Johnson Controls

YORK

Commercial and Industrial Air-Conditioning Products

The World of Mini Chillers and Heat Pump Solutions

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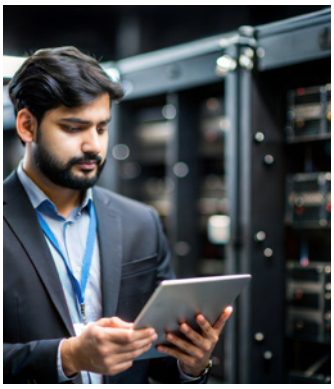
The power behind **your mission**

A more comfortable, safe and sustainable world

Multiple Applications, One Solution


Airports


Commercial Real Estate


Data Centers


Food & Beverages


Government


Healthcare


Hospitality


Industrial & Manufacturing


Life Sciences


Marine and Navy

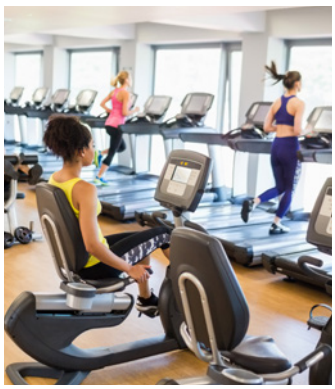

Oil & Gas


Rail & Metro


Retail


Schools & Higher Education

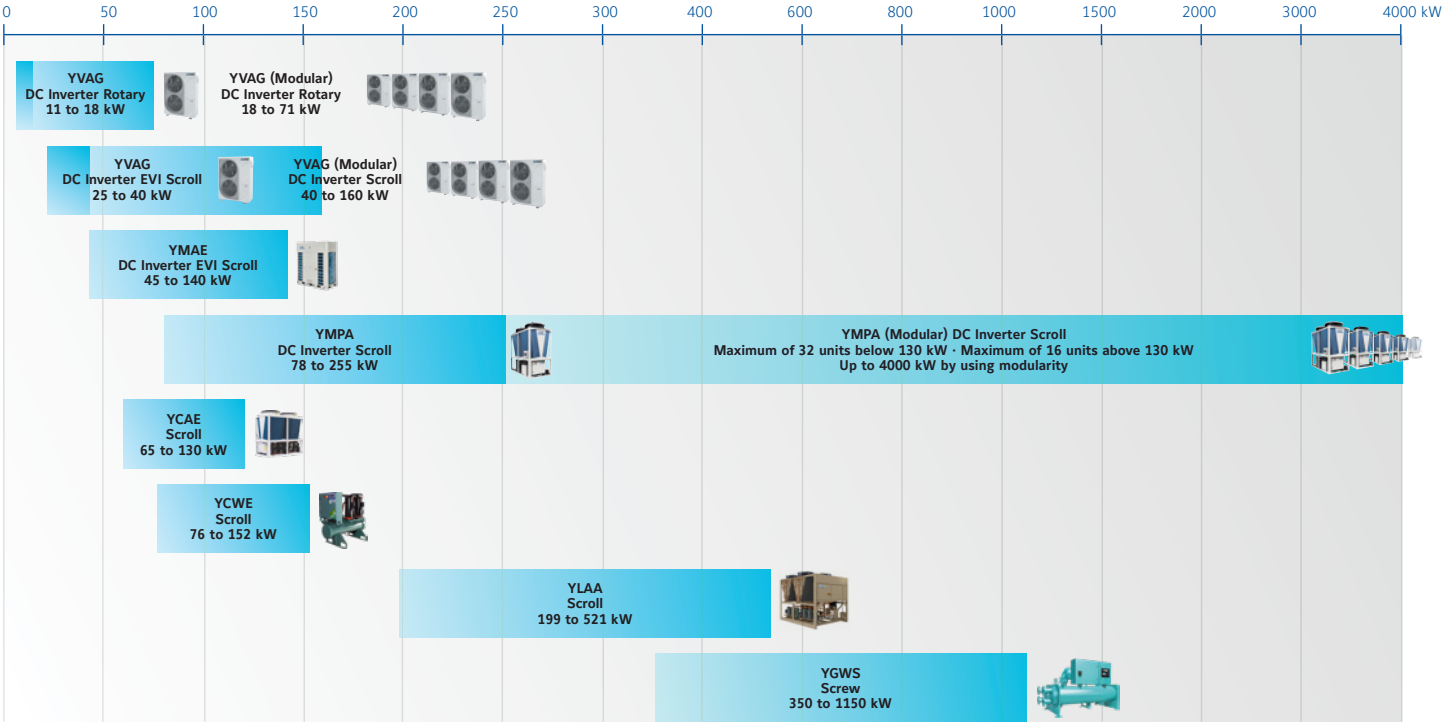

Smart Cities


Sport and Entertaiment

