

winddisplay

OMC-137

Users Manual
Ver. No. 1.03

OBSERVATOR instruments B.V.
P.O.Box 60
2980 AB Ridderkerk
Rietdekkerstraat 6
2984 BM Ridderkerk
Tel. ++31 (0)180 463411
Telefax ++31 (0)180-463510
The Netherlands

Contents

1. General	2
2. Installation	4
2.1. Mechanical	4
2.2. Electrical	4
2.2.1 Cable layout without heater	4
2.2.2 Power supply settings	5
2.2.3. Connections	6
2.2.4. Daisy chaining	7
3. Commissioning	8
3.1 Communication and ports	9
3.1.1 Serial input output Port 1	9
3.1.2 Serial input output Port 2	10
3.1.3 Serial input output Port 3	11
3.1.4 Serial input output Port 4	12
3.1.5 Serial input output Port 5	13
3.1.6 Analogue input output Port 6	14
3.1.7 Serial input output message format	15
3.2 Settings via frontpanel	16
3.2.1 Units and averaging settings	16
3.2.2 Lamp test	16
3.2.3 Deviation setting	16
3.2.3 Gust reset	16
4. Maintenance	17
4.1 Uploading a new software version in the OMC-938 display unit	17
5.0 Input menu OMC-137	18
5.1 Select input device	19
5.1.1 Input settings	20
5.1.2 Analogue input range settings	20
5.2 Select output device	21
5.2.1 Output settings	22
5.2.2 Analogue output	24
5.3 Sensor settings	25
5.4 Display average	26
5.5 Options	26
5.6 Overall view of settings OMC-137	27

1. General

The Obsermet OMC-137 Advanced wind display unit is specially designed for easily read out of wind information for aeronautical purposes. Once again the use of the latest Obsermet standard in combination with a distinguished front panel, known from earlier released displays like the OMC-138, the unit will be a break through in the avionic market.

The display unit is housed in a black Noryl casing, suitable for flush mounting in a console or display panel. The units can easily be mounted while any inclination is allowed and no additional control units are required.

The display was designed to meet all ICAO requirements as mentioned in the Manual Of Aeronautical Meteorological Practice (4 th. edition 1994).

The wind display unit is provided with a double LED circle. One LED in the outer circle indicates the wind direction, while the LEDs in the inner circle shows the wind variation. The average wind direction is also available on a 3 digit numeric display placed on the left of the wind circles. Under this display three displays indicate the maximum, average and minimum wind speeds.

The user of the display will be notified by use of three alarms when the average direction is above 60° , the average wind speed is above 10 k and if one of the wind sensors is malfunctioning.

Since the unit will be able to read in four wind speed and direction sensors the location of the sensor is displayed by means of the runway heading. Selection of these sensors can be made using the MENU keys on the front panel. With this MENU keys also the wind speed units can be selected in m/s, knots, mph, km/h or Beaufort. Another MENU options is the selection of the averaging interval, this interval can be set in 2 minutes, 10 minutes or any user-programmed interval. When not in the menu mode the ▲ and ▼ keys are for brightness control and manual gust reset.

The display unit is developed for integration within complete meteorological systems. Therefore many in- and output connections are made possible, either as standard or as option. The unit was primary intended for use with the Obsermet OMC-160 wind sensor, but other sensors can also be connected, like the OMC-172 and OMC-176. As all Obsermet wind display units have a 'daisy chain' provision, input data can also be taken from another Obsermet wind display unit.

Besides the earlier mentioned 'daisy chain' output, industry-standard analog or digital output signals are available.

Mechanical

Case type	: Modular case according DIN 43700
Material	: Noryl UL94V0
Max. dimensions	: 288x144x100 mm
Panel outcut	: 282x138mm (R2 max)
Panel thickness	: 7mm max
Weight	: 1.5 kg

Electrical

Power Supply	: 230 VAC/50Hz
Power Consumption	: 50 VA max
E.M.C.	: EN-50081-1 (emission) and EN-50082-2 (immunity)

Input

Sensor Supply 4x : 12-15 VDC, max. 100 mA
 Input Signal : Currentloop or RS422
 Compatibility : All Obsermet equipment, wind sensors, displays etc.

Output

Daisy chain : Currentloop or RS422 to other Obsermet display units
 Daisy chain 3x : RS422

RS-232 Communication & programming

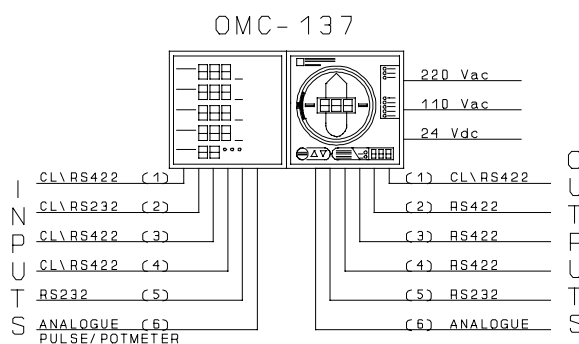
Connector : DB9-M
 User interval : 1 ... 600 sec.
 Gust reset : manual with MENU keys

Averaging interval : 2 min, 10 min, or any user-programmed interval, selectable from front panel.

User interval : programming via RS-232 communications port
 Readout units : m/s, km/h, k, mph, bft, selectable from front panel
 Sensor selected : 2-digit red LED indicator, character height 10.1 mm.
 Sensor select : Manual, on front panel with MENU keys
 Front panel control : 3 keys, marked MENU, ▽ and △
 Brightness control : from front panel with ▽ and △ keys (16 steps)
 Lamp test : from front panel by simultaneously pressing ▽ and △ keys
 Manual gust reset : from front panel by simultaneously pressing MENU and ▽ key

Available Options

: 115VAC Power Supply
 : 24 VDC Power Supply
 : RS-232 or RS-422/RS485 signal output (NMEA-0183 data format)
 : Analog outputs 0-1 V or 4-20 mA of selected sensor
 : Signal input for OMC-172/ OMC-176 1x
 : Signal input RS-232 (Obsermet data format, modem connection)
 : Signal Input for non-Obsermet Sensors: contact factory
 : Remote dimmer



2. Installation

2.1. Mechanical

Panel mounting of the OMC-137 display requires a panel cut-out of 137 x 282 mm. Maximum panel thickness 5 mm. Rear access must be provided, for fixing of the tightening clamps and connecting the electric cabling. The depth of the unit is 75 mm and an additional clearance of 8 mm should be allowed for the cable connections.

