



TECHNICAL BULLETIN : PRODUCT INFORMATION

4 TO 20 mA ANALOG OUTPUT OPERATION INSTRUCTIONS FOR STANDARD PERFORMANCE OUTPUT ON INVITROCELL INCUBATOR MODELS NU-5800 – NU-5841

OPERATION

This analog output is offered as a standard communication output on all NuAire Invitrocell Incubators per TABLE 1. It provides a 4-20 mA analog signal output for external monitoring systems to track the incubator control system performances. All the signal outputs are conditioned and linearized to represent the chamber temperature & CO₂% on all units. Then, Relative humidity % & oxygen % level can also be monitored on models equipped with these options as indicated TABLE 1.

TABLE 1
Incubator Control Systems

Model	Operating Control System Outputs			
	Temperature	CO ₂	RH	O ₂
NU-5800 / E	X	X		
NU-5810 / E	X	X		
NU-5820 / E	X	X	X	
NU-5830 / E	X	X		X
NU-5831 / E	X	X		X
NU-5840 / E	X	X	X	X
NU-5841 / E	X	X	X	X

GENERAL

The NU-58xx Incubators have a RJ-45 (8-pin) connector socket on the upper left side of the back component panel for the purpose of having a remote access to the current Incubator operating points.

These contacts provide the measured values that have been calibrated for Temperature, CO₂, RH, and O₂ for appropriate Incubator models as indicated in TABLE 1.

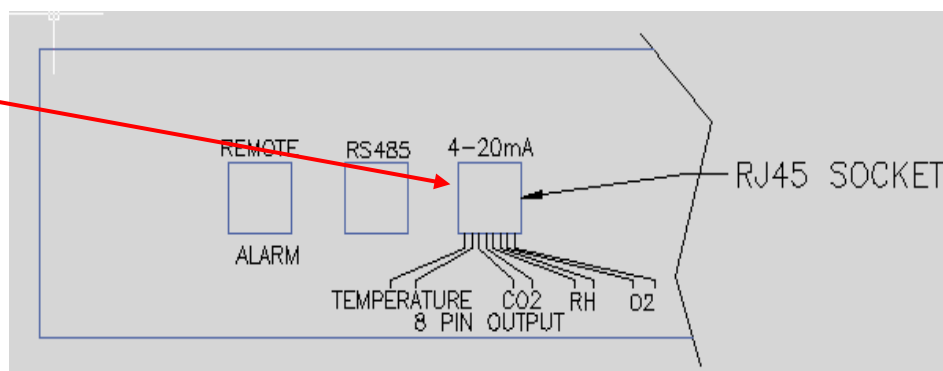
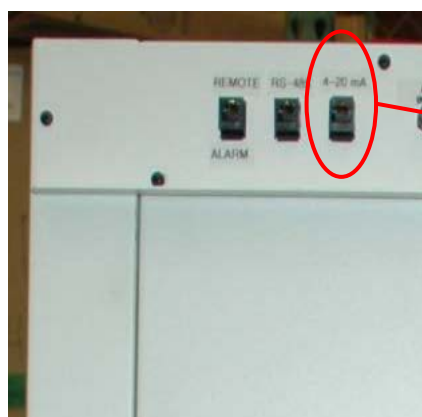


Figure 1

Location of RJ 45 socket oriented with connector locking tab upright Showing Order of Outputs for Control Systems

OUTPUT SCALING

Each control system has a different scale there for the rate of change in current (mA) level per minimum increment of the unit of measure for each control system varies as indicated in TABLE 2 below.

TABLE 2
Scale of Output and mA Rate of Change per Control System Unit of Measure

4-20 mA Output				
Scale	Analog output (mA) at Scale limits ^{3***}		Change in Output	
	mA = 4	mA = 20 ^{2**}	mA = ^{2**}	Scale Increment
Temperature Range (°C)				
Normal running ^{1*}	30.01	60.00	0.0488	0.10° C
Decon cycles ^{1*}	60.01	160.00	0.0488	0.30° C
CO ₂ Range (%)	0	25.00	0.0488	0.10%
R H Range (%)	0	100.00	0.0976	0.50%
O ₂ Range (%)	0	25.00	0.0488	0.10%

NOTES:

- ^{1*} To achieve the resolution indicated in Table 1 for the normal running range of 30.01 degree to 60.00 degree the entire scale from 4 to 20 mA was used.
This requires that beginning with 60.01 degree the scale restart at 4 mA and go to 20 mA when 160 degree is reached. There will be a drop to 4 mA when 60.01 degree is reached and the resolution of the output will change to the values indicated in TABLE 2 above.
- ^{2**} All values in Table 2 are calculated. The actual output will vary due to system tolerances.
- ^{3***} Scale limits apply to analog output only.

If any question arises during the installation, please call NuAire Technical Service at 1-800-328-3352 or 763-553-1270

Connection Instructions

- To connect the external monitoring system to the analog output of the Incubator an RJ45 8 pin plug is required to plug into the socket provided on the back panel of the incubator.
- A minimum of a 4 conductor cable is required to monitor the Temperature and CO₂ control systems that are standard in all models. An additional 2 conductors are required for each additional control system to be monitored up to an 8 conductor cable. See FIGURE 1 for more detail. However regardless of the number of conductors in the cable used (4,6 or 8) an RJ45 8 pin plug must be used to connect to the incubator wired as shown in FIGURE 1.