NAFFCO

PASSION TO PROTECT

MICRO PROCESSOR BASED FIRE PUMP CONTROLLERS

c UL us LISTED

FM APPROVED

NEMA

AN INTRODUCTION TO NAFFCO

NAFFCO was founded in Dubai, UAE to become the world's leading producer and supplier of life safety solutions. By recognizing the importance and convenience of having easy access to multiple safety services, we became specialized by offering complete solutions under one roof for all types of high quality firefighting equipment, fire protection systems, fire alarms, addressable emergency systems, security systems, custom-made vehicles such as fire trucks, ambulances, mobile hospitals and airport rescue firefighting vehicles (ARFF).

With the most talented and dedicated employees from around the world, NAFFCO has over 2,000 passionate engineers and over 6.5 million square feet of manufacturing facilities. We are currently exporting to over 100 countries worldwide.

NAFFCO manufactures UL, FM, BSI & Global Mark approved products in our facility in consistent with International Standards UL-DQS, BSI certifies for the Quality Management System against ISO 9001. Our Environmental (ISO 14001) & Occupational Health & Safety (ISO 45001) Management Systems have been certified by UL-DQS. Our Trucks & Vehicles division has been assessed & certified for Quality Management System requirement for Aviation, Space & Defense organization (AS 9100) by UL-DQS.

Our success is driven by our passion to protect; our vision is to become the world's number one provider of innovative solutions in protecting life, environment and property.

NAFFCO
ISO 45001 | ISO 14001 | ISO 9001
20002009

FM615437

FP/2414

2797

0086/2021

MANUFACTURING

NAFFCO manufacturing department has the latest technology, state-of-the-art machines (CNC machines, hydraulic shearing and bending machines, all types of welding machines - MIG, TIG, ARC etc. and a complete machine shop that enable us to meet the needs of any production requirement.

NAFFCO has the ability to introduce the latest technological systems & equipment in the field. Our engineers and technicians are well qualified & experienced in producing quality products.

The department is equiped with full-fledged testing facilities to test the equipment as per NFPA, EN, ICAO, KKK and Civil Defense standards & requirements, and to meet the customers specifications.

Considering the above facilities and excellence in engineering capabilities, NAFFCO can meet any challenges to produce bulk quantities of fire safey materials.

UL / FM CERTIFIED ELECTRIC MOTOR CONTROLLER

MICROPROCESSOR BASED CONTROLLER

NAFFCO Electric Motor Controllers for fire pumps are listed by Underwriters Laboratories (UL file number EX15064), in accordance with UL 218 (Standard for Fire Pump Controllers), UL 508 (Standard for Industrial Control Equipment), NFPA 20 (Standard for the Installation of Stationary Pumps for Fire Protection), NFPA 70 (National Electrical Code) and relevant NEMA standards.

Also approved by FM approvals (Factory Mutual), in accordance with FM standard 1321 /1323 (Approval Standard for Controllers for Electric Motor Driven and Diesel Engine Driven Fire Pumps).

Only high quality UL listed or UL recognized components are used in these panels to guarantee the best possible reliability. Also high quality UL listed enclosures are used.

ENCLOSURE OPTIONS : NEMA 2, NEMA 3, NEMA 4, NEMA 4x & NEMA 12

CONTROLLER RATINGS

Motor Power (HP)	Rated Voltage (V)	Frequency (Hz)	Short Circuit Rating (KA)
15	230 / 380 / 415 (UL & FM) 480 (UL)	50 / 60	100
20			
25			
30			
40			
50			
60			
75			
100			
125			
150			
200			
250			
300			
350			
400			

UL / FM CERTIFIED ELECTRIC MOTOR CONTROLLER

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ENCLOSURE OPTIONS : NEMA 2, NEMA 3, NEMA 4, NEMA 4x & NEMA 12

CONTROLLER RATINGS

Motor Power (HP)	Rated Voltage (V)	Frequency (Hz)	Short Circuit Rating (KA)
15	230 / 380 / 415 (UL & FM) 480 (UL)	50 / 60	100
20			
25			
30			
40			
50			
60			
75			
100			
125			
150			
200			
250			
300			
350			
400			

UL / FM CERTIFIED ELECTRIC MOTOR CONTROLLER

MICROPROCESSOR BASED CONTROLLER

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Also approved by FM approvals (Factory Mutual), in accordance with FM standard 1321 /1323 (Approval Standard for Controllers for Electric Motor Driven and Diesel Engine Driven Fire Pumps).

Only high quality UL listed or UL recognized components are used in these panels to guarantee the best possible reliability. Also high quality UL listed enclosures are used.

