Temperature

Equipment Technical Manual

Pressure

Base station

Flow

Current, volts & true power

4 – 20 mA

Complete Case Kits & Case Kit Contents

airINSITE, Base station & PSU Kit	ZS1088920
ZS1088920 Kit Contains	
airINSITE, Base station	ZS1088932
airINSITE, PSU (100 - 240vAC input / DC output power supply c/w plug assortment)	ZS1088945
Note: No case is supplied with this kit, items are supplied loose.	

airINSITE, Logger, 4 - 20mA - complete case kit	ZS1088921
ZS1088921 Kit Contains	
Logger Case	ZS1088929
airINSITE, Logger, 4 - 20 mA - logger assembly	ZS1088933
airINSITE, Logger, 4 - 20 mA - counter connector	ZS1088934
airINSITE, PSU (100 - 240vAC input / DC output power supply c/w plug assortment)	ZS1088945

airINSITE, Logger, Moisture (dewpoint) - complete case kit	ZS1088922
ZS1088922 Kit Contains	
Logger Case	ZS1088929
airINSITE, Logger, Moisture (dewpoint) - Logger assembly	ZS1088935
airINSITE, Sensor, moisture (dewpoint)	ZS1088936
airINSITE, Sensor, moisture (dewpoint) mounting chamber	ZS1088937
airINSITE, PSU (100 - 240vAC input / DC output power supply c/w plug assortment)	ZS1088945

airINSITE, Logger, Current & Volts - complete case set	ZS1088926
ZS1088926 Kit contains	
Logger Case	ZS1088930
airINSITE, Logger, current & volts - logger & current sensor assembly	ZS1088944
airINSITE, Logger, replacement volt probe set	ZS1088928

Note: All battery powered loggers are supplied with batteries included.

Complete Case Kits & Case Kit Contents

airINSITE, Logger, Flow - complete case kit	ZS1088923
ZS1088923 Kit Contains	
Logger Case	ZS1088927
airINSITE, Logger, flow - logger assembly	ZS1088938
airINSITE, Sensor, flow	ZS1088939
airINSITE, PSU (100 - 240vAC input / DC output power supply c/w plug assortment)	ZS1088945

airINSITE, Logger, Temperature (PT1000) - complete case kit	ZS1088924
ZS1088924 Kit Contains	
Logger Case	ZS1088929
airINSITE, Logger, temperature (PT1000) - logger & sensor assembly	ZS1088940

airINSITE, Logger,Pressure (0 - 16BAR) - complete case kit	ZS1088925
ZS1088925 Kit contains	
Logger Case	ZS1088929
airINSITE, Logger, pressure (0 - 16BAR) - logger & sensor assembly	ZS1088941
airINSITE, Logger, pressure (0 - 16BAR) - NPT adapter	ZS1088943

airINSITE, Logger, current & volts SMALL - complete case set	ZS1160311
ZS1160311 Kit Contains	
airINSITE, Logger, Case - current & volts - case only	ZS1088930
airINSITE, Logger, replacement volt probe set	ZS1088928
airINSITE, Logger, current & volts SMALL	TBA

airINSITE, Logger, 0-60bar-cpl. case kit	ZS1133091
ZS1133091 Kit Contains	
airINSITE, Logger, Case - flow - case only	ZS1088927
Airinsite, Logger, 0-60bar-log.&sen.assy	ZS1133092
airINSITE, PSU (100 - 240vAC input / DC output power supply c/w plug assortment)	ZS1088945

Note: All battery powered loggers are supplied with batteries included.

airINSITE Spare parts

airINSITE, Logger, Case - flow - case only	ZS1088927
airINSITE, Logger, replacement volt probe set	ZS1088928
airINSITE, Logger, Case - press, temp, dewpoint, 4-20mA - case only	ZS1088929
airINSITE, Logger, Case - current & volts - case only	ZS1088930
airINSITE, Logger, replacement battery pack	ZS1088931
airINSITE, Base station	ZS1088932
airINSITE, Logger, 4 - 20 mA - logger assembly	ZS1088933
airINSITE, Logger, 4 - 20 mA - counter connector	ZS1088934
airINSITE, Logger, Moisture (dewpoint) - Logger assembly	ZS1088935
airINSITE, Sensor, moisture (dewpoint)	ZS1088936
airINSITE, Sensor, moisture (dewpoint) mounting chamber	ZS1088937
airINSITE, Logger, flow - logger assembly	ZS1088938
airINSITE, Sensor, flow	ZS1088939
airINSITE, Logger, temperature (PT1000) - logger & sensor assembly only	ZS1088940
airINSITE, Logger, pressure (0 - 16BAR) - logger & sensor assembly only	ZS1088941
airINSITE, Logger, pressure (0 - 16BAR) - NPT adapter	ZS1088943
airINSITE, Logger, current & voltes - logger & current sensor assembly	ZS1088944
airINSITE, PSU (100 - 240vAC input / DC output power supply c/w plug assortment)	ZS1088945
Airinsite, Logger, 0-60bar-log.&sen.assy	ZS1133092

Note: All battery powered loggers are supplied with batteries included.

Contents:

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Section 1: Safety Warning:

Section 1.1: Safety warning

This 'AIRINSITE product wide' safety warning should be read and understood. Additional safety information is contained in this manual. Both the AIRINSITE product wide and additional safety information contained in the manual must be read and understood.

Warning: Risk of danger
Warning: Risk of electric shock
Warning: Risk of high pressure
Warning: Risk of burn
Warning: Risk of fire
Warning: Consult manual

Do not install or operate the AIRINSITE™ product(s) (hereinafter can be referred to as the device) until you and all personnel concerned have read and established a working understanding of the device inclusive of duties to be performed while installing, operating and maintaining the device.

This manual contains IMPORTANT SAFETY DATA and should be printed and kept with the device at all times.

Improper use of the device may compromise the safety and protection of the device and its environment.

Never use the device in explosive environments.

Use only CATIII 600V or better insulated, test leads and voltage probes as supplied with the device.

Before use, verify current clamp, test leads and voltage probes for damage or wear indicators, dispose of and replace when damaged or worn.

No serviceable parts inside, dispose according to local regulations.

Wall adaptor is part of a SELV circuit, use only supplied net adapter.

Don't mix lead and voltage probe colours and disconnect unused leads to prevent short circuits.

Do not expose this device to heat, fire or direct sunlight

When installing, commissioning, operating or carrying out service or maintenance on the device, personnel must use relevant safe working practice and observe all relevant local health and safety requirements and regulations.

Lethal voltages may be present at or around the device. Electricity has the potential to cause severe personal injury or death. Use extreme caution when carrying out checks where lethal voltages may exist.

Never remove or tamper with safety devices, guards or insulation materials fitted to the device or the compressed air installation.

Compressed air has the potential to cause severe personal injury or death. Use extreme caution when carrying out compressed air related checks.

Hot and cold surfaces may be present at or around the device. Use caution as necessary

A requirement of fault-free operation and fulfilment of any right to claim under guarantee is that documentation is observed.

This document is subject to change without notice, if in doubt, do not proceed!

