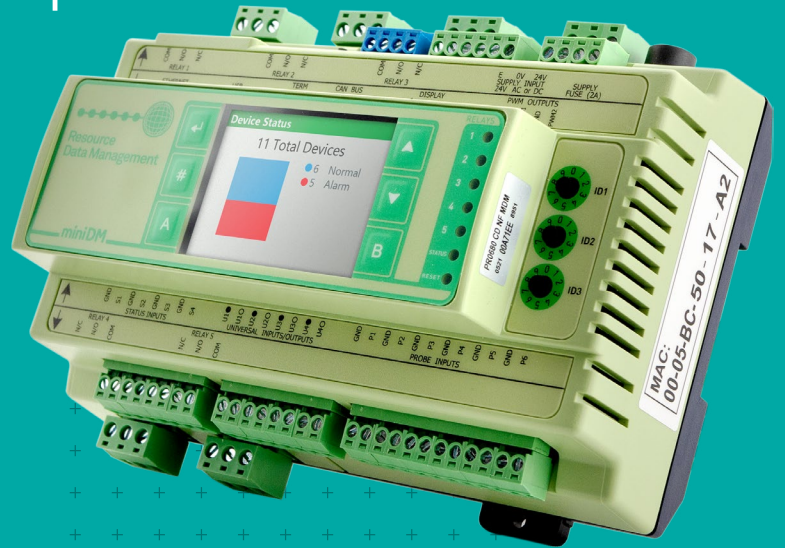
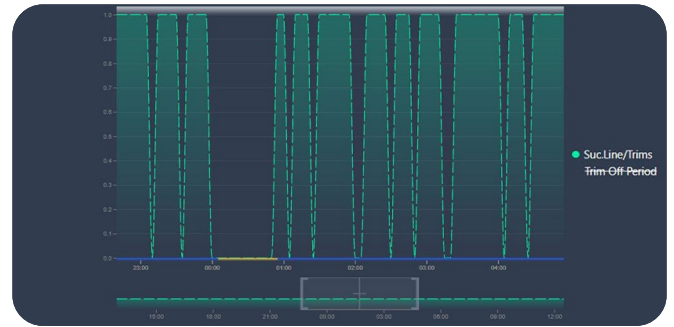


DMTouch & miniDM Energy Saving Features



RDM's control and monitoring systems front-end, DMTouch and miniDM, offer energy-saving software features for refrigeration applications. Each feature targets a specific part of the refrigeration system and is designed to lower energy use while increasing performance and system longevity. Using some or all of the features helps businesses reduce carbon emissions to keep costs low and work towards net zero goals.

Device	Description	Value	Status	Pack
HT01-0	Fresh Meat Piped	-0.2 ⓘ	Normal	1
HT01-1	Fresh Meat Piped	4.1 ⓘ	Alarm	1
HT01-2	Fresh Meat Piped	1.5 ⓘ	Alarm	1
HT01-3	Fresh Meat Piped	4.2 ⓘ	Df Min	1
HT01-4	Fresh Meat Piped	2.6 ⓘ	Alarm	1
HT01-5	Produce Piped	4.7 ⓘ	Alarm	1



Pack Optimisation (Suction Float)

The Pack Optimisation feature enables the target pressure of a pack controller to be adjusted in response to the average valve openings of all the evaporators using that pack. This ensures that all evaporators are being used at optimum efficiency and the resultant energy usage of the pack compressors is reduced. Overall, the Pack Optimisation feature typically leads to a **10-30% reduction in pack power**, without any interruption or deterioration in case temperature control.