ENCLOSURE OPTIONS : NEMA 2, NEMA 3, NEMA 4, NEMA 4x & NEMA 12

ADVANTAGES

- Low starting current during startup of motor (Around 150% of rated current), with soft gradual ramp (no current peak).
- Smooth soft starting and soft stopping.
- Significant reduction in mechanical stresses of the coupling and transmission devices (gearboxes, pulleys, gears, conveyors, etc.) during start (no torque peak).
- Increases motor and equipment lifetime due to the elimination of mechanical shock.
- Avoids the “Water Hammer” in pumps, and pressure surges, and so having longer life for pipe lines.
- Using power electronic semiconductors (Thyristors) to control the motor voltage at starting up and at stopping, and a built in single contactor for continuous steady operation.
- Connected to motor through 3 terminals, so it requires less cabling (3 cables), and easier setup and installation.
- Fire pump controller is rated 50 degree ambient, and soft starter unit is rated 55 degree ambient (UL Listed).
- Limitation of voltage drop during start up, so less rated power source is needed.
- Gradually reduces the output voltage to a minimum value in a preset time thus providing a highly controlled and highly secure stop of the connected firefighting pump.

CONTROLLER RATINGS

Motor Power (HP)	Rated Voltage (V)	Frequency (Hz)	Short Circuit Rating (KA)
15	230 / 380 / 415 (UL & FM) 480 (UL)	50 / 60	100
20			
25			
30			
40			
50			
60			
75			
100			
125			
150			
200			
250			
300			
350			
400			

UL / FM CERTIFIED VARIABLE FREQUENCY DRIVE FIRE PUMP CONTROLLER

NAFFCO Variable Frequency Drive Controllers are listed by Underwriters Laboratories (UL file number EX15064), in accordance with UL 218 (Standard for Fire Pump Controller), UL 508 (Standard for Industrial Control Equipment), NFPA 20 (National Fire Protection Association Standard for the Installation of Stationary Pumps for Fire Protection), NFPA 70 (National Electric Code) and applicable NEMA standards.

Also approved by FM approvals (Factory Mutual), in accordance with FM standard 1321 / 1323 (Approval Standard for Controllers for Electric Motor Driven and Diesel Engine Driven Fire Pumps).

ELECTRIC FIRE PUMP CONTROLLER MODELS

- **NFY-VFD-DOM1** - VARIABLE SPEED W/ DIRECT ON LINE
- **NFY-VFD-SSM1** - VARIABLE SPEED W/ SOFT STARTER

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ENCLOSURE OPTIONS : NEMA 4, NEMA 4x & NEMA 12

ADVANTAGES

- Fixed stable controlled pressure from no flow till full flow, therefore reduce or eliminating the need for PRVs, and drain risers.
- Eliminate the need for NFPA 25 quarterly testing for PRVs, and so more reliable system..
- Significant Power Saving since motor is not running at full speed.
- When used with soft starter the soft start and soft stop will considerably reduce the mechanical stress over couplings, shafts etc.
- Eliminate water hammer phenomena.
- Reduce the size of power supply (Genset or Transformer).
- Maintenance costs can be lowered, since lower operating speeds result in the reduction of pump wear, particularly on bearings and seals & longer life for motors.
- Ramp-time can be adjusted for controlled ramp-up speed and this can eliminate the problems of water hammer and excess power draw on start-up, and reduce or avoid flow or pressure surges.

CONTROLLER RATINGS

Motor Power (HP)	Rated Voltage (V)	Frequency (Hz)	Short Circuit Rating (KA)
15	230 (FM) 380 / 415 (UL & FM)	50 / 60	100
20			
25			
30			
40			
50			
60			
75			
100			
125			
150			
200			
250			
300			
350			
400			

ELECTRIC MOTOR CONTROLLER
FEATURES

STANDARD FEATURES

- 230 / 380 / 415 VAC, 50/60 Hz main 3 phase system power.
- Voltage Surge Protector.
- Main disconnecting switch with rotary handle sized for disconnecting motor horsepower and voltage.
- Motor Run indicator/free contact
- Phase Loss/Failure alarm / indicator / free contact
- Phase sequence error alarm/indicator / free contact.
- System error alarm / indicator / free contact.
- Fail to start alarm / indicator.
- System error alarm / indicator.
- Pump lockout indicator / free contact
- Push button for alarm silence (only for additional alarms).
- Motor locked rotor trip at 600% of FLA, after programmable time delay.
- Programmable automatic test, which can be programmed to start at any desired day, hour and minute in the week.
- Manual test push button.
- Motor overload alarm/ indicator / free contact (programmable).
- Over voltage alarm/indicator / free contact (programmable).
- Circuit breaker with shunt trip coil and rotary handle.
- Rated motor connectors.
- Emergency run mechanism to mechanically close motor connector contacts to start motor in case of emergency.
- Manual start and stop push buttons.
- 20x4 LCD display showing all system parameters and variables.
- User friendly software enables user to program all related parameters like timers, pressure, inputs, outputs... etc.
- Shows 3 phase line voltages.
- Shows 3 phase line motor currents.
- Shows real value of discharge pressure.
- Shows motor running hours.
- Shows ambient temperature.
- Starting delay timer (programmable) for sequence multiple pumps starting.
- Automatic shutdown mode enabled/disabled indicator.
- Power ON/Healthy indicator.
- Automatic mode indicator.
- Manual mode indicator.
- Remote start on alarm / indicator / free contact (programmable).
- Manual local start on alarm/ indicator / free contact (programmable).
- Fail while run alarm / indicator / free contact (programmable).
- Emergency start on alarm / indicator / free contact (programmable).
- Test on alarm/indicator/free contact(programmable).
- 10 additional programmable indicators (LED's).
- 10 additional programmable auxiliary digital inputs.
- 7 additional programmable output relays (free contacts).
- Pressure transducer with analog voltage output.
- Data logging system for pressure and events.
- USB port for saving recorded pressure and events on USB memory, and can be viewed with MS word and Excel.
- Electrically actuated built in discharge solenoid valve.
- Under voltage alarm / indicator / free contact (programmable).
- Low discharge pressure alarm / indicator / free contact (programmable).
- Deluge valve on alarm / indicator / free contact (programmable).
- Electrical alarm bell.
- Ambient Temperature Operating Range: 39°F (4°C) to 122°F (50°C)

