ICUBE™ Adaptive Defrost Module

From Grässlin by Intermatic®, an easy, versatile, innovative, and affordable way to reduce defrost cycles by 40% or more per day.

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INTERMATIC®

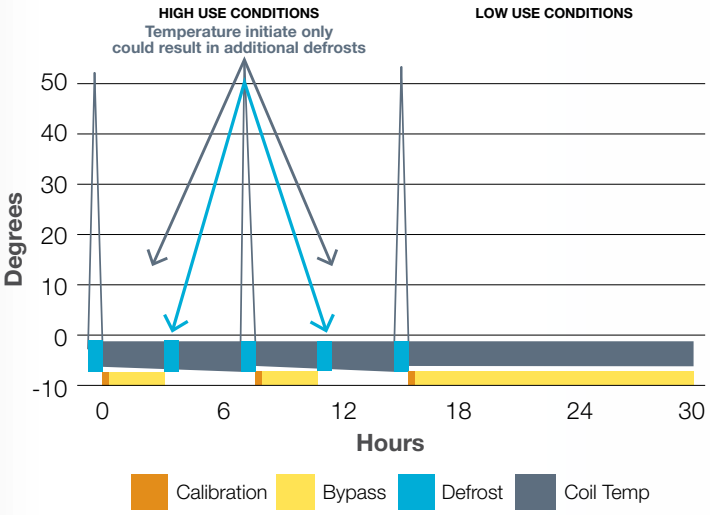
Generate energy savings in the food service industry with the new iCUBE™.

Designed by Grässlin by Intermatic®, this Adaptive Defrost Refrigeration Module for commercial walk-in coolers and freezers puts the chill on unnecessary defrost cycles and provides some refreshing savings on utility bills. Innovative, smart-sensing technology continuously monitors evaporator coil temperatures in walk-in coolers and freezers and only allows defrosting when necessary at the next programmed timer interval.

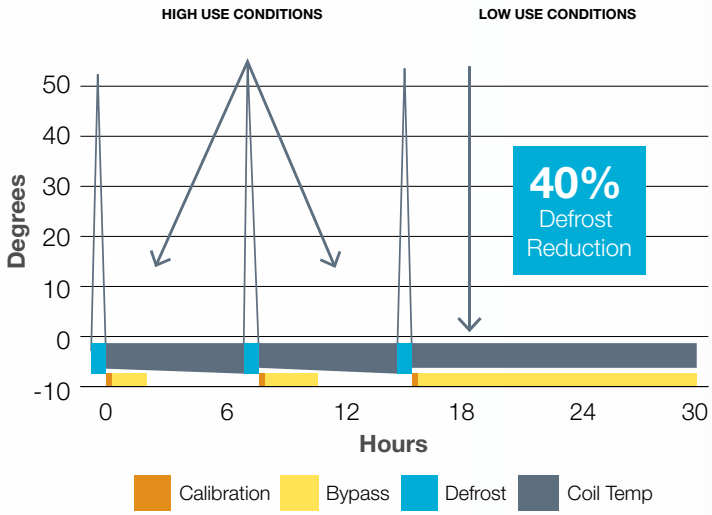
Greater Energy Efficiency with a Time and Temperature Combination.

Running unnecessary defrost cycles in commercial walk-in coolers and freezers is impacting the utility bills of commercial food service businesses. Now there's a better way. Simply retrofit a Grässlin DTAV40 Defrost Timer with the ICUBE™ Module for smart, energy-efficient control of commercial walk-in coolers and freezers. The ICUBE™ Module uses adaptive defrost control algorithms to continuously monitor the conditions of the evaporator coil and only defrosts when necessary at the next programmed interval. Time scheduling is especially important during busy periods in food service, such as the lunchtime rush. The example below compares defrost cycles during high usage periods with a temperature-initiated only control versus the ICUBE™ Module with a DTAV40 Defrost Timer.

