



# Daikin Service & Solutions Catalogue 2021



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Please visit [www.my.daikin.eu](http://www.my.daikin.eu)  
for up-to-date information about Service, Products and Solutions



Dear service colleagues,

With this summary of Services, we aim to communicate our portfolio of customer Solutions.

A Sales Index is an information page which explains the facts and market approach of the different service products in a condensed format and for internal users.

Because of its content, the Sales Index is a document for 'Internal use only'. However, it is distributed in an editable format to allow you to translate it, add your local information, use it for training or as input for local marketing purposes.

In our quest for Service Excellence, your feedback is highly valued as It will allow us to continuously improve the document with more services and better information.

So make sure you keep the latest version at hand!

Remaining at your service,

DENV Service Business & Solutions team.

Daikin Service Business & Solutions

Questions, suggestions or comments can be sent to: [fqs.servicebusiness@daikineurope.com](mailto:fqs.servicebusiness@daikineurope.com)

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# Daikin Services & Solutions


Successful Life Cycle Cost management includes purchasing the most efficient equipment available, right-sizing this equipment to match the building loads and commissioning of the equipment to ensure that it runs efficiently and as specified.

The next challenge is to ensure the long-term efficiency and performance.

Daikin offers a range of services such as maintenance programs, monitoring, upgrades and optimization to meet these challenges and add value to our customers.



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# Compressor oil offer

- › Offer to your customers our compressor oil selection. This is a **great value generator** while you are on-site for maintenance or any intervention.
- › Place your orders through your **Spare Parts System**.

Part number	Packing	Description	Applicable for
9993006 5004333	18 L 1 L	FVC68D	VRV systems EWYD-BZ chiller (HPI)
5013622	5 L	RL32	Multi scroll chillers (DAE manufactured)
5012866 5018318 5018317	20 L 5 L 1 L	Single screw 68	Screw chillers, centrifugal chiller (WTC)
5900797 5900796 5900795	20 L 5 L 1 L	Single screw 220	EWWD-VZ
5001896 5014436	20 L 5 L	Arctic 46	Centrifugal chillers

## ✓ Benefits

- › Extend lifetime.
- › Reduce operational costs.
- › Reduce the environmental footprint.

## ✓ Opportunities

- › Use Daikin's oil analysis program to extended oil drain intervals and avoid oil waste.

## ✓ Arguments

- › Using poorly performing lubricants leads to higher service costs as well as unplanned servicing.
- › Rapid lubricant aging, lower cooling efficiency, poor stability, and insufficient protective quality jeopardize the reliable operation of the equipment.
  - Therefore, longer lubricant lifetime reduces total service costs.

## Product description

The compressor oil of your equipment is a vital component that provides lubrication to ensure a smooth operation while helping you avoid potential failures. Checking and replacing it regularly offer you these benefits:

- › Maximum protection of seals and moving parts.
- › High temperature and hydrolytic stability.
- › Higher reliability.
- › Maximum equipment uptime.
- › Minimum operating cost.
- › Less impact on the environment.

Our robust formula helps you extend the lifetime of your equipment while reducing operational costs and environmental impact.





# Dual port safety valve

- › To avoid vacuuming the system for valve replacement, we offer to promote installation of 'dual port valve'.
- › Saving labour time / reducing chiller downtime.
- › Manufacturer states that the lifetime is 5 years after installation.

Part number	Description
5000300	Dual shut-off valve 1/2"
5016368	Dual port valve 3/8"
5007170	Dual port valve 1"npt

## ✓ Benefits

- › Reduce replacement time.
- › Avoid vacuuming the system every 5 years.

## ✓ Arguments

- › The current EN 378 standard requires relief valves to be tested every five years.
- › Manufacturer states that the lifetime is 5 years after installation.
- › These valves are typically not tested, but replaced.
- › The need of vacuuming every time the valves need to be tested or replaced, increases significantly the cost of the preventive maintenance.

## ✓ Opportunities

- › A maintenance visit is enough to schedule a valve replacement. By doing the job once, the customer will save the labour and material cost of vacuuming the system in 5, 10 and 15 years.
- › Systems that have been running more than 5 years, are likely candidates to this replacement.

## Product description

The changeover device is a service valve for dual pressure relief valves that allows using one valve while isolating the other from the system.

This device allows the user to work on the isolated valve, for periodic checking or replacement, while the system is completely operative and the other valve is in service.

**N.B. : each safety valve placed on a changeover device must have sufficient capacity to protect the vessel alone.**

The valve is designed so that it is never possible to close off both ports at the same time. Under working conditions, the shutter must be clamped against one of the two seats of the valve, front port or back port, in order to ensure always full discharge to the corresponding safety valve.

Intermediate positions of the shutter are not acceptable in order not to affect the operation of both safety valves.

The valve ensures a pressure drop perfectly compatible with the safety valve operation under conditions of discharge of saturated vapour as well as overheated vapour.





# Available services

Site visits during installation	<ul style="list-style-type: none"> <li>• The visiting Daikin engineer will have full review on the installation before ceilings and ducts are closed.</li> <li>• Remarks are reported to the installer and customer in order to meet Daikin's installation guidelines.</li> <li>• A visit report template is available.</li> </ul>
Pre-commissioning	<ul style="list-style-type: none"> <li>• A checklist document for customers to request the visit of a Daikin Commissioning expert.</li> </ul>
Commissioning	<ul style="list-style-type: none"> <li>• A Daikin expert checks and starts-up the installation as per Daikin's guidelines and assures the installation is tuned to its design parameters.</li> </ul>
Commissioning Plus	<ul style="list-style-type: none"> <li>• A Daikin expert will re-visit the site when the building or process is in use to tune the installation and system controllers optimally in real operating conditions.</li> </ul>

## ✓ Target customer

This service is strongly recommended for any larger installation and could be a mandatory or strongly advised service to guarantee the best performance and customer satisfaction.

## ✓ Quotation and ordering process

- › Typically a 'fixed price package' is agreed at time of equipment sales, which is subject to additional charge if extra Daikin consult, expertise or waiting time is required during the visit.
- › As per accounting manual, site inspections and commissioning visits are booked as Service Business.

## Product description

A correct installation is an absolute must to assure optimal operation, safety and lifetime of the equipment and ancillaries. Daikin manufacturer trained experts are at your service when requiring support in order to assure that installations are put in operation as per Daikin's guidelines. During Daikin Commissioning a final check and tuning assures running within design parameters.



# F-Gas: Regulation compliance check

## ✓ Why F-Gas inspections?

HVAC-R equipment that contains fluorinated greenhouse gases in quantities of 5 tonnes of CO<sub>2</sub> equivalent or more must be checked for F-Gas leakage by certified personnel. During these checks, precautionary measures are taken to prevent leakages; and in case a leak is detected, it is repaired without undue delay.

## ✓ What is the frequency of the inspections?

The frequency of the equipment's leak inspections depends on its F-Gas charge size measured in CO<sub>2</sub> equivalents as shown on the table.

The installation of a leakage detection system is mandatory for equipment containing 500 t CO<sub>2</sub> or more and its proper functioning has to be checked at least once every 12 months.

When the equipment has a leakage detection system, the frequency of required leak checks is reduced by half.

Leak checks frequency	Tonnes of CO <sub>2</sub> equivalent	Refrigerant			
		R410A (Kg)	R407C (Kg)	R134a (Kg)	R32 (Kg)
<b>12 months</b>	$5 \leq t \text{ CO}_2\text{e} < 50$	2.4 – 24	2.8 – 28	3.5 – 35	7.4 – 74
<b>6 months</b>	$50 \leq t \text{ CO}_2\text{e} < 500$	24 – 240	28 – 280	35 – 350	74 – 740
<b>3 months</b>	$t \text{ CO}_2\text{e} \geq 500$	$\geq 240$	$\geq 280$	$\geq 350$	$\geq 740$

## ✓ Our offer

Daikin's certified technicians offer

- › Regular leak checks (mandatory).
- › Diligent record keeping (mandatory).
- › The installation of leakage detection systems.
- › Recovery and/or destruction of gases before the equipment is discarded.

The obligatory F-Gas inspections are ideally complemented with Daikin Service Plans.

Visit [www.daikin.eu/f-gas](http://www.daikin.eu/f-gas) to find out more about the F-Gas regulation.

## Product description

As HVAC-R equipment contains fluorinated greenhouse gases (F-Gases) such as hydrofluorocarbons (HFCs), customers must comply with a series of requirements adopted in the European Union to ensure emission prevention, containment; and hence reduce the environmental impact of refrigerants.

### F-Gas Regulation (EU) No 517/2014

- › Applies from 1 January 2015
- › Puts in place mandatory measures to reduce F-Gas emissions in the EU
- › One of these measures is the prevention of emissions of F-Gases by conducting:
  - Periodical checks.
  - Proper servicing.
  - Recovery of the gases at the end of the equipment's life.





# Oil analysis: diagnostic and predictive maintenance service

## ✓ Oil analysis is applicable for

- › All HVAC oils.
- › All compressor technologies.

## ✓ Available oil analysis tools

	Spare Parts numbers
Glass sample bottle, including sample label, pre-addressed shipment label and pre-paid analysis	Number per bottle: <b>EU.SB.5000061</b>

## ✓ Process

- › A sampling bottle is available via the Spare Parts channels:  
**EU.SB.5000061**.
- › The price of the samples already includes the cost of the analysis, therefore, you do not need to worry about any additional invoices.
- › The oil samples shall be sent to the lab, using the pre-addressed envelopes in the kit.
- › After 5 working days of the samples arriving to the lab, you should find the analysis report on **www.wearcheck.be** with your login and password. Login and password can be obtained from **fqs.servicebusiness@daikineurope.com**
- › When sending the bottles for analysis, please notify **labo@alphams.eu** and **fqs.servicebusiness@daikineurope.com** by email.

## ✓ Benefits

### Reduced downtime

Oil analysis, when used as part of a maintenance program, can prevent catastrophic chiller failures and eliminate the cost of unexpected shutdowns. Knowing the current operating condition of your machine allows you to schedule repairs at a time that works best for you.

### Minimize costly repairs

Because oil analysis can identify problems before you might otherwise be aware of them, conditions can be remedied before they become problems that are more expensive to repair. Oil analysis helps to pinpoint the areas that should be checked so scheduled repairs can be accomplished quickly and cost effectively.

### Extend chiller life

By identifying and repairing abnormal machine conditions early, it is much easier and less expensive to keep your chiller in peak operating condition. If oil analysis is conducted on a scheduled basis, you benefit from a more reliable chiller performance for years to come.

### Environment

Oil will remain in the chiller as long as analysis findings are within expected limits. Extending oil lifetime reduces handling of oil waste. It is a win-win for the environment and cost saving.

## Product description

Regularly scheduled analysis of your chiller's oil is a valuable aid in assessing internal mechanical condition. Laboratory analysis of chiller oil samples can identify potential problems so they can be remedied before they become disruptive headaches.

Oil comes in contact with many important internal components and therefore holds valuable information about a chiller's condition. The presence of harmful acids, corrosion causing water and abnormal metal wear particles can all be detected by chemical analysis. By comparing the results of the analysis against your chiller's historical operating data, our analysts provide a reliable diagnosis with individualized recommendations for each system.

#### Identifies:

- Lubricant Condition.
- Internal Contamination.
- Abnormal Wear.
- Mechanical Condition.

#### Results:

- Earlier detection of problems.
- Lower operating costs.
- Increased reliability.



More info on: [https://my.daikin.eu/denv/en\\_US/home/service-and-solutions.html](https://my.daikin.eu/denv/en_US/home/service-and-solutions.html)





### Convenient:

- › Prepaid analysis.
- › Online reporting.
- › Pre-addressed stickers for envelopes.

### Oil Analysis:

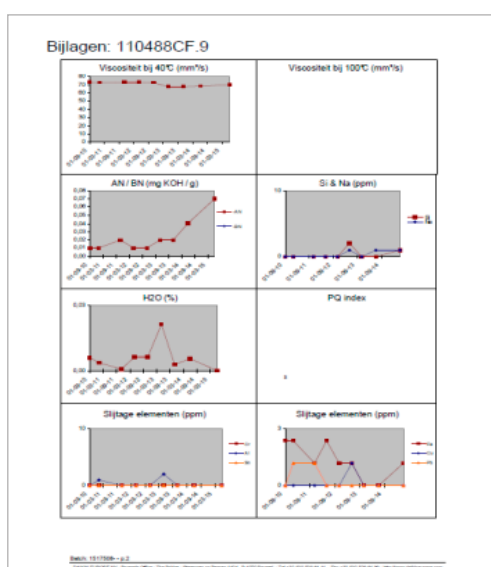
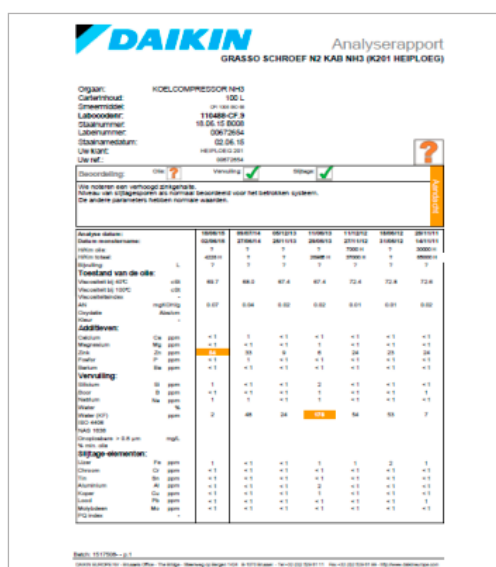
- › For any brand of HVAC oil.
- › For all compressor technologies and brands

### Report what really matters:

- › Expert comments and corrective recommendations
- › History and trend lines of
  - Chemical
  - Contamination
  - Wear
  - Acidity
  - Moisture

oil types: Emkarate RL6BH (POE) MOBIL EAL ARTIC 68 (POE) DAPHNE HERMETIC OIL PWS6EA (PVE) DAPHNE HERMETIC OIL FCV6RD(PVE)					oil types: Daphne hermetic FVC D 132			oil types: general polyester		
test		Result			Result			Result		
		Normal	Resample after 1000 hrs	Investigate for cause, Replace oil, filter and dryer	Normal	Resample after 1000 hrs	Investigate for cause, Replace oil, filter and dryer	Normal	Resample after 1000 hrs	Investigate for cause, Replace oil, filter and dryer
Visco	cSt	± 10%	± 10% - 15%	> 15%	± 10%	± 10% - 15%	> 15%	± 10%	± 10% - 15%	> 15%
water	ppm	< 150	150 - 200	> 200	< 400	400 - 800	> 800	< 400	400 - 800	> 800
Si	ppm	< 50	50 - 100	> 100	< 10	10 - 20	> 20	< 50	50 - 100	> 100
Na	ppm				< 10	10 - 20	> 20			
Fe	ppm	< 100	100 - 150	> 150	< 10	10 - 20	> 20	< 100	100 - 150	> 150
Cr	ppm	≤ 10		> 10	< 10	10 - 20	> 20	≤ 10		> 10
Mo	ppm	≤ 10		> 10	< 10	10 - 20	> 20	≤ 10		> 10
Al	ppm	< 100	100 - 150	> 150	< 10	10 - 20	> 20	< 100	100 - 150	> 150
Cu	ppm	< 100	100 - 150	> 150	< 10	10 - 20	> 20	< 100	100 - 150	> 150
Pb	ppm	≤ 10		> 10	< 10	10 - 20	> 20	≤ 10		> 10
Sn	ppm	≤ 10		> 10	< 10	10 - 20	> 20	≤ 10		> 10
TAN	mg KOH/g	< 0,10	0,10 - 0,20	> 0,20	< 0,20	0,20 - 0,40	> 0,40	< 0,20	0,20 - 0,40	> 0,40

Oil limits



Report example: analysis through time of the same machine in the back



# Service Plan for DX and Applied

Maintenance plan	Features
Care	<ul style="list-style-type: none"> <li>• Pre-determined labor &amp; travel</li> <li>• Service Checker™ diagnostics by experts</li> <li>• Compliant with European F-Gas regulation</li> <li>• Recommendation report</li> <li>• Easy access to Daikin Spare Parts</li> </ul>
Preventive Care	<ul style="list-style-type: none"> <li>• Includes all scheduled preventive maintenance labor, travel and diagnosis for in- and outdoor units</li> <li>• Frequent visits for better control and monitoring</li> <li>• Keeps the installation in optimal conditions</li> <li>• Overhaul is not included and has to be quoted additionally</li> </ul>
Extended Care	<p>Full coverage of the installation</p> <ul style="list-style-type: none"> <li>• Scheduled maintenance</li> <li>• Includes overhauls</li> <li>• Peace of mind: predictable and unexpected repairs included (parts, labor, travel)*</li> <li>• Recommended option: remote Monitoring for quick response to unexpected events</li> </ul>

\*Given the fact that it is caused by the quality of the equipment or effect of the maintenance.