2.2. Electrical

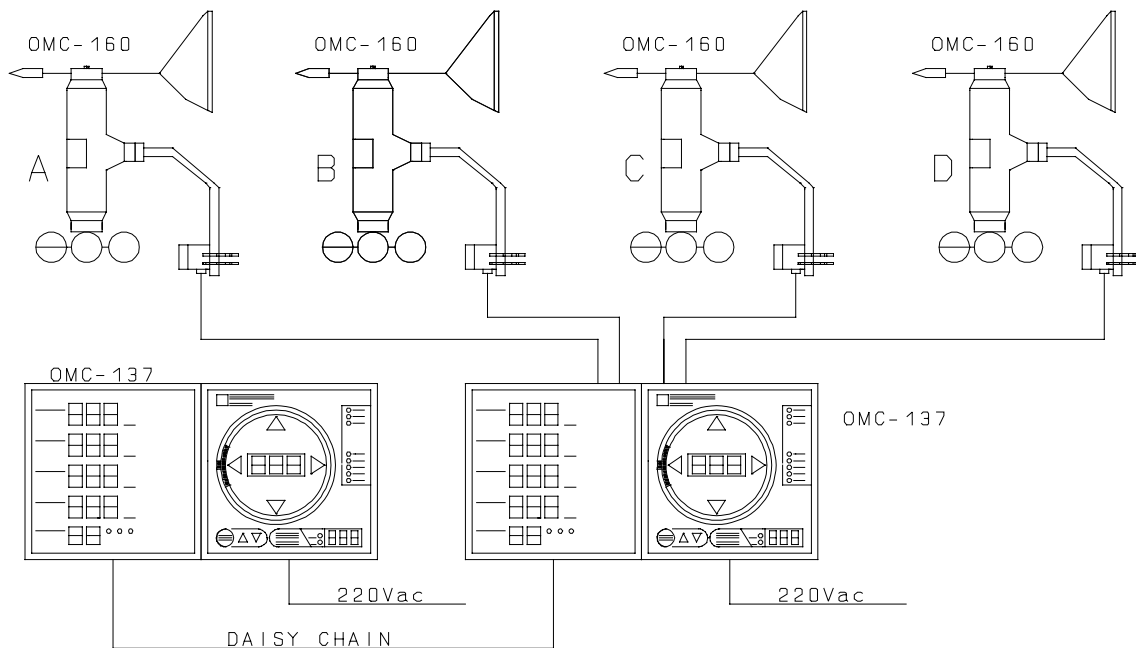
All Obsermet displays utilize a common terminal strip for the connections to the wind sensors and the ancillary displays and/or recorders. The signal cable between sensor and display is a 4-core cable with 2 cores for power to the sensor and 2 cores for signal transmission. To reduce interference the cable must have a common screen. This screen should be grounded to earth in the junction box of the wind sensor. In this way the cable may run distances up to 1 kilometer.

Recommended cable: 2 (or 3) twisted pairs with common screen, core size 0.75 mm².

In the case that the wind sensor is provided with a heater. 2 extra cores are required for power supply to the heater. The size of the heater cable depends on the cable length. (For more details see manual wind sensor)

The OMC-137 display unit provides the 4 times 15 Volts DC. power supply to the microprocessor transmitter in the wind sensor. The power consumption of the sensor transmitter electronics is approx. 65 mA. This power supply should not be used for the optional heaters in the sensor. These sensor-heaters must be powered independently from the display unit.

2.2.1 Cable layout without heater



2.2.2 Power supply settings

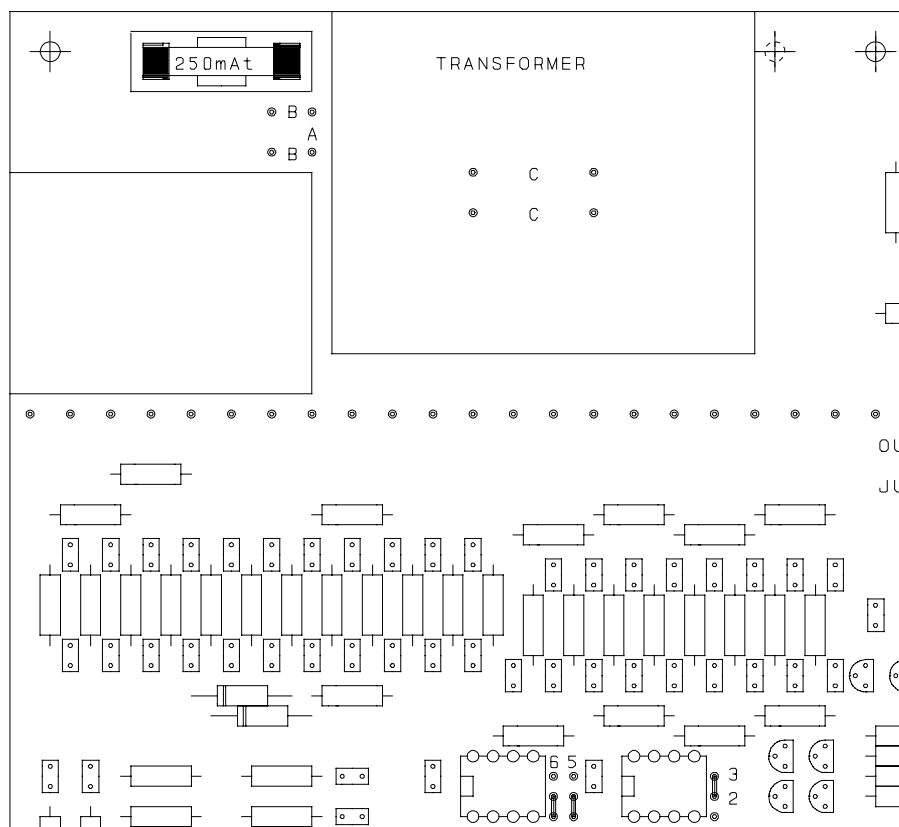
The OMC-137 will be delivered with the power supply set as required by the customer. If no power supply is mentioned in the official ordering papers the OMC-137 power supply will be set for 230 Vac.

If during installation is found that the supply setting is wrong two things can be done, the unit can be returned to the factory for modification or the user will modify the unit himself.

To modify the display unit for a different power supply proceed as follows,

On the power supply board, the Pcb with the terminal connection on the rear side, there is installed a transformer. The transformer offers the possibility of 115 or 230 Vac. The supply depends on the jumper settings between the filter transformer and the supply transformer. (see Pcb layout) If the wires marked "B" are installed the unit is set for 115 Vac, If the wire "A" is installed the unit is set for 230 Vac.

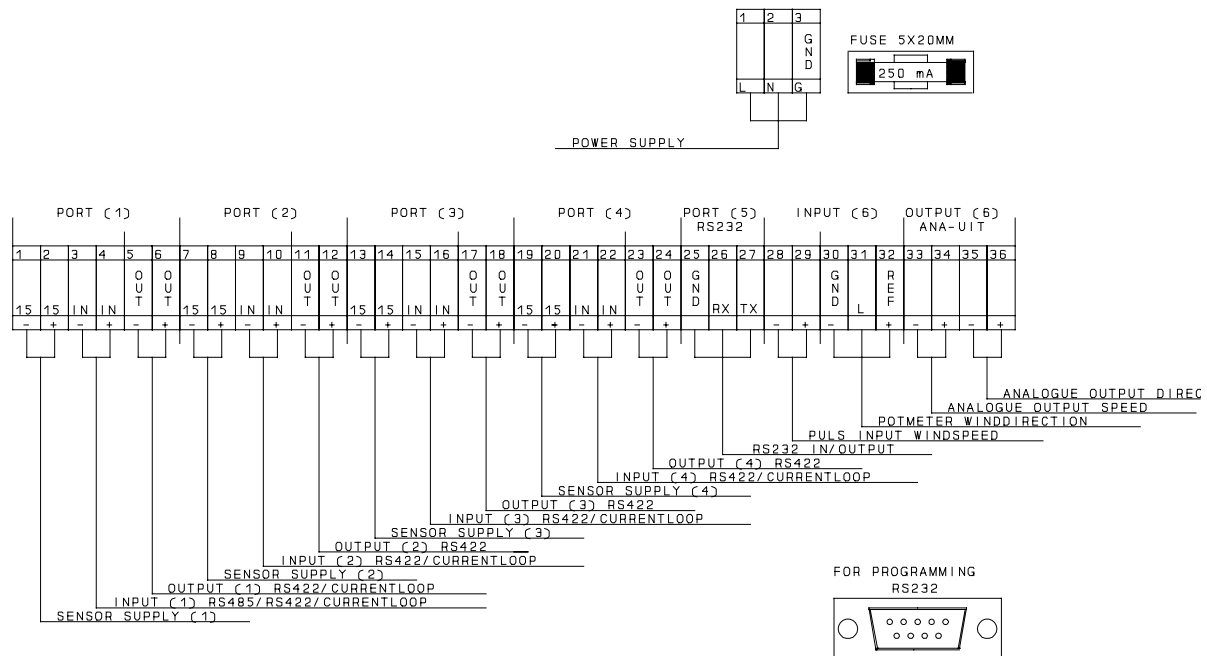
For 24 Vdc power supply the transformer TR1 has to be removed from the printed circuit board. When this transformer has been removed a two wire connection can be made (marked with "C")



As an option the OMC-137 can be delivered for 12 Vdc, If the unit has to be modified to work with 12 Vdc the transformer has to be removed. With the transformer removed it becomes possible to install a DC/DC converter on the location of the transformer. The DC/DC converter converts the 12 Volt supply voltage up to 24 Vdc.

