperature is displayed on the small digits.
Resolution (temperature): to the tenth of a degree.

5. Measuring current wind speed w/ the windchill temp. (Xplorer 2, 3 and 4)
Low temperatures present a danger to the human body and this danger is aggravated by the speed of the wind. The Xplorer models 2, 3 and 4 show immediately the temperature felt by the body and warn of risks of chilblains and hypothermia.

WHICH MEANS: The wind chill factor is calculated on the basis of ambient temperature and wind speed. In the event of wind, it gives an indication of the loss of heat by the body if the temperature is less than 10°C. This is the formula which was adopted in January 2003 by the United States Federal Office for Meteorological Cordination with the Meteorological Service of Canada (MSC), the US Department of Defence (DoD) and the United States National Oceanic and Atmospheric Administration (NOAA).
Example: An ambient temperature of 0°C and a wind of 30km/h act on your body as if the temperature were -7.8°C!

Choice of the unit of measurement for temperature:
See section 4, choice of the unit of measurement.

Display:
The display of the instant wind speed is made on the large digits and the wind chill temperature on the small digits with the indication
Resolution (temperature): to the tenth of a degree.
Measuring cycle: 2 measurements per second.

6. Measuring the instant wind speed w/ electronic compass (Xplorer 3 and 4)

Choice of the unit of measurement (wind):
See section 3, choice of the unit of measurement

Compass display:
The compass display is given in degrees on the small digits.
WHICH MEANS! Your Skywatch Xplorer tells you magnetic north and not geographical north!


fig. A

Measurement:
To carry out a measurement as accurate as possible, hold your instrument perfectly vertical (fig. A). If the figures are replaced by ---°, that means that the instrument is too tilted or that it is being disturbed by a nearby magnetic source.

Calibration:
IMPORTANT! Calibrate your Xplorer before the first use and at each change of environment or battery.
When the instrument is first energised, the compass shows ---°. So you carry out a calibration as follows: Hold the button pressed down for approx. 3 seconds and, when CAL appears in the large digits, release. Then turn yourself around until the instrument is showing , then, in order to validate the calibration, press briefly on the button. During the calibration, the instrument shows in succession , , then and finally in front of the small digits. This operation needs to take place at the speed pf 1 turn in approx. 30 seconds. To obtain an accurate calibration, the impeller MUST NOT turn! If there is wind, shelter the impeller between your thumb and your index finger.

Note: The lines of a terrestrial magnetic field are disturbed by metal environments, buildings, electricity pylons, vehicle interiors, metal boats and also by magnetic fields generated by any electrical machinery or equipment and by magnets. It is therefore necessary, in order to obtain accurate measurements, to move away from the sources of disturbance, or to recalibrate.

7. Measuring instant windspeed with current altitude (Xplorer 4)

IMPORTANT! This instrument calculates altitude by using air pressure. it is therefore quite normal for the altitude to change when the air pressure changes. For this reason the instrument needs to be recalibrated as often as possible.

Choice of the unit:
By keeping the button pressed for approx. 4 seconds, the units start to go past. You can choose between the following units: **m** (metres) and **ft** (feet). When the unit of your choice appears, release the button, and the unit of measurement is thereby validated and the instrument returns to the mode of measuring the instant wind speed with altitude display.

Display of maximum altitude:
Hold the button pressed down for approx. 3 seconds and, when CAL appears in the large digits, release. Hold the button pressed down to increase the figure for the altitude in steps of 1 unit. To reduce the same, release then once again hold the button pressed down. A brief pressure on the button validates the new altitude.

Deletion of the maximum:
The maximum is retained even when the instrument is off. To delete the figure for the maximum, hold the button pressed down for approx. 2 seconds, then release it. This operation should be carried out after the mode of display of the max. altitude.

8. Measuring the wind speed w/ display of relative and absolute pressure

WHICH MEANS: The instrument offers 2 modes for displaying pressure: QFE pressure and QHN pressure. These two abbreviations (QFE and QNH) are taken from the famous "Q" code. This code was instituted by the London conference of 1912. It is made up of a list of three letter indicators, valid for all the countries of the world. Intended mainly for telegraphic and radio-telegraphy transmissions (in morse) it is made up of a list of abbreviations, using three letters to summarise without ambiguity phrases, questions or responses which would take too long to formulate in clear text, thus eliminating the risks of errors arising out of transmission, reception, language and interpretation. The "Q" is still widely used in our day by ships and amateur radio enthusiasts. it is still in official usage in radio telephony. The Aeronautical world does not use all of it but regularly uses part of it.