Benefit vs. Temperature initiate only



Defrost only when needed with ICUBE™ module



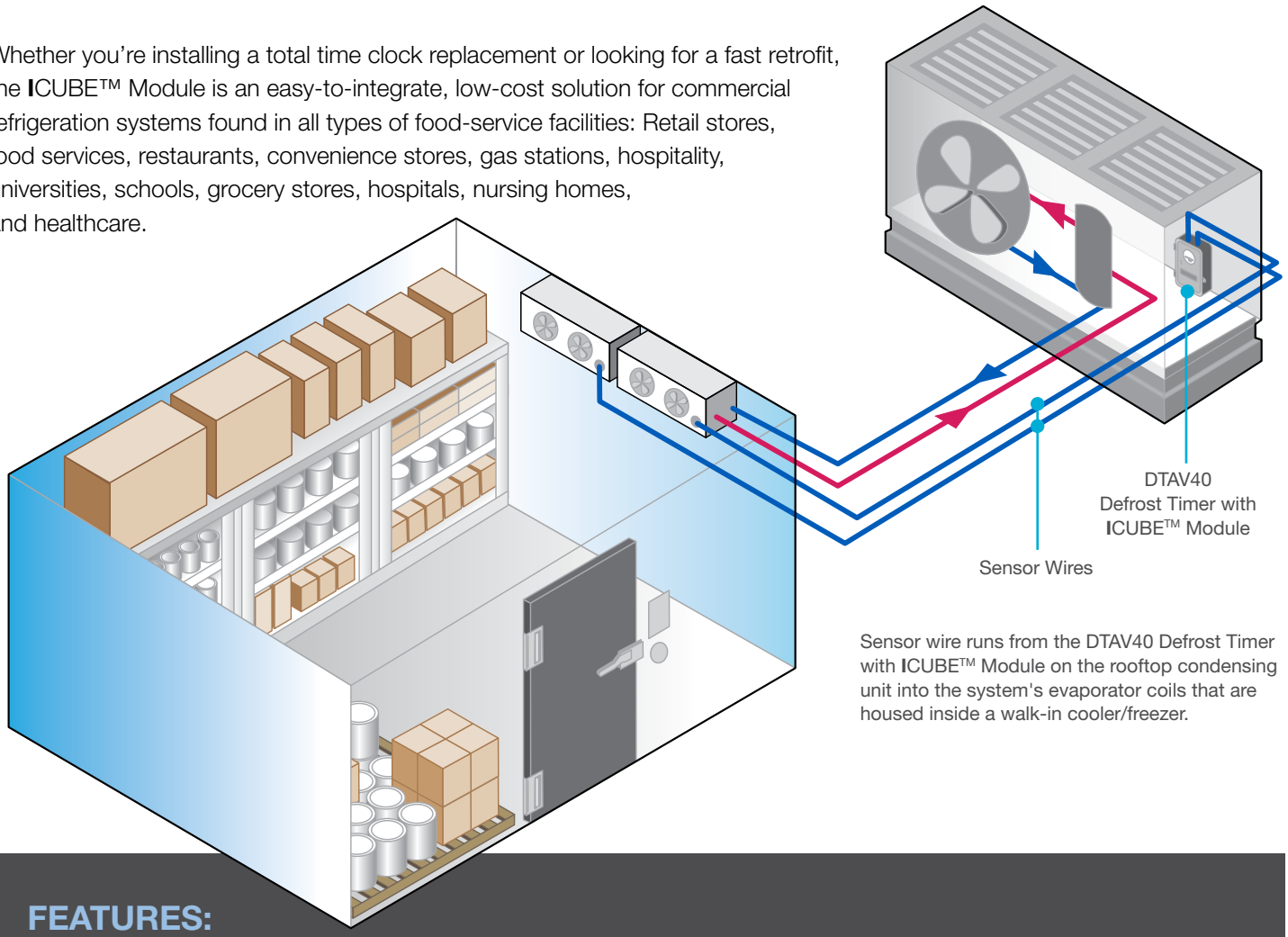
Defrost cycles during high-usage times with a temperature-only initiated control.
With temperature-initiated controls, defrost cycles can run unnecessarily during high-usage periods which can result in frequent defrosting and efficiency loss from prolonged pull down durations. This is due to the exterior ambient air infiltrating the box and making contact with the evaporator coil, creating a frost load condition.

Defrost cycles during high-usage times with the ICUBE™ Module.
When paired with a Grässlin DTAV40 Defrost Timer, the ICUBE™ Module utilizes a time/temperature hybrid methodology which maintains the timer scheduling aspect which would in effect temporarily delay a defrost to initiate at an optimal low usage time.

