Wall-i
Watch

Electronic pressure control system…

USER MANUAL
European Directive 2014/30/EU

CE

TABLE OF CONTENTS

SECTION 1 - **GENERAL INFORMATION**

WARNING

This manual covers the **Wall-i Watch** electronic system and the **sensor box** connected thereto.

PACKAGE CONTENTS

- 1 **Wall-i Watch Unit - CP30000**
- 1 Multi-country power supply transformer.
- 2 fixing sets (nylon plugs + screws).
- 1 **sensor box - CP31100**
- 1 RJ45 cable
- 1 metre of silicone hose
- Option: Particle Counter – CP31101

Note: The user manual is available on the USB key supplied with the administrative documents or by **airinspace**® personnel if they are in charge of putting the device into service.

1.1   SAFETY INSTRUCTIONS

- **READ THESE INSTRUCTIONS THOROUGHLY** and strictly follow the chronological order of installation, commissioning and maintenance steps.

- Use at room temperatures of +5°C to +35°C with relative humidity lower than 80% and dust levels lower than 1 mg/m3.

- Do not allow any liquid to penetrate the **Wall-i Watch** and the **sensor box**

- Do not use the product outdoors.

- Do not use this product near high electromagnetic radiation sources, as they may interfere with its effective operation.

- The device can be used at an altitude of up to 2000m.

- The device must be connected to a 24Vcc safety extra low voltage (SELV) power supply.

- Do not place the device near a heat source.

IMPORTANT: FAILURE TO COMPLY WITH USAGE RULES AND SAFETY INSTRUCTIONS MAY AFFECT THE OPERATION OF THE DEVICE.

IMPORTANT: BEFORE CARRYING OUT ANY WORK ON AN ELECTRICAL COMPONENT, SWITCH OFF THE EQUIPMENT BY DISCONNECTING THE 24VCC POWER CONNECTOR.

WORK ON ELECTRICAL CIRCUIT COMPONENTS IS STRICTLY RESERVED FOR **airinspace®** MAINTENANCE STAFF OR DULY TRAINED PERSONNEL.

1.2   REGULATORY STANDARD

The **Wall-i Watch** is CE-marked under European regulations:

CE   **European Electromagnetic Compatibility Directive *2014/30/EU***

1.3   NORMATIVE STANDARDS

EN 61326-1 (2013). Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements

EN 61000-3-2 (2006 + A1(2009) + A2(2009): Electromagnetic compatibility (EMC) - Part 3-2: limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

EN 61000-3-3 (2013): Electromagnetic compatibility (EMC) - Part 3-3: limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤16 A per phase and not subject to conditional connection

1.4   CLASSIFICATION

|	
Degree of protection against water and solids	**IP 40**
Operating mode	**Continuous service** Operation under normal conditions of an unlimited duration without exceeding operating temperature limits.
Level of safety when used in the presence of flammable anaesthetics mixed with air, oxygen or nitrous oxide	**Device not suitable for use with flammable anaesthetics mixed with air or oxygen.** The **Wall-i Watch** is not an AP or APG category device. It must always be kept more than 25 cm from the point where there is a mixture of flammable anaesthetic **with** air, oxygen or nitrous oxide.
Electromagnetic interference	**The Wall-i Watch is suitable for operation in an environment consisting of devices which comply with regulations on electromagnetic interference.**