CODE	MEANING
QFE	Atmospheric pressure at ground level, also known as absolute pressure
QNH	Atmospheric pressure obtained by calculation at sea level in standard atmospheric conditions also known as relative pressure. This is the pressure mentioned in meteorological bulletins or on the television.

Choice of the unit:
If the button is kept pressed down for at least 4 seconds the units start to pass by, and you have the possibility of choosing between the following units: hPa (hecto Pascals) and inHg (inches of mercury). When the unit of your choice appears, release the button. This validates the unit of measurement and the instrument goes back to the wind/relative pressure (QNH) mode.

Display of absolute pressure (QFE):
Keep the button pressed down for approx. 2 seconds and at the very moment when the indication QFE is displayed in the large digits, release it. The instrument then goes into absolute pressure mode. To exit this mode press once on the button and the instrument returns to the wind/relative pressure (QNH) mode.

Calibration of relative pressure (QNH):
Hold the button pressed down for approx. 3 seconds, then release it at the moment when CAL is displayed on the large digits. Then the adjustment (increase/reduction) is carried out in the same way as for the calibration of altitude, see section 7 (altitude calibration).

1. If QNH figure is steady (not flashing) this indicates the current relative presure (QNH) credible because deduced from meteorologically slow variation.
2. The QNH sign flashes if this pressure has changed since the last calibration.
3. If the QNH figure is flashing it indicates the QNH pressure entered at the last calibration.
4. A rise in altitude or a meteorological variation when the recording is not active makes the QNH figure flash.
5. Calibration of the QNH or of the altitude (known datum) makes it possible to re-adjust the Xplorer in relation to the measured ambient pressure. This varies continually according to altitude and current meteorological conditions.
6. The only reference for the Xplorer is the air pressure which it is measuring, from which it deduces the altitude. Any variations in this pressure makes the altitude change: 9m per hPa at low altitudes, 14m at 5,000m and this is why it is necessary to calibrate as often as possible to maintain a credible display (even airline pilots have this to comply with!)

9. Recording modes (Xplorer 4)
WHICH MEANS: The three recording modes operate in the same way and are connected. They display under different forms one of the 48 pressure measurements stored each hour. By default: 24h are displayed. The record stores just the pressure on the sensor, the QNH or the altitude displayed is calculated, depending on the current calibration.

Trend: This is the variation in pressure over the last 24 hours (or 48 hours, or 1 hour, etc.) This is valid if the Xplorer is in the same place (same altitude). A negative figure indicates a drop in pressure (arrival of a depression), a positive figure, an increase (anticyclone). Pressure naturally varies during the day, and the weather trend is more accurate at 24 hours or 48 hours (same time of day).

QNH: This is the relative pressure at 24 hours ago (or 48 hours, etc.) Valid if the Xplorer is at the same place and is recalibrated.
Altitude: If you set off for a mountain walk or go paragliding, you can check the altitudes achieved hour by hour. The altitude will be accurate if you force the QNH calibration of the Xplorer on the weather pressure that was present when you recorded.

Display of a particular moment in the record:
Example; you want to know the trend, the QNH or the altitude 12 hours ago. Keep the button pressed down, then when 12h appears on the large digits, release.

Battery economy (stop recording):
This feature This feature is possible by disabling the pressure sensor while the instrument is off. The measurements of pressure and altitude are only active when the instrument is on. To turn off the sensor, put one of the three records on 0h (zero hours).

1. If you consult the record and you leave displayed 5h, for example, the next time you switch on the Xplorer, it will display 24h if there has been a new pressure measurement, this being generated by the internal clock (one measurement per hour).
2. On releasing the 0h, the record will no longer perform a measurement each hour (but will retain the current contents) **thereby giving you battery economy.**
3. In going back to active record mode (anything other than 0h) the current measurement is stored as the starting time and displayed under 1h.

10. General reset (Xplorer 3 and 4)
This mode resets by default all figures and removes the calibration of the compass. In order to carry out a general reset, switch off the instrument as normal. Then, to restart, hold the button pressed down. At the moment where all the LCD digits appear (see opposite), release it, then again hold the button down until off. You can then start up your instrument in the normal way.