Energy Technology List

Department for Energy Security & Net Zero

Product application checklist

Please complete in BLOCK CAPITALS

Refrigeration System Controls

Manufacturer/supplier name: ....

Applicant's name: ....

Telephone number: ....

Product information

Product name: ....

Model number: ....

Please complete each section of this form based on your product's characteristics. Incomplete or incorrect data could affect the processing of your product application.

Each product application should be made on a separate form unless a product's design characteristics are common to all the products. In this instance a single application can be made for multiple products.

1.	Product certification	No	Yes
1.1	**Does your product conform to the requirements of the EU Electromagnetic Compatability (EMC) Directive 2014/30/EU?**		
1.2	**If your product allows wireless/remote functionality, does it conform to the requirements of the EU Radio Equipment Directive (RED) 2014/53/EU?**		
1.3	**Does the product have an appropriate Conformity Assessment mark?**		

2.	Product type	No	Yes
2.1	**What category of product are you applying for?** *(tick one).*		

    a) System management unit or package. *(Please complete section 4).*

    b) Add-on controller. *(Please complete section 5).*

3.	Product features	No	Yes

3.1 **Does the product incorporate a microprocessor-based controller?**

3.2 **Is the product pre-programmed to automatically control the rate of flow of refrigerant through, and/ or operating temperature of, and/or the fan speed of at least one of the following components of refrigerating systems?** *(tick all that apply).*

    a)   Evaporators *(Please complete section 6).*

    b)   Condensers *(Please complete section 7).*

    c)   Compressors *(Please complete section 8).*

    c)   Electronic expansion valves

    d)   Door trim heaters

Products designed to control other equipment/plant not directly related to refrigeration systems, are not eligible. This includes, for example, products that control space heating or store lighting.

3.3 **How is this equipment controlled?:** *(tick all that apply).*

    a)   Directly by means of an analogue or digital signal connection.

    b)   Indirectly by means of another control device (or devices).

Products that incorporate any of the following types of equipment are not eligible (except where incorporated solely for the purposes of cooling electronic circuitry):

- Heat exchangers or valves.
- Motors, pumps or fans.
- Variable speed drives.

3.4 **Does the product incorporate an anti-tampering mechanism that prevents the product's control strategy and configuration settings from being modified, and automatic control from being disabled, except during commissioning, maintenance or testing?**

4.	Product features (System management products)	No	Yes

4.1 **Does the system management product:**

    a.   Automatically adjust system operating set points in a manner that minimises the refrigeration system's energy consumption under different operating loads, weather conditions and surrounding air temperatures?

    b.   Pre-programmed to undertake at least one of the following actions:

        i)   Monitor temperatures, fan speeds and pressures around the system, and automatically initiate defrost cycles, or inhibit (or delay) scheduled defrost cycles, within individual parts of the refrigeration system, as required, to optimise the overall performance of the refrigeration system?

        ii)   Monitor refrigeration system energy input (kWh) and generate a visual or audible alarm when system power consumption exceeds a pre-defined limit, or when system efficiency degradation is preventing automatic adjustment?

        iii)   Automatically in accordance with a pre-defined weekly time schedule, turn off, or turn down, ancillary power loads around the refrigeration system (such as lighting in display cabinets, trim heaters or fans), or activate night blinds, in order to reduce system energy consumption?

    c)   Provide facilities that enable system managers to define the default set points, and alarm limits, for each item of refrigeration equipment controlled?

5.	Product features (Add-on controllers)	No	Yes

5.1 **Does the add-on controller:**

    a)   Automatically accept instructions from the system manager to change its operating set points or alarm limits, or to initiate or inhibit a defrost cycle?

    b)   Automatically transmit data on operating temperatures, pressures, or flow rates to the system manager at intervals not exceeding 1 minute?

    c)   OR For products which solely control the evaporator fan speed, does the add-on controller automatically transmit data on the evaporator fan speed to the system manager at intervals not exceeding 10 minutes?

6.	Product features (for products that directly control evaporators)	No	Yes

6.1   **Does the product:**

a.   Directly measure evaporator pressure or temperature by means of a sensor, and automatically adjust the flow of refrigerant through the evaporator to maintain the refrigerated space within pre-defined operating limits?

b.   Automatically terminate its defrost cycle when:

   i)   The temperature of the evaporator or refrigerated space exceeds a preset value?

   ii)   A maximum defrost time consistent with sensor failure has been exceeded?

c.   Provide facilities that enable system managers to define separate temperature set points and alarm limits for each evaporator being controlled?

d.   Provide facilities that enable system managers to take the equipment out of service for cleaning or maintenance?

e.   Generate an alarm signal when the temperature of the refrigerated space is in danger of straying outside, or has strayed outside, it's pre-defined safe operating limits?