It is not possible to anticipate every circumstance that might represent a potential hazard. If the operator employs an operating procedure, an item of equipment or a method of working which is not specifically recommended the user must ensure the product will not be damaged or made unsafe and that there is no risk to persons or property. Failure to observe safety precautions or implement safe working practices may be considered dangerous practice or misuse of the device.

Section 1.2: Installation

Installation work must only be carried out by a competent person under qualified supervision equipped with the correct tools and appropriate protection against hazards.

When necessary, locate the emergency power off before installing the device; never work alone if potentially hazardous conditions exist.

Disconnect the power before connecting the device, never assume power is off but always

check the circuit. Be aware that other nearby circuits can still be powered.

Do not open access panels or approach electrical components while voltage is applied unless measurements are impossible otherwise. When hazardous live parts are exposed use personal protective equipment to prevent risk of electric shock. Use suitable protective gloves, fire resistant clothes and face protection when working with live conductors. Keep fingers behind protective barriers.

The current and voltage logger is rated CAT III and must always be connected behind the installation's circuit breakers.

Do not use the device in environments where vibration or shocks are likely to disrupt the function or compromise the safety of the device.

Do not wear loose clothes or jewellery like chains or bracelets which could make contact with electrical components.

Allow the installation environment to cool or heat to acceptable temperatures before attempting to install a device sensor.

Always ensure any pressure within a compressed air system is safely vented to atmosphere before attempting to remove or install a device sensor, never assume the compressed air system is vented but always check the air gauge. Be aware that other nearby parts can still be hot, cold or pressurized.

The device should be installed in such a location as to allow operational and maintenance access to the installation without obstruction or hazard and to allow clear visibility of indicators at all times.

Section 1.3: Operation

Correct operation of the device may only be checked by trained personnel according to safe practices equipped with appropriate protection against hazards.

The device must only be operated at the ratings: supply voltage, frequency, pressure, temperature, altitude, humidity and environmental rating for which it is designed.

Do not operate the device without battery door, enclosure open or covers removed.

The device's batteries are monitored, replacing the batteries during operation is not necessary.

Do not operate the device in high humidity environments or with wet hands

Do not open access panels or expose electrical components while device is operating.

Section 1.4: Maintenance

Maintenance must only be carried out by competent personnel under qualified supervision.

If replacement parts are required use only genuine parts from the original equipment manufacturer.

Before competent personnel under qualified supervision remove any access panels or carry out work on the device, isolate from the source of supply power using relevant and local safe isolation procedures.

Ensure that all instructions concerning operation and maintenance are strictly followed and that the complete device, with all accessories and safety devices, is kept in good working order.

The accuracy of sensor devices must be checked on a regular basis. They must be renewed when acceptable tolerances are exceeded. Always ensure any pressure within a compressed air system is safely vented to atmosphere before attempting to remove or install a sensor device.

The device must only be cleaned with a damp cloth, using mild detergents if necessary. Avoid the use of any substances containing corrosive acids or alkalis. Remove all input signals before cleaning the device.

Do not paint the control facia or obscure any indications, controls, instructions or warnings

Section 1.5: Batteries

Do not use other types of batteries than those originally supplied.

Use supplied batteries only in device as intended. Pay attention on the polarity when fitting batteries.

Keep batteries out of reach from children and

animals. Get medical help in case a battery has been swallowed.

Do not remove replacement batteries from their packaging until they are required for use.

When replacement batteries are required, replace all four batteries inside the device battery compartment with suitable new ones.

Do not store batteries in environments with loose metal parts or exposed to moisture, heat, fire or direct sunlight.

Do no expose batteries to vibration, impacts or deformation.

Fire, explosion and sever burn hazard. Do not recharge, crush, disassemble, heat above 100°C, incinerate batteries or expose contents to water.

Consult IATI guidelines describing safe air transport of Li-ion batteries.

Dispose of batteries according to local regulations. A recycle program might be applicable.

Section 2: General description

AIRINSITE™… Compressed air analytics made easy!

Advanced hardware, software and cloud computing solutions that enable compressed air and vacuum systems to be quickly and easily audited.

AIRINSITE™ offers market-leading, innovative and technically advanced solutions that streamline traditional compressed air system audits.

Seamlessly integrating robust hardware and software platforms… The success of AIRINSITE™ has been built upon a unique ability to seamlessly integrate our own robust processor and input/output hardware platforms with a comprehensive software library to provide a bespoke compressed air and vacuum auditing solution.

Streamlining data collection, improving analysis… First, our AIRINSITE™ data loggers incorporate high quality sensors to collect and store information relating to a system's pressure, temperature, moisture dew point and flow rate. In addition, our current and voltage loggers enable true power to be accurately calculated.

The very latest Bluetooth technology then enables this information to be effortlessly transferred from multiple data loggers to a single, intelligent AIRINSITE™ base station. In turn, the base station transfers this data to our Air-insite.com cloud computing platform. Here, it is encrypted and stored so that is can be securely accessed and interrogated by users 24 hours a day.

Combining unique application expertise with proven hardware and software platforms to deliver the complete, value-adding analytics service… AIRINSITE™ provides customers with the reassurance of working with an experienced, market-leading partner positioned at the very forefront of technology.

Evaluating requirements… Whilst developing AIRINSITE™, we took time to carefully evaluate traditional compressed air auditing procedures. Once these were clearly understood, our analytics specialists began to formulate a solution that made things simpler.

PLC hardware engineering… Our partners are vastly experienced in the development of processor and input/output hardware platforms. This expertise has enabled us to manufacture a range of AIRINSITE™ data loggers that feature 16 bit precision sensor inputs with the capacity to store more than 1.4 million data samples.
Powered by 110-240v AC mains or batteries that can offer an incredible working life of two years or more, our data loggers record information on pressures up to 60 bar (870 psi), temperatures from -50°C - +200°C (-58°F - +392°F), moisture dew point from -80°C - +20°C (-112°F to +68°F), flow rates to 185m/sec (607 ft/sec) and current and voltage from 10 – 800Amp and 100 V – 700V respectively. Additionally, there's a 4-20mA data logger that can be used with a variety of sensor types.

AIRINSITE™ base stations are also robustly constructed and incorporate a 3.5" VGA colour display and ergonomically designed keypad.
PLC software development

3.0 Version revisions

Use the base station graphical user interface and AIRINSITE™ base station operating procedures to maintain software in both the AIRINSITE™ base station and AIRINSITE™ data loggers.

Audit configuration and logger data are unaffected by the software update process. As such, a base station software update can be performed at any time.

