UNIFIRE

Made in Sweden

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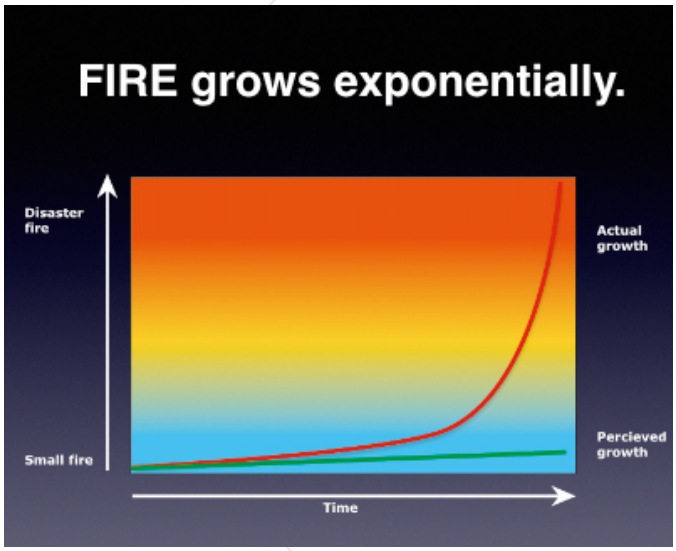
FlameRanger

Revolutionary Firefighting Robot

Introducing the first-of-its kind, fully automatic fire detection & suppression system using advanced, high flow robotic nozzles.

Welcome to 21st Century Firefighting!

Traditional Method, with a 21st Century Kick



The Problem

Fire grows exponentially quickly. Traditional methods often result in late detection of a fire and long waits until adequate suppression can begin. By that time, loss to property and life can be catastrophic.

The Solution

Rapid detection, coupled with rapid, high-flow suppression, is the key to maximizing the chances of successfully fighting a fire—before it spreads out of control.

Enter FlameRanger. It constantly detects for the presence of flames, 24/7/365. Any fire that breaks out is detected almost instantaneously. Unifire's sophisticated computing and software technology guide its advanced robotic nozzles with precision to aim a high volume of water or foam to directly douse the fire (or fires) at its source. Fire suppression commences in as little as 5 seconds, long before it gets out of control.

Problem → Solved.

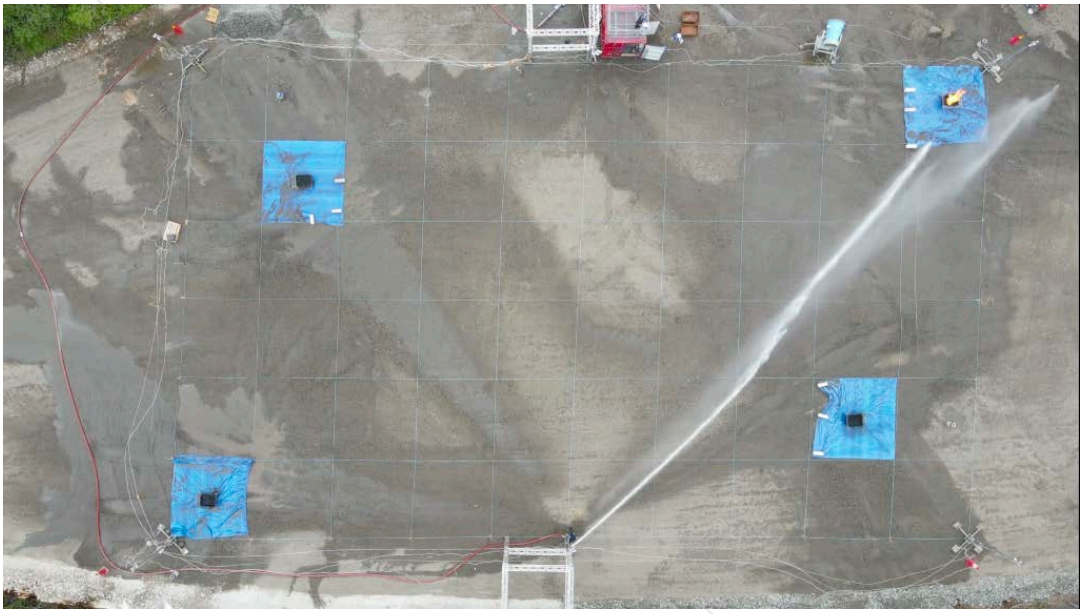
Suppress While the Fire is Small!