1.5   DESCRIPTION OF THE DEVICE

1.5.1   OVERVIEW

1.5.1.1 Wall-i Watch
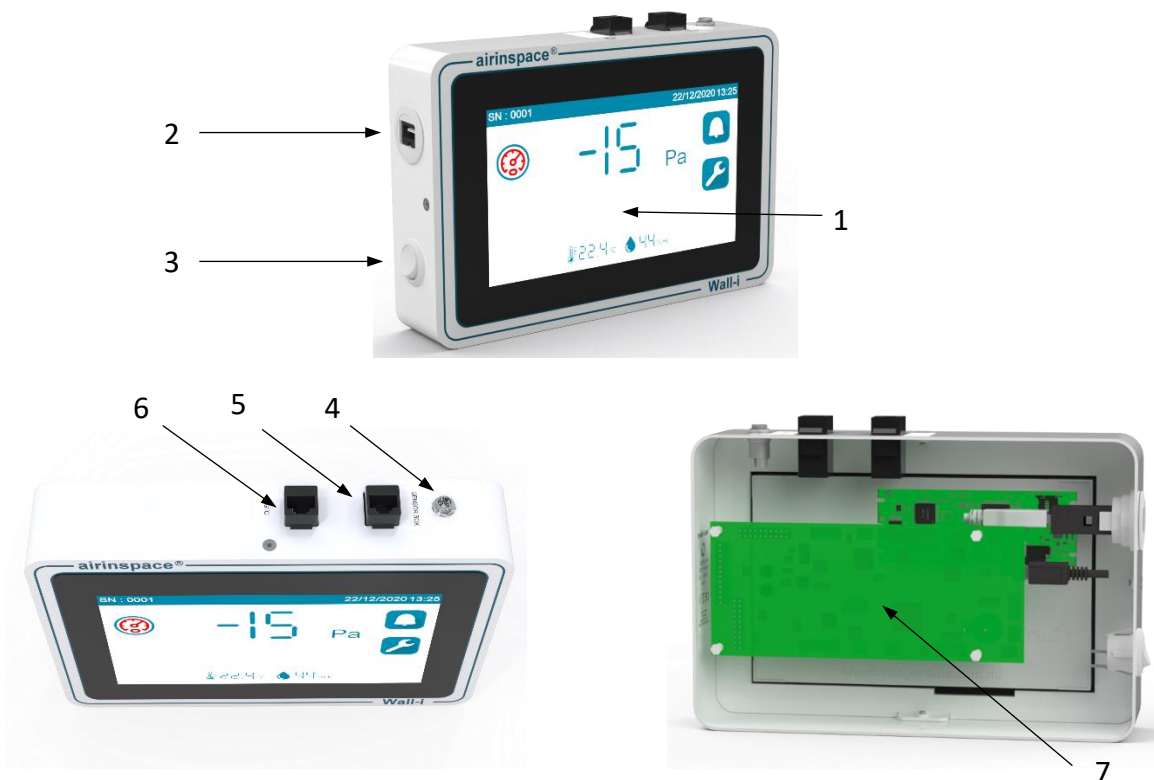
1	7-inch screen
2	USB data logger connector
3	ON/OFF switch
4	24VCC power connector
5	Sensor box RJ45$_1$ connector
6	ModBUS RJ45$_2$ connector (HVAC)
7	Control card

1.5.1.2 Sensor Box
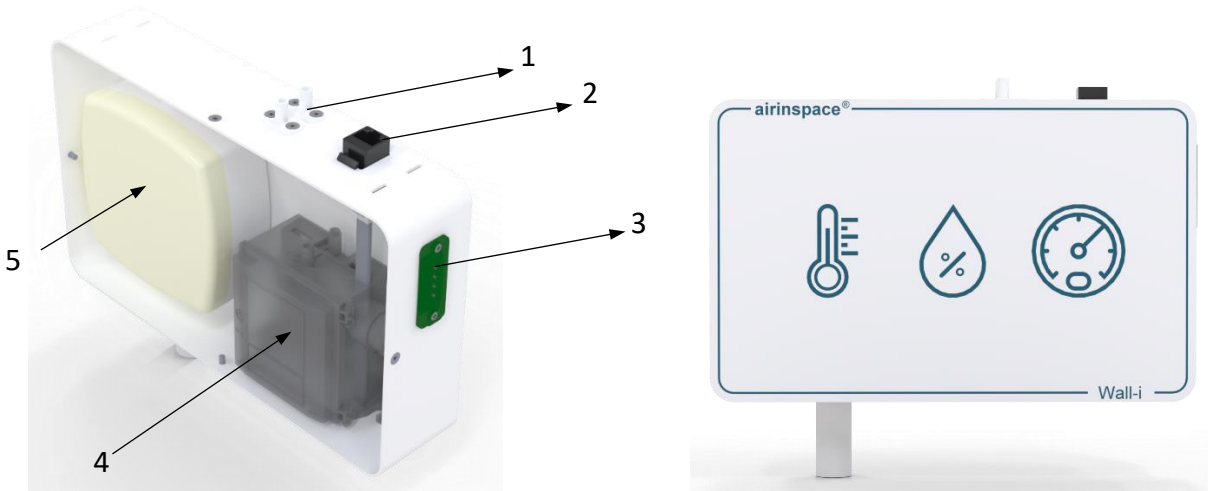
1	Internal pressure tap
2	**Wall-i Watch** RJ45 connector
3	Particle counter connector (optional)
4	Pressure transducer
5	Temperature and relative humidity sensor

1.5.2   MARKINGS AND WARNINGS

Label	Description	Position
Product	**Wall-i Watch** P/N: CP30000 S/N: WW- 0001 24.0Vcc - 1.0A IP 40 CE made in France airinspace™ 14 rue Jean Monnet Elancourt 78990 - FRANCE	On the right side of the box
Electrical characteristics	GTC	On the end of the second RJ45 connector
Electrical characteristics	SENSOR BOX	On the upper side of the box, between the RJ45 connector and the jack plug
Electrical characteristics	+ '	On the sensor box Negative pressure/Positive pressure

1.6 FUNCTIONAL DESCRIPTION OF THE DEVICE

1.6.1 INTENDED USE

The **Wall-i Watch** is a 24 Vcc powered electronic system used to measure differential pressure, temperature and relative humidity. It is used with the **sensor box**.