7.	Product features (for products that directly control condensers)	No	Yes

7.1   **Does the product:**

a)   Directly measure condenser pressure or temperature by means of a sensor, and automatically adjust the airflow across the condenser(s) in a manner that maintains condensation at the rate required to maintain the thermal balance of the refrigeration system under different operating loads and weather conditions?

b)   Allow the compressor discharge (head) pressure to 'float' with ambient temperature down to the minimum safe level for the particular refrigeration system?

c)   Provide facilities that enable system managers to define separate temperature set points and alarm limits for each condenser being controlled?

d)   Generate an alarm signal when the condensing pressure or temperature is in danger of straying outside, or has strayed outside, the predefined safe limits?

e)   Provide facilities that can enable madulating control of a condenser by controlling the speed of a variable speed condenser fan?

8.	Product features (for products that directly control compressors)	No	Yes

8.1   **Is the product able to control the operation of at least two refrigeration compressors?**

8.2   **Is the product able to provide modulating control of a single variable speed compressor within a multi-compressor pack consisting of other fixed speed compressors?**

8.3   **Does the product incorporate automatic control algorithms that monitor rate of change in system suction pressure or refrigerant temperature to prevent compressors from unnecessarily being controlled to load or unload in response to small fluctuations in cooling demand?**

For multi-compressor packs containing a single variable speed compressor, the product shall be able to optimise the operation of the variable speed compressor using the monitored changes to the suction pressure or refrigerant temperature to minimise the energy consumption of the refrigeration system.

8.4   **Is the product able to provide crankcase heater control using ambient and superheat temperature conditions to restrict crankcase heater operation to only when required, thereby reducing the energy consumption of the compressor pack?**

8.5   **Is the product able to use operational data from the refrigerated display cabinets/cases (transmitted via the system management unit) to float the suction pressure of the compressor pack?**

9.	Product features (for products that directly optimise the speed of evaporator fans)	No	Yes

9.1. Is the product able to optimise the speed of at least two evaporator fans?

9.2 Does the product incorporate automatic control algorithms that reduce the speed of the evaporator fans in response to signals from the master controller, for example when the set point has been reached/exceeded, a doorway within the refrigerated space has been opened, or a defrost cycle is underway?

9.3 Does the product not affect the ability of the refrigeration system to achieve the set point and maintain any temperature legally required to refrigerate products contained in the space?

9.4 Is the product compatible with an ETL compliant system management unit or package type refrigeration system controls?

10.	Product features (for products that control electronic expansion valves)	No	Yes

10.1 Is the product able to control the operation of at least two electronic expansion valves?

10.2 Does the product enable the modulating control of electronic expansion valves by monitoring refrigerant temperature and pressure?

11.	Product features (for products that directly control door trim heaters)	No	Yes

11.1 Is the product able to control the operation of at least two refrigerated display cabinet/case door trim heaters by pulsing the trim heaters on and off to reduce their energy consumption?

11.2 Is the product able to monitor ambient relative humidity levels to turn the trim heaters off for longer periods if ambient humidity levels are low, thereby reducing the door trim heater energy consumption?

10.   Summary of documents to be included   No | Yes

Please send ONE copy of each of the following documents:

If the relevant information in support of the questions above is contained within a larger document, please indicate the location of the relevant information. Note that all documentation submitted must directly refer to the model numbers for which you are making this application. Documentation should be added to your online application.

    a) A technical sales brochure or leaflet for the product clearly summarising:

        i)   The key features of the product (ideally including photographs of the product's exterior).

        ii) The product's operation (i.e. in-built functionality) and intended applications (i.e. usage).

        iii) Any product selection options (including optional extras, alternative configurations etc.).

This documentation should contain sufficient detail to enable the assessor to confirm that the proposed entry on the Energy Technology Product List (ETPL) is correct, and uniquely represents a single product of fixed design (as defined by the rules of the ETL). If the model names contain any 'wildcards' in respect of cosmetic variations please check with ETL Questions that this is permitted before submitting your application.

    b) A technical specification for the product, including:

        i)   Details of the model numbers covered (including individual features of each model).

        ii) The product's design ratings (electrical, mechanical, thermal, flow rates, energy use etc.).

        iii) A description of how to install the product including connection/wiring diagrams. Where the product must be assembled, configured and/or commissioned on site before use, please include instructions.

This documentation should contain sufficient detail to enable the assessor to confirm that each product entry on the ETPL has the design features specified in the eligibility criteria for that category of product. Please indicate on the checklist where information on specific design features is located in the documentation.

    c) Please ensure that this documentation includes details of:

        i)   The product's control input/output signals, and requirements for sensors or control valves.

        ii) The product's automatic control strategies, mechanisms, and configuration settings.

        iii) The anti-tampering mechanism used to prevent automatic control from being disabled.

    d) A Declaration of Conformity with UK/EU Directives on product safety, including one of the following:

        i)   An appropriate Conformity Assessment mark.

        ii) EU Electromagnetic compatibility (EMC) directive 2014/30/EU.

    e) Evidence that a quality assurance system/procedures is/are in place to:

        i)   Control the specification, design, manufacturing and testing of the products.

    f) Signed application checklist.

Please note that all product documentation provided must be written in, or translated into, English.

| **11.** | **Declaration** |

I confirm that the information given above is correct to the best of my knowledge and that I have read and agree to the terms and conditions governing the management of the Energy Technology List.
A copy of the terms and conditions can be found **here**.

Signature: _____ Date: _____

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