Example: small (1m²) pan fire detected from 58 meters.

Fire typically detected, targeted, and suppression commenced in ***less than 15 seconds from fire ignition***.

☞

Click to Watch the Video on YouTube.



Detect, Aim, Suppress, Automatically, Robotically, 24/7/365.

Enter the Age of Robotics

FlameRanger is the first-of-its-kind robotic nozzle system that automatically detects a fire, determines its size and location in three dimensions, and directs a high volume of water or foam, with great accuracy, directly onto the fire—all within seconds of a fire breaking out, and without any human intervention.

Unifire's Force Robotic Nozzles are the World's Most Advanced, Intelligent Firefighting Robots


Quality &
Technology,
Unleashed
5260919
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With regard to robots, in the early days of robots people said, 'Oh, let's build a robot' and what's the first thought? You make a robot look like a human and do human things. That's so 1950s. We are so past that.
Neil deGrasse Tyson

So, What Is It, Exactly?

Every large fire starts as a small fire and grows exponentially. Rapid detection and suppression are crucial to successfully fighting a fire, before it has a chance to develop into a catastrophic, uncontrollable fire.

What FlameRanger Does:

FlameRanger is a high capacity, fully automatic, fire detection and suppression robotic nozzle system that operates completely autonomously around the clock, while providing constant system status information and human operator intervention and remote control at all times.

How it Works:

The system uses FV300 Array IR Detectors or state-of-the-art thermal imaging cameras to detect and locate a fire, typically within seconds of ignition.

When a flame is detected, the system guides our advanced robotic nozzles to aim at the fire and open the valve (or start the pump) when the nozzle is aimed at the target fire.

A high flow of water (or foam) is then accurately aimed directly onto and around the target fire (or fires). The spray angle can also be automatically adjusted.

When fire is no longer detected, the system automatically shuts off and returns to stand-by mode, and the water supply closes automatically, takes the robotic nozzle back to stow position, and the system remains ready to reactivate should a flame reignite.

Human Remote Control At Any Time:

Manually remote control any system at any time, regardless of whether a fire has been detected or not. FlameRanger provides all of the benefits of a traditional remote control monitor system coupled with nearly instantaneous automatic reaction and suppression with the reliability of advanced high-tech fire/heat detection and robotics. Take control via Unifire's joysticks, ONE App for iOS and Android, or by computer from anywhere in the world.

Graphical User Interfaces:

Unifire's Graphical User Interfaces (GUI's) provide easy system setup and calibration, real-time status and data of all system components, and system remote control.

Instant Remote Technical Support World-Wide

Unifire can provide system technical support to any system in the world in real time without travel expenses and delays. With minimal assistance from our customers, we can log in to your FlameRanger system and troubleshoot, assist with system settings, update software, etc., resulting in rapid intervention, significant cost savings and reduced potential system downtime.

A Melange of Technology, Seamlessly Blended

Unifire Force™ Robotic Nozzle

Industrial robot BLDC motors, highest quality internal gears, stainless steel 316L construction. Flows from 1000 to 5000 litres (265 to 1320 gallons) per minute.

Thermal Imaging Camera(s) or Flame Detectors

Accurate detection and location of heat buildup or flames & very low false alarm risk.

Advanced Computing & Software

Seamlessly enable interactive data and control from any authorized device anywhere in the world.

Graphical User Interface

Complete monitoring and control

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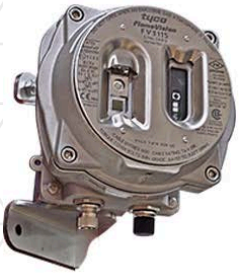
Full Situational Awareness

While completely autonomous and fully automatic, Unifire's Graphical User interface (GUI) can inform authorized personnel anywhere in the world of real-time system status, fire alarms, and provide full remote control intervention capabilities.



Fully Automatic, with Remote Oversight & Total Control

Fully Network Ready, of Course

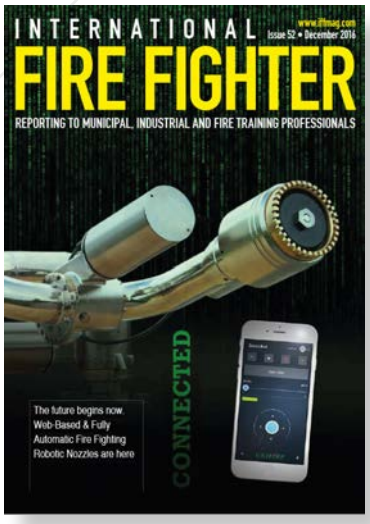
FlameRanger systems can be networked, monitored, and even manually remote controlled from anywhere in the world from any authorized device—smart phone, tablet, laptop, or PC.

