



The next generation sprinkler system.



Industry leaders in domestic and residential fire suppression systems

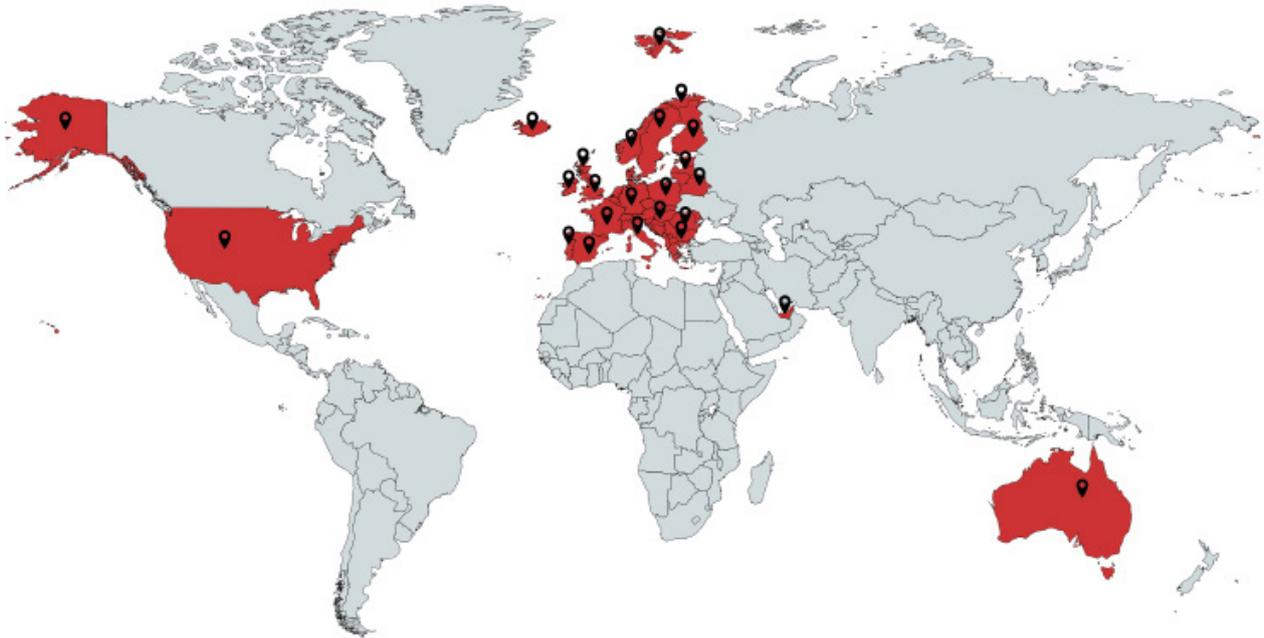
# Manufactured in Britain, installed worldwide.

The iCO® water mist system offers a smarter and safer means to protecting your property from fire damage.

Our discreet and easy to install solution is designed specifically for the residential and domestic markets, offering design flexibility whilst providing faster and more reliable protection.

Operating independently and using 80% less water than traditional sprinkler systems, our discreet nozzles cause less water damage whilst providing real time alerts to notify the owner in the event of a fire.

As a leading manufacturer of fire suppression systems, we sell through a network of accredited distributors in the UK and overseas.