## ✓ Benefits

### Focus on total Life Cycle Costs (LCC)

Focus should not be put on the isolated plan cost, but on the total LCC. For example, poor maintenance will cause energy costs to increase. Energy costs represent a large portion of the total cost of ownership, that's where we need to focus, to keep these as low as possible.

### Cost of maintenance can be forecasted: budget control

With a Service Plan, maintenance becomes a fixed operational cost with no surprises. Reliability on the other hand is maintained by highly skilled Daikin Service technicians who perform all needed interventions and only use approved Daikin Parts at all times.

This translates into maintenance done professionally, on time and quickly, resulting in the Life Cycle Costs for the customer.

### Three 'Plans' to respond to every customer need

Our Service Plan portfolio responds to every customer need. The Daikin Care packages provide a complete range of Service Plans to cover any customer requirement. Not to mention the complementary Remote Monitoring option that allows the customer to receive instant notification on the installation's status and to monitor the HVAC installation from any location.

## Product description

Protecting your customer's installation will safeguard their investment, increase their comfort level and contribute the cost efficiency.

Energy and comfort are directly influenced by the maintenance of HVAC equipment as it needs to be kept in optimal operating condition at all times. The correct Service Plan should be promoted and targeted accordingly to guarantee proactive maintenance. It leads to protection of all installed equipment and reduces the risk of energy losses and even failures.

A Service Plan is an "all-in-one" solution that combines knowledge of highly specialized service technicians, who use only Daikin Parts, delivered through the dedicated Daikin Parts Centre and various levels of coverage to assure **maximum comfort at minimum Life Cycle Cost.**





# Service Plan for DX and Applied

Controlled climate	Avoid disturbances and surprises	Budget control
<ul style="list-style-type: none"> <li>To assure your customer's comfort all the time</li> <li>To keep an optimal air quality and prevent health issues of employees and customers</li> </ul>	<ul style="list-style-type: none"> <li>Works in your sales area should be time efficient</li> <li>Prevent the system from unexpected stops</li> </ul>	<ul style="list-style-type: none"> <li>Optimal operation assures the best energy consumption</li> <li>Preventively maintaining your system reduces repairs</li> <li>Early detection of problems reduces breakdown possibilities</li> </ul>

## ✓ Service Plan

A Service Plan is much more than a number of maintenance visits. Daikin offers the Service of an organization which is specialized and tuned to deliver the best service on Daikin products to the market.

This includes factory trained/certified engineers, world class spare parts logistics and a back-office which is assuring reliable planning, quality administration and invoicing.

Agreement delivery	Care	Preventive Care	Extended Care
<b>Number of visits</b>	<b>1</b>	<b>2 or 4</b>	<b>2 or 4</b>
<b>Inspection</b>			
Check the hydraulic system of the chiller	•	•	•
Check and adjust the chiller control parameters	•	•	•
Check the operation time of the compressors	•	•	•
Check the operational data of the refrigerant circuit (pressure, temperatures, superheat, subcooling).	•	•	•
Check the electrical system (current, voltage, insulation condition).	•	•	•
Verify the safety devices	•	•	•
<b>Preventive maintenance</b>			
Check the condition and re-tighten the electrical connections, contactors.		•	•
Check the condition and re-tighten the electrical connections, contactors by thermal camera inspection.			•
Clean the electrical cabinet and the cabinet filter			•
Oil and filter change – when required		•	•
Oil sampling and analysis of each compressor circuit (screw compressors only)	Option	•	•
Water sampling: water analysis per circuit (evaporator and condenser if required)	Option	•	•
Condenser cleaning, when required	Option	Option	Option
<b>Support technical file</b>			
F-Gas leak test and issue the certificate	•	•	•
PED: administrative support to keep the technical file of the equipment up-to-date (all technical interventions must be logged).	•	•	•
Diagnostics			•
Discount on repair parts	•	•	
Repair parts included			•
Compressor inspection	Option	Option	•
Recommendations	•	•	•
Issue a visit report	•	•	•

## ✓ Invoicing and payment

The contract fee is an upfront fixed value. The yearly fee is invoiced on date of start of the contract, however affiliate specific deviations are possible. Financial booking instructions are documented in Daikin's accounting manual.



# Service Plan for DX and Applied

## Frequently asked questions

### 1 How to quote?

In a collaboration between DENV and other affiliates we have worked to adapt 2 quotation tools for maintenance contracts.

Ask **[fqs.servicebusiness@daikineurope.com](mailto:fqs.servicebusiness@daikineurope.com)** how to use these tools and how can they can be set up according to your maintenance offer.

### 2 Will a Service Plan be cheaper than ad-hoc service interventions?

It will. The reason is that preventive maintenance allows us to plan in advance and avoid rush interventions, this means a Service Plan is always cheaper in the long run. Our specialists will come prepared, thus avoiding repeated visits and extra interruptions for the customer.

### 3 I have x years of warranty on my equipment. Why should I consider a Daikin Service Plan for the start-up date?

Warranty coverage and Maintenance Plans go hand in hand, but are not the same. It is evident that maintenance should be organized from the start-up date of the installation. Lacking to do so, will undeniably result in a drop in comfort and energy efficiency. With Daikin's Service Plans, we aim to keep the installation's performance optimal from start and over time. By choosing a Daikin Extended Care package, the coverage is extended. To be able to extend coverage, a maintenance program is mandatory from the start.

### 4 Extended Care seems expensive. Where is the value?

Service Plans are designed to give our customers "maximum comfort at minimum total cost of ownership". Extended Care packages do just that: everything is included, meaning Daikin simply assures that the unit is always running in optimal conditions and if a breakdown occurs, necessary interventions are covered.

Daikin products are designed to keep energy costs as low as possible. By keeping the optimal installation performance, the energy requirements will also remain optimal over the whole period, providing the lowest lifecycle costs possible.



An added value is that the lifetime of the installation is maximized.



# Daikin on Site

## ✓ Remote service levels

Level	Delivery
Alerts and web application	<ul style="list-style-type: none"> <li>• 24/7/365 automated alarm and event monitoring by customer themselves</li> <li>• Automated notification via email to customers</li> <li>• Access to Daikin on Site web application</li> </ul>
Active monitoring	<ul style="list-style-type: none"> <li>• Remote alarm analysis and diagnostics by Daikin Affiliate Experts</li> <li>• Smart mobilization of authorized service personnel</li> </ul>
Connected Service Plan	<ul style="list-style-type: none"> <li>• Remote alarm analysis and diagnostics by Daikin Affiliate Experts</li> <li>• Smart mobilization of authorized service personnel</li> <li>• Complemented with a Daikin Service Plan</li> </ul>

	DoS PREMIUM 	DoS PARTNER 
Access to unit parameters	FULL PARAMETERS	MAIN PARAMETERS
Dashboard and Web graphics	DETAILED UNIT'S WEB GRAPHICS	DASHBOARD INCLUDED
Core features	INCLUDED	INCLUDED
Advanced features	INCLUDED	NOT INCLUDED
Target Market	Daikin Affiliates	Service Companies

## ✓ Features & Compatibilities

Main Feature List	PARTNER	PREMIUM
Datapoints	up to 200	up to 500
History	1-year	10-years
Reporting	✓	✓
API access	Internal Use	Internal Use
<b>Core Features</b>		
Map & KPI		✓
Remote Alarm Notification	✓	✓
Alarm Dashboard	✓	✓
Datapoint List	✓	✓
Web Graphics		✓
Dashboard	✓	✓
Trend Viewer	✓	✓
Scheduler	✓	✓
Web Access	✓	✓
<b>Advanced features</b>		
Leak Detection		✓
Trend Analysis		✓
Predictive maintenance		✓
Optimization		✓

## ✓ Quotation and order process

- › An monthly access fee is invoiced to affiliates for each connection. For additional info, contact DENV [fqs.servicebusiness@daikineurope.com](mailto:fqs.servicebusiness@daikineurope.com)
- › Invoicing starts as of activation of a connection by the affiliate DoS key-user.
- › Dos Partner is based on yearly fee.
- › Dos Premium is based on monthly fee.
- › Affiliates offer local annual contracts into the market, based on the above proposed levels.
- › To access the DEMO PLANT, please contact [fqs.servicebusiness@daikineurope.com](mailto:fqs.servicebusiness@daikineurope.com)

## ✓ For whom

- › Daikin on Site is a multi-feature platform. It has the ambition to be a collaborative platform for all people managing the operation and maintenance of the chiller plants and/or AHUs.
- › DoS Premium → Direct Service Business for Affiliates
- › Include advanced features
- › DoS Maint → Service partners or Facility managers
- › Specific products for Service Partners

## ✓ Benefits

- › Peace of mind, with control over operation and maintenance budgets.
- › Control and measuring: remote site assessment, relevant dashboards, access to real-time and historical data from anywhere, whenever needed.
- › Optimal performance: team-up with Daikin's expertise, quick alarm resolution, remote service and software updates.
- › Energy efficiency: enhanced control (remote control and master-slave), energy metering
- › Available as standalone (access only) or fully integrated in Daikin's Service Plans.










## ✓ Practicals

- › No hardware investment required.
- › Easy commissioning.
- › Annual access fee per connection (pay per use).
- › Unlimited users per connection allowed.
- › Different access roles for operators, trained service and Daikin.
- › Internet and data privacy secure.



# Daikin on Site

## ✓ Connectivity

Chillers MT3 & MT4 controlled chillers		
 	<ul style="list-style-type: none"> <li>› Chiller software is 'DoS ready'.</li> <li>› No extra hardware required.</li> </ul>	<p>Find the overall DoS software release planning in the compatibility list on <b><a href="http://www.mydaikin.eu">www.mydaikin.eu</a></b></p>
AHU – MT3 controlled		
	<ul style="list-style-type: none"> <li>› Uses IP port of controller to connect to LAN or modem.</li> </ul>	<ul style="list-style-type: none"> <li>› New chillers: delivered from factory 'DoS ready'.</li> </ul> <p>Installed base:</p> <ul style="list-style-type: none"> <li>› Chiller software update is required; see compatibility list on <b><a href="http://www.mydaikin.eu">www.mydaikin.eu</a></b>.</li> </ul>
Chillers MT2 controlled		
  	<ul style="list-style-type: none"> <li>› Unique device for any MTII controlled Unit.</li> <li>› New features, as the possibility to control additional sensors.</li> <li>› Possibility to connect the unit with BMS of the customer.</li> </ul>	<p>ALC DC8 EU.SB.5000081</p> <p>Unified version of Gateway to connect chillers controlled by MTII (Carel pCO<sub>2</sub>-pCO<sub>3</sub>-pCO<sub>5</sub>) to DoS.</p> <p>Supersede existing models: EU.SB.5000052 EU.SB.5000001 EU.SB.5000004</p>
	ALC DC8	
iCM – Chiller plant manager		
	<ul style="list-style-type: none"> <li>› iCM is DoS-ready.</li> <li>› No extra hardware required.</li> <li>› Uses IP port of controller to connect iCM has a modem onboard.</li> </ul>	<p>Look for iCM documentation on <b><a href="http://my.daikin.eu">my.daikin.eu</a></b></p>
Measurement and Monitoring kitfor targeted energy audit		
	<ul style="list-style-type: none"> <li>› M&amp;M is DoS-ready.</li> <li>› No extra hardware require.</li> <li>› Uses IP port of controller to connect to LAN or modem.</li> </ul>	<p>Look for sales index 'target energy audit'.</p>

A compatibility table is available on Daikin Extranet.









If you do not find it, then **[fqs.servicebusiness@daikineurope.com](mailto:fqs.servicebusiness@daikineurope.com)** and **[fqs.technicalsupport@daikineurope.com](mailto:fqs.technicalsupport@daikineurope.com)** will assist you.

The table provides information of required hardware, software and monitoring features for each chiller model.

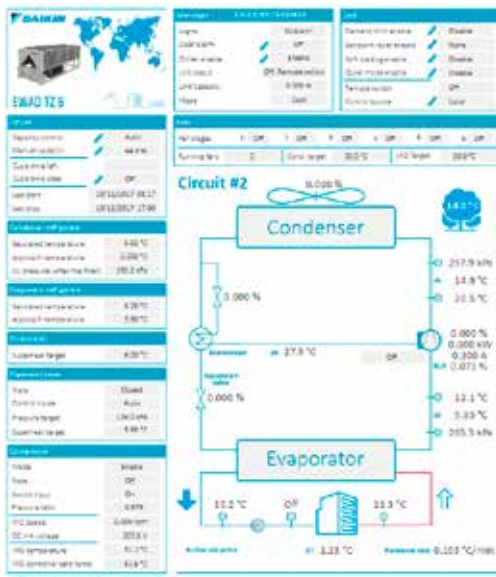


# Daikin on Site

## ✓ Roles and access levels

			
Plant Dashboard	Plant Dashboard	Plant Dashboard	Plant Dashboard
Data points 	Data points 	Data points 	Data points 
Alarms	Alarms	Alarms	Alarms
Web graphic	Web access	Web access	Web access
History	Web graphic	Web graphic	Web graphic
Schedulers	History	History	Upgrade
Documentation	Schedulers	Schedulers	Schedulers
	Documentation	Documentation	Tasks
			Documentation
			Plant settings

## ✓ Few screenshot examples (more on Daikin on Site)



Circuit overview – real-time data  
For maintenance check and diagnostics.



