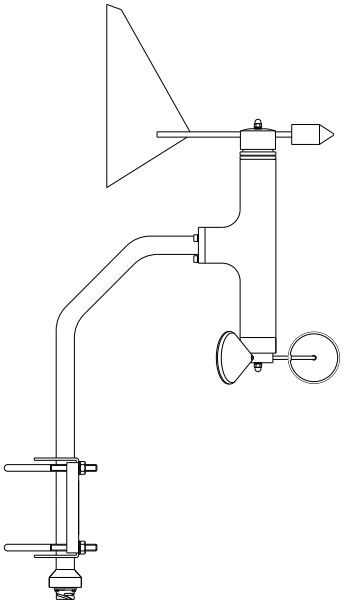
OBSERVATOR
instruments



Manual

OMC-150

Version: 2.13
Status: Final
Date: 25 October 2019
Author: Observator

Document history

The Observator range is in continuous development and so specifications may be subject to change without prior notice. When in doubt about the accuracy of this document, contact the Observator Group.

Reference documents

Type of document / tool	Product type and name (incl. url)
Software	N.A.
Datasheet	OMC-150
Manual	OMC-150

Revision history

Date	Amendments	Company, position
1992-11-01	Initial document creation	Observator instruments
2000-5-29	V1.2 incorporating junction box	
2003-8-27	V2.02 rewritten for ATEX certification, incorporating plug connection	
2004-1-29	V2.03 some typing errors corrected	
2005-5-1	V2.04 minor error corrected (7core vs 8core)	
2007-5-1	V2.05 annex G added	
2013-4-1	V2.06 update certification (IECEx added) Review version	
2013-8-1	V2.07 Version 2.06 including all updated certificates	
2015-12-1	V2.08 Update CE declaration	
2016-12-1	V2.09 Update maintenance section	
2017-5-1	V2.10 Update EU declaration	
2019-1-2	V2.11 Update IP rating	
2019-2-1	V2.12 Update DoC	
2019-10-25	V2.13 Update DoC & style	

Preface

This manual provides information for the best performance and safe application of the OMC-150 anemometer. This manual is intended for the engineers who are responsible for site planning, installation, commissioning and maintenance of the intrinsically safe OMC-150 anemometer. Professional knowledge on mechanical and electrical systems in potentially explosive atmospheres is required for the users of this manual. This manual does not cover the OMC-156 junction box or the OMC-158 interface unit. These units will come with their own documentation.

When an enumeration in this manual is numbered, it denotes a particular sequence. If the enumeration is marked with dots, there is no special sequence.

Read this manual carefully before starting the installation of the Observator OMC-150 anemometer. Keep this manual after installation for future reference.

Table of contents

1 Introduction

1.1 Utilisation

The OMC-150 anemometer is designed to measure wind speed and wind direction in harsh environments including potentially explosive atmospheres. Typical application areas are offshore industry, petrochemical industry, and transportation. All exposed parts are made in non-corrosive materials, therefore the OMC-150 anemometer is ultimate suitable for marine environment.

1.2 General arrangement

Figure 1 General Arrangement

1.3 Basic Specifications

parameter	value
Type of instrument	anemometer
EX-certification	ATEX Ex ia IIC T4
Measuring principle	cup and vane
Mounting	pole-mounting
Main dimensions	approx. 450 x 460 x 905 mm
Weight including cup unit and vane unit	approx. 5 kgs
Electrical connection	7-pole plug
Output signal compatibility	direct connection to Obsermet OMC-158
Measuring range (wind speed)	0 … 75 m/s
Measuring range (wind direction)	0 … 360 degrees (no gap)

Table 1 Basic Specifications

1.4 Theory of Operation

The OMC-150 is a cup and vane anemometer. Cup and vane anemometers are the most common instrumentation for measurement of wind speed and direction. Cup and vane anemometers are the primary sensors for wind measurement used by the leading meteorological services all over the world. Therefore the readings of the OMC-150 anemometer are intercomparable with the readings of other cup and vane anemometers without any conversions.

For a more comprehensive discussion on the measurement principle please refer to Chapter 5 of the WMO CIMO guide[1]

1.5 Conditions of use.

The OMC-150 anemometer is built to provide reliable measurement results under all weather conditions. Rain, snow, or other kinds of precipitation do not effect the readings. Further the OMC-150 anemometer is insensitive to noise, extreme temperatures, solar radiation, etc.

[1] Guide to Meteorological Instruments and Methods of Observation, WMO No. 8, latest Edition, World Meteorological Organisation, Geneva, Switzerland

2 Description

2.1 General

While reading this chapter please refer to the dimensional drawing in Appendix C:For detailed specifications please refer to Appendix B:

2.2 Main parts

The OMC-150 anemometer consists of a sensor body and a mounting bracket. Note that the mounting bracket, though it is sometimes referred to as OMC-157, is an integral part of the OMC-150 anemometer. The mounting bracket has a mast clamp and an electrical plug connector. This clamp is designed for mounting on a vertical pipe end.

2.3 Moving parts

The only moving parts are the cup unit and the vane unit. The vane unit is mounted on top of the sensor body, and the cup unit is mounted under the sensor body. Both the cup unit and the vane unit are wind driven. The wind speed sensor is a rotary cup type unit manufactured in stainless steel and polycarbonate. The three cups are cone shaped for optimum response to varying winds. The vane unit is made in stainless steel.

2.4 Electrical

The electrical circuit for wind speed measurement and the electrical circuit for wind direction measurement are not interconnected. The speed sensor is a proximity switch with a 2-wire “NAMUR” signal on connections E and F; the direction sensor is a dual wiper potentiometer with a 360 degree winding (no gap). It has two supply connections A and B, and two wiper connections C and D. For details see section 3.3.

2.5 Layout of a wind **system**

The following accessories are supplied with the OMC-150 anemometer:

- pigtail cable with mating connector to the OMC-150 anemometer
- U-bolts with small mounting materials

In order to build a complete wind system, the following components may be required. These components must be ordered separately:

- OMC-156 Junction box for cable extension
- Field cabling
- OMC-158 interface unit
- Calibration certificate (see also section 0)

See Appendix A: for a typical system layout. Note that the maximum length of the field cable, which runs from the junction box (nearby the OMC-150 anemometer) through the Ex zone to the OMC-158-2 interface unit, is up to 1 km (depending on the cable quality).