United Kingdom • Europe • Australia • USA • United Arab Emirates

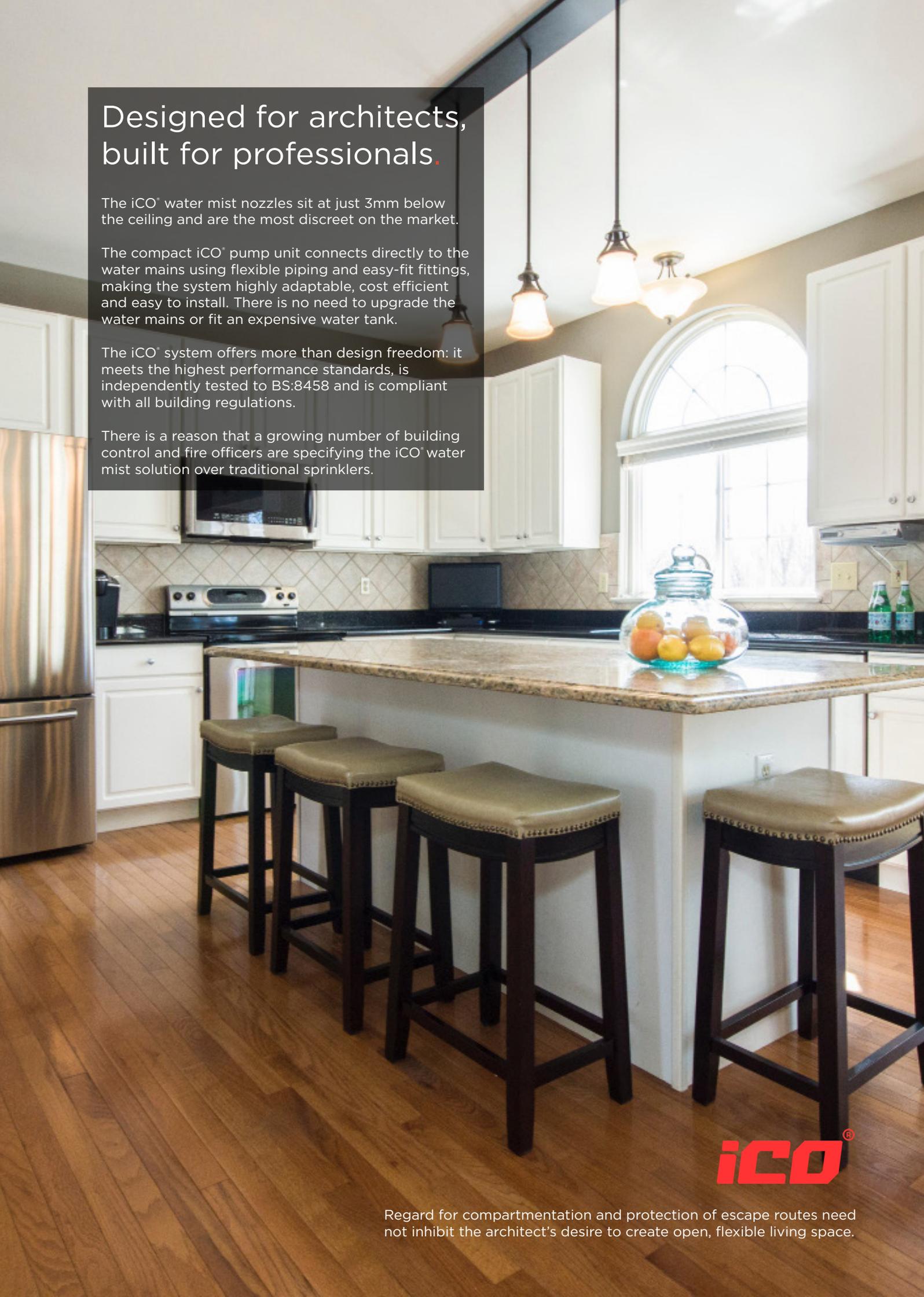
## Designed for architects, built for professionals.

The iCO® water mist nozzles sit at just 3mm below the ceiling and are the most discreet on the market.

The compact iCO® pump unit connects directly to the water mains using flexible piping and easy-fit fittings, making the system highly adaptable, cost efficient and easy to install. There is no need to upgrade the water mains or fit an expensive water tank.

The iCO® system offers more than design freedom: it meets the highest performance standards, is independently tested to BS:8458 and is compliant with all building regulations.

There is a reason that a growing number of building control and fire officers are specifying the iCO® water mist solution over traditional sprinklers.



**iCO**®

Regard for compartmentation and protection of escape routes need not inhibit the architect's desire to create open, flexible living space.

## Features and specifications

iCO® specialise in high quality, industry leading fire suppression systems. Our products are manufactured in-house and rigorously tested to ensure they meet the highest performance and safety standards.

The iCO® system has undertaken an independent third-party assessment by Warrington Fire, a UKAS accredited laboratory and achieved all testing criteria. Tests reports are available upon request.

### iCO MISTING NOZZLE

The iCO® easy fit nozzles are extremely low profile, sitting just 3mm below the ceiling and can be colour matched to any colour using the RAL colour code system.

Patents granted: United Kingdom, USA, Australia, Europe  
Patents pending: UAE



**72<sub>mm</sub> x 19<sub>mm</sub>**

Dimensions

**200<sub>g</sub>**

Weight

**57 °C**

Bulb Specification

**16<sub>m</sub><sup>2</sup>**

Fire Suppression

**White**

Standard Colour

**Stainless 316**

Material

**Torsion Springs**

Fixing method

### iCO PUMP UNIT

The sleek, compact iCO® pump unit connects directly to the existing mains water supply: using an impressive 12 litres per minute for rapid and effective fire suppression.

The smart-enabled system includes an on-board monthly self test and manual test facility with real time monitoring and alerts.

The control board monitors the pump and is equipped with fire and fault N/O and N/C relays for use with third party equipment (e.g. alarms and fire panels).



**342<sub>mm</sub><sup>2</sup> x 495<sub>mm</sub>**

Dimensions

**24<sub>kg</sub>**

Weight

**240V**

Voltage Rating

**13A**

Current Rating

**12<sub>lmp</sub> @ 1 bar**

Minimum Water Requirement

**1/2" BSP**

Inlet Connection

**3/8" BSP 60 °C Cone**

Outlet Connection

**Floor or wall**

Mounting



The iCO® water mist system is more cost effective than traditional sprinklers, while using 80% less water.

## High pressure water mist versus traditional sprinklers.

Conventional fire sprinkler systems were originally developed for commercial applications. Whilst these systems perform well in specific situations, they are not designed for homes or residential properties.

iCO® offers a more effective, cost efficient, sustainable and less damaging alternative to conventional sprinklers.

The iCO® system has been developed to disperse a fine, high-pressure water mist, ensuring that the water evaporates as quickly as possible: decelerating the combustion process much more effectively than a traditional sprinkler system.

