

Carrier® SMART Service

System Maintenance Analysis Remote Technology



Carrier® SMART Service delivers a wide variety of equipment and system optimization benefits.

Welcome to Carrier® SMART Service

Carrier® SMART Service is a dynamic, proactive strategy for enhanced equipment and system management. Through the identification and analysis of chiller and system operating trends, more informed decisions can now be made relative to meeting comfort demands, implementing service, maintenance or repair events and improving a building's financial performance.

It is an engineered technology that provides continuous data transmission, collection — and subsequent analysis — from up to four chillers. To accomplish this, a custom panel is placed on or near the chiller(s) where wireless technology transmits data to Carrier's Web portal. This unique service can be included in a Carrier Service Agreement plan as part of a regular preventive and predictive maintenance program.

This technology is also portable and can be used on a temporary basis to troubleshoot, diagnose issues and provide analysis for service recommendations.

Benefits:

- Insight into chiller operation and trends
- Access to continuous operating data rather than 'point-in-time' data
- Early indication of equipment problems and faster problem resolution
- Maximum operating efficiency through analysis of key operating data
- Mitigate risk by identifying and correcting minor problems before they lead to more complex and expensive repairs

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Chiller Analysis & Reports

Incorporating Carrier® SMART Service into a Carrier maintenance program will add improved equipment protection, efficient system operation and peace of mind. Benefits include continuous, real-time data collection coupled with the extensive service expertise of Carrier to assess chiller and system health.

Every month, Carrier will provide a detailed report designed to provide clear insight into current chiller operating conditions with comparisons to original design data. Over time, data is compiled which allows our service experts to view trends, identify potential issues and proactively recommend corrective actions.

The data in the monthly report includes:

- A data summary of major chiller component operation
- Chiller runtime profile
- Chiller operating efficiency
- Chiller capacity illustrating peak and average values
- Heat exchanger performance
- Key electrical characteristics

Chiller Analysis	Value	Comments
Chiller Total Run Hours	11349.2 Hrs	
Run hours failed this period	258.3	
Number of starts	72	
Number of hours/number of starts	3.54	
Peak surging	192.5	
Number of times that leaving chilled water exceeded +/- 1.5F from setpoint	0	Check for controller overrides or excess cooler load
# of trips	0	GOOD
Average Outdoor Temperature	6F	
Under performing lower condition	0%	
% Time in Normal Mode	99%	
% Time in Alert Mode	0%	
% Time in Alarm Mode	0%	

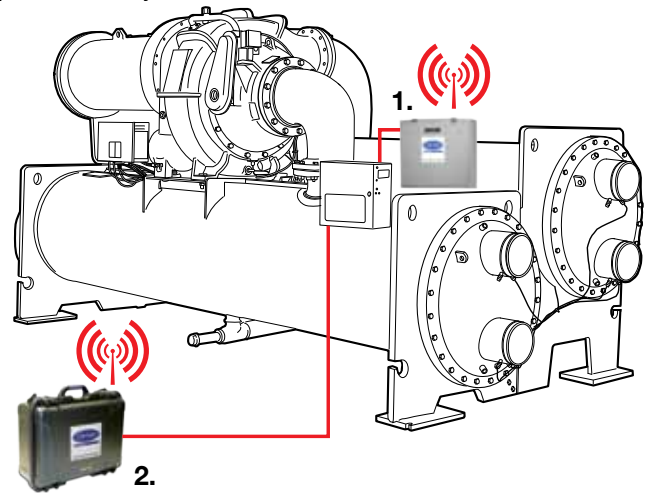
Heat Exchanger Analysis Value Comments		
Cooler Inlet Temperature	40.7F	
Average Cooler approach	0.6F	Emp. Approach is good
Highest Cooler approach	0.5503F	Emp. Approach is poor
# of times Surge counts exceed 4.0	0	
Highest Line voltage readings, Phase 1	4378 VAC	
Average Line voltage readings, Phase 1	4262 VAC	
Lowest Line voltage readings, Phase 1	4198 VAC	
Highest Line voltage readings, Phase 2	4395 VAC	
Average Line voltage readings, Phase 2	4267 VAC	
Lowest Line voltage readings, Phase 2	4207 VAC	
Highest Line voltage readings, Phase 3	4378 VAC	
Average Line voltage readings, Phase 3	4273 VAC	
Lowest Line voltage readings, Phase 3	4202 VAC	
Highest Condenser Temp	86.3F	
Average Condenser Approach Temp	1.8F	
Highest Condenser Approach Temp	4.3F	
Average Chilled water supply temp	41.1F	

Compressor/Motor Analysis Value Comments		
# of instances of high bearing temperature	0	
# of instances of high oil sump temperature	0	
# of instances of high motor temperature	0	
# of instances of line voltage imbalance	0	
# of instances of line current imbalance	133	
Average or pressure starting run mode	33.3 PSI	Good
# of instances high discharge gas temperature	0	
Lowest superheat reading	-1.3F	



How It Works

Most new and many previously installed Carrier chillers feature Product Integrated Controls (PIC). These advanced control systems include a network of sensors linked to a microprocessor. Through our wireless technology, Carrier continuously 'reads' real-time operating data directly from the chiller's PIC. This data is then collected, reviewed and analyzed by Carrier to identify operating trends and the overall health of the chiller(s). Depending on the results, recommendations for service, repairs, modifications or other Carrier solutions will be provided. A detailed monthly report is provided for your records.



1. Under a Carrier Service Agreement, the Carrier® SMART Service panel can be field-mounted on the chiller itself or a nearby wall.
2. Portable Unit for short-term requirements.

Troubleshooting & Optimization

With Carrier SMART Service, we can also utilize this technology for a short time period to collect data, troubleshoot and optimize operation. With this comprehensive view, we can discover potential operating problems, make recommendations to run your chillers and system more efficiently, suggest control setting adjustments, and provide a precise assessment of how all equipment components are performing.

In short, Carrier's SMART Service is the key to optimal equipment management. With it, you can make the most informed decisions on necessary maintenance, repairs and operating strategies.

