



## INTRODUCTION

Instructions for the removal of the IceFree3 and installation of Hybrid XT sensor for NEG Micon turbines are provided below. Users should be familiar with the operation of the Hybrid XT anemometer, Hybrid XT vane and Hybrid personality module prior to performing this retrofit.

There are two ways to perform this Hybrid XT retrofit: with and without the NRG Interface board. **It is important to make this determination at the very beginning of the planning process because each method uses a different types of Hybrid XT sensors.**

Product manuals and instructions for retrofits on other turbines can be obtained by contacting NRG Systems at [info@nrgsystems.com](mailto:info@nrgsystems.com).

## Important Considerations

### NOTICE

Always power the heater on your Hybrid XT sensor! Failure to maintain constant heating may lead to corrosion or inferior sensor performance. Constant heating helps prevent condensation from forming on sensor components. **If the sensor is used without the heater, the warranty will be void.**



### WARNING

Sensor surfaces (particularly the head and the upper body) can become quite hot and may burn you; especially in warm ambient conditions. **Use caution when the heater power is on.**

### NOTICE

This procedure requires access to sensor mast. This procedure should only be performed by qualified personnel, in accordance with onsite safety protocols.



### HYBRID XT RETROFIT WITH NRG INTERFACE BOARD

#### Tools

- 10 mm wrench
- 13 mm wrench
- Wire strippers
- Small flathead screwdriver
- Digital voltmeter

#### Materials

- Hybrid XT Anemometer #7901
- (2) Hybrid XT Vane #9363
- (3) Hybrid XT stub adapter #3769
- (3) Hybrid XT Cable #9234
- Zip ties

#### Sensor Installation

To successfully retrofit the turbine with Hybrid XT sensors, the older IceFreeII sensors need to be removed, along with the wiring. For more detailed information on installing the stub adapter or cables, see the Hybrid XT Anemometer and Wind Vane manuals.

1. Remove the current IceFreeII sensors from the masts on the turbine.
2. Install the #3769 Hybrid XT Turbine Control Stub Adapter Assembly onto the mast.
3. Label the ends of each cable with the name of the sensor being installed (Wind Vane 1, Wind Vane 2 and Anemometer).
4. Run the Hybrid XT sensor cables down the stub mast and along the same route as the IceFree wiring to the controller.
5. Install the sensor on the stub mast and secure it.



### Sensor Wiring

1. Remove the existing wiring for the IceFreeII sensors.

*Take note of where the IceFreeII heater power is connected – the Hybrid XT will use the same location.*

2. Wire the Hybrid XT sensors from left to right on the ‘NRG Interface’ module as follows:

#### **Wind Vane 1 – Hybrid XT Vane #9363**

Heater cables are installed in the same location as the IceFreeII. Sensor signal wires are installed in terminals 3, 4, 6, 7, and 30.

	24V Heater Power Supply		X1 Terminal Block on NRG Interface				
Terminal			3	4	6	7	30
Sensor Cable	Orange/White	Orange/Black	White	Yellow	Black	Shield	Red
Function	Heater Power	Heater GND	VR	VL90	GND	SHD	24V DC

*Note: Terminal 5 is skipped.*

#### **Wind Vane 2 – Hybrid XT Vane #9363**

Heater cables are installed in the same location as the IceFreeII. Sensor signal wires are installed in terminals 10, 11, 13, 14, and 30.

	24V Heater Power Supply		X1 Terminal Block on NRG Interface				
Terminal			10	11	13	14	30
Sensor Cable	Orange/White	Orange/Black	White	Yellow	Black	Shield	Red
Function	Heater Power	Heater GND	VR	VL90	GND	SHD	24V DC

*Note: Terminal 12 is skipped.*



### **Anemometer – Hybrid XT Anemometer #7901**

Heater cables are installed in the same location as the IceFreeII. Sensor wires are installed in terminals 17, 18, and 30. The wire installed in terminal 28 needs to be moved to terminal 17.

	24V Heater Power Supply		X1 Terminal Block on NRG Interface				
Terminal			17	18		28	30
Sensor Cable	Orange/White	Orange/Black	White	Black		*Wire*	Red
Function	Heater Power	Heater GND	Signal	GND		Signal	24V DC

### **NOTICE**

- Move the wire in terminal 28 over to terminal 17, with the anemometer signal wire.
- Yellow lead in the cable is not used for the anemometer.

### **Additional Notes**

- There will be 2 wires in terminal 17: The signal wire from the anemometer and the signal wire from the controller.
- There will be three red wires in terminal 30, plus one wire from the controller.
- Indicator/Tally lights on the Interface board will work for the wind vanes but NOT the anemometer.



### HYBRID XT RETROFIT WITH THE NRG PERSONALITY MODULE

#### Tools

- 10 mm wrench
- 13 mm wrench
- Wire strippers
- Small flathead screwdriver
- Digital voltmeter

#### Materials

- Hybrid XT Anemometer #4718
- (2) Hybrid XT Vane #4715
- (3) NRG Personality Module #3798
- (3) Hybrid XT stub adapter #3769
- (3) Hybrid XT Cable #9234
- 3.5" DIN rail section PER Personality Module (10" minimum for all three)
- Zip ties

#### Sensor Installation

To successfully retrofit the turbine with Hybrid XT sensors, the older IceFreeII sensors need to be removed, along with the wiring. For more detailed information on installing the stub adapter or cables, see the Hybrid XT Anemometer and Wind Vane manuals.

1. Remove the current IceFreeII sensors from the masts on the turbine.
2. Install the #3769 Hybrid XT Turbine Control Stub Adapter Assembly onto the mast.
3. Label the ends of each cable with the name of the sensor being installed (Wind Vane 1, Wind Vane 2 and Anemometer).
4. Run the Hybrid XT sensor cables down the stub mast and along the same route as the IceFree wiring to the controller.
5. Install the sensor on the stub mast and secure it.



## Personality Module Installation

1. Route the Hybrid XT cables into the nacelle and to the cabinet where the Personality Modules will be mounted.
2. Remove the NRG Interface Module 0998136.
3. Mount the Personality Modules inside the top box, either by using available space on existing DIN rail(s) or by installing new DIN rail(s) into the cabinet.

## Sensor Wiring

The Personality Modules will take the place of the NRG Micon NRG Interface Module. Use the following table as a guide for wiring the Personality Module into the turbine.

SENSOR	PERSONALITY MODULE		NEG MICON INTERFACE
	Mode	Output Wiring	Equivalent Output Wiring
ANEMOMETER	A2/A3*	pin #2	pin #28
VANE 01	U2	pin #1	pin #24
		pin #2	pin #25
VANE 02	U2	pin #1	pin #26
		pin #2	pin #27

**\*NOTE:** Newer NEG Micon turbines may have IceFree3 anemometers installed. This is be noted by a “-3” appended to the serial number etched on the sensor’s base. In this case, use A3 mode with the anemometer’s Personality Module.

Wiring diagrams are located on the following page.