Updating of loggers **should not** be performed whilst the data logger is in operation (i.e. installed and logging data). Complete any logging activity and transfer any logged data from data loggers to base station and to the cloud computing environment before performing a data logger software update

4.0 AIRINSITE™ equipment

4.1 AIRINSITE™ base station

4.1.1 Physical

Front elevation

Back elevation

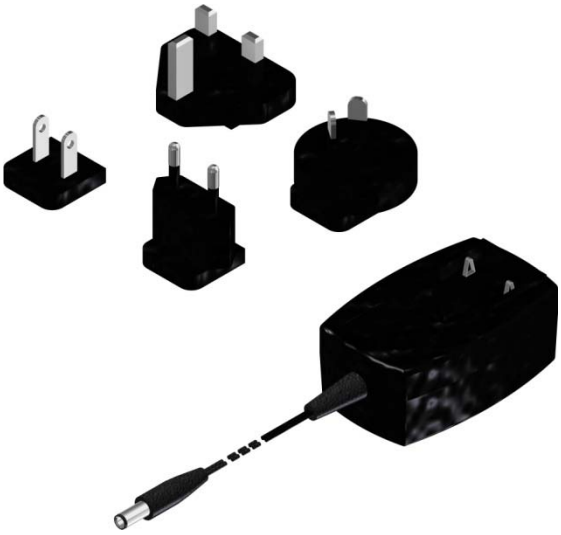
Side elevation

Side elevation

Note: A tamper resistant label providing device ID, serial number and original equipment manufacturer bar code data is located on the back elevation of the base station

4.1.2 Preparing for first use

Each AIRINSITE™ base station is supplied with a power supply and a variety of 'domestic' power supply heads.



You will also require an Ethernet CAT 5e cable (not supplied), an accessible CAT 5e RJ45 socket, and an IP address with access to the World Wide Web and a source of supply power for the AIRINSITE™ base station.

First, select the appropriate 'domestic' power supply head and complete assembly of the power supply. Insert the power supply jack into the socket of the AIRINSITE™ base station and apply supply power. Following a device boot sequence the graphical user interface will display.

Connect an Ethernet CAT 5e cable (not supplied) to the RJ45 socket of the AIRINSITE™ base station and to an accessible RJ45 socket with access to the World Wide Web.

Establish an IP address for the AIRINSITE™ base station using either DHCP or manual input methods (see notes below).

Finally and only after an internet connection

has been established; perform a base station update as described in this manual.

Your AIRINSITE™ base station is ready for use!

Notes: AIRINSITE™ base stations use conventional DHCP or manual IP configuration methods.

The manufacturers do not provide support relating to the use of ancillary products such as WIFI dongles.

Network security restrictions may prevent the AIRINSITE™ base station from accessing the internet

If you experience internet connection difficulties, contact your local IT administrator in the first instance!

4.1.3 General operation

A AIRINSITE™ base station provides users with a 'PC free' solution for the handling of data between the Air-insite.com cloud computing environment and AIRINSITE™ data loggers

The AIRINSITE™ base station allows users to download audit configurations from the Air-insite.com cloud computing environment, wirelessly synchronise audit configurations with up to 20 AIRINSITE™ data loggers, wirelessly retrieve logged data from up to 20 AIRINSITE™ data loggers and return logged data to the Air-insite.com cloud computing environment.

Once audit configurations are synchronized, AIRINSITE™ data loggers can log data without the need for any further connection with the AIRINSITE™ base station.

Although identical in size and rugged in design, the AIRINSITE™ base station is not intended to accompany data loggers to the audit location. More typically, the AIRINSITE™ base station will remain connected to an office local area network with internet access and act as an instantly accessible portal for the transfer of data between the Air-insite.com cloud computing environment and AIRINSITE™ data loggers.

Once AIRINSITE™ data loggers return from the audit location, simply synchronize with the AIRINSITE™ base station once more and transfer your logged data from the AIRINSITE™ base station to the Air-insite.com cloud computing environment.

Only one AIRINSITE™ base station is required to manage data between the Air-insite.com cloud computing environment and an infinite number of AIRINSITE™ data loggers.

4.1.4 Technical data

Function:	Handles data between AIRINSITE™ data loggers and the Air-insite.com cloud computing environment
Part Number	ZS1088920
IP rating:	IP20
Dimensions:	(W x H x D): 98 x 203.2 x 34.8mm (0.32 x 0.66 x 0.11 ft)
Weight:	0.31 kg (11 ounces)
Connection:	Ethernet:CAT5e 10/100Mbps RJ45 LED A: flashes to indicate communications LED B: On when 100Mbps connection is detected Off when 10Mbps is active
USB:	USB type B (not used)
Power:	Input power: 100 – 240V AC 50 – 60Hz 0.6 A Supplied with EU, UK & US AC heads as standard Output power: 24vDC 0.75Amp 1.8M (5 foot) jack lead
Graphic display:	3.5" colour ¼VGA
Keypad:	5 tactile key, membrane switch panel construction
Bluetooth:	V2.1 + EDR (enhanced data rate) master device with capacity to simultaneously communicate with up to 20 slave data loggers
Bluetooth range:	10 metres (33 ft) The effective range varies due to propagation conditions, material coverage, production sample variations, antenna configurations and battery conditions
Software	Pre programmed application software configurable via OUI
Languages:	N/A
Display symbols:	ISO7000 and custom
Approvals:	CE, FCC
Operating temp:	0°C ~ +40°C (+32°F ~ +104°F)
Storage temp:	-25°C ~ +70°C (-13°F ~ +158°F)
Relative humidity:	<95% condensation @ 40°C (104°F) without condensation

4.1.5 Power supply

The AIRINSITE™ Base Station is powered from an external power supply which can be operated from a regular 'domestic' power supply.

Operating voltage:	90 - 264 Vac
Frequency range:	47- 63Hz

4.1.6 Keypad

Use BACK, UP, DOWN, RIGHT and ENTER keys as appropriate

4.1.7 Graphical user interface

The graphical user interface of the AIRINSITE™ base station is designed to complement the Air-insite.com cloud computing environment.

The graphical user interface uses animated images and simple text to articulate device state or condition. Common menus are described in this manual.

4.1.8 Menu navigation

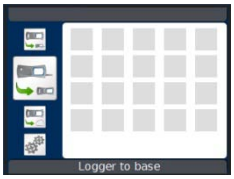
Boot screen

Cloud to base: Used to collect Audit Wizard configuration files from the Air-insite.com cloud computing environment

Cloud to base: Collecting Audit Wizard configuration files from Air-insite.com

Base to logger(s): Used to transfer Audit Wizard configuration files from base station to logger(s) using Bluetooth

Base to logger(s): Distributing logger configuration files to loggers.

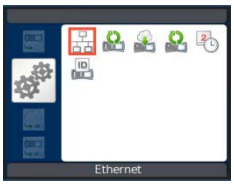


Logger(s) to base: Used to transfer data files from logger(s) to base station using Bluetooth

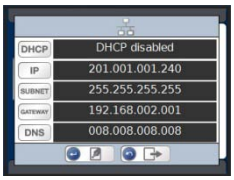
Logger(s) to base: Returning logger data to base station

Base to cloud: Used to transfer data files from base station to the Air-insite.com cloud computing environment

Settings: Used to configure base station IP, set time and date, update base station and / or logger device software

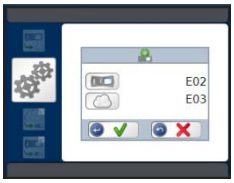


Settings/IP: Used to access base station IP configuration menu

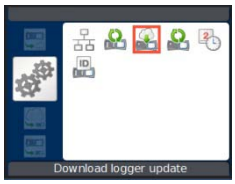


Settings/IP: Used to configure for DHCP or set IP address manually

Settings/Update base station: Used to download base station software updates from Air-insite.com



Settings/Update base station: Existing and cloud software version confirmation with ‘update’ or ‘abort’ keys



Settings/Download logger update: Used to download logger software updates from Air-insite.com. to logger(s) using Bluetooth

Settings/Update loggers: Used to initiate update of logger(s) via Bluetooth

Settings/Update loggers: Screen prompt indicating that operator should press the logger(s) Bluetooth button

Settings/Time and Date: Used to set time, date and date formats

Base station ID: Use to establish the Base station ID number as well as current operating software version

4.1.9 Graphical user interface E learning

This technical manual is not intended to be a source of learning for the AIRINSITE™ base station graphical user interface. Instead, a HTML simulator of the Base station graphical user interface describing its use and operation of its functions can be found at repsnet.compair.com or GDExtranet.com.