3 Operation

3.1 General

The numbers in parenthesis refer to the item numbers on the assembly drawings in

3.2 Measurement of wind speed

The cup unit (6) is driven by the wind. There is an almost linear dependency between wind speed and rotational velocity of the cup unit. The proportional factor is 1.68 meters per revolution. The cup unit is connected to a shaft (12), which drives a metal slotted code cap (16). The transitions between the metal partitions and the slots in this code cap generate pulses by means of an inductive proximity switch (10). The code cap generates 8 pulses per revolution, so each pulse represents 0.21 meters

3.3 Measurement of wind direction

The stainless steel vane unit (4, 5) is driven by the wind. It turns until the counterweight (5) directs into the wind direction. The position of the vane unit is transmitter through the shaft (12) and the coupling (17, 18) to the dual wiper potentiometer (8). Figure 2 shows the typical output voltage in relation to the vane position.

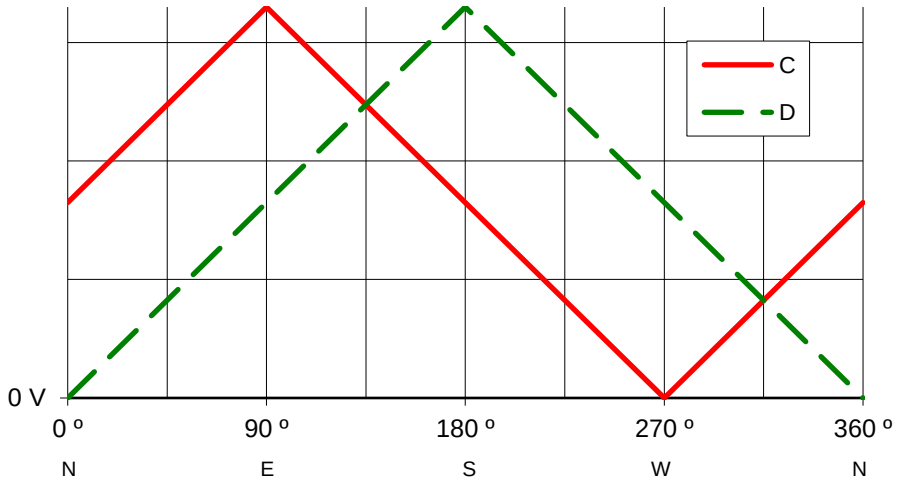


Figure 2 Output voltage on terminals C and D of the dual wiper potentiometer

4 Safety

4.1 Safety measures by the design of the OMC-150 anemometer

The OMC-150 anemometer is a Category 2 G device, certified for use in potential explosive atmospheres (gas explosion) in zone 1 and zone 2. The method of protection of the OMC-150 anemometer is intrinsic safety (Ex-i) according to EN-60079-0 and EN-60079-11. A risk analysis was performed on the mechanical construction of the instrument, both for operation during normal use and for anticipated faults, according to EN13463-1.

4.2 System integration - interconnection to the other system components

As the OMC-150 anemometer is an intrinsic safe device, it should be connected through certified zener barriers. All connections A through F are 'floating' with respect to earth. The three zener barriers must comply to the following safety description, while used with both channels (A-B, C-D or E-F) interconnected with no earth return:

Zener barriers on connections A-B and C-D:

$U_i \leq 20V$, $I_i \leq 150mA$, $P_i \leq 125$ mW

Zener barriers on connections E-F:

$U_i \leq 16V$, $I_i \leq 52mA$, $P_i \leq 169$ mW

The zener barriers limit the voltage with respect to earth.

Examples of suitable barriers are given in Table 2.

Manufacturer	Barrier Type for pins A-B and C-D	Barrier Type for pin E-F	Remarks
MTL[2]	7761Pac	7742[3]	
Pepperl & Fuchs	Z961.H		
CEAG[4]	SB-1761	SB-1351	
Stahl	9002/22-093-040-00		

Table 2 Applicable zener barriers

The OMC-158-2 interface unit does contain suitable barriers. No separate barriers are needed when the OMC-158 -2 interface unit is applied.

Note that all components in the intrinsic safe loops of the OMC-150 anemometer must be suitable for use in the designated zone.

[2] MTL instruments , internet www.mtl-inst.com
[3] The MTL 7742 is an active barrier which requires external power supply
[4] CEAG Apparatenbau Hundsbach GmbH & Co. KG, internet www.ceag.de

4.3 Required personnel qualification and remaining risks

The engineers who handle the OMC-150 anemometer during installation, commissioning and maintenance must have professional knowledge on mechanical and electrical systems in potentially explosive atmospheres.

The engineers that are handling the OMC-150 anemometer at the point of installation must be aware of the risks of working at height. Local Safety regulations on site must be adhered to. Adequate Personal Protective Equipment must be used where necessary.

Remind that the cup unit and vane can easily turn, and can turn unexpected. Keep safe distance to these moving parts during work at the sensor location.

5 Handling, transportation and storage

5.1 Handling

Keep the instrument in the protective Styrofoam package until installation. Care should be taken not to damage the cup unit the vane unit. Take care that the small mounting materials will not be lost.
Once the installed, store the packing for later use (see section 5.3)

5.2 Long term storage

When not in use, store the OMC-150 anemometer in a dry place. Note that this is required, as the system is only weatherproof when mounted in an upright position while the electrical plug is mated.

5.3 Reshipping the instrument

Whenever the OMC-150 anemometer is shipped, e.g. for calibration or repair, it should be shipped in the original packing. If this is no longer available on site, replacement packing can be ordered from Observator instruments B.V. or one of their world-wide agents or resellers. For contact information please refer to section 8.2.
If the anemometer is shipped for calibration, please also include the vane unit and cup units, as those parts are required during calibration.

6 Installation

6.1 Unpacking

The scope of supply of the OMC-150 anemometer consists of a foam filled cardboard box containing:

- sensor body with integral mounting arm
- cup unit
- vane unit
- U-bolts
- mounting materials
- 5 meters cable with plug

Note that additional materials that were simultaneously ordered for the same order might be packed in the OMC-150 box.

6.2 Location of the sensor

Ensure that the OMC-150 anemometer will be mounted on a location that is free from turbulence from obstacles. Plan the OMC-150 anemometer in a free area as far as practicable. For guidance on the best location refer to the WMO CIMO Guide [5]. The location must be accessible for maintenance.

6.3 Location of the sensor

Ensure that the OMC-150 anemometer will be mounted on a location that is free from turbulence from obstacles. Plan the OMC-150 anemometer in a free area as far as practicable. For guidance on the best location refer to the WMO CIMO Guide [6]. The location must be accessible for maintenance.