ICUBE™ Module = EASY^2 for Contractors.

Easy integration. Easy expandability.

Whether you're installing a total time clock replacement or looking for a fast retrofit, the ICUBE™ Module is an easy-to-integrate, low-cost solution for commercial refrigeration systems found in all types of food-service facilities: Retail stores, food services, restaurants, convenience stores, gas stations, hospitality, universities, schools, grocery stores, hospitals, nursing homes, and healthcare.



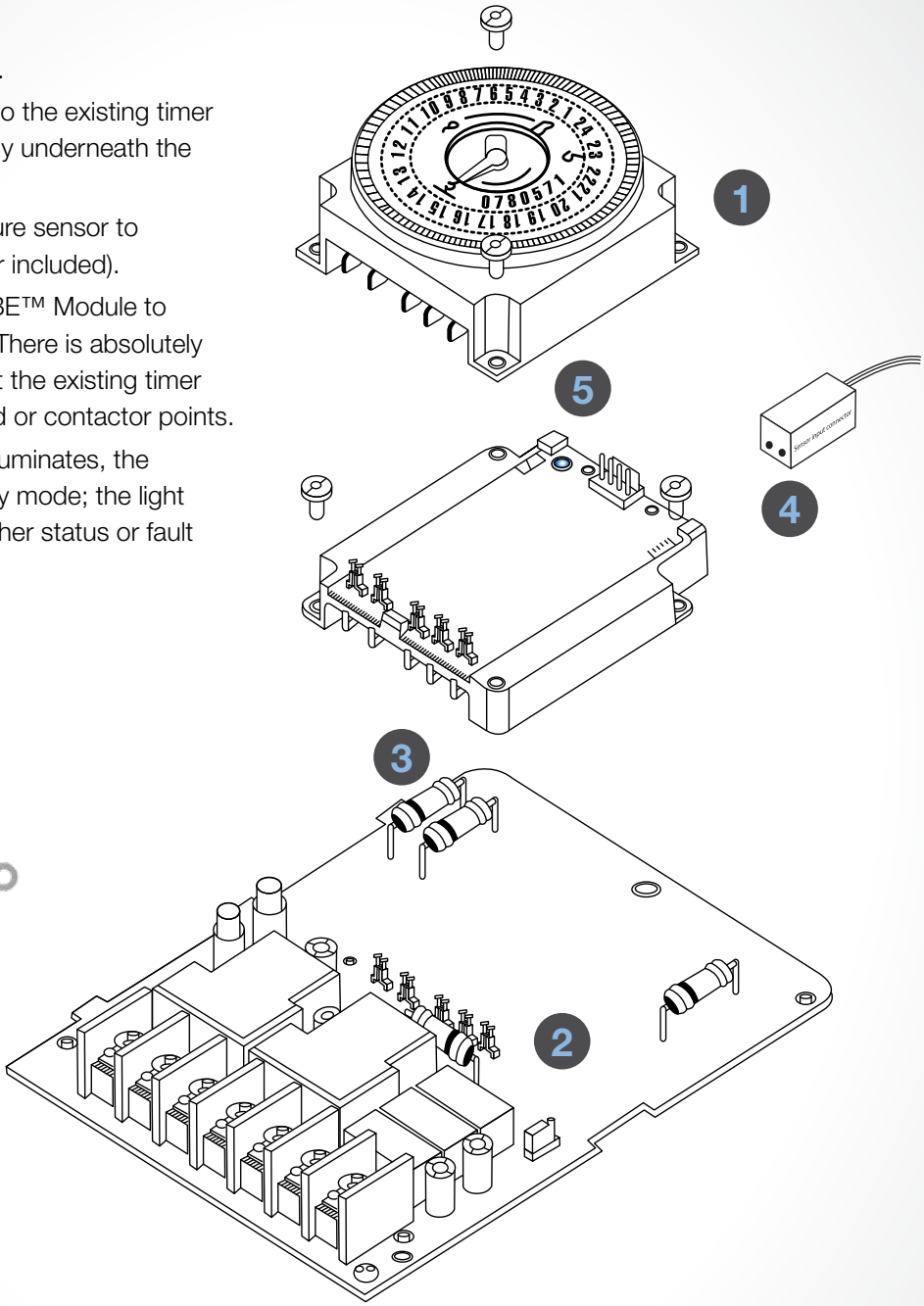
Sensor wire runs from the DTAV40 Defrost Timer with ICUBE™ Module on the rooftop condensing unit into the system's evaporator coils that are housed inside a walk-in cooler/freezer.