The **Wall-i Watch** is mounted to the wall and can provide an indication as to the particulate contamination of the room where it is installed, with an indicative value (ISO9 to ISO5).

It is equipped with a 7-inch colour touchscreen allowing you to view variables and change setpoint settings.

1.6.2 PHYSICAL CHARACTERISTICS

Power supply	⎓ 24 Vcc ±10%	
Maximum electrical power	5 Watt	
Differential pressure (display)	+/-30 Pa max	
Temperature (unregulated)	0°C +35°C	
Relative humidity (unregulated)	0 to 90%RH	
Overall dimensions	H 143 x L 213 x 43.2 mm	
Sensor box dimensions	H 145 x L 233 x 53 mm	
Weight	800 g	
ModBUS connection	ModBUS DB9 Series	
Sensor box connection	RJ45 connector	
USB connector	USB to retrieve data from the Data Log	
Environmental operating range	Temperature	+5 °C to +35 °C
	Relative humidity [**]	< 80% non-condensing
Environmental storage range	Temperature	0°C to 40°C
	Relative humidity	< 80% non-condensing
	Dust level	< 1 mg/m^3

> **Note:** The information contained in this table is for information only. For any information on measurements and tolerance intervals, please contact **airinspace®** at the address provided at the end of this document.

1.7 PACKAGING - ACCEPTANCE

The **Wall-i Watch** is supplied and installed with a **sensor box**.

Carefully examine the equipment delivered when installing the components.

In the event of any anomaly, please contact the manufacturer or distributor, providing the serial number and date of purchase

1.8 TRANSPORT

Before transporting, protect the unit from shocks and scratches, keep and use the original packaging.

SECTION 2 - **INSTALLATION**

2.1   ASSEMBLY

The **Wall-i Watch** and the **sensor box** are mounted to the wall.

They come with two fixing kits, each including 2 nylon plugs for concrete, plaster or plasterboard walls, and 2 screws.

Using a drill and a 6mm diameter concrete drill bit, drill two holes with a centre distance of 180mm.
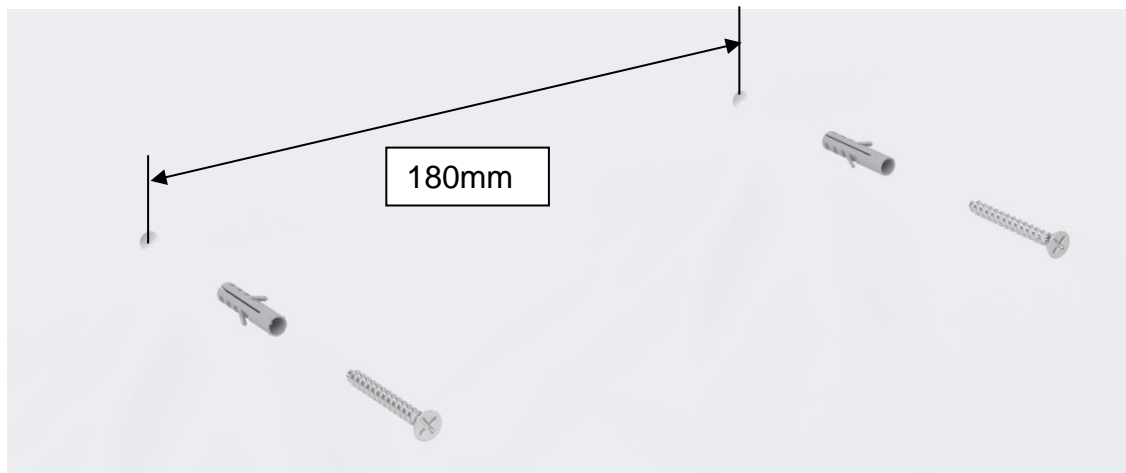

Using a hammer, insert the two plugs and then tighten the screws, leaving them a few millimetres overhanging.

Follow the assembly example below.

On the **sensor box**, position the flexible tube on the positive pressure tap **+**, the sensor will automatically detect positive pressure (prevents the spread of incoming contamination) or negative pressure (prevents the spread of outgoing contamination).
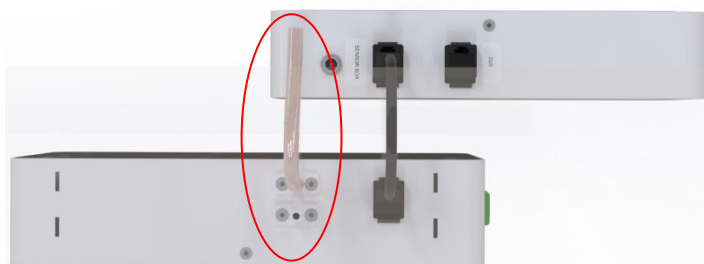
Electrically connect the **Wall-i Watch** to the **sensor box** using a straight RJ45 cable.
Position the straight RJ45 cable on the RJ45 connector$_1$, marked as **Sensor box.**