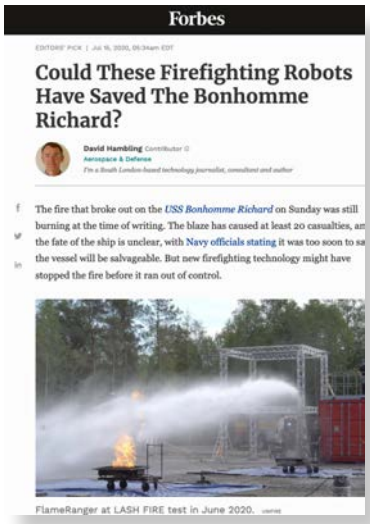
The system provides 24/7/365 peace of mind by instantly reacting to fire or heat buildup. The system can even be configured to alert the appropriate individuals of any fire detected and its exact location.

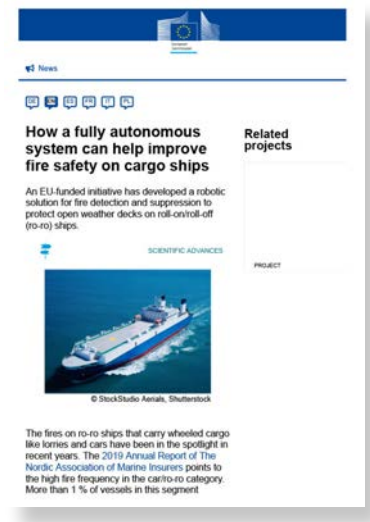
Moreover, the system is self-monitoring and capable of alerting authorized individuals of fires detected as well as any system errors detected, with complete details of the exact component or issue in need of attention.

At the user's request and assistance, Unifire can troubleshoot and adjust settings, update software, and provide full technical support intervention, all via the Internet, instantaneously from Sweden.

FlameRanger is featured in numerous trade magazines and articles, including:







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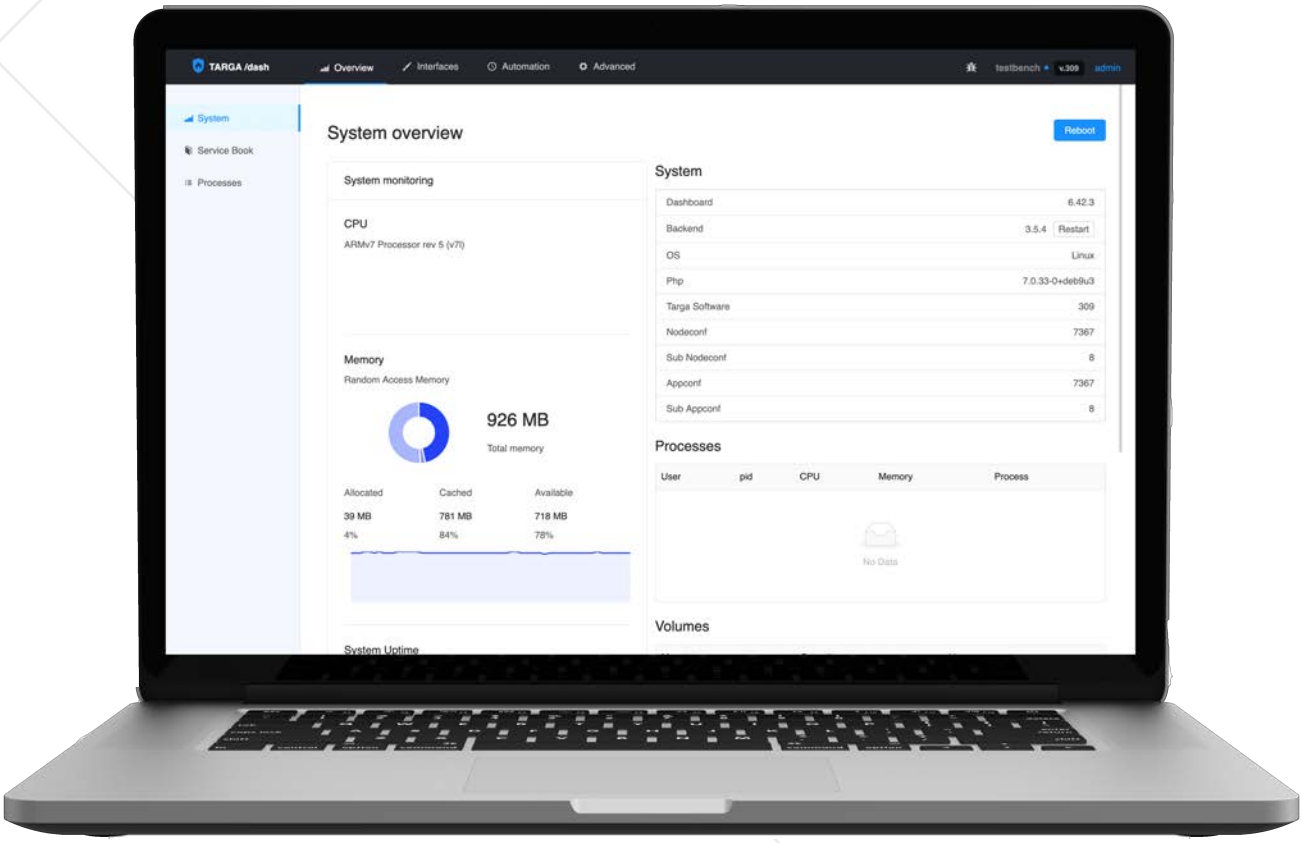
Unifire
FlameRanger & HeatRanger
Fully Automatic Systems
Comparison Chart