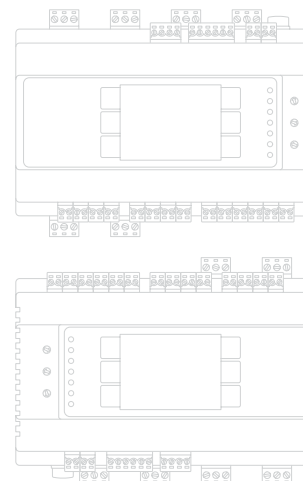
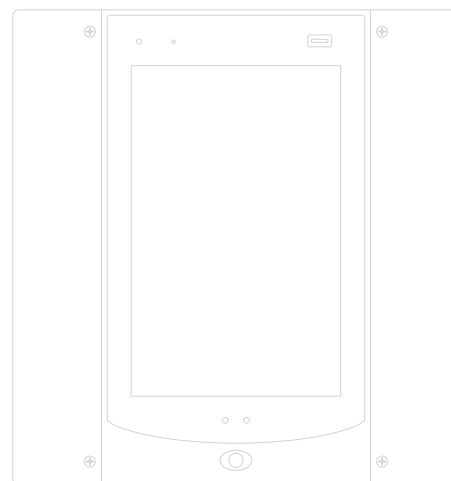
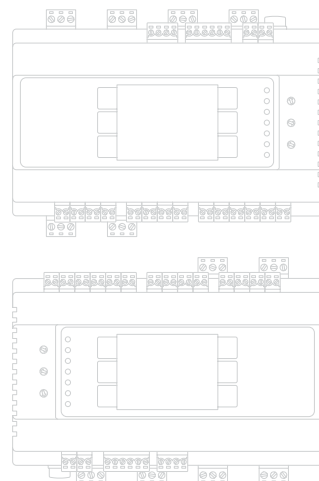
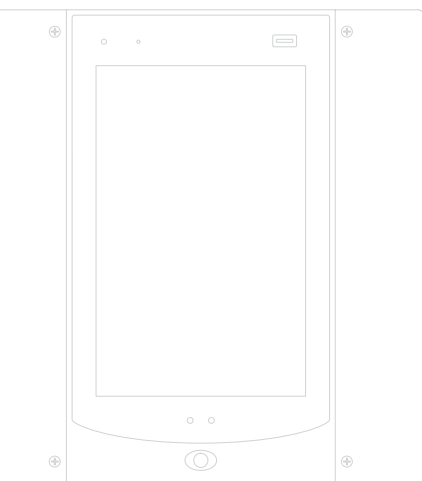
Utilising this feature reduces compressor run times and number of starts, which reduces energy use and can also extend the lifespan of compressors. Optimisation performance is logged and alarm thresholds can be set on a case by case basis.

Failure to achieve some level of optimisation is a precursor to system or individual case failure. To convey this information quickly, indicators are displayed in the device list to show the operation of optimisation for a specific device. These are listed under the heading 'Pack'. The number reflects the pack to which the device is connected. The indicators are colour coded from green (good) to red (poor).

Network Trim Control

Using the Network Trim energy feature leads to an overall 30-50% reduction in trim heater load power. To achieve this, DMTouch or miniDM can instruct RDM case controllers to adjust their trim heater output levels. The adjustments are made according to humidity and ambient temperature sensor readings from anywhere on the network. Trims can also be controlled using the space humidity only. The output level of the trim heaters will be enough to prevent condensation forming without using unnecessary power and will constantly adjust to changing atmospheric conditions.

The trim level settings can also be automatically reduced at night time to provide further energy savings when the facility is unoccupied. Even by simply reducing the maximum output of the heaters to 70% (as opposed to always on), **energy consumption is instantly reduced by 30%**.





Night Blinds

Night-blinds installed on an open-air refrigerated case, when deployed after store trading, can **reduce the power requirement of the case by up to 40%**. This of course is dependent on the night-blinds actually being utilised. By comparing different temperature sensors in the refrigerated cabinet, DMTouch or miniDM can ascertain if the night blinds have been used and generate an alarm if they have not. Both front-end systems can also produce a report detailing night-blind use for the store.