2.2.3. Connections

All connections to the OMC-137 display are made to the rear of the display as shown on the drawing on the right.



If the Obsermet windsensor is used, only the terminals 1, 2, 3, and 4 are used. Daisy chaining to the next instrument is done on the terminals 5 and 6.

If a sensor is used providing a pulse signal for windspeed connections must be made to terminals 28 and 29.

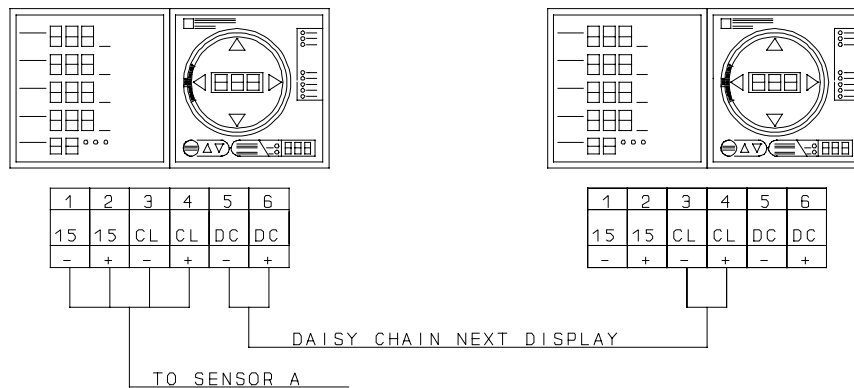
If for wind direction a sensor is used with a potentiometer connections must be made to the terminals 30, 31 and 32.

- 1, 7, 13, 19 = -15 Vdc sensor supply
- 2, 8, 14, 20 = +15 Vdc sensor supply
- 3, 9, 15, 21 = - serial currentloop input, or RS422 input
- 4, 10, 16, 22 = + serial currentloop input, or RS422 input
- 5, 11, 17, 23 = - daisy chain output currentloop or RS422
- 6, 12, 18, 24 = + daisychain output currentloop or RS422
- 28 = - pulse input (windspeed) (*)
- 29 = + pulse input (windspeed) (*)
- 30 = 0 Volt reference supply potmeter (winddirection)
- 31 = input signal potmeter
- 32 = + reference signal potmeter 2500 mV
- 33 = - analogue speed output 4..20 or 0..1 Volt
- 34 = + analogue speed output 4..20 or 0..1 Volt
- 35 = - analogue direction output 4..20 mA or 0..1 Volt
- 36 = + analogue direction output 4..20 mA or 0..1 Volt

*) it is possible to use the pulse input for windspeed to adjust the brightness of the display from a remote location. This is optional and must be ask for when the instrument is ordered.

2.2.4. Daisy chaining

The daisy-chain output is used to transfer the wind sensor information to a second wind display. The cable length depends on the type of cable used. Depending on the total capacity of the cable a distance up to 1000 meter is possible. The cable should be screened, and the screen should be grounded at 1 point only.



Recommended cable: 1 twisted pair with common screen, core size 0.75 mm².

If more than one sensor has been connected to the OMC-137 which is working as master display, the output format selected should be 2900 format. With this format it is possible to transmit received sensor information from all sensors to an output port. This output port can then be connected to the next display in line. On that display the information will be received on the first currentloop input. With the setup program the received information can then be coupled to the different input port by means of the identifier letters used.

3. Commissioning

Before switching ON the main supply, check if the main supply is the same as indicated on the identification label on the rear of the equipment.

With no signal cable connected, switch on the display and observe the front panel LED,s. The system will perform a led test all led are switched on and off one by one. When the test is finished the display shows on the led circle no information and on both speed displays only "---" is shown. This is because no sensor information is received by the display.

Check the voltage at terminals [1] and [2] on the rear panel this should be 15 Volts DC. With all cabling correctly connected, the display will show the wind speed and wind direction directly as transmitted by the wind sensor.

Adjustment cannot be made as the sensor-signal is digitally transmitted.

When there is no serial information received from the wind sensor the watchdog circuit in the display unit starts to switch the 15 Volt supply voltage to the sensor ON and OFF. The supply voltage is 10 seconds ON and if none information is received from the wind sensor the supply voltage is switched OFF for 5 seconds. If this is happening during the commissioning check the wiring to the wind sensor.

When the display is fully operational and the and the sensor information is not received for more than 5 seconds the display starts flashing indicating that the sensor information is not longer received by the display unit.

If from the speed display inside the led circle the decimal point between the hundred and the ten display is ON the Eeprom has been damaged. Settings for proper operation are most probably lost. The display must be returned to the factory.

Extension (optional)

The display can provide information of wind speed and direction in the NMEA-183 format.

The display can be used with a Gill wind sensor

The display can be used with an Irdam wind sensor

The display can be used with Vector wind sensors (12 Vdc supply possible)

Adjusting brightness on remote location. (not when Vector sensors are used)

The display can provide 0...1 Volt or 4...20 mA output signals

3.1 Communication and ports

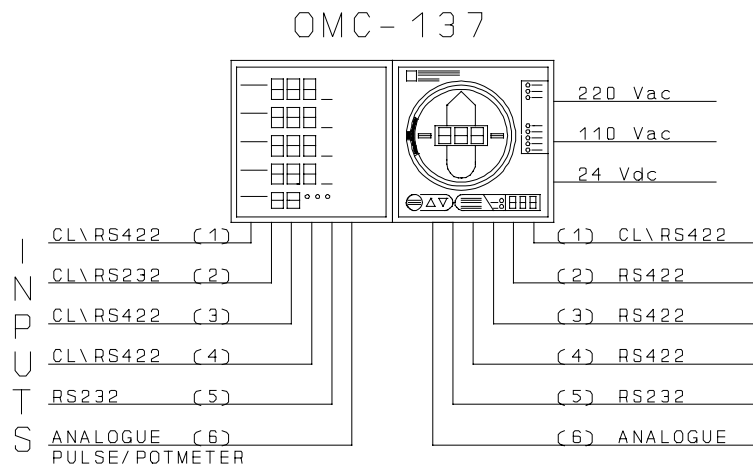
The OMC-137 has 6 input and output ports available. The first 4 inputs are normally used for the Obsermet windsensors working with a currentloop output signal. For other wind sensor a RS422 input is also possible. Port number 1 can also be set for a RS485 input signal.

3.1.1 Serial input output Port 1

Port 1 uses the connections on the rear of the instrument numbered 1 to 6 in the following way,

- 1 = -15Vdc sensor supply
- 2 = +15Vdc sensor supply
- 3 = - serial input signal
- 4 = + serial input signal
- 5 = - serial output signal
- 6 = + serial output signal

Port number 1 will accept signals like currentloop, RS422 or RS485, this depends on jumper settings on the connection board and on the processor board.



Input jumper settings

Port number 1 has jumper settings on the connection board as well as on the processor board. On the connection board jumper field J1 is used to select Currentloop or RS422.