	FlameRanger		HeatRanger
			
Detection Technology:	Tyco FV311 IR Array Flame Detectors		FireTIR thermal imaging cameras
Number of detectors	2		1
Reacts to Flames:	✔		**X**
Reacts to Heat Buildup, allowing suppression before presence of flame:	**X**		✔
Locates the fire in 3D space and specifically targets the flames:	✔		No. Suppresses the pre-defined zone (area) in which the heat sources is located by deploying a spray pattern defined/programmed on site. Up to 8 zones can be defined and programmed.
Tracks fire/heat source in real time:	✔		No. Suppresses the area where the heat build-up is detected for a pre-defined amount of time.
Dynamically fights the fire (follows flames in real time)	✔		**X**
Automatic opening of valve:	✔		✔
Automatic valve shut off:	Yes, after a pre-programmed delay (e.g. 30 seconds) after flames are no longer detected		Yes, after a pre-programmed time from commencement.
Requires external PC for processing of data from detector:	**X**		✔
After shut off, remains in stand-by mode and will react to any new alarm signal:	✔		✔

Ammolite™

All Data.
All the Time.
At Your Fingertips.



ONE™
App for iOS & Android

A Simple User Interface for Exquisite Nozzle Control

Unparalleled Quality

DS/EN ISO 9001:2008 Certified Manufacturing Facilities

Unlimited Applications

Waste Processing & Recycling

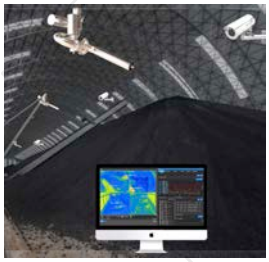
Waste-to-Energy (WtE), Energy-from-Waste (EfW) and Plastic Recycling facilities all require 24/7/365 protection, with immediate reaction to fire. FlameRanger is ideally suited for a variety of waste and recycling facilities and applications.

Marine Fire Protection

Aircraft carriers and other large storage areas on naval vessels and ships present a significant challenge to fire safety. FlameRanger provides ideal automatic fire protection on the high seas.

High-Rise Building Exteriors

Protecting the exteriors of high-rise buildings is a formidable challenge. Until now. Unifire's FlameRanger XT has been specifically developed to detect and suppress these fires with speed & precision.



Coal Storage

FlameRanger detects and suppresses heat buildups with targeted focus. A human operator can intervene at any time, whether or not an alarm has triggered automatic function.

Aircraft Hangars

Trust FlameRanger to protect even the highest value aircraft and hangar facilities. Our system detects fires around the clock and, in seconds of breakout, deploys a high volume of foam, directly on the fire, until it's out!

Tunnel Fire Protection

Tunnel fires are among the most difficult to combat and among the most destructive in terms of loss of life and property. FlameRanger is like having a firefighting crew on site the moment fire erupts.

Historical Buildings

FlameRanger is ideal for protecting rare and valuable historical buildings around the clock. Made for outdoor, harsh environments, our systems are designed to react immediately and autonomously.