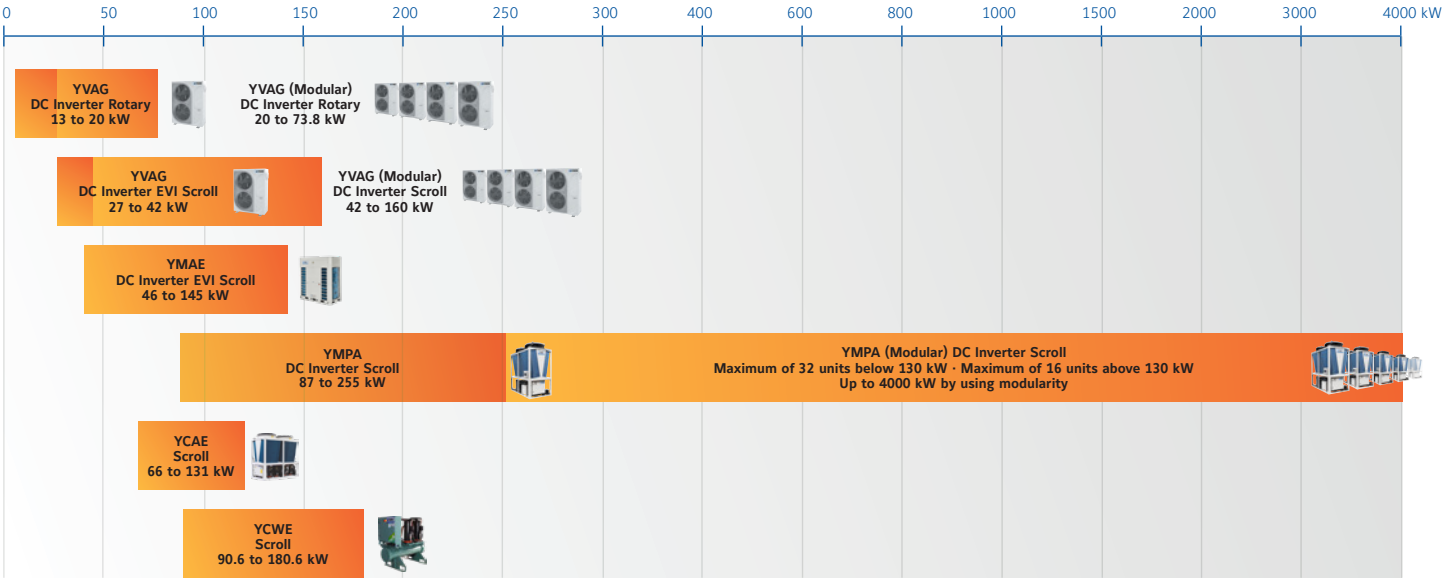
YORK® Mini Chillers and Heat Pumps

YORK offers a complete range of chillers and heat pumps within **11 kW to 4000 kW capacities,** to cover all customer needs, maintaining the highest efficiency levels and operative performances.

YORK Chillers Units



YORK Heat Pump Units



YORK® YVAG
Air-cooled DC Inverter Scroll Chiller and Heat Pump

YVAG 012 to 040

A complete range from 11.2 kW up to 40 kW

R410A | INVERTER

Features

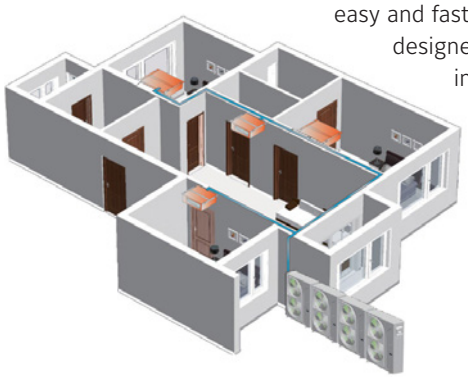
- High Efficiency
- Built in Pump
- Optimized Low sound
- Cooling & Heating
- Plug & Play
- Factory coated Condenser
- Modular Units: can control up to 4 units up to 160 kW

