NHM - 393

Features

- **Ruggedised, compact, State-of-the-art Micro-controller based system**
- **16 x 2 LCD Display**
- **Accepts 4-20mA Inputs for Flow, Inlet Temperature and Outlet Temperature**
- **LED Indications for Serial Communication**
- **Programmable Flow Rate Span and Serial Rs485 parameters from keyboard**
- **Password protection for programming**
- **RS485 with Modbus RTU protocol**
- **Calculate and Displays Instantaneous Net Heat, Temperatures and Flow**
- **Totaliser Display for Net Heat and Volumetric Flow**
- **Real Time Clock for accurate totaliser values of Net Heat and Volumetric Flow**
- **Built in Density and Enthalpy Tables**
- **Ideal for Building Automation Applications**

Application

NHM-393 is a Net Heat Calculator specially developed for Centralized Air Conditioning Applications which is mainly used in Building Automation Systems.

NHM-393 is a net heat calculator supplied with RTD Pt1000 Temperature Transmitters for accurate temperature sensing. Most reliable 4-20mA loop is provided for easy installation of the NHM-393 anywhere in the plant which is powered by unit.

NHM-393 calculates net heat consumed in chilled water air conditioning systems which supports all flow meters which will provided 4-20mA signal corresponding to volumetric flow rate. 8 Digit Net Heat Totaliser is an important feature of NHM-393. This totaliser makes NHM-393 a reliable energy meter for the total net heat consumed.

All settings and the totalisers are stored in non-volatile memory.

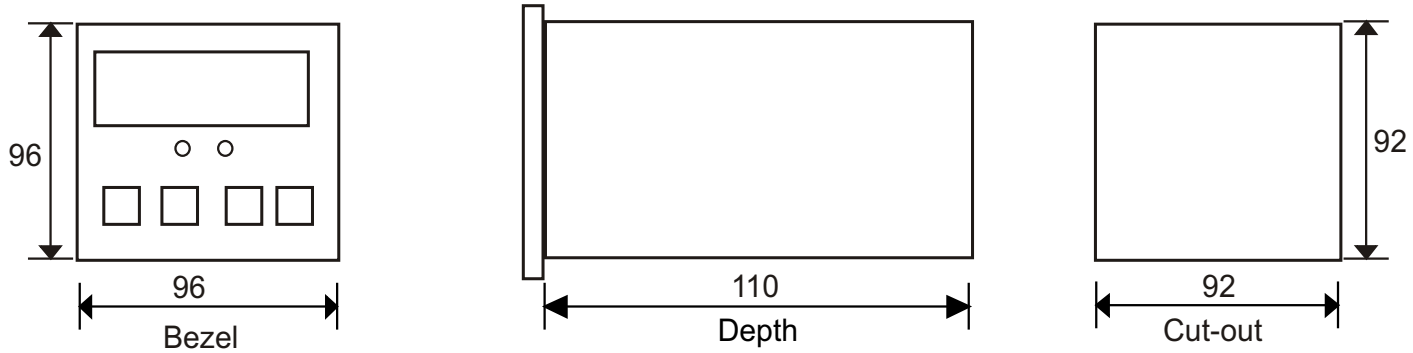
Real Time Clock is used to calculate the totaliser values very accurate.

RS485 - MODBUS RTU protocol for serial communication is provided for energy management systems.

Fuse protections are provided for input power and output power for the transmitters to protect the unit in any conditions.

Dimensional drawing

All dimensions are in mm



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TECHNICAL SPECIFICATIONS

Inputs	4-20mA - 3 Nos for Flow Rate and Temperatures accepts and displays on LCD till 21.60mA
Accuracy	± 0.25% of FSR ± 1 bit of ADC for Instantaneous readings ± 1% of value for Totalisers
Display	16 x 2 back light LCD
Keyboard	4 Keys tacktile keyboard
Resolution	12 Bit
Settings	Flow rate span programmable and all settings in non-volatile memory
Logging Time	Programmable from 1 to 240 second or minute or hour
Protection	Password protection for all settings and data
LED Indications	LED indications for Serial communication
Power	230VAC, 50Hz ± 10%, 110VAC Selection available inside cabinet 24VDC,100mA Output is provided for temperature transmitters.
Serial Port	RS485 port with MODBUS RTU protocol for on-line communication
Connections	Screw Type connectors on back panel of cabinet
Cabinet	Bezel: 96 x 96mm (H x W) Depth: 110 mm Cutout: 92 x 92 mm (H x W)

Net Heat Calculations

The 393 Heat Calculator measures the temperature in the feed and return lines and, from this, calculates the density and enthalpy of the water .By also measuring the volume of water flowing in the system, the 393 will then compute the energy consumed.
Net Heat is calculated as:
$NH = V \times p \times (h_{TV} - h_{TR})$
where NH = Net Heat Rate (kcal/hr)
V = Volumetric flow rate (m_3/hr)
p = Density
h_{TV} = Specific enthalpy at Feed temperature
h_{TR} = Specific enthalpy at Return temperature
The volume, energy, temperatures and totaliser for NH are all calculated and can be displayed on the LCD

Note : Due to continuous development specifications may change without prior notice

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