

NPC-602-COM

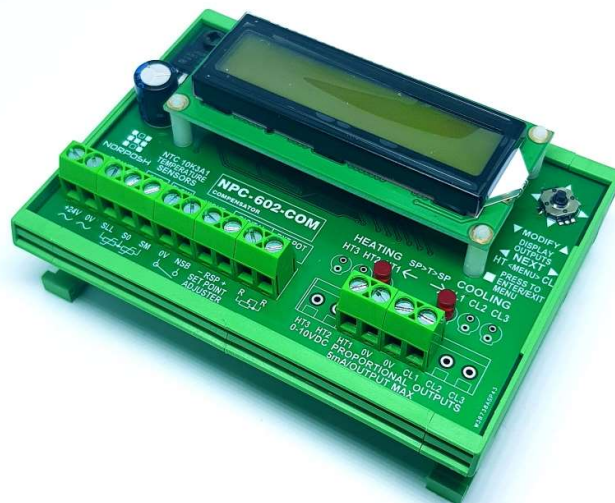
COMPENSATOR



DESCRIPTION

The NPC-602-COM is a Proportional/Integral Compensator with advanced features. Setpoint is calculated internally with respect to outside temperature using user defined Heating Curve. Calculated Setpoint can be trimmed up to $\pm 20^{\circ}\text{C}$ using External Pot. Digital Remote can be used to display Flow Temperature and Calculated Setpoint only.

The compensator has separate analogue 0-10VDC proportional outputs for heating and cooling so requires no configuration for outputs prior to use. The unit offers individual Proportional band and Deadband adjustment of each output and separate adjustment of Heating and Cooling Integral Time. The compensator is designed specifically to control Damper Actuators, Thyristor Controllers, Relay Modules etc.



Product shown is for reference only. Actual unit may be slightly different from the one shown in photo.

FEATURES:

- Two Analogue outputs, 1Heating output and 1Cooling output
- Digitally calibrated 0-10VDC proportional outputs
- Separate outputs for Heating and Cooling, i.e., Plug n Play, no configuration required
- Full Proportional + Integral
- Separate Integral Time for Heating and Cooling allowing it to be used for Heating and Cooling with or without Integral.
- Analogue output value in (%) is displayed on LCD. All Proportional outputs have Blinking LEDs with a Blinking rate directly proportional to Analogue output. e.g. output with 0% is completely off while for 100% solid lit
- User friendly Back-lit 16X2 LCD Display with 5Way Navigation Switch
- Temperature range from -5°C to $+95^{\circ}\text{C}$ with a resolution of 0.1°C for Flow and Outside Temperature
- Heating Curve design option using Flow High and Flow Low temperature values
- Setpoint is calculated internally with respect to outside temperature using user defined Heating Curve

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- Temperature Sensors offset feature. With this feature, individual offset of $\pm 5^{\circ}\text{C}$ with a resolution of 0.1°C can be adjusted to eliminate error for Flow and Outside Temperature Sensors.
- Night Set-back option. Indication is provided on LCD when Night Set-back is activated
- Choice of Remote Setpoint input, i.e. two-wire Digital and Analogue:
 - Digital Remote requires no external power therefore Power and Data is Transmitted/Received simultaneously over a pair of wires with NORPOSH Intelligent Communication Protocol with CRC (checksum) on both side for error free Flow Temperature and Calculated Setpoint Display
 - Analogue input is user selectable for Resistance
 - ◆ Resistance input can be selected from menu for 0-10K Ω , 1-11K Ω , 0-5K Ω and 560-10560 Ω . Variety of pre-defined External Pot ranges gives an option to use different available POTs in the market.
- 24VAC/DC Power input
- Din-rail PCB Holder

SPECIFICATIONS

Power Supply	24VAC/DC, -15/+10% 130mA max
Flow/Outside Temperature Range	-5 $^{\circ}\text{C}$ to 95 $^{\circ}\text{C}$, 0.1 $^{\circ}\text{C}$ Resolution
Flow and Outside Sensors	NTC 10K3A1, Offset is user adjustable $\pm 5^{\circ}\text{C}$, 0.1 $^{\circ}\text{C}$ Resolution
Integral Time (Heating & Cooling)	0 to 500seconds
Proportional Band (Prop band)	0-50 $^{\circ}\text{C}$, 1 $^{\circ}\text{C}$ Resolution
Deadband	0-10 $^{\circ}\text{C}$, 1 $^{\circ}\text{C}$ Resolution
Night Set-back (Shift Heating Curve)	0 $^{\circ}\text{C}$ to 15 $^{\circ}\text{C}$, 1 $^{\circ}\text{C}$ Resolution
External Pot Resistance	User selectable from Menu: 0-10K Ω , 1-11K Ω , 0-5K Ω and 560 Ω -10560 Ω
External Pot Range	User selectable: $\pm 4^{\circ}\text{C}$, $\pm 5^{\circ}\text{C}$, $\pm 10^{\circ}\text{C}$, $\pm 20^{\circ}\text{C}$
Flow High (T _{outside} $\leq$ -5 $^{\circ}\text{C}$)	21 $^{\circ}\text{C}$ to 95 $^{\circ}\text{C}$, 1 $^{\circ}\text{C}$ Resolution
Flow Low (T _{outside} $\geq$ 20 $^{\circ}\text{C}$)	20 $^{\circ}\text{C}$ to 94 $^{\circ}\text{C}$, 1 $^{\circ}\text{C}$ Resolution
Proportional Outputs (Heating and Cooling)	Digitally Calibrated 0-10VDC, 5mA per output max at 10VDC
Dimensions	113 x 82 x 47 (W x H x D)