4.2 AIRINSITE™ data loggers

4.2.1 AIRINSITE™ assembly case

Each AIRINSITE™ data logger is supplied in a custom manufactured polypropylene case with cushion insert. The case and cushion insert is designed to protect your investment as well as provide for a flexible yet safe storage and transportation system.

Note: Case contents vary.

Each case features:

- Durable polypropylene material
- Raised feet and a straight hinge for stability when upright
- Carry handle
- Two shaped and robust locks either side of carry handle
- Transportation feet for stability when stacked
- Formed cushion insert
- Tamper resistant label providing device ID, serial number and original equipment manufacturer bar code data for easy identification (Do not remove)

4.2.2 Physical

Front elevation

Rear elevation

Side elevation

Side elevation

Note: Do not remove the tamper resistant label providing device ID, serial number and original equipment manufacturer bar code data is located on the rear elevation of the data logger

4.2.3 Preparing for first use

Using a AIRINSITE™ base station; check the installed data logger software version with the software version available online and perform a data logger update as necessary.

Your AIRINSITE™ data logger is ready for first use!

4.2.4 General operation:

Each AIRINSITE™ data logger is equipped with a sensor which is permanently connected to the data logger, except the current and volt

Operating voltage: 90 - 264 Vac
Frequency range: 47- 63 Hz

logger which features detachable voltage alligator clips and test leads and the 4-20mA data logger which is intended for use with any sensor (not supplied) that features a suitable 4-20mA output signal.

All data loggers provide sufficient memory to store audit data for a minimum of 14 days and at a fixed resolution of 1 sample per second.

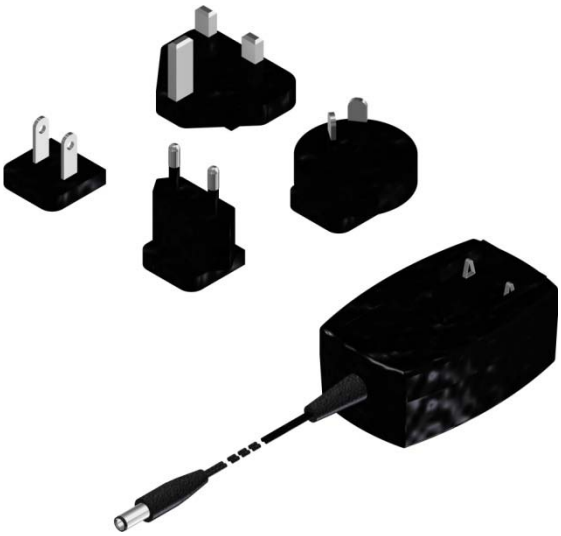
To protect audit data, data loggers feature batteries with lifetime estimated at two calendar years or more. To further improve ease of use, the AIRINSITE™ base station will alert the operator and prevent a logger configuration from taking place if battery condition would prevent the data log from completion.

4.2.5 Power supply

All AIRINSITE™ data Loggers are powered using internal lithium batteries.

Some AIRINSITE™ data loggers <u>also</u> feature an external power supply input. This is used to power the data logger sensor.

Note: The use of an external power supply unit does not eliminate the use of or need for the data loggers internal lithium batteries!



When featured, the AIRINSITE™ data logger sensor is powered via the AIRINSITE™ data logger power supply jack. This can be operated from a 'regular' domestic power supply. Select the appropriate 'domestic' power supply head and complete assembly of the power supply. Insert the power supply jack into the socket of the AIRINSITE™ data logger and apply supply power.

Notes: It is not necessary to externally power the AIRINSITE™ data logger whilst transferring data to and from the data logger and a AIRINSITE™ base station

When in use, verify that power supplies are plugged in and working as intended using the data logger LED diagnostic feature

Ensure that the wall socket power connection will not be disturbed, knocked or otherwise disrupted whilst data is being logged

4.2.6 Logger battery compartment

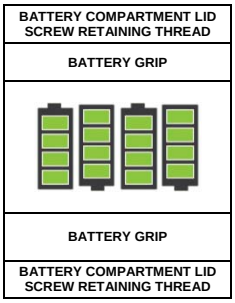
The data logger battery compartment can be found on the rear elevation of the data logger. Use an appropriately sized crosshead screwdriver to unscrew and access the battery compartment by removing the battery compartment door.

When required to do so, change all batteries!

Take care to observe battery polarity when inserting new batteries into the battery

compartment.

With the data loggers back elevation facing you and the logger orientated upright (when the tamper resistant data logger serial number and bar code are above the battery compartment door) batteries are inserted as follows…



ONLY USE BATTERIES RECOMMENDED IN THIS MANUAL

4.2.7 Keypad

AIRINSITE™ data loggers feature two keys on the device front elevation identified by a key symbol. Each key feature an associated LED located directly above the key / symbol.

4.2.7.1 Bluetooth key & LED

When prompted by a base station to do so, press the Bluetooth key…

Key location: Front elevation, bottom left
Key symbol:

FLASHING **SOLID ON**

Key function: Bluetooth operation
LED colour: Blue
LED diagnostics:

OFF	Not paired
 Slow flash	Searching for base station
 Fast flash (50ms on / 50ms off)	Pairing or Transferring data
ON	Paired

Time out: 1 minute

If a data logger has not found a discoverable base station within one minute, the search will end.

Try again

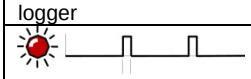
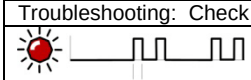
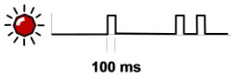
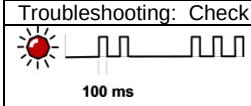
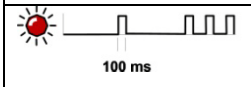
4.2.7.2 Diagnostic key & LED

Press the diagnostic key as necessary…

Key location: Front elevation, bottom right
Key symbol:

FLASHING **SOLID ON**

Key function: Logger diagnostics
LED colour: Red
LED diagnostics:

OFF	Low batteries
Troubleshooting: Check battery condition and replace batteries as necessary	
 Slow flash	Not configured
Troubleshooting: Create audit configuration, transfer from cloud to base station and then from base station to logger	
 Fast flash	Configured, not sensing data
Troubleshooting: Check installation	
 Fast flash	**All data loggers except current and volt logger…** Configured, sensing valid data
 Fast flash	**Current and volt logger only…** Configured, sensing current data, not sensing valid voltage data
Troubleshooting: Check installation	
 Fast flash	**Current and volt logger only…** Configured, sensing current data, sensing voltage data
 Fast flash	**Current and volt logger only…**

	Configured, not sensing valid data
Troubleshooting: Check installation	

Time out: 5 minutes

LED diagnostics will remain ON for 5 minutes after the key is pressed

4.2.8 Data logger installation

Prior to installation make sure that data loggers are configured using the Audit Wizard feature at Air-insite.com.