- J1 jumper position 1-3 and 2-4 = Currentloop input
- J1 jumper position 3-5 and 4-6 = RS422 input

On the processor board (right) the following jumper field is used,

- J1 jumper position 1-2 = Currentloop input
- J1 jumper position 2-3 = RS422 input
- J1 jumper position 4-5 = RS485 input

The default settings for port 1 are Currentloop input 300 bps communication speed.

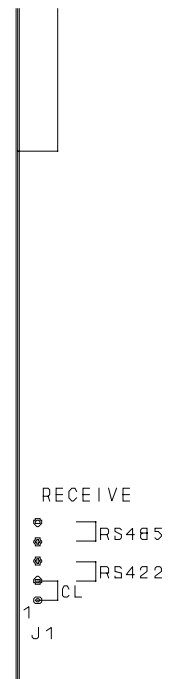
Port is always used for input of windspeed and direction information. Information can be accepted from several different sensors depending of settings in hardware and software.

Output jumper settings

Port number 1 has only jumper settings on the connection board, the selected outputs are Currentloop or RS422. Jumpers must be set as follows,

- J5 jumper position 1-3 and 2-4 = Currentloop output
- J5 jumper position 3-5 and 4-6 = RS422 output

Output port settings are default Currentloop output with a communication speed of 9600 bps.



3.1.2 Serial input output Port 2

Port 2 uses the connections on the rear of the instrument numbered 7 to 12 in the following way,

- 7 = -15Vdc sensor supply
- 8 = +15Vdc sensor supply
- 9 = - serial input signal
- 10 = + serial input signal
- 11 = - serial output signal
- 12 = + serial output signal

Port number 2 will accept signals like currentloop and RS422, this depends on jumper settings on the connection board.

Input jumper settings

Port number 2 has only jumper settings on the connection board. On the connection board jumper field J2 and J6 is used to select Currentloop or RS422.

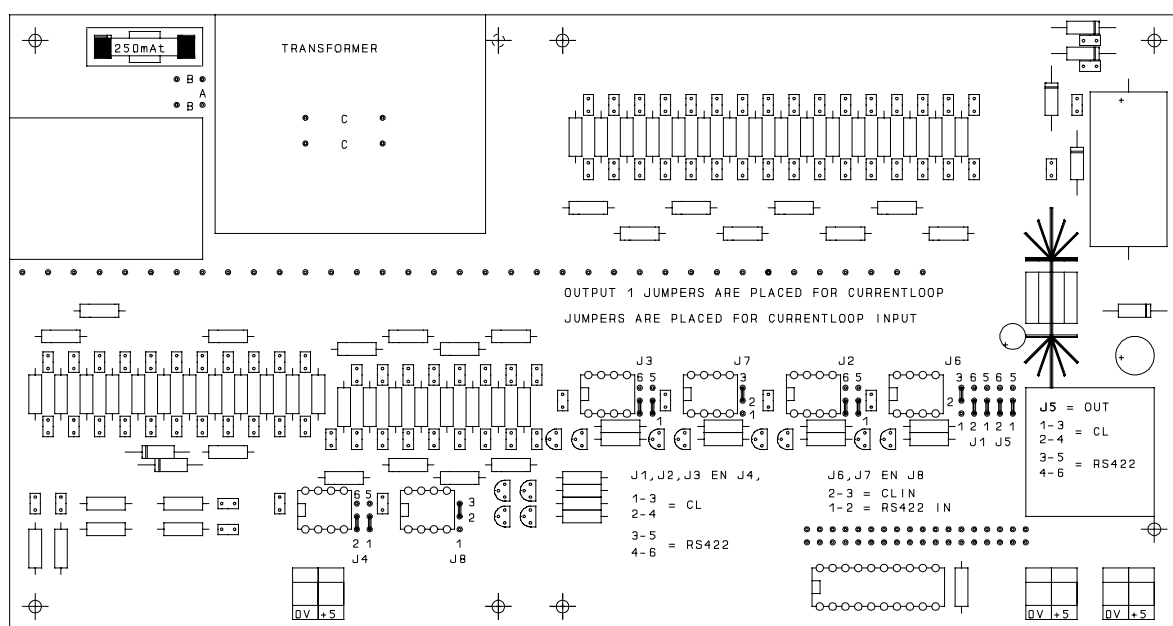
- J2 jumper position 1-3 and 2-4 = Currentloop input
- J2 jumper position 3-5 and 4-6 = RS422 input
- J6 jumper position 1-2 = RS422
- J6 jumper position 2-3 = Currentloop

Output jumper settings

There are no jumper settings available. The output on port 2 can only be RS422.

The default settings for port 2 are Currentloop input 300 bps communication speed, RS422 output communication speed 9600 bps.

Port is always used for input of windspeed and direction information. Information can be accepted from several different sensors depending of settings in hardware and software.



3.1.3 Serial input output Port 3

Port 3 uses the connections on the rear of the instrument numbered 13 to 18 in the following way,

- 13 = -15Vdc sensor supply
- 14 = +15Vdc sensor supply
- 15 = - serial input signal
- 16 = + serial input signal
- 17 = - serial output signal
- 18 = + serial output signal

Port number 3 will accept signals like Currentloop and RS422, this depends on jumper settings on the connection board.

Input jumper settings

Port number 3 has only jumper settings on the connection board. On the connection board jumper field J3 and J7 is used to select Currentloop or RS422.

- J3 jumper position 1-3 and 2-4 = Currentloop input
- J3 jumper position 3-5 and 4-6 = RS422 input
- J7 jumper position 1-2 = RS422
- J7 jumper position 2-3 = Currentloop

The default settings for port 3 are Currentloop input 300 bps communication speed. Port is always used for input of windspeed and direction information. Information can be accepted from several different sensors depending of settings in hardware and software.

Output jumper settings

There are no jumper settings available.

The output on port 3 can only be used for RS422 output. Default communication speed setting is 9600 bps.

3.1.4 Serial input output Port 4

Port 4 uses the connections on the rear of the instrument numbered 19 to 24 in the following way,

19 = -15Vdc sensor supply
20 = +15Vdc sensor supply
21 = - serial input signal
22 = + serial input signal
23 = - serial output signal
24 = + serial output signal

Port number 4 will accept signals like currentloop and RS422, this depends on jumper settings on the connection board.

Input jumper settings

Port number 4 has only jumper settings on the connection board. On the connection board jumper field J4 and J8 is used to select Currentloop or RS422.

J4 jumper position 1-3 and 2-4 = Currentloop input
J4 jumper position 3-5 and 4-6 = RS422 input
J8 jumper position 1-2 = RS422
J8 jumper position 2-3 = Currentloop

The default settings for port 4 are Currentloop input 300 bps communication speed.

Port is always used for input of windspeed and direction information. Information can be accepted from several different sensors depending of settings in hardware and software.

Output jumper settings

There are no jumper settings available.

The output on port 4 can only be used for RS422 output, Default communication speed setting is 9600 bps.

3.1.5 Serial input output Port 5

Port 5 uses the connections on the rear of the instrument numbered 25 to 27 in the following way,

25 = Ground signal
26 = Receive data
27 = Transmit data

Port number 5 will accept only RS232 signals.

Within the menu driven software, input or output can be set to transmit or receive data on this port.

There are no jumper settings available for input or output port number 5

The default settings for port 5 are RS232 input and output, communication speed 9600 bps.

Port 5 is sometimes used for output all the received information to a computer running the GDM software for capturing the information and showing trend information as well as numeriek information. Program stores received information in day files on hard disk. example shown below.



3.1.6 Analogue input output Port 6

Port 6 is completely different used as the ports 1 to 5. The input of port 6 accept signals from an analogue windsensor system providing a pulse for wind speed and an potmeter output signal for wind direction. The output port 6 are two analogue signals coupled to one of the input and providing 0...1 Volt or 4...20 mA over a set range.