High efficiency

Part-load performances meet the highest efficiency values and deliver performance beyond typical efficiency levels in cooling and heating. It uses a high-efficiency DC inverter compressor together with advanced variable frequency drive technology. Compressor frequency range goes from 15-120 percent to quickly and efficiently meet the needs of building or process load changes. It uses dual fans equipped with high-efficiency, low-noise DC inverter motor which adjusts the air flow to exactly match the capacity in a more accurate and efficient way.

Easy installation and operation

Modular concept: The small packaged YORK® YVAG heat pump comes as standard with a hydronic loop circulating pump, expansion tank, water flow switch, safety valve, fill valve, and wye strainer, saving space in the room and making installations easy and fast. The units are designed for modular installations (up to four module combinations among all the models). This permits installed capacities from 11.2-160 kW.



Perfect comfort in a wide operating range: Wide operating envelope with lower sound levels. With its wide operating range, the YORK® YVAG is perfect for all climates. It does not matter if the ambient temperature in summer is 48°C or if in winter is -27°C, as the unit will maintain the efficiency in stable operation. With heating outlet water temperatures up to 58°C, the unit is perfect for radiant panels.

Optimized for low sound: Thanks to the component design, the unit's sound emissions are as low as 51 dB(A) Sound Pressure at full load, reducing to as low as 40 dB(A) at part-load operation.

Take SMART control of your spaces

Get SMART control of your environment with the YORK® YVAG system.

The highly sensitive T8610 intelligent thermostat closely monitors the actual and target temperatures of every room, instantly communicating requirements and load changes to the system and gathering data on usage requirements over time.

The YORK YVAG system adaptively adjusts the water temperature, compressor, and water pump running state in accordance with indoor and outdoor load changes. The results? More comfortable temperatures and humidity levels as well as annual operating costs that can be reduced by up to 18 percent.

Air-cooled DC Inverter Scroll Chiller and Heat Pump

YVAG 012 to 040

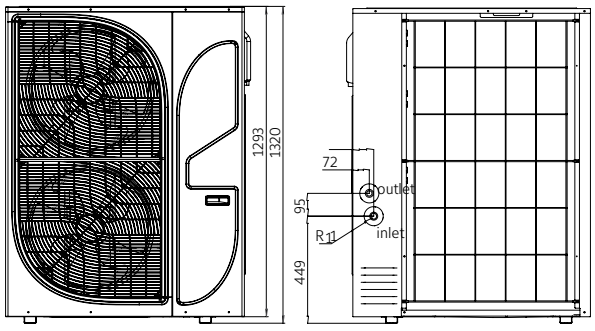
Technical features

Model			YVAG012	YVAG018	YVAG025	YVAG033	YVAG040
Performance	Nominal Cooling Capacity	kW	11.2	18	25	32	40
	Nominal Heating Capacity	kW	12.6	19.5	27	34	42
	Sound Power Level	dB(A)	54	57	57	59	62
Compressor	Type		Rotary DC Inverter		EVI DC Inverter		
	Quantity	#	1	1	1	1	1
Air side heat exchanger	Fan motor type		Brushless DC Fan Motor				
	Fans quantity	#	2	2	2	2	2
	Airflow	m^3/h	2500-6600		2500-10500		2500-15000
Water side heat exchanger	Type		Brazed Plate Heat Exchanger				
	Pump Type		Multiple Stage Centrifugal Pump				
	Nominal water flow	m^3/h	1.93	3.1	4.3	5.5	6.88
	Unit external head	m	15	11	19	14	14
Dimensions and weight	Height	mm	1320	1320	1588	1588	1700
	Width	mm	995	995	1100	1100	1300
	Depth	mm	360	360	400	400	760
	Operating weight	kg	126	141	210	215	350
Electrical	Power supply	V/ph/Hz	230V/1ph/50Hz		380/400V-3Ph-50Hz		