FEATURES:

- **EASY** – Assembles directly into existing Grässlin DTAV40 Time Initiated, Temperature, Pressure, or Time Terminated Defrost Timers.
- **INNOVATIVE** – Demand defrost; only defrosts evaporator coils when necessary.
- **SMART** – LED indicator conveys status and fault conditions, including efficiency mode and probe fault.
- **RELIABLE** – Maintains the timer's scheduling to reduce frequent defrost initiations during high usage times.
- **EXPANDABLE** – Reaches remote condensing units up to 400 ft with typical field-used 18 gauge shielded or unshielded wire.
- **VERSATILE** – Four sensor inputs accommodate up to four evaporators or multiple sensor locations for larger coils.
- **THIN** – Simply install the module right underneath the existing DTAV40 FM-Timer Module and run the sensing wire from the ICUBE™ Module inputs to the evaporator coils (sensor wire runs through existing conduit); there's no need to change any other wiring in the system.

Retrofitting the ICUBE™ Module to a Grässlin DTAV40 Defrost Timer:

1. Remove the FM-Timer Module.
2. Snap the ICUBE™ Module onto the existing timer relay board – it fits unobtrusively underneath the FM-Timer Module.
3. Insert quick connect temperature sensor to ICUBE™ sensor inputs (sensor included).
4. Run sensor wire from the ICUBE™ Module to the system's evaporator coils. There is absolutely no change required to wiring at the existing timer terminal locations or at the load or contactor points.
5. When the blue LED indicator illuminates, the ICUBE™ Module is in efficiency mode; the light will change to communicate other status or fault conditions.



Model #	Description
DDFM	ICUBE™ Adaptive Defrost Refrigeration Module with Sensor
DDT40	Adaptive Defrost Refrigeration Time Control with ICUBE™ Module, Sensor, and Type 3R Enclosure
178GR10K-1	Additional Separate Sensor Accessory (for Multiple Evaporator Applications)

ICUBE™ Module = SAVINGS² for the Food Service Industry.

Save on energy. Realize a rapid payback.

Increasing food prices and volatile energy costs are biting into the profit margins of food service businesses. The simple addition of the energy-saving ICUBE™ Module to a walk-in cooler or freezer can significantly impact a building owner's savings by reducing utility bills and delivering a fast return on investment. The ICUBE™ Module pairs with a Grässlin DTAV40 Defrost Timer to monitor based on both time and temperature.

The timer scheduling function delays defrosts during those hectic in-and-out of the freezer periods and delays them to a low usage optimal time, such as when the kitchen is closed. Skipping unnecessary defrost cycles greatly reduces energy consumption. Since the ICUBE™ Module helps curtail the drain on the power grid during times of congestion, implementing this type of control could also provide an opportunity for even greater savings for businesses that participate in demand response programs.

Add up the savings

Compare the kilowatt hours at two restaurants: Both locations use two evaporators with 1500 watt electric defrost heaters that run 365-days. With the ICUBE™ Module, average usage per day decreases (per hour) and kilowatt hours are reduced. In this example, kilowatts decrease by 876-hours, generating a $150 annual cost savings and an ROI of just over 1-year.

Restaurant 1 with Defrost Timer	
Calculate Kilowatt Hours	
Watts	3,000.00
Average usage per day (in hours)	2.00
Number of days used	365.00
Cost per KWH	0.17
Output	
Kilowatt hours	2,190.00
COST	**$372.30**

Restaurant 2 with Defrost Timer and ICUBE™ Module	
Calculate Kilowatt Hours	
Watts	3,000.00
Average usage per day (in hours)	1.20
Number of days used	365.00
Cost per KWH	0.17
Output	
Kilowatt hours	1,314.00
COST	**$223.38**

Calculate your Energy Savings

Use our online Energy Savings Calculator tool to easily determine your company's potential for saving money when you install an energy-efficient Intermatic control solution.