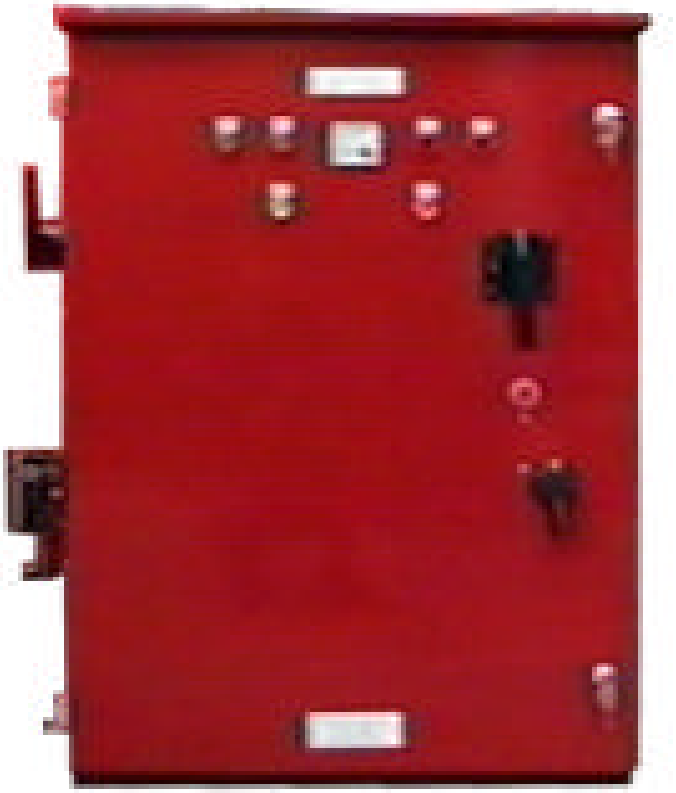
FIRE PUMP CONTROLLER
for Electric Motor Fire Pumps

CE

Type M300u (Direct on line)0 & M430u (Star delta)

SPEC. 2/9807 Release 1.0

Features



The Metron Eledyne MOTOSTART type M300u and M430u ranges of electric motor fire-pump controllers have been designed in accordance with the latest requirements of NFPA No 20 for automatic and manual starting of star-delta and direct on line electric motor driven fire pumps. The standard range covers all ratings upto 520 Amps at 380/415v with higher ratings (upto 690V) available upon request.

Components are contained in a locking sheet steel enclosure, with an ingress protection rated at NEMA2 (IP51). The paint finish is to Metron Eledyne specification PSO396.

Alternatively there is a NEMA4X (IP65) version available with a “Lexan” windowed front door and lock-up internal access door.

Control System

Manually operated door interlocked isolator suitably rated for motor KW/HP size.

Auto-closing heavy duty direct on line contactor, or star-delta contactors, with adjustable stardelta changeover timer.

Wiring terminals at clearly marked termination points. External cable connections are through enclosure bottom fitted cable gland plate.

In the event of a control circuit failure, there is a manual mechanically operated direct on line start system, activated by a lever mounted on the side of the enclosure.

Controls & Instrumentation

Fascia Mounted

Control Circuit Healthy Lamp
Mains Phases Healthy Lamp
Phase Sequence Healthy Lamp
Pump On Demand Lamp
Manual Start Pushbutton
Manual Stop Pushbutton
Circuit Breaker Switch
Isolator
Isolator Release Pushbutton

Remote Alarm Signals

Phase Sequence Fault
Mains Failure
Pump Running
Pump On Demand

Options

A	Autostop Timer
B	Anti-condensation Heater
C	Stainless Steel Pressure Switch
D	Freestanding Plinth
E	Chart Recorder

When ordering, please specify;

- Motor full-load current
- Supply voltage and frequency
- Any optional extras required
- EC “CE” marking/certificate of conformity.

Order Code

M300u-	voltage-	hp

M430u-	voltage-	hp

OPERATING INSTRUCTIONS FOR: MOTOSTART TYPE MFP/NFPAW/DOL/90

1 CAUTION

In order to avoid risk of personal INJURY or damage to the control equipment, READ THIS MANUAL VERY CAREFULLY. If after reading these instructions doubt exists, do not hesitate to contact Metron Eledyne for further clarification. In the interests of safety pay special attention to the CAUTION notes listed below:

If work has to be carried out on the motor or control equipment, ensure the control equipment is ISOLATED AND LOCKED OFF from the A.C mains supply before work commences. If possible use a temporary label which draws attention to this fact. Label suggestion: Caution ENGINEER WORKING ON EQUIPMENT.

The control system operating automatically from the pressure switch, may start the motor at any time. Ensure all concerned are aware of this condition by means of an appropriate label, prominently displayed in the motor area. Label suggestion: WARNING MOTOR MAY START AT ANY TIME.