Print and retain the audit configuration check list before attending the audit location!

Download the audit configuration from air-insite.com to your AIRINSITE™ base station

Transfer the audit configuration from your AIRINSITE™ base station to each AIRINSITE™ data logger

Ensure that each data logger is installed to the assigned audit location (e.g. air compressor brand, model and or serial number or pressure point)

4.2.9 AIRINSITE™ current & volt data logger

4.2.9.1 Technical data:

Identification:	AIRINSITE™ Logger, current & volts
Part number:	ZS1088926
Product family:	AIRINSITE™
Definition:	AIRINSITE™ current & volts data logger
Function:	Precision data logging

Data logger:

A / D resolution:	16 bit
Battery life:	2 calendar years or more (est.)
Bluetooth (slave):	2.1 + EDR (enhanced data rate)
Bluetooth range:	10 metres (33 feet) The effective range varies due to propagation conditions, material coverage, production sample variations, antenna configurations and battery conditions
Operating temp:	0°C ~ +55°C (+32°F ~ +131°F)
Power / batteries:	Four AA lithium primary cells, Li/SOCI2, 3.6V, 2700mAh
Real time clock:	Precision real time clock (temp compensated crystal)
Maximum deviation:	0.4s / day
Sample capacity:	More than 1.4 million samples (16 days continuous logging)
Sample frequency:	1 second (fixed resolution)
Software:	Pre-programmed application software

Current sensor:

AC voltage:	Range: 100 V to 700 V Accuracy: 1%
AC current:	Range: 10 Amp ~ 800Amp
Accuracy:	1%
Max non destructive current:	2000 A
Ambient temperature influence on accuracy:	<0.1% per 1°C for temperatures from -10°C to +18°C and from 28°C to 50°C
Rise / fall time:	< 400ms
Burden resistance:	≤1 ohm
Operating temp:	-10°C ~ +50°C (+14°F ~ +122°F)
Storage temp:	-40°C to +70°C (-40°F to +160°F)
Safety rating:	CAT III 600V
Useable frequency:	10Hz – 100 kHz
Dimensions:	216mm (8.5") x 111mm (4.4") x 45mm (1.8")
Jaw capacity:	52mm (2.05 inch)
Weight	0.65kg (1.4lb)
Conformity:	IEC61010-031: 2008 IEC61010-1: 2010
Drop test:	IEC 68-2-32 @ 1 metre
Mech and shock test:	IEC 68-2-27 @ 100G
Regulatory mark:	CE, UL

Volt measurement and test lead set:

Measuring device:	Alligator clip set (2)
	Red & black pair of small, insulated, nickel plate jaws
	Blunt tip grabs round screw heads up to 9.5mm
	CAT IV 600V, CAT III 1000 V, 10A rating
Test lead set:	Red & black with safety shrouded, standard diameter banana plugs
	Right angle connector on one end and straight connector on the other
	Reinforced strain relief
	1.5metre silicone-insulated wire resists heat & cold
	CAT IV 600V, CAT III 1000 V, 10A rating
Conformity:	EN 61010-1-032 73/23/EEC, Low voltage (amended 93/68/EEC)
Regulatory mark	CE, UL

Note:

The use of alternative volt measuring devices to the alligator clip set provided with each AIRINSITE™ current and volt data logger is permissible.

Proceed with caution; check compatibility of any alternative

volt measuring devices before proceeding and observe safe working practises!

Assembly:

External protection:	Polypropylene case, moulded cushion insert
Size:	Logger (W x H x D) 98 x 203.2 x 34.8mm 3.8 x 8.0 x 1.3 inch
	Sensor (W x H x D) 111 x 216 x 45mm 4.4 x 8.5 x 1.7 inch
	Case (W x H x D) 437 x 379 x 100mm 17.2 x 14.9 x 3.9 inch
Weight:	2.67kg (5.8lbs)

4.2.9.2 Sensor installation

Warning risk of electrical shock, high pressure and moving parts. Read and understand all safety instructions for both AIRINSITE™ data logger and the compressed air installation and their risks where the data logger will be used before proceeding.

If in doubt stop immediately!

Use the sensor (current clamp) only as specified in this manual and on 50 or 60Hz AC power supply cables only or the protection provided by the device can be compromised.

Do not connect the sensor (current clamp) to DC power supply cables

Examine the case of the device sensor and sensor accessories regularly. Look for cracks or missing plastic. Carefully look at the insulation around the connectors.

Make sure the battery door is closed and secure before operating the device.

Remove the test leads from the device before the battery door is opened.

When variable speed drives are a feature of the air compressor being logged, place the sensor (current clamp) on the input power side of the variable speed drive.

Do not attempt to close the jaws of the sensor (current clamp) around a conductor carrying more than 1000 Vac

Do not attempt to close the jaws of the sensor (current clamp) around more than one of the three phase power supply cables

Do not mount the sensor (current clamp) to a compressor main motor cable, this will not record the total compressor input current flow and will give inaccurate results.

Do not use the device around explosive gas, vapour or in wet environments.

Do not use the device if it operates incorrectly. Protection can be compromised.

Examine the test leads for damaged insulation or exposed metal. Check test lead continuity. Replace damaged test leads before using the device

Locate test leads appropriately. Safeguard against test lead damage during installation and throughout the audit duration.

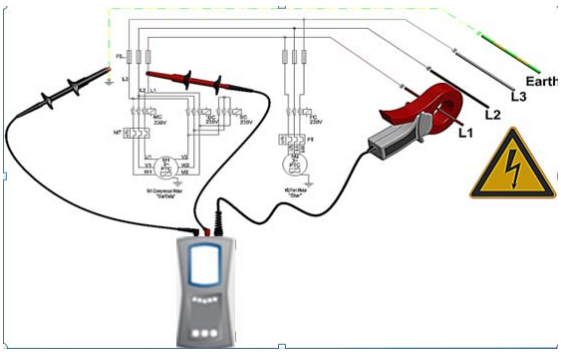
Safeguard against test lead damage when securing electrical cabinet doors.

The AIRINSITE™ current and volt logger utilises a split ferrite core type sensor current clamp. De-energize the installation and place the current clamp over a single conductor supplying current to the entire air compressor package as illustrated below.

Ensure the jaws of the current sensor are securely closed around the cable to enable data acquisition with accuracy.

Connect the RED alligator clip voltage measurement device to the same phase that the current sensor as illustrated below. Connect the BLACK alligator clip voltage measurement device to Earth as illustrated below.

To protect the device, locate the alligator clips after the electrical system fuses as illustrated below..



