

# Bus HVAC Product Guide





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Note:

Rated capacities are at following conditions:

Outside 35 °C, inside 27 °C DB and 19 °C WB.

Evaporator airflow: unit free blowing @ 0 mm water column external static pressure (bench free blow)



# ATHENIA™ MK II SERIES

S-500	8
S-700	10
S-805	12
S-960	14
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# ATHENIA™ MK II S-500



Specifications	S-500 N	S-500 W
Listed Cooling Capacity [kW]	18	
Rated Cooling Capacity [kW]	14.5	
Heating Capacity [kW]	33	
Evaporator airflow* [m³/h]	3500 (4400)	
Fresh Air [%]	100	
Current Draw** [A]	54 (65)	
Dimensions W x L x H [mm]	1850 x 2300 x 215	2100 x 2300 x 215
Weight [kg] (model 1000)	133	138
Refrigerant	R134a	

N: Narrow Model - W: Wide Model

\*m³/h of unit (free blow)

\*\*Amp draw for unit only (Amp draw for system including clutch and pump)

# ATHENIA™ MK II S-700



Specifications	S-700 N	S-700 W
Listed Cooling Capacity [kW]	26	
Rated Cooling Capacity [kW]	21	
Heating Capacity [kW]	33	
Evaporator airflow* [m³/h]	3500 (4400)	
Fresh Air [%]	100	
Current Draw** [A]	54 (65)	
Dimensions W x L x H [mm]	1850 x 2300 x 215	2100 x 2300 x 215
Weight [kg] (model 1000)	137	142
Refrigerant	R134a	

N: Narrow Model - W: Wide Model

\*m³/h of unit (free blow)

\*\*Amp draw for unit only (Amp draw for system including clutch and pump)



# ATHENIA™ MK II S-805



Specifications	S-805 N	S-805 W
Listed Cooling Capacity [kW]	32	
Rated Cooling Capacity [kW]	24	
Heating Capacity [kW]	47	
Evaporator airflow* [m³/h]	5100 (6600)	
Fresh Air [%]	100	
Current Draw** [A]	81 (92)	
Dimensions W x L x H [mm]	1850 x 2300 x 215	2100 x 2300 x 215
Weight [kg] (model 1000)	143	154
Refrigerant	R134a	

N: Narrow Model - W: Wide Model

\*m³/h of unit (free blow)

\*\*Amp draw for unit only (Amp draw for system including clutch and pump)

# ATHENIA™ MK II S-960



Specifications	S-960 N	S-960 W
Listed Cooling Capacity [kW]	38	
Rated Cooling Capacity [kW]	28	
Heating Capacity [kW]	47	
Evaporator airflow* [m³/h]	5100 (6600)	
Fresh Air [%]	100	
Current Draw** [A]	90 (101)	
Dimensions W x L x H [mm]	1850 x 2300 x 215	2100 x 2300 x 215
Weight [kg] (model 1000)	149	160

N: Narrow Model - W: Wide Model

\*m³/h of unit (free blow)

\*\*Amp draw for unit only (Amp draw for system including clutch and pump)





# ATHENIA™ MK II S-960 ADVANTECH™



Specifications	S-960 N AdvanTech™	S-960 W AdvanTech™
Listed Cooling Capacity [kW]	38 - 46	
Rated Cooling Capacity [kW]	28 - 34	
Heating Capacity [kW]	47	
Evaporator airflow* [m³/h]	5100 (6600)	
Fresh Air [%]	100	
Current Draw** [A]	99 (110)	
Dimensions W x L x H [mm]	1850 x 2300 x 215	2100 x 2300 x 215
Weight [kg] (model 1000)	149	160
Refrigerant	R407C	

N: Narrow Model - W: Wide Model

\*m³/h of unit (free blow)

\*\*Amp draw for unit only (Amp draw for system including clutch and pump)

# X-SERIES

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X-500°	20
X-700°	22
X-900°	24
X-900° Compact	26
X-900° AdvanTech™	28

# X-500®



Specifications	X-500® N	X-500® W
Listed Cooling Capacity [kW]	18	
Rated Cooling Capacity [kW]	14.5	
Heating Capacity [kW]	34	
Evaporator airflow* [m³/h]	2900 (3750)	
Fresh Air [%]	30	
Current Draw** [A]	46 (57)	
Dimensions W x L x H [mm]	1523 x 2200 x 184	1800 x 2200 x 184
Weight [kg] (model 1000)	86	90
Refrigerant	R134a	

N: Narrow Model - W: Wide Model

\*m³/h of unit (free blow)

\*\*Amp draw for unit only (Amp draw for system including clutch and pump)

# X-700®



Specifications	X-700®
Listed Cooling Capacity [kW]	27
Rated Cooling Capacity [kW]	21
Heating Capacity [kW]	39
Evaporator airflow* [m <sup>3</sup> /h]	3400 (4400)
Fresh Air [%]	30
Current Draw** [A]	63 (74)
Dimensions W x L x H [mm]	1800 x 2200 x 184
Weight [kg] (model 1000)	96
Refrigerant	R134a

\*m<sup>3</sup>/h of unit (free blow)

\*\*Amp draw for unit only (Amp draw for system including clutch and pump)

# X-900®



Specifications	X-900®
Listed Cooling Capacity [kW]	35
Rated Cooling Capacity [kW]	25
Heating Capacity [kW]	47
Evaporator airflow* [m³/h]	5100 (6600)
Fresh Air [%]	30
Current Draw** {A}	90 (101)
Dimensions W x L x H [mm]	2000 x 2950 x 182
Weight [kg] (model 1000)	136
Refrigerant	R134a

\*m³/h of unit (free blow)

\*\*Amp draw for unit only (Amp draw for system including clutch and pump)



# X-900<sup>®</sup> COMPACT



Specifications	X-900 <sup>®</sup> Compact
Listed Cooling Capacity [kW]	35
Rated Cooling Capacity [kW]	25
Heating Capacity [kW]	47
Evaporator airflow* [m <sup>3</sup> /h]	5100 (6600)
Fresh Air [%]	30
Current Draw** [A]	90 (101)
Dimensions W x L x H [mm]	1900 x 2500 x 182
Weight [kg] (model 1000)	130
Refrigerant	R134a

\*m<sup>3</sup>/h of unit (Free Blow)

\*\*Amp draw for unit only (Amp draw for system including clutch and pump)



X-900® ADVANTECH™



Specifications	X-900® AdvanTech™
Listed Cooling Capacity [kW]	35 - 42
Rated Cooling Capacity [kW]	25 - 32
Heating Capacity [kW]	47
Evaporator airflow* [m³/h]	5100 (6600)
Fresh Air [%]	30
Current Draw** {A}	99 (110)
Dimensions W x L x H [mm]	2000 x 3050 x 207
Weight [kg] (model 1000)	150
Refrigerant	R407C

\*m³/h of unit (free blow)

\*\*Amp draw for unit only (Amp draw for system including clutch and pump)





# DOUBLE DECK UNITS

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TDD-M1	32
TDD-M2	34
TDD-C	36



# TDD-M1



Specifications	TDD-M1
Max. Cooling Capacity [kW]	56
Heating Capacity [kW]	27
Evaporator airflow* [m <sup>3</sup> /h] both decks together	8834
Dimensions W x L x H [mm]	740 x 2190 x 1364
Weight [kg]	379
Refrigerant	R407C

\*m<sup>3</sup>/h of unit (free blow)



# TDD-M2



Specifications	TDD-M2
Max. Cooling Capacity [kW]	44
Heating Capacity [kW]	43
Evaporator airflow* [m <sup>3</sup> /h] both decks together	8834
Dimensions W x L x H [mm]	740 x 2190 x 1364
Weight [kg]	362
Refrigerant	R134a

\*m/h of unit (free blow)

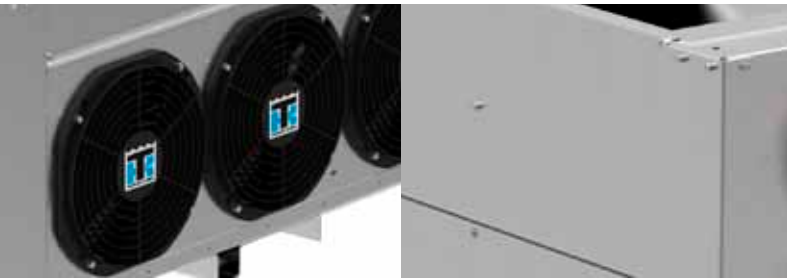


# TDD-C



Specifications	TDD-C
Listed Cooling Capacity [kW]	37
Rated Cooling Capacity [kW]	30
Heating Capacity [kW]	58
Evaporator airflow* [m <sup>3</sup> /h] both decks together	6500
Dimensions W x L x H [mm]	715 x 2140 x 1020
Weight [kg] (model 1000)	220
Refrigerant	R134a

\*m<sup>3</sup>/h of unit (free blow)





# SHUTTLE ROOF

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SR-10E	40
SR-15	42
SR-50C	44
SR-250	46
SR-350	48
SR-380	50

# SR-10E



Specifications	SR-10E
Listed Cooling Capacity [kW]	3
Rated Cooling Capacity [kW]	2.5
Evaporator airflow* [m <sup>3</sup> /h]	700 (1100)
Current Draw [A]	62
Dimensions W x L x H [mm]	670 x 1303 x 224
Weight [kg] (model 1000)	54.5
Refrigerant	R407C

\*m<sup>3</sup>/h of unit (free blow)



# SR-15



Specifications	SR-15
Listed Cooling Capacity [kW]	4.5
Rated Cooling Capacity [kW]	4.2
Heating Capacity [kW]	4
Evaporator airflow* [m <sup>3</sup> /h]	816 (1100)
Fresh Air [%]	0 or 100
Current Draw** [A]	12 (14)
Dimensions W x L x H [mm]	1090 x 1010 x 180
Weight [kg] (model 1000)	45
Refrigerant	R134a

\*m<sup>3</sup>/h of unit (free blow)

\*\*Amp draw for unit only (Amp draw for system including clutch and pump)



# SR-50C



Specifications	SR-50C
Listed Cooling Capacity [kW]	18
Rated Cooling Capacity [kW]	14.5
Heating Capacity [kW]	14,5
Evaporator airflow* [m³/h]	2100
Current Draw** [A]	40 (42.5)
Dimensions W x L x H [mm]	1136 x 2319 x 215
Weight [kg] (model 1000)	86
Refrigerant	R134a

\*m³/h of unit (free blow)

\*\*Amp draw for unit only (Amp draw for system including clutch and pump)



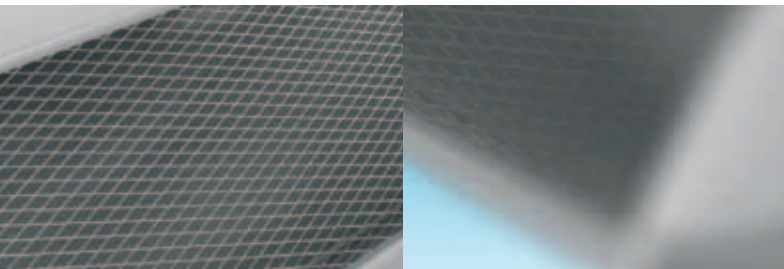
# SR-250



Specifications	SR-250
Listed Cooling Capacity [kW]	9
Rated cooling Capacity [kW]	7.7
Heating Capacity [kW]	10
Evaporator airflow* [m <sup>3</sup> /h]	1500 (2200)
Fresh Air [%]	30
Current Draw** [A]	24 (26.5)
Dimensions W x L x H [mm]	1250 x 1987 x 225
Weight [kg] (model 1000)	66
Refrigerant	R134a

\*m<sup>3</sup>/h of unit (free blow)

\*\*Amp draw for unit only (Amp draw for system including clutch and pump)





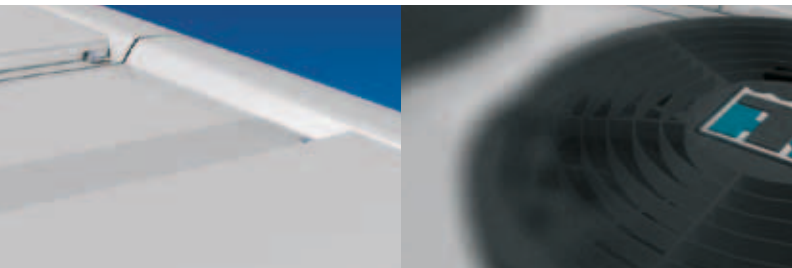
# SR-350



Specifications	SR-350
Listed Cooling Capacity [kW]	11
Rated Cooling Capacity [kW]	9.5
Heating Capacity [kW]	10
Evaporator airflow* [m <sup>3</sup> /h]	1500 (2200)
Fresh Air [%]	30
Current Draw** [A]	33 (35.5)
Dimensions W x L x H [mm]	1250 x 1987 x 225
Weight [kg] (model 1000)	71
Refrigerant	R134a

\*m<sup>3</sup>/h of unit (free blow)

\*\*Amp draw for unit only (Amp draw for system including clutch and pump)



# SR-380



Standard version



Compact version

\*Tropic version available as option

Specifications	SR-380
Listed Cooling Capacity [kW]	12
Rated Cooling Capacity [kW]	10.5
Heating Capacity [kW]	12
Evaporator airflow* [m <sup>3</sup> /h]	1900 (2200)
Fresh Air [%]	30
Current Draw** [A]	30.5
Dimensions W x L x H [mm]	1498 x 1885 x 197
Weight [kg] (model 1000)	65
Refrigerant	R134a

\*m<sup>3</sup>/h of unit (free blow)

\*\*Amp draw for unit only (Amp draw for system including clutch and pump)

# FRONT BOXES

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Modular Front Box I Version	54
Modular Front Box L Version	56
Modular Front Box P Version	58



## MODULAR FRONT BOX MK II I-VERSION



Specifications	MFB I VERTICAL	MFB I HORIZONTAL
Listed Cooling Capacity [kW]	7	
Rated Cooling Capacity [kW]	4.1	
Heating Capacity [kW]	18.5	
Evaporator airflow* [m³/h]	750 (1100)	
Fresh Air [%]	100	
Current Draw [A]	12	
Dimensions W x L x H [mm]	222 x 464 x 534	575** x 464 x 349
Weight [kg] (model 1000)	21	

\*m³/h of unit (free blow)

\*\*Dimensions are valid for boxes with filter module

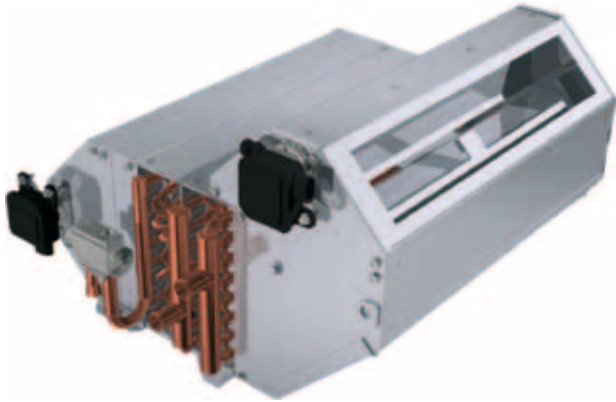
## MODULAR FRONT BOX L VERSION



Specifications	MFB L VERSION
Listed Cooling Capacity [kW]	7
Rated Cooling Capacity [kW]	4.1
Heating Capacity [kW]	18.5
Evaporator airflow* [m <sup>3</sup> /h]	750 (1100)
Fresh Air [%]	100
Current Draw [A]	12
Dimensions W x L x H [mm]	382 x 464 x 600
Weight [kg] (model 1000)	21

\*m<sup>3</sup>/h of unit (free blow)

## MODULAR FRONT BOX P VERSION



Specifications	MFB P VERTICAL	MFB P HORIZONTAL
Listed Cooling Capacity [kW]	7	
Rated Cooling Capacity [kW]	4.1	
Heating Capacity [kW]	18.5	
Evaporator airflow* [m <sup>3</sup> /h]	750 (1100)	
Fresh Air [%]	100	
Current Draw [A]	12	
Dimensions W x L x H [mm]	320 x 468 x 450	492** x 468 x 349
Weight [kg] (model 1000)	21	

\*m<sup>3</sup>/h of unit (free blow)

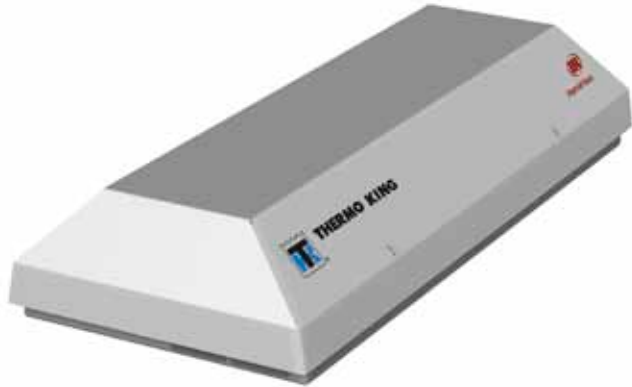
\*\*Dimensions are valid for boxes with filter module

# HEATING SERIES

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Roof Top Heater JKB	62
Interior Heater Tracker	64
Interior Heater Pluto	66
TKV Convectors	68
TKV Forced Air Convectors	70

## ROOF TOP HEATER JKB



Specifications	ROOF TOP HEATER JKB
Heating Capacity [kW]	29.4
Heater airflow [m <sup>3</sup> /h]	1575 (2000)
Current Draw [A]	36
Dimensions W x L x H [mm]	407 x 1000 x 175
Weight [kg]	12



# INTERIOR HEATER TRACKER



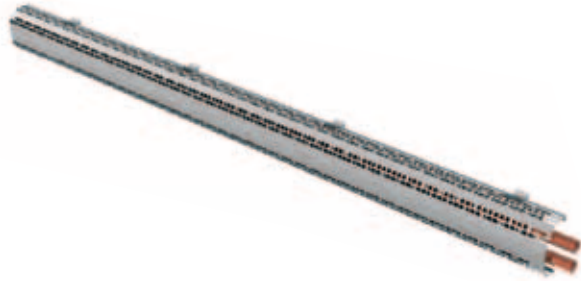
Specifications	INTERIOR HEATER TRACKER
Heating Capacity [kW]	4
Heater airflow [m <sup>3</sup> /h]	300 (410)
Current Draw* [A]	0.75
Dimensions W x L x H [mm]	290 x 182 x 204
Weight [kg]	2

# INTERIOR HEATER PLUTO



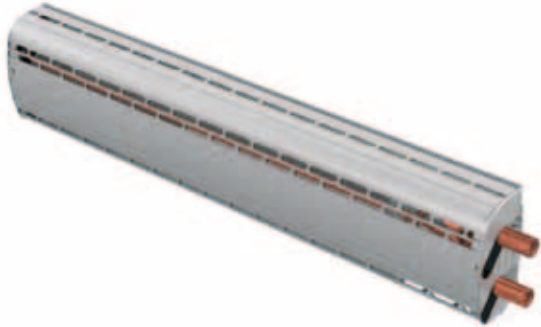
Specifications	INTERIOR HEATER PLUTO
Heating Capacity [kW]	1.8
Heater airflow [m <sup>3</sup> /h]	100 (140)
Current Draw* [A]	0.5
Dimensions W x L x H [mm]	247 x 147 x 136
Weight [kg]	1.5

# TKV CONVECTORS



Specifications	TWO-PIPE MODELS	
	700	800
TKV	700	800
Tube Diameter [mm]	22	
Weight [kg/m]	2.48	
Heating Capacity $Q_{60}$ [W/m]	575	664
Heating Capacity $Q_{80}$ [W/m]	808	965

## TKV FORCED AIR CONVECTORS



Specifications	TKV FORCED AIR CONVECTORS
Heating Capacity $Q_{90}$ [kW]	3.1
Heating Capacity $Q_{100}$ [kW]	3.9
Heater airflow [m <sup>3</sup> /h]	120 (140)
Coolant Flow Rate [l/h]	750
Coolant Inlet Temperature [°C]	80
Air Inlet Temperature [°C]	0 and -20
Current draw* High Speed [A]	0.7
Current draw* Low Speed [A]	0.4
Weight [kg]	3.97



# CONTROLLERS

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FRONTAIRE II™	74
CANAIRE®	76
CLIMAIRE ID™	80

# FRONTAIRE II™



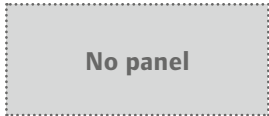
Specifications	FRONTAIRE II™
Application	Control of front box and heaters
Setup temperature range	18° C (64 °F) to 27 °C (80 °F)
Operating voltage range	22-30 V DC
Current consumption	Max. 60 mA
Operating temperature range	-30 °C (22 °F) to 80 °C (176 °F)
Connection	Molex 39-01-2140 and 39-01-2180
Dimension W x D x H [mm]	187 x 57 x 60
Inputs	Return Air Temperature Sensor
	Coil Temperature Sensor
	Ambient Temperature Sensor
	Floor Temperature Sensor
	Duct Temperature Sensor
	3 Analog Inputs (0 - 24 VDC)
	2 Digital Inputs (0 - 24 VDC)
Outputs	6 Hi/Lo Side Universal Outputs (max. 0.5 A each)
	4 Servomotor Outputs
	Heat Valve
	Floor Heat Valve
	Fresh Air Damper
	Windshield Damper
	Compressor Clutch Output (24 VDC / 2 A)
	PWM Blower Output (24 VDC, 20 kHz, 0 - 100%)
	Software Features
	Timer for Preheater
Diagnostic / Programming	RS232

# CANAIRE®

## DRIVER PANELS (HMI OPTIONS)



CANAIRE® drivers panel



No panel

Auto control with ON/OFF and option of Set Point control



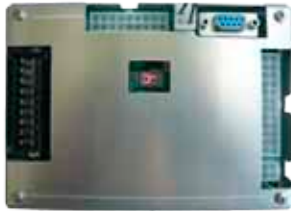
Panel Integrated in vehicle dashboard

Communication with control using CAN

Specifications	CANAIRE®
<b>General:</b>	
Application	Control of HVAC unit, expandable configuration per application CAN system according to ISO11898 and/or SAE J1939
Setup temperature range:	17 °C to 27 °C
Operating voltage range:	12/24 V DC per EN50155
Operating temperature range:	-30 °C up to 80 °C
	Automatic/manual operation
	Programming via RS232
	Configuration/ Detailed Diagnostic via CAN
<b>Drivers panel</b>	
	HMI (human machine interface)
	Up to one module in the system
	Graphic LCD display
	One integrated drivers panel for saloon and driver area
	Two adjustable setpoints
	Real time clock
	Timer for preheater
Inputs / Outputs:	1 x CAN port
	1 x supply/control connector
	1 x constant battery voltage input
	1 x ignition input
	2 x analog/digital input
	2 x digital output

# CANAIRE® (continued)

## CONTROLLER MODULES



CANAIRE® Main module



CANAIRE® I/O module

Specifications	CANAIRE®
<b>Main module:</b>	
	core of the control system
	Up to three modules in the system
	2 x CAN independent ports
	CAN gateway function, interfacing between TK and vehicle CAN
Inputs / Outputs:	7 x temperature inputs
	2 x pressure input
	4 x servomotor interface
	4 x digital input
	2 x 5 A digital output (direct compressor clutch)
	10 x 1 A digital output
	4 x PWM output for brushless motors
	Overvoltage protection against pulse 5 per ISO 7637-2
<b>Floor I/O module:</b>	
	Input/output module floor heating or Power Pack
Inputs / Outputs:	Up to 7 modules in the system
	1 x CAN port
	2 x temperature inputs
	2 x digital input
	4 x digital output 0.5 A
	1 x servomotor interface
<b>Frontbox I/O module:</b>	
	Input/output module floor drivers zone
Inputs / Outputs:	1 module in the system
	1 x CAN port
	4 x temperature inputs
	1 x digital input
	2 x digital output 0.5 A
	1 x PWM output for brushless motor
	3 x servomotor interface



# CLIMAIRE ID™



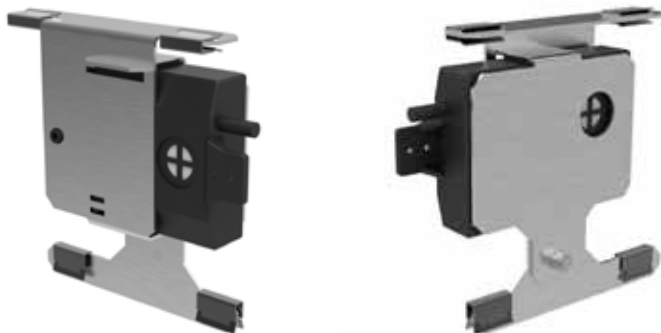
Specifications	CLIMAIRE ID™
Application	Control of HVAC unit
Setup temperature range	17 °C (63 °F) to 27° C (80 °F)
Operating voltage range	10-35 V DC
Current consumption	Max. 100 mA
Operating temperature range	-30 °C (22 °F) to 80 °C (176 °F)
Connection	Molex 39-01-2140
Dimension (W x D x H)	152 mm x 57 mm x 23 mm
Inputs	<ul style="list-style-type: none"> <li>Interior Temperature Sensor</li> <li>Freeze Temperature Sensor</li> <li>Ambient Temperature Sensor</li> <li>Pressure Sensor - Switch (LPCO, HPCO)</li> </ul>
Outputs	<ul style="list-style-type: none"> <li>Number of Outputs - 7</li> <li>Low Speed Blower</li> <li>Medium Speed Blower</li> <li>High Speed Blower</li> <li>Compressor Clutch</li> <li>Boost Pump</li> <li>Solenoid Heat Valve (PWM 0.1 Hz)</li> <li>Fresh Air Damper (0/1/PWM 1Hz)</li> </ul>
Diagnostic / Programming	RS232 (via Molex connector)

# ADVANTECH™

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AdvanTech™ Fresh Air Control	84
AdvanTech™ Clean Air Filter	86
AdvanTech™ GPS Control System	88

## ADVANTECH™ FRESH AIR CONTROL



### ADVANTECH™ FRESH AIR CONTROL

Air quality power requirements	24 VAC/VDC $\pm$ 20%, 50 Hz
Power consumption	< 1 W
Weight	0.2 kg
Controller	CANAIRE®
Ingress protection	IP50
EMC compliance	EMC directive 89/336/EEC. RoHS directive 2002/95/EG
Maintenance	Not required

# ADVANTECH™ CLEAN AIR FILTER



## ADVANTECH™ CLEAN AIR FILTER

Filtration efficiency. Test standard EN 779, ASHRAE 52.2	E1.0 = 40% (avg. 0.2 to 1.0 micrometer) E2.5 = 50% (avg. 0.2 to 2.5 micrometer)
Air flow resistance	10 Pa
Electrical power requirements	1.5 A at 24 V DC
Power consumption	20 W
Weight	10 kg
EMC compliance	EN 50121-3-2 and EHK10
Corrosion compliance	EN 60068
Ozone compliance	EN 60335-2-65
Maintenance	Pressurized water
Filter grade equivalent	G4 or MERV 10

# ADVANTECH™ GPS CONTROL SYSTEM



## ADVANTECH™ GPS CONTROL SYSTEM

HW PART – GBB HSLO BOX	Three interfaces to HVACR <ul style="list-style-type: none"> <li>• RS232/RS485</li> <li>• CAN bus</li> <li>• Relay output</li> </ul>
	External Wifi antenna
	External GPS antenna
	Wifi client mode <ul style="list-style-type: none"> <li>• Dedicated AP required</li> </ul>
	LED indication of performance
	Possibility to fit harness to specific application
	Power 7 – 35 V, 0.2A
	Dimensions 280 mm x 146 mm x 230 mm
	Weight 200 g
	IP67
HW PERFORMANCE	Up to 1000 zones memory
	Real time clock synchronized from GPS
	UTC time operation
	Programmable via WiFi network
SW PART	Map editor <ul style="list-style-type: none"> <li>• Open Street Maps based</li> <li>• Circular &amp; Rectangular zones</li> <li>• Time range of zone validity</li> <li>• Zone priority for special applications</li> <li>• Log data display</li> </ul>
	Data Download/Upload tool <ul style="list-style-type: none"> <li>• Data transfer over Wifi</li> <li>• Local operation in vicinity of vehicle or over network AP's</li> </ul>



# COMPRESSORS DRIVE KITS

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Compressor X-430	92
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# COMPRESSOR X-430



Specifications	COMPRESSOR X-430
Displacement	492 cm <sup>3</sup> (30 in <sup>3</sup> )
Number of cylinders	4
Maximum BHP	19 BHP (R134a)
	29 BHP (R407C)
Maximum speed	2,600 rpm (R134a)
	2,600 rpm (R407C)
Refrigerant	R134a or R407C
Oil Capacity	4.2 liters (8.9 pints)
Oil pump	Gerotor type
Oil type	TK Part No. 67-404 (R407C)
	TK Part No. 66-6828 (R134a)
Maximum tilt	10° any direction
Drive method	Belt or direct
Maximum belt side loading	136 kg (300 lbs.)

Operating Conditions	
Max. discharge temperature	162.8 °C (325 °F)
Max. saturated suction temperature	12.7 °C (55 °F)
Max. saturated discharge temperature	68.3 °C (155 °F)

Weight (approximate)	52.2 kg (115 lbs.) (including oil, service valves and clutch)
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# COMPRESSOR S-391



Specifications	COMPRESSOR S-391
Type	Helical Lobed Screw
Displacement	391 cm <sup>3</sup> /rev. (23.86 in <sup>3</sup> /rev.)
Refrigerant	R134a or R407C
Oil separator	Integrated
Oil sump	Integrated, on discharge side
Oil charge	60 fl. oz./1.8 liters
Oil type	POE SOLEST 370
Oil filter	Integrated full-flow
Maximum tilt	10° in any direction
Drive method	Belt or direct
Maximum belt side loading	136 kg (300 lbs.)

Operating Conditions	
Maximum BHP (R407C)	35 hp at 450 psi discharge and 100 psi suction @ 3000 rpm
Maximum BHP (R134a)	24 hp @ 350 psi discharge and 65 psi suction @ 3000 rpm
Maximum speed	3000 rpm
Maximum discharge temperature	148.9 °C (300 °F)
Maximum operating pressure	450 psi

Weight (approximate)	66.8 kg (147 lbs.) (including oil, service valves and clutch)
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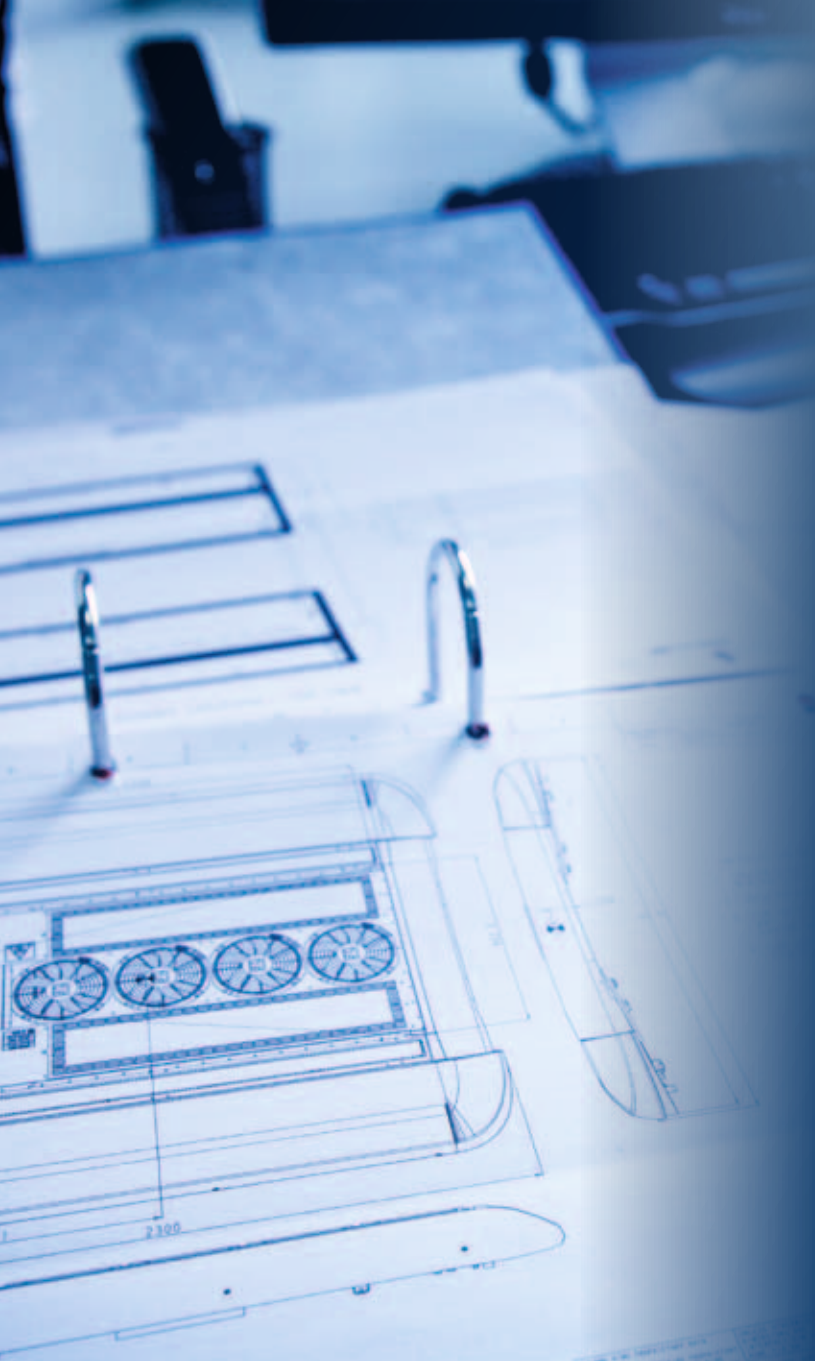
# COMPRESSOR S-616



Specifications	COMPRESSOR S-616
Type	Helical Lobed Screw
Displacement	616 cm <sup>3</sup> /rev. (37.59 in <sup>3</sup> /rev.)
Refrigerant	R134a or R407C
Oil separator	Integrated
Oil sump	Integrated, on discharge side
Oil charge	60 fl. oz./1.8 liters
Oil type	POE SOLEST 370
Oil filter	Integrated full-flow
Maximum tilt	10° in any direction
Drive method	Belt or direct
Maximum belt side loading	136 kg (300 lbs.)

Operating Conditions	
Maximum BHP (R407C)	28 @ 350 psi discharge and 65 psi suction @ 3000 RPM
Maximum speed	3000 rpm
Maximum discharge temperature	148.9°C (300°F)
Maximum operating pressure	350 psig (R134a)

Weight (approximate)	77.2 kg (171 lbs.) (including oil, service valves and clutch)
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# RESEARCH & DEVELOPMENT

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State-of-the-Art Research & Development Centre	100
Competencies and Capabilities	100
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### **State-of-the-art Research & Development Centre**

Ingersoll Rand's R&D centre near Prague, Czech Republic, is a state-of-the-art facility using the latest technology to perform a wide range of tests on Thermo King equipment.

### **Competencies and capabilities**

- Refrigeration analysis
- Reliability-centred culture
- FEA analysis - ANSYS, MSC (Nastran, Mark)
- Noise and vibration analysis
- Material analysis
- In-house high accelerated life testing
- In-house Kaizen inspections
- Reliability analyses of components and final products
- Field data acquisition and analysis

- Testing of components and products (HVAC units, refrigeration units, retail products, finished solutions)
- In-house MAST vibration testing
- Design for retail businesses
- Design and development of new applications for commercial and industrial refrigeration
- Design of new applications for industrial technology business groups

### **R&D projects in Prague**

- Green solutions
- HFC-free refrigerants
- Sanitation
- Electric drives
- Technical support for local manufacturing facilities to help enhance production efficiency



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**Ingersoll Rand** - Lenneke Marelaan 6, B-1932 Sint-Stevens-Woluwe, Belgium.

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