6.4 Mounting / mechanical installation

First connect the mounting clamp to the mast / pipe end. The top of the mounting clamp must be mounted less than 30 mm under the end of the pipe to prevent the pipe end blocking the wind flow to the cup unit.

Securely tighten the nuts on the U-bolts, preventing the nuts vibrating loose.

Connect now the plug (bayonet). The plug must be protected against salt spray e.g. using vulcanising tape. The sensor cable must be properly supported, and fastened to prevent exerting force on the connector.

[5] Guide to Meteorological Instruments and Methods of Observation, WMO No. 8, latest Edition, World Meteorological Organisation, Geneva, Switzerland, ISBN 92-63-16008-2

[6] Guide to Meteorological Instruments and Methods of Observation, WMO No. 8, latest Edition, World Meteorological Organisation, Geneva, Switzerland, ISBN 92-63-16008-2

Figure 1 Mechanical installation

6.5 Assembly of cup and vane

The wind-sensors are shipped with the wind vane and cups disconnected from their appropriate units. On the common unit, the upper spindle is for the wind direction sensor, and the lower spindle for the wind speed sensor. To prevent damaging the wind vane and cups, properly mount the sensor/bracket combination on the mast before fitting the wind vane and cup-unit. (this may not always possible)

The shafts of the OMC-150 anemometer and the inside of the cup unit and vane unit are conical. This enables fastening of the capped nut without the shaft turning along.

The cup unit and the vane blade are made in light materials for optimum response on the wind. Both are balanced to provide accurate measurement and to prevent vibration. Take care not to damage the cup unit or the vane blade while mounting.

Place the vane unit and mounting materials on the upper shaft in the following sequence:

1) Vane unit
2) Plain washer
3) Capped nut

Place the cup unit and mounting materials on the lower shaft in the following sequence:

1) Cup unit
2) Spring washer
3) Capped nut

6.6 Alignment of the wind vane

The wind direction sensor needs alignment to North. The wind direction sensor has on the wind direction head a dot marking (figure 2). This dot marking is in most cases opposite of the mounting arm and must be aligned to North.

The wind direction vane can only be installed in one position on the axis due to a small iron pin. With the sensor installed in such a way that the dot in pointing to the North the indicator will show the correct wind direction.

Locate the North direction, using a hand hold compass or similar. Unscrew the nuts of the complete sensor and rotate the sensor so, that the red dot points to the North.

Figure 2 North alignment dot

REMARK : Depending on local circumstances, it may be more practical to first align the wind vane with the sensor mounting bracket and adjust the wind vane shaft until the LED's light. The mounting bracket can then be aligned to the North by rotating the complete mast, thus aligning the wind vane to the North.

Note that the accuracy of the wind direction reading of the OMC-150 anemometer depends fully on the alignment of the vane!

6.7 Electrical installation

Connections

The OMC-150 anemometer is provided with a plug to connect the sensor (through a junction box) to the field cabling. The anemometer has a 7-core signal cable with common screen wired to the plug.

connector pin	sensor internal wiring colour	sensor cable wire colour	speed/ direction	description
A	red	white	direction	potentiometer supply (+3.3V)
B	blue	brown	direction	potentiometer supply (0V)
C	orange	green	direction	potentiometer signal 0º
D	yellow	yellow	direction	potentiometer signal 90º
E	black	grey	speed	NAMUR +
F	brown	pink	speed	NAMUR -
G	yellow/green	blue		chassis

Table 3 Connector wiring

The field cables should be properly supported, and fastened to prevent exerting force on the terminals.

Cable extension

The length of extension cable is limited to a maximum of 240 m cabling in addition to the supplied 5 meters pigtail. A 3-pair instrumentation cable (control signal cable) with individual screened twisted pairs and a minimum conductor size of 0.75 mm^2 and blue outer sheath should be used. Further requirements might apply, dependant on the installation site (e.g. minimum conductor size, halogen content, flame retardancy, classification, etc.)

The total loop capacitance, loop inductance, and L/R ratio of the installation must be checked not to exceed the allowed limits (EX installation requirements) using the parameters of the selected cable.

7 Commissioning

Commissioning procedure

It is impossible to calibrate the OMC-150 anemometer in the field. However, the following procedure makes sure that the installation was successful.

1) Check the connections
2) Install the interface and (if applicable) the display instrument. Normally the OMC-150 anemometer is powered through the interface unit.
3) Check the direction readings. A various wind directions, make sure that the change in reading corresponds to the direction of the vane. For interpretation of the wind direction reading, remind that the wind direction is defined as the direction where the wind comes from. The readings should be reasonable
4) Check the wind speed reading. Table 4 can be used for estimation of the actual wind speed. The reading should be reasonable

Force [Bft]	Speed		Name	Conditions at sea	Conditions on land
	knots	m/s			
0	< 1	<0.2	Calm	Sea like a mirror.	Smoke rises vertically.
1	1-3	0.3-1.5	Light air	Ripples only.	Smoke drifts and leaves rustle.
2	4-6	1.6-3.3	Light breeze	Small wavelets (0.2 m). Crests have a glassy appearance.	Wind felt on face.
3	7-10	3.4-5.5	Gentle breeze	Large wavelets (0.6 m), crests begin to break.	Flags extended, leaves move.
4	11-16	5.5-7.9	Moderate breeze	Small waves (1 m), some whitecaps.	Dust and small branches move.
5	17-21	8.0-10.7	Fresh breeze	Moderate waves (1.8 m), many whitecaps.	Small trees begin to sway.
6	22-27	10.8-13.8	Strong breeze	Large waves (3 m), probably some spray.	Large branches move, wires whistle, umbrellas are difficult to control.
7	28-33	13.9-17.1	Near gale	Mounting sea (4 m) with foam blown in streaks downwind.	Whole trees in motion, inconvenience in walking.
8	34-40	17.2-20.7	Gale	Moderately high waves (5.5 m), crests break into spindrift.	Difficult to walk against wind. Twigs and small branches blown off trees.
9	41-47	20.8-24.4	Strong gale	High waves (7 m), dense foam, visibility affected.	Minor structural damage may occur (shingles blown off roofs).
10	48-55	24.5-28.4	Storm	Very high waves (9 m), heavy sea roll, visibility impaired. Surface generally white.	Trees uprooted, structural damage likely.
11	56-63	28.5-32.6	Violent storm	Exceptionally high waves (11 m), visibility poor.	Widespread damage to structures.
12	64+	>32.6	Hurricane	14 m waves, air filled with foam and spray, visibility bad.	Severe structural damage to buildings, wide spread devastation.