4.2.10 AIRINSITE™ pressure data logger

4.2.10.1 Technical data

Identification:	AIRINSITE™ Logger, pressure, 0 – 16 Bar Or AIRINSITE™ Logger, pressure, 0 – 60 Bar
Part number:	0 – 16 BAR (0 – 232 psi) ZS1088925
Product family:	AIRINSITE™
Definition:	AIRINSITE™ pressure data logger
Function:	Precision data logging

Logger:

A / D resolution:	16 bit
Battery life:	2 calendar years or more
Bluetooth slave:	2.1 + EDR (enhanced data rate)
Bluetooth range:	10 metres (33 feet) The effective range varies due to propagation conditions, material coverage, production sample variations, antenna configurations and battery conditions
Operating temp:	0°C ~ +55°C (+32°F ~ +131°F)
Power:	Four AA lithium primary cells, Li/SOCI2, 3.6V, 2700mAh batteries
Real time clock:	Precision real time clock (temperature compensated crystal)
Maximum deviation:	0.4s / day
Sample capacity:	More than 1.4 million samples (16 days continuous logging)
Sample frequency:	1 second (fixed resolution)
Software:	Pre-programmed application software

Sensor:

Type:	Ceramic Al_2O_3 (96%)
Output:	10 ~ 90% ratio metric, 5VDC +/-5%
Pressure Conn:	G¼ sealed at back, DIN 3852 form E
Conn material:	Stainless steel 1.4305 / AISI 303
Seal material:	Fluoro elastomer
Pressure mode:	Relative
Pressure range:	0 ~ 16 BAR (0 ~ 232 psi) Or 0 ~ 60 BAR (0 ~ 870 psi)
Sensor response:	< 5ms
Temp range:	-15° ~ +80°C (+5°F ~ + 176°F)
Storage temp:	-40°C to +80°C (-40°F to +176°F)
Conformity:	CE conformity acc. EN61326-2-3

Gas adapter:	G¼ parallel ~ ¼" NPT taper thread adapter

Combined:

External protection:	Polypropylene case, moulded cushion insert
Dimensions:	Logger (W x H x D) 98 x 203.2 x 34.8mm 3.8 x 8.0 x 1.3 inch Sensor (Diameter x H) 36 x 82.5mm 1.4 x 3.2 inch Polypropylene case (W x H x D) 437 x 379 x 100mm 17.2 x 14.9 x 3.9 inch
Weight:	2.12kg (4.67lbs)

4.2.10.2 Sensor installation

Warning risk high pressure. Isolate gas connection from the compressed air system (e.g. gate or ball valve) before attempting to locate the pressure sensor. Read and understand all safety instructions for both AIRINSITE™ data logger and the compressed air installation and their risks where the data logger will be used before proceeding.

If in doubt stop immediately!

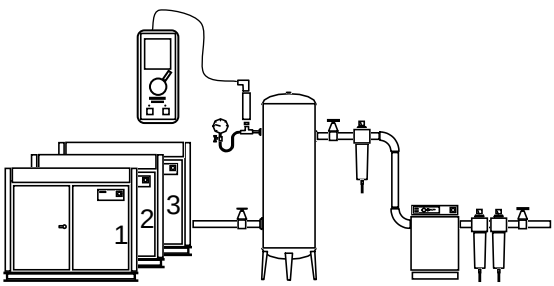
Locate the pressure sensor in such a way as to avoid moisture or other forms of debris forming on the sensor element.

Ideally, mount the pressure sensor upright!

Caution: Ensure there is no compressed air leakage around the pressure sensors gas connection. Any leakage can affect detected pressure and give inaccurate results.

Once the pressure sensor is located and pipe work integrity has been checked, remove the gas isolation from the pressure sensor.

For common system pressure, mount the pressure sensor at a location where the sensor is exposed to the 'common' system pressure of all compressors in the system at all times. For example a common pipe work header or compressed air storage vessel…



Note: The physical location of the pressure sensor can vary and should be chosen according to practical constraints.

Observe and maintain safe working practises at all times

4.2.11 AIRINSITE™ temperature data logger

Sensor probe:

4.2.11.1 Technical data

Identification:	AIRINSITE™ Logger, temperature
Part number:	ZS1088924
Product family:	AIRINSITE™
Definition:	AIRINSITE™ Temperature data logger
Function:	Precision data logging
Logger:	
A / D resolution:	16 bit
Battery life:	2 calendar years or more
Bluetooth slave:	2.1 + EDR (enhanced data rate)
Bluetooth range:	10 metres (33 feet) The effective range varies due to propagation conditions, material coverage, production sample variations, antenna configurations and battery conditions
Operating temp:	0°C ~ +55°C (+32°F ~ +131°F)
Power:	Four AA lithium primary cells, Li/SOCI2, 3.6V, 2700mAh batteries
Real time clock:	Precision real time clock (temperature compensated crystal)
Maximum deviation:	0.4s / day
Sample capacity:	More than 1.4 million samples (16 days continuous logging or more)
Sample frequency:	1 second (fixed resolution)
Software:	Pre-programmed application software
Sensor:	
Working pressure:	16bar, depending on medium & temperature
Measuring range:	-50° ~ +200°C
Sensor material:	Steel, corrosion protected
Sensor length:	40mm (inch)
Sensor width;	5.8mm (outer diameter)
Combined:	
External protection:	Polypropylene case, moulded cushion insert
Dimensions:	Logger (W x H x D): 98 x 203.2 x 34.8mm (3.8 x 8.0 x 1.3 inch) Sensor (Diameter x H): 6mm x 40mm (0.2 x 1.6 inch) Polypropylene case (W x H x D): 437 x 379 x 100mm (17.2 x 14.9 x 3.9 inch)
Weight:	1.95kg (4.29lbs)

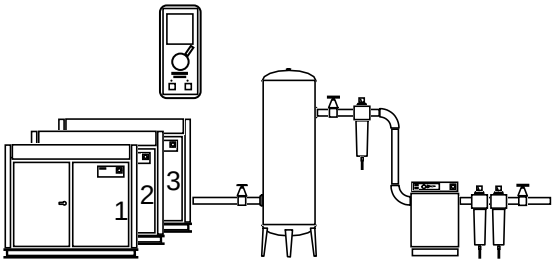
4.2.11.2 Sensor installation

⚠ Warning risk of high pressure, moving parts and burn risk. Read and understand all safety instructions for both AIRINSITE™ data logger and the compressed air installation and consider any risks where the data logger will be located before proceeding.

If in doubt stop immediately!

The temperature sensor may be located in different locations depending on the process parameter being monitored.

Common uses include ambient temperature, room temperature, compressor outlet temperature, compressor cabinet temperature, compressor package outlet temperature etc.



The position of the temperature sensor has to be chosen according to common and safe engineering practices and take into account all practical constraints.