In the event of a fire the iCO® system will discharge a calculated amount of water mist from the nearest nozzle, suppressing the fire efficiently without causing excess water damage.

There is a reason that the iCO® system has already been installed in thousands of homes.

# iCO® Products

## Key features and benefits



### Water Requirement

The iCO® system is designed to operate using the lowest flow and pressure possible (12l/min @ 1 bar).

### Rapid response

iCO® eliminates the two combustion elements of a fire by cooling & reducing the oxygen level at the base of the fire.

### Reliable activation

The iCO® nozzles are highly reliable and can be activated by a double knock trigger (heat and smoke) as an option to reduce the risk of false activation.

### Localised suppression

Only the nozzle nearest the fire will operate: protecting other areas of the property from water damage.

### Minimal water damage

On average iCO® uses 80% less water than traditional sprinklers, minimising water damage when activated.

### Fully accredited

The iCO® system has an IP rating of IP53 and meets the fire performance tests outlined in BS:8458.

### Real time monitoring and alerts

iCO® System GSM Monitoring provides real time alerts to your smart phone in case of emergency or fault.

### Low maintenance

The iCO® pump has a removable cover so that the internal components can be serviced on-site if needed.

### Easy installation

iCO® simple design and flexible hoses make installation a breeze when compared to conventional sprinkler systems.

### Discreet and compact design

The iCO® pump unit will fit in most kitchen cabinets. Our nozzles are the most discreet on the market and can be colour matched to any colour.

### Highly adaptable

iCO® adaptability means the system can be installed in almost any residential or domestic category project.

### Environmentally friendly

The iCO® system only uses water from the mains when needed: saving vast amounts of water.

### Cost efficient

The iCO® system connects directly to the current water supply: no need to upgrade the mains or install a tank.

### Automated self testing

The iCO® pump unit automatically tests itself once a month to ensure the unit is functioning correctly. Unlike other systems no water is used and no drain is required.





The iCO® system is highly recommended, independently tested and is used in thousands of properties.

## One solution, multiple applications.

The iCO® system can be installed in almost any residential or domestic property.

iCO® is an ideal solution for private homes, heritage or listed buildings, new-build properties, apartments, care homes, student accommodation, hotels, industrial kitchens and HMOs (houses in multiple occupancy) where the risk of fire is greater.

Passive fire protection is often used to pass building regulations; such as internal fire doors, travel distances to exits and fire-retardant materials within the fabric of the building.

A growing number of forward-thinking architects and developers are specifying the iCO® system in their designs to reduce the passive requirements needed to meet regulations: allowing more flexibility and freedom of design.



iCO® Misting Nozzles  
Technical Data





## Technical Data - iCO® Misting Nozzles

Part No:	PU002-02
Dimensions:	Ø72mm x 19mm
Weight:	200g
K Factor:	1.71
Temperature Rating:	57°C
Max Pressure:	1020 psi (70 bar)
Minimum Operating Pressure:	40 Bar
Response Type:	Fast (Residential)
Occupancy Type:	Domestic
Connection Size:	3/8" BSP
Minimum Spacing:	2m (6.5ft)
Maximum Spacing:	4m x 4m (13.2 x 13.2ft)
Colour:	White as standard. Other colours available.
Material:	316 Stainless Steel
Fixing method:	Torsion Springs

### TESTING & CERTIFICATION

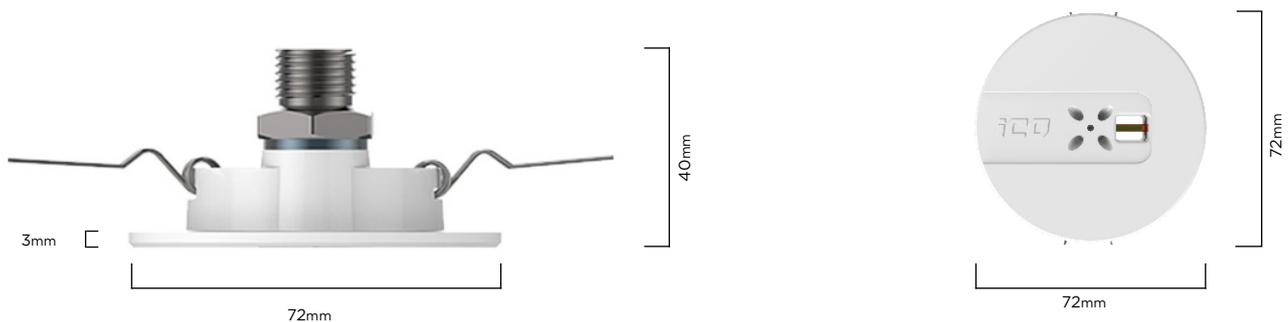
iCO® is ISO9001 accredited for the design, manufacture and supply of water mist fire suppression systems.

iCO® has been independently tested by Exova Warrington Fire, a UKAS accredited laboratory and meets the performance requirements of BS:8458.



### DIMENSIONS (MM)

The iCO® easy fit nozzles are extremely low profile. Sitting just 3mm below the ceiling they are the most discreet misting water mist nozzles on the market.



### INSTALLATION

Our cost efficient and easy to install solution is designed specifically for the residential and domestic markets, offering design flexibility whilst providing faster and more reliable fire suppression.