Table 4 Beaufort scale

8 Faults, support, and service

8.1 Faults

Manifestation of fault		Possible cause	Solution
zero reading for both windspeed and wind direction		electrical problem; check if the sensor is powered; check plug connection at sensor, check wiring	
fixed reading for wind direction , correct reading for wind speed	vane is moving	electrical problem; check wiring;	
	vane is not moving	mechanical problem; check the sensor for dirt and worn bearings	Contact Observator in case of bearings
reading for wind speed too low (not zero)	cup unit turning too slow	wind flow is blocked; check the location of the OMC-150 anemometer (any obstacles?)	move the OMC-150 anemometer if necessary
		mechanical problem; check the sensor for dirt and worn bearings	Contact Observator in case of bearings
	cup unit turning at normal speed	misinterpretation of the output signal (e.g. factor 10 or conversion factor for m/s to knots or MPH)	
		wind flow is blocked; check the location of the OMC-150 anemometer (any obstacles?)	move the OMC-150 anemometer if necessary
zero reading for wind speed, correct reading for wind direction	cup unit turning	electrical problem; check wiring	
	cup unit not turning	mechanical problem; check the sensor to for dirt and worn bearings	Contact Observator in case of bearings

Table 5 Faults

Notes:

- Regular maintenance as described in section 9 will prevent most faults in the operation of the OMC-150 anemometer.
- Please refer to section 9 for details on the proposed solutions

8.2 Support, service and warranty

Support, service, and warranty on Obsermet equipment are provided by the company where the product was purchased. Make sure that you have the following information available when contacting

- Type and model of equipment
- Serial number
- Original order number and year of purchase

If it is impossible to find out where the instrument was purchased, please contact the manufacturer:

Observator instruments
Rietdekkerstraat 6
2984BM Ridderkerk
The Netherlands
Tel. + 31 180 463 411
Fax + 31 180 463 530
http://www.observator.com

Purchase of replacements:
sales@observator.com

Technical support:
service@observator.com

Service and warranty:
service@observator.com

9 Maintenance

9.1 Maintenance schedule (preventive maintenance)

Initial maintenance interval is 1 year under normal circumstances. Maintenance is best planned in the season when outside work is most comfortable.

For critical applications (where wind data is of major importance) under severe conditions, an initial maintenance interval of 6 months might be considered.

The maintenance interval can be adjusted depending on the maintenance experience.

Periodic maintenance comprises inspection on the following points.

- check ball bearings; contact Observator when they need replacement.
- check cabling and cable support
- check mounting; retighten if necessary
- clean the sensor if necessary

Refer to section 6 for more information about the mechanical aspects. If the ball bearings require replacement, the OMC-150 anemometer must be removed from its location.

The OMC-150 may only be opened and serviced by a qualified engineer certified by Observator Instruments! An exchange service is available, contact your reseller or Observator Instruments if you require maintenance.

9.2 Removing the OMC-150 anemometer from its location

1) First remove the vane unit and the cup unit.

The cup unit and the vane blade are made in light materials for optimum response on the wind. Both are balanced to provide accurate measurement and to prevent vibration.

Take care not to damage the cup unit or the vane blade while mounting or disassembly.

The shafts of the OMC-150 anemometer and the inner side of the cup unit and vane unit are conical. After removal of the capped nut and washer or O-ring, it might require a careful tap to loose the cup unit or vane unit from its shaft.

2) Unplug the electrical connector. Prevent water ingress in the cable part plug during the period that the OMC-150 anemometer is disconnected.

3) Loose the U-bolts and remove the OMC-150 body from its location.

9.3 Recalibration

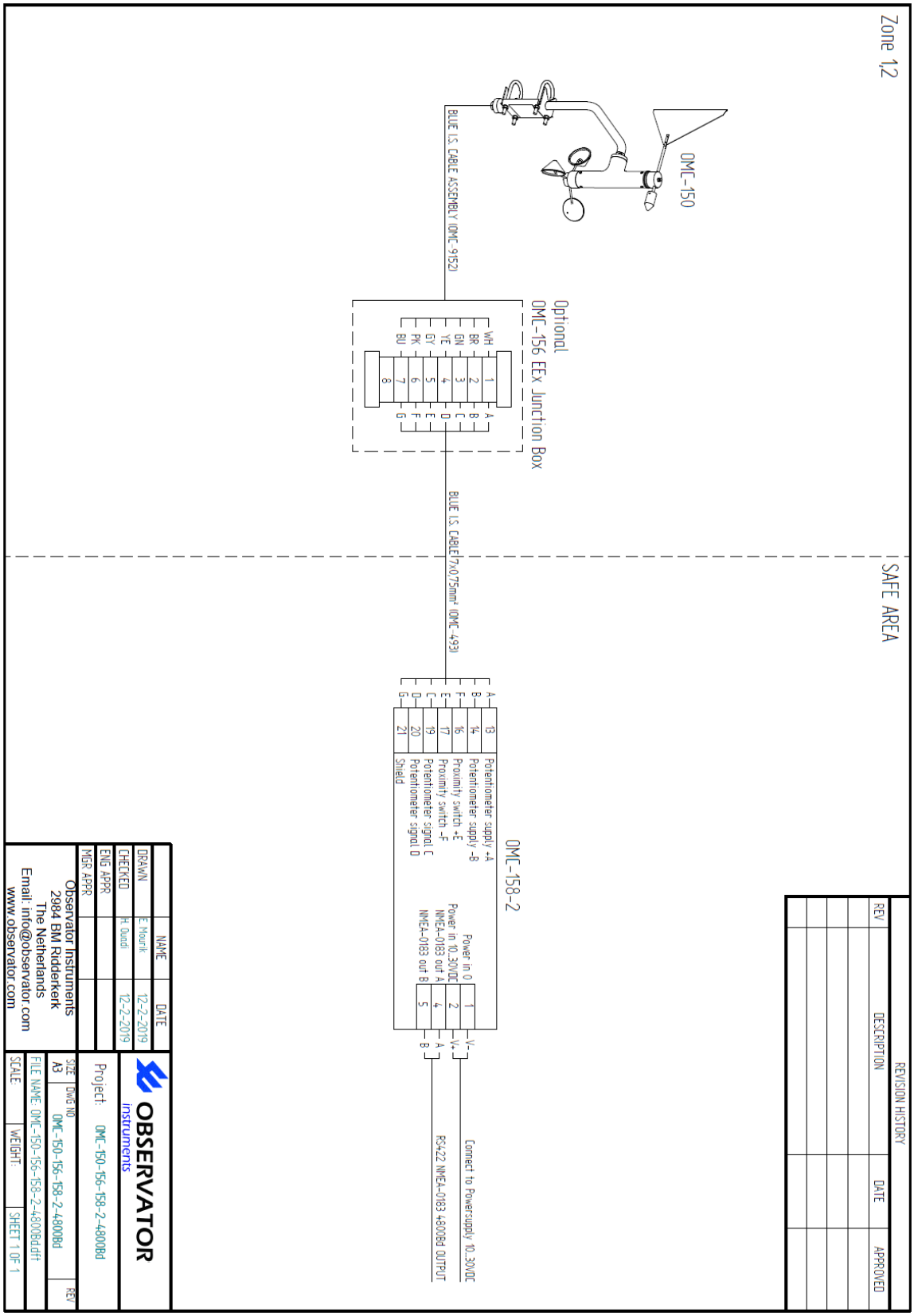
If the OMC-150 anemometer is included in a calibration program, the recommended calibration interval is 2 years. If required, you can adjust this interval.
Calibration of wind speed sensor is only possible in a wind tunnel. Observator instruments b.v. provides calibration services. For address details see section 8.2. Always include the cup unit and the vane unit when the OMC-150 anemometer is shipped for recalibration.