Port 6 input

Port 6 uses the connections on the rear of the instrument numbered 28 to 32 in the following way,

- 28 = - input pulse wind speed
- 29 = + input pulse wind speed
- 30 = common signal potentiometer
- 31 = wiper potentiometer
- 32 = + reference signal 2.7 Volts

As analogue input is optional the IC's needed are standard not installed in the sockets. If analogue is needed the IC's 14 and 15 must be placed in the sockets.

Port 6 output

The OMC-137 provides an analogue output signal for wind speed and wind direction. This is optional and not as standard available.

On the processor board (middle board) there are some jumper settings to select a current or voltage output signal. There are three jumpers that have to be set in the correct position. In the drawing the selection for a voltage output is set. In jumper field J2 de position 2-3 is selected and in jumper field J3 the jumper settings 1-3 and 2-4 are selected.

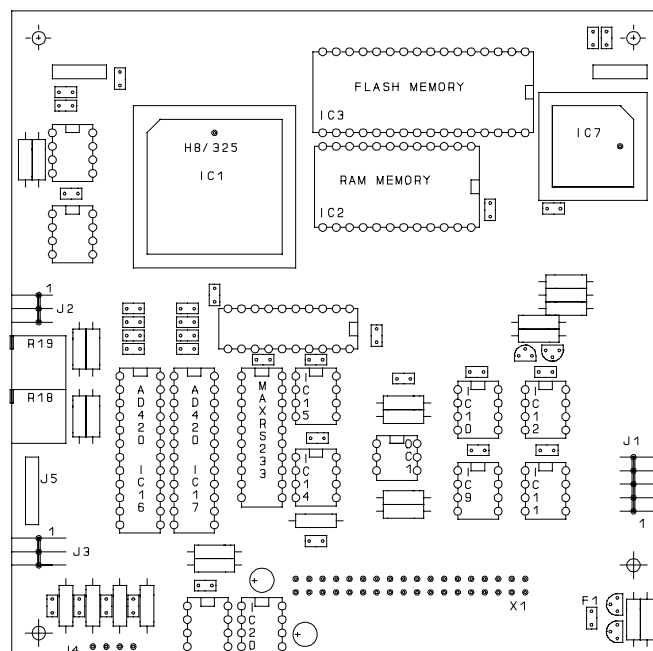
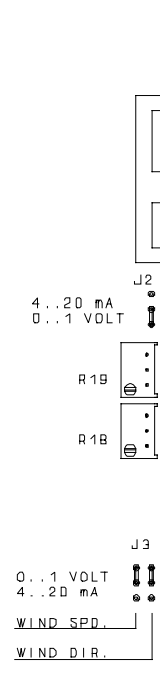
To get a 4...20 mA output the jumpers must be set as follows,

- Jumper field J2 set 1-2
- Jumper field J3 set 3-5 and 4-6

The potmeters R18 and R19 are used to set the range of the analogue output signals.

Because the analogue output is optional the IC,s needed for this output are not installed originally. If the analogue output is added after the display has left the factory some IC,s needs to be installed in the correct sockets.

For the analogue output the following IC,s have to be installed, IC16, IC17, IC18 and IC20. To select the correct output signal see above for the correct jumper settings.



3.1.7 Serial input output message format

Currentloop output OMC-160 message format

The currentloop output is normally used to transport the collected data from the currentloop input. Using the system in this way it is not necessary anymore to output the data as analogue signals which upgrade the performance and the accuracy. The data is transmitted with the same speed as data is received from the windsensor. 300 baud 8N1.

If the currentloop output signal from the OMC-160 is repeated by the OMC-138 the message looks as follows,

```
<LF>D125<sp>V234<sp>cscs<CR>
```

In the above message the transmitted wind direction is the number shown after the indent "D" 125 degrees. the windspeed in the message is shown after the indent "V" 234 is 23.4 m/s. The windspeed is transmitted without decimal point and must therefor be divided by 10 to get the correct windspeed.

The checksum is all information in the string added, the least significant byte is divided into high and low nibble and both nibbles are incremented by hexadecimal 30. This information is sent out as a checksum.

OMC-2900 message format

Sometimes the data is transmitted in the OMC-2900 format. This format is used when more parameters are transmitted.

The wind data transported in the OMC-2900 format looks as following,

```
<STX> <LF>V21.2<SP>cscs< CR>  
      <LF>D156<SP>cscs<CR> <EOT>
```

Every message starts with a start of text character after this the messages are transmitted. All messages start with a line feed followed with the identifier for the data, then the data and then a checksum for protection reasons, the message end with a carriage return.

All input channels can be transmitted in this way every second to any receiving station.

RS232/RS422 in/output channel

The OMC-2900 and the OMC-160 format on the RS232/RS422 looks the same as the format used in the currentloop output described paragraph 3.2.2.2

There are two possibilities to transmit data in the NMEA output, windspeed can be transmitted in m/s or in knots, both messages are shown below.

SIIMWV.I 23.R.5.8.N.A*24 Windspeed in knots

SIIMWV.1 23.R.5.8.M.A*27 Windspeed in meters per seconds

The transmission speed is the same as the communication speed of the windsensor used, if this is the OMC-160 it will be 300 bps 8N1.

If the currentloop input is not used the speed can be set from 300 to 9600 bps.

3.2 Settings via frontpanel

On the frontpanel of the display there are three pushbuttons. The buttons are marked "MENU", arrow up and arrow down. Under normal conditions the buttons marked arrow up and down are used to adjust the brightness of the display.

3.2.1 Units and averaging settings

When the menu button is pressed the led in the average time window starts flashing indicating that the select option is on. It becomes possible now to make a selection using the arrow up and down button. If the menu button is pressed again the led in the units window starts flashing indicating that the select option is on. With the arrow up and down button it is possible now to select different units for the windspeed.

When the buttons are not touched for 5 seconds the display will return to the normal operation mode.

3.2.2 Lamp test

With both arrow buttons pressed all the displays and led's start flashing (lamp test) When the interval time for gust is set to 0 seconds the Gust must be reset manually. this has to be done by pressing the menu and the arrow down button at the same time.

3.2.3 Deviation setting

The display provide the possibility to add an offset to the wind direction. This is very useful for wind systems installed on oilrigs and for airports if they want to use the magnetic North instead of the true North.

An offset is added in the following way, Press the arrow-up button and the Menu button, the Gust display starts flashing and is showing the offset. As long as the display is flashing the offset can be changed using the arrow-up or arrow-down buttons. The set value is added to the actual wind information from the sensor.

3.2.3 Gust reset

The display in the lower right corner shows the maximum wind speed measured after the last manual reset. This reset is given with the front panel buttons.

When "Menu" button together with the "down" button is pushed the display will return to zero or the actual windspeed at the time of reset.

4. Maintenance

The Obsermet OMC-137 digital display unit has no moving parts, and requires no routine maintenance. If required, the perspex display front can be cleaned with a cloth, slightly moistened with a soft detergent. Care must be taken that no liquid enters the display unit. Solvents should not be used, and scratches should be avoided.

Fuses: Glass fuses 5x20 mm, 250mA for 230 Vac, 250 mA for 115 Vac, 250 mA for 24 Vdc.

The fuse can be reached as follows,

Switch of the main supply and disconnect all the wiring on the rear of the display.

Remove the four 2.5 mm screws on the rear of the display.

Remove the front window, pull on a corner with both hands.

With holding the front down, the whole case can be removed now.

The fuse can be reached now. The fuse is placed on the PCB where all the wires are connected to.

4.1 Uploading a new software version in the OMC-938 display unit

On the rear of the instrument there is a 9 pin D-connector. Connect to this connector a RS232 serial cable wired from computer to computer (2 and 3 swapped). No handshake needed.