As a leading manufacturer of fire suppression systems, iCO® sell through a network of accredited distributors in the UK and overseas.

iCO® systems must be designed, installed and commissioned by an accredited installer. On-going systems should be also maintained annually by an accredited installer.

To find a local installer, visit [ico-products.com/find-installer](http://ico-products.com/find-installer)



Image: iCO® Misting Nozzle in situ

## KEY BENEFITS



HIGHLY ADAPTABLE



DISCREET DESIGN



RAPID RESPONSE



ECONOMICAL



REAL-TIME ALERTS



SIGNIFICANT SAVINGS



EASY INSTALLATION



HIGH PERFORMANCE



MINIMAL DAMAGE



LOW MAINTENANCE

## KEY FEATURES

### Excellent Quality Assured

iCO® is independently tested in line with automatic water fire suppression systems standards.

### Discreet Nozzle Design

The iCO® easy fit nozzles are extremely low profile and can be colour matched to any colour using the RAL colour code system.

### Rapid Response

iCO® eliminates the two combustion elements of a fire by cooling and reducing the oxygen level at the base of a fire.

### Reliable Activation

iCO® nozzles are highly reliable and can be activated by a double knock trigger: as an option to reduce the risk of false activation.

### Localised Suppression

Only the nozzle nearest the fire will operate: protecting other areas of the property from water damage.

### Minimal Water Damage

On average iCO® uses 80% less water than traditional sprinklers: minimising water damage whilst providing the same performance.

### Minimal Smoke

iCO® uses very small droplets of water as a fine mist: quickly reducing the harmful smoke and toxic gases caused by a fire.

### Environmentally Friendly

The iCO® system only uses water from the mains when needed: saving vast amounts of water.

### Outstanding Durability

The iCO® nozzles are made from stainless steel and capable of withstanding extreme temperatures in the event of a fire.

### Highly Adaptable

iCO® adaptability means the system can be installed in almost any residential or domestic category project.

### Easy Installation

iCO® simple design and flexible hoses make installation a breeze when compared to conventional sprinkler systems.

### Ceiling Mounted Nozzles

The iCO® misting nozzles are situated in the ceiling: attacking the fire from above without obstruction from furniture.

### Battery Backup

Battery back-up to provide audible alarm in the event of power loss or system failure.

### External Power Out

12V power out for powering 3rd party equipment such as GSM alarm diallers for remote monitoring or external relays.

### Additional Relay Connections

iCO® provides 2 fault & 2 alarm relays as standard for connection to 3rd party equipment such as fire alarms and AOV's.

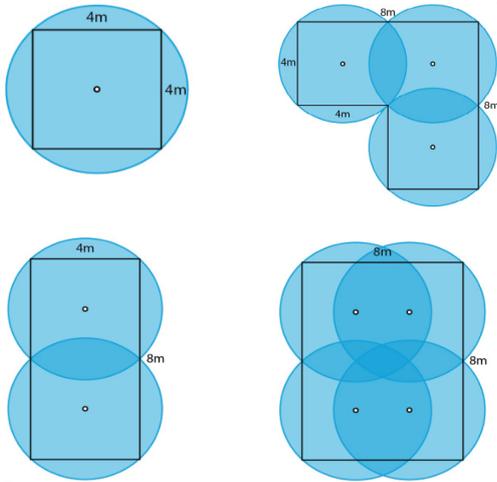
### Real Time Monitoring and Alerts

iCO® System GSM Monitoring provides real time alerts to your smart phone in case of emergency or fault.

# Technical Data - iCO® Misting Nozzles

## INSTALLATION

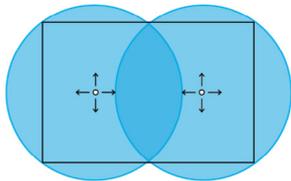
### NOZZLE SPACING: FLAT CEILING



#### Installation Notes:

- <sup>1</sup> 4x4m Grid (16m<sup>2</sup>)
- <sup>2</sup> Max 2m from wall
- <sup>3</sup> 2m minimum distance between nozzles

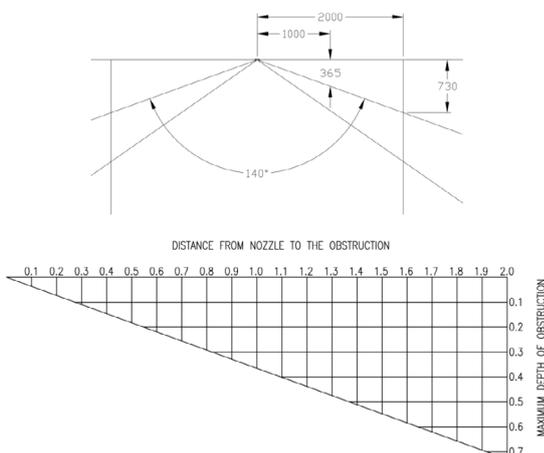
### NOZZLE ORIENTATION



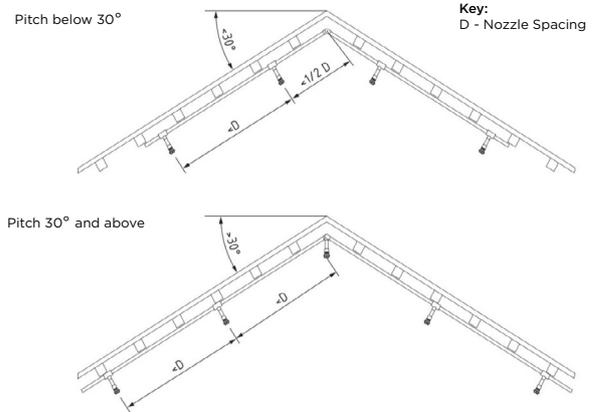
#### Installation Notes:

- <sup>1</sup> The preferred nozzle outlet orientation is perpendicular to the walls of a room.
- <sup>2</sup> Nozzles should be positioned away from obstructions to allow a 140° spray pattern.

### DISTANCE FROM OBSTRUCTIONS



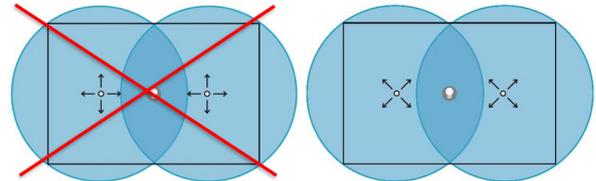
### NOZZLE SPACING: SLOPED CEILING



#### Installation Notes:

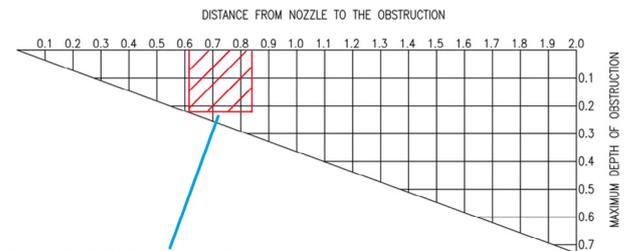
- <sup>1</sup> When installing iCO® misting nozzles on sloped ceilings, the position of the nozzle should be determined by the pitch of the ceiling.
- <sup>2</sup> Where the pitch is below 30° iCO® nozzles should be mounted at standard spacing when measured in line with the pitch of the ceiling.
- <sup>3</sup> Where the pitch is 30° and above, the first row of iCO® nozzles should be mounted within 300mm radially from the apex of the ceiling.
- <sup>4</sup> All nozzles should be mounted perpendicular to the ceiling as shown below.

### NOZZLE ORIENTATION: PENDANT LIGHT FITTINGS



#### Installation Notes:

- <sup>1</sup> Nozzle spray angles should not be directed at pendant light fittings.
- <sup>2</sup> The spray direction can be rotated 45° to spray into the corners of a room to avoid pendant light fittings. Nozzles should be at least 500mm away from a pendant light fitting.



Example of obstruction matrix use.

If obstruction fits wholly inside matrix, nozzle positioning is unaffected.

#### Maintenance and Storage Notes:

- <sup>1</sup> The nozzle should be maintained in accordance with BS8458
- <sup>2</sup> Minimum/Maximum ambient temperature 4°C/40°C



iCO® Pump Unit V2  
Technical Data





## Technical Data - iCO® Pump Unit V2 (Monitored, Non-WiFi)

Part No:	PU001-00
Dimensions:	342mm (W)x 342mm (D) x 495mm
Clearance requirement:	100mm of clear space required around on each side for ventilation
Voltage rating:	240V
Current rating:	13A
Power Supply Connection:	Dedicated 16A fused supply from the NON RCD side of the board. Fire rated cable required
Inlet connection:	1/2" BSP
Outlet connection:	3/8" BSP 60° Cone
Water requirement:	12 lpm @ 1 bar Minimum
Pump run sound pressure level:	79db @ 1 m
Pump run Flow switch:	0.5lpm
Weight:	24kg
Serviceability Access:	Removable front cover with security screws
Internal Components:	Corrosion resistant brass and stainless steel
Mounting:	Floor or wall mount
Standing Pressure:	Mains water pressure 1-10bar
Running Pressure:	Adjustable 10-100bar
Mains low pressure monitoring:	Set at 0.5 bar
Mains water over pressure protection:	Pressure relief set at 20bar
Pump run time:	10min or 30min (adjustable with pump and actuated ball valve shut off)
Operation:	Wet type or pre-action linked to smoke detection
Self-test:	Monthly self-test
Heat protection:	Thermal fuse set at 100°C
Fire relay:	2x NO / NC volt free 30vDC 1 A
Fault relay:	2x NO / NC volt free 30vDC 1 A
Priority demand valve output:	12v 1A
Power out:	12v 1A
Power monitoring:	Battery backed up audible alarm for fault monitoring
Battery monitoring:	Check every 8mins if battery is detached
System indication:	Internal LCD display
Control valve:	Integral isolation valve, drain valve & pressure gauge
Strainer:	Internal 500 micron filter
IP Rating:	IP53
Manual controls:	Internal and optional external manual start and stop button

# Technical Data - iCO® Pump Unit V2 (Monitored, Non-WiFi)



Typical domestic category installation.