10 End of operational life

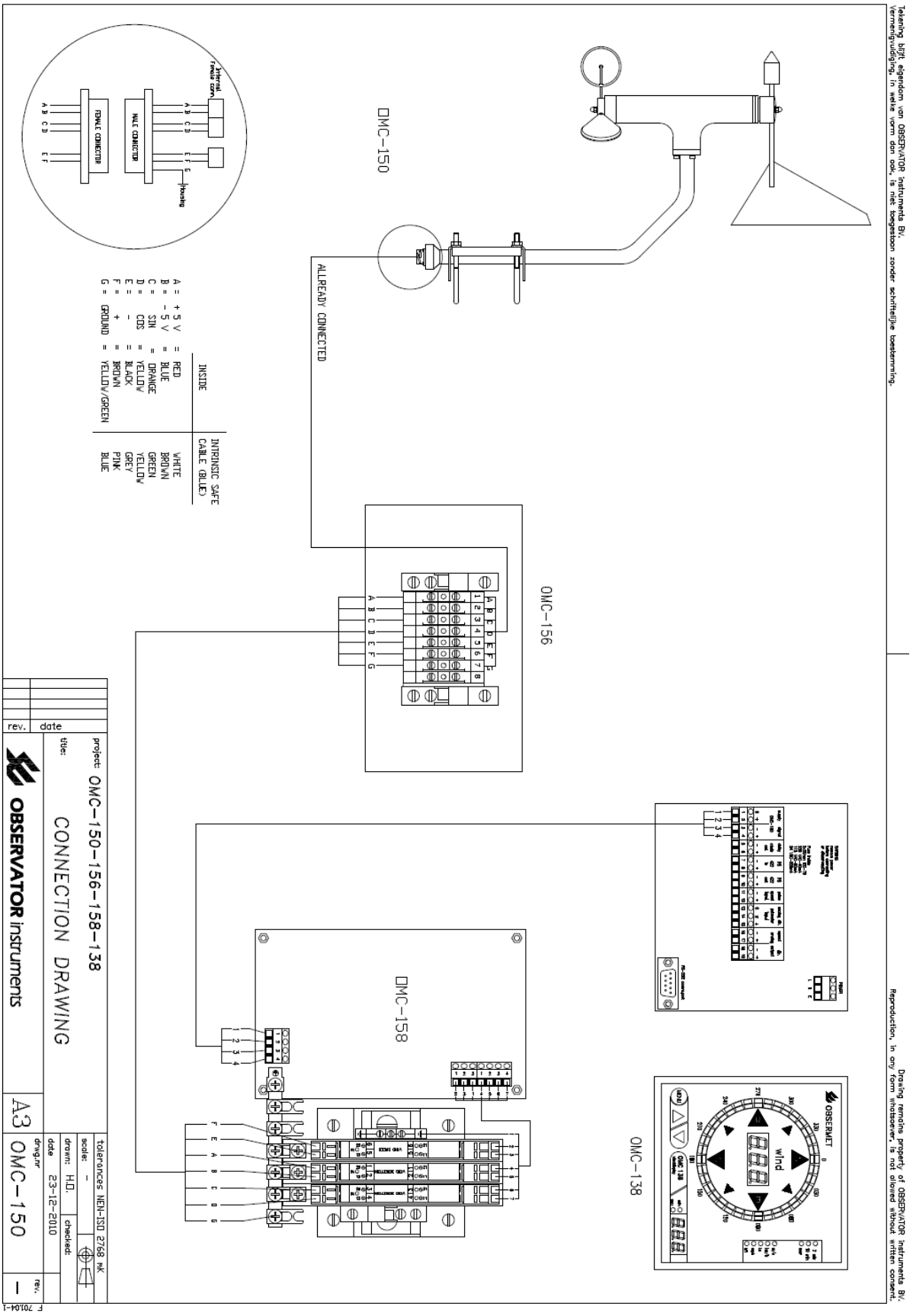
If the OMC-150 is at the end of it operational life, it must be disposed in accordance to the local regulations at that time. The main materials of the OMC-150 anemometer are stainless steel.

Appendix A: Typical system layout

Example with OMC-158-2



Example with OMC-158 (old):