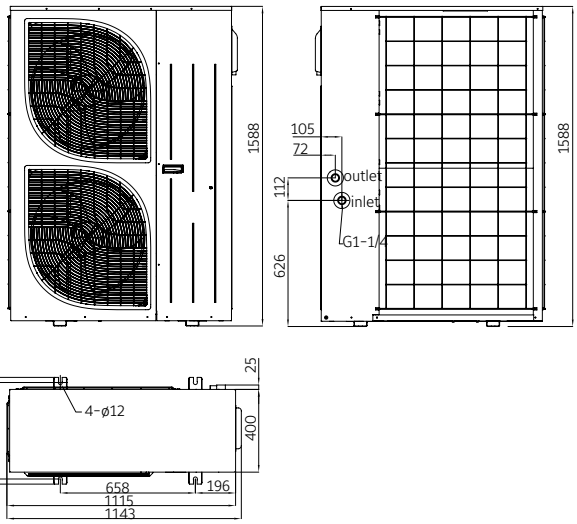
Nominal conditions:
Cooling capacities in kW given for 12/7°C water leaving temperature Δt 5°C and 35°C ambient temperature.
Heating capacities in kW given for 40/45°C water leaving temperature and 7°C ambient temperature.
Sound data is tested in YORK lab which may vary according to different installation conditions.

Dimensions

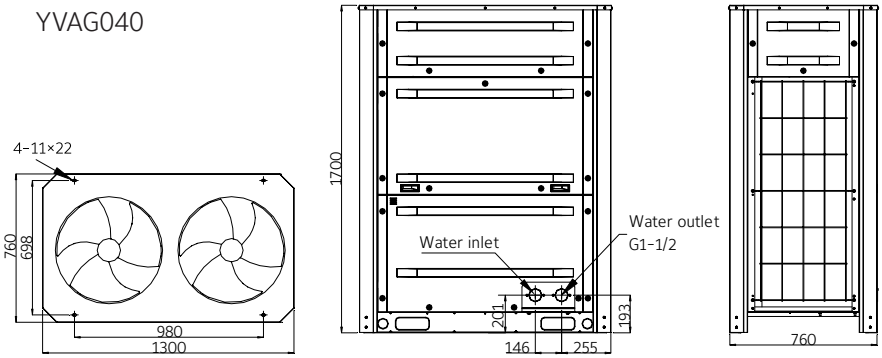
YVAG012-018



YVAG020-033



YVAG040



Manufacturer reserves the rights to change specifications without prior notice.

YORK® YMAE
Air-cooled DC Inverter Scroll Chiller and Heat Pump

YMAE 045 to 140
A complete range from 46 kW to 145 kW

R410A

INVERTER

E.V.I. SYSTEM

SMART EQUIPMENT Johnson Controls

High efficiency

BLDC Fan: The fan blades have been aerodynamically optimized for streamlined style to deliver extraordinarily low operation noise. The high-efficiency electronically commutated DC brushless BLDC motor regulates fan using a stepless speed method. The fan blades and motor align perfectly to deliver great low energy consumption.

Brazed Plate Heat Exchanger (BPHE): A stainless steel high-efficiency BPHE ensures optimum heat transfer efficiency. This provides superior performance and longer life cycle. In addition, the cross and counter flow design supplies water to the refrigerant circuit for full heat transfer with each refrigerant system, maximizing chiller efficiency, especially under part-load operation.

Best-in-class efficiency | Wide operation range | Quiet operation | Robust reliability | Sustainability

Fin Plate Coil: The airside heat exchanger features new corrugated fins with 7mm internal threaded copper tubes. The fins are made of hydrophilic aluminum foil to provide excellent hydrophilicity and corrosion resistance. The wave pattern design provides low airflow resistance, strengthens airflow disturbance and expands the heat transfer area. This makes for more effective heat exchange, which improves heat transfer efficiency.

Wide operating range

YMAE has a wide operating range for full-year operation:

- **Cooling:** Operating ambient temperature from - 15°C to 48°C for superior cooling performance.
- **Heating:** Operating ambient temperature from - 27°C to 43°C for stable heating performance that caters to different customer requirements.