Factories & Warehouses

Traditional methods of protecting large open spaces in building interiors from fire are often ineffective. FlameRanger offers unprecedented fire protection capabilities in these environments.

Oil & Gas Facilities

Unmatched detection & suppression for oil & gas facilities of many kinds. Targeted, high-volume foam suppression begins in seconds of a fire breaking out. Large networked systems centrally monitored & controlled.

... and many more

Shift Your Paradigm.

The FlameRanger can be adopted to numerous types of installations to suit virtually any application.

FORCE 50 - 2" ROBOTIC NOZZLE

SYSTEM'S 2" FORCE 50 ROBOTIC NOZZLE (MONITOR) SPECS

#	Feature	Unifire FlameRanger™	Competing Solution
S1	Chassis Model:	Unifire Force 50 Robotic Nozzle	
S2	Nozzle Tip Model:	Unifire Integ 50 jet/spray robotic nozzle tip	
S3	Motor Type (Chassis & Nozzle Tip):	24VDC Brushless (BLDC)	
S4	Maximum Flow @ 10 Bars:	2000 LPM	
S5	Recommended operating pressure range:	3 - 12 Bars	
S6	Maximum operating pressure:	16 Bars	
S7	Mass including nozzle tip:	≅ 20 Kg	
S8	Dimensions:	50 x 35 x 22 cm	
S9	Internal Pipe Diameter:	50 mm	
S10	Horizontal Range of Motion:	360° rotation	
S11	Vertical Range of Motion:	180° vertical (+/- 90° from horizontal).	
S12	Positioning accuracy:	Better than 0,1°	
S13	Robotic Nozzle Chassis Material:	Stainless Steel 316L (EN1.4404)	
S14	Nozzle Tip Material:	Stainless Steel 316L & Bronze (CuSn12)	
S15	Input connection:	2" male BSP, or DN50 or DN65 Flange. ANSI or JIS flange optional.	
S16	Fully integrated and enclosed worm gears?	✔	
S17	Worm gear material:	Stainless Steel 316L	
S18	Gear wheel material:	Bronze (CuSn12)	

SYSTEM'S 2" FORCE 50 ROBOTIC NOZZLE (MONITOR) SPECS (Continued)

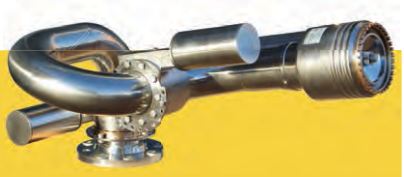
#	Feature	Unifire FlameRanger™	Competing Solution
S17	Manufactured at ISO Certified Facilities?	✔	
S18	Country of manufacture:	Denmark	
S19	Type Approval / Certificates:	Bureau Veritas (BV) Type Approval / CE Marked	
S20	Robotic nozzle Movement Velocity:	Standard: 18°/sec. rotational; 12°/sec. vertical (higher velocities are optional)	
S21	Modular design for capability of changing damaged pipe sections and gear housings?	✔	
S22	M12 water-resistant cable connection type for simple installation, maintenance & repair)?	✔	
S23	Progressive speed / movement control provides substantially increased accuracy of control?	✔	
S24	Simultaneous movement horizontally and vertically (true diagonal movement) capability?	✔	
S25	Programmable, real-time record / playback feature?	✔	
S26	Programmable end positions, set by software to any ranges desired?	✔	
S27	Programmable Park Position?	✔	

FORCE 80 - 3" ROBOTIC NOZZLE

3" FORCE 80 ROBOTIC NOZZLE (MONITOR) SPECIFICATIONS

#	Feature	Unifire FlameRanger™	Competing Solution
S1	Chassis Model:	Unifire Force 80 Robotic Nozzle	
S2	Nozzle Tip Model:	Unifire Integ 80	
S3	Motor Type (Chassis & Nozzle Tip):	24VDC Brushless (BLDC)	
S4	Flow range:	2000 - 5000 LPM	
S5	Recommended operating pressure range:	3 - 12 Bars	
S6	Maximum operating pressure:	16 Bars	
S7	Mass including nozzle tip:	30 Kg	
S8	Dimensions:	71 x 50 x 33 cm	
S9	Internal Pipe Diameter:	80 mm	
S10	Horizontal Range of Motion:	360°	
S11	Vertical Range of Motion:	180° vertical (+/- 90° from horizontal).	
S12	Positioning accuracy:	Better than 0,1°	
S13	Robotic Nozzle Chassis Material:	Stainless Steel 316L (EN1.4404)	
S14	Nozzle Tip Material:	Stainless Steel 316L & Bronze (CuSn12)	
S15	Input connection:	DN80 or DN100 Flange. ANSI or JIS flange optional	
S16	Fully integrated and enclosed worm gears?	✔	
S17	Worm gear material:	Stainless Steel 316L	
S18	Gear wheel material:	Bronze (CuSn12)	