1
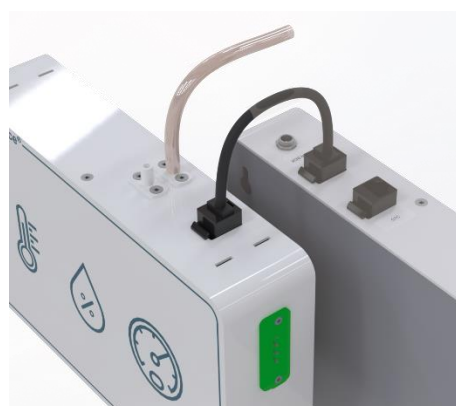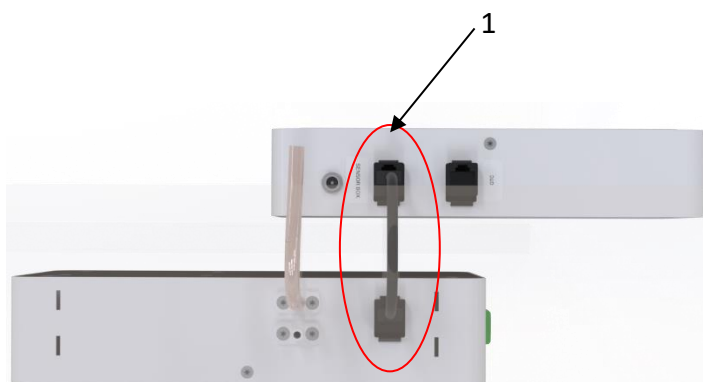
Electrically connect the **Wall-i Watch** to the jack plug (24Vcc).

2.2   DISPOSAL

This product is covered by European Directive 2012/19/EU of 04 July 2012 on waste electrical and electronic equipment (WEEE) and falls within category 6 "Electrical and electronic tools (with the exception of large-scale stationary industrial tools)" as defined in Appendix I to this directive.

Disposal of this product and the recovery of the resultant waste must respect regulations arising from the application of the European directive by the different member states, as well as any local regulations that complement it.

2.3 USE OF USER INTERFACE

The **Wall-i Watch** is equipped with a simple, user-friendly interface. The user interface consists of a 7-inch colour touchscreen.

1		*Light signals* *Green: the pressure is consistent with the setpoint (+/-1 Pa).* *Orange: the pressure is different from the setpoint (+/-1Pa).* *Red: the pressure is outside the permitted pressure range defined by the High threshold and the Low threshold for more than 2 minutes.*
2	Pa	*Differential pressure display*
3		*Maintenance menu access button*
4		*ISO particulate class indication* *If the particle counter is used (optional)*
5		*Alarm, warning log access button*
6		*Temperature display* *Relative humidity display*
7	22/12/2020 13:25	*Date and time display*
8	V Pa	*Alarm and warning icons display area*

2.4 START-UP/SHUTDOWN

2.4.1 START-UP

Check the electrical connection of the **Wall-i Watch** to the sensor box with an RJ45 cable.

Check the electrical connection of the **Wall-i Watch** to the jack plug (24Vcc).

Set the On/Off switch of The screen of the **Wall-i** appears.

the **Wall-i Watch** to "I". **Watch** turns on and the home screen

The **Wall-i Watch** enters the initialisation phase. This step lasts 20 to 30 seconds. It corresponds with pressure, temperature and humidity controls in the **sensor box** by the **Wall-i Watch**.
The default setpoint is +15Pa in positive version and -15Pa in negative version.

IMPORTANT: THE ELECTRICAL SUPPLY MUST COMPLY WITH THE NATIONAL LEGISLATION AND BE PERIODICALLY CHECKED.

2.4.2 WALL-I WATCH SHUTDOWN (E.G.: FOR MAINTENANCE OPERATION)

Set the On/Off switch of the **Wall-i Watch** to "0".

2.5 SETTINGS DISPLAY

Regulation settings are displayed from the maintenance screen by pressing the maintenance button

The maintenance screen displays:
- ➢ The pressure setpoint
- o Alarm delay (factory setting 2 min, maximum value 10 min).
- o Low pressure alarm threshold (factory setting 10Pa)
- o High pressure alarm threshold (factory setting 20Pa)
- o Flow alarm threshold (factory setting 300m^3/h)
- o Flow warning threshold (1,000 m^3/h)
- o Transfer filter operating time
- o Total operating time

Visualization :

|	
Pressure setpoint :	-- Pa
Pressure alarm delay :	- min
High pressure alarm threshold :	-- Pa
Low pressure alarm threshold :	-- Pa
Flow alarm threshold :	--- m3/h
Flow warning threshold :	---- m3/h
Transfer filter operating time :	---- h
Total operating time :	----- h
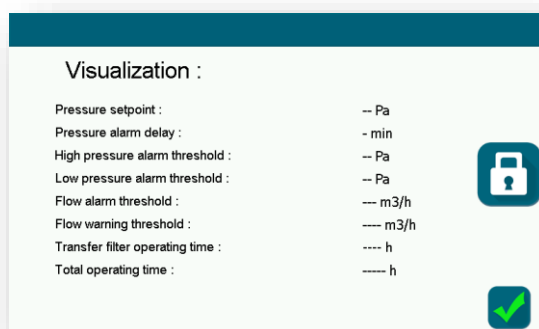
Press the confirmation button to return to the main screen.