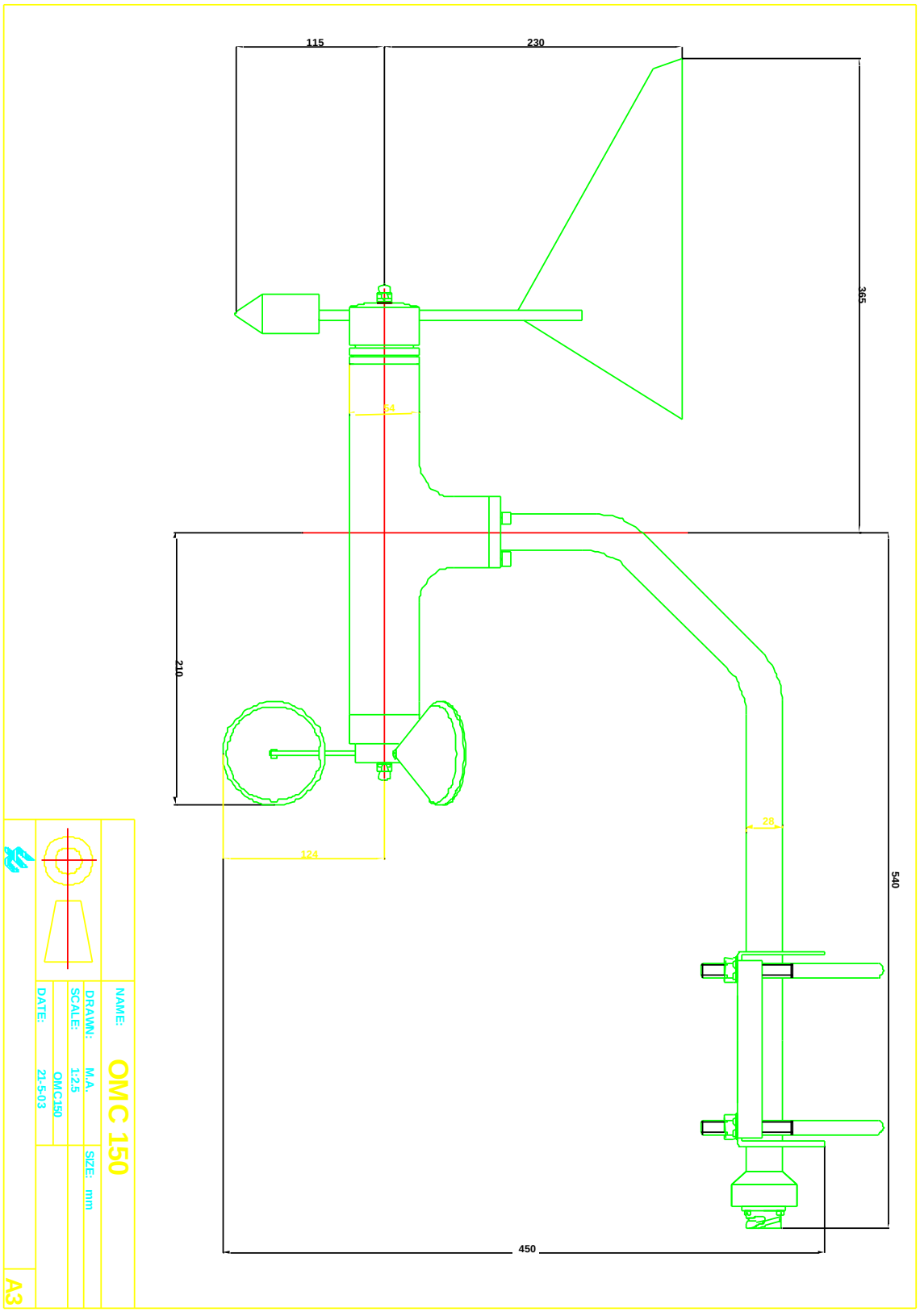
Appendix B: OMC-150 Specifications

parameter	value
Type of instrument	Anemometer
Measuring principle	Cup and vane
Certification	ATEX Ex ia IIC T4 Gb
ATEX group and category	II 2 G
ATEX Certificate number	
IECEx 02	Ex ia IIC T4 Gb
IEXEx Certificate number	
Measuring system	ISO – Metric
Materials of exposed parts	Stainless steel
Material of cups	Polycarbonate with carbon black as antistatic
Ingress Protection	IP-x6 according to EN-60529
Operation Temperature	-25 … +70 deg. C
Humidity	5 … 90%
Measuring range (wind speed)	0 … 75 m/s
Accuracy (wind speed)	Better than 2 %
Threshold (speed)	Approx. 0.3 m/s
Distance constant	1.68 meters
Measuring range (wind direction)	0 … 360 ° (no gap)
Direction accuracy (non-linearity etc.)	2 degrees
Output signal compatibility	Direct connection to Obsermet OMC-158
Speed signal	NAMUR signal according to IEC/EN-60947-5-6
Direction supply voltage	3.3 V nom.
Direction signals	Dual 0..+3.3V analogue voltage signals
Electrical connector type	ITT Canon CA 3102E 16S-1
Pigtail cable length	5 meters
Pigtail cable type	Screened blue signal cable, LAPP Ölflex EB-CY 8x0.75 mm^2 or equivalent.
Overall height (excluding mating plug)	Approx. 905 mm
Overall width (vane mounted)	Approx. 460 mm max.
Mounting method	Pole-mounting bracket with U-bolts (M10) for mounting on cylindrical or square pole
Clamping range	35 to 60 mm
Weight	Approx. 5 kgs. excluding cable
Packing dimensions	1050 x 510 x 150 mm
Packing weight	10 kgs