Start the Program Hyper terminal available in Windows 95'.

Set terminal parameters to 9800 8N1

Press the "enter bar", The following menu should appear.

OMC 938/939 Obsermet Mini weather display unit
Software version 1.1 Serial nr : 93800001

- 1 - Select input device.
- 2 - Select output device.
- 3 - Set averaging of channels.
- 4 - Set options.
- 5 - Show all settings.
- 6 - Test instrument.

If this menu appears on your screen a proper connection with the display has been established, cable, display and terminal program are working properly.

Close the program "Hyper terminal" and go to the DOS environment.

Go to the directory where the files "Upload" and the program "Flash.A20" can be found. If this is done give the following command "Upload 1 flash.a20" (The "1" stands for the number of com port)
Display will respond with the following messages,

1. Program to upload motorola hex-files into the omc-138 and series
2. Start erasing Flash eprom
3. Flash is erased
4. Start with upload and programming of flash
5. 000000 !ACK! until 01C500 !ACK! (number of blocks depends on length of program)

The program has been downloaded and installed.

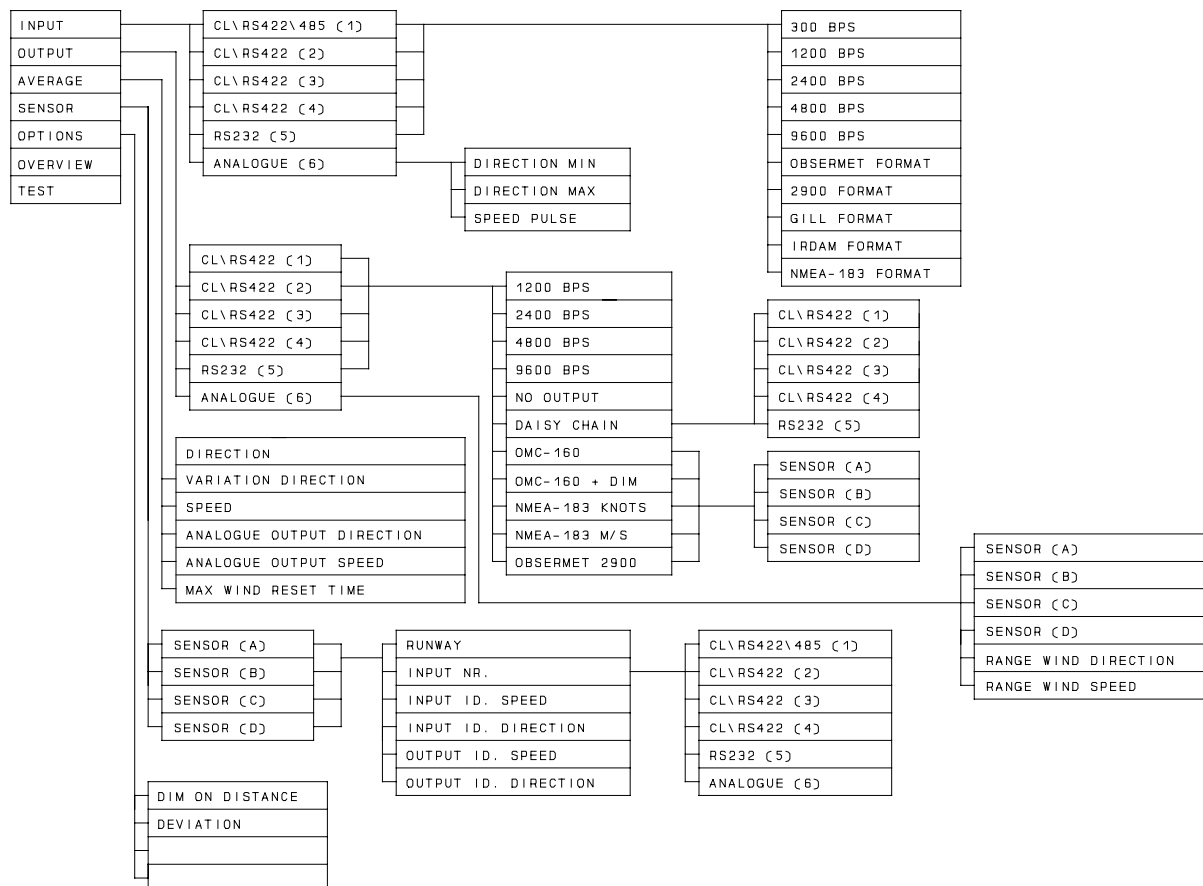
The next thing to do is programming display parameters.

5.0 Input menu OMC-137

During final testing in the factory the OMC-137 is setup for the system it is manufactured for. If at an later stage the settings have to be changed this can be done by the user in the following way.

Connected a cable to the RS232 connector at the rear of the instrument. Connected the other end of the cable to a PC. Start on the PC a terminal program like "Terminal" under Windows or "Hyper terminal" under windows 95.

Select the proper transmission speed, the speed is as a standard set to 9600 bps. This setting might be set differently, if no response from the instrument when pressing the ENTER button on the keyboard try a different transmission speed.



If contact is established with the display the above shown menu will appear on your computer screen. From this menu it becomes possible to set the OMC-137 to the users satisfaction.

5.1 Select input device

First of all the unit must be told were to find what type of sensor and with what speed the sensor is communicating with the display unit.

Selecting "1" gives the next screen,

The OMC-137 has 6 different input possibilities. The first input has the possibility for a currentloop, RS422 or RS485 signal. The next 3 inputs have the possibility for Currentloop and RS422. Input 5 is an RS232 input while input 6 gives the possibility to select potmeter and pulse input for wind direction and wind speed.

It is possible to select for maximum 4 inputs a input format and a transmission speed.

OMC 137 Obsermet Enhanced Wind display unit
Software version 1.0

Serial nr : 000000

- 1 - Select input device.
- 2 - Select output device.
- 3 - Select sensor settings.
- 4 - Set averaging of channels.
- 5 - Set options.
- 6 - Show all settings.

- 7 - Test instrument.

OMC 137 Obsermet Enhanced Wind display unit
Software version 1.0

Serial nr : 000000

Instrument input device.

- 0 - menu back.
 - 1 - input 1 cl/rs422/rs485.
 - 2 - input 2 cl/rs422.
 - 3 - input 3 cl/rs422.
 - 4 - input 4 cl/rs422.
 - 5 - input 5 rs232.
 - 6 - input analog.
- Select option :

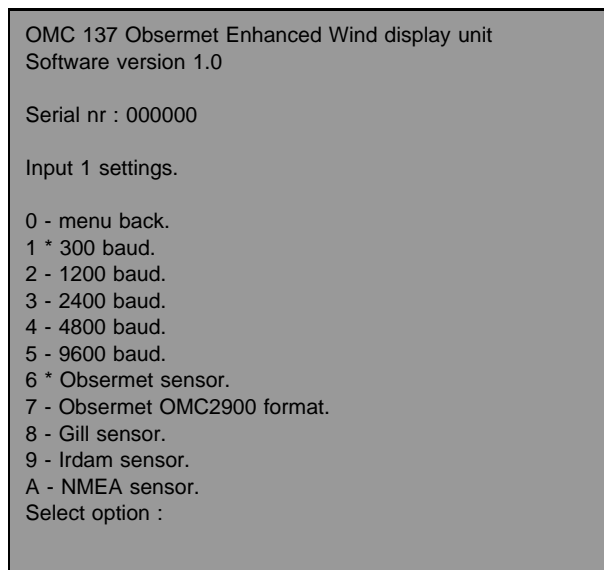
5.1.1 Input settings

If one of the inputs has been selected the screen will show some new information as shown on the right.

On this screen a selection must be made for the type of sensor or the format of the message to be received for this input only. Secondly the transmission speed of the connected sensor must be selected.