4.2.12 AIRINSITE™ moisture data logger

4.2.12.1 Technical data

Identification:	AIRINSITE™ Logger, moisture (dew point)
Part number:	ZS1088923
Product family:	AIRINSITE™
Definition:	AIRINSITE™ Moisture (dew point) data logger
Function:	Precision data logging
Logger:	
A / D resolution:	16 bit
Bluetooth slave:	2.1 + EDR (enhanced data rate)
Bluetooth range:	10 metres (33 feet) The effective range varies due to propagation conditions, material coverage, production sample variations, antenna configurations and battery conditions
Operating temp:	0°C ~ +55°C (+32°F ~ +131°F)
Power supply:	110 – 240v AC
Real time clock:	Precision real time clock (temperature compensated crystal)
Maximum deviation:	0.4s / day
Sample frequency:	1 second (fixed resolution)

Sample capacity:	More than 1.4 million samples (16 days continuous logging or more)
Software:	Pre-programmed application software

Sensor & measuring chamber:

Ambient conditions:	0°C ~ +50°C (+32°F ~ +122°F)
Accuracy:	2°C dew point
Sensor conn:	G½
Material:	Stainless steel
Chamber conn:	Quick release coupling Prevost ERP07.6153
Mating conn:	Prevost ESG07.1153 or compatible alternative
Measure range:	-80°C ~ +20°C dew point (-112°F ~ +68°F) 0 ~ 100% relative humidity -30°C ~ +70°C (-24°F ~ +158°F)
Pressure range:	-1 ~ +16 bar (-14.35 ~ +232 psi)
Response time:	> 30 sec (descending), >10 sec (ascending)
Sensor casing:	Zinc, alloy, PC & ABS
Conformity	DIN EN 61326

Combined:

External protection:	Polypropylene case, moulded cushion insert
Dimensions:	Logger (W x H x D) 98 x 203.2 x 34.8mm 3.8 x 8.0 x 1.3 inch
	Sensor (Diameter x H) 30mm x 109mm 1.1 x 4.3 inch
	Polypropylene case (W x H x D) 437 x 379 x 100mm 17.2 x 14.9 x 3.9 inch
Weight:	2.57kg (5.66lbs)

4.2.12.2 Sensor installation

Warning risk high pressure. Isolate gas connection from the compressed air system (e.g. gate or ball valve) before attempting to locate the moisture sensor. Read and understand all safety instructions for both AIRINSITE™ data logger and the compressed air installation and consider any risks where the data logger will be located before proceeding.

If in doubt stop immediately!

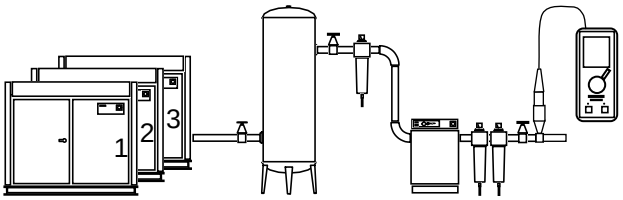
The sensor is supplied complete with measuring chamber. The measuring chamber features a quick release coupling.

Connect sensor and measuring chamber assembly to the compressed using the quick release coupling.

In case of compressed air containing oil and dirt particles a pre-filter should be installed in front of the measuring chamber.

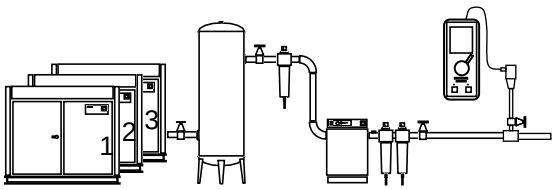
Compressed air flows continuously in the capillary pipe of the measuring chamber.

Note: The location of the moisture sensor may vary according to the parameter monitored. Placing a moisture sensor in front and behind a dryer allows evaluating a dryer's performance level.



4.2.13 AIRINSITE™ flow logger

Note: The location of the air flow sensor may vary according to the compressor, compressor array or the process parameter being monitored

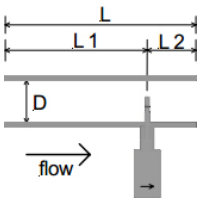


Safety:

The flow sensor measures the flow velocity using the calorimetric principle in the middle of the pipe. Please observe mounting instruction:

- L: Length of pipe section
- At inlet (L1): 15 x inner pipe diameter
- At outlet (L2): 5 x inner pipe diameter

- D: Inner diameter of pipe wall



Warning:

Do not exceed the pressure range of 50bar!

Pressure is a hazard! When installing and removing the sensor and where the operating pressures in and around the position of the sensor are greater than 10 bar g, we recommend the use of elevated protection measures prescribed by local, regional, national or internationally reputable organisations. If in doubt, do not proceed!

Overheating destroys the sensor.

Observe the permissible storage and transportation temperature as well as the permissible operating temperature.

Always observe the direction of flow when positioning the sensor!

The safety ring at the sensor head must always remain undamaged and rest correctly in its installed position.

The screwed fixture must be pressure tight.

The adapter sleeve must be tightened with a torque of 20 to 30 Nm.

Avoid condensation or water droplets at the sensor element. Condensation or water on the sensor element may cause a fault and may corrupt sensor data.

The size of the inlet and outlet pipe diameter sections must not be less than the specified minimum values. Failure to observe may increase deviations in the measured data.

The manufacturer cannot be held liable for any damage which occurs as a result of non observance or non-compliance with these instructions.

Should the device be tampered with in any matter other than a procedure which is described and specified in the manual, the warranty is cancelled and the manufacturer is exempt from liability.

The device is supplied exclusively for the described application

Observe the measuring ranges of the sensor

4.2.13.1 Technical data

Identification:	AIRINSITE™ Logger, flow
Part number:	ZS1088922
Product family:	AIRINSITE™
Definition:	AIRINSITE™ Flow data logger
Function:	Precision data logging

Logger:

A / D resolution:	16 bit
Bluetooth slave:	2.1 + EDR (enhanced data rate)
Bluetooth range:	10 metres (33 feet) The effective range varies due to propagation conditions, material coverage, production sample variations, antenna configurations and battery conditions
Operating temp:	0°C ~ +55°C (+32°F ~ +131°F)
Power supply:	110 – 240v AC
RTC:	Precision real time clock (temperature compensated crystal)
Maximum deviation:	0.4s / day
Sample frequency:	1 second (fixed resolution)
Sample capacity:	More than 1.4 million samples (16 days continuous logging or more)
Software:	Pre-programmed application software

Sensor:

Accuracy:	±3% of measured value
Fitting:	G½”
Max Flow:	185 m/sec (607 ft/sec)
Max working press:	50 bar g (750 psi g)
Measurement:	DIN 1945, ISO 1217 at 20°C and 1000mbar a
Measurement range:	See air flow measuring range table
Probe:	Stainless Steel 1, 4301
Sensor type:	Calorimetric; Pt45, Pt1000
Sensor medium:	Air, Gas
Sensor calibration:	Di=53.1; 0-10m3/min
Temperature range:	-30ºC to +80ºC (-22°F ~ +176°F)

Combined:

External protection:	Polypropylene case, moulded cushion insert
Dimensions:	Logger (W x H x D) 98 x 203.2 x 34.8mm 3.8 x 8.0 x 1.3 inch Polypropylene case (W x H x D) 437 x 379 x 100mm 17.2 x 14.9 x 3.9 inch
Weight:	2.88kg (6.34lbs)

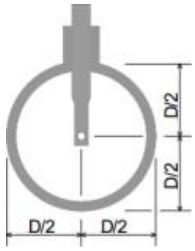
4.2.13.2 Sensor installation

Warning: risk of high pressure, vent the

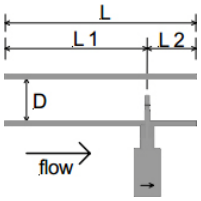
compressed air system to atmosphere before attempting to install or de-install the air flow sensor.