Air-cooled DC Inverter Scroll Chiller and Heat Pump

YMAE 045 to 140

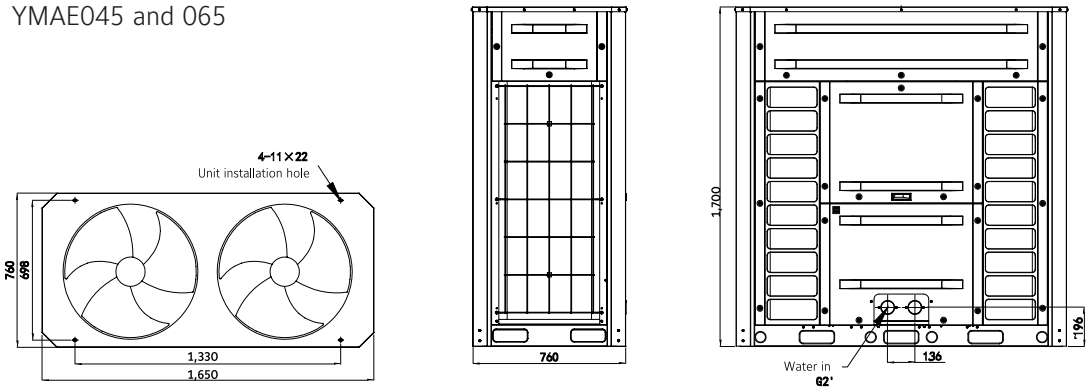
Technical features

Model			YMAE045	YMAE065	YMAE140
Performance	Nominal Cooling Capacity	kW	45	65	140
	Nominal Heating Capacity	kW	46	66	145
	Sound Power Level	dB(A)	66	68	69
Compressor	Type		EVI DC Inverter		
	Quantity	#	1	1	2
Air side heat exchanger	Fan motor type		Brushless DC Fan Motor		
	Fans quantity	#	2	2	2
	Airflow	m^3/h	0-15000	0-22000	0-44000
Water side heat exchanger	Type		Brazed Plate Heat Exchanger		
	Pump Type		Centrifugal pump		
	Nominal water flow	m^3/h	7,74	11,19	23,22
	Unit external head	m	22	15	-
Dimensions and weight	Height	mm	1700	1700	2440
	Length	mm	1300	1650	2250
	Width	mm	760	760	1200
	Operating weight	kg	357	440	970
Electrical	Power supply	V/ph/Hz	380/400V-3Ph-50Hz		

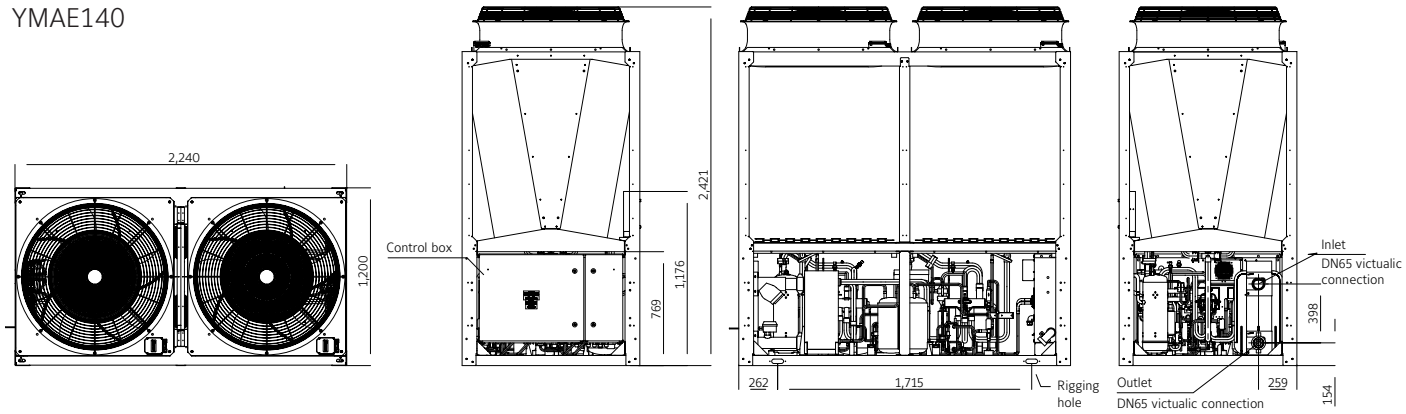
Nominal conditions:
Cooling capacities in kW given for 12/7°C water leaving temperature Δt 5°C and 35°C ambient temperature.
Heating capacities in kW given for 40/45°C water leaving temperature and 7°C ambient temperature.
Sound data is tested in YORK lab which may vary according to different installation conditions.