Press the Password button to access the maintenance menu.

2.6 CHANGING THE SETTINGS

The configuration menu can be accessed by pressing the maintenance [wrench icon] button from the main

screen, then the Password button [padlock icon] .

Access to this menu is protected by a definable User password, by default **1234**.
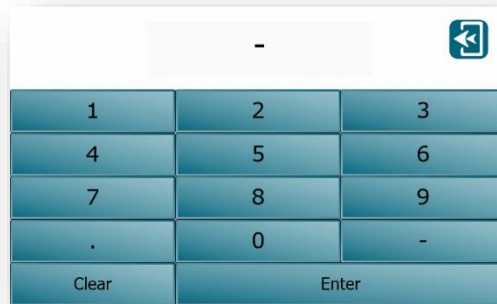
Note: don't forget to confirm password entry by pressing ENTER.

The screen for changing the settings appears, making it possible to change the following variables:
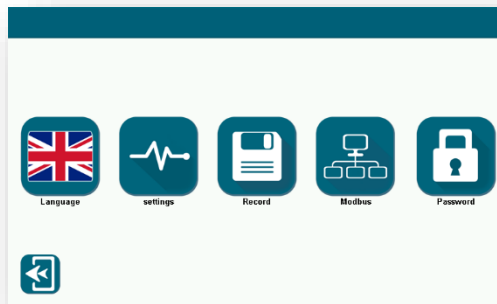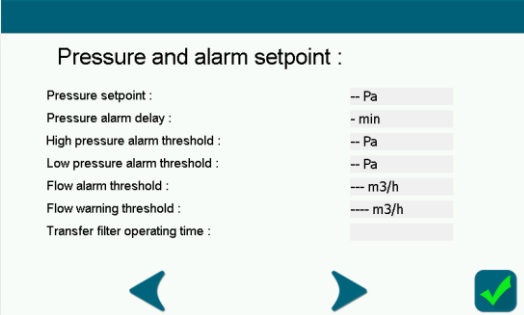
[French flag icon] Langue	*Language: Choice of language*
[settings icon] Parametres	*Settings: Access settings*
[save icon]	*Records: View records*
[modbus icon]	*ModBus: Access the settings of the Modbus link*
[password icon]	*Password: Access the definable user password*

2.6.1   PRESSURE ALARM THRESHOLDS

Pressure and alarm setpoints can be accessed by pressing the settings button ![settings] of the configuration menu.

This screen allows you to view and change the following variables:
- o   Pressure setpoint
- o   Pressure alarm delay (factory setting 2 min, maximum value 10 min).
- o   Low pressure alarm threshold (factory setting 10Pa)
- o   High pressure alarm threshold (factory setting 20Pa)
- o   Flow alarm threshold (factory setting 300m^3/h)
- o   Flow warning threshold
- o   Transfer filter operating time

You can also browse the following pages by pressing the right ![right arrow] and left arrows ![left arrow] .

2.6.2 SOFTWARE UPDATE, DATE, HOUR AND MINUTE

In settings [icon], this page allows you to:

- View the software version of the **Wall-i Watch** unit
- Set the date and time
- Enable or disable the "Buzzer" audible signal
- Adjust the volume of the audible signal
- Load a new software in the electronic card by pressing the Upgrade button
- View the serial no. of the particle sensor (optional)
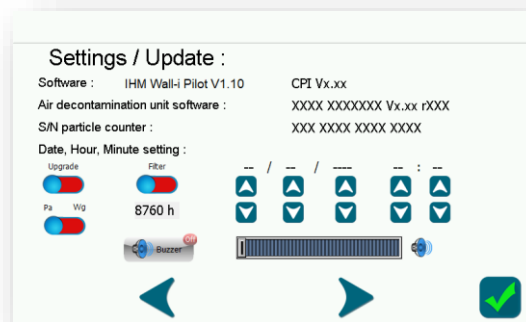
2.6.3 ADJUSTING THE MODBUS NETWORK LINK SETTINGS

In Modbus [icon], this page allows you to:

- Set the transmission speed
- View the number of data bits
- Set parity
- View the number of stop bits
- Set the unit address
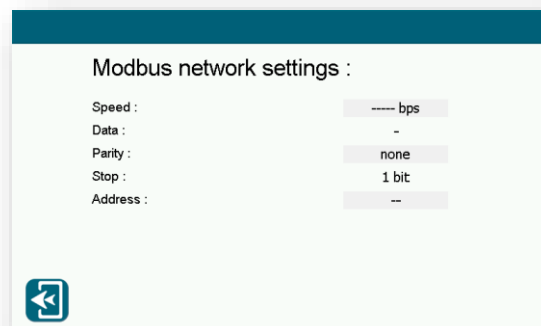
2.6.4 ADJUSTING THE TEMPERATURE, HUMIDITY AND PRESSURE CORRECTION SETTINGS

In settings , this page allows you to apply an offset to the temperature, humidity and pressure values.
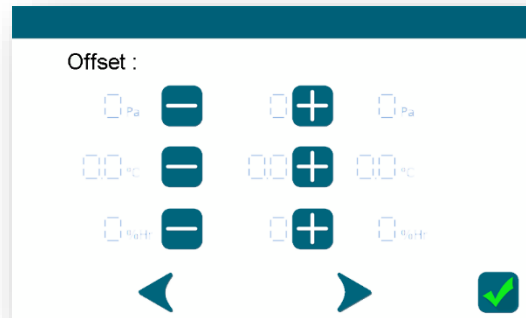
2.7 HANDLING WARNINGS AND ALARMS

2.7.1 DEFINITIONS

➢ **Warning:** a warning message is sent by the management card when a fault, temporary or otherwise, leads or may lead to a deterioration in the equipment's nominal operation conditions, without however diminishing its performance significantly. Therefore, the warning helps point out that a maintenance operation is required.

➢ **Alarms:** an alarm message is sent by the management card when a fault, temporary or otherwise, may jeopardise the safety of individuals, goods or processes. The unit remains switched on so that it can report its status.

2.7.2 LIST OF WARNINGS AND ALARMS AND HOW THE HANDLE THEM

Display unit	Fault code	Warning definition	Fault condition(s)
	No fault code	Differential pressure Warning	If the pressure measured is different from the pressure setpoint +/-1Pa
	T	Transfer filter alert	When the filter operating time exceeds the recommended shelf life
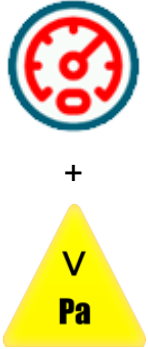
NOTE: THERE MAY BE SEVERAL ACTIVE WARNINGS AT THE SAME TIME.

> **Processing:**

Schedule a maintenance operation suited to the fault reported.
When the fault condition disappears, the warning automatically disappears.

> *NOTE: IF THE OPERATION REQUIRES REPLACING THE TRANSFER FILTER, RESET THE CORRESPONDING COUNTER (SEE CHAPTER 2.6.1).*

2.7.3 LIST OF ALARMS AND HOW TO HANDLE THEM

Display unit	Fault code	Alert definition	Fault condition(s)
+ V Pa	V	Differential pressure Alarm	When the pressure measured is outside the pressure range defined by "Low pressure alarm threshold" and "High pressure alarm threshold" for a period exceeding "Pressure alarm delay"

The alarms are auto-reset, which means that there is no need to validate or acknowledge a fault to reset it.

> *NOTE: AIRINSPACE® SHALL NOT BE HELD LIABLE FOR THE USE OF FILTERS DIFFERENT FROM THOSE SUPPLIED WITH THE EQUIPMENT, OR FOR THE USE OF AN AIR DECONTAMINATION UNIT SOURCED FROM ANOTHER SUPPLIER*

As all alarms and warnings trigger an audible signal, it can be temporarily disabled by pressing the Buzzer icon. To disable the "Buzzer" entirely, please refer to chapter 2.6.2

2.7.4 ALARM AND WARNING LOG DISPLAY

In alarm , the alert and warning log display is accessible by pressing the alarm and warning log button

Press the icon to save the alarm and warning log to a USB key.

Press the button to return to the main screen.

2.8   FREQUENCY RECORDS DISPLAY

In settings , the frequency records of the **Wall-i Watch** are displayed from the records screen by

pressing the records button

Press the icon to save the records log to a USB key.

Press the button to return to the main menu.

ERROR MESSAGE IF NO USB KEY TO BE ADDED

SECTION 3 - **MODBUS**

The **Wall-i Watch** controller can be connected to a supervision unit via a serial ModBUS link (RJ45 connector)
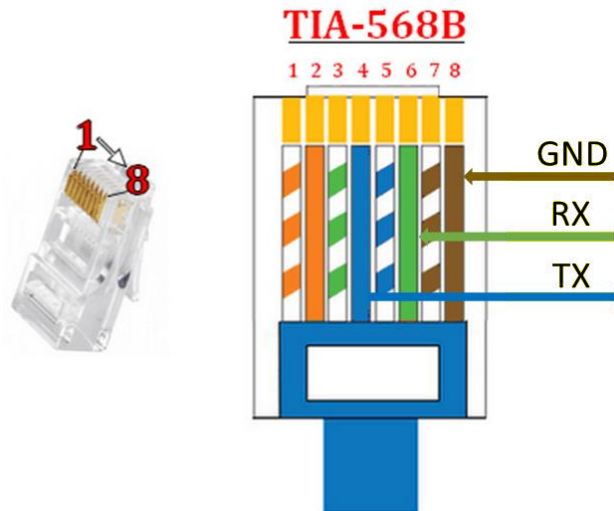
The following exchange table lists the register addresses used:

Paramètres Modbus	
liaison série:	19200 bauds, 8 data bit, parity Even, 1 stop bit
Endianness:	big-endian (octet de poids fort en premier)
Codage:	RTU
Mode:	esclave
L'adresse slave Modbus du device:	10 (en décimal)
Fonctions Modbus supportées:	03 et 06

Définition des registres Modbus de paramètres						

Les registres suivants fonctionnent par pairs car tous les paramètres sont des valeurs sur 32 bits. L'ordre utilisé est big-endian.

Register address	Adr début	Adr fin	Nb reg	Name	R/W	type	LSB value	Comment
40100 à 40101	99	100	2	Consigne courant HT	R/W	unsigned 32 bits	LSB= 10/256	
40102 à 40103	101	102	2	Gestion pression	R/W	unsigned 32 bits		
40104 à 40105	103	104	2	Consigne ventilateur Régime 1	R/W	unsigned 32 bits	LSB= 10/256	
40106 à 40107	105	106	2	Consigne ventilateur Régime 2	R/W	unsigned 32 bits	LSB= 10/256	
40108 à 40109	107	108	2	Consigne ventilateur Régime 3	R/W	unsigned 32 bits	LSB= 10/256	
40110 à 40111	109	110	2	Consigne pression Régime 1	R/W	unsigned 32 bits		
40112 à 40113	111	112	2	Consigne pression Régime 2	R/W	unsigned 32 bits		
40114 à 40115	113	114	2	Consigne pression Régime 3	R/W	unsigned 32 bits		
40116 à 40117	115	116	2	Seuil de warning courant	R/W	unsigned 32 bits	LSB= 660/10	
40118 à 40119	117	118	2	Seuil d'alarme courant	R/W	unsigned 32 bits	LSB= 660/10	
40120 à 40121	119	120	2	Courant maximum	R/W	unsigned 32 bits	LSB= 660/10	
40122 à 40123	121	122	2	Seuil de warning tension	R/W	unsigned 32 bits	LSB= 660/10	
40124 à 40125	123	124	2	Seuil d'alarme tension	R/W	unsigned 32 bits	LSB= 660/10	
40126 à 40127	125	126	2	Valeur de la tempo (s)	R/W	unsigned 32 bits	1 seconde	
40128 à 40129	127	128	2	Compteur étage 1	R/W	unsigned 32 bits	30 minutes	
40130 à 40131	129	130	2	Compteur étage 2	R/W	unsigned 32 bits	30 minutes	
40132 à 40133	131	132	2	Compteur étage 3	R/W	unsigned 32 bits	30 minutes	
40134 à 40135	133	134	2	Compteur étage 4	R/W	unsigned 32 bits	30 minutes	
40136 à 40137	135	136	2	Compteur de fin de vie étage 1	R/W	unsigned 32 bits	30 minutes	
40138 à 40139	137	138	2	Compteur de fin de vie étage 2	R/W	unsigned 32 bits	30 minutes	
40140 à 40141	139	140	2	Compteur de fin de vie étage 3	R/W	unsigned 32 bits	30 minutes	
40142 à 40143	141	142	2	Compteur de fin de vie étage 4	R/W	unsigned 32 bits	30 minutes	
40144 à 40145	143	144	2	Prise en compte manostat (L)	R/W	unsigned 32 bits	N/A	
40146 à 40147	145	146	2	Prise en compte switch porte (P)	R/W	unsigned 32 bits	N/A	
40148 à 40149	147	148	2	Prise en compte microswitch prefiltre (S)	R/W	unsigned 32 bits	N/A	
40150 à 40151	149	150	2	Prise en compte microswitch réacteur (U)	R/W	unsigned 32 bits	N/A	
40152 à 40153	151	152	2	Mémorisation allure	R/W	unsigned 32 bits	N/A	
40154 à 40155	153	154	2	Coefficient pression	R/W	unsigned 32 bits	N/A	
40156 à 40157	155	156	2	Temps total	R/W	unsigned 32 bits	30 minutes	
40158 à 40159	157	158	2	(inutilisé)	R/W	unsigned 32 bits	N/A	
40160 à 40161	159	160	2	Nombre de marche / arrêt	R/W	unsigned 32 bits	1 arrêt / ma	
40162 à 40163	161	162	2	Calibration mesure I	R/W	float 32 bits	N/A	
40164 à 40165	163	164	2	Calibration mesure V	R/W	float 32 bits	N/A	
40166 à 40167	165	166	2	Calibration mesure pression	R/W	float 32 bits	N/A	
40168 à 40169	167	168	2	Coefficient débit	R/W	float 32 bits	N/A	
40170 à 40199	169	198	30	Réservés				

Définition des registres de contrôle et status							
Register address	Adr début	Adr fin	Nb reg	Name	R/W	Usage	Possible	Comment
40001	0	0	1	Arrêt / Marche	R/W	Ecrire 0 pour faire une demande d'arrêt. Ecrire 1 pour faire une mise en marche. La lecture donne l'état actuel.	0|1	
40002	1	1	1	Désactiver Ventilateur	N/A	N/A	N/A	
40003	2	2	1	Régime ventilateur (= mémorisation	R/W	valeur 1 à 7 pour sélectionner le régime voulu	N/A	Le nombre de valeurs possible est fonction de l'unité de traitement d'air connecté
40004	3	3	1	Différentiel de pression	R/-	Valeur en Pascals	N/A	
40005	4	4	1	Consigne	R/-	en V, LSB de 0,01V	0 à 10V	
40006	5	5	1	Utiliser HT	R/W	0: filtrage passif (générateur HT non utilisé) 1: filtrage actif (générateur HT activé sur mise en marche, valeur par défaut)	0|1	Toute valeur non nulle écrite sera considérée comme un '1'. Cette valeur est remise à 1 par défaut au démarrage.
40007	6	6	1	Enable HT	R/-	0: générateur HT désactivé 1: générateur HT activé	0|1	Etat courant du générateur HT.
40008	7	7	1	Consigne HT	R/-	en V, LSB de 0,01V (10V = 2000µA)	0 à 10V	
40009	8	8	1	Recopie courant HT	R/-	en V, LSB de 0,01V (10V = 2000µA)	0 à 10V	
40010	9	9	1	Recopie tension HT	R/-	en V, LSB de 0,01V (1V = 1kV)	0 à 10V	
40011	10	10	1	Avertissement	R/-	0: pas d'avertissement en cours 1: avertissement en cours	0|1	Si un avertissement est présent, consulter le registre 40014 pour connaitre le détail. Les messages court et long (registres 40015 et 40016
40012	11	11	1	Avertissement HT	R/-	0: pas d'avertissement HT en cours 1: avertissement HT en cours	0|1	Si un avertissement est présent, consulter le registre 40014 pour connaitre le détail. Les messages court et long (registres 40015 et 40016 à 40031)
40013	12	12	1	Alerte	R/-	0: pas d'alerte en cours 1: alerte en cours	0|1	Si une alerte est présente, consulter le registre 40014 pour connaitre le détail. Les messages court et long (registres 40015 et 40016 à 40031)
40014	13	13	1	Défauts	R/-	Ce champ de bit signale les défauts d	Spécial	Les correspondances avec chaque bit sont indiquées dans l'onglet "Défaut". Plusieurs bits peuvent être combinés si plusieurs
40015	14	14	1	Message court	R/-	Lettre correspondant au dernier défaut de plus haute priorité	N/A	Le code lettre est décrit dans l'onglet "Défaut", colonne "type / afficheur".
40016 à 40031	15	30	16	Message long	R/-	Message ASCII décrivant le dernier défaut de plus haute priorité	N/A	
40032	31	31	1	Consigne Pression	R/W	Valeur en Pascals	-30 à +30	Valeur de type entier
40034	32	32	1	Pression mesuré	R/-	Valeur en Pascals	-30 à +30	Valeur de type entier
40034	33	33	1	Température	R/-	Valeur en °C	0 à 600	Valeur de type entier
40035	34	34	1	Humidité	R/-	Valeur en %	0 à 100	Valeur de type entier
40036	35	35	1	Débit	R/-	Valeur en m3/h	0 à 9999	Valeur de type entier
40037 à 40047	36	48	13	Réservés	N/A	N/A	N/A	
40048 à 40082	49	98	50	Firmware version	R/-	Chaine ASCII décrivant la version firm	ASCII	

SECTION 4 - **SERVICING- MAINTENANCE**

4.1 MAINTENANCE

MAINTENANCE AND REPAIR OF THE EQUIPMENT DURING ITS LIFETIME IS THE RESPONSIBILITY OF THE MANUFACTURER OR AN AUTHORISED SERVICE CENTRE.

Maintenance and verification operations cover the differential pressure sensor for which an annual calibration inspection is recommended, and the temperature/humidity sensor.

4.2 MODEL IDENTIFICATION

When contacting **airinspace®** or a dealer, please provide the product's serial number and date of purchase. The serial number features on the product label.

4.3 WARRANTY

Contact your local **airinspace®** dealer.

Note: any problems arising from an unauthorised repair attempt, modification, fall, use at incorrect voltage or operations that do not comply with the instructions in the User Manual, are not covered by the warranty.

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