In order to avoid the risk of serious electric shock, NEVER energise the control system with the access door open unless absolutely necessary. Care must be taken when dealing with the external pressure switch, which has control circuit voltage at the switch contacts when the panel is energised.

If the access door to the interior of the panel has to be opened when the panel is energised, BEWARE of the three phase motor supply and the single phase control circuit supply. This warning cannot be stressed enough.

WARNING
Remove wires from surge suppressors before doing insulation tests.

2 GENERAL

The Metron Eledyne Motostart Electric Motor Controller, is designed to operate a three phase electric motor driven pump. The system is based on the requirements of N.F.P.A. No 20. The unit is self contained with volt free outputs to facilitate remote monitoring.

The motor is protected by an N.F.P.A. characteristic circuit breaker. The three phases are monitored by phase failure, (PFR), and phase sequence, (PSR), relays which provide remote indication should a phase fault occur.

For these operating instructions, the following terms are defined as:-

Visual	- Pilot lamp lit, metre or flag indicating.
Volt free	- Remote indicating volt free contacts.
Standby	- System awaiting an operational event.
Normal	- System energised with all parameters within designed limits.

Generally, for simplicity, only changes in status will be mentioned for the above.

3 SUPPLY CONNECTIONS

Refer to drawing information on the title page.

Connect the 'Pump Motor' to terminals A1, B1 & C1. Ensure the system is correctly earthed. Connect the appropriate motor supply to the following input terminals:

Phase 1 (Red)	- input terminal L1.
Phase 2 (Yellow)	- input terminal L2.
Phase 3 (Blue)	- input terminal L3

4 ENERGISING THE CONTROL SYSTEM

With the start pressure high and remote start contacts open, close the Supply Isolator.

Visual.	Control Circuit Healthy. Mains Phases Healthy. All other lamps out.
Volt free.	Normal.

5 HEATERS

The heater thermostat must be set to 30EC.

With cabinet temperature below thermostat setting.	Cabinet heater warms.
With cabinet temperature above thermostat setting.	Cabinet heater cools.

6 PHASE FAULTS

If the phase sequence is reversed.

Visual.	Phase Sequence Fault.
Volt free.	Phase sequence fault.

If phases L1 or L3 are lost.

Visual.	All control circuit power is lost and all lamps are out.
Volt free.	Mains failure. Controller off or in manual.

If phase L2 is lost.

Visual.	Mains Phases Healthy - goes out.
Volt free.Mains failure.	

With phase voltage below the set point of the PFR.

Visual.	Mains Phases Healthy - goes out.
Volt free.	Mains failure.

7 START AVAILABILITY

With the control circuit energised, starting is always available from the following sources. Automatic start, from the pressure switch.

	Manual start, from the controller Manual Start pushbutton.
Alternatively.	Emergency start, (with control circuit unavailable only).

8 STANDBY

Start pressure switch supply pressure normal.

Visual.	Control Circuit Healthy.

Mains Phases Healthy.
All other lamps out.

Volt free. Pump stopped.
Pump on demand - clear.
Mains failure - clear.
Phase sequence fault - clear.

9 AUTOMATIC START ON PRESSURE DROP

Pressure switch supply goes below the pressure switch set point.Start delay timer begins to time.

Volt free. Pressure switch pump on demand.

Start delay timer times out.

Motor contactor operates. The motor starts.

Visual. Pump On Demand.

Ammeter reads high starting current which rapidly reduces to running value.

Volt free. Pump on demand.
Pump running.

10 MOTOR STOP

When the pressure switch supply is above the start pressure switch set point, the motor can be stopped.

Visual. Pump On Demand - goes out.

Volt free. Pressure switch pump on demand - clear.
Controller pump on demand - clear.

Press the Stop/Reset button. The motor stops.

All indications return to standby.

11 MANUAL OPERATION

MANUAL MOTOR START

Press the Man Start pushbutton. The motor starts immediately.

Visual. Ammeter reads high starting current which rapidly reduces to running value.

Volt free. Pump running.

12 **MOTOR STOP**

Press the Stop/Reset button. The motor stops.
All indications return to standby. 13

REMOTE START

Close the Remote Start contacts. The motor starts immediately.

Visual. Ammeter reads high starting current which rapidly reduces to running value.

Volt free. Pump running.

MOTOR STOP

Press the Stop/Reset button. The motor stops.

All indications return to standby.

14 **EMERGENCY START OPERATION**

Emergency manual operation is provided in case of failure of control circuitry. This lever is manually moved to the "On" position and must be manually latched in the "ON" position or it will return to "Off" when released. The lever should be moved from the "Off" position to the "On" position in as quickly a motion as possible to prevent burning the contacts. The circuit breaker should be tripped to disconnect circuit before releasing emergency lever. This lever is for emergency use only. A mechanical interlock switch is connected to the emergency lever to operate the contactor electrically when all circuitry is functioning properly. This is provided to prevent inadvertent slow closing of contactor and burning of contacts.

TABLE OF CONTENTS