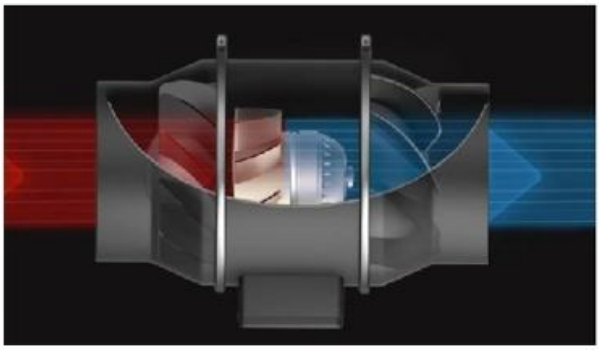
INNOTEK AIR **HumidiFlex System (IAHS)**

A Revolutionary leap in dehumidification system & control technology

Dehumidification Mixed Air Controller (DMAC) Inverter Control Feature when combined with a typical thermostat



The **Dehumidification Mixed Air Controller (DMAC**) is a core component of the **HumidiFlex System,** a smart add-on that brings powerful dehumidification to any existing air conditioning or heating system. It seamlessly integrates with your indoor unit's thermostat, actively monitoring for heating, cooling, or fan operation.

The Inverter Control Advantage

The **HumidiFlex System** truly shines when paired with an inverter-type condenser and compressor. While inverter units are great for energy efficiency, their slow ramp-down speed can be a drawback for effective dehumidification. They often don't reduce the indoor unit's air delivery quickly enough to remove moisture.

This is where the **DMAC's specialized inverter control feature comes in**. Through a dedicated electronic board and a specific parameter setting, the **DMAC** takes charge. **It overrides the standard inverter controls and intelligently increases the compressor's speed**. **This allows the system to deliver the rapid, precise cooling needed for superior dehumidification**, ensuring your home feels comfortable and dry without sacrificing the energy-saving benefits of your inverter system.

To understand how the DMAC handles the invert type system the staring point is going through how it initially works

Basically: An **inverter-type heat pump** using a **conventional thermostat** combines the energy-saving benefits of variable-speed technology with the simplicity of standard "on/off" control wiring.
While a conventional thermostat cannot directly command the heat pump's compressor speed, the system's internal controls manage the variable capacity based on the thermostat's basic call for heating or cooling.

The inverter system uses a **closed-loop control strategy** where the compressor's speed is continuously adjusted to achieve a specific target pressure, which directly relates to the desired cooling output.

Inverter's Operation with a Standard Thermostat (The Limitation): A standard thermostat only has simple **On/Off** signals, often using a "Y1" wire for Stage 1 cooling and sometimes a "Y2" wire for Stage 2 cooling. It cannot send a complex message like "I need 75% capacity."

- **Manufacturer Default:** The heat pump's control board must interpret this simple "Stage 1 On" signal. To protect the sophisticated compressor and avoid energy waste, the manufacturer programs the inverter to start at a **very low, conservative speed** (e.g., 30-40%) even on a Stage 1 call.
- **Slow Staging:** The heat pump waits to see if this low speed can satisfy the thermostat. If the thermostat *still* hasn't satisfied after a long time (often 5 to 15 minutes, depending on the installer's settings), the thermostat calls for Stage 2 ("Y2"), which is then interpreted by the heat pump as a command to finally **ramp up to a higher speed** (e.g., 70-100%).
- **The Result:** You feel a long delay where the system is running but cooling slowly, only to finally speed up much later when the Stage 2 call is received. The initial "ramp-up" from 0 to a noticeable capacity is deliberately cautious and therefore slow.
- **The dehumidification result is that it takes a significant amount of time for the system to start any dehumidification**
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