3" FORCE 80 ROBOTIC NOZZLE (MONITOR) SPECIFICATIONS



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S18	Country of manufacture:	Denmark	
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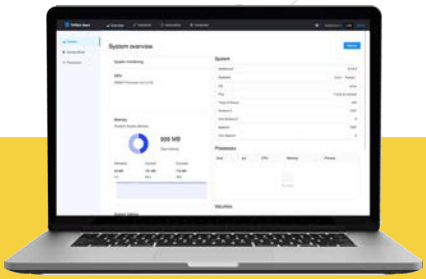
S20	Robotic nozzle Movement Velocity:	24°/sec. rotational; 12°/sec. vertical	
S21	Modular design for capability of changing damaged pipe sections and gear housings?	✔	
S22	M12 water-resistant cable connection type for simple installation, maintenance & repair)?	✔	
S23	Progressive speed / movement control provides substantially increased accuracy of control?	✔	
S24	Simultaneous movement horizontally and vertically (true diagonal movement) capability?	✔	
S25	Programmable, real-time record / playback feature?	✔	
S26	Programmable end positions, set by software to any ranges desired?	✔	
S27	Programmable Park Position?	✔	

GRAPHICAL USER INTERFACE (GUI) FEATURES

Ammolite GUI



ONE App

SYSTEM'S GRAPHICAL USER INTERFACE FEATURES

#	Feature	Unifire **ONE app & Ammolite**	Competing Solution
G1	Displays full system status information in real time, including any errors of any component?	✔	
G2	Display on any device with modern web browser (so long as connected to the network)?	✔	
G3	Allows for full system controls, including: open valve, close valve, nozzle spray pattern (jet/fog continues control), robotic nozzle movement horizontally and vertically, park, etc.?	✔	
G4	Allows multiple separate users to simultaneously view system status and activity?	✔	
G5	Features, look, language, etc. can be customized and programmed to customers's specific needs, including varying features and levels of control based on the operator's credentials?	✔	
G6	Simple to update software over network?	✔	
G7	Web server built-in with the system's PLC?	✔	
G8	Upgrade / reprogram the PLC via the web server?	✔	

VII.
PROGRAMMABLE LOGIC CONTROL (PLC) FEATURES

SYSTEM'S PLC FEATURES

#	Feature	Unifire InterAct™	Competing Solution
P1	PLC Make / Model	Unifire X-TARGA	
P2	Built-in power converter (100-230VAC/24VDC(20A)	✔	
P3	IP Rating	IP66	
P4	Cable gland entry sealing system:	ROXTEC EzEntry 10	
P5	Cabinet type:	RITTAL type AE 1045.500	
P6	Cabinet dimensions:	500 x 400 x 210 mm	
P7	Number of digital inputs:	4 - 16	
P8	Number of analogue inputs:	4 - 32	
P9	Expandable number of digital inputs / outputs:	✔	
P10	Expandable number of analogue inputs / outputs:	✔	
P11	Number of DC Brushless Motor (BLDC) driver card slots:	6	
P12	USB port for simple software updates?	✔	
P13	Graphical User Interface for system setup, calibration, component data and system diagnosis?	✔	
P14	Simple quick installation with M12 multi-connectors?	✔	
P15	Fully programmable and expandable?	✔	
P16	Electrical requirements:	100-240VAC / 50-60 Hz	
P17	Average power consumption:	< 500 W	
P18	Capable of power via emergency battery backup?	✔	

About Unifire

UNIFIRE is a Swedish, high-tech robotic nozzle technologies laboratory. We make the world's most advanced robotic nozzle systems, Period. Unifire's Robotic Nozzles represent a paradigm shift in the old way of making remote control monitors and water cannons. Boasting cutting-edge, industrial robot-type brushless (BLDC) motors and state-of-the-art electronics and software, Unifire is alone in creating a whole new generation of remote controlled robotic nozzle solutions. Whether your application is firefighting, mining, water fountains, wash down, dust control or anything else requiring water control, you've come to the right place!

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Global Service

FlameRanger is available around the globe.

From initial consultation to project planning, sales, installation, support and service, Unifire and its world-class partners can assist around the globe.

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