Typical residential category installation.

**NOTE:** All images in this document are for illustration purposes only.

## KEY BENEFITS



**EASY INSTALLATION**



**USES JUST 12L/MIN  
AT 1 BAR OF  
PRESSURE**



**NO STORED WATER  
NEEDED**



**80% LESS WATER  
THAN STANDARD  
SPRINKLERS**



**FULLY COMPLIANT**

## KEY FEATURES

### Excellent Quality Assured

iCO® is independently tested in line with automatic water fire suppression systems standards.

### Neat, Compact Design

All iCO® system components are integrated and housed within the iCO pump unit: no untidy valves or hoses.

### Automated Self-Test

The iCO® pump unit automatically tests itself once a month to ensure the unit is functioning correctly.

### Removable Cover

The iCO® pump unit has a removable cover allowing easy access for servicing and maintenance.

### Outstanding Durability

The iCO pump unit is comprised of steel: protecting it from fire and mechanical damage.

### Wall or Floor Mounted

The iCO® pump will fit in most kitchen cupboards or can be wall mounted if preferred.

### Adjustable Run Time

The iCO® pump can be adjusted to suit a 30min (Residential) or 10min (Domestic) application, depending on the need.

### Adjustable Run Pressure

The iCO® pump can be adjusted from 10 - 100bar to suit the particular building or application.

### Actuated Ball Valve

iCO® has an integrated actuated ball valve to shut off the water and power supply following elapse of the selected run time.

### External Power Out

12V power out for powering 3rd party equipment such as GSM alarm diallers for remote monitoring or external relays.

### Battery Backup

Battery backup to provide audible alarm in the event of power loss or system failure.

### LCD Display

An internal LCD display is provided on the control & monitoring board to indicate the status of the system.

### Thermal Fuse

A thermal fuse has been provided on the control & monitoring board to cut power if the temperature exceeds 100°C.

### Manual Start/Stop Button

The iCO® pump unit has a connection point for an (optional) manual start/stop button.

### Double Knock Activation

The iCO® nozzles are activated by a double knock trigger (heat/smoke): significantly reducing the risk of false activation.

### Additional Relay Connections

iCO® provides 2 fault & 2 alarm relays as standard for connection to 3rd party equipment such as fire alarms and AOV's.

### Drip Tray with Float Switch

The iCO® float switch will close the actuated ball valve in the event of a leak: shutting off the water supply to avoid damage.