Plant overview, with real-time data  
Full insight in the plant operation for commissioning and optimization.



Historical data: select parameters, select period, zoom, ...  
Full insight in the equipment operation for diagnostics and optimization.



Pre-engineered dashboards for each user role.  
Easy customizable by each user.



# Daikin on Site

## ✓ Periodic reports



Periodic reports on the unit for the last 1 and 6 months.

Data displayed:

- Overall unit status
- Component status and recommendations
- Unit status
- Compressor running hours
- Compressor starts
- Compressor starts and working hours
- Compressor capacity
- Condenser status (per circuit)
- Evaporator status (per circuit)
- Evaporator pump - Run hours
- Circuit status
- Alarm history
- Energy consumption per day and accumulated

More info on: [https://my.daikin.eu/denv/en\\_US/home/service-and-solutions.html](https://my.daikin.eu/denv/en_US/home/service-and-solutions.html)

Sharepoint for Reports download: <https://denv.sharepoint.com/sites/DaikinonSiteReporting>



# Leak detection function on DoS

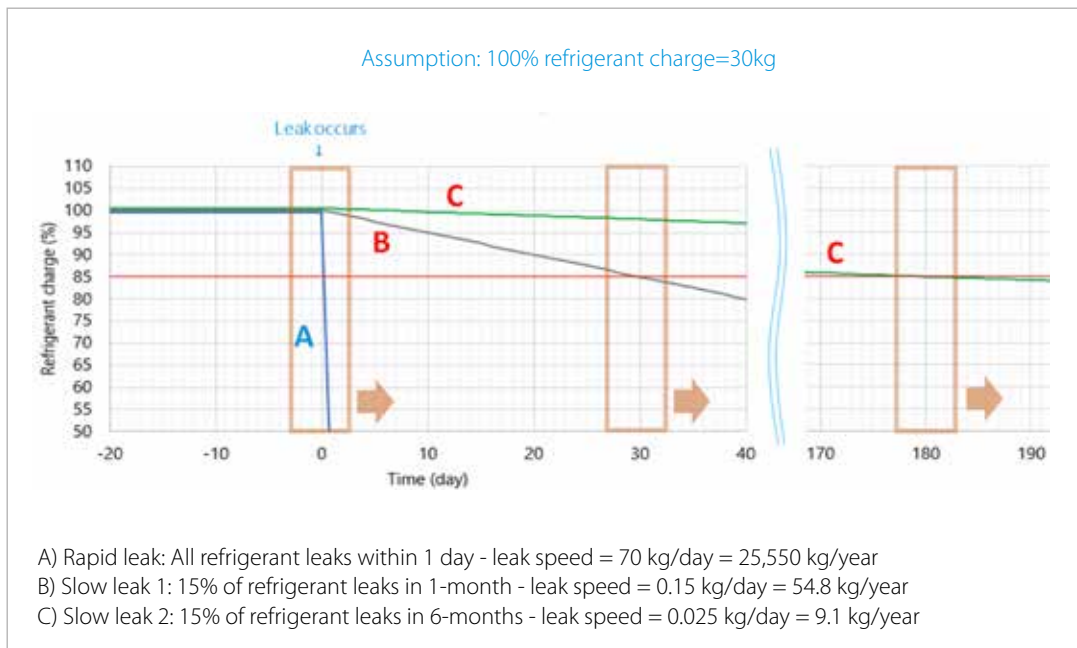
## ✓ Description

Through an extensive analysis of working data of the unit, a Machine Learning algorithm will detect potential gas losses by notifying the Operator. The algorithm can detect losses that are in a range of 0-15% of the total amount of gas.

Automatically available on DoS PREMIUM plants → Tz units equipped with liquid temperature sensor.

In case of potential slow leakages, it notifies the operator raising an Alarm.

Through a dedicated section the Operator can see the status of the Unit and if the probability of a gas leakage.



## ✓ Available informations on dashboard

- › Last Check: indicates when the algorithm performed for the last time.
- › Cx Status: indicates if there are leakages or not in the circuit.
- › Cx Leak occurrences: indicates how many times the algorithm detected a possible leakage
- › Cx Avg prob of Leakage: indicates the probability to have leakages
- › Cx Messages: indicates in case of no data availability if the algorithm performed or not



# Daikin Cloud Service



## ✓ Proposition

It is the target for Daikin Service and partners to keep the equipment in premium condition. Using Daikin Cloud Service as a tool, the following services can be provided:

### Control and Monitoring:

It helps keeping the installation in top condition (maximum uptime).

### Remote support & diagnostic:

Aims to optimise the comfort, reducing the downtime with predictive and preventive actions.

### Optimisation:

Taking an extra step in identifying and acting on Energy Saving Opportunities.

		Available for ITM/LC8			
		Available for iTab			
		Control and monitoring	Remote support and diagnostics	Advice and optimisation	
fDCSeatures	Remote control, scheduling and interlocking*	• (iTablet only)	• (iTablet only)	• (iTablet only)	Access license per controller
	Energy monitoring	•	•	•	
	Multi-site benchmark	•	•	•	
	Alarm history and e-mail notifications**	•	•	•	
	Predictions and e-mail notifications**		•	•	Service license per IU range
	Operation data access		•	•	
	Indoor use analysis		•	•	
	Outdoor use analysis		•	•	
Daikin Service	Remote diagnostic and support from Daikin		•	•	
	Periodical analysis and optimisation advice from Daikin			•	
	Can be combined with maintenance programmes: › Technical inspection › Preventive Maintenance Plan › Comprehensive Maintenance Plan			•	

\* Possible via ITM link for sites using an ITM controller

\*\* VRV units only

## Product description

<https://cloud.daikineurope.com/>

Daikin Cloud Service is the cloud-based monitoring for DX installations. It offers an advanced set of intelligent services such as control, scheduling, prediction logic, multisite comparison, energy monitoring, among others.

Daikin can secure the highest support and control levels thanks to our state of art cloud technology, which is fully complementary with Daikin Service Plan.



# Daikin Cloud Service



## ✓ Interface

The user interface is optimized to be easy to use for all stakeholders.  
The user management is built to empower partnerships and collaboration across all stakeholders (users, service partners, Daikin).

## ✓ Key functions and features



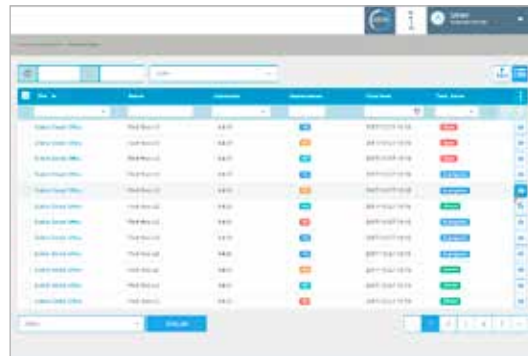
Control function (only available on iTab).



Energy monitoring incl indication heating, cooling mode.  
Incl multi-site comparison.



Comfort monitoring.



Alarm dashboard For Daikin affiliate service and professional users  
(access mgmt by aff)

- Keep track of alarms and events.
- Daikin's unique prediction algorithms (VRV only).
- Remote pre-diagnose for first time fix.
- Collaboration with professional users.

## Daikin Cloud Service

Daikin Cloud Service is a cloud-based remote control and monitoring solution for Daikin's Commercial DX systems. Using enhanced control, monitoring and predictive logic, Daikin Cloud Service provides near real-time data and the support from Daikin experts to help identify cost-saving opportunities, increase the lifetime of your equipment and reduce the risk of unexpected issues. Daikin Cloud Service is offered in 3 levels to fit the different needs of the partners and customers:

1. Remote control and energy visualization.
2. Remote support and diagnostic.
3. Optimization and advice.

Daikin Cloud Service is offered in 3 levels to fit the different needs of the professional partners and users.






# Daikin Cloud Service



## ✓ Levels

Level	Delivery
Control and Monitoring	<ul style="list-style-type: none"> <li>› System Control (for iTablet only).</li> <li>› Energy monitoring.</li> <li>› Multi-site benchmark.</li> <li>› Alarm indication.</li> <li>› Alarm notification to customer by e-mail.</li> <li>› Access to Daikin Cloud Service web application.</li> </ul>
Remote support and diagnostic	<ul style="list-style-type: none"> <li>› Event and prediction indication and notification.</li> <li>› Access to operational system data for remote diagnostics.</li> <li>› Smart mobilization of authorized service personnel.</li> </ul>
Advice and Optimization	<ul style="list-style-type: none"> <li>› Periodical evaluation of the system with Daikin expert advise on health, comfort and/or energy saving opportunities.</li> </ul>

## ✓ Hardware requirement

Local controller	Requirement
iTab Controller (DCC601A51)	<ul style="list-style-type: none"> <li>› Gateway function is embedded in iTab, no other hardware needed.</li> <li>› Modem or Lan: to be provided locally as needed.</li> </ul>
iTM (DCM601A51)	 <ul style="list-style-type: none"> <li>› An IoT gateway with pre-loaded DCS-specific software is required.</li> <li>› Modem or Lan: to be provided locally as needed.</li> </ul>
LC8 (999156A)	
	<ul style="list-style-type: none"> <li>• pn EU.SB5000072 IoT Gateway DCS (iTM)</li> <li>• pn 999175A AC-DC converter</li> </ul>

## ✓ License (procedure on [my.daikin.eu](https://my.daikin.eu))

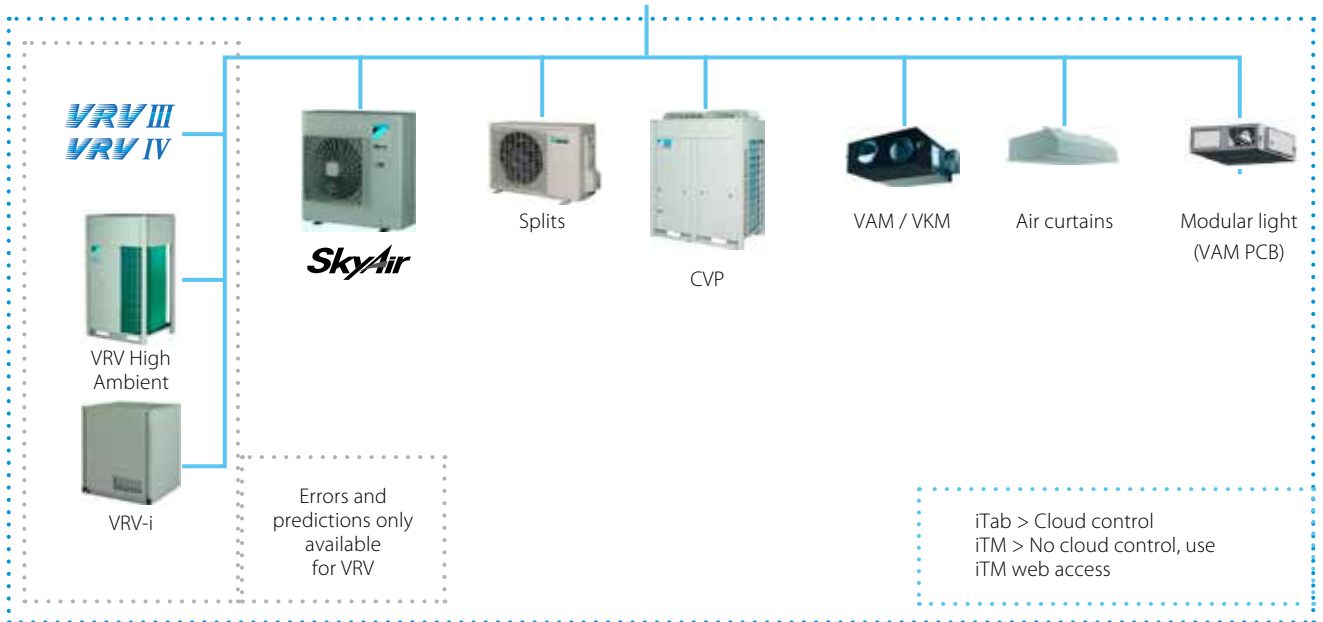
License type	Content
Access license	<ul style="list-style-type: none"> <li>› Target: end-user; service providers and professionals</li> <li>Price: <ul style="list-style-type: none"> <li>• Depending on the controller used</li> <li>• Depending on the license duration</li> </ul> </li> <li>› Unlock following functions: <ul style="list-style-type: none"> <li>• Control (in case of iTab only)</li> <li>• Energy monitoring</li> <li>• Basic alarm function</li> </ul> </li> </ul>
Service license	<ul style="list-style-type: none"> <li>› Target: Daikin Affiliate Service, trained professionals under supervision of Daikin</li> <li>Price: <ul style="list-style-type: none"> <li>• Complementary to Access license</li> <li>• Depending on number of indoor units</li> </ul> </li> <li>› Unlocks additional functions: <ul style="list-style-type: none"> <li>• Alarm dashboard, including predictions (external access is mgmt by affiliate Service team)</li> <li>• Indoor and outdoor use analyzer</li> <li>• Operation Data download</li> </ul> </li> </ul>



# Daikin Cloud Service



## ☒ Compatibility



## ☒ Demo account

**[www.cloud.daikineurope.com](http://www.cloud.daikineurope.com)**

Login: demo@demo.dcs

Password: Demodcs



More info on: [https://my.daikin.eu/denv/en\\_US/home/service-and-solutions.html](https://my.daikin.eu/denv/en_US/home/service-and-solutions.html)



# ERMC: European Remote Monitoring Centre

The ERMC helps you analyse existing installations and provide you with detailed reports on how to optimise the energy consumption of the installations.

## ✓ What's the added value of the ERMC?

- › Provides good matter for customer visit.
- › Evaluates the system operation for a certain period.
- › Provides an overview of schedule efficiency and user behaviour.
- › It provides an overview of the comfort level of the premises.
- › Visualise unnecessary plant operation and save energy costs.
- › Visualises wastefully set temperatures to save energy costs.
- › Visualises sudden energy consumption peaks, saving penalties for exceeding the 15-minute maximum.
- › Visualises the system capacity and allows downsizing to save energy costs.

## ✓ ERMC for affiliates

Our ERMC produces reports that help Daikin systems reach their full potential. While we provide these services to our customers only, it's important Daikin affiliates get on board as well. Why?