Dimensions and hydraulic connections

YMAE045 and 065

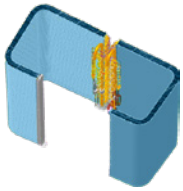


YMAE140



Manufacturer reserves the rights to change specifications without prior notice.

YMAE045 to 065 configuration



C-Shaped
Condenser coils

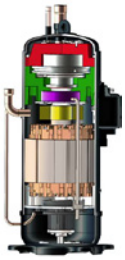
BLDC Fan

Standard Wire Grill

Remote mounted
HMI Controller

EVI System

Brazed Plate
Heat Exchanger



DC Inverter Scroll
compressor

Water connection
External thread

YMAE140 configuration

Premium components

Customized fan assembly

Optimized fan kit with BLDC motor - high reliability guaranteed.

High-efficiency inverter scroll compressor (R410A)

Optimize internal oil circulation to lower rate (OCR) and enjoy enhanced chiller reliability with dynamic oil-balance system.

Airside heat exchanger

Standard hydrophilic aluminum plate fin with 7mm internally threaded copper tube ensures strong resistance to oxidation and corrosion.

High-efficiency brazed plate

Stainless steel construction with asymmetrical channel distribution brings reduced waterside pressure drop and excellent anti-freeze capability.

Economizer - BPHE

Economizer system with electronic expansion device permits a considerable increase in cooling capacity by lowering sub-cooling temperatures and contributes to optimized chiller efficiency.

Electronic expansion valve

The high-precision electronic expansion valve intelligently and adaptively regulates the refrigerant flow to ensure the system operates with optimal pressure and temperature.

Water filter and flow switch

- Standard water filter to protect unit from blockage by preventing large particles from entering
- Water flow switch eliminates risk of freezing and cracking caused by low unit water flow

Frequency-driven, liquid-cooled

- YMAE140X unique inverter driven liquid cooling to improve efficiency
- Low internal temperature of power devices
- Guaranteed reliability of the inverter
- Ensures normal air conditioning unit operation in harsh environments

YORK® YMPA
Air cooled Scroll DC Inverter reversible heat pump

YMPA 0080 to 0260
A complete range from 78 kW up to 255 kW

R454B

R410A

INVERTER

SMART EQUIPMENT Johnson Controls

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

WINNER

Heat Pump Product of the Year
WINNER **ACR AWARDS 2021**

Exceeding Efficiency Standards

The YORK® Amichi Series Air-Cooled DC Inverter Scroll Chillers and Heat Pumps have been designed to meet tomorrow's efficiency standards today. Delivering performance beyond typical chiller and heat pump efficiency levels, the YORK® Amichi Series meets or exceeds stringent regulatory requirements (see chart below) through an optimized combination of efficiency-enhancing technologies from YORK®.

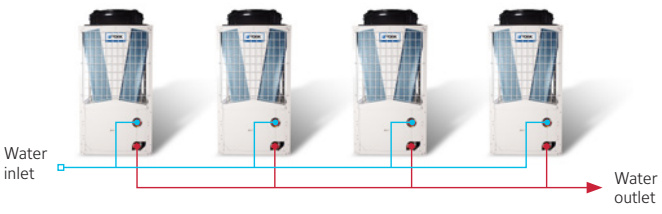
ECODESIGN REGULATIONS CATEGORY:	EFFICIENCY METRIC:	TOMORROW'S STANDARDS MET TODAY:
Comfort Heating	SCOP/ηsh	**Amichi Heat Pump:** Sept. 2017 Compliant (Tier 2)
Comfort Cooling	SEER/ηsc	**Amichi Chiller:** Jan. 2021 Compliant (Tier 2)
Process Cooling (Med. Temp.)	SEPR	**Amichi Chiller:** July 2018 Compliant (Tier 2)
Process Cooling (High Temp.)	SEPR	**Amichi Chiller:** Jan. 2021 Compliant (Tier 2)

Performance Without Compromise

The YORK® Amichi Series is a no-compromise solution for a variety of climates and locations. It can maintain efficiency in a variety of conditions without kits or add-ons (down to -18°C ambient in cooling mode and -15°C ambient in heating mode). With the smallest footprint across the widest capacity range on the market, the YORK® Amichi Series is also the perfect solution for high performance in smaller spaces. Our systems offer two levels of sound performance. If requirements call for sound attenuation beyond our standard low-noise levels, an optional Ultra Quiet Kit can further reduce sound power by 6 dBA, providing one of the quietest units available.