As soon as a selection has been made the screen is refreshed and in front of the selected item the dash (-) is replaced by an asterisk(*)

This kind of selection has to be done for all connected sensors.

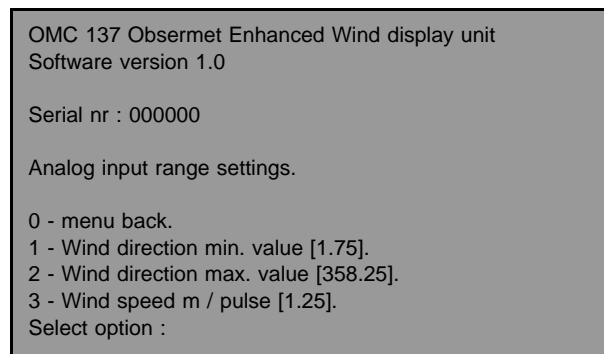


5.1.2 Analogue input range settings

If in the instrument input device window the analogue option (6) has been selected the screen as shown on the right will be shown.

In this window it is possible to set the minimum and maximum value for wind direction. The numbers to be filled-in depend on the potentiometer used in the wind direction sensor.

If a wind speed sensor is used which provides a pulse output the value of wind speed per pulse must be set here. The values used in the screen are used with a Vector wind speed and direction sensor.



5.2 Select output device

The display provides the possibility to output the information that has been received from the connected sensors. There are 6 output ports available. Output 1 provides the possibility to select currentloop or RS422. The selection is made via jumper settings on the input board.

Output 2, 3 and 4 can only be used as RS422 outputs.

Output number 5 is a RS232 output port and output number 6 is the 2 channel 4...20 mA output.

When number 2 has been selected the screen as shown on the right appears.

Select here the output port that needs adjustment.

As soon as a number has been entered a new screen will be shown.

OMC 137 Obsermet Enhanced Wind display unit
Software version 1.0

Serial nr : 000000

- 1 - Select input device.
- 2 - Select output device.
- 3 - Select sensor settings.
- 4 - Set averaging of channels.
- 5 - Set options.
- 6 - Show all settings.
- 7 - Test instrument.

OMC 137 Obsermet Enhanced Wind display unit
Software version 1.0

Serial nr : 000000

Instrument output device.

- 0 - menu back.
 - 1 - output 1 cl/rs422.
 - 2 - output 2 rs422.
 - 3 - output 3 rs422.
 - 4 - output 4 rs422.
 - 5 - output 5 rs232.
 - 6 - output analog.
- Select option :

5.2.1 Output settings

With the screen "Output 1 settings" the transmission speed for port 1 as well as the output format can be set. The selected items are marked with an asterisks.

The output speed to select depends on the speed the receiving unit is has been set for.

The output format also depends on the receiving party.

If no output is needed on port 1 number "5" should be selected.

If the input from the sensor connected to input port "1" must copied to an output port, daisy chain should be selected. When daisy chain has been selected the input is re-directed to an selected output port.

As soon as "6" has been selected a new screen will appear. This screen gives the possibility to select the sensor from which the information should be daisy chained on output port number 1.

If a none Obsermet sensor has been connected to the input port 1 the output can be set to transmit the wind information as an OMC-160 wind message when "7" is selected.

As soon as "7" has been selected a new screen will appear. This screen gives the possibility to select the sensor from which the information should be transmitted in OMC-160 format on output port number 1.

OMC 137 Obsermet Enhanced Wind display unit
Software version 1.0

Serial nr : 000000

Output 1 settings.

- 0 - menu back.
- 1 * 1200 baud.
- 2 - 2400 baud.
- 3 - 4800 baud.
- 4 - 9600 baud.
- 5 - no output.
- 6 - daisy chain.
- 7 * obsermet 160 format.
- 8 - obsermet 160 format with dimmer info.
- 9 - obsermet 2900 format.
- A - NMEA knots.
- B - NMEA m/s.

OMC 137 Obsermet Enhanced Wind display unit
Software version 1.0

Serial nr : 000000

Output 1 daisy chain settings.

- 0 - menu back.
 - 1 * transmit information from input 1.
 - 2 - transmit information from input 2.
 - 3 - transmit information from input 3.
 - 4 - transmit information from input 4.
 - 5 - transmit information from input 5.
- Select option :

OMC 137 Obsermet Enhanced Wind display unit
Software version 1.0

Serial nr : 000000

Output 1 obsermet 160 format settings.

- 0 - menu back.
 - 1 * transmit information from sensor 1.
 - 2 - transmit information from sensor 2.
 - 3 - transmit information from sensor 3.
 - 4 - transmit information from sensor 4.
- Select option :

When more than one display unit is used in the same room it is possible to use the brightness control from one instrument to control the brightness from other instruments. When this needs to be done number "8" must be selected. As soon as "8" has been selected a new screen will appear. This screen gives the possibility to select the sensor from which the information should be transmitted on output port number 1.

With the OMC-2900 format it becomes possible to output sensor information from all connected wind sensors.

This option is used to provide slave display's with all sensor information using only a 2 wire connection. Specially when line drivers are needed to transport the signal over longer distances this is a very good option because only 2 line drivers are needed instead of 8.

When "9" has been selected the screen as shown on the right will appear.

Here the sensors, from which the information should be transmitted, must be selected. Selected sensors are marked with an asterisks.

The information transmitted must have an unique identifier set that can be recognized by the receiving display. See 5.3

It is possible to output an NMEA-183 formatted signal with windspeed and direction information.

If the input from the sensor connected to input port "1" must be copied to an output port, with NMEA-183 format A or B should be selected.

As soon as "A" or "B" has been selected a new screen will appear. This screen gives the possibility to select the sensor from which the information should be transmitted in the NMEA-183 format on output port number 1.

Difference between "A" and "B" is windspeed information is transmitted in Knots or m/s.

OMC 137 Obsermet Enhanced Wind display unit
Software version 1.0

Serial nr : 000000

Output 1 obsermet 2900 format settings.

0 - menu back.
1 * transmit information from sensor A.
2 * transmit information from sensor B.
3 * transmit information from sensor C.
4 * transmit information from sensor D.
Select option :

OMC 137 Obsermet Enhanced Wind display unit
Software version 1.0

Serial nr : 000000

Output 1 NMEA format settings.

0 - menu back.
1 * transmit information from sensor A.
2 - transmit information from sensor B.
3 - transmit information from sensor C.
4 - transmit information from sensor D.
Select option :

5.2.2 Analogue output

The OMC-137 provides two analogue output. This outputs are optional. There are two outputs one for the windspeed and one for winddirection. With jumper settings on the middle pcb it is possible to select current or voltage output. See paragraph 3.2.1

There is only 1 analogue output for speed and direction available, therefor a sensor must be selected from which the information should be converted into analogue.

The scaling can be set with the menu shown on the right. The actual settings are set to 0...360 degrees and 0...40 m/s over the full output swing of the current or voltage signal. The user can change this to meet his requirements.

OMC 137 Obsermet Enhanced Wind display unit
Software version 1.0

Serial nr : 000000

Analog output settings.

0 - menu back.
1 * input from sensor A.
2 - input from sensor B.
3 - input from sensor C.
4 - input from sensor D.
5 - range wind direction [360 deg].
6 - range wind speed [40 m/s].
Select option :

5.3 Sensor settings

The display unit can handle the information from 4 different sensors. For every sensor some information must be known by the software to be able to put the correct information on the display's.

The sensors are identified by the letters A, B,C and D. If one of the sensors is selected by entering the number in front of text "sensor x" a new screen will appear as shown below.

For every sensor a number can be set, this number will be shown in the lower left corner. In case of an airfield display the runway heading is used as indent number.