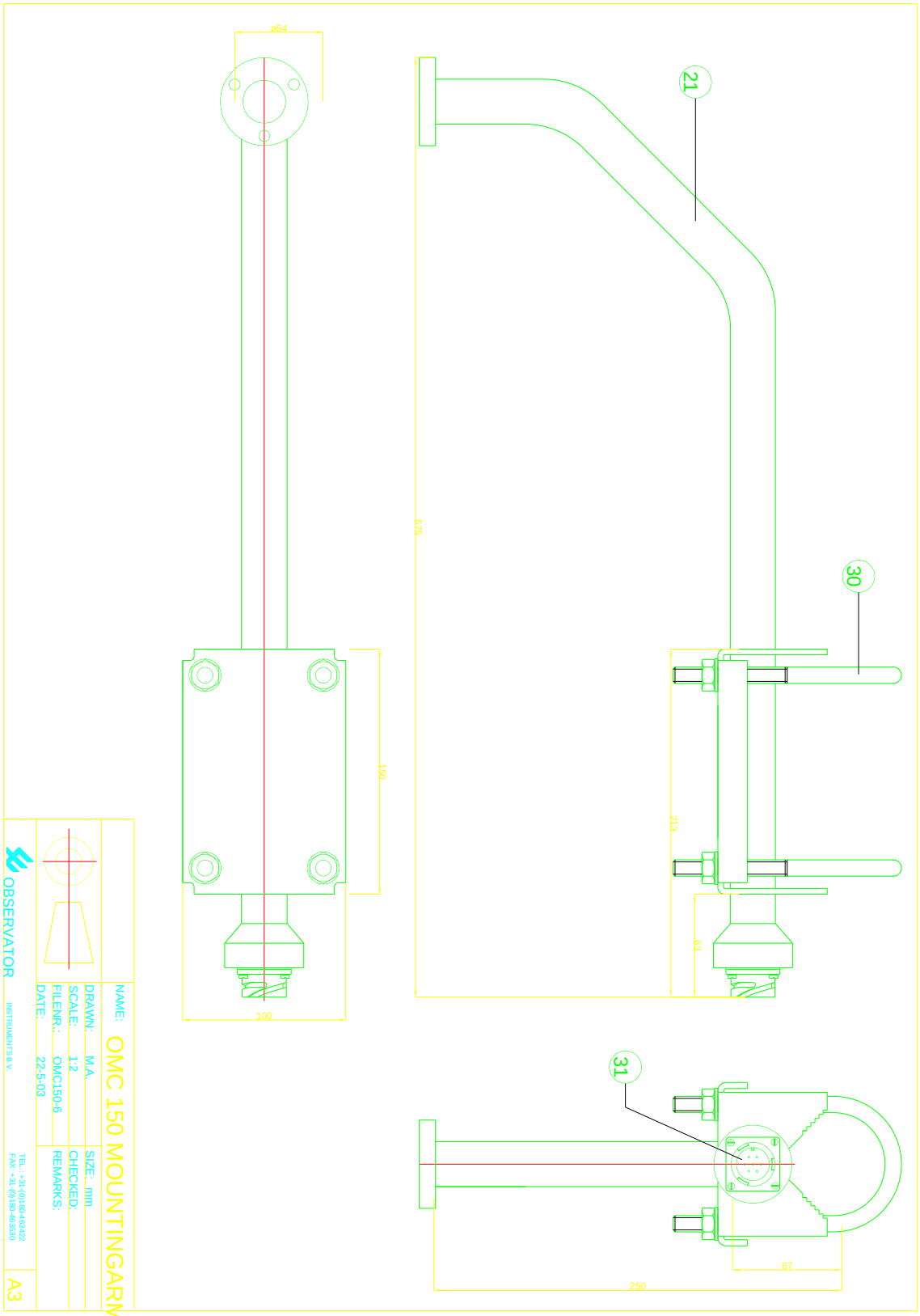
Appendix C: Drawings

Filenr.	Title	Version	Comment
OMC-150	OMC 150	21-5-03	Dimensional drawing
OMC-150-3	OMC 150	21-5-03	Assembly drawing
OMC-150-6	OMC 150 MOUNTINGARM	22-5-03	Assembly drawing

OMC-150 dimensional drawing



OMC-150 Mounting Arm



Appendix D: Spare Parts

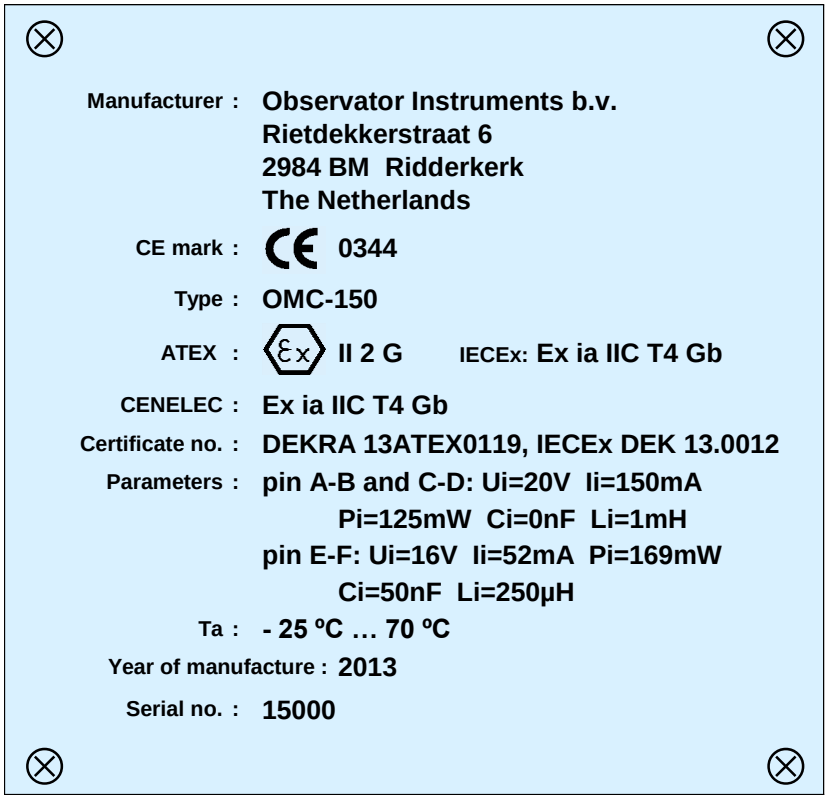
Spare Parts List

Reference is made to the item numbers in drawing filenr. OMC150-3 and OMC-150-6

Order number	Name	Dimensions	Drawing item no.
OMC-9169 Set ball bearings for speed or direction shaft	Precision ball bearing	10x19x7mm	14
	Retaining ring	DIN-471A, St.st. 10mm	
	Precision ball bearing	8x22x9mm	13
	Retaining ring	DIN-471A, St.st. 8mm	
Set of small mounting materials and O-rings	2 O-rings	small	28
	2 O-rings	42x2mm NBR70	27
	Plain washer	M6 A2 DIN-125A	26
	Spring washer	M6 A2 DIN-127	25
	Capped nut	M6 A1 DIN-1587	24
OMC-9151	Dual Wiper Potentiometer	SCP40-8266A	8
OMC-9156	Proximity switch	P&F SJ3,5N	10
OMC-9166	Cup assembly for OMC-150 / OMC-160		
OMC-9155	Vane assembly		4
OMC-9150	Shaft for speed or direction head		12
Set of U-bolts	2 U-bolt	St.st, 68mm pitch, M10	30
	2 Plain washers	M10	
	2 Nuts	M10 A4	

Appendix E: OMC-150 Marking

Project	OMC-150
Subject	Marking plate
Rev	E
Date	12 July 2013
Document no	OMC-150 marking.xls



Notes: 0344 is the identification number of the notified body that is involved in the production control stage
Year of manufacture according to actual year of manufacture
Serial number to be completed by adding three engraved digits

Material Specifications:

Size	85 X 90 mm
Mounting	pop rivets or M3 bolts
Material	Aluminum with adhesive layer or Stainless steel

Appendix F: ATEX certificate

CERTIFICATE

EC-Type Examination

(1)

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **DEKRA 13ATEX0119** Issue Number: **1**

(4) Equipment: **Anemometer type OMC-150**

(5) Manufacturer: **Observator Instruments b.v.**

(6) Address: **Rietdekkerstraat 6, 2984 BM Ridderkerk, The Netherlands**

(7) This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) DEKRA Certification B.V., notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the directive.