Modular system - Greater design flexibility

- 9 package models or modular combinations
- Controls can be parent/child controller if application requires
- Maximum of 32 units below 130 kW
- Maximum of 16 units above 130 kW



Air cooled Scroll DC Inverter reversible heat pump

YMPA 0080 to 0260

Technical features

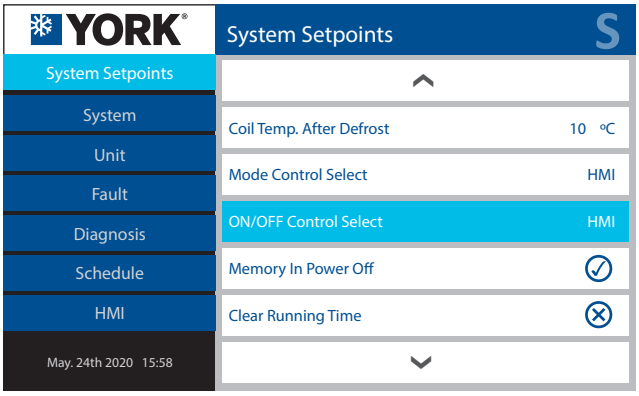
Model			YMPA0080	YMPA0100	YMPA0130	YMPA0160	YMPA0200	YMPA0230	YMPA0260
Performance	Nominal Cooling Capacity	kW	78	99	122	159	188	222	255
	Nominal Heating Capacity	kW	87	99	131	161	190	230	255
	Sound Power Level STD/LN	dB(A)	81/77	83/79	84/80	86/82	87/82	88/83	89/84
Compressor	Type		DC Scroll Inverter + Scroll						
	Quantity	#	3	3	4	5	6	7	8
Air side heat exchanger	Fan motor type		EC Motor						
	Fans quantity	#	2	2	2	3	3	4	4
	Airflow	m^3/h	32400	36000	43200	61200	68400	82800	90000
Water side heat exchanger	Type		Brazed Plate Heat Exchanger						
	Pump Type		Multiple-stage centrifugal pump						
	Nominal water flow	m^3/h	13.68	17.28	21.24	26.64	32.76	37.8	42.84
	Unit external head	kPa	15	15	15	15	15	15	15
Dimensions and weight	Height	mm	2440			2500			
	Length	mm	2240			2240			
	Width	mm	1200			3050			
	Operating weight	kg	893	920	999	1922	2003	2235	2316
Electrical	Power supply	V/ph/Hz	380/400V-3Ph-50Hz						

Nominal conditions:
Cooling capacities in kW given for 12/7°C water leaving temperature Δt 5°C and 35°C ambient temperature.
Heating capacities in kW given for 40/45°C water leaving temperature and 7°C ambient temperature.
Sound data is tested in YORK lab which may vary according to different installation conditions.
Dimension & weight data with standard unit without opiton. Weight might vary with options like Hydronic kit.

Easy to set up

Comfort, productivity and up to half of the energy used in your building – these are all factors affected by how your chiller operates and how it interacts with other components in your HVAC&R system.

To help maximize efficiency and keep you in control, the YORK® Amichi Series comes standard with integrated Smart Equipment. This technology allows the equipment to connect seamlessly to building controls where smart-enabled equipment can self-identify and interoperate. In addition, with the 7" Optiview LT touch panel, setting chiller parameters has never been easier.



Maximum reliability

Every new YORK® chiller is subjected to a Highly Accelerated Life Test (HALT) during the design product development stages, allowing us to simulate a variety of extreme conditions and ensuring long-term operational reliability and quality. But our pursuit of quality doesn't stop there.