Secondly the display must know to which input port the sensor is connected. If number "2" is selected a new screen as shown below is shown.

By entering a number the input port is selected. The selected port is marked with an asterisks in front input number.

If in the menu option "input" the OMC-2900 format has been selected the display must be told what the indent letters are in front of the measured values. This is done with the menu option 3 and 4.

When in the menu option "output" the OMC-2900 output format has been selected the transmitted information must be given an letter as identifier. This is done with the menu options 5 and 6.

OMC 137 Obsermet Enhanced Wind display unit
Software version 1.0

Serial nr : 000000

Sensor settings.

0 - menu back.
1 - sensor A.
2 - sensor B.
3 - sensor C.
4 - sensor D.
Select option :

OMC 137 Obsermet Enhanced Wind display unit
Software version 1.0

Serial nr : 000000

0 - menu back.
1 - runway/sensor nr [10].
2 - input nr [1].
3 - input id. speed [C].
4 - input id. direction [A].
5 - output id. speed [E].
6 - output id. direction [D].
Select option :

OMC 137 Obsermet Enhanced Wind display unit
Software version 1.0

Serial nr : 000000

0 - menu back.
2 * input 1 cl/rs422/rs485.
3 - input 2 cl/rs422.
4 - input 3 cl/rs422.
5 - input 4 cl/rs422.
6 - input 5 rs232.
7 - input 6 analog.
Select option :

5.4 Display average

On the front of the display a selection can be made for the averaging of the wind information. A choice can be made between 2 minutes, 10 minutes and user select. With the menu shown the user select parameters can be filled-in.

1. Direction is the average time for the actual direction indication. (red circle)
2. Variation direction is the average time for the variation direction indication. (Yellow circle)
3. Speed is the average time for the speed display.
4. Average time of the analogue output for wind direction can be set in seconds.
5. Average time of the analogue output for wind speed can be set in seconds.
6. The analogue output average time can be set here.

Maximum wind speed (Gust) reset time can be set. If this is set to zero the maximum wind speed must be reset manually on the front panel. Maximum time setting is 600 seconds.

5.5 Options

If possible with the existing hardware it is possible to change the software to customers specification. Those options can than be selected in the menu "Device options".

The option "Dim on distance" provide the possibility to adjust the brightness of the display on remote location. A push button must be connected to the pulse input normally used for pulsed wind speed information.

A windsensor with pulse output can not be used anymore.

When wind systems are installed on platforms which are sometimes relocated it was always necessary to align the wind sensor with the true North location. With the option Deviation this is not longer necessary. If the platform is relocated, the alignment can be done by adding a value to the wind direction information coming from the wind sensor. The wind indication shown on the display is than sensor output + deviation (e.q. 345 + 33 gives 018 degrees wind direction)

OMC 137 Obsermet Enhanced Wind display unit
Software version 1.0

Serial nr : 000000

Averaging of channels.

- 0 - menu back.
 - 1 - Direction [3].
 - 2 - Variation direction [3].
 - 3 - Speed [3].
 - 4 - Analog output direction[3].
 - 5 - Analog output speed[3].
 - 6 - Max windspeed reset time[0].
- Select option :

OMC 137 Obsermet Enhanced Wind display unit
Software version 1.0

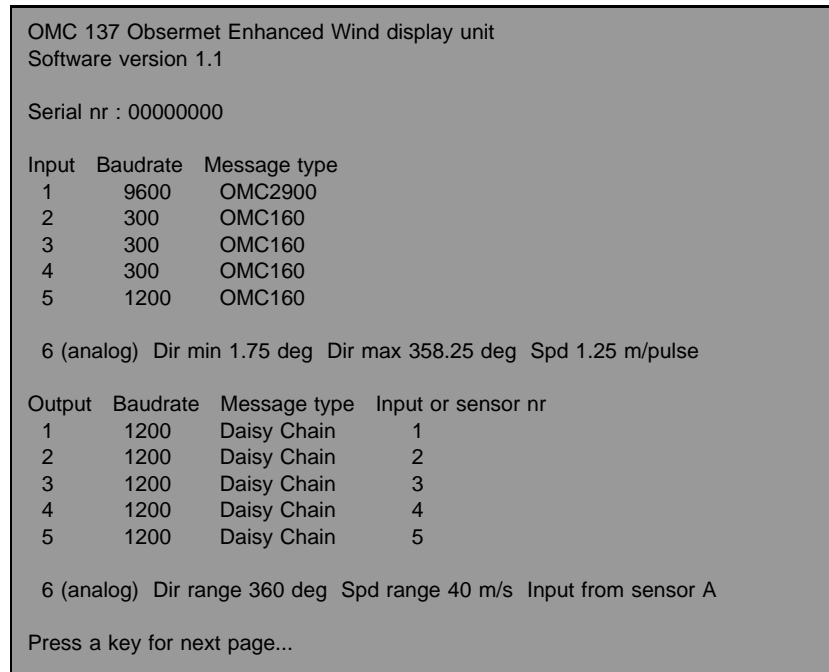
Serial nr : 000000

Device Options.

- 0 - menu back.
 - 1 - Dim on distance [off].
 - 2 - Deviation [35 deg].
- Select option :

5.6 Overall view of settings OMC-137

Selecting item 6 give a window as shown below, all the settings made to the OMC-137 are shown on two screens.



OMC 137 Obsermet Enhanced Wind display unit
Software version 1.1

Serial nr : 00000000

Input	Baudrate	Message type
1	9600	OMC2900
2	300	OMC160
3	300	OMC160
4	300	OMC160
5	1200	OMC160

6 (analog) Dir min 1.75 deg Dir max 358.25 deg Spd 1.25 m/pulse

Output	Baudrate	Message type	Input or sensor nr
1	1200	Daisy Chain	1
2	1200	Daisy Chain	2
3	1200	Daisy Chain	3
4	1200	Daisy Chain	4
5	1200	Daisy Chain	5

6 (analog) Dir range 360 deg Spd range 40 m/s Input from sensor A

Press a key for next page...

The upper part of the screen shows the instrument serial number. Below the serial number for all hardware inputs the transmission speed (BPS) and the message type expected by the display on that particular input is shown. Those settings are made using the various menu's.

Inputs 1 until 5 are currentloop/RS422 inputs, input 5 is the RS232 input and input number 6 is the analogue input using the potmeter and the pulse.

Below the analogue input information the output information is shown. The shown settings indicate that for all inputs the output is daisy chained to provide other display with the sensor information as received. Also the transmission speed for that output port is shown.

For more information a key must be pressed which will show the screen on the next page.

OMC 137 Obsermet Enhanced Wind display unit						
Software version 1.1						
Serial nr : 00000000						
Sensor	Runway	Input	Input id.spd	Input id.dir	Output id.spd	Output id.dir
A	10	1	A	B	V	D
B	20	1	C	D	V	D
C	30	1	E	F	V	D
D	40	1	G	H	V	D
Average direction : 3 sec						
Average variation direction : 3 sec						
Average speed : 3 sec						
Average analog out direction : 3 sec						
Average analog out speed : 3 sec						
Max windspeed reset time : 3 sec						
Dim on distance disabled.						
Deviation : 0 deg						
Press a key.						

The above shown settings are typically for a slave display. The input signals for all sensor is taken from input (1). The master display transmit all sensor information using one output. The wind information in that output is labeled with different indent letters. This letters are shown under the input id.spd and input id.dir. For every sensor, different ID numbers must be chosen in the master display, and the same ID numbers must be set in the slave display.

If the information should have been outputted to an other slave display then the output id.spd and the output id.dir should also have been set differently.

The user interval for wind speed and twice wind direction is set to 3 seconds. Brightness control from a distance is disabled.

There is no deviation set.