ORDERING INFORMATION

NPC-602-COM	2 x 0-10VDC analogue outputs. 1 Heating & 1 Cooling
NSP-100	Digital Remote (Display only i.e. Flow Temperature and Calculated Setpoint) compatible with NPC-602-COM

INSTRUCTIONS

1. From the Main Temperature Screens as shown below, navigate ◀ ▶ to display heating or cooling analogue outputs in percentage (%) and navigate ▼ ▲ to toggle display Flow/Outside temperature, or press the navigation switch to enter Menu.

```
TEMPFlow ~ 20.0°C  
Calc'd SP 20.0°C
```

```
TEMPOutside ~ 20.0°C  
Calc'd SP 20.0°C
```

In the above screen `Calc'd SP` stands for 'Calculated Setpoint'.

2. Navigate ◀ ▶ to select Menu and if the Menu has sub-menu, it will be shown with ■■■ mark. Press the navigation switch again to enter sub-menu.
3. Navigate ▼ ▲ to modify selected menu parameters. The modification can only be made if the displayed parameter is shown with ⚙ mark.
4. While on last Menu, pressing navigation switch at any time or if navigation switch is not used for more than 10 seconds, will cause exit to Main Temperature Screen.

OPERATION

The NPC-602-COM Compensator has 2 analogue 0-10VDC proportional outputs. As the compensator has separate heating and cooling proportional outputs, no configuration is required prior to use. Both sensors, Flow and Outside must be connected to compensator in order to run the unit. If any of the sensor is not connected, all proportional outputs are shut-down to zero volts regardless the value of Calculated Setpoint. The Flow and Outside sensor error can easily be compensated by adjusting the sensor offset from Sensor Offset Menu. Avoid running sensor cable with the mains as this will cause fluctuation in temperature value. Adjust the appropriate PROP BAND. Too small value will cause high fluctuation at the analogue outputs. PROP BAND of each output and DEADBAND between HT1 and CL1 stage can be adjusted. The Compensator offers separate Integral Time for heating and cooling. If the integral function is not required, set it to 0s. Night Set-back shifts the curve downwards in 0 to 15°C range. Closing the 0V and NSB contacts, will take the compensator in Set-back mode. When the night mode is activated, ■■■ appears on Main Temperature Screen. Calculated Setpoint can be adjusted or trimmed externally by using External Pot only. Choice of external Pot resistance is available. User can easily select these values from R_{Pot} Menu.

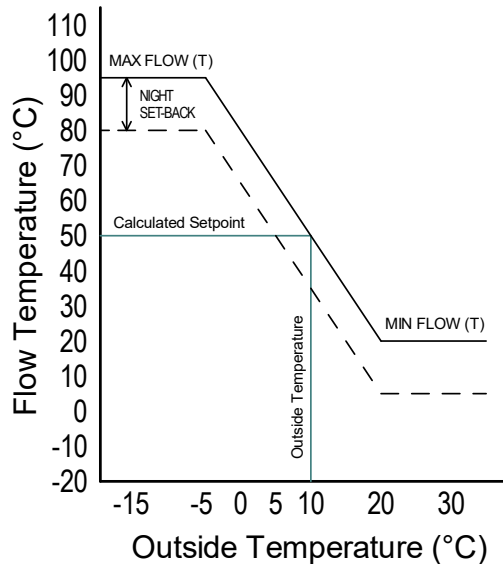
HEATING CURVE

Design the appropriate Heating Curve for the desired Flow Temperature. Setpoint is calculated with respect to outside temperature. User can easily adjust the curve from <Design>HEATING CURVE menu.

First set the maximum flow temperature MAX FLOW (T) when outside temperature is equal or below -5°C. Next, set the minimum flow temperature MIN FLOW (T) when outside temperature is equal or above 20°C. A typical default Curve is shown in the picture given below. In Night Set-back mode, the curve is shifted downwards.

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WIRING INSTRUCTIONS

The compensator operates at 24VAC/DC. Flow Sensor is connected between S0 and SM while Outside Sensor must be connected between SLL and S0. Always use shielded cable for sensors. All 0V terminals are connected internally and potential at sensor terminal S0 is also zero-volt and is internally connected to 0V. Avoid short circuiting the DIGITAL REMOTE terminals for a long time. However these terminals are internally current limited. The maximum recommended load at any analogue proportional output at 10VDC is 5mA. Do not apply power at these outputs as this will cause permanent damage to the compensator.

DIMENSIONS

