



# SPECIFICATIONS FOR MODEL GPS + GPU FULL SERVICE REDUCED VOLTAGE ELECTRIC SOFT STARTER ELECTRIC FIRE PUMP CONTROLLER WITH AUTOMATIC POWER TRANSFER SWITCH

## LISTING AND APPROVAL

The electric fire pump controller and automatic power transfer switch shall meet the latest NFPA 20 requirements, be listed with UL (in accordance with UL218, UL1008 and CSA C22.2 No. 14 Industrial Control Equipment), approved by FM Global (in accordance with approvals Class 1321/1323) and by the City of New York for fire pump service.

## STARTING METHOD

The electric fire pump controller and automatic power transfer switch shall be a full service combined manual and automatic type suitable for reduced voltage soft start starting of the electric fire pump motor.

## SHORT CIRCUIT WITHSTAND RATING

The short circuit withstand rating of the electric fire pump controller and automatic power transfer switch shall be 100 kA RMS at 200V - 480V or 50 kA RMS at 600V.

## ENCLOSURE

The standard enclosure shall be NEMA type 2. The enclosure shall incorporate a bottom entry gland plate for normal and alternate power and/or motor lead entrance. The gland plate shall be field removable and meet the same NEMA rating of the enclosure. Lifting lugs shall be provided.

## POWER CIRCUIT COMPONENTS

The electric fire pump controller and automatic power transfer switch shall be supplied with an electric soft start motor starter and the following power components for both the normal and alternate (emergency) power supply:

- Voltage surge arrestor for normal
- Motor rated combination isolating switch and circuit breaker assembly. Both the isolating switch and circuit breaker shall be rated not less than 115% of the motor full load current.
- The circuit breaker overcurrent sensing shall be non-thermal type, magnetic only.
- Locked rotor protector set to automatically trip the circuit breaker within 8 to 20 seconds at 600% of full load current. The locked rotor protector shall be factory calibrated, set and tested.
- An automatic power transfer switch mechanically held and electrically operated. Manual operation of the transfer switch shall be provided by means of manual operating handle.

## OPERATIONAL COMPONENTS

The electric fire pump controller and automatic power transfer switch shall be supplied with the following externally flange mounted components approved to match the NEMA rating of the enclosure:

- Common operating handle for the isolating switch and the circuit breaker assembly for normal power.
- Common operating handle for the isolating switch and the circuit breaker assembly for alternate (emergency) power.
- Mechanically interlocked with the enclosure door to prohibit access to the interior in the "ON" position.

- One "Emergency Start" and run handle mechanism latchable in the "ON" position

## TOUCH SCREEN OPERATOR INTERFACE

The electric fire pump controller and automatic power transfer switch shall be supplied with a 4.2" LCD color touch screen (HMI technology) operator interface powered by an embedded microcomputer with software PLC logic. The operator interface's touch screen shall allow navigation through the various operating screens.

The following keypad type pushbuttons shall be provided:

- Start
- Stop
- Run test
- Navigation
- Help
- Home
- Alarms
- Settings/Configuration
- History/Statistics

The touch screen operator interface shall graphically display:

- Normal and alternate (emergency) power voltage and amperage readings of all three phases, simultaneously and independently displayed with true RMS technology.
- Transfer switch status
- Motor starting transition
- Motor stopped / running
- Type of starting cause
- Actuation mode
- Type of controller
- Method of shutdown
- Time and date
- Pump room temperature (°F or °C)
- System pressure in 5 different user selectable units of measure;
  - PSI
  - kPA
  - Bar
  - Feet of head
  - Meter of water

The touch screen operator interface shall allow for the program and display of:

- Cut-In and Cut-Out pressure settings
- Minimum run period timer
- Sequential start timer
- Periodic test timer

The user shall be able to select the language of operation on-site.

Contextual HELP screens shall be accessible to the user while navigating through the operator interface.

## CONDITION AND ALARM VISUAL INDICATORS

The touch screen operator interface shall visually indicate alarms and differentiate the criticalness by color code:

- Normal and alternate (emergency) power phase reversal
- Normal and alternate (emergency) power phase loss
- Locked rotor



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- Fail to start
- Transfer switch trouble
- Normal and alternate (emergency) power loss
- Service required
- Undercurrent
- Overcurrent
- Under voltage
- Overvoltage
- Phase unbalance
- Periodic test cut-in not reached
- Periodic test solenoid valve check
- Faulty pressure transducer
- Low water level
- Low system (discharge) pressure
- Pump on demand
- Over pressure
- Under pressure
- Alternate (emergency) power isolating switch off
- Alternate (emergency) power circuit breaker open
- Alternate (emergency) power locked rotor
- Low pump room temperature

## PRESSURE AND EVENT RECORDING

The fire pump controller's touch screen operator interface shall be capable of logging pressure data and operational events with time and date stamp. It shall be able to display the last 500 operational events and display the pressure data in text and/or graphic form. Under regular maintained operation, pressure data and operational events can be stored in memory for up to 5 years. The data shall also be retrievable and downloadable to a flash memory disk via the USB port accessible to the user without having to open the controller door. General system information, events and alarms include the following:

- Last service statistics
  - Powered since
  - On time
  - Motor last run
  - Motor run time
  - Motor start count
  - Minimum, maximum, average system pressure
  - Minimum, maximum, average pump room temperature
  - Generator last run
  - Generator run time
  - Transfer switch transfer count
- All time statistics
  - First power up
  - First start up
  - On time
- Power statistics
  - Voltage between phases with date stamp
  - Amperage between phases with date stamp

## WETTED PARTS

The electric fire pump controller and automatic power transfer switch shall be supplied with a pressure transducer and run test solenoid valve assembly. The pressure sensing line connection to the pressure

transducer shall be ½" FNPT. Provision for a redundant pressure transducer shall be provided. This assembly shall be rated 500psi working pressure (calibrated at 0-300psi) and be externally mounted with a protective cover.

## SERVICE/FLOW TESTING CAPABILITIES

The electric fire pump controller's touch screen operator interface shall have the capability of scheduling maintenance reminders. It shall also have the capability of inputting pump flow test data, generate and display the pump curve and store this information in memory for the lifetime of the controller.

## CONNECTION FOR EXTERNAL DEVICES

The electric fire pump controller and automatic power transfer switch shall provide terminals for the connection for the following external devices:

- Manual remote start device
- Automatic remote start device
- Deluge valve start
- Generator start signal

## ALARM CONTACTS FOR REMOTE INDICATION

SPDT dry alarm contacts rated for 8A – 250VAC for remote indication shall be provided for the following conditions;

- Power or phase failure and/or circuit breaker in open position
- Phase reversal
- Pump run (X2)
- Common pump room alarm (field re-assignable)
- Common motor trouble (field re-assignable)
- Emergency power isolating switch in the OFF position
- Transfer switch in normal position
- Transfer switch in emergency position
- Field programmable

Removable alarm contact terminal shall be provided.

## AUDIBLE ALARM

A 4" alarm bell rated for 85dB at 10ft (3m) shall sound during boot up and internal communication error.

## MANUFACTURER

The electric fire pump controller and automatic power transfer switch shall be a Model GPS+GPU with ViZi Touch operator interface as manufactured by Tornatech Inc.