The examination and test results are recorded in confidential test report number NL/DEK/ExTR13.0010/**.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0 : 2012 **EN 60079-11 : 2012** **EN 13463-1 : 2009**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

Ex **II 2 G Ex ia IIC T4 Gb**

This certificate is issued on 12 July 2013 and, as far as applicable, shall be revised before the date of cessation of presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

DEKRA Certification B.V.

C.G. van Es
Certification Manager

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DEKRA Certification B.V. Utrechtseweg 310, 6812 AR Arnhem P.O. Box 5185, 6802 ED Arnhem The Netherlands
T +31 26 3 56 20 00 F +31 26 3 52 58 00 www.dekra-certification.com Registered Arnhem 09085396

DEKRA

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate DEKRA 13ATEX0119** Issue No. **1**

(15) **Description**

The Anemometer type OMC-150 is a cup and vane anemometer used for measuring wind speed and wind direction.

Ambient temperature range -25 °C to +70 °C.

Electrical data

Wind direction sensor Supply (pin A and B):
in type of protection intrinsic safety Ex ia IIC, only to be connected to a certified intrinsically safe circuit, with the following maximum values:
U_i = 20 V; I_i = 150 mA; P_i = 125 mW; C_i = 0 nF; L_i = 1 mH.

Output circuit (pin C and D):
in type of protection intrinsic safety Ex ia IIC, only to be connected to a certified intrinsically safe circuit, with the following maximum values:
U_i = 20 V; I_i = 150 mA; P_i = 125 mW; C_i = 0 nF; L_i = 1 mH.

Wind speed sensor Supply and output circuit (pin E and F):
in type of protection intrinsic safety Ex ia IIC, only to be connected to a certified intrinsically safe circuit, with the following maximum values:
U_i = 16 V; I_i = 52 mA; P_i = 169 mW; C_i = 50 nF; L_i = 250 µH.

Installation instructions

The instructions provided with the equipment shall be followed in detail to assure safe operation.

(16) **Test Report**

No. NL/DEK/ExTR13.0010/**.

(17) **Special conditions for safe use**

None.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at (9).

(19) **Test documentation**

As listed in Test Report No. NL/DEK/ExTR13.0010/**.

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Form 100
Version 3 (2012-12)

Appendix G: IECEx certificate

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEx DEK 13.0012 issue No.:0	Certificate history:
Status:	Current	
Date of Issue:	2013-07-12 Page 1 of 3	
Applicant:	**OBSERVATOR Instruments BV** Rietdekkerstraat 6 2984 BM Ridderkerk **The Netherlands**	
Electrical Apparatus: *Optional accessory:*	**Anemometer type OMC-150**	
Type of Protection:	**ia**	
Marking:	Ex ia IIC T4 Gb	
Approved for issue on behalf of the IECEx Certification Body:	C.G. van Es	
Position:	Certification Manager	
Signature: *(for printed version)*		
Date:	2013-07-12	

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

DEKRA Certification B.V.
Utrechtseweg 310
6812 AR Arnhem
The Netherlands

DEKRA

IECEx Certificate of Conformity

Certificate No.: IECEx DEK 13.0012

Date of Issue: **2013-07-12** Issue No.: **0**

Manufacturer: **OBSERVATOR precisietechniek BV**
Asterweg 12
1031 HN Amsterdam
The Netherlands

Additional Manufacturing location (s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:
The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition: 6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2006 Edition: 5	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:
NL/DEK/ExTR13.0010/00

Quality Assessment Report:

NL/DEK/QAR13.0001/00

IECEx Certificate of Conformity

Certificate No.: IECEx DEK 13.0012

Date of Issue: **2013-07-12** Issue No.: **0**

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Schedule

EQUIPMENT:
Equipment and systems covered by this certificate are as follows:

The Anemometer type OMC-150 is a cup and vane anemometer used for measuring wind speed and wind direction.

Ambient temperature range: –25 °C to +70 °C

Electrical data
Wind direction sensor Supply (pin A and B):
in type of protection intrinsic safety Ex ia IIC, only to be connected to a certified intrinsically safe circuit, with the following maximum values:
U_i = 20 V; I_i = 150 mA; P_i = 125 mW; C_i = 0 nF; L_i = 1 mH.

Output circuit (pin C and D):
in type of protection intrinsic safety Ex ia IIC, only to be connected to a certified intrinsically safe circuit, with the following maximum values:
U_i = 20 V; I_i = 150 mA; P_i = 125 mW; C_i = 0 nF; L_i = 1 mH.

Wind speed sensor Supply and output circuit (pin E and F):
in type of protection intrinsic safety Ex ia IIC, only to be connected to a certified intrinsically safe circuit, with the following maximum values:
U_i = 16 V; I_i = 52 mA; P_i = 169 mW; C_i = 50 nF; L_i = 250 µH

CONDITIONS OF CERTIFICATION: NO

Appendix H: EU Declaration of Conformity

OBSERVATOR
instruments

Observator Instruments B.V.

Rietdekkerstraat 6
2984 BM Ridderkerk
The Netherlands

P.O. Box 60
2980 AB Ridderkerk
The Netherlands

Tel.: +31 (0)180 463411
Fax.: +31 (0)180 463530

Email: info@observator.com
Internet: www.observator.com
CoC: 24172722

EU DECLARATION OF CONFORMITY

(1) Apparatus model : **OMC-150**

(2) Manufacturer :
Observator instruments B.V.
Rietdekkerstraat 6
2984 BM Ridderkerk
The Netherlands

(3) This declaration of conformity is issued under the sole responsibility of the manufacturer.

(4) Object of the declaration :

OMC-150 Intrinsically safe wind sensor

(5) The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:
- Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres
- Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility
- Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

(6) References to the relevant harmonised standards used:

EN IEC 60079-0:2012 EN IEC 60079-11:2012

EN 13463-1:2009. A review against EN ISO 80079-36:2016, which is harmonised, shows no significant changes relevant to this equipment so it continues to represent "State of the Art".

EN IEC 60945:2002 including EN IEC 60945/C1:2008 EN IEC 61326-1:2013

EN 50581:2012

(7) The Notified body DEKRA Certification B.V. performed Type Examination and issued the EC-Type Examination Certificate Number DEKRA 13ATEX0119

(8) Signed for and on behalf of:

Ridderkerk, 27 January 2019,
Observator instruments

Dr. Ir. R. de Vries
CEO

Since 1924 Observator has evolved to be a trend-setting developer and supplier in a wide variety of industries. Originating from the Netherlands, Observator has grown into an internationally oriented company with a worldwide distribution network and offices in Australia, Germany, the Netherlands, Singapore and the United Kingdom.