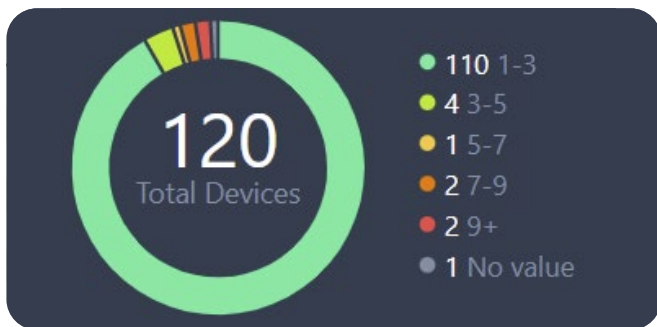
To help identify problem cases DMTouch and miniDM keep a 'history' for each device which can be viewed. They calculate an expected 'pattern' and highlight when a device deviates from this (blinds not used).



Defrost Warning

The Defrost Warning feature provides a warning when a consecutive number of defrost cycles on a particular evaporator terminate on time setpoint as opposed to the temperature limit. The number of consecutive defrosts before a warning is issued is user configurable on either control system front-end. If a defrost cycle terminates on time then it may indicate that the evaporator has not cleared all the ice which will affect efficiency and use more power.

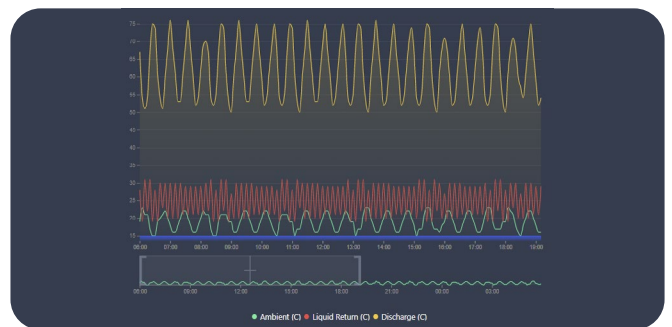
There is also a defrost limit setting which produces an alarm if an evaporator has more than a pre-set amount of defrost cycles per day. Having unnecessary defrosts increases energy use.



Case Performance (TPI)

The Temperature Performance Indicator (TPI) informs users of poorly performing refrigerated cases or coldrooms. It is a predictive monitoring solution to help users easily identify faults before they become a costly issue. TPI allocates a performance score for each case or coldroom so that users can spot problematic equipment at a glance.

The TPI score is based on a number of variables such as the setpoint, differential, over-temperature alarms and under-temperature alarms. A score of one equates to a good performance, a score of 10 equates to a poor performance. The TPI score can be viewed for each individual device or as a summary for all devices.



Condenser TD (Temperature Differential)

The Condenser TD feature monitors the efficiency of condensers - DMTouch monitors up to 50 condensers and miniDM up to five. Three probes are fitted to the condenser to measure liquid return, discharge and ambient air temperature. The DMTouch and miniDM will report three levels of alarm: pre-warning, warning and alarm, thus giving early notification if a condenser is not operating efficiently. This can be due to various reasons, for example if a condenser is blocked by debris, and would lead to higher energy use if the issue is not fixed. Two measurement methods are available: Discharge to Liquid Return and Liquid Return to Ambient Air On.

Use of the Condenser TD feature can eliminate the need for pre-scheduled maintenance, leading to additional cost savings. It can be used in conjunction with the pack controller's Fan Reversal feature to clean debris and buildup while monitoring for inefficiency.

Ordering Information

All energy saving features can be purchased individually or as a group to be enabled on an RDM control and monitoring system front-end: DMTouch or miniDM.

DMTouch

FEATURE	PART NUMBER
Pack Optimisation	PR0474
Network Trim	PR0475
Night Blinds	PR0476
Condenser TD	PR0477
Case Performance (TPI)	PR0478
Defrost Warning	PR0479
All Energy Features (PR0474 to 479)	PR0484

miniDM

FEATURE	PART NUMBER
Pack Optimisation	PR0474-MD
Network Trim	PR0475-MD
Night Blinds	PR0476-MD
Condenser TD	PR0477-MD
Case Performance (TPI)	PR0478-MD
Defrost Warning	PR0479-MD
All Energy Features (PR0474-MD to 479-MD)	PR0484-MD