This controller is completely wired, assembled, programmed and tested at the factory before shipment, and ready for immediate installation.

NAFFCO WEATHER PROOF ENCLOSURE

NEMA 4x & NEMA 12

NAFFCO Weather Proof Enclosures are UL Listed. The construction of the metallic enclosures are based on UL50E standard, with requirements meeting for NEMA 4X & 12 Environmental Considerations. These enclosures acts as solution to protect the electric control panels against different environmental factors.

Equivalent Ingress Protection Ratings as per ANSI/IEC 60529
NEMA 4X - IP66
NEMA 12 - IP54

NEMA 4x & NEMA 12 ENCLOSURES		
Enclosure Series	NF-ENC-1000	NF-ENC-2000
Enclosure Material	E.G. Sheet	
Hinge Material	Stainless Steel	
Lock Material	Stainless Steel	Zinc Alloy Casting
Lock Type	Quarter Turn Lock	Multi Point Lock
Min. Overall enclosure dimensions (H X W X D) in mm	270x270x150	850x600x200
Max. Overall enclosure dimensions (H X W X D) in mm	800x600x300	1700x1200x500
Designed as per NEMA 250		
Tested and Approved as per UL 50 and UL 50E		

NEMA 4X: These enclosures are constructed for indoor and outdoor use to provide a degree of protection to personnel against incidental contact with the enclosed equipment; to provide a degree of protection against falling dirt, rain, sleet, snow, windblown dust, splashing water, hose-directed water, and corrosion; and that will be undamaged by the external formation of ice on the enclosure.

NEMA 12: These enclosures are constructed for indoor use to provide a degree of protection to personnel against incidental contact with the enclosed equipment; to provide a degree of protection against falling dirt, against circulating dust, lint, fibers, and flyings; against dripping and light splashing of non-corrosive liquids; and against light splashing and consequent seepage of oil and non-corrosive coolants.

Design of these enclosures have passed the following tests as part of design approval from UL:

NEMA 4X:
External icing test
Hose down test
Outdoor corrosion protection test
Additional corrosion protection test
Gasket test
Misalignment test

NEMA 12:
Indoor (circulating) dust test
Indoor corrosion protection test
Gasket test
Misalignment test

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BASIC CONSTRUCTION FEATURES

ENCLOSURE SERIES : NF-ENC-1000	
Door or Cover Construction	One Door
Sheet Metal Thickness of Enclosure Body	2 mm
Sheet Metal Thickness of Door(s)	2 mm
Number of Locking(s) up to a max width of 600 mm and height of 800 mm	1 Quarter turn lock (Lock with spring inside)

ENCLOSURE SERIES : NF-ENC-2000	
Door or Cover Construction	One Door
Sheet Metal Thickness of Enclosure Body	2 mm
Sheet Metal Thickness of Door(s)	2 mm
Number of Locking(s) up to a max width of 1200 mm and height of 1700 mm	Multi-point-latch-system with min. 3 interlocking points

MOUNTING

Standard Design : Without Legs (Surface Mounted)

Optional Addition : With Legs (Self Standing)

BASIC ENCLOSURE FEATURES

NEMA 12

Application : Indoor

- Protection against Hazardous Parts
- Protection against Oil and Coolant seepage
- Protection against ingress of solid foreign objects such as:
  - » Circulating Dust
  - » Lint
  - » Fibers
  - » Flyings
  - » Falling Dirt
  - » Settling Airborne Dust
- Protection against Ingress of water such as:
  - » Dripping
  - » Light Splashing

NEMA 4x

Application : Indoor & Outdoor

- Protection against Hazardous Parts
- Protection against Oil and Coolant seepage
- Protection against ingress of solid foreign objects such as:
  - » Circulating Dust
  - » Lint
  - » Fibers
  - » Flyings
  - » Falling Dirt
  - » Settling Airborne Dust
  - » Windblown Dust
- Protection against ingress of water such as:
  - » Dripping
  - » Light Splashing
  - » Rain
  - » Snow
  - » And Sleet
  - » Hosedown
  - » Splashing Water

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