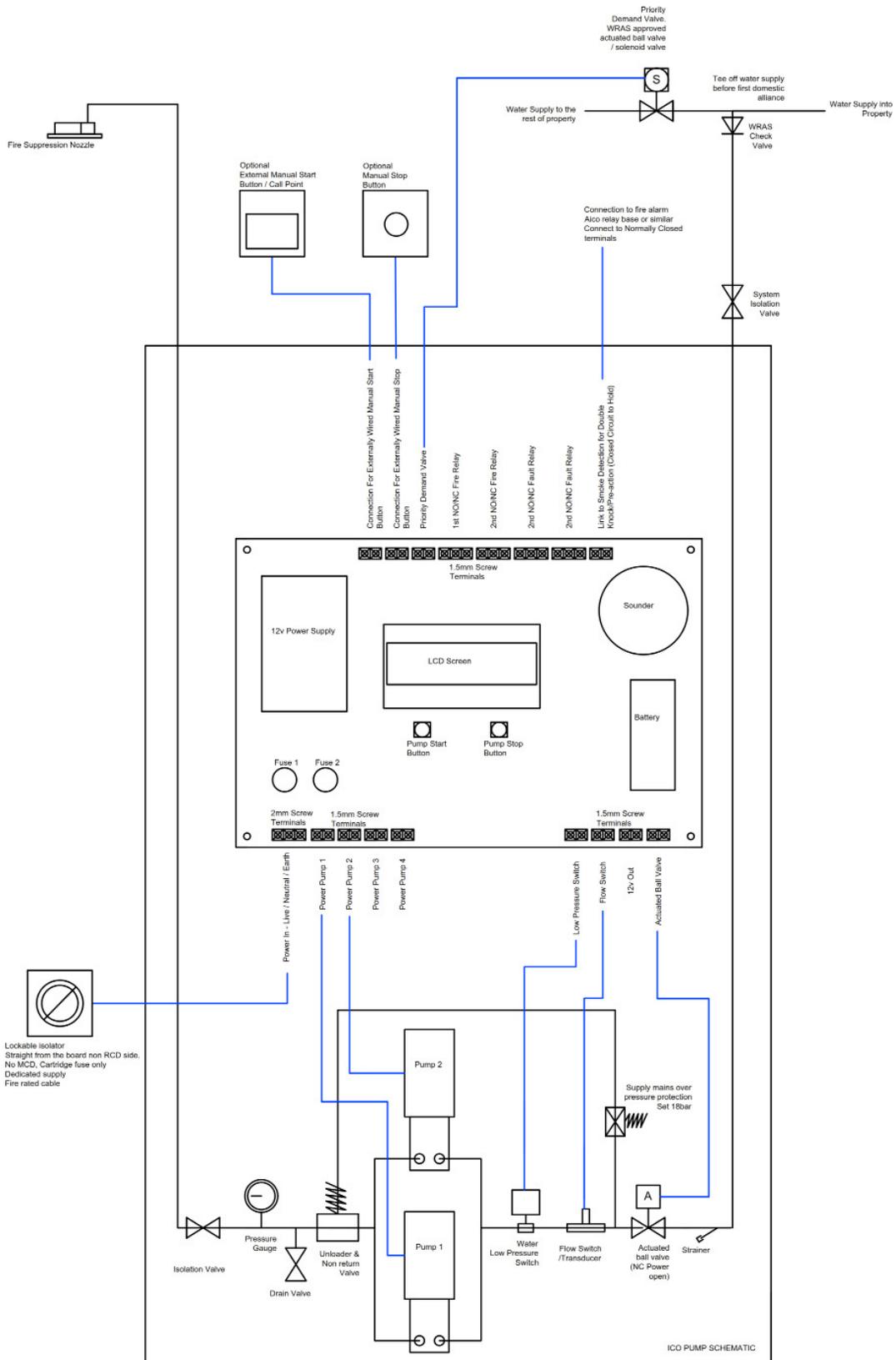
### Real Time Monitoring and Alerts

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# Technical Data - iCO® Pump Unit V2 (Monitored, Non-WiFi)

## TECHNICAL PUMP SCHEMATIC (DOMESTIC)

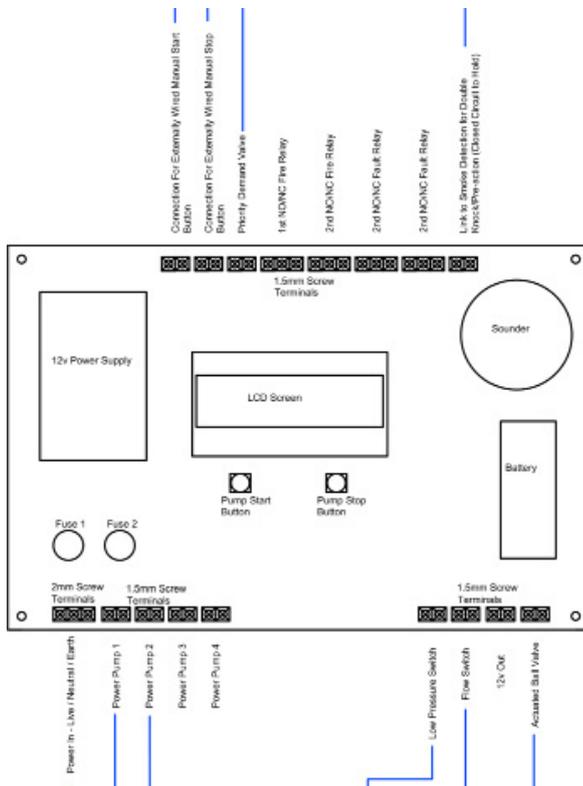
Private homes, heritage or listed buildings and new-build properties.



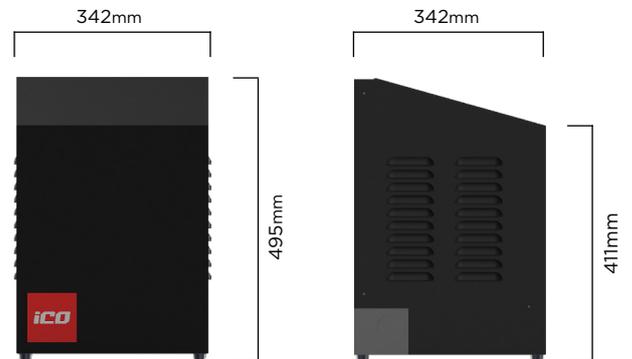


# Technical Data - iCO® Pump Unit V2 (Monitored, Non-WiFi)

## CONTROL & MONITORING BOARD



## DIMENSIONS (MM)



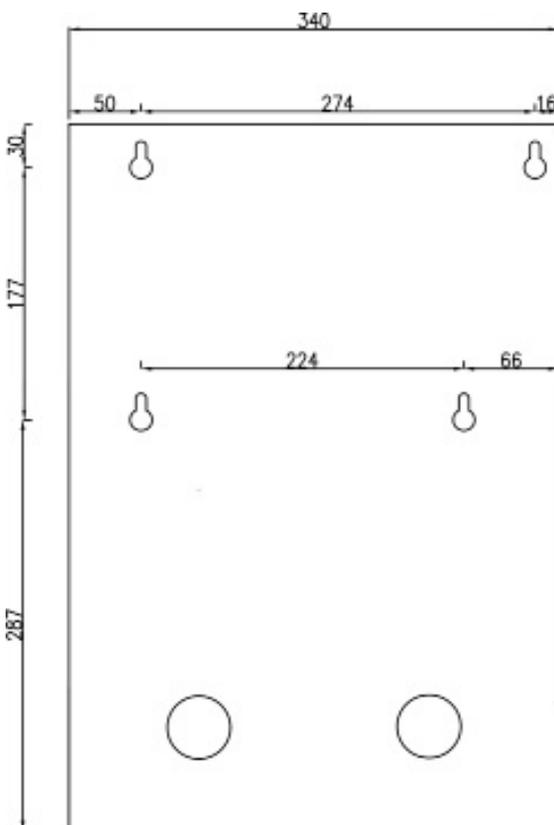
## TESTING & CERTIFICATION

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## WALL MOUNT DETAILS



## INSTALLATION

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# A Guide to BS 9991: 2015.