To measure the air flow of the entire compressed air system, mount the air flow sensor at a location where the sensor is exposed to 'common' air flow of all compressors in the system at all times. A straight pipe of sufficient length after the common 'wet' air receiver or dryer (when used) is necessary.

To maintain acceptable accuracy the sensor must be inserted in the centre of a straight pipe with undisturbed flow progression.



Undisturbed flow is assumed when no obstacles, seams, edges, curves are present in area L of the diagram below. Be aware that the air flow sensor is directional.



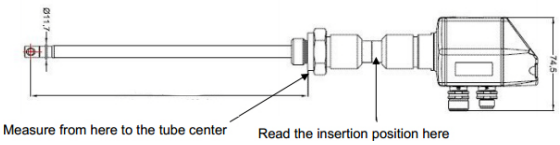
- L: Length of pipe section
- At inlet (L1): 15 x inner pipe diameter
- At outlet (L2): 5 x inner pipe diameter
- D: Inner diameter of pipe wall

Where flow obstructions exist before the measuring section L1 should be adjusted as follows…

Flow obstruction	**L1 (Min)** [1]
Slight curve (bend <90°)	12 x D
Reduction in D	15 x D
Expansion in D	15 x D
90° bend	15 x D
2 x 90° bends on one level	20 x D
2 x 90° bends with a three dimensional change in direction	35 x D
Shut off valve	45 x D

Observe the flow direction which should match with the arrows at the sensor connector head!

The sensor head must be placed in the centre of the pipe. Therefore the probe shaft has a scale. To determine the correct position, measure the length from the marked position to the centre of the pipe. The probe can then be inserted up to this measure and then secured.



Assembly is carried out by inserting the connection thread (1/2" thread, SW 27) into the connection piece. The sensor is then inserted to the required depth and aligned according to the direction of air flow. A depth scale engraved on the probe tube, a flow alignment arrow and an aligning device will be of help to you. Once the sensor has been aligned, the adapter sleeve must be tightened with the stipulated torque (SW 17).

Attention: Alignment of the sensor must not be modified when tightening the connection thread and adapter sleeve. Check the depth and alignment again and correct if necessary!

The angular deviation should not be greater than ± 2° in relation to the ideal position otherwise the measuring accuracy will decrease.

Air flow measuring range data:

Measuring range will vary relative to inner pipe diameter (D).

Maximum velocity of 185 metres per second (607 cubic feet per second)

D (mm)	D (inch)	Flow (m³/min)	Flow (cfm)
65	2½	30.35	1071
70.3		35.63	
71.1		36.45	
76.1		41.85	
80	3	46.31	1635
82.5		49.31	
84.9		52.22	
90		58.75	
100	4	72.62	2564
107.1		83.4	
110		87.98	
125	5	113.74	4016
133.7		130.13	

150	6	163.98	5790
159.3		184.95	
182.5		243.03	
190		263.42	
200	8	292.22	10319
206.5		311.53	
250	10	457.15	16144
260.4		496.56	
300	12	659.07	23274
309.7		702.38	
339.6		844.55	
400		1171.69	
500		1830.76	
600		2636.3	
700		3588.3	
800		4686.75	
900		5931.67	
1000		7323.05	

DIN 1945/ISO 1217: 20°C, 1000mbar

Gas flow max velocity adjustment table

Gas		Max velocity (m/s)	Max velocity (ft/s)
Air		170.1	558.07
Argon	Ar	289.2	948.81
Carbon dioxide	CO^2	183.1	600.72
Nitrogen	N_2	164.5	539.69
Oxygen	O_2	176.4	578.74
Nitrous oxide	N_2O	181.4	595.14
Natural gas	NG	109.4	358.92

DIN 1343: 0°C, 1013.25mbar

Maintenance

The sensor head should be checked regularly for dirt and cleaned if necessary. Should dirt, dust or oil accumulate on the sensor element, a deviation will occur in the measuring value.

An annual check is recommended. Should the compressed air be heavily soiled this interval must be shortened.

Cleaning of the sensor head

The sensor head can be cleaned by carefully agitating it in warm water with a small amount of domestic wash liquid. Avoid physical intervention on the sensor (e. g. using a sponge or brush).

If soiling cannot be removed, service and maintenance must be carried out by the manufacturer.

Calibration certificates

Calibration certificates are issued by the manufacturer on request. A service fee is payable! Calibration is carried out using DKD (German calibration authority) certificated volume flow meters.

Note: The location of the air flow sensor may vary according to the compressor, compressor array or the process parameter monitored

4.2.14 AIRINSITE™ 4 – 20mA logger

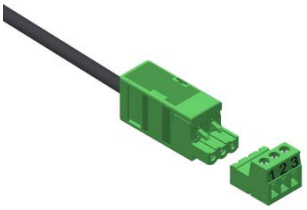
4.2.14.1 Technical data

Identification:	AIRINSITE™ Logger, 4 – 20mA
Part number:	ZS1088921
Product family:	AIRINSITE™
Definition:	AIRINSITE™ 4-20mA data logger for use with self or loop powered 4-20mA signal types
Function:	Precision data logging

Logger:

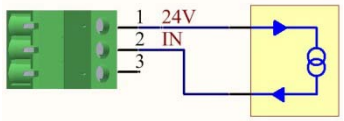
A / D resolution:	16 bit
Analogue input:	4 – 20mA (1)
Bluetooth slave:	2.1 + EDR (enhanced data rate)
Bluetooth range:	10 metres (33 feet) The effective range varies due to propagation conditions, material coverage, production sample variations, antenna configurations and battery conditions
External protection:	Polypropylene case, moulded cushion insert
Power supply:	110 – 240v AC
Real time clock:	Precision real time clock (temperature compensated crystal)
Maximum deviation:	0.4s / day
Sample frequency:	1 second (fixed resolution)
Sample capacity:	More than 1.4 million samples (16 days continuous logging or more)
Software:	Pre-programmed application software
Size:	Logger (W x H x D): 98 x 203.2 x

	34.8mm (3.8 x 8.0 x 1.3 inch)
	Polypropylene case (W x H x D): 437 x 379 x 100mm (17.2 x 14.9 x 3.9 inch)
Weight:	2.13kg (4.69lbs)
Connectors:	phoenix male connector with compatible female connector supplied loose

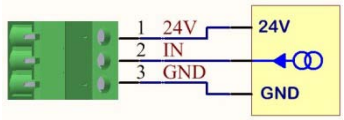


Counter connector pin ID & wiring diagram:	PIN1: Ground PIN2: Signal PIN3: Ground

Loop powered sensor:



Self powered sensor:



Note: When using self powered sensors observe the maximum power rating for the circuit:

24V, 600mA max or 14.4W

Self powered sensor with alternative source of supply power: