

UNIFIRE 2024  
R O B O T I C N O Z Z L E  
**CATALOG**



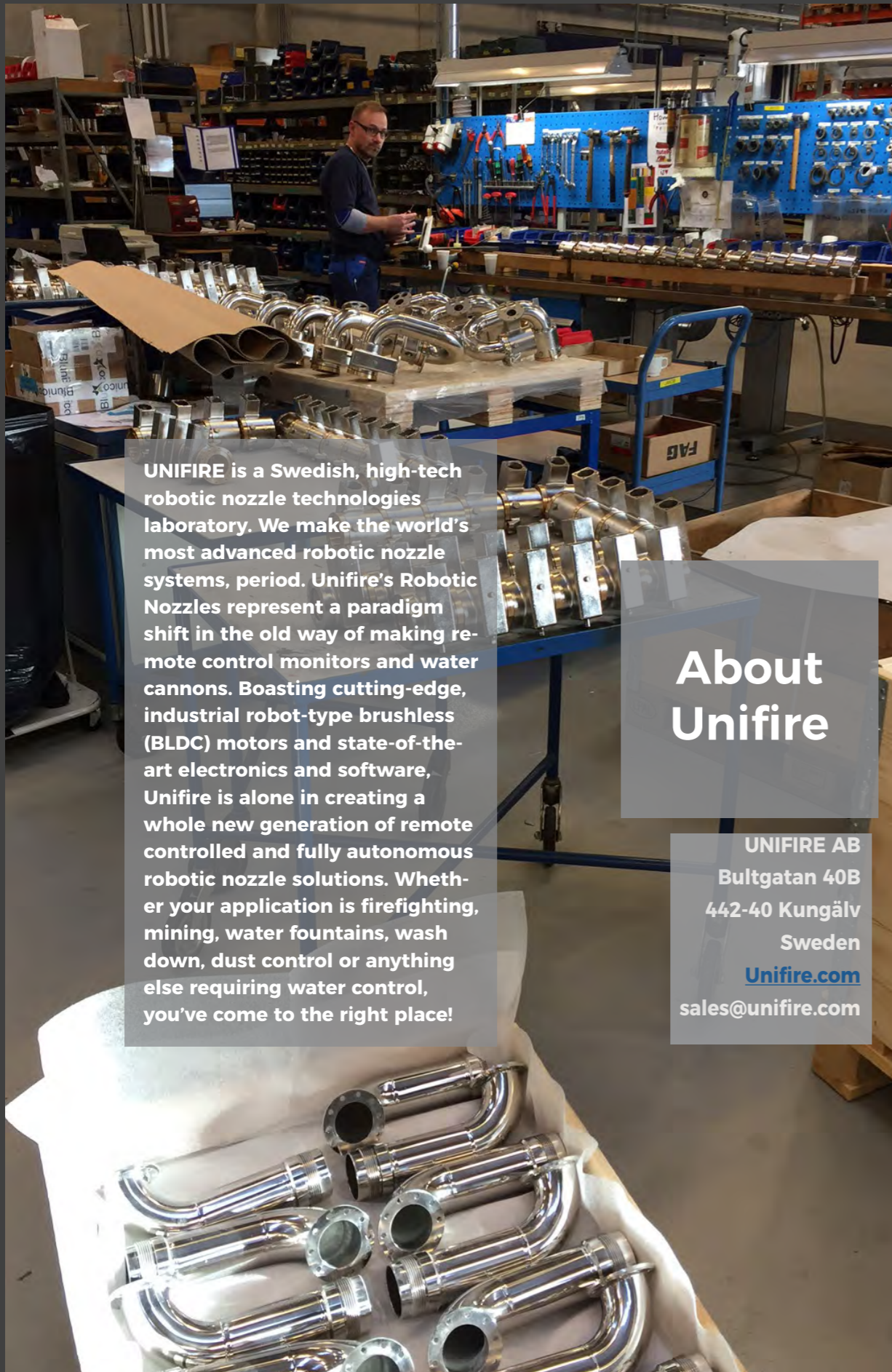
Made in Sweden



**UNIFIRE**

Advanced Robotic Nozzle Technologies™

v.27-11-2023



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 and fully autonomous 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!

## About Unifire

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## OVERVIEW



### INDUSTRIES WE PROUDLY SERVE

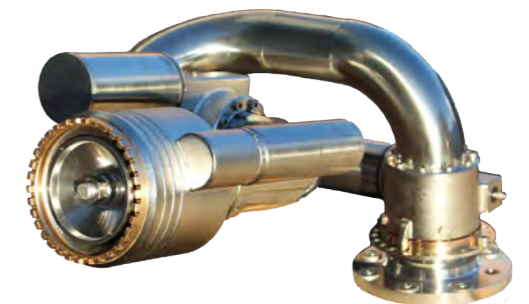
Pages 8-18

Unifire's state-of-the-art robotic nozzles serve a wide variety of industries and applications. Learn about the many possibilities.



**Force 50™**  
 Pages 19-32

Discover Unifire's 2" **Force 50** stainless steel 316L robotic nozzle for flows up to 2000 liters per minute at 10 bars, with a reach of up to 65 meters.



**Force 80™**  
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Discover Unifire's 3" **Force 80** stainless steel 316L robotic nozzles for flows up to 5000 liters per minute at 10 bars, with a reach of up to 85 meters.



**TARGA PLC's & Electronics**  
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Our state-of-the-art **TARGA** PLC's and advanced electronics completely developed in-house by Unifire, comprise the most advanced robotic nozzle control systems on the market. Learn more here.



**ONE™**  
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Learn about our cutting-edge **ONE App** & **ONE Web** Graphical User Interface. Control one or multiple systems and peripheral devices by computer, tablet, phone or Internet, with fully-customizable functions, logic languages and look.



**Accessories & Spare Parts**  
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Adding peripheral devices and ordering spare parts couldn't be easier. Check out some of the many possibilities here.



**System Packages**  
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Explore our wide variety of popular system packages, or let us help customize the perfect-fit package to meet your needs.



**FlameRanger™**  
Autonomous Robotic Fire Suppression  
Pages 62-71

Unifire's **FlameRanger** is the world's most advanced, and one-of-a-kind fully autonomous fire detection and suppression system. Discover our cutting-edge firefighting robot in this section.



**Joysticks & Controllers**  
Pages 72-77

We offer tons of ways to control our robotic nozzles. Explore standard solutions and inquire for custom-fit controllers.



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**UNIFIRE**

**INDUSTRIES  
WE  
PROUDLY  
SERVE**



# FIRE FIGHTING

## Helicopter Landing Pads

Unifire's Force series robotic nozzles are ideal for helideck fire protection both on- and off-shore.



## Fire Trucks & ARFF Vehicles

Force robotic nozzles are outfitted on Aircraft Rescue Fire Fighting (ARFF) and municipal firefighting vehicles around the world.

## Aerials

Compact and light weight, Force monitors are ideally suited for aerial ladders & platforms, booms and other firefighting applications.



## Robots

Unifire's advanced control systems can wirelessly control the nozzle as well as third-party robotic platforms, like this one made in cooperation with Segway.

# FIRE FIGHTING



## Aircraft Hangars

Unifire supplies both remote-controlled and fully automatic fire detection & suppression systems for aircraft hangars.

## Industrial & Manufacturing

Unifire's Force robotic nozzles protect numerous fixed industrial and manufacturing facilities.



## Fixed Installations

We serve a wide variety of fixed fire fighting solutions, both indoors and outdoors in some of the harshest environments.

## Bumper & Roof Monitors

Our robotic nozzles are widely used on numerous fire fighting vehicles as roof and bumper turrets.



# WASTE & RECYCLING

## Waste Bunker Protection

Our remote controlled & fully automatic robotic nozzle systems for complete waste bunker protection at waste-to-energy plants.

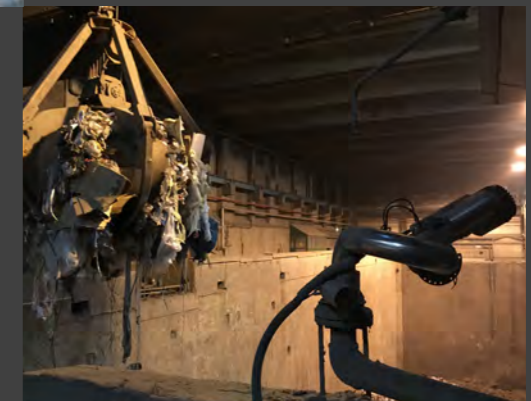


## Recycling Facilities

Unifire's equipment is trusted to protect a variety of recycling facilities internationally.

## Unrivalled Durability

We design and manufacture the most durable equipment available on the market to last and last in the harshest conditions



## Custom Fit

Offering bespoke control systems, doors, swing arms and booms to suite challenging installation requirements.

# AUTONOMOUS SYSTEMS

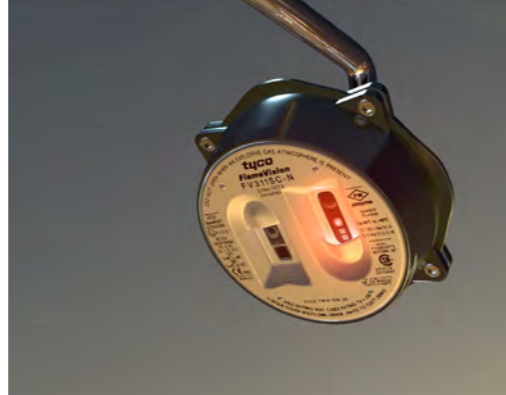


## FlameRanger Technology

Unifire's FlameRanger is the world's most advanced, fully autonomous fire detection & suppression system for nearly instantaneous fire protection, 24/7/365.

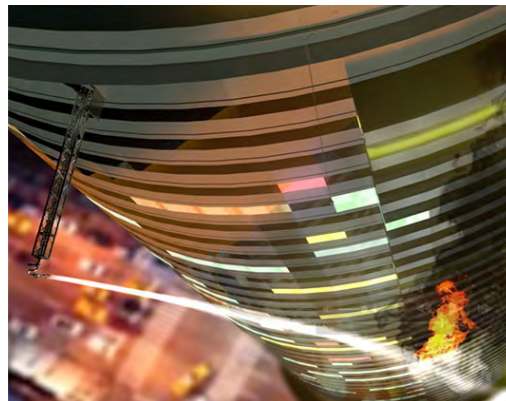
## Detection in Seconds

Advanced fire detectors detect fire within seconds of breaking out & the system responds immediately with great accuracy.



## Rapid, High-Volume Suppression

The robotic nozzle rapidly and dynamically targets the fire and suppresses it at its source with a large volume of water or foam.



## 24/7/365 Protection

Sleep tight while FlameRanger protects your valuable facilities around the clock, 24/7/365.



# MARINE & OFF-SHORE

## Open-Deck Protecton

Protecting open decks on ferries, Ro-Ro and cargo ships and other marine vessels.



## Super Yachts

World-class super yachts turn to Unifire for unmatched protection against fire & intrusion.

## Fire Boats

Unparalleled performance is why numerous fire boats have selected Unifire to supply their most critical equipment.



## Small & Mid-Sized Boats

Light weight, reliability and long-life cycle in the harshest marine environments make our equipment the perfect choice for small and mid-sized boats.



# MARINE & OFF-SHORE



### Anti-Pirate Protection

Unifire's Anti-Pirate Water Cannons protect numerous naval vessels, ships and super yachts from pirate attacks.

### Oil Platforms

Fire and intrusion protection on oil platforms requires nothing but the highest quality, most durable and reliable equipment: Unifire is uniquely qualified for the task.



### Unmanned Surface Vessels

Unmanned Surface Vessels (USV)'s and other remotely operated vessels.

### Hovercraft

Unifire has delivered to unique hovercraft thanks to the light weight and durable marine-grade construction of our robotic nozzles.



# FOUNTAINS

### Dazzling Effects

Direct a high volume of fresh or sea water with DMX for complete precision and synchronization to achieve dazzling effects.



### DMX Control

Unifire alone offers native DMX protocol for seamless integration in fountain control systems.

### Rapid Movement

We offer extremely high speed (up to 360° / second) motors to achieve any desired fountain movements and effects.



### Prepare to Be Inspired

Take your inspiration to new levels with Unifire's robotic nozzles for world-class fountain systems.



# MINING & WATER TRUCKS



### High Volume

Unifire offers systems in a variety of flow ranges to suite your needs, ranging up to 5000 liters (1320 gallons) per minute.

### Far Reaching

Long-range reach of up to 80 meters (87 yards) and total nozzle spray pattern provide unparalleled control.



### Unrivalled Durability

Our stainless steel 316L construction and high quality design and build are made for the harshest environments.

### Complete Control

Complete, precise spray pattern control is critical for mining, dust control and wash down. We've got you covered.



# SPECIAL APPLICATIONS

### Crowd Protection

Humane solutions for law enforcement and protection of the public.



### Animal Showers

Delightful cooling and cleaning of large animals at zoos.



### Anti-Pirate Protection

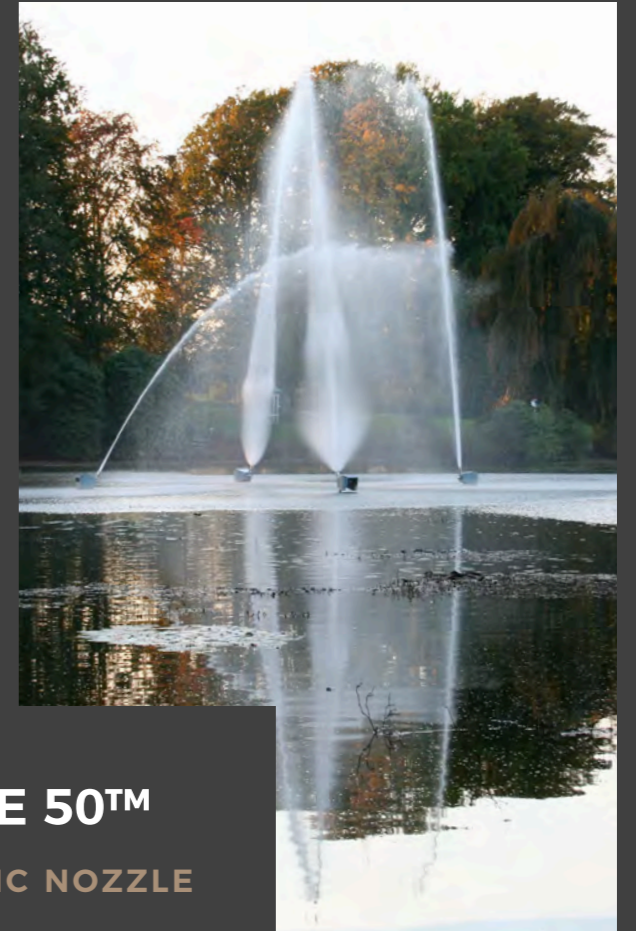
A non-lethal approach to protection from hijacking and pirate attacks.



### Customized Solutions

With flexible customized solutions for almost any need, Unifire offers unique, bespoke solutions for our valued customers.

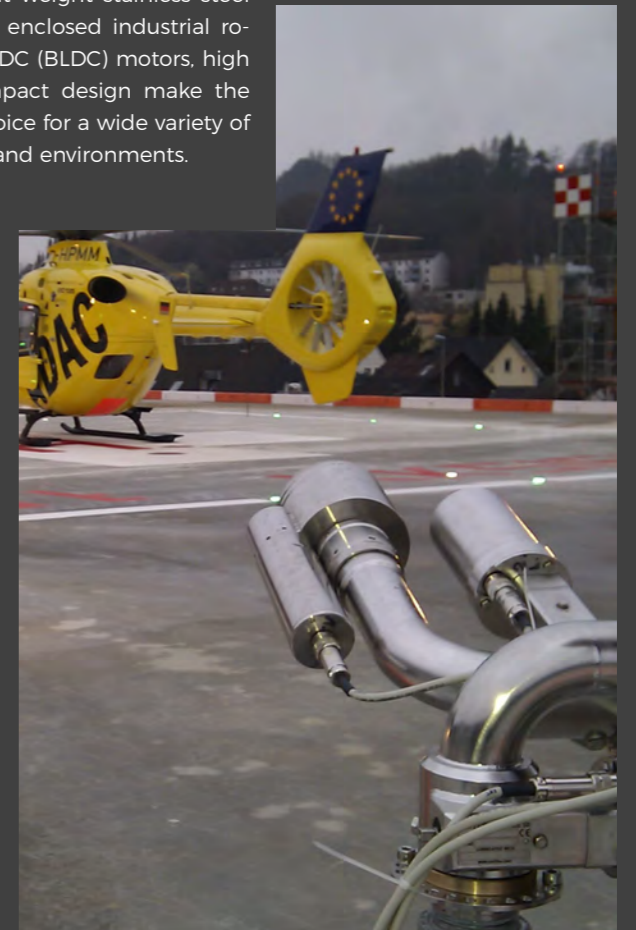
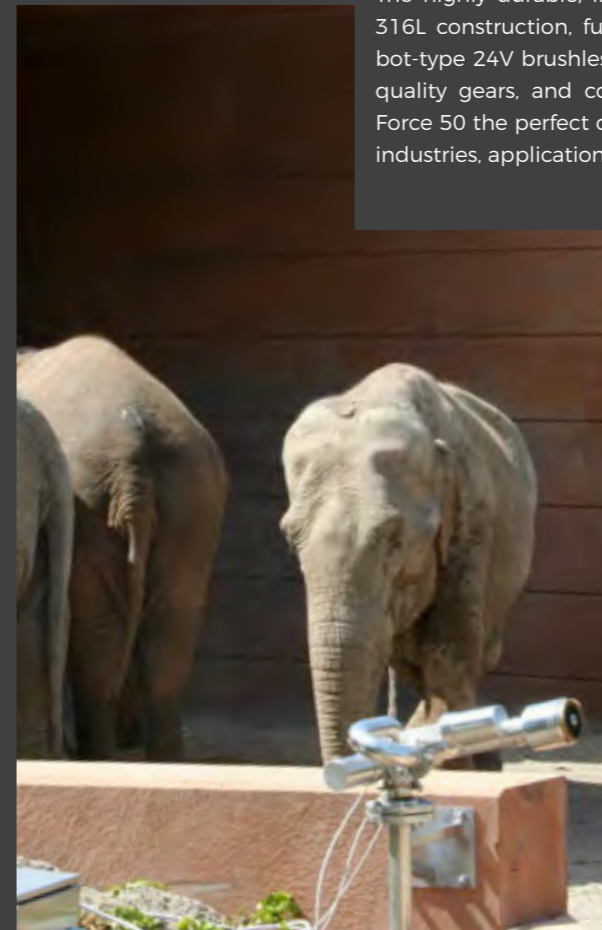




## FORCE 50™

### 2" ROBOTIC NOZZLE

The highly durable, light weight stainless steel 316L construction, fully enclosed industrial robot-type 24V brushless DC (BLDC) motors, high quality gears, and compact design make the Force 50 the perfect choice for a wide variety of industries, applications and environments.





## FORCE 50™

### 2" High Quality, Heavy Duty, Stainless Steel, Robotic Nozzle

Manufactured at state-of-the-art, ISO certified facilities, the Force 50 is the pinnacle of elegant, Swedish design, engineering, manufacturing & efficient performance, with the highest quality materials and featuring industrial-robot-type brushless (BLDC) motors, there is no finer robotic nozzle on the market.

- Heavy duty industrial robotic nozzle
- 2" BSP connection for variety of nozzle tip options
- Stainless steel 316L pipe and worm-gears
- Industrial robotic brushless DC motors (BLDC)
- Laser-welded IP68 motor enclosure
- M12 fully sealed IP67 multi-connectors
- Position feedback accuracy better than 1/100°
- Up to 38°/sec rotation speed
- Over 360° Horizontal Movement (set any range by software)
- Over 180° Vertical Movement (set any range by software)
- 50 mm internal pipe diameter
- Virtually maintenance-free; never requires re-greasing
- Light weight: ≈ 19 Kg (42 lbs.) (with Integ Nozzle Tip)
- Max Flow: 2200 lpm @ 12 bars (581 US gallons @ 175 psi; 132 m<sup>3</sup>/hr)
- Max Reach: 65 meters
- Connection by 2" male BSP or flange (ANSI, DIN, JIS)



## FORCE 50 QUICK SPECIFICATIONS

### 2" ROBOTIC NOZZLE

**Max Flow: 2 100 liters (555 gallons) per minute; 126 m3/hr**

Type:	Remote Controlled	
Material:	Stainless Steel 316L	
Range of Motion:	360° rotation / 180° vertical movement	
Base Connection:	2" Male BSP or flange (ANSI, DIN, JIS)	
Nozzle Tip Connection:	2" Male BSP	
Motor Type:	24V Brushless DC (BLDC)	
Certificates:	CE Marked / Manufactured at ISO 9001:2015 Certified Facilities	
	<b>Metric</b>	<b>Imperial</b>
Int. Pipe Diameter:	50 mm	2" inches
Dimensions (w/ Integ nozzle):	25 x 35 x 58 cm	9.8" x 13.8" x 22.8" inches
Weight (approx. w/ Integ nozzle):	19 kg	42 lbs
Max. Flow:	2 100 lpm	555 gpm
Max. Reach:	65 meters	71 yards
Max. Working Pressure:	12 bar	174 psi
Nominal Operating Pressure:	10 bar	145 psi

## FORCE 50 DETAILED SPECIFICATIONS

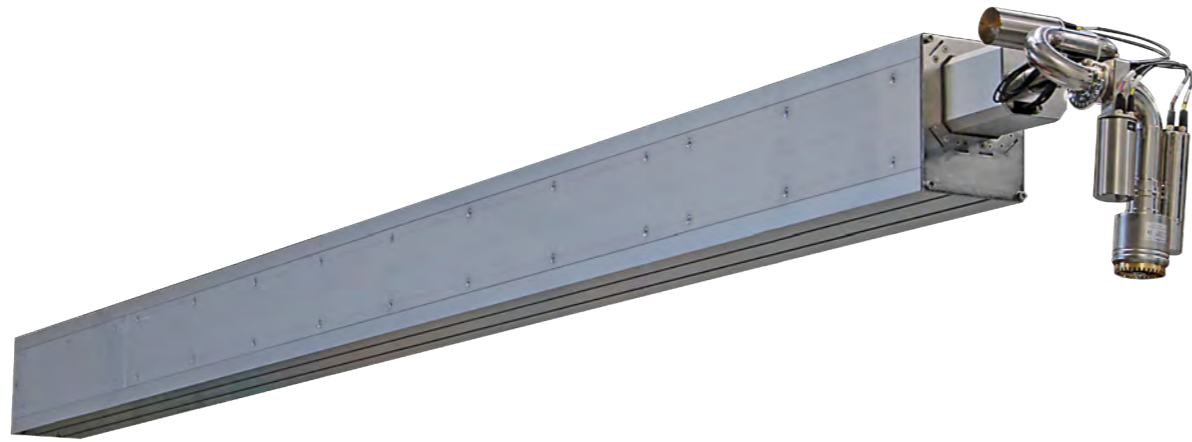
ITEM / FEATURE	DESCRIPTION
<b>Force 50 BLDC Robotic Nozzle Chassis:</b>	<p>2" electric 24V brushless motor (BLDC) robotic nozzle (a.k.a. "remote control monitor" or "water cannon") suitable for fire fighting.</p> <p>Made of 316L Stainless Steel (EN1.4404).</p> <p>Robust and suitable for harsh environments.</p> <p>Compatible with use of foam, salt-water, and other harsh agents.</p> <p>Smooth, large (50mm) pipe bends for minimal friction loss.</p> <p>Fully integrated and enclosed stainless steel worm gears, with Bronze (CuSn12) gear wheels.</p> <p>Fully enclosed BLDC brushless motors provide extremely long life, high torque and allow extremely accurate positioning and position feedback.</p> <p>Modular design for capability of changing damaged pipe sections and gear housings.</p> <p>Very low-maintenance; never requires re-greasing.</p> <p>Mass: Approx. 15 kg without nozzle.</p> <p>Dimensions (w/ Integ nozzle): 25 x 35 x 58 cm.</p> <p>Ambient temperature range: -25°C to +70°C.</p>
<b>Flow Range:</b>	500 to 2100 liters (130 to 555 U.S. gallons) per minute; ; 126 m3/hr).. Integ 50 jet/spray tip is mechanically adjustable to accommodate various flows. JETRANGE 50 tip has interchangeable flow discs to meet your flow requirements
<b>Max Working Pressure:</b>	12 bar
<b>Nominal Operating Pressure:</b>	10 bar
<b>Maximum Reach:</b>	Approximately 65 meters at 2000 liters per minute at 10 bars (71 yards at 530 gpm at 145 psi) in jet stream mode. Actual results can vary significantly depending on a number of factors (wind, piping, valves, pump, etc.)
<b>Maximum Range of Motion:</b>	360° horizontal; 180° vertical (+/- 90° from horizontal). Range can be easily set to any range desired. (May be limited if used with POINTER controller to 270° horizontal / - 20°/+ 70° or other custom specification. Inquire to learn more.)
<b>Movement Velocity (Speed):</b>	Standard: 24°/sec. rotational; 12°/sec. vertical Optional High Speed: up to 70 or 360 °/sec.

# FORCE 50 DETAILED SPECIFICATIONS

ITEM / FEATURE	DESCRIPTION
Manual Override:	Yes. Emergency manual override motor crank wheels available upon request.
Monitor Connection Types:	Base: 2" male BSP, or or flange (ANSI, DIN, JIS) Nozzle: 2" male BSP
Progressive, multi-directional movement:	Progressive speed control from extremely slow to max speed; simultaneous movement horizontally, vertically and nozzle jet/spray pattern control.
Programmable end positions:	End positions are set by software to any angle desired. Avoids wear and tear on motors, such as occurs with competing brands with mechanical hard stops.
Record & Play:	Simple record and play buttons to record all movements of the monitor and nozzle. Playback loops until interrupted by the operator.
Programmable Park Position:	Control system features an easy to record park (stow) position and a button for taking monitor to the park position.
Electric connection points:	M12 Multi-connectors on monitor and joystick electrical connections, allowing for quick installation, troubleshooting and replacement.
Modular Design:	Modular design for quick, simple replacement of all major components, including gear assemblies, pipe sections, joystick, electronic control box, cables, and motors.
INTEG 50 Jet/Spray Nozzle TIP:	2" electrically adjustable jet/spray firefighting water/foam nozzle. Generates a full, effective fog cone.  Stepless, adjustable spray angle from straight stream, over narrow spray to 140° fog cone.  Stainless steel 316L, remote controlled.  Fully enclosed BLDC brushless motors provide extremely long life, high torque and allow extremely accurate positioning and position feedback.  Fully integrated gear drive mechanics and integrated brushless DC (BLDC) motor. Multi-connector for quick and simple installation.
JETRANGE 50 Tip:	Stainless steel 316L, 2" nozzle tip provides tight jet stream. Changeable flow discs (baffles) for flows ranging up to 2000. For use with fresh- or salt-water, foam, dyes, and other harsh agents.



## F50-XT™ Extending Boom



### Extend Your Force 50 Robotic Nozzle by 4 Meters

The F50-XT is designed to extend the Unifire Force 50 by up to 4 meters in only 6 seconds, in order to reach an ideal position for suppression. The F50 Boom can be mounted to extend the robotic nozzle vertically (up or down) or horizontally. The F50 Boom is particularly useful when the robotic nozzle needs to be concealed, such as in a building exterior or interior, then extend into position in the case of a fire or other use.

The F50-XT was originally designed for exterior building façade protection (our FlameRanger XT™), where the entire unit is concealed in the building and pops out in the event of a fire, but it has many other applications as well. It is made of high strength, heavy duty extruded aluminium profile. The mechanics, transmission and motors are protected from dust (IP55). Electromechanical transmission with 400W AC Servo motor provides smooth and quiet operation. Simple, quick installation with multi-connector cables to the control cabinet.



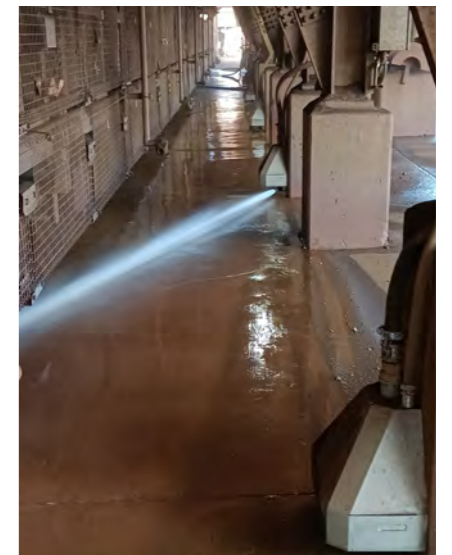
## F50-ST™

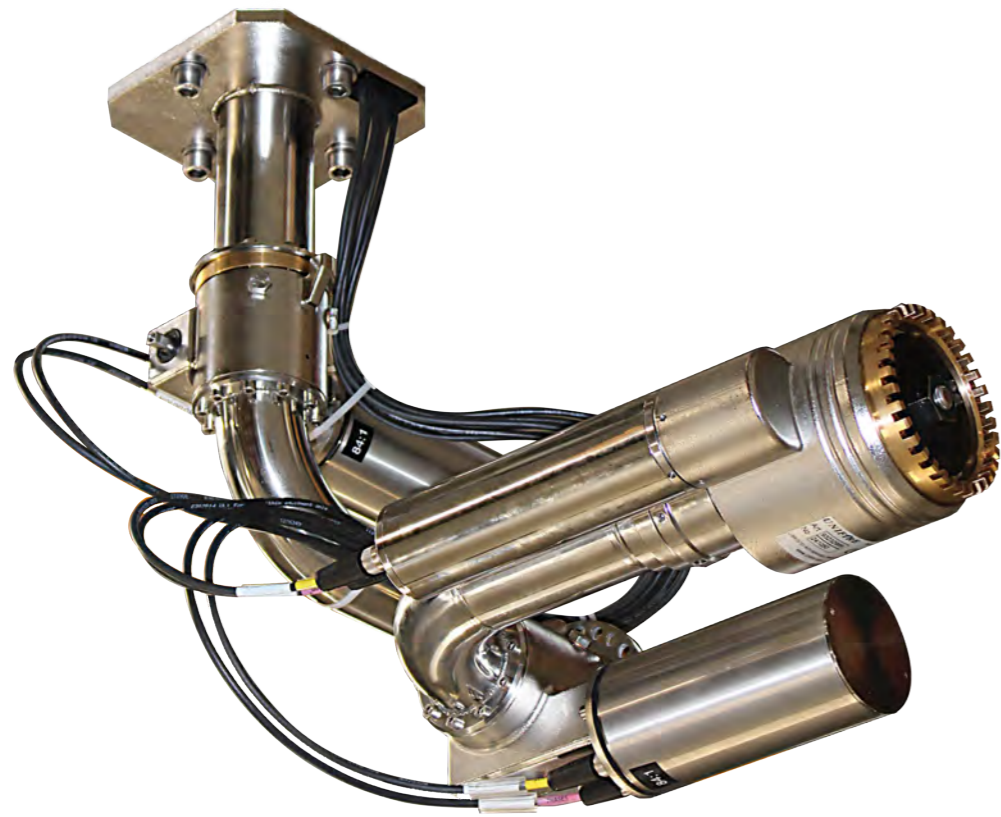


### The Single-Axis Turret

Made of Stainless Steel 316L, the F50R-ST is our single-axis robotic nozzle, typically supplied with our V-Nozzle mechanically-adjustable spray pattern tip. It is made of stainless steel 316L with a 50mm (2" inch) internal pipe diameter designed for low friction and high performance in the harshest possible environments. It is ideal for wash-down applications, mining belt-cleaning, and firefighting. The precision gearing and BLDC motors provide extremely precise and stable feedback without losing orientation over time, making them ideal for our fully autonomous systems and pre-recorded playback sequences. We offer numerous control options, including inputs from other systems.

- Heavy duty, single-axis robotic nozzle
- High quality firefighting nozzle tip, mechanically adjustable spray pattern
- Stainless steel 316L pipe and worm-gears
- Industrial robotic brushless DC motor (BLDC)
- Laser-welded IP68 motor enclosure
- M12 fully sealed IP67 multi-connectors
- Position feedback accuracy better than 1/100°
- Over 360° Horizontal Movement (set any range by software)
- 50 mm internal pipe diameter
- Virtually maintenance-free; never requires re-greasing
- Compact with a low profile
- Connection by 2" male BSP or flange (ANSI, DIN, JIS)





## FORCE 50CM™

### Ceiling Mount Configuration

The Force 50CM is our standard Force 50 with a twist! The special configuration is designed “upside down” for mounting on ceilings.

- Upside-down ceiling mount configuration
- Heavy duty industrial robotic nozzle
- 2" BSP connection for variety of nozzle tip options
- Stainless steel 316L pipe and worm-gears
- Industrial robotic brushless DC motors (BLDC)
- Laser-welded IP68 motor enclosure
- M12 fully sealed IP67 multi-connectors
- Position feedback accuracy better than 1/100°
- Up to 38°/sec rotation speed
- Over 360° Horizontal Movement (set any range by software)
- Over 180° Vertical Movement (set any range by software)
- 50 mm internal pipe diameter
- Virtually maintenance-free; never requires re-greasing
- Light weight: ≈ 19 Kg (42 lbs.) (with Integ Nozzle Tip)
- Max Flow: 2200 lpm @ 12 bars (581 US gallons @ 175 psi; 132 m3/hr)
- Max Reach: 65 meters
- Connection by 2" male BSP or flange (ANSI, DIN, JIS)



## F50R-LT™

### Compact Design with Integrated JETRANGE Tip

Our F50R-LT is our compact footprint configuration of the Force 50, while maintaining a 50 mm (2") internal pipe diameter. Our most economical robotic nozzle, the F50R-LT is designed and ideally suited for vehicle bumpers, where space really matters.

- Heavy duty industrial robotic nozzle
- 2" BSP connection for variety of nozzle tip options
- Stainless steel 316L pipe and worm-gears
- Industrial robotic brushless DC motors (BLDC)
- Laser-welded IP68 motor enclosure
- M12 fully sealed IP67 multi-connectors
- Position feedback accuracy better than 1/100°
- Up to 38°/sec rotation speed
- Over 360° Horizontal Movement (set any range by software)
- Over 180° Vertical Movement (set any range by software)
- 50 mm internal pipe diameter
- Virtually maintenance-free; never requires re-greasing
- Light weight: ≈ 16 Kg (35 lbs.)
- Max Flow: 1940 lpm @ 10 bars (512 US gallons @ 145 psi; 116.4 m3/hr)
- Max Reach: 65 meters
- Connection by 2" male BSP or flange (ANSI, DIN, JIS)

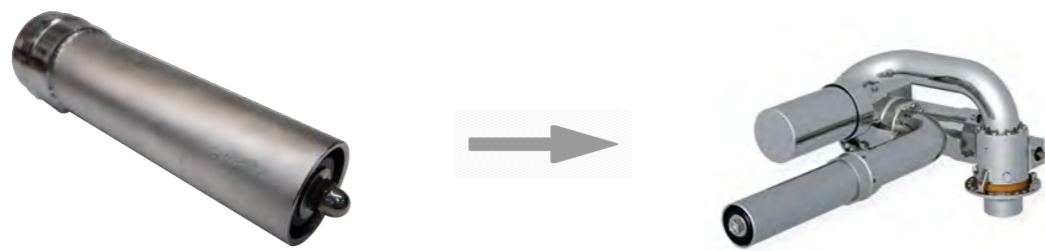
# FORCE 50 NOZZLE TIPS

## Integ 50



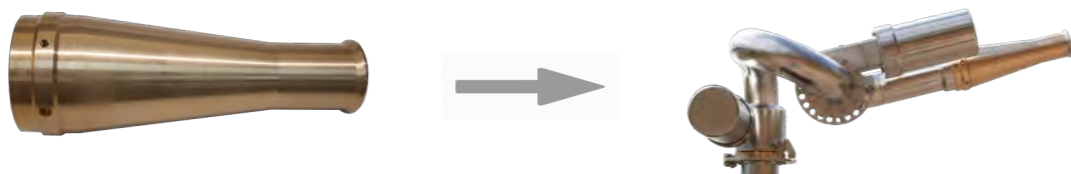
The Integ 50 is unique. Made of stainless steel 316L and bronze stream-shaper and featuring fully enclosed, high quality gears and stainless-steel-encased 24V DC brushless (BLDC) motors, the Integ 50 provides unbeatable performance and exquisite control from tight jet stream, to full fog cone, and everything in between.

## JETRANGE 50



The JETRANGE 50 is ideal for applications requiring a tight jet stream. It features built-in stream shapers to achieve high performance, as well as interchangeable flow discs (baffles) to accommodate various flow requirements. The baffle also creates a natural vacuum, producing a very tight jet stream.

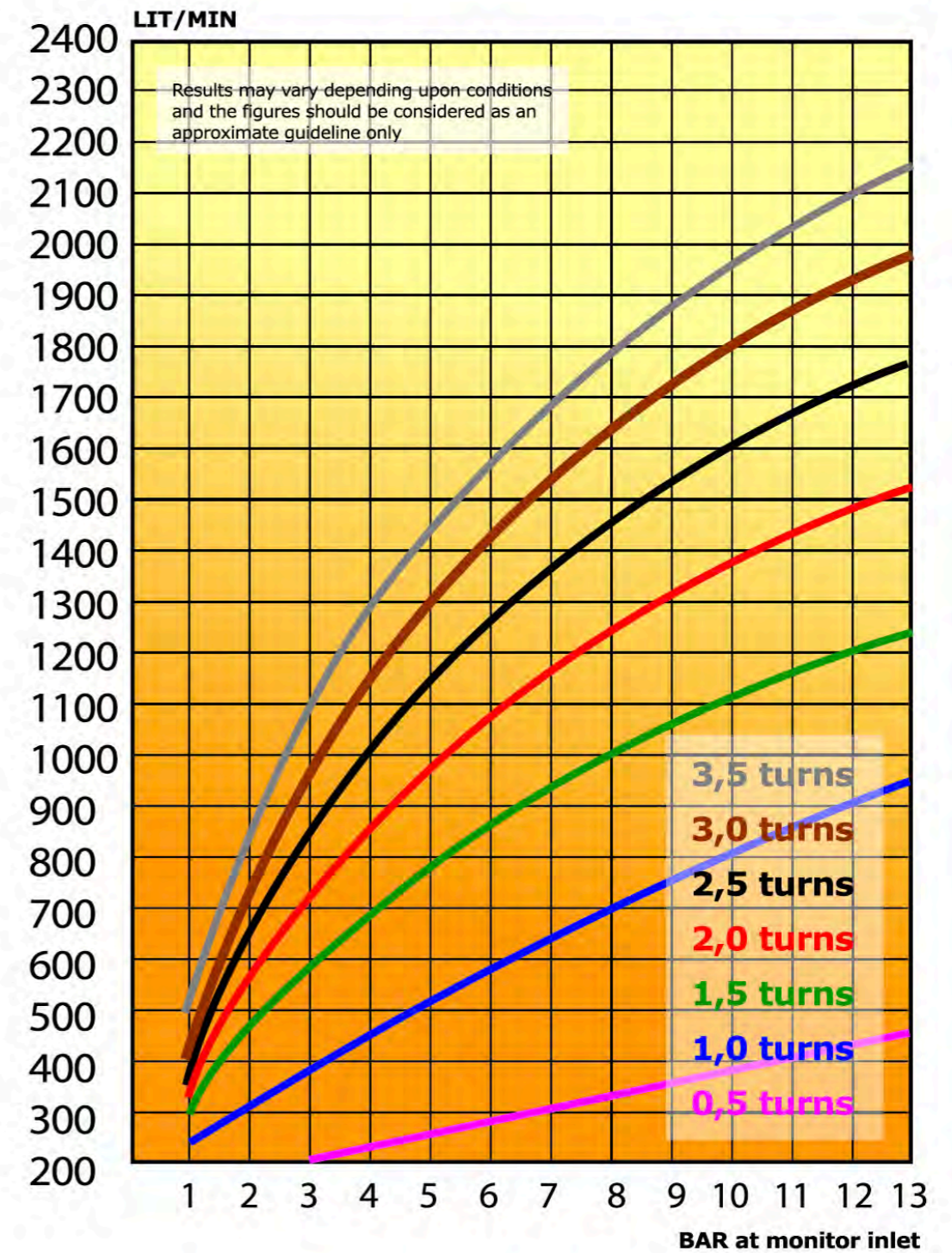
## Smooth Bore (24mm & 32mm)



High quality bronze smooth bore nozzle tip available in 24mm and 32 mm openings. Ideal for jet stream applications, particularly where there may be dirt and particulates in the water source.

# FORCE 50 FLOW CHART

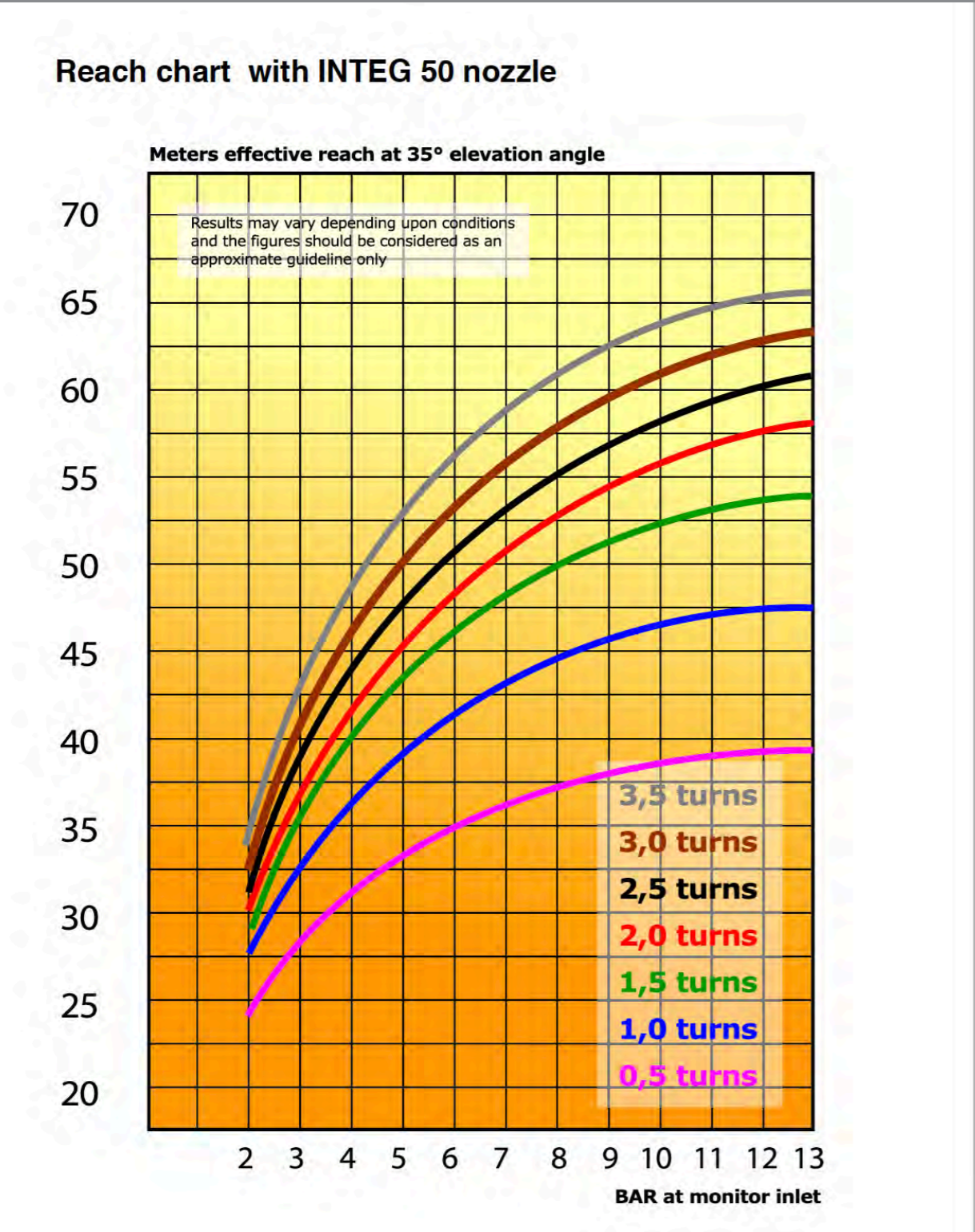
Flow Chart with Integ 50 Jet/Spray Tip





# FORCE 50 REACH CHART

Reach Chart with Integ 50 Jet/Spray Tip



## FORCE 80™

### 3" ROBOTIC NOZZLE

All the benefits of the Force 50, but with a 3" internal pipe diameter for flows of up to 5000 liters per minute at 10 bars. Stainless steel 316L construction, fully enclosed industrial robot-type 24V brushless DC (BLDC) motors, high quality gears, and compact design.





## FORCE 80 QUICK SPECIFICATIONS

### 3" ROBOTIC NOZZLE

**Max Flow: 5 500 liters (1 453 gallons) per minute**

Type:	Remote Controlled	
Material:	Stainless Steel 316L	
Range of Motion:	360° rotation / 180° vertical movement	
Base Connection:	3" Male BSP or flange (ANSI, DIN, JIS)	
Nozzle Tip Connection:	3" Male BSP	
Motor Type:	24V Brushless DC (BLDC)	
Certificates:	CE Marked / Manufactured at ISO 9001:2015 & ISO 14001:2015 Certified Facilities	
	<b>Metric</b>	<b>Imperial</b>
Int. Pipe Diameter:	80 mm	3" inches
Dimensions (with nozzle):	34 x 48 x 75 cm	13.4" x 18.9" x 29.5" inches
Weight (approx.):	30 kg	66 lbs
Max. Flow:	5 500 lpm	1 453 gpm
Max. Reach:	80 meters	87 yards
Max. Working Pressure:	12 bars	175 psi
Nominal Operating Pressure:	10 bar	145 psi

## FORCE 80 DETAILED SPECIFICATIONS

ITEM / FEATURE	DESCRIPTION
<b>Force 80 BLDC Robotic Nozzle Chassis:</b>	<p>3" (80mm) electric 24V brushless motor (BLDC) robotic nozzle (a.k.a. "remote control monitor" or "water cannon") suitable for fire fighting.</p> <p>Made of 316L Stainless Steel (EN1.4404).</p> <p>Robust and suitable for harsh environments.</p> <p>Compatible with use of foam, salt-water, and other harsh agents.</p> <p>Smooth, large (80mm) pipe bends for minimal friction loss.</p> <p>Fully integrated and enclosed stainless steel worm gears, with Bronze (CuSn12) gear wheels.</p> <p>Fully enclosed BLDC brushless motors provide extremely long life, high torque and allow extremely accurate positioning and position feedback.</p> <p>Modular design for capability of changing damaged pipe sections and gear housings.</p> <p>Very low-maintenance; never requires re-greasing.</p> <p>Mass: Approx. 33 kg (73 lbs) with nozzle.</p> <p>Dimensions (w/ Integ nozzle): 34 x 48 x 75 cm (13.4" x 18.9" x 29.5" inches)</p> <p>Ambient temperature range: -25°C to +70°C.</p>
<b>Maximum Operating Capacity (Flow):</b>	5500 liters (1453 gallons) per minute; 330 m3/hr.
<b>Max Working Pressure:</b>	12 bar (174 psi)
<b>Nominal Operating Pressure:</b>	10 bar (145 psi)
<b>Maximum Reach:</b>	Approximately 80 meters at 5000 liters per minute at 10 bars (87 yards at 1320 gpm at 145 psi) in jet stream mode. Actual results can vary significantly depending on a number of factors (wind, piping, valves, pump, etc.)
<b>Maximum Range of Motion:</b>	360° horizontal; 180° vertical (+/- 90° from horizontal). Range can be easily set to any range desired. (May be limited if used with POINTER controller to 270° horizontal / - 20°/+ 70° or other custom specification. Inquire to learn more.)
<b>Movement Velocity (Speed):</b>	Standard: 16°/sec. rotational; 12°/sec. vertical Optional High Speed.; inquire for details.

# FORCE 80 DETAILED SPECIFICATIONS

ITEM / FEATURE	DESCRIPTION
Manual Override:	Yes. Emergency manual override motor crank wheels available upon request.
Monitor Connection Types:	Base: 3" male BSP, or flange (ANSI, DIN, JIS). Nozzle: 3" male BSP.
Progressive, multi-directional movement:	Progressive speed control from extremely slow to max speed; simultaneous movement horizontally, vertically and nozzle jet/spray pattern control.
Programmable end positions:	End positions are set by software to any angle desired. Avoids wear and tear on motors, such as occurs with competing brands with mechanical hard stops.
Record & Play:	Simple record and play buttons to record all movements of the monitor and nozzle. Playback loops until interrupted by the operator.
Programmable Park Position:	Control system features an easy to record park (stow) position and a button for taking monitor to the park position.
Electric connection points:	M12 Multi-connectors on monitor and joystick electrical connections, allowing for quick installation, troubleshooting and replacement.
Modular Design:	Modular design for quick, simple replacement of all major components, including gear assemblies, pipe sections, joystick, electronic control box, cables, and motors.
INTEG 80 Jet/Spray Nozzle TIP:	3" electrically adjustable jet/spray firefighting water/foam nozzle. Generates a full, effective fog cone.  Stepless, adjustable spray angle from straight stream, over narrow spray to 140° fog cone.  Stainless steel 316L, remote controlled.  Fully enclosed BLDC brushless motors provide extremely long life, high torque and allow extremely accurate positioning and position feedback.  Fully integrated gear drive mechanics and integrated brushless DC (BLDC) motor. Multi-connector for quick and simple installation.
JETRANGE 4000 Tip:	Stainless steel 316L, 3" nozzle tip provides tight jet stream. Changeable flow discs (baffles) for flows ranging up to 4000 lpm (1056 gpm). For use with fresh- or salt-water, foam, dyes, and other harsh agents.



## FORCE 80™

### 3" High Quality, Heavy Duty, Stainless Steel, Robotic Nozzle

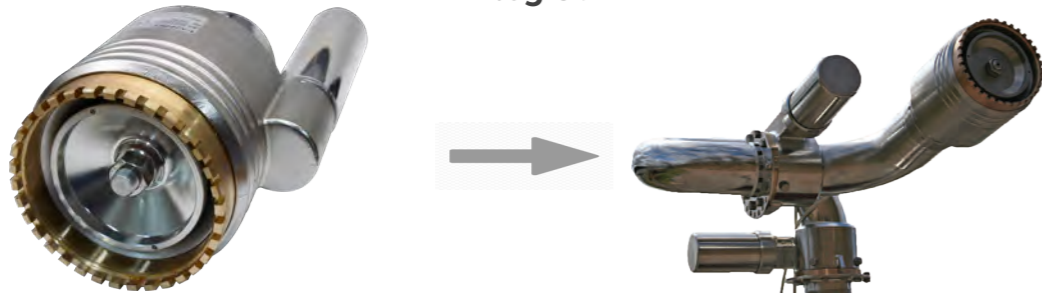
Manufactured at state-of-the-art, ISO certified facilities, the Force 80 is the pinnacle of elegant, Swedish design, engineering, manufacturing & efficient performance, with the highest quality materials and featuring industrial-robot-type brushless (BLDC) motors, there is no finer robotic nozzle on the market.

- Heavy duty industrial robotic nozzle
- 3" BSP Connection for a variety of nozzle tip options
- Stainless steel 316L pipe and worm-gears
- Industrial robotic brushless DC (BLDC) motors
- Laser-welded IP68 motor enclosure
- M12 fully sealed IP67 multi-connectors
- Position feedback accuracy better than 1/100°
- Over 360° Horizontal Movement (set any range by software)
- Over 180° Vertical Movement (set any range by software)
- 80 mm internal chassis pipe diameter
- Virtually maintenance-free; never requires re-greasing.
- Max Flow @ 12 bars: 5500 lpm (1453 US gallons @ 175psi; 330 m3/hr)
- Max Reach: 80 meters (87 yards)
- Light Weight: 33 Kg (73 lbs.) including nozzle
- Base connection by 3" male BSP or flange (ANSI, DIN, JIS)



# FORCE 80 NOZZLE TIPS

**Integ 80**



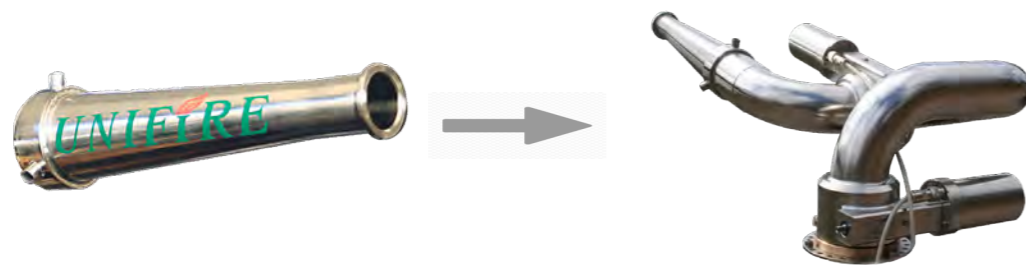
The Integ 80 is unique. Made of stainless steel 316L and bronze stream-shaper and featuring fully enclosed, high quality gears and stainless-steel-encased 24V DC brushless (BLDC) motors, the Integ 80 provides unbeatable performance and exquisite control from tight jet stream, to full fog cone, and everything in between.

**JETRANGE 80**



The JETRANGE 50 is ideal for applications requiring a tight jet stream. It features built-in stream shapers to achieve high performance, as well as interchangeable flow discs (baffles) to accommodate various flow requirements. The baffle also creates a natural vacuum, producing a very tight jet stream.

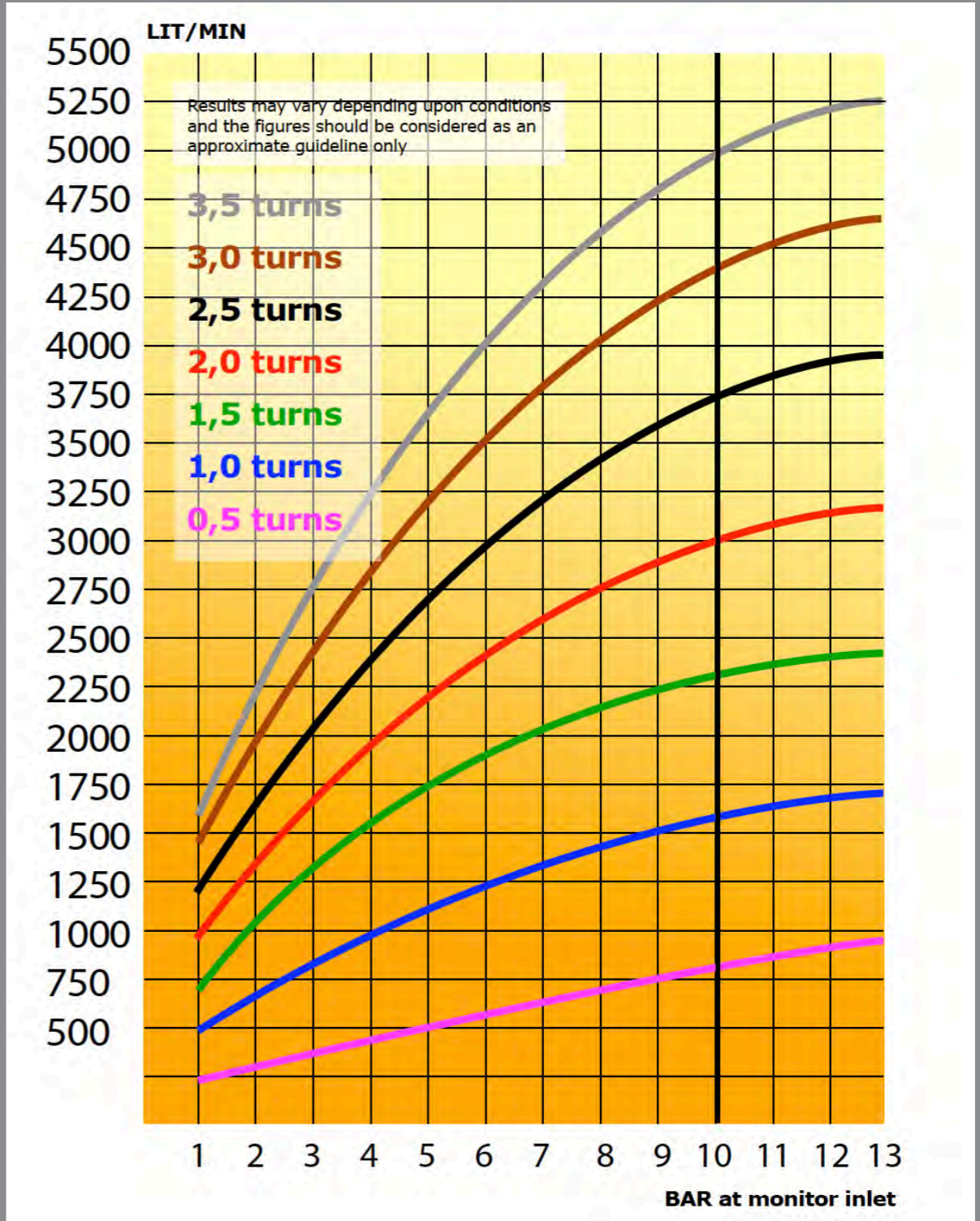
**Smooth Bore (48 mm)**



High quality stainless steel 316L smooth bore nozzle tip with a 48 mm opening. Ideal for jet stream applications, particularly where there may be dirt and particulates in the water source.

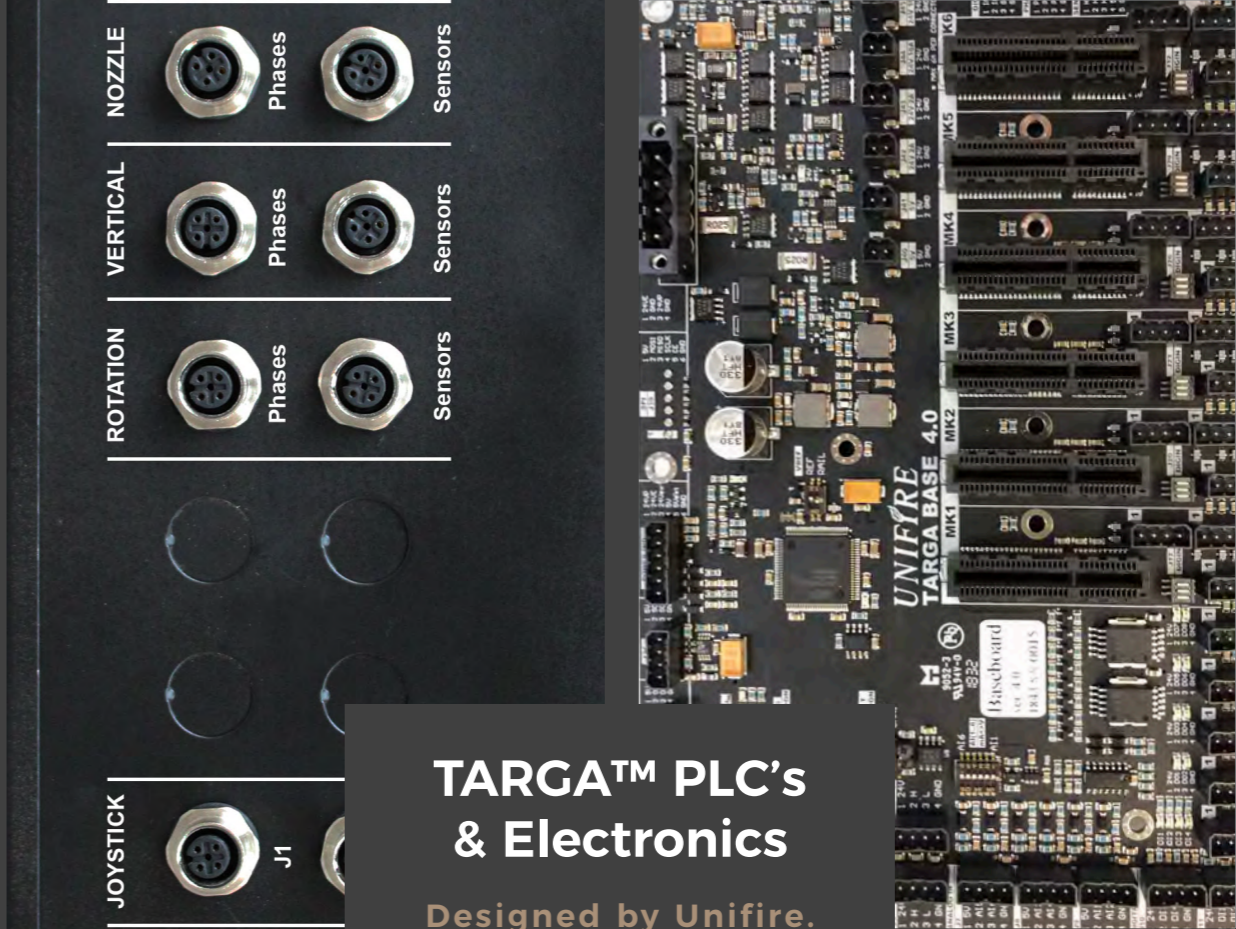
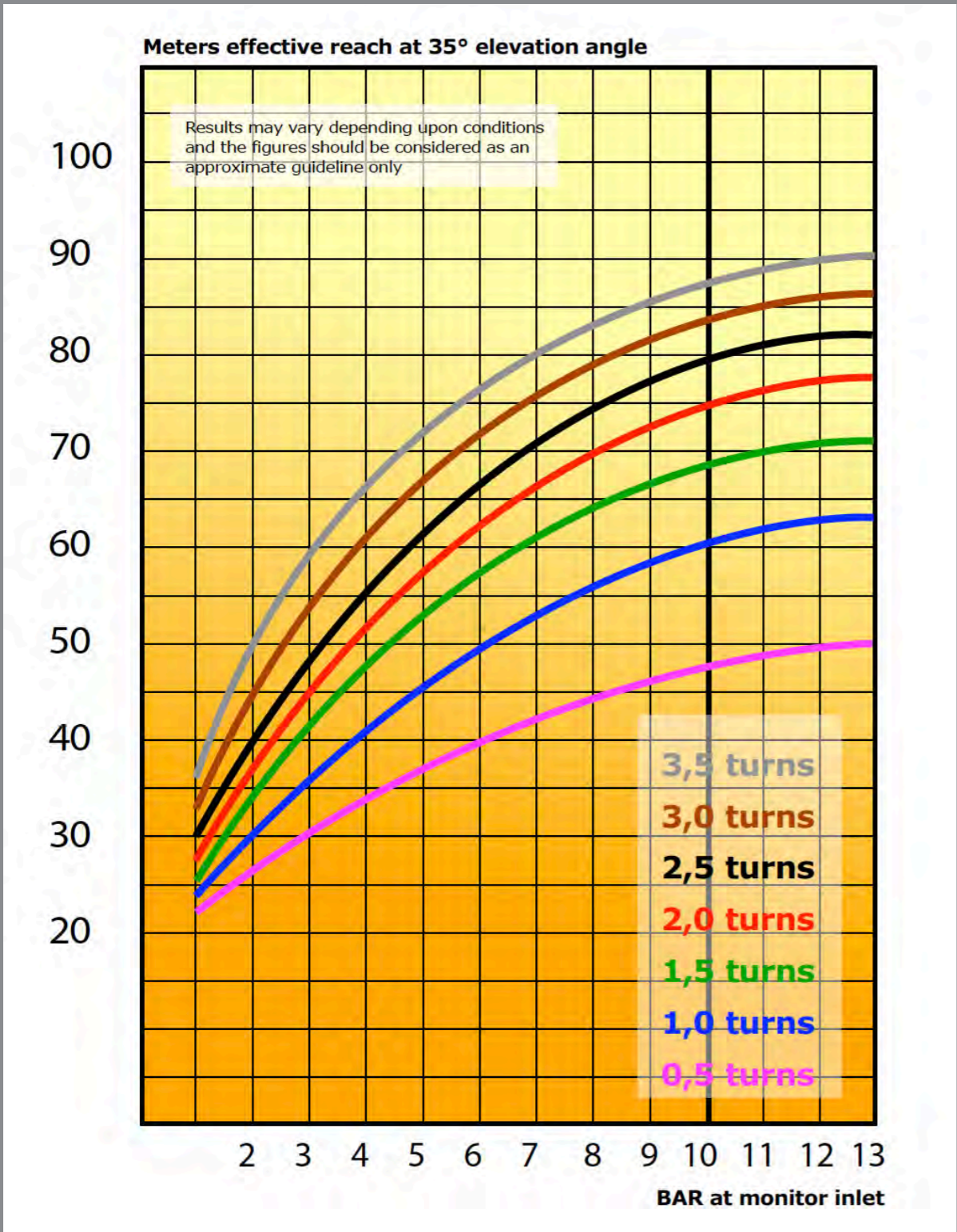
# FORCE 80 FLOW CHART

Flow Chart with Integ 80 Jet/Spray Tip



# FORCE 80 REACH CHART

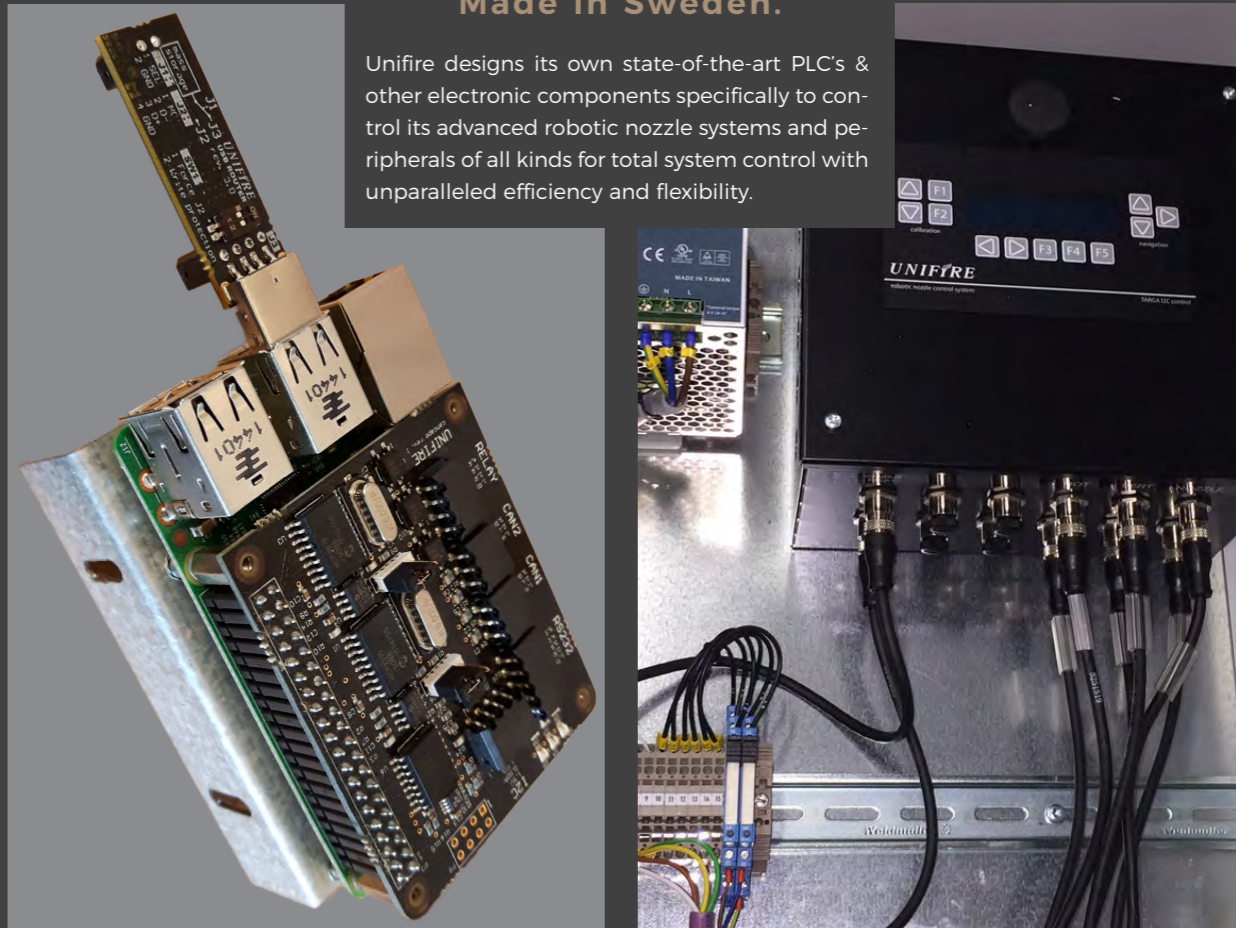
Reach Chart with Integ 80 Jet/Spray Tip



## TARGA™ PLC's & Electronics

Designed by Unifire. Made in Sweden.

Unifire designs its own state-of-the-art PLC's & other electronic components specifically to control its advanced robotic nozzle systems and peripherals of all kinds for total system control with unparalleled efficiency and flexibility.



# TARGA PLC MODELS

Unifire's new, 4th generation TARGA and X-TARGA Programmable Logic Controllers (PLC's) are the culmination of more than a decade of meticulous, state-of-the-art electronic hardware and software design, which provide endless possibilities for the control of Unifire's robotic nozzles systems and perhiperal system devices.

## TARGA™

The TARGA PLC is a light-weight, compact, 24V PLC packed with features and flexibility to control any robotic nozzle system exatly how you want.



## X-TARGA™

The X-TARGA PLC combines the TARGA, built-in power converter and additional, optional electronic components in an industrial-grade IP66 Rittal cabinet.



## X-TARGA-S™

The X-TARGA-S PLC combines the TARGA, built-in power converter and additional, optional electronic components in a rugged, IP67 stainless steel 316 IP66 Weidmüller cabinet.



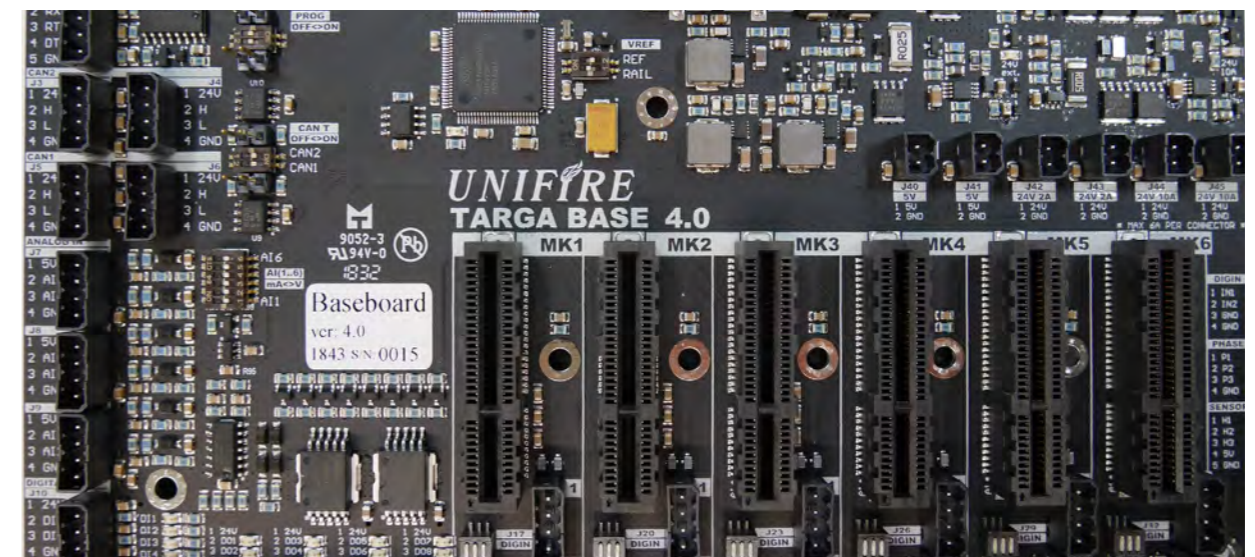
TOTAL SYSTEM CONTROL



**DESIGNED IN-HOUSE BY UNIFIRE FOR THE SOLE PURPOSE OF TOTAL ROBOTIC NOZZLE CONTROL**

UNIFIRE designed its TARGA programmable logic controller (PLC) and ancillary electronic components from the ground up for the sole purpose of providing the most powerful, efficient, flexible and comprehensive control of our robotic nozzle systems.

Complete flexibility to control motors, valves, lights, alarms, and virtually any other peripheral device. Control via joysticks, computer, tablet, smart phone, and/or the Internet. Customizable ap to provide the functions, look, language and feel that suits your specific needs.



## TARGA™



### Unifire's Revolutionary PLC for Total System Control

Unifire's one-of-a-kind, state-of-the-art TARGA PLC allows users to simply and economically tailor water cannon systems to their individual needs. From basic, low-cost, stand alone installations, to highly sophisticated and integrated systems.

The TARGA is a scalable system platform that supports up to six BLDC motors and numerous analogue and digital inputs and outputs. This substantially raises the bar for the industry and opens worlds of possibilities—features unavailable anywhere else on the market. The Unifire TARGA PLC is the backbone of control robotic nozzles, valves, lights, peripherals, automatic systems, integrated systems, and much more.

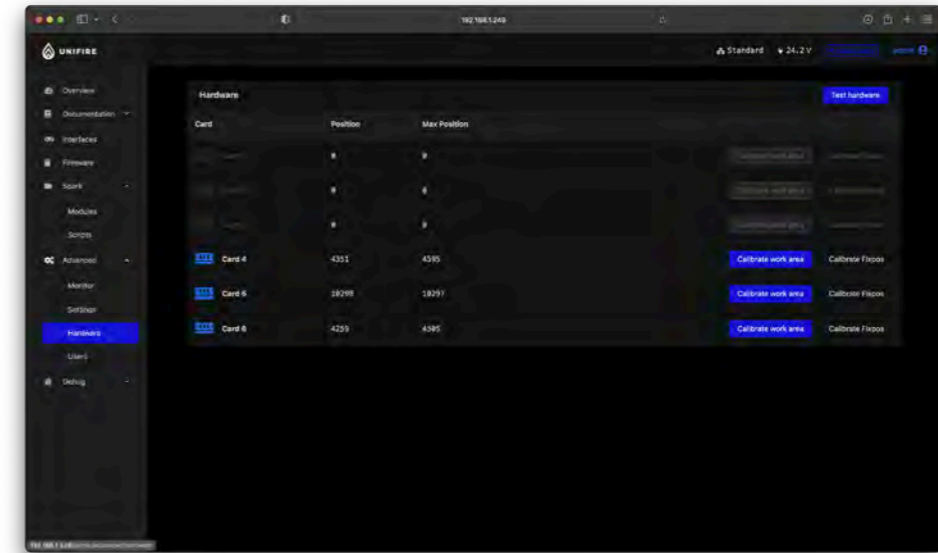
Featuring a built-in web server, our cutting-edge technology allows our customers to connect to the TARGA PLC over a secure network connection to control their systems from their phone, tablet and computer, from anywhere in the world. Our customers can also choose to give Unifire's technicians access to perform remote commissioning and technical support on a moment's notice, without incurring travel fees and delays.

## TARGA PLC DIMENSIONS





# Ammolite™



**Built-in to Every TARGA PLC, Ammolite is a Graphical User Interface Tool for System Setup, Configuration & Technical Support**

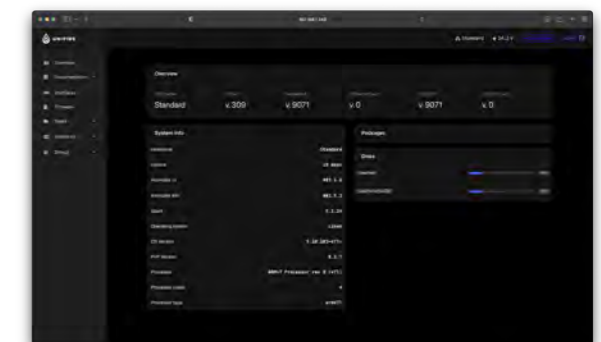
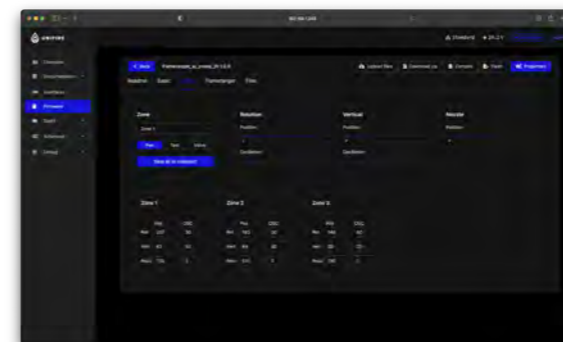
## TARGA PLC SPECIFICATIONS

Models:	TARGA1, TARGA2, TARGA3, TARGA4, TARGA5, & TARGA6 (digit represents # of installed BLDC driver cards)
Power:	24V DC / 20 Amps
Weight:	1 kg / 2.2 lbs.
Dimensions:	225 x 225 x 125 mm / 8.9" x 8.9" x 5" inches
Communication Protocols:	2 x CAN 2.0 29-bit header (UniCAN) 125,250,500 kB/s, RS232, RS485 (Modbus, DMX, etc.)
Physical Layer Protocols:	USB, Ethernet (TCP/IP, web socket), others available per customer requirements
BLD Motor Driver Card Slots:	6 (each with 2 digital inputs)
Inputs:	4 digital inputs (NPT) + 2 per installed motor driver card, 6 analogue inputs (4-20 mA or 0-5V), expandable & customizable to customer requirements
Outputs:	8 digital outputs, of which 4 can be set to PWM, expandable to customer requirements
Connector Types:	M12 A/B coded, 4P, 5P, 8P, 12P
Certificates:	EMCD 2014/30EU, CE Marked, produced at ISO certified facilities

Ammolite is Unifire's powerful Graphical User Interface tool to allow technicians to easily and intuitively set up and configure Force robotic nozzle systems and FlameRanger systems.

Technicians can simply connect a computer to the TARGA PLC for complete access to all system information and settings of the system, perform system calibration, set park (stow) position, view and troubleshoot system data, view in real time all CAN bus system data, including motor positions and loads, and much more.

And, by providing a secure connection to Unifire, Unifire's technicians can provide real-time remote system commissioning, trouble-shooting and technical support to anywhere in the world, bringing you extremely fast service and assistance without travel fees and delays.





# X-TARGA & X-TARGA-S



**RITTAL IP66 Steel Plate Cabinet**



**Weidmüller IP67 Stainless Steel cabinet**

## Unifire's Revolutionary TARGA Programmable Logic Controllers (PLCS) in 2 Cabinet Options: IP66 & IP67

Unifire offers its advanced TARGA PLC (see above) mounted in one of two choices of heavy-duty industrial cabinets: X-TARGA in a RITTAL IP66 cabinet, and the X-TARGA-S in a Weidmüller IP67 Stainless Steel cabinet.

Both cabinet types come with a high-quality power converter accepting from 110 to 230 V AC at 50 or 60 Hertz.

Both cabinet types are designed for the harsh environments, both on- and off-shore. The X-TARGA & X-TARGA-S come standard with a built-in power converter from 110 to 230 V AC at 50 or 60 Hertz to TARGA's native 24VDC / 20 Amp requirement. The mounted TARGA (see TARGA section of this brochure) is a scalable system platform that supports up to six BLDC motors and numerous analogue and digital inputs and outputs. The Unifire X-TARGA PLC controller for robotic nozzles, valves, lights, peripherals, automatic systems, system integration, and much more.

2024 technology allows our customers to control systems from their phone, tablet and computer, from anywhere in the world. Unifire also provides remote commissioning and technical support world-wide.

# X-TARGA



## X-TARGA PLC SPECIFICATIONS

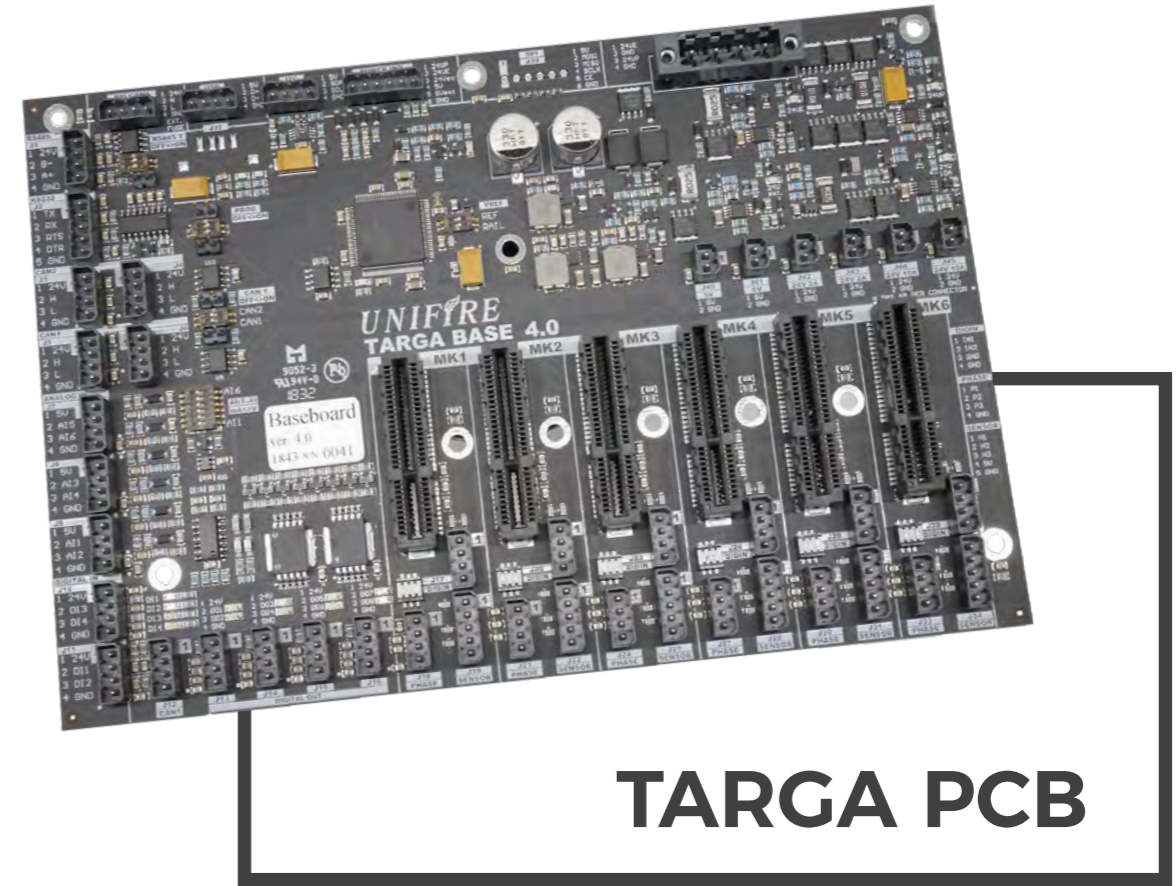
Models:	X-TARGA (followed by a number 1-6, representing the quantity of installed BLDC driver cards)
Power Input:	110/230 V AC, 50/60 Hz (built-in converter to 24VDC / 20 Amps)
Approximate Weight:	15 kg / 33 lbs.
Cabinet Types:	<b>Model: X-TARGA:</b> RITTAL IP66 Steel Plate cabinet type: AE 1045.500, Dimensions: 500 x 400 x 210 mm / 19.7" x 15.8" x 8.3" inches, mass: 13 kg.
Communication Protocols:	2 x CAN 2.0 29-bit header (UniCAN) 125,250,500 kB/s, RS232, RS485 (Modbus, DMX, etc.)
Physical Layer Protocols:	USB, Ethernet (TCP/IP, web socket), others available per customer requirements
BLD Motor Driver Card Slots:	6 (each with 2 digital inputs)
Inputs:	4 digital inputs (NPT) + 2 per installed motor driver card, 6 analogue inputs (4-20 mA or 0-5V), expandable & customizable to customer requirements
Outputs:	8 digital outputs, of which 4 can be set to PWM, expandable to customer requirements
Connector Types:	M12 A/B coded, 4P, 5P, 8P, 12P
Certificates:	EMCD 2014/30EU, CE Marked, produced at ISO certified facilities

## X-TARGA-S



## X-TARGA-S PLC SPECIFICATIONS

Models:	X-TARGA-S (followed by a number 1-6, representing the quantity of installed BLDC driver cards)
Power Input:	110/230 V AC, 50/60 Hz (built-in converter to 24VDC / 20 Amps)
Approximate Weight:	15 kg / 33 lbs.
Cabinet Types:	<b>Model: X-TARGA-S:</b> Weidmüller IP67 Stainless Steel cabinet type: KTB MH 453820 S4E1 Stainless Steel 316L Cabinet, Dimensions: 458 x 382 x 200 mm / 18" x 15" x 7.9" inches, mass: 11.54 kg.
Communication Protocols:	2 x CAN 2.0 29-bit header (UniCAN) 125,250,500 kB/s, RS232, RS485 (Modbus, DMX, etc.)
Physical Layer Protocols:	USB, Ethernet (TCP/IP, web socket), others available per customer requirements
BLD Motor Driver Card Slots:	6 (each with 2 digital inputs)
Inputs:	4 digital inputs (NPT) + 2 per installed motor driver card, 6 analogue inputs (4-20 mA or 0-5V), expandable & customizable to customer requirements
Outputs:	8 digital outputs, of which 4 can be set to PWM, expandable to customer requirements
Connector Types:	M12 A/B coded, 4P, 5P, 8P, 12P
Certificates:	EMCD 2014/30EU, CE Marked, produced at ISO certified facilities



## TARGA PCB

### Unifire TARGA PCB

Many PLC's (programmable logic controllers) are commercially available on the market, and are used by many of Unifire's competitors.

But Unifire won't settle for standard, off-the-shelf solutions. At Unifire, we think for ourselves. And, we are very demanding.

Commerically-available PLC's are bulky, designed to suit a wide variety of industries and applications, and are therefore over-loaded with bulky electronics, components and software, markedly reducing efficiency, and often failing to include key features Unifire demands for its advanced systems.

That is why Unifire has spent years meticulously designing and improving our own TARGA PCB (printed circuit board), tailor-made for our robotic nozzle systems and their peripherals, and to accommodate technologies yet to come. Our newest generation PCB is cutting-edge technology and provides a huge range of possibilities, accommodates rapid, dynamic technological advances, maximizes efficiency in hardware and software design, and is the perfect solution for total control of our robotic nozzle systems.

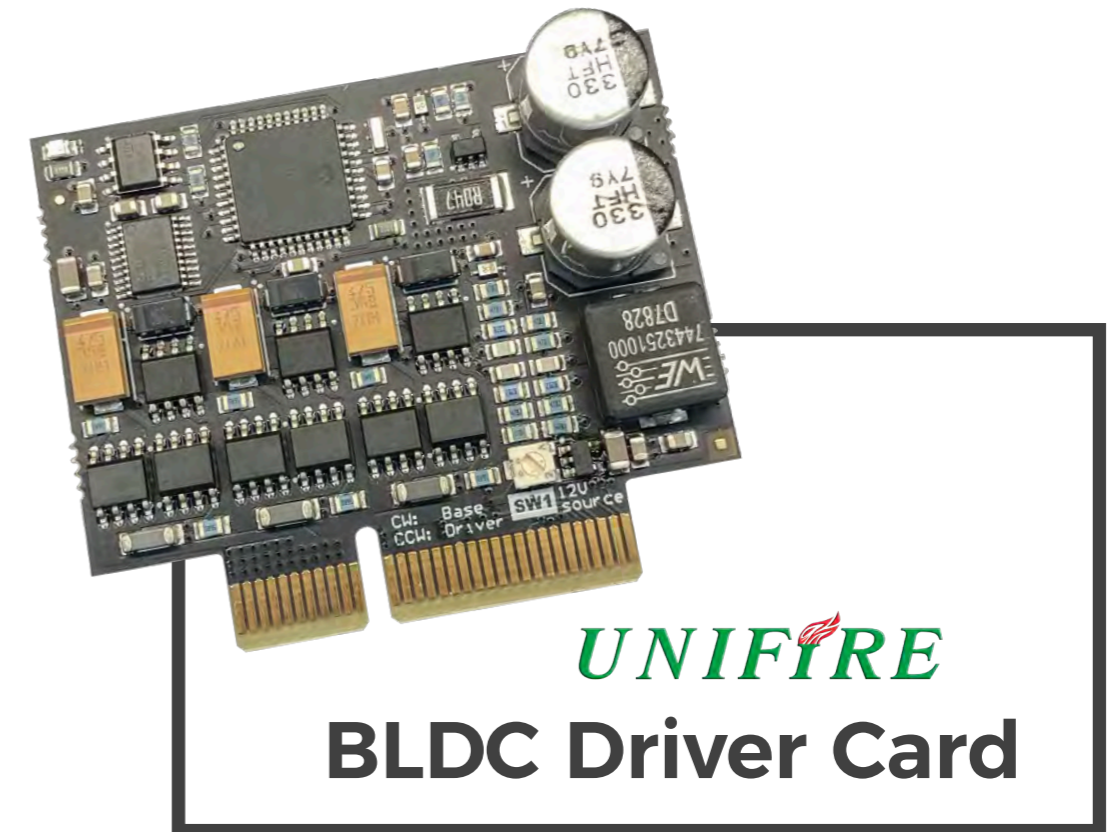
Manufactured for Unifire in Sweden at ISO 9001 & 14001 certified, state-of-the-art facilities, side-by-side with electronics for Ericsson, SAAB Space, Volvo, and other industry-leading, highly demanding companies.

When quality matters, look to Unifire.

## Features

The Unifire TARGA PCB is loaded with features, including, to name a few:

- 6 BLDC Motor Driver Slots for the control of brushless motors
- A variety of communication protocols, including 2 x CAN 2.0 29-bit header (UniCAN) 125,250,500 kB/s, RS232, RS485 (Modbus, DMX, etc.
- USB, Ethernet (TCP/IP, web socket), others available per customer requirements
- 4 digital inputs (NPT) + 2 per installed motor driver card,
- 6 analogue inputs (4-20 mA or 0-5V), expandable & customizable to customer requirements
- 8 digital outputs, of which 4 can be set to PWM, expandable to customer requirements
- Reserved control pins, allows to work with other control boards
- Comes with development resources and manual (examples in wiringPi/python)



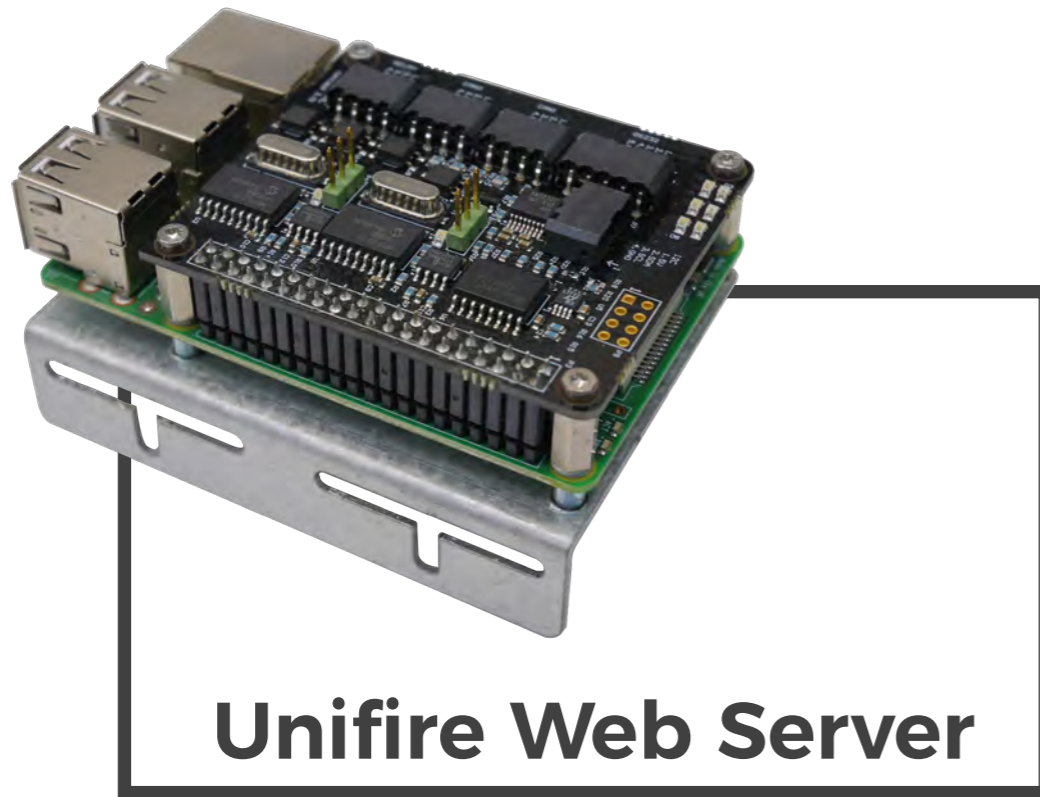
### Unifire BLDC Motor Driver Card

Like all of our electronics, Unifire designed its own BLDC motor driver card to deliver the functionality and efficiency unique to Unifire's robotic nozzle systems.

Unlike competing solutions, Unifire uses 3-phase 24V DC brushless (BLDC) motors to control its robotic nozzles. These are the same motors used in numerous industrial robots – and for good reason. BLDC motors offer numerous advantages over standard, “brushed” DC motors used in most competing products., such as higher torque, higher precision in their control, and much longer life.

Controlling BLDC motors, however, requires special electronics to precisely control the three phases sent to the motors. That's where Unifire's unique BLDC motor driver cards come in.

With Unifire's BLDC motor driver cards, our customers benefit from the highest precision steering and control of any robotic nozzle on the market –with an accuracy over over 1/50th of a degree.



## Unifire Web Server

**Take Complete Control Of Unifire's Robotic Nozzle Systems From Anywhere In The World, Thanks To Our Web Server—A Full-Blown, Internet-Ready Pc, Built In To Our Targa Plc, That Fits In The Palm Of Your Hand!!**

Welcome to the Internet of Things!

The Unifire Web Server is our optional, full-functioned personal computer (PC) add-on to our entire line of TARGA PLC's.

The Unifire web server, combined with our CAN Bus Cape, allows all models of Unifire's TARGA PLC's to come fully online.

Thanks to the Unifire Web Server, our customers have the option of taking full, secure control of Unifire's advanced robotic nozzle systems with our ONE software and app.

Have a phone? Control our systems. Have a tablet? Control our systems. Have a computer? Control our systems. Got Internet access? Control our systems from anywhere in the world!

### Features

The Unifire Web Server is a key component of Unifire's ONE system. Combined with our CANbus Cape, USB Router and ONE software and Graphical User Interfaces, adds to Unifire's advanced robotic nozzle systems a host of networking and control capabilities, including over the Internet.

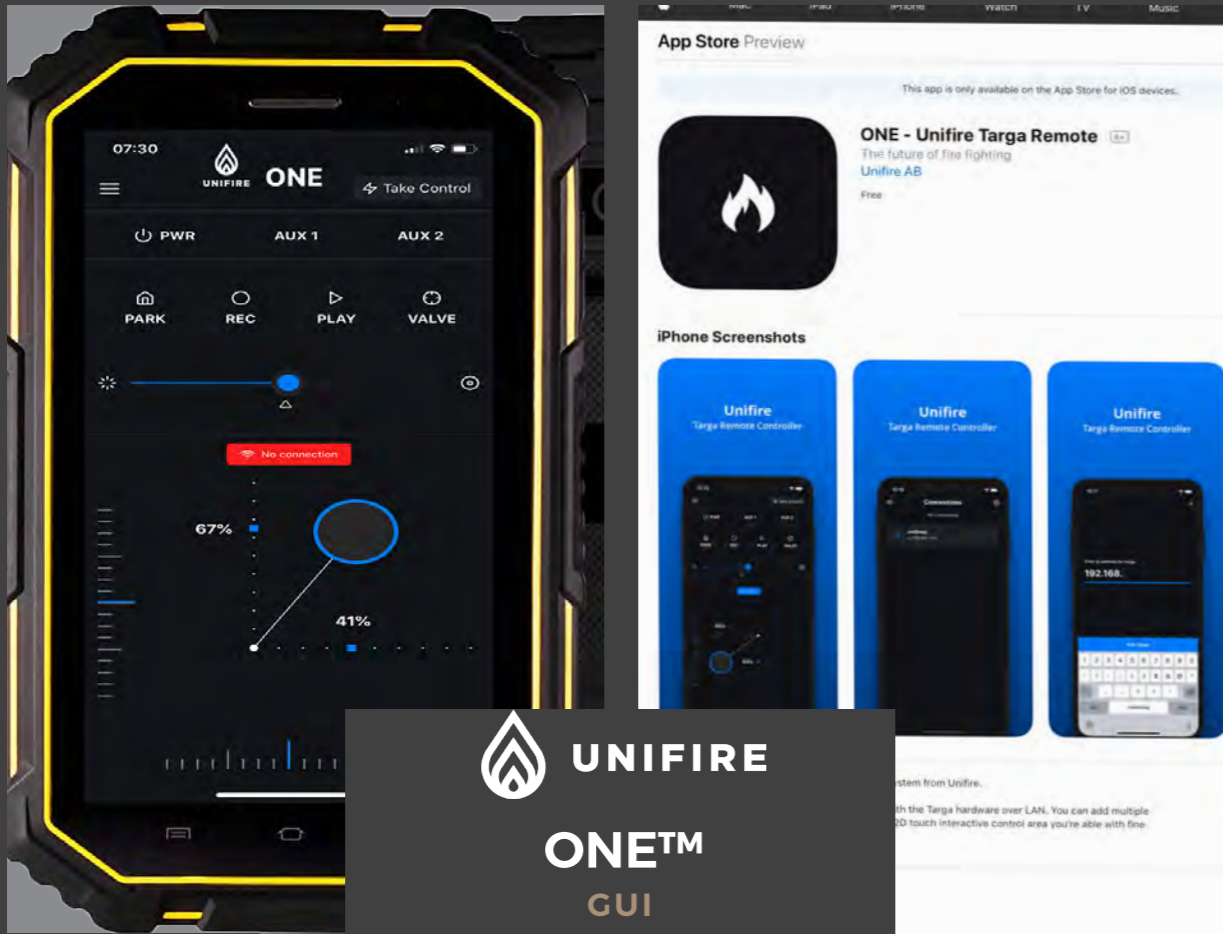
Unifire's already powerful and flexible ONE graphical user interface can be custom designed to your specific needs, look, functionas, language and look, with virtually unlimited flexibility to control systems with advanced logic sequences and automated functions.

### Specifications

- SOC: Broadcom BCM2837B0, Cortex-A53 (ARMv8) 64-bit SoC
- CPU: 1.4GHz 64-bit quad-core ARM Cortex-A53 CPU
- RAM: 1GB LPDDR2 SDRAM
- Operating system support: Linux and Unix
- WIFI: Dual-band 802.11ac wireless LAN (2.4GHz and 5GHz ) and Bluetooth 4.2, capable of running at 2.4GHz and 5GHz.
- Ethernet: Gigabit Ethernet over USB 2.0 (max 300 Mbps)
- Thermal management: Yes.
- Power over Ethernet
- Video: Yes - VideoCore IV 3D. Full-size HDMI
- USB 2.0: 4 ports
- Power: 5V/2.5A DC power input

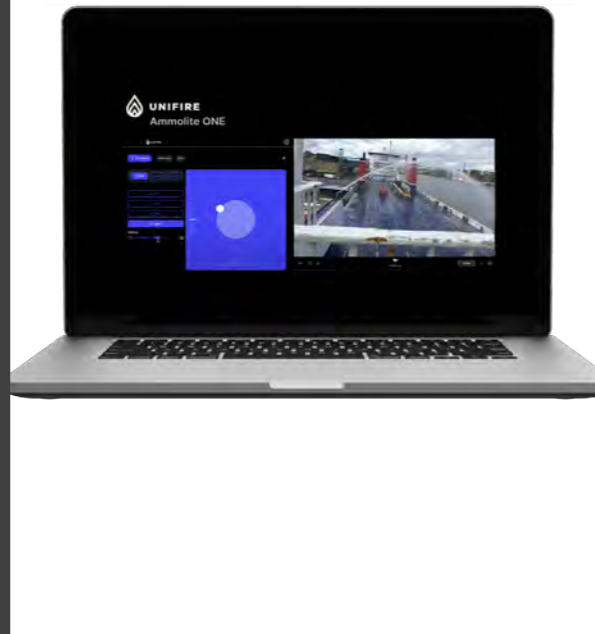
*"Here's to the crazy ones. The misfits. The rebels. The troublemakers. The round pegs in the square holes. The ones who see things differently. They're not fond of rules. And they have no respect for the status quo. You can quote them, disagree with them, glorify or vilify them. About the only thing you can't do is ignore them. Because they change things. They push the human race forward. And while some may see them as the crazy ones, we see genius. Because the people who are crazy enough to think they can change the world, are the ones who do."*

— Apple Inc.



**UNIFIRE**  
**ONE™**  
 GUI

**ONE** is Unifire's advanced electronic hardware and software technology that turns your phone, tablet or computer into a full system control device over a secure Local Area Network (LAN) or securely over the Internet from anywhere in the world.



# ONE™ Graphical User Interfaces (GUIs)

Unifire's Powerful ONE App & ONE Web  
 System Controllers





# ONE™ App



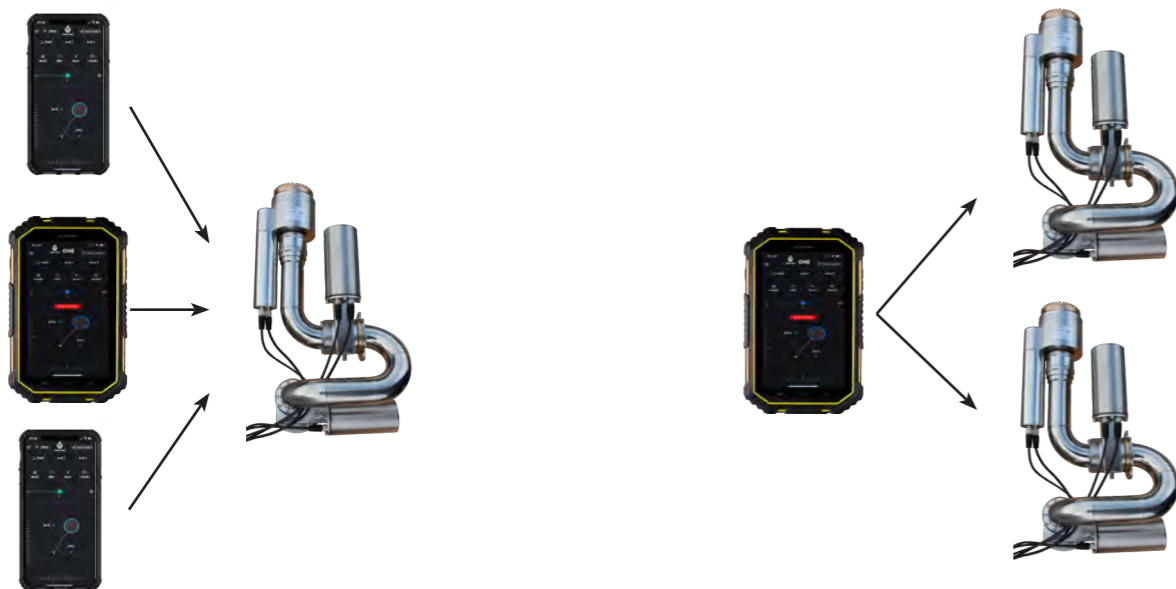
**ONE App is a powerful, full-function and customizable app for iOS/Android devices.**

ONE is Unifire's powerful and flexible control of complete robotic nozzle systems from your preferred devices over WiFi or the Internet.

Both the ONE App and ONE Web provide full control of Unifire's robotic nozzles and their peripheral devices. And, you can customize the functions, language, button names to your liking.

### All for ONE and ONE for All

Use multiple devices to control one system, or a single device to control multiple systems.



# UNIFIRE Graphical User Interface

## ONE App App for iOS & Android

**The First & Only Robotic Nozzle Control App on the Market.** ONE is Unifire's revolutionary, full-functioned graphical user interface & virtual joystick for iOS & Android, available for free on Google Play Store and Apple iPhone App Store.

- Auxiliary 1 Controller
- Auxiliary 2 Controller
- Take Over Control
- Open Menu
- Power On
- Park Button
- Record & Play Back All Actions
- Open & Close Valve
- Nozzle Tip Spray Pattern Control
- Touch & Aim Joystick Pad with Variable Speed & Direction Control

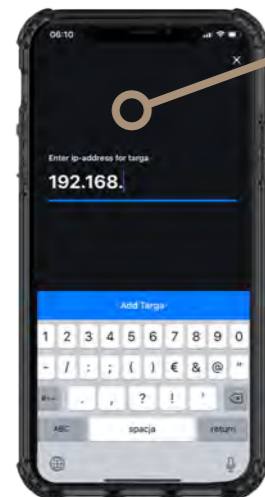


# ONE App for iOS & Android



### Intuitive Menu

Easily control your system  
Connection, Settings or go to the  
Control Screen.



### Simple Setup

Simply enter the IP Address of your  
System Router for quick system  
connection and control.

With Unifire's InterAct core technology and our ONE app, you no longer need a joystick.

For a fraction of the price of our competitors' tethered and wireless joysticks, you can turn any device into a powerful wireless controller. And, it's easier to use and comes loaded with more functions than most competing controllers!

## Welcome to 21st Century robotic nozzle system control!



# ONE™ Web



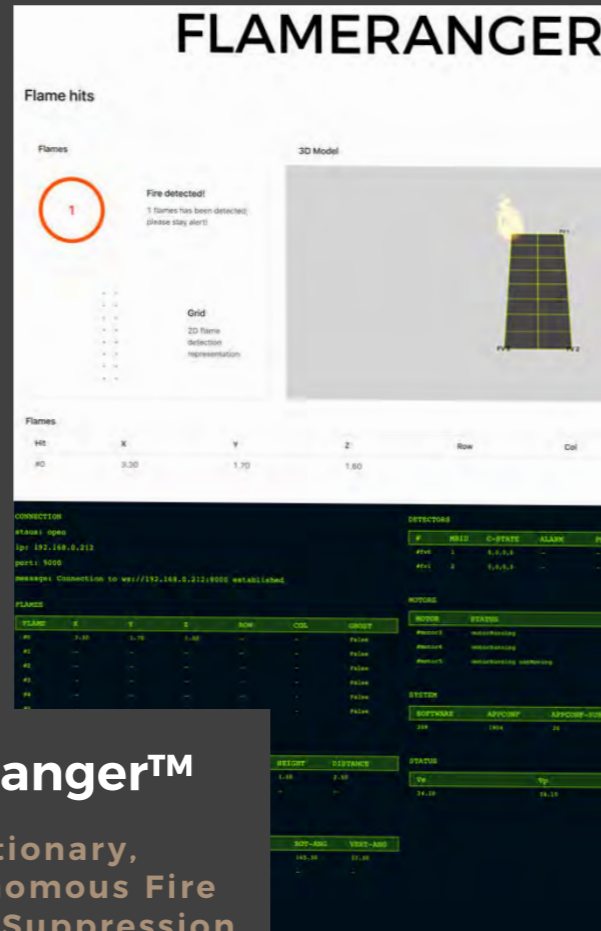
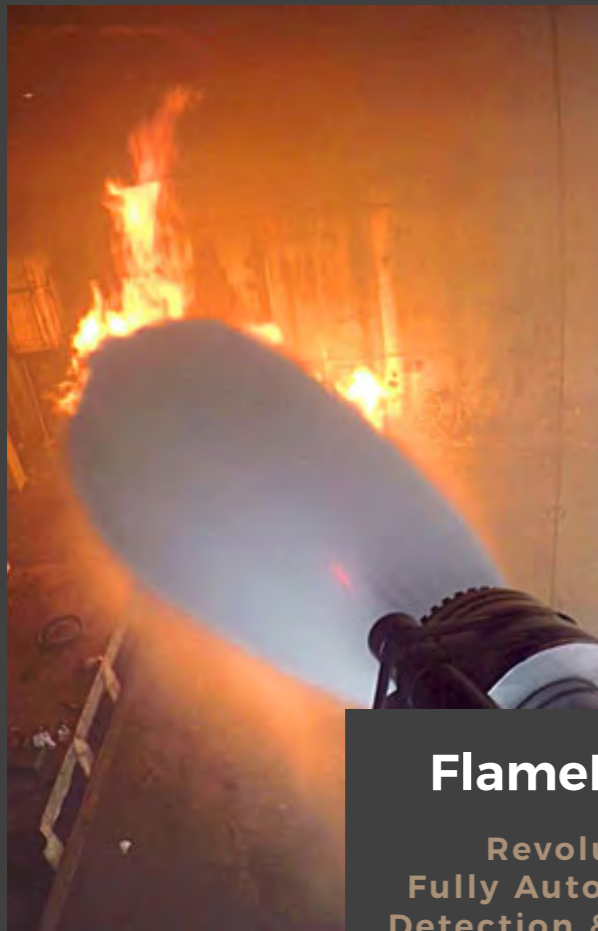
**ONE App is a powerful, full-function and customizable virtual controller for computers.**

Any computer with a secure network connection to the PLC can control the system(s) over a standard web browser. Use any standard CCTV camera to view your robotic nozzle and control it from anywhere in the world. (Of course, it is vital to only use this feature over a secure network connection.)

New York

Sydney





**FlameRanger™**  
 Revolutionary,  
 Fully Autonomous Fire  
 Detection & Suppression  
 System

Welcome to the age of Robots!

Unifire's FlameRanger is the first-and-only of its kind fully autonomous robotic fire suppression system, keeping people and property safe 24/7/365.



Fully automatic flame detection, 3D-positioning and fire suppression, without any human intervention.

**FlameRanger™**

The World's First & Most Flexible  
 Fully Autonomous Robotic Fire Suppression System

**The Problem**

Fire grows exponentially quickly. Traditional methods often result in late detection of a fire and in long wait times until fire fighters can intervene with adequate fire suppression. By that time, fire can lead to catastrophic loss to property and life and may be out of control.

**The Solution**

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

**Enter Unifire's FlameRanger...**

Unifire's FlameRanger 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 suppress 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 fire in seconds from ignition, 24/7/365, without any human intervention.



# FlameRanger™

## Revolutionary Fire Fighting

Since 2010, Unifire has been leading the revolution in autonomous fire fighting systems.

FlameRanger is the world's first and most accurate, dependable and advanced autonomous robotic fire suppression system that detects and suppresses fires within seconds from ignition and without any human intervention.

Unifire offers its revolutionary FlameRanger systems that combine virtually any fire detection technology with our advanced, high flow robotic nozzles and our state-of-the-art electronic hardware and software.

The result? A robot fire fighter on duty 24/7/365, which reacts to fire in seconds with eerie, seemingly human-controlled movement to suppress the fire at its source, with a high volume of water (or foam) and high accuracy.

### So, What Is It, Exactly?

#### Background & Objective:

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, fully developed fire.



#### What FlameRanger Does:

The 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 allowing human operator intervention and remote control at all times.

### How Does it Work?

The system uses one or more fire detection technologies to almost instantaneously detect a fire or heat buildup.

When a fire 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 large flow of water (or foam) is then accurately aimed directly onto the target fire (or fires). The spray angle is also automatically adjusted. The stream is intelligently guided to efficiently suppress the fire.

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.

*"Don't think of robots as replacements for humans -- think of them as things that will help make us better at tackling many of the problems we face."*  
 — Eoin Treacy

FLAMERANGER CAPABILITIES & BENEFITS	
<b>Capabilities</b>	
Time to detect visible flame or heat alarm (typically):	Miliseconds
Time from fire ignition to fire suppression (typically):	5-15 seconds
Extremely low false-alarm rate	✓
Detection Technologies offered:	✓
<input checked="" type="checkbox"/> IR3 flame detectors with video analytics to accurately locate the fire	✓
<input checked="" type="checkbox"/> IR3 IR array flame detectors with flame coordinates	✓
<input checked="" type="checkbox"/> Thermal imaging cameras with algorithms to reduce false alarms	✓
<input checked="" type="checkbox"/> Video analytics	✓
<input checked="" type="checkbox"/> Hybrid thermal imaging and video analytics	✓
<input checked="" type="checkbox"/> Optical fibre linear heat detection	✓
<input checked="" type="checkbox"/> Standard IR3 flame detectors	✓
<input checked="" type="checkbox"/> Sniffers	✓
<input checked="" type="checkbox"/> all other detection technologies possible	✓
Ability to combine 2 or more detection technologies	✓
Maximum number of detectors per system	10
Flame Suppression Methods	✓
<input checked="" type="checkbox"/> 3-dimensional fire location and suppression	✓
<input checked="" type="checkbox"/> Dynamic fire suppression (nozzle follows the flame)	✓
<input checked="" type="checkbox"/> Vector aiming with a single detector	✓
<input checked="" type="checkbox"/> Pre-defined zone responses (up to 10 zones)	✓
<input checked="" type="checkbox"/> Ability to detect multiple fires simultaneously and suppress them in the order detected	✓
Automatic control of the valve (open when fire is detected, close after it's extinguished)	✓
Ability to remote control the system at any time, regardless of whether the system detected a fire or not	✓
Ability to control the system from anywhere in the world over a secure WAN connection	✓
Ability to provide remote commissioning and remote technical support anywhere in the world over a secure WAN connection	✓
Advanced robotic nozzles with industrial-robot-type brushless DC (BLDC) motors & extremely high-spec gears preventing loss of calibration over time	✓
Designed for extremely harsh environments (including stainless steel 316L construction of robotic nozzles)	✓
Tested by multiple accredited and renowned 3rd party testing authorities	✓
Over 130 systems in operation on 5 continents	✓
FlameRanger technology first tested and operational in:	2010

# FlameRanger™

## Types of Detection & Suppression Methods

Unlike other autonomous system manufacturers, only Unifire offers complete flexibility in the type of detectors used and how the system behaves. Why is this important? Each fire detection technology has its advantages and limitations, and different risks require different solutions. Since 2010, Unifire has been testing and integrating a variety of the world's most reputable fire detection technologies in order to bring the most effective autonomous systems to the market, with the flexibility to meet any fire risk.

Unifire offers four general approaches, each of which has its own options and customizations. Each of these methods are explained in more detail on the following pages. Briefly, they are:

**1. Fully three-dimensional location, tracking and dynamic aiming:** This is the most accurate system, and for this we use a pair of IR3 flame detectors with built-in video analytics. It uses 2 or more detectors, and each of them provides x,y coordinates. They are installed to provide stereo views and the system can triangulate the 3D position of the fire. The system updates the location information at 10Hz.

**2. Vector aiming:** One or more IR3-HD detector(s) is placed directly above the robotic nozzle to have the same view of the area to be protected. In the event of a fire, the detector sends the vector of the fire and the robotic nozzle aims at the fire and oscillates around it to contain and suppress it.

**3. Zone aiming:** As long as we know the area, or "zone" of an event, the system can suppress the entire zone. The system allows the programming of an aiming and spray pattern response to suppress each zone. Each FlameRanger system can be programmed to suppress up to 10 zones. Zones can be setup in 3 possible ways:

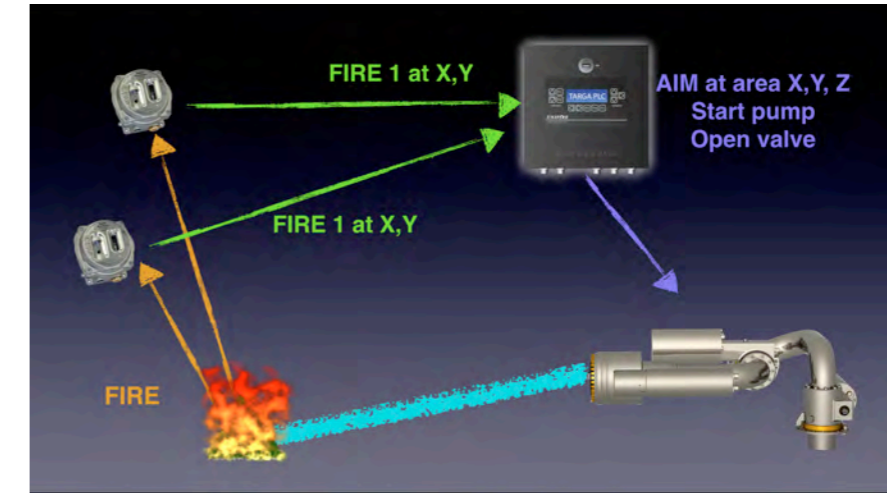
- Thermal Imaging Camera: we can use a thermal imaging camera system and set zones within its view;
- IR3-HD Flame Detector: we can use the FGD-IR3HD-UNF's video analytics to set zones; and
- Digital Inputs: we can use any of up to 10 digital inputs (from any type of detector), each of which can be associated with a pre-programmed response. Each FlameRanger system can have up to 10 inputs, each assigned a zone and a correlating response. The input is a simple digital input to the PLC, and therefore this type of zone system could be from virtually any detector, including standard IR3 flame detectors, sniffers, linear heat detectors (fibre optics), or anything else.

**4. A Combination of these approaches:** Unifire can combine various methods above, such as adding additional standard IR3 detectors to supplement a 3D system's potential blind spots, etc.

**We work with you to design the most effective solution for your risk, ensuring complete fire detection and fire protection coverage.**

# FlameRanger™

## 1. Fully Three-Dimensional Location, Tracking & Dynamic Aiming



**Unifire's 3D Dynamic systems** use two highly specialized triple-IR (IR3) flame detectors, each of which provides the fire's x,y coordinates. The system processes the signals from the detectors and triangulates the third dimension, giving the system the exact size and position of the flame. The system tracks the fire in real-time throughout the suppression. These systems have an extremely low susceptibility to nuisance alarms, and they can detect and track up to 4 fires simultaneously and suppress them in the order in which they are detected.

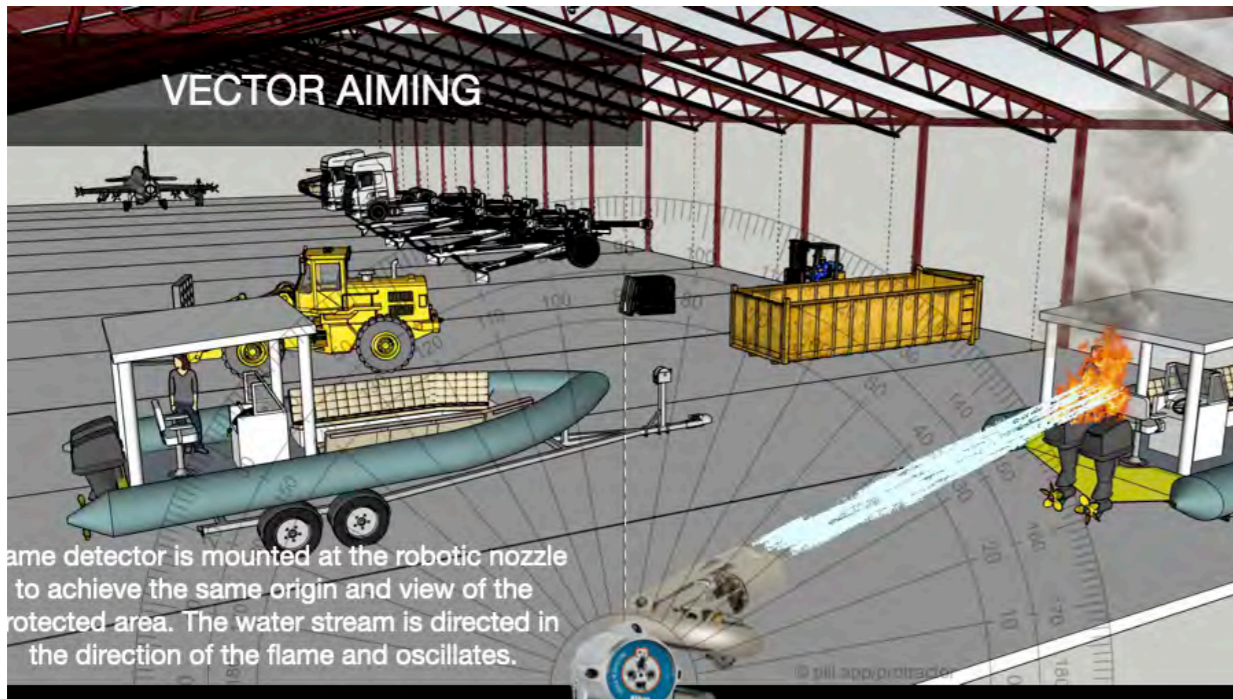
When a fire is detected, the system opens the valve and intelligently guides our advanced robotic nozzles to first surround the fire with a high volume of water to contain it by wetting and cooling its surroundings, then sweeps over and around the fire until it is extinguished. The nozzle's spray pattern is also intelligently controlled, depending on how far the fire is from the robotic nozzle. The system's intelligent behavior is based on numerous real-fire tests to determine the most effective method of containing and extinguishing fires.

Briefly after fire is no longer detected, the system automatically shuts off the valve and returns to stand-by mode, and the system remains ready to reactivate should a flame reignite.



# FlameRanger™

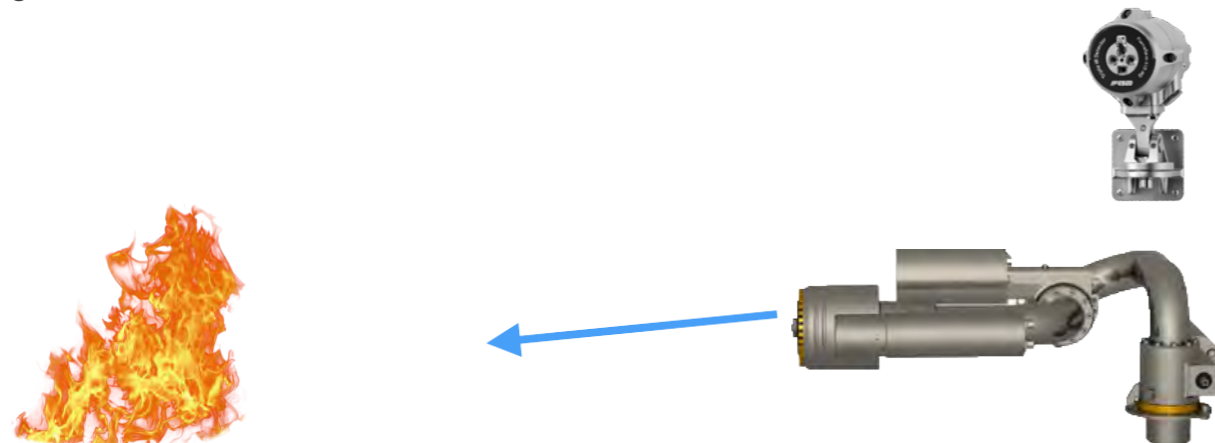
## 2. VECTOR Aiming Systems



Unifire's Vector aiming systems use one or more IR3-HD detector(s). These highly-specialized IR3 flame detectors have an HD camera and video analytics built in, which provide FlameRanger with the fire's location information.

One or more detectors is (are) placed directly above the robotic nozzle to have the same view of the protected area. In the event of a fire, the detector sends the vector of the fire and the robotic nozzle aims at the fire and oscillates around it to contain and suppress it.

Each detector has a viewing angle of 80° degrees, and by placing two or more detectors side-by-side, the system can have a viewing angle of 160°, 240°, 320° or 400° degrees.



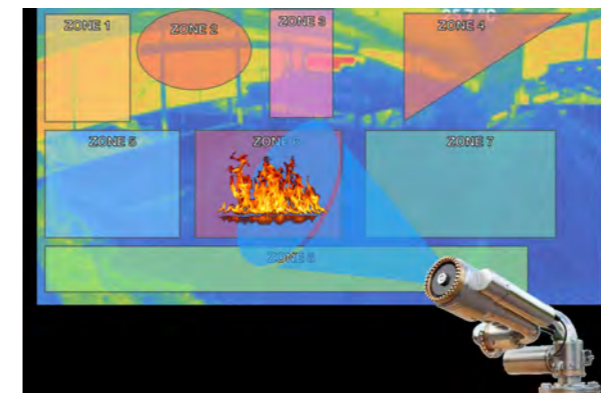
# FlameRanger™

## 3. ZONE Aiming Systems

Unifire's Zone aiming systems provide inputs for up to 10 zones. The inputs can be from a thermal imaging camera system or any other type of detector.

During set up, using Unifire's intuitive Ammolite Graphical User Interface, a custom aiming response is programmed to protect each zone individually.

When an alarm is triggered in a zone, the system opens the valve and deploys the programmed aiming response set for that zone.



Example Thermal Imaging Camera Zone System



Example IR3 flame detector Zone System

Zones can be setup in 4 possible ways:

- Thermal Imaging Camera: we can use a thermal imaging camera system and set zones within its view;
- IR3-HD Flame Detector: we can use IR3-HD flame detectors with built-in video analytics to set zones; and
- Digital Inputs: any type of detector, including standard flame detectors, can provide an alarm input to one of up to 10 digital inputs. These inputs can supplement both of the systems above. This allows the placement of additional detectors in a system to protect special objects or other areas hidden from the view of the primary detection system.
- A combination of the above and/or in combination with the 3D Dynamic systems and Vector systems describe previously.

# FlameRanger™

## Combined Approaches

FlameRanger is the most flexible system on the market, and when the risk demands flexibility or a combination of detection methods is desired, Unifire offers systems that combine the above detection and suppression methods.

For example, a 3D system can be supplemented with additional detectors to monitor special hazards or areas out of view of the stereoscopic IR3 detectors. This is true also of zone systems with a thermal imaging camera system.



*"Don't think of robots as replacements for humans -- think of them as things that will help make us better at tackling many of the problems we face."*  
 — Eoin Treacy

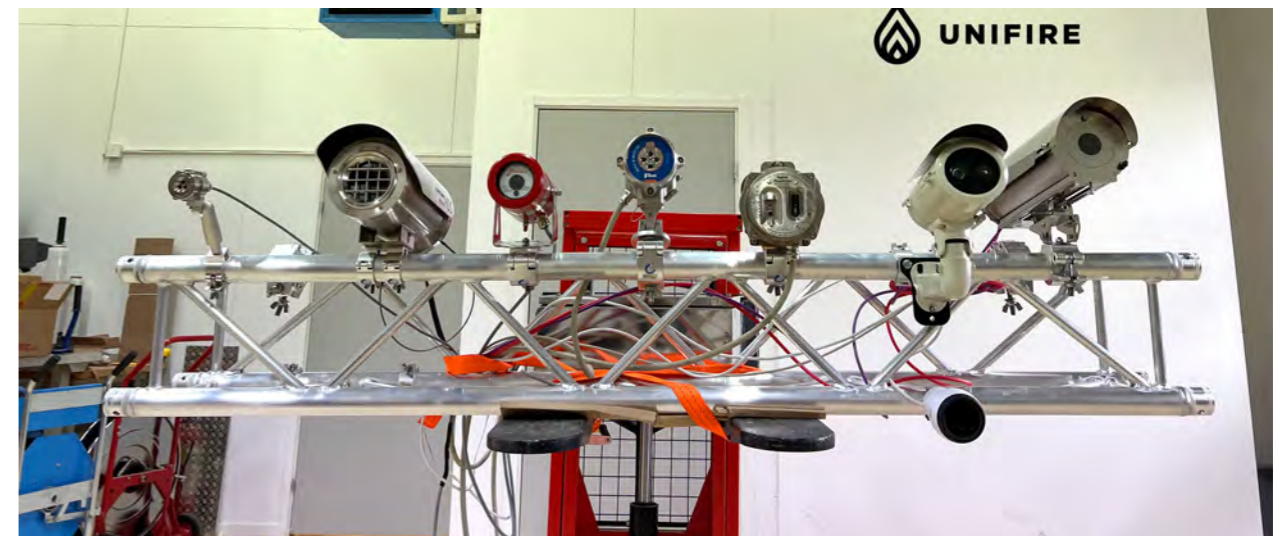
# FlameRanger™

## Remote Control at Any Time

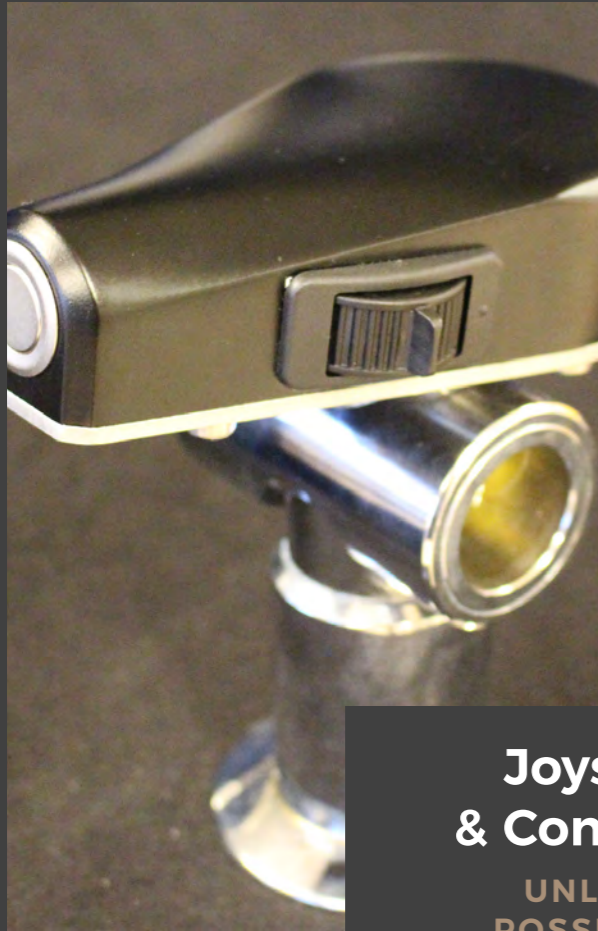
Unifire's FlameRanger autonomous systems can be controlled by a human operator at any time, regardless of whether the system has activated autonomously or not. So you have all of the benefits of an extremely fast-acting system operating 24/7/365 and a remote control fire monitor for use at any time. Remote control devices include CANbus joystick and/or wireless radio remote and/or our ONE App for iOS & Android devices, or by computer over a secure WAN connection from anywhere in the world.



## A Melange of Technologies



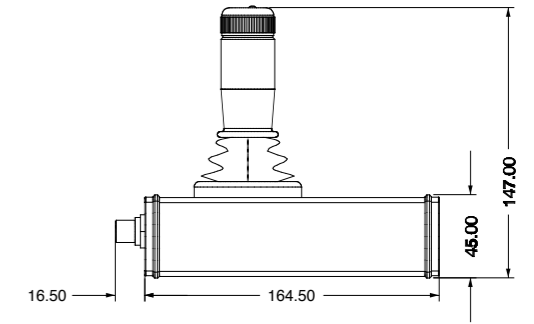
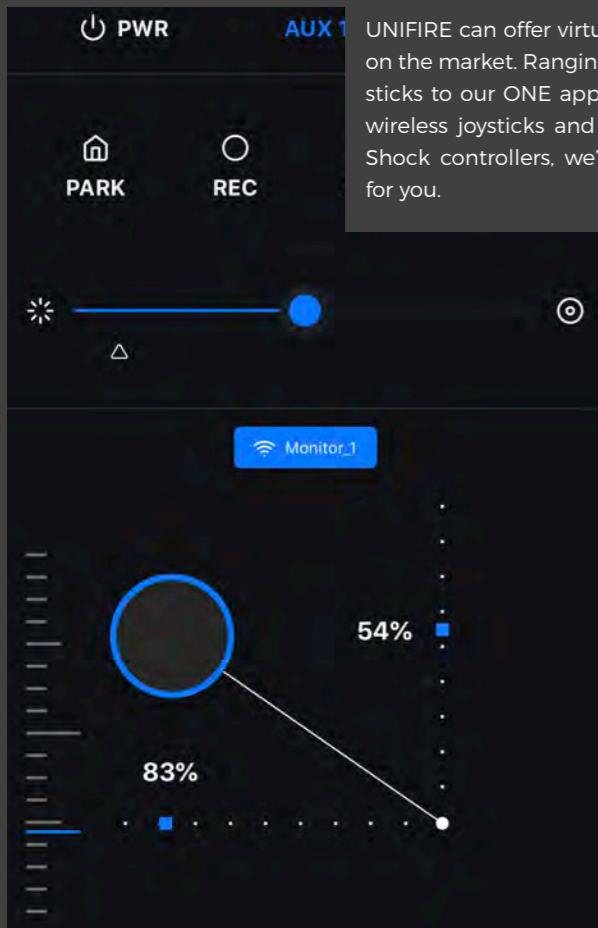
FlameRanger is unequivocally the world's most sophisticated and flexible autonomous robotic nozzle system. With systems since 2010 and protecting facilities around the clock on 5 continents, trust Unifire's FlameRanger to save lives and your facilities.



## Joysticks & Controllers

UNLIMITED  
POSSIBILITIES

UNIFIRE can offer virtually any type of controller on the market. Ranging from our own line of joysticks to our ONE app to rugged industrial and wireless joysticks and even to Playstation Dual Shock controllers, we've got a perfect solution for you.



## π™ (Pi) CAN bus Joystick

### CAN bus Progressive Speed, Full-Featured Joystick

Unifire's π (Pi) Joystick is Unifire's versatile, full-functioned, hand-held joystick for precise and intuitive control of Force robotic nozzles. Our most popular controller, it is robust and water resistant, with numerous features.

#### Specifications:

- Multifunctional CANbus joystick
- Intuitive, progressive speed control
- 3-Axis control (horizontal, vertical, nozzle)
- Nozzle spray pattern controlled by dial on tip of joystick shaft
- Record / Play - Record any sequence including velocity changes, pauses, & nozzle spray pattern. Play back in a continuous loop.
- Programmable park (stow) function
- LED Position Indicators for relative horizontal, vertical and nozzle positions
- Valve Control Button
- 2 auxiliary buttons for custom configuration & control of peripherals (e.g., lights).
- Up to 500 meter cable supported
- Hand-held
- Weighs only 1 Kg



**Seriously Heavy duty!!  
All chrome plated  
brass and stainless  
steel. Butter-smooth  
action. Massively  
supportive when the  
going gets tough!**

## POINTER™ Synchron Joystick

### Synchronized Movement of POINTER and Robotic Nozzle

The POINTER is Unifire's unique, synchron control device designed to provide a simple and intuitive human interface for controlling the Unifire's robotic nozzles.

The robotic nozzle's movements exactly follow and match the position of the POINTER.

The base is fitted with potentiometer to provide exact position values to the TARGA PLC, which in turn aim the robots to exactly the same horizontal and vertical angles as the POINTER. The hand-grip has a trigger switch at the front. The switch has a spring return. The switch will be connected directly to the vehicle's discharge valve. The water is discharged when the trigger is held, and stops when the trigger is released.

### Specifications:

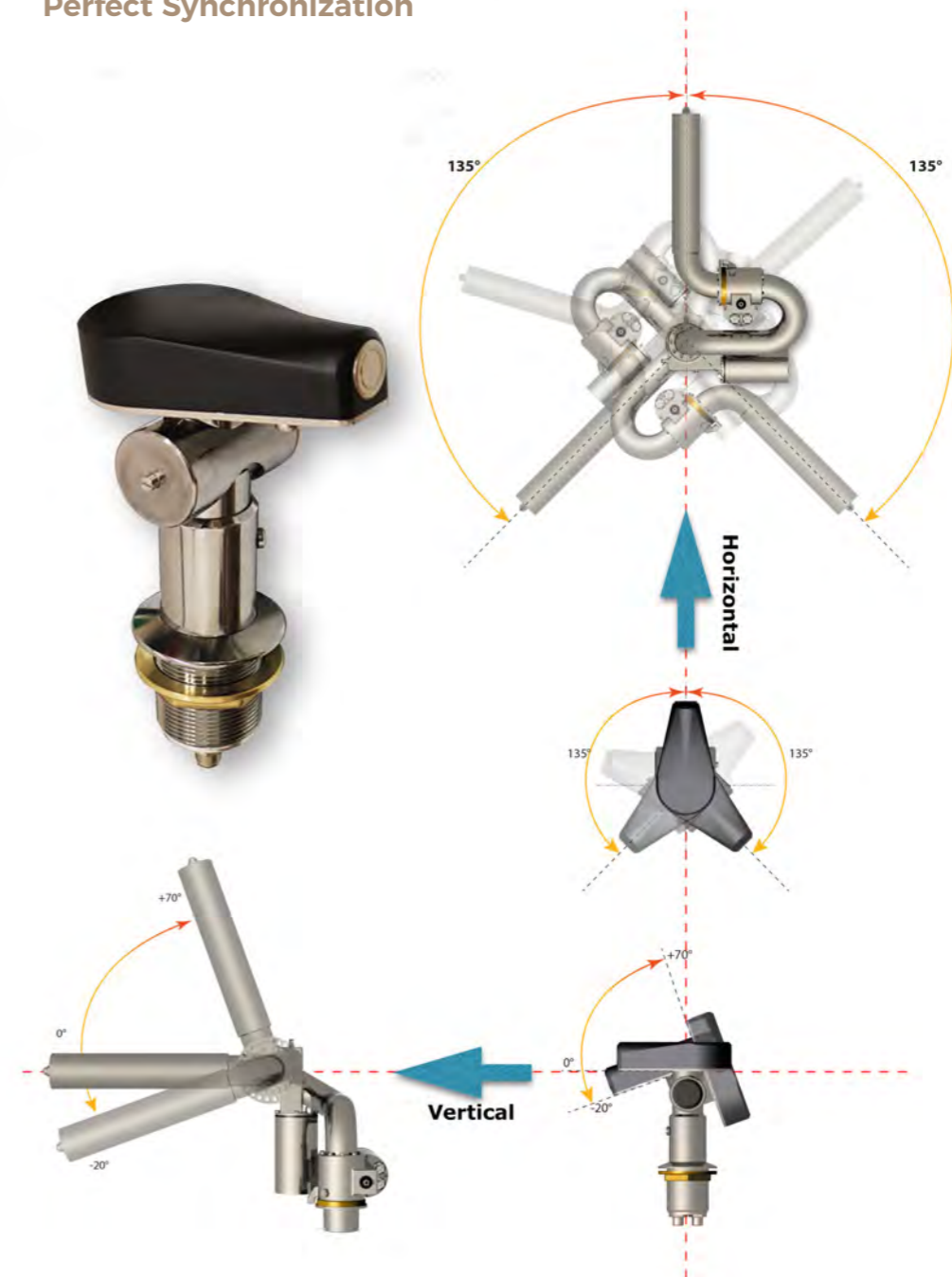
- 142 x 130 x 70 mm (above the panel into which it is mounted)
- Material: Chrome plated brass base; heavy duty plastic grip cover on a 4 mm stainless steel plate
- 5-pin M12 connector connect to the TARGA PLC
- 3-pin M12 connector to route the trigger button to discharge valve control
- Standard rotation range: +70°/-20° vertical, 270° horizontal
- Scroll wheel option for progressive jet/spray nozzle tip control

## POINTER™ (Continued)

The POINTER provides natural and intuitive control of the FORCE robotic nozzle. The stream is aimed in the same direction and elevation angle as the POINTER. This provides the operator perfect control and immediate feedback without even using his eyes. Your hand tells you where the nozzle is aiming, allowing the operator to focus on the outside situation.

The POINTER provides an absolute operating range of -20 to +70°, and +/-135°. Thus, the FORCE robotic nozzle is also limited to the same range when controlled with the POINTER.

### Perfect Synchronization





Rugged, long-lasting full grip joystick with optional custom handles, buttons & functions.

## VIPER Grip Joystick

### Perfect Grip, Ideal for Vehicles & Industrial Applications

The VIPER is a heavy-duty, all purpose grip joystick. It comes with various optional size grips and button configurations to suit your needs.

Manufactured by Caldaro of Sweden, the VIPER gives outstanding precision and a solid full grip size, with optional custom grips, buttons and functions to suit your needs.

### Key Features

- High Quality Materials: The best materials have been chosen for all joystick components, with rubber mixtue for the toughest of environments and uses.
- Strong Shaft: The shaft is manufactured as a single piece and with extended dimensions, making it extremely rigid and virtually impossible to bend.
- Extremely Long Life: Built to withstand more than 5 million operations, while maintaining its precision and detent throughout.
- All Temperatures: Designed for temperatures ranging from -40°C to +85°C (-40°F to +176°F).
- Tested in salt and copper mines
- Made in Sweden

## OEM Joysticks & Controllers

### Your Wish is Our Command.

We can offer virtually any controller on the market. Here are just a few examples:



Sony DualShock



Datek Wireless



HIR Wireless



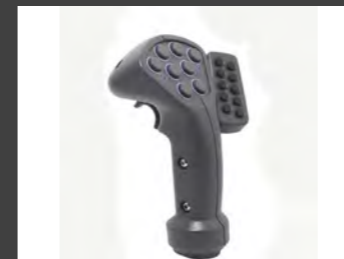
Control Devices JPWM



Scorpion Radio



Curtiss-Wright MG



Sure Grip Lu



Kar-Tech Elite Radio

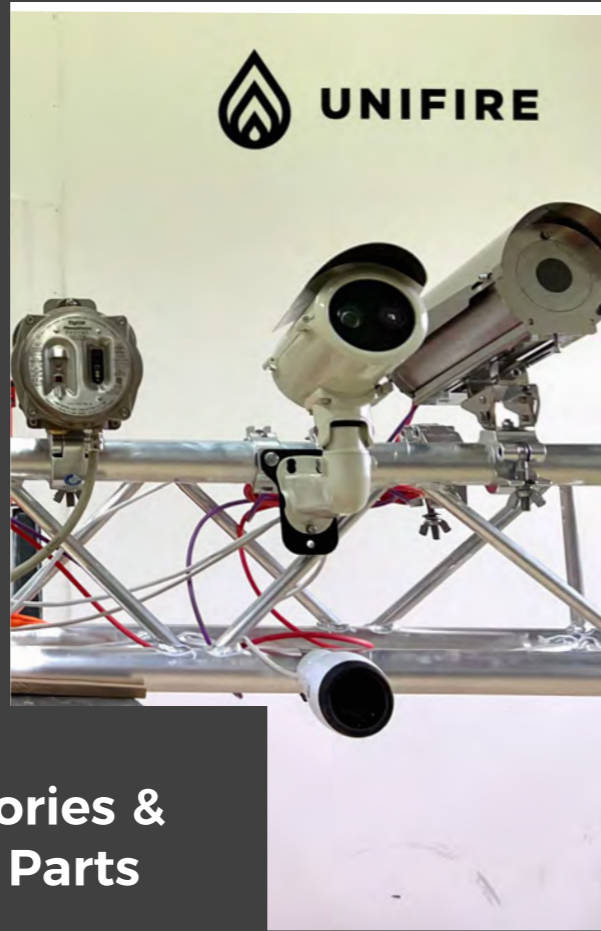


Leap Motion 3D

Unifire's robotic nozzle systems are extremely flexible and can be controlled by virtually any control device, including wireless solutions of all types.

This enables us to offer our customers pretty much any joystick or controller on the market, most of which are themselves fully customizable.

Let us know if you have special needs or desires and we'll help find the perfect-fit solution and ensure it's fully integrated and tested before we deliver.



## Accessories & Spare Parts

### for Force Robotic Nozzle Systems

Unifire offers a variety of accessories and spare parts to compliment your robotic nozzle systems.



## 2" Valve & Actuator

### Product Overview

For Force 50 systems, the 2" Valve & Smart Electric Valve Actuator is a robust and proven valve and actuator with an outstanding track record with Unifire's robotic nozzle systems.

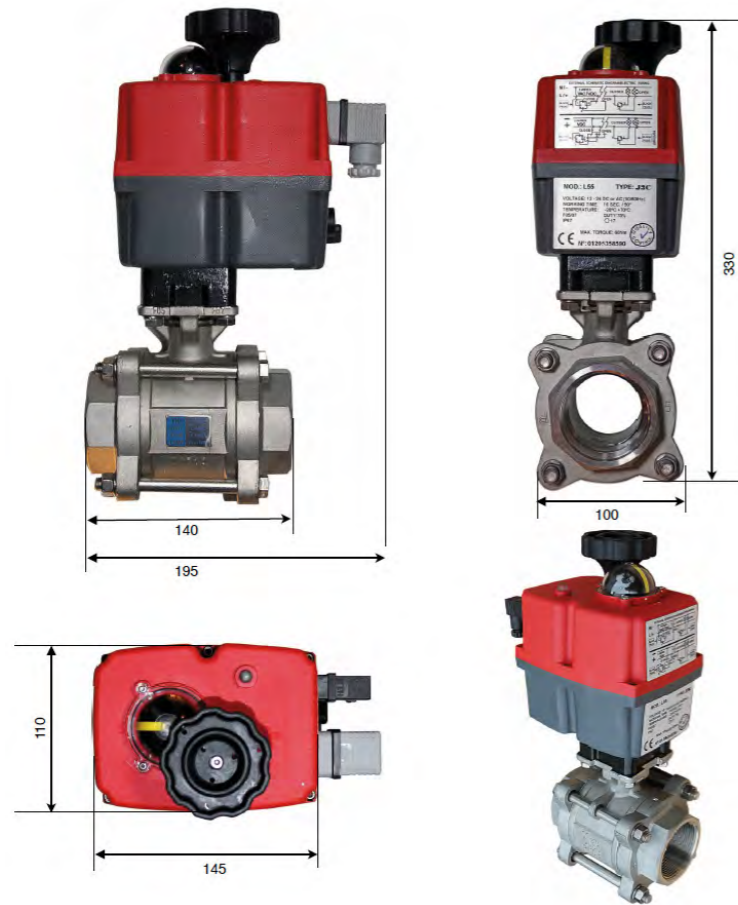
The IP67 weatherproof, corrosion resistant, low voltage electric valve actuator from electric actuator manufacturer J+J offers an impressive list of standard features that include protection against damage from over-torque or condensation, safety features, the ability to have it's standard on-off function changed with user friendly plug & play conversion kits.

The actuator features a highly visible LED light to offer users continual actuator operational status feedback. The LED light remains constantly lit if the actuator is able to respond to remote commands - if it can't, it flashes. The sequence of the flashes indicates what the reason may be for it being unable to respond.



## 2" Valve & Actuator (Continued)

### Dimensions



### Actuator Specifications:

Voltage Range - automatic sensing:	12-24 DC
Operating time (0-90°, no load):	13 seconds
Max. break torque:	60 Nm (531 lb.ins.)
Duty rating:	75%
IP Rating (IEC 60529):	IP67
Motor switches:	2 x SPDT micro switches
End of travel confirmation (volt free):	2 x SPDT micro switches
Heater:	3.5 W
Ambient temperature range:	-20° to +70°C (-4 to +158°F)
Electrical connecting plugs:	DIN 43650/ ISO4400 & C192
Weight:	2.4 kg
Consumption, 24V DC at max. torque:	1428mA



## CANbus Connection Box

for Extending Unifire Joystick Cables to Any Length

### Product Overview

Unifire's CANbus connection box is ideal for marine, industrial and other applications when you wish to extend the joystick cable a long distance.

It provides a convenient and simple means of extending joystick cable length to up to 500 meters.

Installation is as simple as 1) run a standard installation cable from the TARGA or X-TARGA PLC to the location from which you wish to install the joystick; 2) connect it to the connection box; and 3) attach to joystick cable via quick M12 connector.

Unifire Part Number: FOR00150



## System Cables

with M12 Connectors

### Cable Features

- M12 shielded cables for Unifire BLDC mMotors & joysticks
- Quick & simple installation
- Extremely well sealed when connected
- 5 meters (standard).
- Connect two or more joystick cables to extend to any length, in 5-meter increments
- Each BLDC motor requires 2 cables—one 5 pin (PN: M1255) & one 3 pin (PN: M1253)
- Unifire joysticks require a 5 pin M12 cable (PN: M1255)
- Spiral joystick cables available in 2 and 5 meter lengths
- Power cable: PN FOR00415 (inquire for price)

### Unifire Part Numbers:

M1255 (5 pins, for motor sensor and joystick)

M1253 (3 pins, for motor phases)



## BLDC Motors

& Complete Motor Can Assemblies

### Motor Features

Where our competitors are still using run-of-the-mill “brushed” DC motors (which have been used since 1856), Unifire alone is blazing new trails by outfitting all of our robotic nozzles with industrial-robot-type brushless DC (BLDC) motors.

Brushless DC motors are much newer and have no brushes to get worn out, they have significantly higher efficiency and performance, and a lower susceptibility to mechanical wear than standard brushed motors. Some of the other advantages include:

- Higher torque to weight ratio
- Increased torque per watt of power input (increased efficiency)
- Increased reliability and lower maintenance
- Reduced operational and mechanical noise
- Significantly longer life span (10 000 operational hours)

Although it is highly unlikely to ever require replacing a BLDC motor in our robotic nozzles, we do stock and can supply spare motors and complete motor can assemblies with motors pre-mounted for simple, quick replacement.

## FORCE 50 SPARE PARTS



### Force 50 Complete Worm Gear Assembly

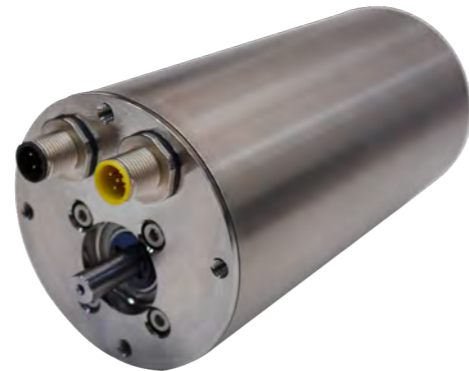
Complete worm gear assembly with gear wheel, gear screw, bearings, and O-ring. Connected to the pipes by flange assembly.

**Part Number.: FOR50200**

### Complete BLDC Motor & Welded Cover

BLDC Motor in welded stainless steel cover, for quick and simple motor replacement.

**Part Numbers.:**  
 BLDC-MAV - BLDC Maxon Vertical  
 BLDC-MAH - BLDC Maxon Horizontal



### Force 50 Front Pipe Section

Front pipe section for the Force 50, with stream straightener and 2" BSP male thread outlet for nozzle tip connection.

**Part Number.: FORCE50-PS1**



### Force 50 Middle Pipe Section

Force 50 middle pipe section with flange connection with 10 x (M5x16) at both ends.

**Part Number.: FORCE50-PS2**



## FORCE 80 SPARE PARTS



### Force 80 Complete Worm Gear Assembly

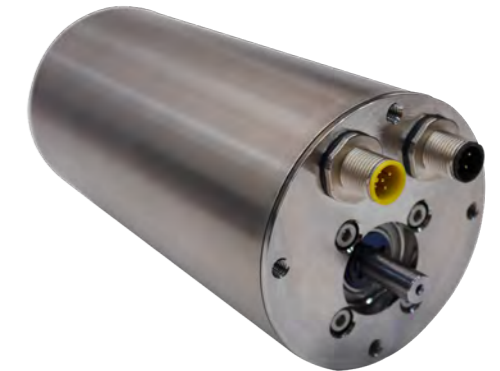
Complete worm gear assembly with gear wheel, gear screw, bearings, and O-ring. Connected to the pipes by flange assembly.

**Part Number.: FOR80200**

### Complete BLDC Motor & Welded Cover

BLDC Motor in welded stainless steel cover, for quick and simple motor replacement.

**Part Numbers.:**  
 3910103: BLDC with 24:1 Gear Ratio  
 3910107: BLDC with 49:1 Gear Ratio  
 3910108: BLDC with 84:1 Gear Ratio



### Force 80 Front Pipe Section

Front pipe section for the Force 80, with stream straightener and 3" BSP male thread outlet for nozzle tip connection.

**Part Number.: FORCE80-PS1**



### Force 80 Middle Pipe Section

Force 80 middle pipe section with flange connection with 10 x (M5x16) at both ends.

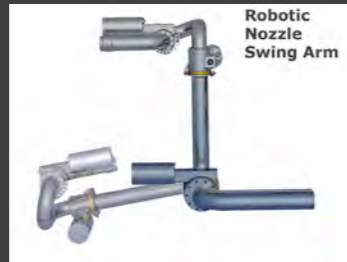
**Part Number.: FORCE80-PS2**



# Custom Solutions



Horizontal Swing Arm



Vertical Swing Arm



Automatic Doors



Flange Connection



Vehicle Side Turret



Telescopic Pipe



Custom Radio Remote



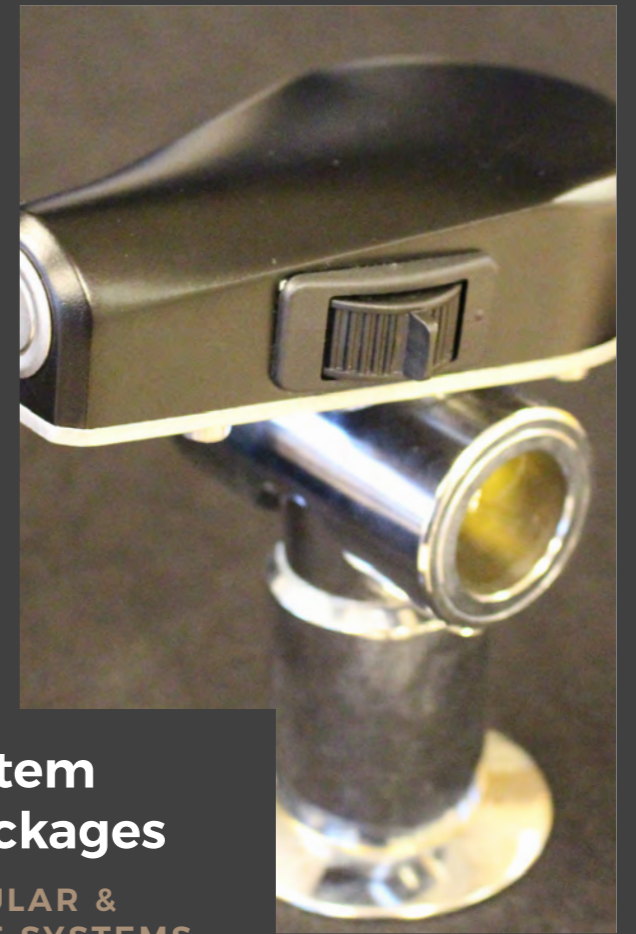
Force 50 Rail Mount



Force 80 Rail Mount

Unifire offers a variety of piping mounts, swing arms, automatic doors, special vehicle solutions (including touchscreen computer controls) and other custom solutions.

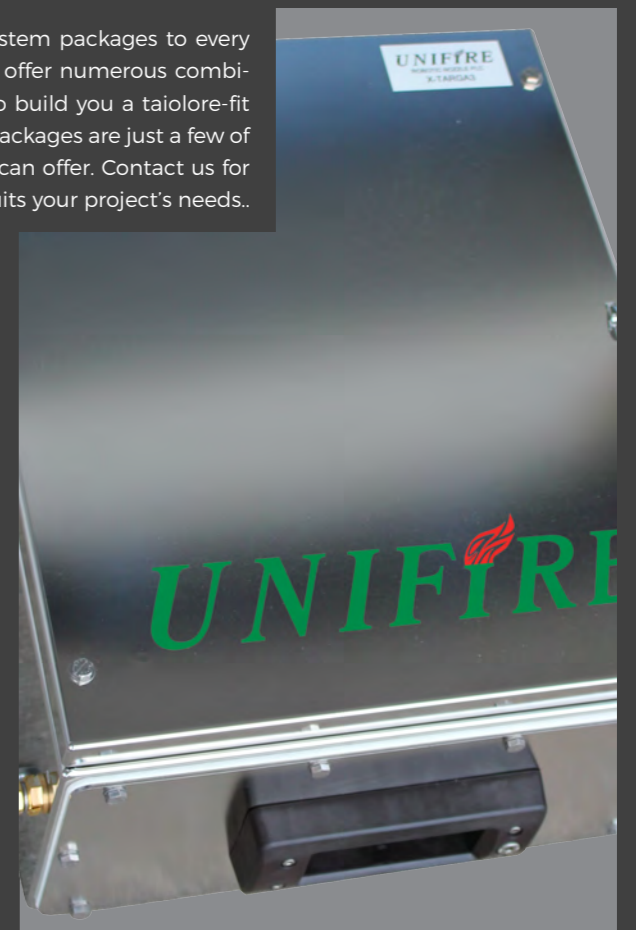
Pictured above are just a few examples. If you have special requirements, contact us for more information.



## System Packages

### POPULAR & EXAMPLE SYSTEMS

Unifire offers tailored system packages to every client we serve. We can offer numerous combinations of equipment to build you a tailored solution. The following packages are just a few of the many packages we can offer. Contact us for an offer that perfectly suits your project's needs.



## ABOUT OUR SYSTEM PACKAGES

### These Packages are Just a Few Examples

The following packages are just some examples of popular system configurations.

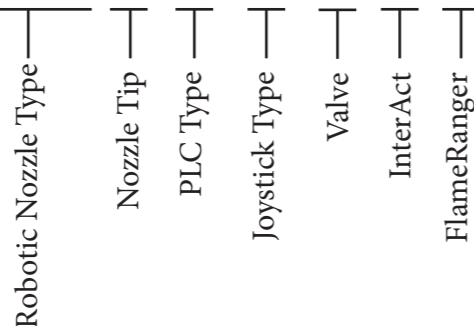
There are so many possible combinations, we can't possibly show them all.

This section is designed to provide ideas and example packages. Of course, we make custom-fit offers for each customer based on what the need.

Contact Unifire today at sales@unifire.com or by phone at +46 303 248 403 for an offer.

### Package Identification:

**F50-I-X-P-V-I-F**



## Package F50-I-X-TS-P-V-I-F



Force 50 with Integ 50 Jet/Spray Tip



X-TARGA-S3



PI Joystick



M12 Cable Kit



2" Valve & Actuator



ONE App



FlameRanger

### Includes:

<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	Integ 50 (PN: INT50B)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE GUI Package:</b>	Yes	●
<b>FlameRanger Package:</b>	Yes, incl. 2 x FV300 Detectors	●
<b>Valve Type:</b>	2" Valve (PN: VALVE2)	●
<b>PLC Model:</b>	X-TARGA-S (PN: X-TARGA-S3)	●
<b>M1255 Cables (Qty.):</b>	Qty: 4 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 3 (PN: M1253)	●

# Package F50-I-XT-P-I



Force 50 with Integ 50 Jet/Spray Tip



X-TARGA3



PI Joystick



M12 Cable Kit



2" Valve & Actuator



ONE App

**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	Integ 50 (PN: INT50B)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	Yes	●
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	2" Valve (PN: VALVE2)	●
<b>PLC Model:</b>	X-TARGA (PN: XTARGA3)	●
<b>M1255 Cables (Qty.):</b>	Qty: 4 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 3 (PN: M1253)	●

# Package F50-I-T-P



Force 50 with Integ 50 Jet/Spray Tip



TARGA3



PI Joystick



M12 Cable Kit



2" Valve & Actuator

**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	Integ 50 (PN: INT50B)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	2" Valve (PN: VALVE2)	●
<b>PLC Model:</b>	TARGA (PN: TARGA3)	●
<b>M1255 Cables (Qty.):</b>	Qty: 4 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 3 (PN: M1253)	●

# Package F50-I-XT-P



Force 50 with Integ 50 Jet/Spray Tip



X-TARGA3



PI Joystick



M12 Cable Kit

**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	Integ 50 (PN: INT50B)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	(N/A)	-
<b>PLC Model:</b>	X-TARGA (PN: X-TARGA3)	●
<b>M1255 Cables (Qty.):</b>	Qty: 4 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 3 (PN: M1253)	●

# Package F50-I-T-PT-I



Force 50 with Integ 50 Jet/Spray Tip



TARGA3



POINTER Joystick  
w/ Scroll Wheel



M12 Cable Kit



2" Valve & Actuator



ONE App

**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	Integ 50 (PN: INT50B)	●
<b>Joystick / Controller:</b>	POINTER (PN: PNTR-S)	●
<b>ONE App:</b>	Yes	●
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	2" Valve (PN: VALVE2)	●
<b>PLC Model:</b>	TARGA (PN: TARGA3)	●
<b>M1255 Cables (Qty.):</b>	Qty: 4 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 4 (PN: M1253)	●

# Package F50-I-T-PT-V



Force 50 with Integ 50 Jet/Spray Tip



TARGA3



POINTER Joystick w/ Scroll Wheel



M12 Cable Kit

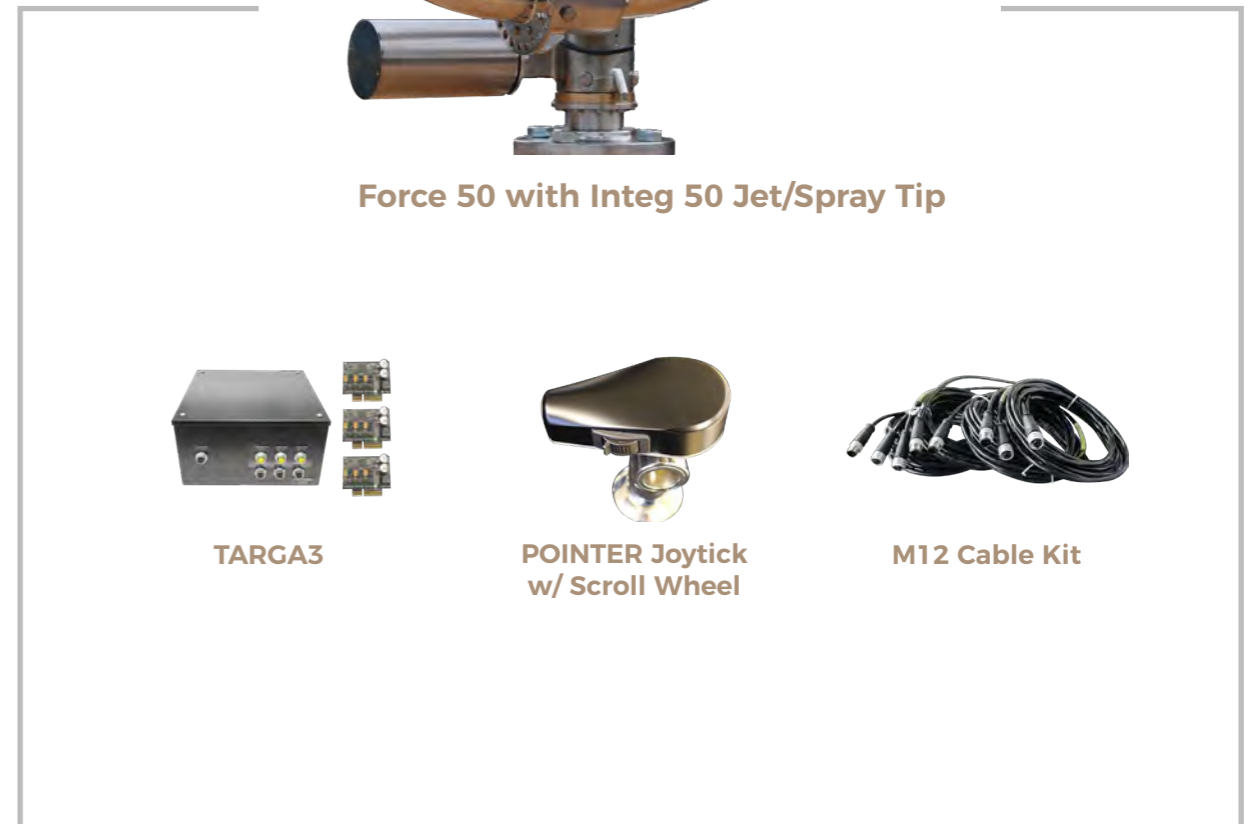


2" Valve & Actuator

**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	Integ 50 (PN: INT50B)	●
<b>Joystick / Controller:</b>	POINTER (PN: PNTR-S)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	2" Valve (PN: VALVE2)	●
<b>PLC Model:</b>	TARGA (PN: TARGA3)	●
<b>M1255 Cables (Qty.):</b>	Qty: 4 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 4 (PN: M1253)	●

# Package F50-I-T-PT



Force 50 with Integ 50 Jet/Spray Tip



TARGA3



POINTER Joystick w/ Scroll Wheel



M12 Cable Kit

**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	Integ 50 (PN: INT50B)	●
<b>Joystick / Controller:</b>	POINTER (PN: PNTR-S)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	(N/A)	-
<b>PLC Model:</b>	TARGA (PN: TARGA3)	●
<b>M1255 Cables (Qty.):</b>	Qty: 4 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 4 (PN: M1253)	●



# Package F50-J-T-P-V-I



		Includes:
<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	JETRANGE (PN: JR50)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	Yes	●
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	2" Valve (PN: VALVE2)	●
<b>PLC Model:</b>	TARGA (PN: TARGA2)	●
<b>M1255 Cables (Qty.):</b>	Qty: 3 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 2 (PN: M1253)	●

# Package F50-J-T-P-V



		Includes:
<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	JETRANGE (PN: JR50)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	2" Valve (PN: VALVE2)	●
<b>PLC Model:</b>	TARGA (PN: TARGA2)	●
<b>M1255 Cables (Qty.):</b>	Qty: 3 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 2 (PN: M1253)	●

# Package F50-J-T-P



Force 50 with JETRANGE Tip



TARGA3



PI Joystick



M12 Cable Kit

**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	JETRANGE (PN: JR50)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	(N/A)	-
<b>PLC Model:</b>	TARGA (PN: TARGA2)	●
<b>M1255 Cables (Qty.):</b>	Qty: 3 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 2 (PN: M1253)	●

# Package F50-J-T-PT-V-I



Force 50 with JETRANGE Tip



TARGA2



POINTER Joystick



M12 Cable Kit



2" Valve & Actuator



ONE App

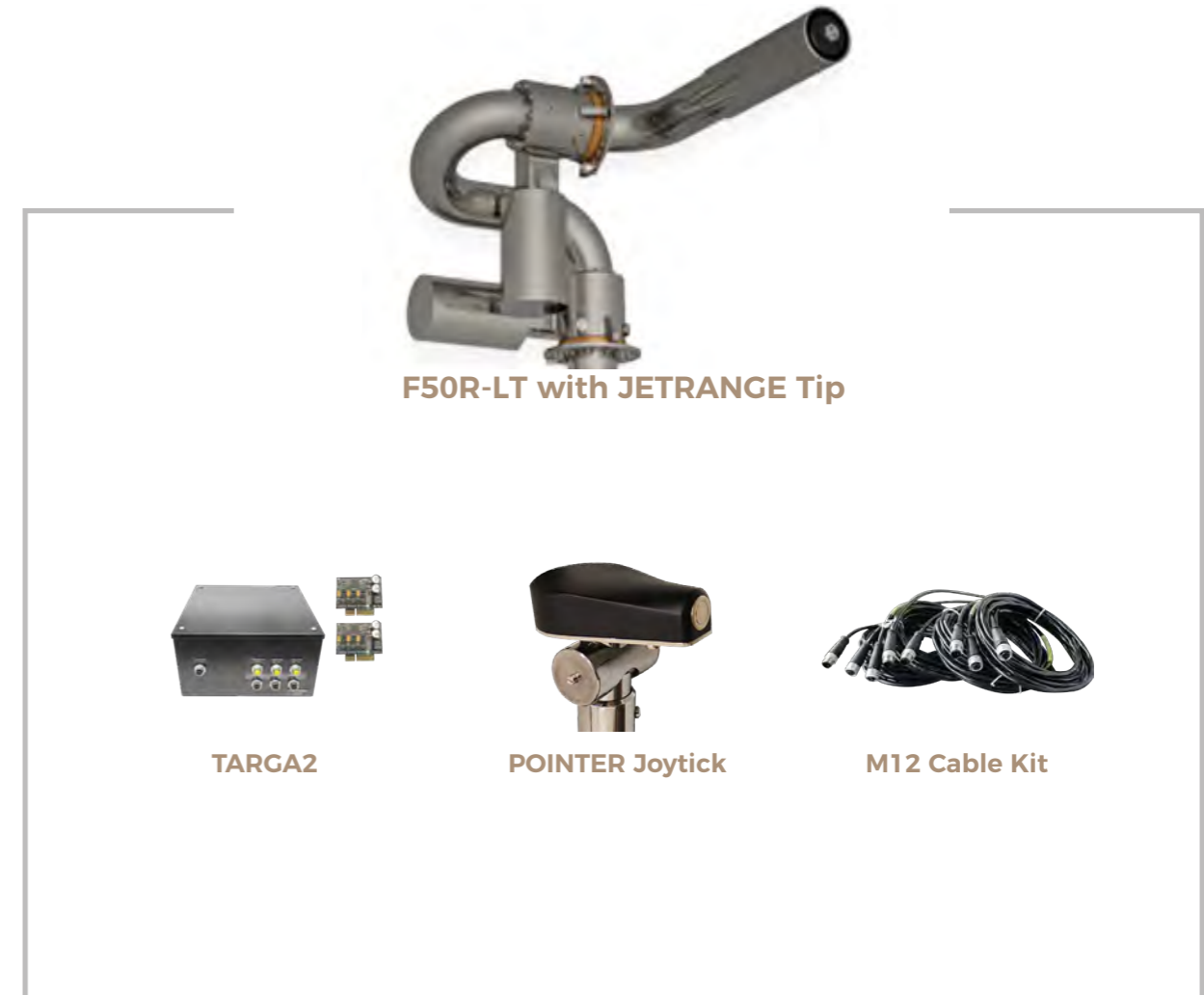
**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	JETRANGE (PN: JR50)	●
<b>Joystick / Controller:</b>	POINTER (PN: PNTR-NS)	●
<b>ONE App:</b>	Yes	●
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	2" Valve (PN: VALVE2)	●
<b>PLC Model:</b>	TARGA (PN: TARGA2)	●
<b>M1255 Cables (Qty.):</b>	Qty: 3 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 3 (PN: M1253)	●

# Package F50RLT-T-P-V-I



# Package F50RLT-T-PT-V



**Includes:**

<b>Robotic Nozzle Chassis:</b>	F50R-LT (PN: F50R-LT)	●
<b>Nozzle Tip:</b>	JETRANGE (PN: JR50)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	Yes	●
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	2" Valve (PN: VALVE2)	●
<b>PLC Model:</b>	TARGA (PN: TARGA2)	●
<b>M1255 Cables (Qty.):</b>	Qty: 3 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 2 (PN: M1253)	●

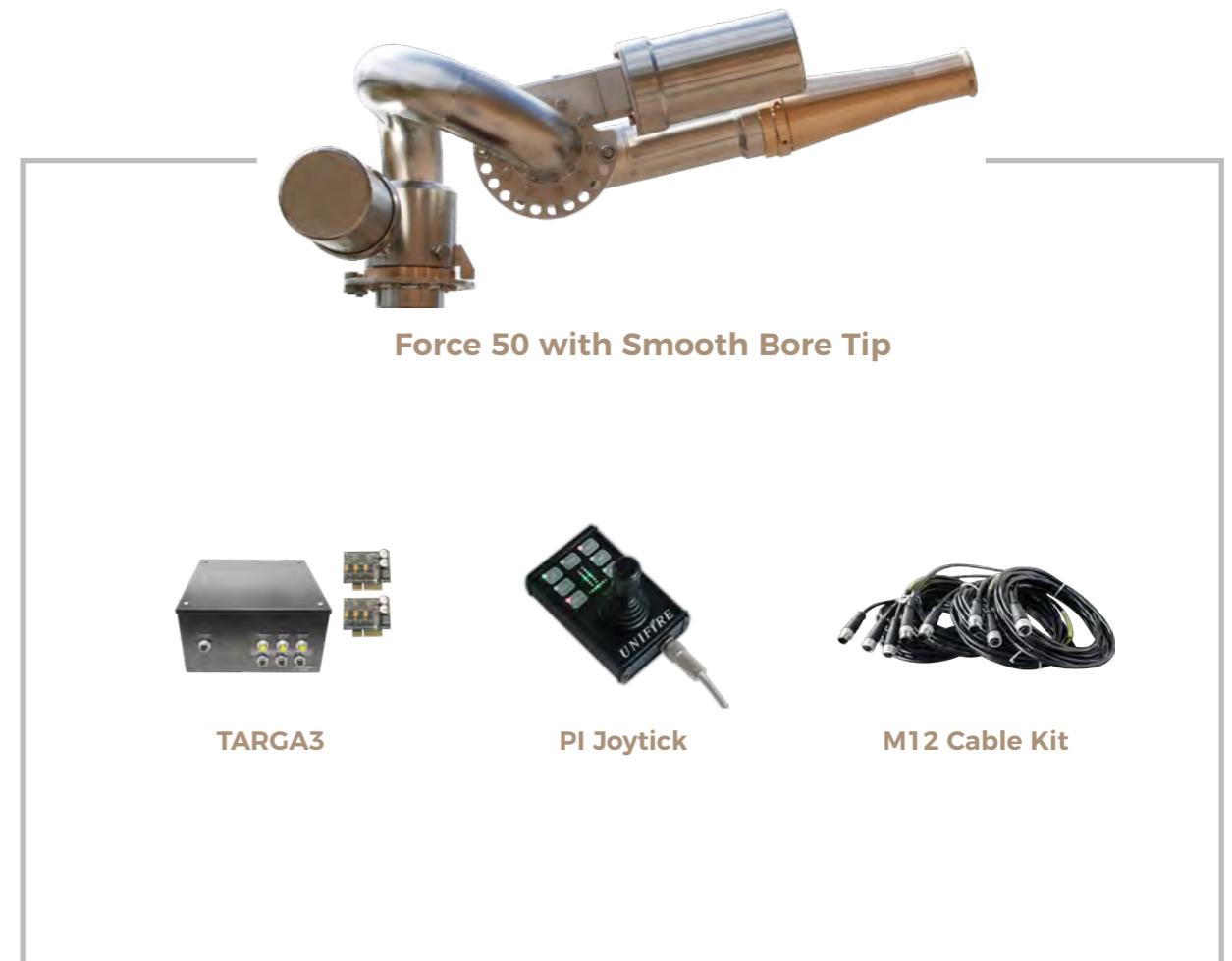
**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	Interated JETRANGE (PN: JR50)	●
<b>Joystick / Controller:</b>	POINTER (PN: PNTR-NS)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	(N/A)	-
<b>PLC Model:</b>	TARGA (PN: TARGA2)	●
<b>M1255 Cables (Qty.):</b>	Qty: 3 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 3 (PN: M1253)	●

# Package F50-S-XT-P-V



# Package F50-S-T-P



**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	Smooth Bore (PN: FOR24100)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	2" Valve (PN: VALVE2)	●
<b>PLC Model:</b>	X-TARGA (PN: X-TARGA2)	●
<b>M1255 Cables (Qty.):</b>	Qty: 3 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 2 (PN: M1253)	●

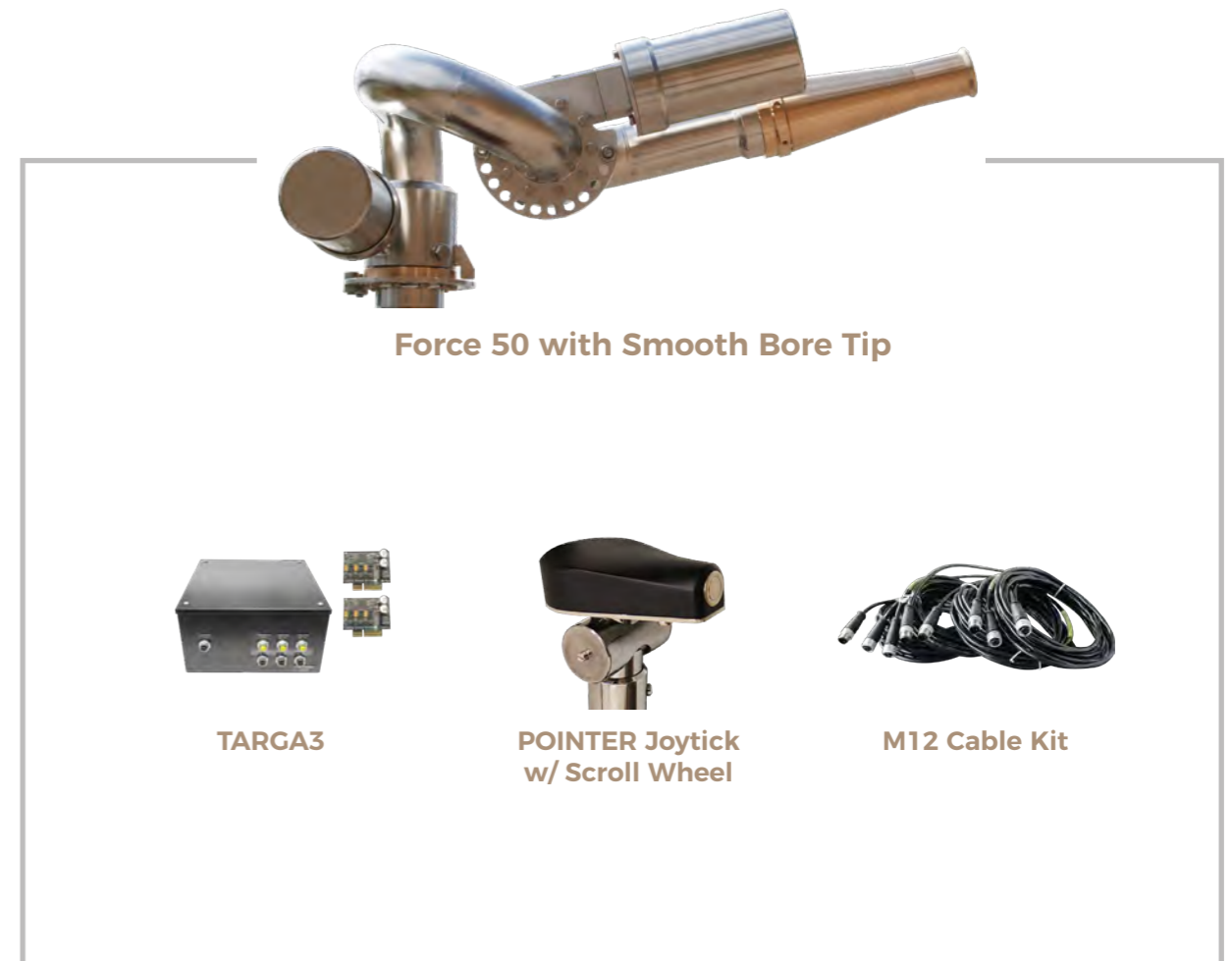
**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	Smooth Bore (PN: FOR24100)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	(N/A)	-
<b>PLC Model:</b>	TARGA (PN: TARGA2)	●
<b>M1255 Cables (Qty.):</b>	Qty: 3 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 2 (PN: M1253)	●

# Package F50-S-T-P-V



# Package F50-S-T-P-V



**Includes:**

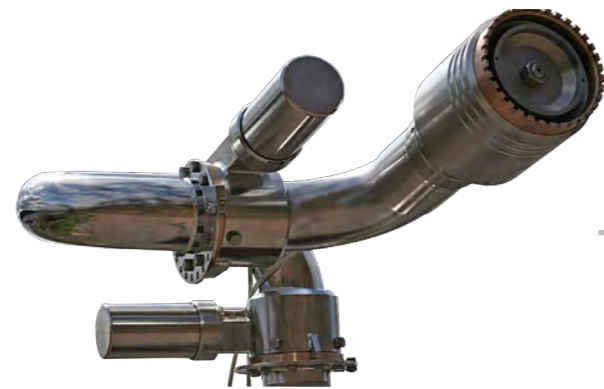
<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	Smooth Bore (PN: FOR24100)	●
<b>Joystick / Controller:</b>	POINTER (PN: PNTR-NS)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	2" Valve (PN: VALVE2)	●
<b>PLC Model:</b>	TARGA (PN: TARGA2)	●
<b>M1255 Cables (Qty.):</b>	Qty: 3 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 2 (PN: M1253)	●

**Includes:**

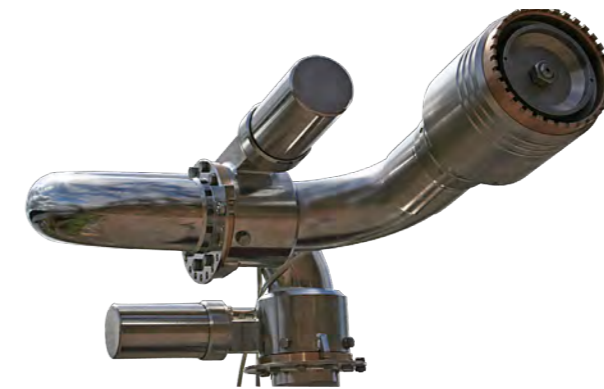
<b>Robotic Nozzle Chassis:</b>	Force 50 (PN: F50B)	●
<b>Nozzle Tip:</b>	Smooth Bore (PN: FOR24100)	●
<b>Joystick / Controller:</b>	POINTER (PN: PNTR-NS)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	(N/A)	-
<b>PLC Model:</b>	TARGA (PN: TARGA2)	●
<b>M1255 Cables (Qty.):</b>	Qty: 3 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 2 (PN: M1253)	●

# Package F80-I-XTS-P-V-I-F

# Package F80-I-XT-P-V-I



Force 80 with Integ 80 Jet/Spray Tip



Force 80 with Integ 80 Jet/Spray Tip



X-TARGA-S4



PI Joystick



M12 Cable Kit



X-TARGA4



PI Joystick



M12 Cable Kit



3" Valve & Actuator



ONE App



FlameRanger



3" Valve & Actuator



ONE App

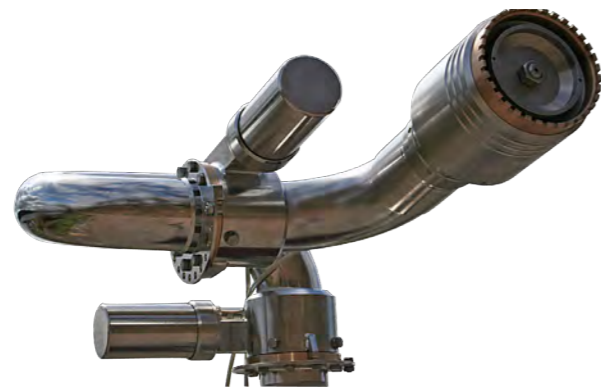
**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 80 (PN: F80B)	●
<b>Nozzle Tip:</b>	Integ 80 (PN: INT80B)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App</b>	Yes	●
<b>FlameRanger Package:</b>	Yes, incl. 2 x FV300 Detectors	●
<b>Valve Type:</b>	3" Valve & Actuator (PN: ACT24 & SD15)	●
<b>PLC Model:</b>	X-TARGA-S (PN: X-TARGA-S4)	●
<b>M1255 Cables (Qty.):</b>	Qty: 5 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 4 (PN: M1253)	●

**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 80 (PN: F80B)	●
<b>Nozzle Tip:</b>	Integ 80 (PN: INT80B)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	Yes	●
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	3" Valve & Actuator (PN: ACT24 & SD15)	●
<b>PLC Model:</b>	X-TARGA (PN: X-TARGA4)	●
<b>M1255 Cables (Qty.):</b>	Qty: 5 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 4 (PN: M1253)	●

# Package F80-I-XT-P



Force 80 with Integ 80 Jet/Spray Tip



X-TARGA3



PI Joystick

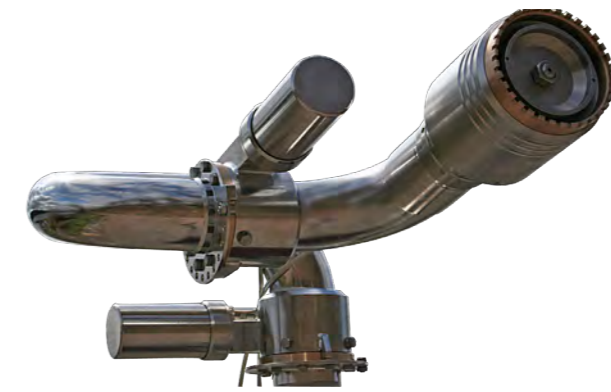


M12 Cable Kit

**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 80 (PN: F80B)	●
<b>Nozzle Tip:</b>	Integ 80 (PN: INT80B)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	(N/A)	-
<b>PLC Model:</b>	X-TARGA (PN: X-TARGA3)	●
<b>M1255 Cables (Qty.):</b>	Qty: 4 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 3 (PN: M1253)	●

# Package F80-I-T-P



Force 80 with Integ 80 Jet/Spray Tip



TARGA3



PI Joystick

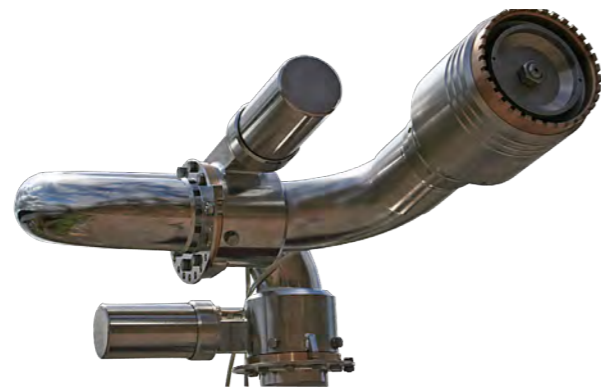


M12 Cable Kit

**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 80 (PN: F80B)	●
<b>Nozzle Tip:</b>	Integ 80 (PN: INT80B)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	(N/A)	-
<b>PLC Model:</b>	TARGA (PN: TARGA3)	●
<b>M1255 Cables (Qty.):</b>	Qty: 4 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 3 (PN: M1253)	●

# Package F80-I-T-PT



Force 80 with Integ 80 Jet/Spray Tip



TARGA3



POINTER Joystick with Scroll Wheel



M12 Cable Kit

**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 80 (PN: F80B)	●
<b>Nozzle Tip:</b>	Integ 80 (PN: INT80B)	●
<b>Joystick / Controller:</b>	POINTER (PN: PNTR-S)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	(N/A)	-
<b>PLC Model:</b>	TARGA (PN: TARGA3)	●
<b>M1255 Cables (Qty.):</b>	Qty: 4 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 3 (PN: M1253)	●

# Package F80-J-T-PT



Force 80 with JETRANGE Tip



TARGA3



POINTER Joystick



M12 Cable Kit

**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 80 (PN: F80B)	●
<b>Nozzle Tip:</b>	Integ 80 (PN: INT80B)	●
<b>Joystick / Controller:</b>	POINTER (PN: PNTR-NS)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	(N/A)	-
<b>PLC Model:</b>	TARGA (PN: TARGA3)	●
<b>M1255 Cables (Qty.):</b>	Qty: 4 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 3 (PN: M1253)	●



# Package F80-J-XT-P-V-I

# Package F80-J-XTS-P-V



Force 80 with JETRANGE Tip



Force 80 with JETRANGE Tip



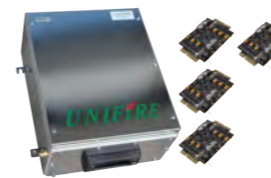
X-TARGA4



PI Joystick



M12 Cable Kit



X-TARGA-S4



PI Joystick



M12 Cable Kit



3" Valve & Actuator



ONE App



3" Valve & Actuator

**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 80 (PN: F80B)	●
<b>Nozzle Tip:</b>	JETRANGE (PN: JR4000)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	Yes	●
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	3" Valve & Actuator (PN: ACT24 & SD15)	●
<b>PLC Model:</b>	X-TARGA (PN: X-TARGA4)	●
<b>M1255 Cables (Qty.):</b>	Qty: 5 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 4 (PN: M1253)	●

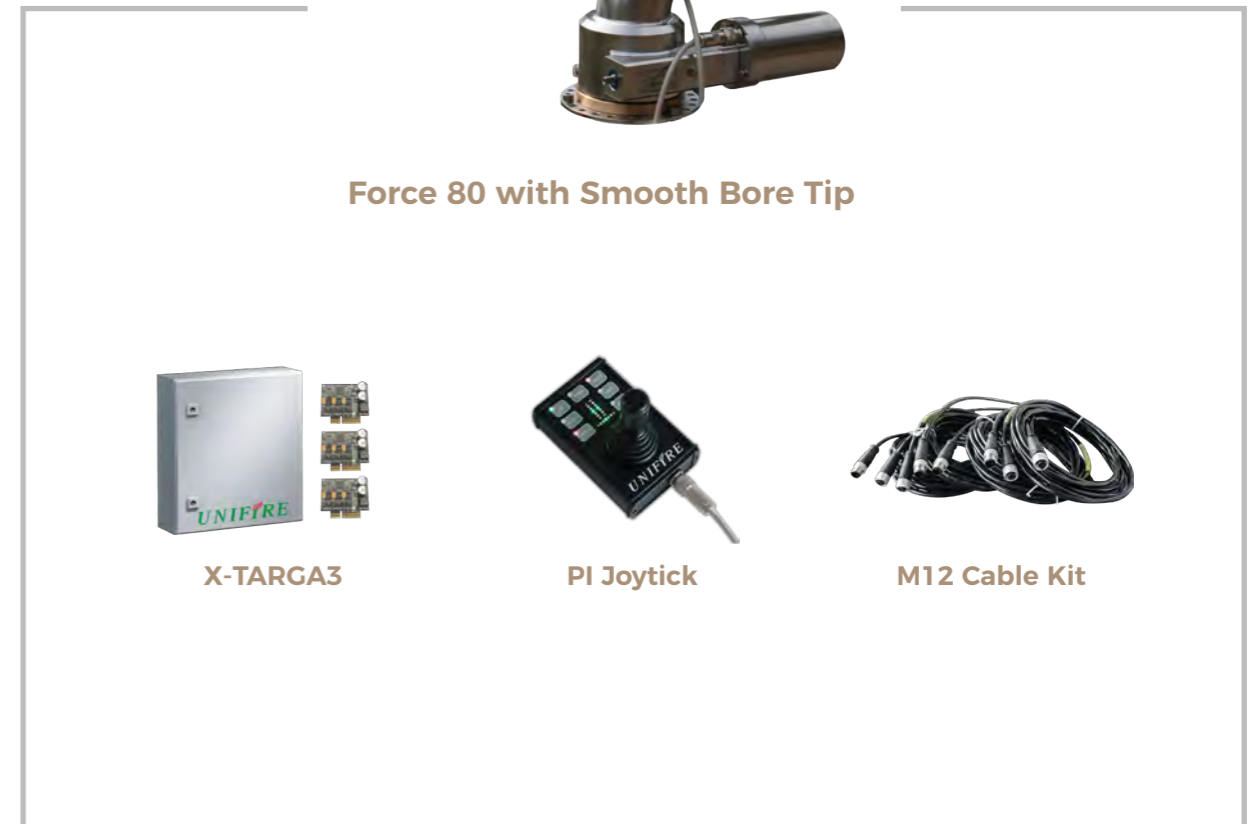
**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 80 (PN: F80B)	●
<b>Nozzle Tip:</b>	JETRANGE (PN: JR4000)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	3" Valve & Actuator (PN: ACT24 & SD15)	●
<b>PLC Model:</b>	X-TARGA (PN: X-TARGA-S4)	●
<b>M1255 Cables (Qty.):</b>	Qty: 4 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 3 (PN: M1253)	●

# Package F80-S-XTS-P-V



# Package F80-S-XT-P



**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 80 (PN: F80B)	●
<b>Nozzle Tip:</b>	Smooth Bore (PN: FOR48300)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	3" Valve & Actuator (PN: ACT24 & SD15)	●
<b>PLC Model:</b>	X-TARGA (PN: X-TARGA-S4)	●
<b>M1255 Cables (Qty.):</b>	Qty: 4 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 3 (PN: M1253)	●

**Includes:**

<b>Robotic Nozzle Chassis:</b>	Force 80 (PN: F80B)	●
<b>Nozzle Tip:</b>	Smooth Bore (PN: FOR48300)	●
<b>Joystick / Controller:</b>	PI Joystick (PN: FOR00207)	●
<b>ONE App:</b>	(N/A)	-
<b>FlameRanger Package:</b>	(N/A)	-
<b>Valve Type:</b>	(N/A)	-
<b>PLC Model:</b>	X-TARGA (PN: X-TARGA3)	●
<b>M1255 Cables (Qty.):</b>	Qty: 4 (PN: M1255)	●
<b>M1253 Cables (Qty.):</b>	Qty: 3 (PN: M1253)	●



*Advanced, Swedish Robotic Nozzle Technologies™*

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