- › **It saves us time and money**  
Service departments will be able to report in a much shorter time frame, maximising their available resources. They will report a full comprehensive analysis instead of having an employee working on the topic for at least two weeks.
- › **It increases customer satisfaction**  
Our ERMC reports provide real added value for our customers. It helps them feel like Daikin is involved and following up at all times. By continuing to provide support, after sales are made and the installation is done, our customers feel valued throughout the entire process.
- › **It's an educational opportunity**  
Enhanced control (remote control and master-slave), energy metering.
- › **Available as standalone (access only) or fully integrated in Daikin's Service Plans**

### What does the ERMC need?

An existing DoS or DCS connection, ready to be shared with our centre in Bratislava. If Required, ERMC can also provide the M2M solution.

### What do you need to cover?

The first hand response to your client needs to be covered locally in your Service centre. This to cover the local Active Monitoring and the Alarm response in the local language to your customer and having a service coordinator for dispatching interventions.



Please contact: [remotemonitoring@daikin-ce.com](mailto:remotemonitoring@daikin-ce.com)



# Energy Audit (remote) VRV/Chiller by European Remote Monitoring Centre (ERMC)

## ✓ Order process

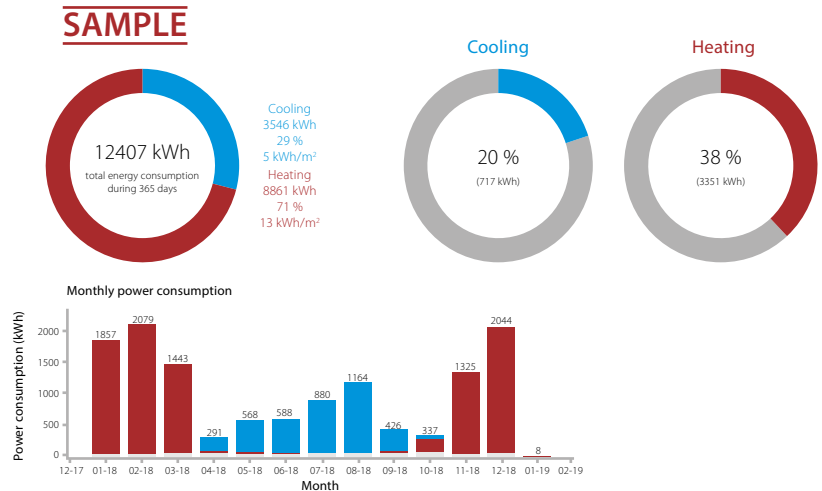
### Contact ERM

- › Martin Durian ☎+421 903 829 276
- › ✉ durian.m@daikin.sk

### Lead time

- › Periodical reports: on schedule.
- › Ad hoc reports 1 week.

## ✓ Energy savings estimate based on actual measurement!



## ✓ Benefits

### For the customer:

- › Save money: propose actions to save energy and identify areas of improvement.
- › Have peace of mind by having Daikin assessing the operation of equipment and providing an overview of the reliability and comfort level.

### For Daikin:

- › Add value to your DCS/DoS-connected maintenance contracts.
- › Save money & staff: it is remotely & automatically done by ERM.
- › Uncover potential service opportunities. Focus on service sales.

Energy Conservation Opportunity (ECO) (Sample for VRV)	Energy Savings [%]
Cooling: shut down A/C when not required	Xx
Cooling: increase indoor units setpoint	Xx
Cooling: adjust target evaporating temperature	Xx
<b>Cooling: all ECOs applied</b>	<b>Xx</b>
Heating: setback A/C during non working time	Xx
Heating: decrease indoor units setpoint	Xx
Heating: adjust target condensing temperature	Xx
<b>Heating: all ECOs applied</b>	<b>Xx</b>

## Product description

To effectively propose energy saving solutions, an accurate measuring of the current situation and modelling of the potential energy savings is a must. For such energy audit, Daikin at the European Remote Monitoring Centre (ERMC) utilises the data coming from Daikin Cloud Service (DCS) and Daikin on Site (DoS) and developed an automated system to perform energy saving and operation assessment report for VRV and Chiller; complete with customer advice and actions.

## Content

An actionable energy audit and operation report to save energy by re-commissioning your VRV equipment:

### Executive summary (Sample for VRV)

- Building description & energy use analysis
  - Building
  - Energy consumption breakdown
- Energy savings
  - Energy savings estimate and applicable ECOs
  - Wasted energy
  - Indoor unit and evaporating setpoint in cooling
  - Indoor unit and condensing setpoint in heating
- Operation & comfort
  - Capacity
  - Reliability
  - Comfort





# Energy Audit (on-site) Chillers by Thermal & Electrical Energy Measuring & Monitoring

## ✓ Available kits

These are Daikin tools, NOT available for external sales.

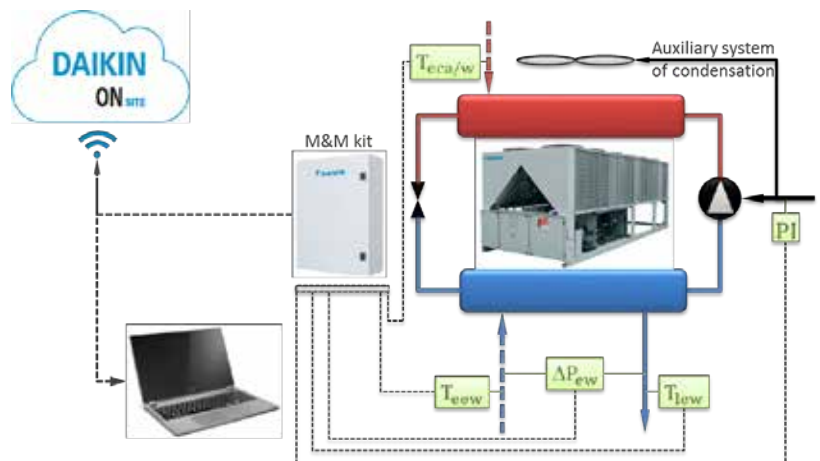
## ✓ Order process

- › Select the required kit:
  - **Thermal Energy kit:** Measures the thermal energy and sends information to the cloud (this kit has the main components – Main box).
  - **Electrical Energy kit:** Measures electrical energy in different points and sends the information to the cloud (this kit complements the Thermal Energy kit – EM box).
- › For additional information: review manual on extranet page or contact DENV at [perezcortines.r@daikin.es](mailto:perezcortines.r@daikin.es) or [fqs.servicebusiness@daikineurope.com](mailto:fqs.servicebusiness@daikineurope.com)

Detail	Kit number
Thermal Energy kit + Communication (Main kit)	5901115
Electrical Energy kit (Additional option)	EU.SB.5000054
Option	Part number
A Differential Pressure (DP) sensor needs to be ordered depending on the pressure drop throughout the evaporator	Request the part number according to the range you need to: <a href="mailto:fqs.servicebusiness@daikineurope.com">fqs.servicebusiness@daikineurope.com</a> [0...200] kPa [0...500] kPa [0...1000] kPa

## ✓ Benefits

- › The M&M kit is not for sale. It is a 'Daikin only' tool which allows us to approach the market with upgrade proposals which are based on real data.
- › Confidently optimizing a chiller plant requires a clear view on the initial performance. By measuring the different points where the energy consumption is concentrated, you can assertively propose the necessary actions for optimization.
- › Daikin Energy Monitoring kits allow customers and our technicians to better understand the chillers' performance and the impact of all actions taken. Because accurate data is the base for correct decisions, both thermal and electrical measurements are recommended.



## Product description

To effectively propose energy saving solutions, an accurate measuring of the current situation is a must. For such targeted energy audit, Daikin developed its own tool: Measurement and Monitoring kit (M&M). All data measured by the Monitoring kit is logged and available in a user friendly way on 'Daikin on Site'. (The DoS connection is charged separately)

And more, because the measurement kit measures on the hydraulic side, it is suitable for any chiller brand.

## Content

### Thermal Energy & Communication kit

- › MT-III Controller
- › 4 temperature sensors
- › Modem 3G and antenna (sim card not included)

### Electrical Energy kit

- › Energy metering module (Nemo)
- › Electrical probes (2 for voltage and 2 for current)

### Options

- › 1 DP sensor

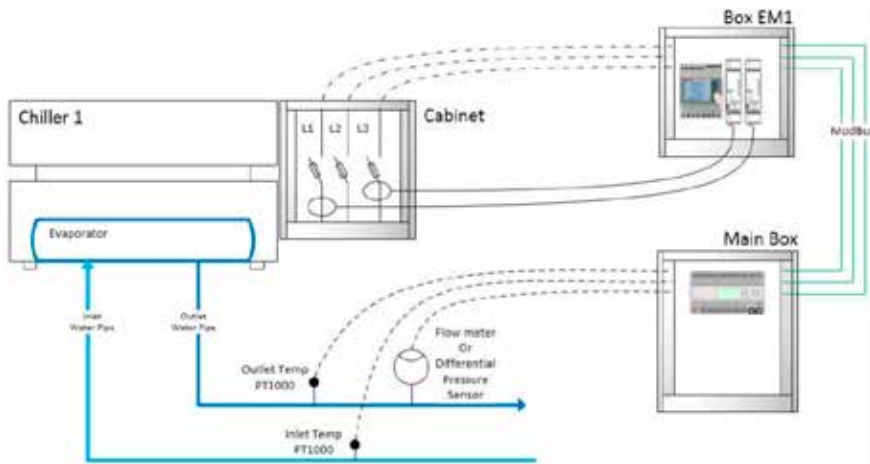




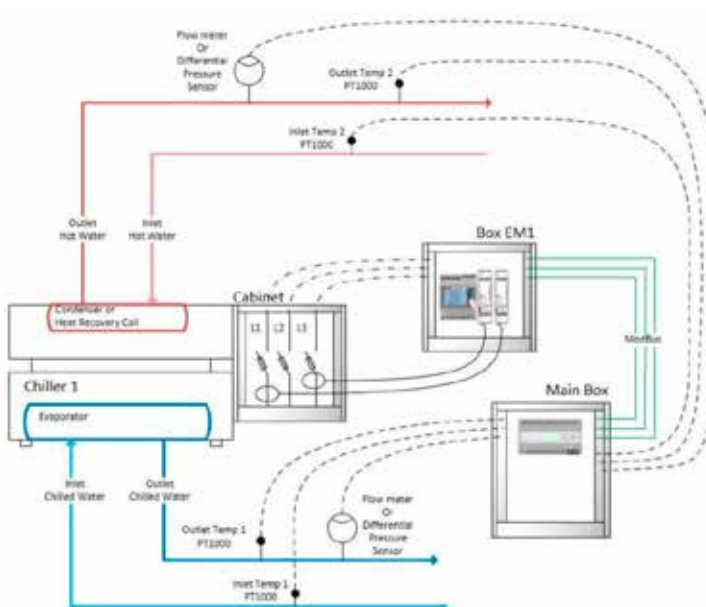


# Energy Audit (on-site) Chillers by Thermal & Electrical Energy Measuring & Monitoring

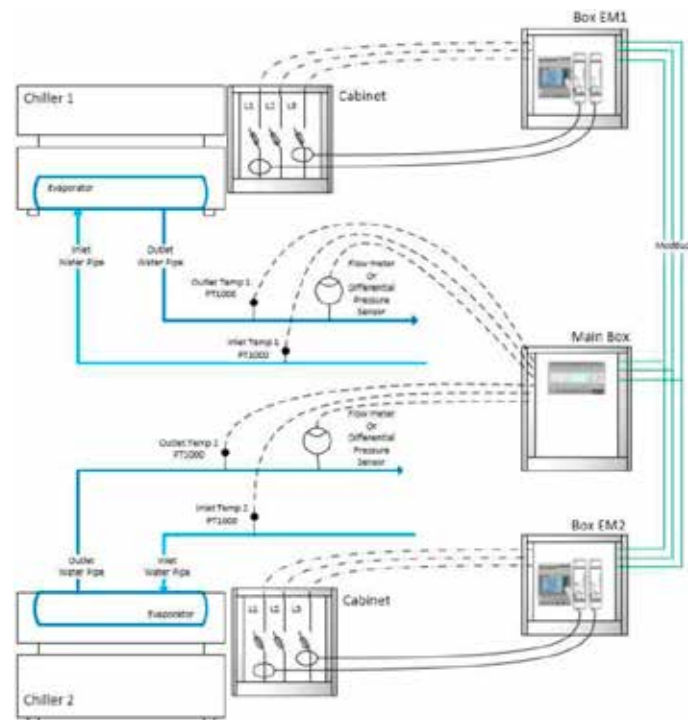
## ✓ Configuration 1: One loop in one chiller



## ✓ Configuration 2: Two loops in one chiller



## ✓ Configuration 3: Two independent chillers







# Energy Audit (on-site) Chillers by Thermal & Electrical Energy Measuring & Monitoring

✓ Daikin on Site web graphic

  <b>M&amp;M Kit</b>		<b>Chiller No. 1</b>		<b>Chiller No. 2</b>	
<b>General</b> 2.00 A		State Off Mode Cool		State Off Mode Cool	
Ambient temperature 0.000 °C Ambient humidity 0.000 %r.H. External alarm No. 1 NoAlarm External alarm No. 2 NoAlarm Sample period 1.000 s		<b>Loop No. 1 - Thermal energy</b>		<b>Loop No. 2 - Thermal energy</b>	
		Temperature inlet 0.000 °C Temperature outlet 0.000 °C ΔT 0.000 dK Flow rate Pressure drop -4.00 kPa Thermal power Cooling energy 0.000 kWh Heating energy 0.000 kWh		Temperature inlet 0.000 °C Temperature outlet 0.000 °C ΔT 0.000 dK Flow rate Pressure drop Thermal power 0.000 kW Cooling energy 0.000 kWh Heating energy 0.000 kWh	
<b>Loop No. 1 - Setup</b>		<b>Loop No. 1 - Electrical energy</b>		<b>Loop No. 2 - Electrical energy</b>	
Flow sensing type DiffPress Flow sensor signal type 0-10V Diff. pressure drop scale 20.0 kPa Nominal flow 45.0 l/s Coefficient 1.80 Fluid type EthylGlycol Ethylene 40.0 % Error temp. sensors 2.00 % Error diff. pressure sensor 1.000 % Error energy meter 2.00 %		Cooling electrical energy 0.000 kWh Heating electrical energy 0.000 kWh Active energy Maximum peak demand 0.000 kW Active power 0.000 kW Average power 0.000 kW Voltage line 1 0.000 V Voltage line 2 0.000 V Voltage line 3 0.000 V Current line 1 0.000 A Current line 2 0.000 A Current line 3 0.000 A Cosinus φ 0.000		Cooling electrical energy 0.000 kWh Heating electrical energy 0.000 kWh Active energy Maximum peak demand 0.000 kW Active power 0.000 kW Average power 0.000 kW Voltage line 1 0.000 V Voltage line 2 0.000 V Voltage line 3 0.000 V Current line 1 0.000 A Current line 2 0.000 A Current line 3 0.000 A Cosinus φ 0.000	
<b>Loop No. 2 - Setup</b>		<b>Loop No. 1 - Energy performance</b>		<b>Loop No. 2 - Energy performance</b>	
Flow sensing type FixValue Fixed flow 50.0 l/s Fluid type Water Error temp. sensors 2.00 % Error energy meter 2.00 %		EER Instantaneous ERR Minimum ERR Maximum ERR Year to date 0.000 ERR Year to date Minimum 0.000 ERR Year to date Maximum 0.000 COP Instantaneous 0.000 COP Minimum 0.000 COP Maximum 0.000 COP Year to date 0.000 COP Year to date Minimum 0.000 COP Year to date Maximum 0.000 Measurement uncertainty 2.88 %		EER Instantaneous 0.000 ERR Minimum 0.000 ERR Maximum 0.000 ERR Year to date 0.000 ERR Year to date Minimum 0.000 ERR Year to date Maximum 0.000 COP Instantaneous 0.000 COP Minimum 0.000 COP Maximum 0.000 COP Year to date 0.000 COP Year to date Minimum 0.000 COP Year to date Maximum 0.000 Measurement uncertainty 0.000 %	

Daikin on Site- Remotely yours @ [www.daikinonsite.com](http://www.daikinonsite.com)

More info on: [https://my.daikin.eu/denv/en\\_US/home/service-and-solutions.html](https://my.daikin.eu/denv/en_US/home/service-and-solutions.html)





# Energy metering kit

## Retrofit for MT3 controlled chillers

### ✓ Available kits

### ✓ Quotation and order process

- › Select the kit to fit the unit main switch.
- › For additional info, contact DENV at [fqs.servicebusiness@daikineurope.com](mailto:fqs.servicebusiness@daikineurope.com)

### ✓ How to sell

- › Energy metering is a product aimed at customers who care about their costs and environmental impact.
- › By measuring energy consumption, proper follow-up and improvement actions can be put in place.

### ✓ Characteristics

**The Digital Display is mounted inside the panel on a DIN rail, but also includes a RS485 communication module.**

**Main electrical parameters which are displayed are:**

- › Line-to-line power supply
- › Phase and average current
- › Active and reactive Power
- › Active and reactive Energy
- › Frequency



Chiller Main Switch	Kit number
250 A	EU.SB.5000015
400 A	EU.SB.5000016
630 A	EU.SB.5000017
800 A	EU.SB.5000018
1000 A	EU.SB.5000019
1250 A	EU.SB.5000020
1600 A	EU.SB.5000021

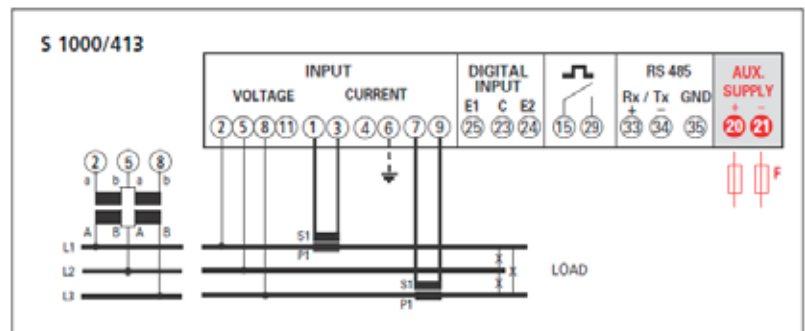
### Multi-Function Digital Display

Technical data:

- › 3-phase network
- › 115 Vac power supply
- › DIN rail mount
- › RS485 communication
- › 5A current input

### Current transformers

Primary current 200 .. 1600 A  
Secondary current 1A..5A  
Housing: self extinguishing polycarbonate IP20



## Product description

In recent years, Energy control has become more important, due to the increasing need for optimization and reduction of power consumption. Two important factors drive this situation: environmental impact and cost. Sustainable impact of the installed equipment can only be controlled through evidence of energy consumption. For Daikin chillers, there is now a **'Energy metering' Retrofit kit** for already installed chillers.

Recording the power consumption of the chiller shows if the climate comfort is optimized for minimum energy absorbed and, if not, promotes the start of actions to increase the efficiency of the system with proper maintenance, and fine tuning of the source and the system in general.

**The 'Energy metering kit' includes:**

- › 1x Multi-Function Digital Display.
- › 2x Current Transformers.





# Energy metering kit Retrofit for MT3 controlled chillers

## ✓ Daikin on Site compatibility

Predefined dashboard for the NEMO meter:

- › Unit power
- › Unit voltage
- › Unit current
- › Active energy
- › Maximum peak demand
- › Active power
- › Average power
- › Cos phi







# Heat recovery HR2: upgrade program for air-cooled screw chillers

## ✓ HR2 is applicable for

Daikin chiller type	McQuay chiller type
EWAD-BJYNN	ALS (from 2002 onwards)
EWAD-C	McEnergy
EWAD-D	McEnergy Evolution
	AWS
EWAD-CZ	AWS inverter

**IMPORTANT: Check in the chiller's IOM, that the inlet/outlet water temperatures are within the envelope for the unit.**

For other chiller types, partial heat recovery can be evaluated.

Contact us to check the feasibility and quote:

[fqs.servicebusiness@daikineurope.com](mailto:fqs.servicebusiness@daikineurope.com)

## ✓ Benefits

Energy and environmental savings

### Energy savings

- › The heat (or energy) recovery kits complements Daikin's range of Energy Saving Solutions. Pre-evaluate, analyze and realize the real savings potential of the installation.
- › Heat recovery reduces Total Life Cycle Cost. It is an investment which will return year after year.

**Highest return: High running hours chillers and/or high consumption of sanitary water (such as hotels (with swimming pool), hospitals, industry...)**

- › The HR2 kits will provide substantial energy savings when used in high operating hour applications. The recovery and savings are maximized when it the need for cooling and heating is simultaneous.

### Environmental savings Value for the customer is ROI

- › The energy saving and carbon footprint reduction go hand in hand.
- › The energy recovered by HR2 results as well in a net saving on carbon emissions.

## ✓ KITS for MT2-controlled chillers (DUMMY materials – for price reference only)

Circuits to be equipped with HR compressor family (MT2)	1	2	3	4
<b>3100</b>	EU.SB.5000030	EU.SB.5000031	-	-
<b>3200</b>	EU.SB.5000032	EU.SB.5000033	-	-
<b>FR4</b>	EU.SB.5000034	EU.SB.5000035	EU.SB.5000036	EU.SB.5000037
<b>FR3A</b>	-	-	-	-
<b>FR4A</b>	-	-	-	-

## ✓ KITS for MT3-controlled chillers (DUMMY materials – for price reference only)

Circuits to be equipped with HR compressor family (MT3)	1	2	3	4
<b>3100</b>	EU.SB.5000038	EU.SB.5000039	-	-
<b>3200</b>	EU.SB.5000040	EU.SB.5000041	-	-
<b>FR4</b>	-	-	-	-
<b>FR3A</b>	EU.SB.5000042	EU.SB.5000043	EU.SB.5000044	-
<b>FR4A</b>	EU.SB.5000045	EU.SB.5000046	EU.SB.5000047	-

A typical kit contains heat recovery heat exchanger, subcooler (if applicable), solenoid valves, expansions valve, temp sensors, pressure transducer, For MT2 a HR2 control box is required / for MT3, a control expansion module is required.

## Product description

- › The energy used to produce cooling with chillers is mostly lost into the atmosphere. With the HR2 Heat Recovery Retrofit solution, this wasted energy will be provided for heating requirements in the same plant at the same time.
- › HR2 incorporates a control system that optimizes the heating output, while maintaining priority for the cooling side. Thanks to the advanced control logic, units are always able to respond to building climate control requirements.
- › The chiller will produce cooling and heating simultaneously, reducing the energy bill.





# Heat recovery HR2: upgrade program for air-cooled screw chillers

## ✓ Pre-checks

- › Check that the chiller is compatible with this solution.
- › Check in the chiller's IOM, that the inlet/outlet water temperatures are within the envelope for the unit.

## ✓ Installation: large diameter piping

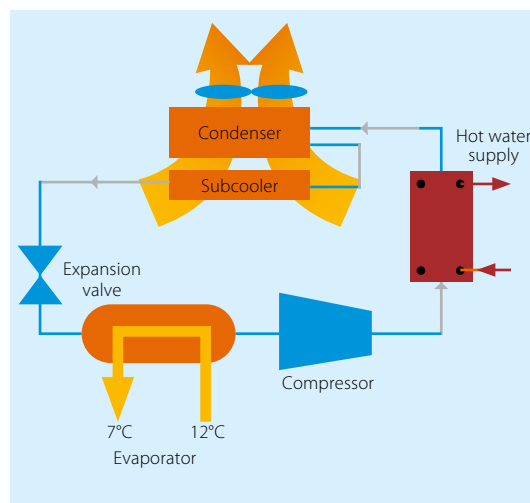
- › HR2 installation requires re-piping on-site. Piping is not included in the HR2 kits. However, following large diameter Cu pipe is available for order in SAP (delivery ex-McQuay Cecchina factory) for your convenience.

## ✓ Quotation flow

- › if support required to select the HR2 kit: contact DAE/DENV at **fqs.servicebusiness@daikineurope.com**
- › Published Kit numbers are to communicate kit prices for quotation ONLY. DO NOT use these number to register your PO.

## ✓ Order flow

- › At time of order, DAE/DENV will create the unique kit number for the specific chiller. Contact **fqs.servicebusiness@daikineurope.com**
- › Affiliate can register PO in SAP when unique kit number has been released.



## ✓ Complementary piping tubes

- › Delivery will be Ex-DAE factory

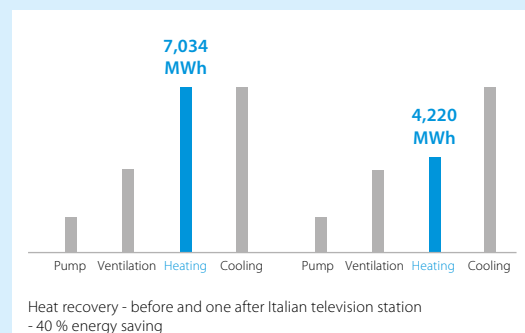
Daikin part number	DAE part number	Description
EU.SB.5000022	888101101	PIPING TUBE D66,67 X 2,5 - L 2M
EU.SB.5000023	888101102	PIPING TUBE CURVE 25° D66,67
EU.SB.5000024	888101103	PIPING TUBE CURVE 30° D66,67
EU.SB.5000025	888101104	PIPING TUBE CURVE 45° D66,67
EU.SB.5000026	888101105	PIPING TUBE CURVE 90° D66,67
EU.SB.5000027	888101106	PIPING TUBE CONNECTOR D66,67
EU.SB.5000028	888101107	PIPING CONNECTION HEAT EXCHANGER D66,67
EU.SB.5000029	133205042	FLEXIBLE PIPE INOX D65 0,975M

## Product description

### Controlled heat recovery system HR2

A plate to plate heat exchanger in series with the condenser. The HR2-controller adjusts the condensing temperature to meet the hot water set point and assure that priority is always given to the cooling side.

Heat recovery Retrofitting projects like this one benefit companies by reducing their carbon footprint, reducing net operating costs, and providing an economical way to heat water.



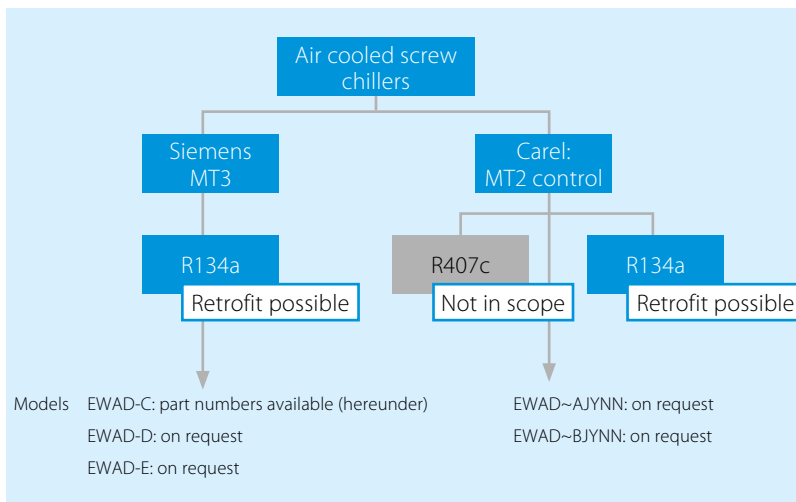




# Inverter Retrofit for screw chillers: program for air-cooled chillers

## ✓ Eligibility

**Important: Inverter Retrofit is possible up to 3 circuits.**



## ✓ Inverter type

There are six different inverter Retrofit packages available. Depending on the compressor(s) present in your chiller the right package can be identified. Every inverter Retrofit package mentions the range of compressors it covers in its description (see below).

All the inverter types are enclosed in an IP 54 cabinet. This provides the inverter protection against dust & splashing water.

## ✓ Order through spare parts platform

You can order your inverter Retrofit through Spare Parts.

Part number DENV	Description
EU.SB.5000064	INVERTER UPGRADE BOX SIZE 3100/3200
EU.SB.5000065	INVERTER UPGRADE BOX SIZE FR3AL/FR3AS/4221
EU.SB.5000066	INVERTER UPGRADE BOX SIZE FR3BS/4222
EU.SB.5000067	INVERTER UPGRADE BOX SIZE FR3BL/4223
EU.SB.5000068	INVERTER UPGRADE BOX SIZE FR4AS/4224
EU.SB.5000069	INVERTER UPGRADE BOX SIZE FR4AL

## ✓ Content order

- › Cabinet IP54 with inverter for 1 compressor including prewired cooling fan.
- › Installation guide: wire diagram, dimension drawing, instructions to adapt parameters.

Not included: shielded power cables.

## Product description

Many fixed speed chillers out in the market are not operating in optimal conditions as the compressor is constantly running at full speed. By having an inverter connected to your unit this can, however, be prevented. The compressor speed is then adapted based on the user needs. This leads to various benefits. The main ones are the following:

Thanks to the 'Inverter Retrofit Solution' the benefits of inverter technology can be added to your unit, even after installation.



The decision to Retrofit will be driven by the time required to payback the investment.

- This pay-back period is determined by:
- % of partial load operation (in others words when compressor is not running at full speed)
  - Operating hours
  - Cost of electricity
  - Public funding







# Inverter Retrofit for centrifugal chillers: upgrade program for R134a chillers

Manage as a project, close consultation AFF - DENV - DAE

Application Manual		Rev. 2.8
Original Instructions	Date: January 2018	
	Supersedes: Rev. 35	

## VFD for Centrifugal Chillers – B-Vintage

WBC/WDC 082, 078, 087, 100, 112, 128, Cooling Only



CE

**KEB**

**McQuay**  
Air Conditioning





# Chiller modernisation: upgrade program for chillers

## ✓ Modernisation is applicable for

McQuay chiller type	Old compressor	New compressor
ALR - prior 2002	Piston	Screw F3100 or F3200
WHR	Piston	
ALS - prior 2002	Oil free screw Frame 2	

## ✓ Available modernisation kits

Chiller	Compressor	With soft starter	With inverter
2 circuit	F3100	EU.SB.5000008	EU.SB.5000005
	F3200	EU.SB.5000011	-
3 circuit	F3100	EU.SB.5000009	EU.SB.5000006
	F3200	EU.SB.5000012	-
4 circuit	F3100	EU.SB.5000010	EU.SB.5000007
	F3200	EU.SB.5000013	-

## ✓ Quotation and ordering process

- › For support to select the 'best fit' kit: contact DAE/DENV at [fqs.servicebusiness@daikineurope.com](mailto:fqs.servicebusiness@daikineurope.com)
- › Above kit numbers are ONLY to communicate kit prices.
- › Only at order process stage, DAE/DENV will create the unique kit number per chiller contact [fqs.servicebusiness@daikineurope.com](mailto:fqs.servicebusiness@daikineurope.com)

## ✓ Benefit

Chiller modernisation is about advising and consulting customers in the search for the 'best fit' solution for their situation. It requires to team-up with the customer, taking into consideration site conditions and accessibility, chiller condition and expected remaining lifetime, criticality of the installation and customer's budget (maintenance, operation, energy or investment budget ...).

- › Tune to today's needs: energy cost and cooling load requirement have changed significantly over the life time of the chiller. Fit the chiller to the new circumstances, with limited investment.
- › Focus on chillers which have accessibility restrictions and/or suffer reduced reliability. In these circumstances, benefit of modernisation will be highest.
- › Cost of modernisation is to be compared with the total installation cost of a new chiller: craning and handling of removing the old chiller, installing a new chiller, re-pipe and reconnect, re-wiring.

While many manufacturers can quote for a new chiller, only Daikin can modernise the chiller.

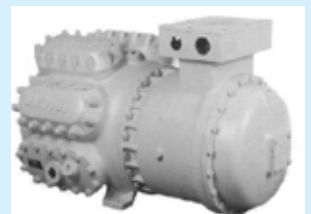
## Product description

The chiller is a critical component in the customer's own production and/or comfort processes. Hence, keeping the equipment fit and reliable is the key. When chillers need compressor exchange while the unit is still in good shape. When refrigerant upgrade is required. When the time is there to consider renewal, but logistic and handling costs are expensive because of basement installation or crane manipulation in the middle of the city centre... For these situations, Daikin offers a **strong alternative solution: Chiller modernisation.**

Daikin will team-up with these customers and work out a 'best fit' solution.

### Benefits of chiller modernisation:

1. Critical components are replaced and upgraded to latest technology:
  - Extends the lifetime
  - Increased reliability and maintenance efficiency
  - Best fit compressors, controls and soft starter/inverter upgrade will enhance energy efficiency up to +20% ESEER.
2. Convert to R134a or R407C.
3. Budget management: avoid the expense, operational and safety risks of chiller removal and installation.



Manage as a project, very close consultation AFF – DENV – DAE



# Chiller modernisation: upgrade program for chillers

## ✓ Modernisation kit content



The modernisation kit

- 1 **Compressor** upgrade  
Recip or oil-free frame 4 screw will be replaced by the latest F3100 or F3200 screw compressor technology.

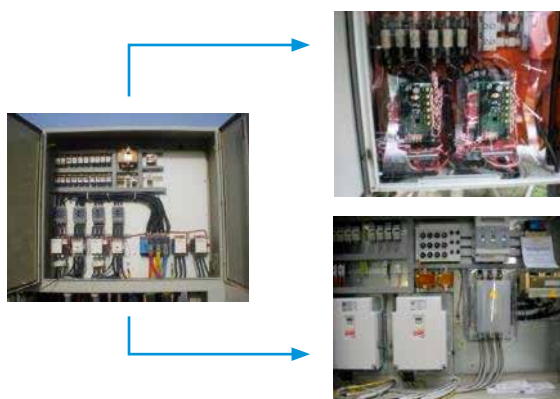


- 2 **Controller** is upgraded to Microtech 2 or Microtech 3 when possible.

- 3 Upgrade of **expansion valve**.



- 4 Upgrade to **soft starter or inverter** technology.



- 5 R22 to R407C refrigerant upgrade.

**YES:** R22 → R407C  
R407C  
R134a

**NO:** R22 → R134a  
R134a → R407C

## ✓ What is involved to execute?

From DAE/DENV	Modernisation kit, wiring diagram and instructions. On-site support can be ordered directly from DAE Italy.
From affiliate	<ul style="list-style-type: none"> <li>› Material: piping, small installation material &amp; refrigerant .</li> <li>› Labour (general estimated 10 days for 2 persons) to replace components, wiring the new MT2, cabling of soft starter or inverter, brazing work).</li> <li>› Transport of the material.</li> </ul>

More info on: [https://my.daikin.eu/denv/en\\_US/home/service-and-solutions.html](https://my.daikin.eu/denv/en_US/home/service-and-solutions.html)





# VRV Compressor Retrofit: upgrade VRV III to the latest technology

✓ Materials available in SAP

Category	Reference	Sales BOM in SAP	Description	Models
VRV Retrofit Compressor kit	AA	D_SV2010500	VRV Retrofit Compressor kit H/P Model	*Heat pump
	AB	D_SV2011009	VRV Retrofit Compressor kit H/A Model	*High Ambient
VRV Retrofit Sensor kit	A	D_SV2010516	VRV Retrofit Sensor kit RXYQ5P7W	RXYQ5P7W1B
	B	D_SV2010522	VRV Retrofit Sensor kit RXYQ8P7 - 8P8W	"RXYQ8P7W1B RXYQ8P8W1B"
	C	D_SV2010538	VRV Retrofit Sensor kit RXYQ10P7 - 12P7W	"RXYQ10P7W1B RXYQ12P7W1B"
	D	D_SV2010544	VRV Retrofit Sensor kit RXYQ14P7 - 18P7W	"RXYQ14P7W1B RXYQ16P7W1B RXYQ18P7W1B RXYQ14P7W1BA RXYQ16P7W1BA RXYQ18P7W1BA"
	E	D_SV2010550	VRV Retrofit Sensor kit RXYQ5P9W	RXYQ5P9W1B
	F	D_SV2010566	VRV Retrofit Sensor kit RXYQ8P9W	RXYQ8P9W1B
	G	D_SV2010572	VRV Retrofit Sensor kit RXYQ10P9 - 12P9W	"RXYQ10P9W1B RXYQ12P9W1B"
	H	D_SV2010588	VRV Retrofit Sensor kit RXYQ14P9 - 18P9W	"RXYQ14P9W1B RXYQ16P9W1B RXYQ18P9W1B"
	I	D_SV2011015	VRV Retrofit Sensor kit RXYQ8P7Y	RXYQ8P7Y1K
	J	D_SV2011021	VRV Retrofit Sensor kit RXYQ10P7 - 12P7Y	"RXYQ10P7Y1K RXYQ12P7Y1K"

✓ Benefits

## Improve comfort

- › Frequently starting and stopping of indoor cassettes is avoided, which increases the tenant's comfort. The cold draught-feeling is prevented by higher out-blow temperatures.

## Extend life time

- › The new Japanese manufactured compressor is designed for even longer lifetime.
- › Combined with the preventive exchange of highly used parts (sensor kit), avoids unscheduled unit breakdown.

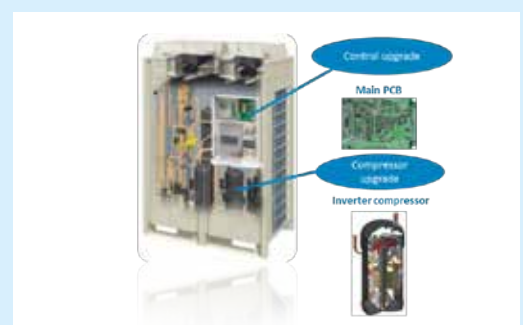
## Improve efficiency in partial load

- › Thanks to its revolutionary Variable Refrigerant Temperature technology, VRV Retrofit adjusts both the inverter compressor speed and refrigerant temperature in cooling and heating, providing the necessary capacity to meet the building load with the highest efficiency at all times.

## Product description

This upgrade introduces the revolutionary Variable Refrigerant Temperature technology on existing installations (VRV IV technology).

The upgrade is applicable for VRV3 heat pumps and will provide solution in case of compressor repair or to upgrade and optimize VRV installations. The lifetime of VRV III units is extended by a newly designed and Japan-manufactured compressor, together with an upgraded control PCB and related sensor parts.





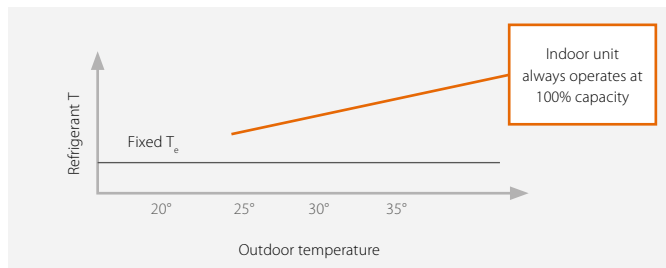


# VRV Compressor Retrofit: upgrade VRV III to the latest technology

✓ Software [Variable Refrigerant Temperature control VRT]

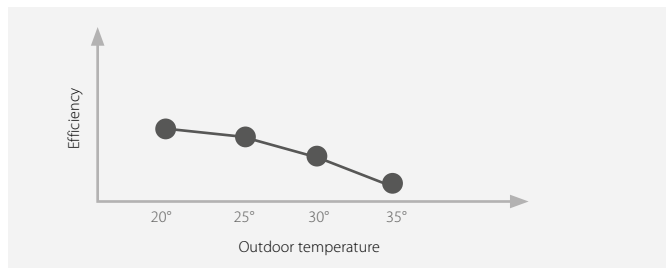
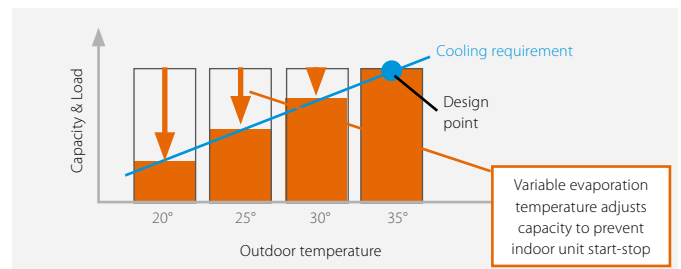
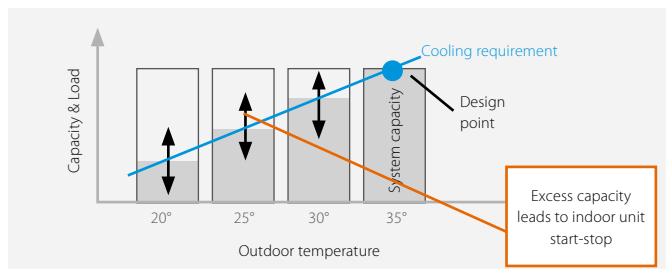
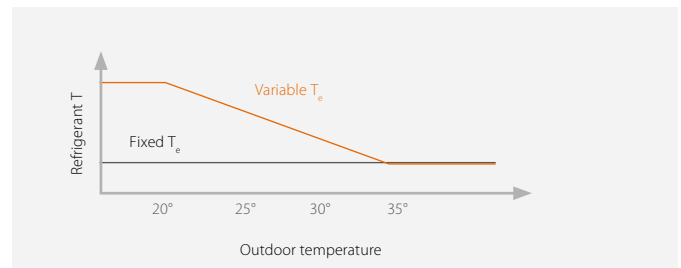
Existing machines

AC capacity adjusted through compressor inverter control  
and start-stop of indoor unit

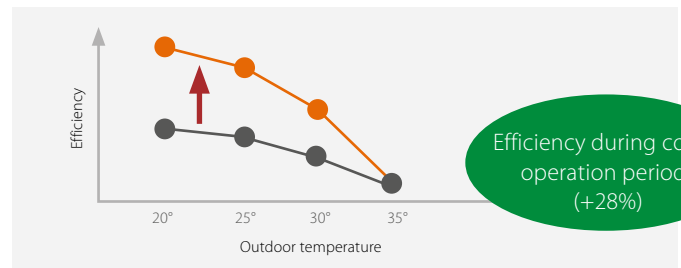


Retrofitted

AC capacity adjusted through compressor inverter control  
and evaporation temperature control



Example: cooling



Example: cooling

The air-conditioner capacity needed as related to the outdoor temperature is monitored in real-time. The system adjusts the optimal refrigerant temperature to throttle compressor speed and raise efficiency. Variable evaporation temperature adjusts capacity to prevent indoor unit start-stop.





# VRV Compressor Retrofit: upgrade VRV III to the latest technology

## Frequently asked questions

### 1 How do I know the result (energy)?

Overall, energy saving starts with measuring and following up your energy consumers. Daikin offers a great tool, which is Daikin Cloud Service (ITab controller) and VRV Cloud (LC8 or iTM). We strongly promote to connect the installations and utilize Daikin's cloud technology to monitor the results.

### 2 Why is the sensor overhaul recommended?

A sensor, thermistor with an offset has an immediate negative impact on the performance of the VRV equipment. During the compressor exchange, the refrigerant will be evacuated. Combining preventive sensor exchange during the same intervention is very cost effective solution.

### 3 Is the upgrade kit also available for heat recovery units?

No, the heat recovery variant has not been developed yet. This development project can be initiated if there is sufficient market request.

### 4 The kit only contains the inverter compressor. Why?

Yes. The kit only includes inverter compressor. Due to the concept of VRV III, the on/off compressor will have less running hours (at least half) then the inverter. The inverter compressor ramps up and when more capacity is asked then it can supply, the on/off will kick in.

Next to this from experience, most sites run on very low part loads which means that the capacity is met with inverter compressor only and the on/off will not even start.

Only in case the site is running 24 hours and/or the system is really undersized, then the technician can consider to replace the on/off as it might have high operating hours.

### 5 What is the reason for the label in the kit?

This label needs to be put on next to the original name label. The first reason is to show that the unit has already been modified with a new model name on it. The second reason is because the new compressor and PCB have new spare part numbers, thus it will be easier to find out by searching the new model name on the Spare Parts Bank.

### 6 What about warranty?

The kit follow the spare part warranty policy if locally available.

Our recommendation is to evaluate the warranty period based on the condition of the site which is retrofitted and keep this to the commercial minimum. This should not exceed 12 months.



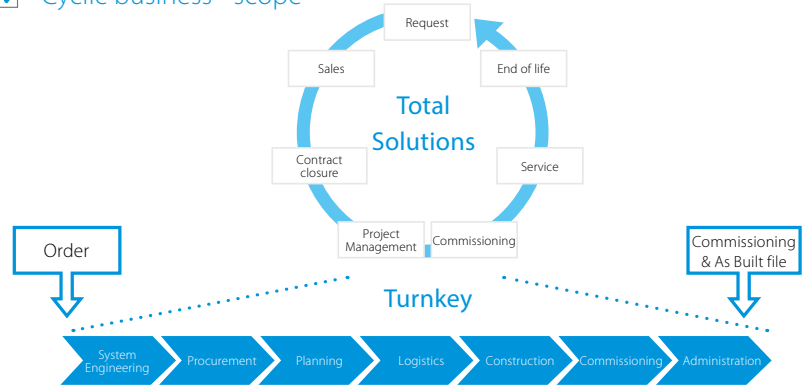
# Turnkey: closing the cyclic business loop

## ✓ Turnkey is applicable for

### Target group:

- › Market: Industrial, Commercial market segment.  
Pillar: Applied.
- › Priority goes to existing clients who have a maintenance contract with Daikin.
- › New clients where Daikin conducted an Energy audit in order to propose a more efficient system with Daikin units.
- › End-users who want to trade exclusively with the manufacturer.

## ✓ Cyclic business - scope



## ✓ Benefits

### Standardised approach for project execution

Centralizing setup of processes and tools will standardise the execution and consolidation of turnkey activities throughout the EMEA region. This will enable quality control and will benefit international clients, offering them a standardized approach.

### Shared services

All services that can be centralized, will be offered to affiliates who need it to execute a project or to set up their own execution team. This will enable us to develop turnkey activities in a lean way. And ensures sharing of best practices between all affiliates.

### Solution approach – tailor made to the needs of the end-user

System engineering is our Unique Selling Proposition. By offering smart, tailor made solutions, including Daikin and third party material, we can make the difference with our competition. Doing so we will avoid mere price discussions and enable WIN-WIN situation with our clients.

**Turnkey is essential to close the cyclic business loop and to enable complex business models such as operating leasing and PAAS.**

## Product description

### Closing the cyclic business loop by enabling 'New Installation'

Turnkey stands for projects that include engineering, procurement, installation and commissioning services.

A turnkey project is typically non-standard and tailor made to the needs of an end-user. By providing engineering services we are able to offer solutions including every aspect of an HVAC system. Project management skills will ensure a streamlined process from order to start up of the system. At the end the client is offered the 'key' to the system, tailor made and ready to go.

We can rely on a network of pre-qualified subcontractors during the execution phase.

This offering is for applied applications and orients towards Industrial and large commercial end-users.

Turnkey capabilities enables also more complex business models like Operational leasing and PAAS.

Our expertise at your fingertips:

- › Project management.
- › System engineering.
- › Pre-qualified subcontractor network.





# Chiller Rental: program for air-cooled chillers

## ✓ When to offer it?

- › Emergency Cooling solution: solving immediate customer needs, whether it's a natural disaster and/or equipment failure that puts the refrigeration system out of action
- › Special Events and cooling load fluctuations such as trade fairs, congresses, temporary structures
- › Planned major interventions (overhaul, Retrofit) and during replacements.
- › When the cooling load is fluctuating due to record outdoor temperature and during startup of new buildings
- › Stand by cooling for critical applications and processes (need of redundancy)

## ✓ What can be offered/subcontracted?

- › Chillers from 10kw to 3MW.
- › Services: shipment, installation, commissioning, onsite maintenance, repair, dismantling.
- › Possibility of renting power generation in certain cases.

## ✓ How to invoice

The accounting manual has dedicated section 2.8.3.8.4 Rental business.

You must invoice on a weekly or monthly basis, depending on the duration of the rental.

## ✓ How to execute it

To start, please contact local rental providers such as Coolworld, ACR or Caterpillar. In specific countries DENV is rolling out a dedicated fleet.

## ✓ In your SAP system

You must have service materials created for this. You can request the creation of local materials, taking into account as long as they have the correct Product Hierarchy (300012005001 - Serv. / Solutions / Other Sol. / Rentals).

These rules apply for contracts shorter than 12 months. Contracts longer than 12 months are not considered as Rental but Leasing under the IFRS rules and are not considered in this chapter.

## Product description

Chiller Rental complements our solutions portfolio providing our customers with:

- › Solutions for cooling emergencies.
- › Standby cooling for critical applications and processes.
- › Cooling supply during planned shutdowns and outages.
- › Solutions for cooling load fluctuations & special events.





# Refrigerant recycling

- ✓ Turn your waste to an asset by creating your own local ecosystem

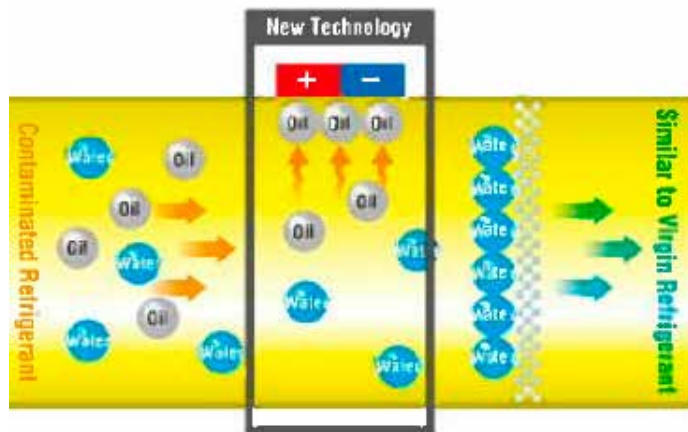
RRDQ220V1 allows to turn recovered refrigerant to an asset for your company by turning it to refrigerant that can be re-used either in new installations or in re-charging systems after repairs.

- ✓ Unique points

- › Three methods of recycling utilized to maximize the quality of the outcome:
  - Oil separation and electrostatic filtering
  - Filter drier to remove moisture
  - Liquid separation via evaporation
- › Oil less compressor preventing oil from the compressor to contaminate the refrigerant.
- › Unique electrostatic filtering technology allowing increased oil and moisture removal from the Recovered refrigerant.

- ✓ Content order

- › Portable recycling unit.



Unique electrostatic filtering technology allowing increased oil and moisture removal from the recovered refrigerant.

As the recovered refrigerant is flowing through the unit, the impurities are charged through friction with a needle valve. By charging them it is easier then to capture.

## Product description

Portable Unit allowing High Purity of Recovered and Recycled Refrigerant by utilizing unique Electrostatic Technology.

## How does it work?

The recovered gas goes through a pre-filter to allow the removal of particles that can harm the compressor.

Then the refrigerant goes through a high performance oil separator and the unique electrostatic filter maximizing the oil removal.

After that the moisture will be removed by utilizing a high performance filter drier.

The final step is the removal of remaining oil and moisture through liquid separation via evaporation of the refrigerant.





# Refrigerant recycling

Model	RRDQ220AV1
Applicable Refrigerants	R32,R134a,R410A – R404A also possible
Recovery method	Liquid and vapor recovery method
Recycling method	Electrostatic separation method
Voltage	220Volt – single phase
Compressor	750W / Oil less compressor with ceramic bearing
Recycling capacity	220 g/min for all kind of refrigerants
Oil separator	Heat exchanger capacity 2L
Dimensions	(L)560 x (W) 520 x (H) 973mm
Operating temperature	5-35C
Weight	63 Kg





# Refrigerant recycling

## ✓ Gas composition analyser

Purpose is to provide to our technicians and partners tools that will allow them fast, accurate testing of a wide variety of refrigerants. This is an essential tool for pre-screening refrigerant prior recovery.

The unit is available for ordering through the spare part route (E-parts also) with a code **EU.SB.5000078**

## ✓ Unique points

- › Weight: less than 10 Lbs
- › Analysed Refrigerants: R22, R32, R134a, R404A, R407C, R410a, Hydrocarbons (HC) and Air
- › Identified Refrigerants: R12, R1234yf, R408A, R409A, R417A, R421A, R421B, R422A, R422B, R422C, R427A and Hydrocarbons (HC)
- › Accuracy: +/- 2% of indicated gasses or better
- › Power Requirements: 12 VDC @ 2A  
via 110/220 VAC Adapter
- › Approvals: CE, UL and CUL
- › User Interface: graphic display, soft keys, built in printer
- › Sample Gas Extraction: pressure from cylinder or system
- › Temperature Range: 50 to 120°F
- › Response Time: less than 3 minutes
- › Humidity: 0-95% RH non-condensing
- › Test Sample Size: 5 g per test
- › Test Pressure: 50 psi - 500 psi

## How does it work?

### Key features:

- › Oil contamination resistant
- › Fast test results
- › Internal thermal printer
- › Greater accuracy in less time
- › Wide refrigerant range
- › Refrigerant composition breakdown
- › Remote software updates for new refrigerants
- › 1/4" Flare sample hose
- › Vapor or liquid sample analysis



More info on: [https://my.daikin.eu/denv/en\\_US/home/service-and-solutions.html](https://my.daikin.eu/denv/en_US/home/service-and-solutions.html)



# Indoor Air Quality Facts & Figures



Air pollutants are important risk factors for various diseases such as allergies, heart disease, lung cancer and respiratory infections.

## ✓ Air pollutants & their sources



Spores



Germs



Pollen



Dust



Microbes

bacteria, viruses & microorganisms



Carbon Dioxide

## ✓ Why is an Indoor Air Quality Audit essential?

It is an important first step to start monitoring the indoor air quality within your daily environment in order to prevent harmful consequences which can be caused by invisible pollutants.

We are focused on providing technical solutions and support that adhere to the guidelines established by local authorities.

As technical experts we can assess your indoor air quality based on European norms & WHO guidelines and make necessary technical audits on your HVAC system to take countermeasures, lowering the risk of airborne infections.





# ReFilter Program



## ✓ ReFilter Program is applicable for

### Target group

- › Technical Inspection: visit for IAQ inspection or Audit, including the IEQ sensor analysis.
- › Fresh Air Re-commissionings: action on the settings of the units (recirculation, ventilation) and recommissioning.
- › Air filtration: filter upgrade sales.
- › Air / Surface disinfection: cleaning & disinfect business.

**Facilities already in operation, willing to invest in safety proofing their buildings.**

## ✓ Process

- › A **Framework** to assess the status of an HVAC system from an Indoor Air Quality (IAQ) standpoint.
- › Implement **Rehva & Ashrae's** recommendations with regard to fresh air operation given the existing installation without heavy modifications.

## ✓ Benefits

### Improve IAQ with our strategic approach and knowhow

- › Providing a technical audit and a range of proposals to improve the IAQ enables the client to assess the state of the HVAC system in view of it's impact on the IAQ. The audit report can act as a risk assessment but also as a supporting document for future improvements that will eventually lead to optimised safety and air quality.

### Our expertise at your finger tips

- › Our technicians will carefully examine your facility and identify how you can improve your air quality and lower the risk of spreading infectious aerosol recirculation. After the visit we will provide you with a status assessment of your HVAC system and proposal for future improvements.
- › A campaign conducted with the installation of our IEQ sensor for a period of time, will give us the objective analysis of the indoor status in a report automatically generated.

## ✓ Available ReFilter tools

### Product Hierarchy

- › Materials for this service, shall be created / assigned under Product Hierarchy.
- › 300011002002 - Serv. / Proactive / Maint. / Preventive.

- › Recommendations to improve air filtration as an important contribution to reduce any infection diffusion.
- › A wide range of existing **technologies** and **products** to disinfect air and surfaces.

- › Our Report will give the opportunity to implement possible solutions to improve and keep under control the IAQ.
- › The quicker and easier countermeasure will be the finetune of AHU and VAM recovery system. Our team will asses if it may be beneficial for you to avoid the heat recovery function . The recovery system can allow up to 20% of exhaust air to re-enter. According with the requirement of the building, our technicians will guarantee reduced dust inside the ambient with a 24/7 operation and increasing the volume of fresh air.
- › Second level of action is the implementation of all available product to increase the air quality or air fresh volume in the ambient, from new filter to modular light units or air purifiers.
- › Finally we can apply available solutions in order to disinfect surfaces and and sanitize air flow.

## Product description

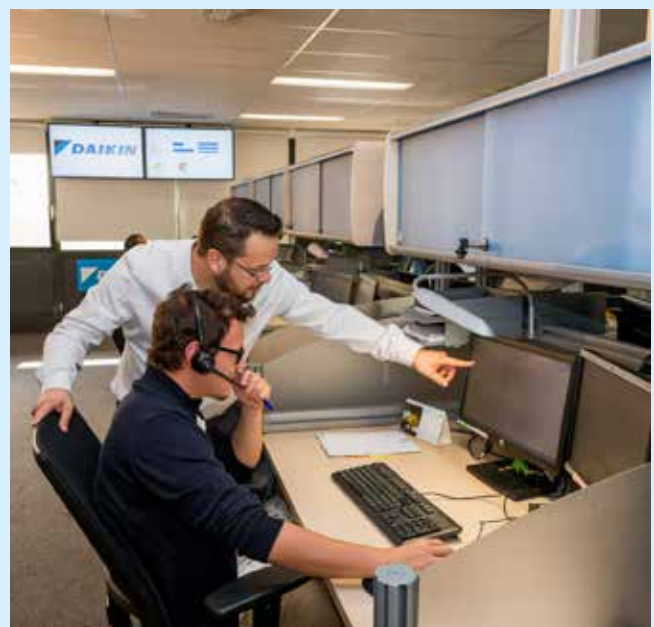
### First step to creating a long term relationship with the end-user, providing a healthy and productive workplace.

As technical experts, we work closely with building owners, installers and engineers to identify the condition of the HVAC system. We evaluate the impact on the indoor air quality and the risk of spread of diseases within workplaces.

A technical audit report enables our customer to understand the state of the installation and take the due countermeasures to lower the risk of **airborne** infections. Our focus is to provide technical solutions and support that adhere to the guidelines established by local authorities.

We advise our customers on how to improve the IAQ:

- › How to properly set your system for a safe operation
- › Which type of further countermeasures can be implemented:
  - New filters.
  - New components or products.
  - Proper air or surface disinfection.





# IEQ Sensor

The Daikin IEQ Sensor measures your well-being by tracking indoor air quality values, environmental comfort, and electromagnetic pollution. It is available with 12 sensors and 15 parameter measures, and connects through your Wi-Fi network or via NB-IoT technology.

## ✓ Complete Standalone Installation

The Daikin IEQ Sensor does not have to be paired with another product, for an extremely easy and completely standalone installation that takes about a minute. The device can be powered up with microUSB power supply (included). The material code is AIRSENSEPROPLUS.

## ✓ Caelum Monitoring Platform

The device connects to Caelum, Daikin's monitoring platform, at [www.daikinaq.com](http://www.daikinaq.com). This enables you to easily monitor Indoor Air Quality levels and create regular reports based on the data detected by the sensor. You can even use the platform to show your indoor air quality levels to your visitors.

## ✓ Mobile App

The configuration app is available as Daikin AirSense on both the App Store and Play Store. Once installed on your mobile device and logged in, scan the QR code on the IEQ sensor and the app will guide you through the entire configuration process. Once your sensor is configured, you will have access to the entire set of functions from your mobile.

## ✓ Connectivity

The IEQ sensor ensures perfect integration with Daikin on Site and Daikin Cloud Service, Daikin's remote monitoring and smart maintenance platform. It gives you perfect control over the entire heating, ventilation and air conditioning system installed in your building.

## ✓ Available ReFilter tools

### Product Hierarchy

- › Material – Product hierarchy: Accessory
- › Material name: AIRSENSEPROPLUS
- › Business Pillar: SERVICES

## ✓ Green Building Certification

Installing the Daikin IEQ sensor can help you achieve better sustainability ratings and green building projects certified with LEED and WELL certification thanks to Indoor Environmental Quality credits.

## ✓ Video wall

The video wall is a great tool to have a general overview of the measurements conducted by the device. This screen can be shared with the occupants of the buildings to show in each moment the Indoor Air Quality status.

## ✓ Communication capability

**NB-IoT:** This technology can reach devices in areas where reception is poor or difficult to reach. Complete standalone installation. This is a perfect solution for service purposes where access to local Wi-Fi is not allowed or not available.

**Wi-Fi:** Easy and complete standalone installation.

### Daikin IEQ Sensor kit

The IEQ sensor kit comes in a carton box containing the following items:

- › Power Supply plug
- › USB - Micro USB Cables
- › Wall fixing kit
- › Quick installation guides



### NB-IoT or WiFi?

Communication is either Wifi or NB-IoT network (mobile network). The NB-IoT services is available in the following 11 countries: Czech Republic, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Portugal, Romania, Spain, United Kingdom. NB-IoT services carry a fee (invoiced after the first year of usage).





# IEQ Sensor



## ✓ Sensor characteristics

### Ambient Light

Range: 0 lux to 120000 lux  
Precision:  $\pm 10\%$   
Resolution: 0,1 lux

### Temperature

Range:  $-40^{\circ}\text{C}$  a  $85^{\circ}\text{C}$   
Precision:  $\pm 1^{\circ}\text{C}$  (between  $0^{\circ}\text{C}$  and  $65^{\circ}\text{C}$ )  
Resolution: 0,1  $^{\circ}\text{C}$

### Humidity

Range: 0 to 100% RH  
Precision:  $\pm 3\%$  RH  
Resolution: 0,1% RH

### Air Pressure hPa

Range: 300 to 1100 mbar (hPa)  
Precision:  $\pm 1$  mbar (hPa)  
Resolution: 0,18 mbar (hPa)

### Sound Pressure

Range: 35 to 120 dBspl  
Frequency: from 50 Hz to 20 KHz  
Precision:  $\pm 1$  dBspl  
Resolution: 0,1 dBspl

### Fine Dust

Concentration Measure PM10/PM2.5:  $0\text{ }\mu\text{g}/\text{m}^3$  to  $1000\text{ }\mu\text{g}/\text{m}^3$   
Precision: (from  $0\text{ }\mu\text{g}/\text{m}^3$  to  $100\text{ }\mu\text{g}/\text{m}^3$ ) :  $\pm 15\text{ }\mu\text{g}/\text{m}^3$   
Precision: (from  $100\text{ }\mu\text{g}/\text{m}^3$  to  $1000\text{ }\mu\text{g}/\text{m}^3$ ) :  $\pm 15\%$   
Resolution:  $1\text{ }\mu\text{g}/\text{m}^3$

### Electrosmog

LF Range: 0-400000 nT - Range: 5 Hz - 120 Hz  
Precision:  $\pm 5\%$  - Resolution: 25nT  
HF Range: 0 - 10 V/m - Range: 50 MHz - 300 GHz  
Precision:  $\pm 10\%$  - Resolution: 0,1 V/m  
Measurements performed on 3 axes

### Air quality

Range: 0 to 500  
Precision:  $\pm 10\%$   
Resolution: 0,1

### CO<sub>2</sub>

Range: 0 to 5000 ppm  
Precision:  $\pm 30$  ppm (between 0 and 1000 ppm)  
 $\pm 3\%$  (over 1000 ppm)  
Resolution: 1 ppm

### TVOC

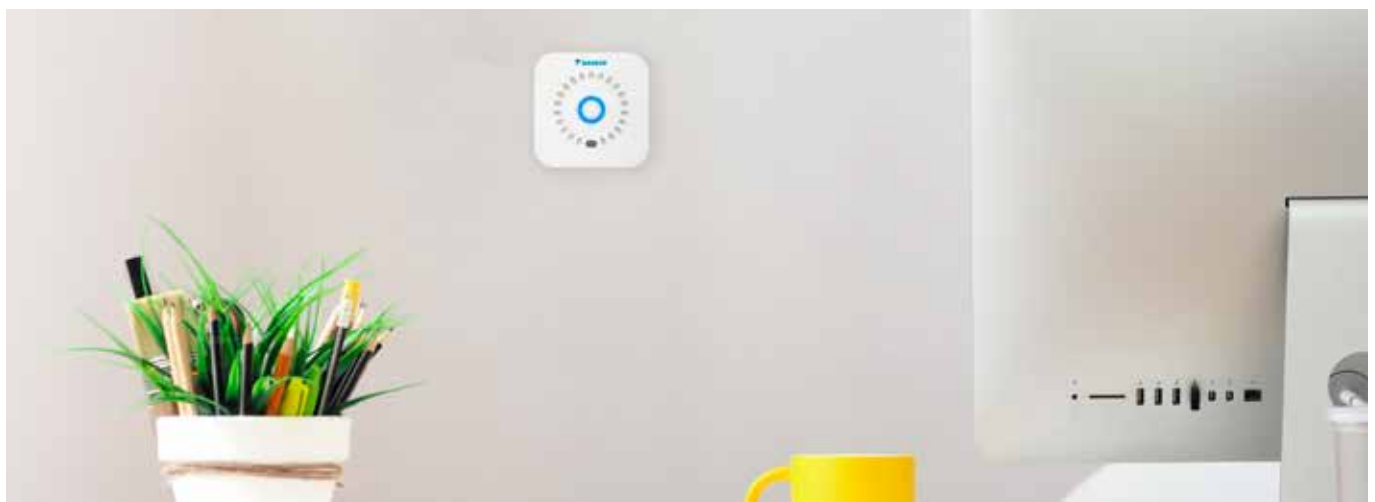
Range: 0 ppb to 1187 ppb  
Resolution: 1 ppb  
Precision:  $\pm 10\%$

### CO<sub>2</sub>e

Range: 400 to 8192 ppm  
Precision:  $\pm 10\%$   
Resolution: 1 ppm

### Wi-Fi networks & signal intensity (2,4GHz band)

Detects Access Point n° in band 2.4Ghz and overall signal level (from 0 to -100 dBm)



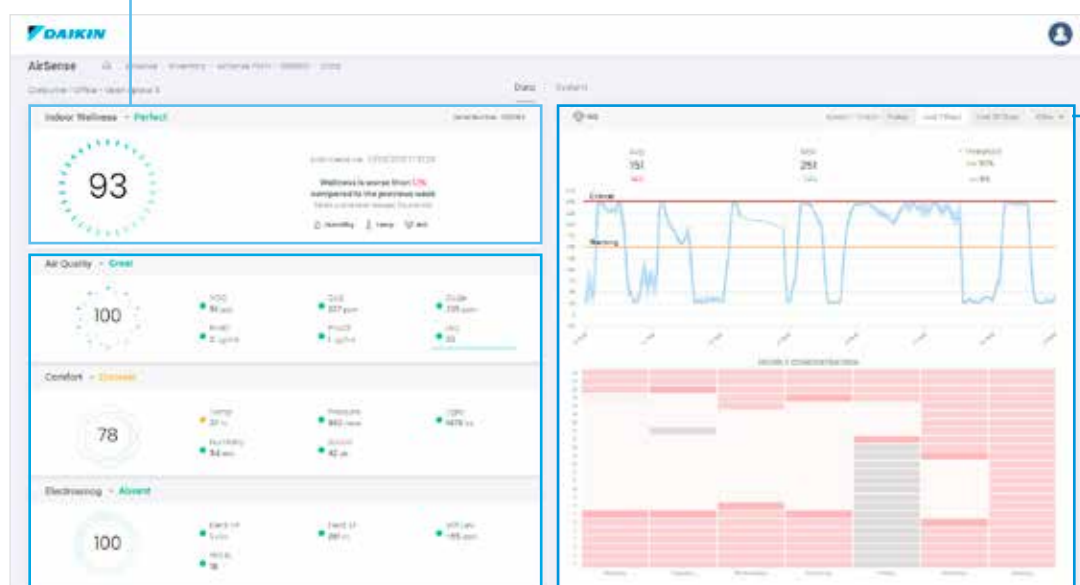


# IAQ Monitoring Deliverables



## ✓ Indoor Air Quality dashboards

Summary indicator on the indoor wellbeing



Detailed views available for each measured parameter

- › Indications on **Air Quality**, **Comfort** and **Electromagnetic radiation**
- › Easy to identify attention points based on red/orange/green color indicators

- › Quick mobile access to the IAQ measurements
- › Simple indicators on wellbeing, air quality & comfort



Give peace of mind to your customers by visualising the Indoor Air Quality within your premises!



# Retradeables

## ✓ About Retradeables

### What is it about?

Retradeables is the first used F-gas marketplace. Created with a mission to leverage technology and innovation to establish a transparent and competitive marketplace for the buying and selling of used F-gases across Europe. The Retradeables platform offers a responsible alternative of a viable circular economy for used F-gases.

Funded and supported by the EU, Retradeables is the only online platform where the industry can connect to recover, recycle and reclaim their own F-gas supplies or to trade recovered F-gas from

others. We want to give influential decision makers a critical edge by connecting them to a dynamic network of recycling and reclaiming data, industry contacts and live prices.

The project was funded by the LIFE Programme of the European Union. The consortium behind Retradeables consists of expert partners from different EU members states – including, Daikin Europe, Daikin Central Europe, MAT4NRG (The Society for Materials and Energy Applications) and the National Technical University of Athens (NTUA).

## ✓ Our goal

### To provide industry players a beneficial solution as the EU aims to achieve carbon neutrality by 2050

The refrigeration and air conditioning industry is under pressure to balance increased global demand along with tightening regulatory pressures. In addition, the high costs of the proper disposal of used and old F-gases mandated by regulations has also caused another industry and environmental issue, the illegal disposal or release of used F-gases into the atmosphere.

Retradeables was established to meet these industry challenges with a responsible alternative of a viable circular economy for used F-gases, while also promoting a simple process of used F-gas recovery and disposal.



F-gases will no longer be a waste and a cost-burden but a profitable asset for installers and distributors



Full transparency and fair pricing, driven by market demand, gas type, quality and quantity

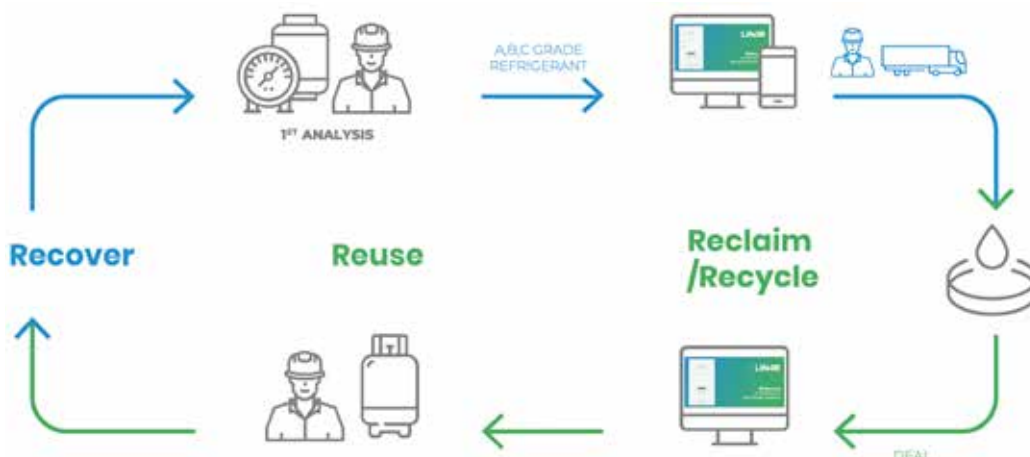
## How does it work?

### ✓ Sell your used F-gases

Connect with other installers and distributors by putting your F-gases for sale. Through the platform you can enter your estimation of the used-gas' grade, enter the price you'd like to sell them for and wait for another member to make an offer.

### ✓ Buy used F-gases

Browse through available used F-gases based on quantity, grade and location and make a bid for the F-gases you would like to purchase. Once the seller approves your bid and a deal is made you can arrange the collection.





# Retradeables

## Why should you join?

### ✓ Make additional revenue

Make more money for your business by selling what was previously a bothersome asset.

### ✓ Meet client demands

Combat limited supply of F-gases and service limitations by buying used F-gas from other official parties.

### ✓ Comply with regulations

Reduce carbon emissions and meet strict climate obligations by re-using F-gases.

### ✓ Make history

Become a pioneer and a role-model of the HVAC-R industry by joining the first ever used F-gas trading platform

## The Retradeables Platform

### ✓ Complete market overview

Through the platform's Sales Center you can find everything you need to initiate and complete a gas trade along with a live view of refrigerant available in the market based on type and quantity as well a view on all your current F-gas offers and bids.

### ✓ Simple and secure payments

Within the Retradeables platform you will also have an e-wallet used for all your payments provided by MANGOPAY. MANGOPAY is the payment provider for the Retradeables platform, adhering strictly to EU anti-fraud regulations and procedures.

### ✓ Arrange proper disposal

Aside from buying and selling used F-gases, through Retradeables you can also list used gases in need of disposal. Installers and distributors will provide you with competitive pricing to arrange the collection and appropriate disposal of your C-grade and lower quality F-gases.

### ✓ Multiple users

Under your company account you can have multiple users for other employees and partners allowing you to share information across your company with ease.

## How can you join Retradeables?

### **Creating the account and joining the platform is free and easy**

- › Register for an account on [marketplace.retradeables.com](https://marketplace.retradeables.com)
- › Add your information and F-gas certificate details
- › Complete the KYC process to activate trading
- › Start buying and selling your used F-gases







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