Brought to you by



## Fire Safety in the Design, Management and use of Residential Buildings.

BS 9991 provides a level of flexibility that allows the fire protection measures and the associated risks to be assessed to enable reasonable practical solutions to be designed.

This document has been created to provide a clear understanding of BS 9991: 2015 and the design freedoms that can be achieved within its scope.

Included are some examples of projects made possible with the use of Automatic Water Fire Suppression Systems (AWFSS).

The British Standard gives recommendations and guidance for Dwellings, Residential buildings and Specialised housing with regards to an overall fire strategy and shouldn't be taken as stand-alone examples. This is also applicable to new builds, refurbishments and change of use buildings.

Where permissible within the British Standard, variations on the fire safety provisions by installation of an AWFSS, the specific systems and categories given in Table 2 should be used.



### Disclaimer

This booklet is not intended to be a comprehensive guide to all of the aspects of the standard but rather a useful source of background information. Whilst every care has been taken to ensure that the contents of this document are correct at the time of publication, it should never be used as any form of substitution for the BS 9991 standard. HiPro shall be under no liability whatsoever in respect to the contents of this document. It should be noted that there may be specific additional requirements dependent upon local authority building regulations and/or fire authority.

# Key Fire Suppression Systems Clauses

The most recent design guide aims to complement BS 9999, which excludes individual dwelling houses from within its scope. BS 9991 maintains the design flexibility shown in BS 9999 and recognises the strength that AWFSS can bring. Importantly water mist systems get conditional approval providing (subject to AHJ agreement).

## **5.2.1.2. Multi-basement buildings**

For dwellings with multiple floors below ground level, a protected stairway and an AWFSS, 9m metres should not be exceeded for from the foot of the protected stair to any habitable room.

## **6.3(c) Dwelling houses with one or more storey greater than 4.5m in height (three storeys)**

Open plan arrangements on the ground floor can be achieved on condition that AWFSS are installed throughout the property in addition to a fire rated partition and door at first floor level.

## **6.4.(b) Dwelling houses with one or more storey greater than 7.5m in height (four storeys)**

A second, separate protected stairwell is not required if AWFSS are fitted throughout.

## **6.5.2. Loft conversions**

Open plan arrangements on the ground floor are permissible should AWFSS be installed throughout, in conjunction with a fire resisting partition and door at first floor level.

## **9.1(d) Internal Planning of Flats and Maisonettes**

Flats or maisonettes with an open plan arrangement and more than one floor should have a protected stairway and AWFSS fitted. This allows escape to the shared external entrance.

## **9.3(b) Provision of inner rooms in flats not more than 4.5 m in height.**

Inner rooms are not suggested unless the use of an AWFSS is utilised throughout the entire building, along with a grade D LD1 fire detection and fire alarm system in accordance with BS 5839-6:2013.

## **9.4.2(a) Extended travel distances within an open-plan flat.**

Flats more than 4.5m above ground level that are entered on the same level can increase total travel distances to the entrances from 9m to 20m with the use of an AWFSS throughout the entire building, along with an LD1 fire detection and fire alarm system in accordance with BS 5839-6:2013.

## **9.5.2(d) Maisonettes with floors greater than 4.5m**

No requirement to provide a separate means of escape if the maisonette has a protected stairwell and a fully fitted AWFSS.

## **9.7 Open Plan Layouts**

Open planned flats are permissible with a fully fitted AWFSS.

## **11.1 Flats where occupants are not capable of independent evacuation**

It is possible to use provisions of an AWFSS where the use of the building is required for people not capable of independent evacuation (excluding common corridors and stairways.)

It is further possible to protect common areas (excluding common corridors and stairways,) using provisions of an AWFSS where the use of the building is required for people not capable of independent evacuation.

## **19.1.2 Vehicular Access**

Access can be increased significantly if an AWFSS is installed and where the arrival time for the fire service is not more than ten minutes:

- 90m for houses less than 4.5m in height.
- 75m for houses/flats not more than one floor above 4.5m.

## **23.1 Extra care housing**

Extra care housing must be fitted throughout with an AWFSS.

## **23.2 Travel distances**

If an AWFSS is fitted throughout a block of flats, then travel distances can be doubled on common escape from 7.5m to 15m and 30m to 60m

## **29.4.2 Boundary Distance**

Boundary distances can be reduced by 50% with a fitted AWFSS.

# A smarter and safer means to protecting your property from fire damage.

iCO® specialise in water mist fire suppression systems for domestic and residential properties.

Our products and services are sold through a network of accredited distributors throughout the UK and overseas.

Patents granted: United Kingdom, USA, Australia, Europe

Patents pending: UAE

## Contact us

Sales Hotline

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Mon - Fri 8:00 am - 5:00 pm

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