- **Intelligent defrost** optimizes the sequencing of the defrost cycle and allows the remaining modules in the system to continue to provide heat, reducing interruptions.
- **Compliance and certifications** include EcoDesign 2021 regulatory compliance, Eurovent certification and CE/PED certification.

YORK® YCAE
Air-Cooled Scroll Chiller

YCAE 065 to 130
A complete range from 65 kW up to 130 kW

R410A

Efficient design

A parallel design with compressors: When a compressor operates, the heat exchange area of the air-side heat Exchanger and the water-side heat exchanger can be fully utilized, to effectively improve unit performance, especially the part-load performance.

A design with two refrigerant systems and an independent air duct: The two refrigerant systems within a single module can easily achieve independent operation, lowering the fan's power consumption at part-load for improved performance.

Multi-level energy regulation: Up to 32 units can be connected together with a wider range of energy regulation (as much as 128 levels), which is close to stepless regulation, have a higher efficiency and a better performance in saving energy.

Reliable operation

Tested by the Highly Accelerating Lifecycle Testing Lab: Each model of the YCAE-X series has been tested in the Highly Accelerating Lifecycle Testing Lab. This test simulates various extremely harsh conditions encountered by the units under various weather conditions (e.g. wind, snow, rain, and frost). The entire year's operating conditions are simulated during a period of 2-4 weeks to ensure the reliable operation of the units in the field.

The air-side heat exchanger:

- Unique U-shaped heat exchanger, multi-side heat transfer, and optimized wind field.
- Standard hydrophilic aluminum foil fins: for strong anti-oxidation and corrosion-resistance performance.

Efficient stainless steel plate heat exchanger: The stainless steel structure provides stability and reliability; the asymmetric flow field design lowers the pressure drop on the water side and improves the antifreeze performance.

Electronic expansion valve: The 480-step high precision electronic expansion valves are used to make intelligent adjustments to the flow of the refrigerant, ensuring that the refrigerant flow is precise, and the unit's operation pressure and temperature are optimal.

Filter & water flow switch:

- The copper filter is standard to prevent dirt from entering the system, which prevents clogging.
- Provide water flow switch as standard to prevent the unit from being froze-cracked due to poor water flow.

Air-cooled scroll chiller

YCAE 065 to 130

Technical features

Model			YCAE065	YCAE100	YCAE130
Performance	Nominal Cooling Capacity	kW	65	100.0	130.0
	Nominal Heating Capacity	kW	66	100.7	131.9
Refrigerant	Type		R410A		
	Amount Injected	kg	12.5	20	23
Compressor	Type		Scroll		
	Quantity	#	2	3	4
Heat exchanger	Evaporator Type		Plate Heat Exchanger		
	Condenser Type		Copper tubes; Hydrophilic Aluminum fins		
	Inlet / Outlet Pipe	mm	DN50	DN65	
	Connection Style		Thread	Victaulic (Clamp)	
Dimensions and weight	Height	mm	1700	2420	
	Length	mm	1650	2250	
	Width	mm	760	1200	
	Transportation weight	kg	519	823	935
	Operating weight	kg	503	864	982
Electrical	Power supply	V/ph/Hz	380/400V-3Ph-50Hz		

Nominal conditions:
Cooling capacities in kW given for 12/7°C water leaving temperature and 35°C(DB) ambient temperature.
Heating capacities in kW given for 40/45°C water leaving temperature and 7°C (DB) ambient temperature.

YORK® YCWE
Water-Cooled Scroll Chiller

YCWE 021 to 042

A complete range from 76.2 kW up to 151.9 kW

R410A

Reliable configuration

The R410A Scroll Compressor: The low-pressure chamber structure is designed with crankcase in a low temperature area, and the motor is cooled by the refrigerant in the low temperature return gas, this extends the motor's life.

Stainless steel evaporator: The asymmetric flow field design lowers the pressure drop on the water side and improves the antifreeze performance, to ensure the stable operation of the system.

Electronic expansion valve: The high-precision electronic expansion valves are used to make intelligent and adaptive adjustments to the flow of the refrigerant, ensuring the flow of the refrigerant is precise and the system's operation pressure and temperature are optimal.

Single-piece standard efficient all-copper filter: This can prevent dirt from entering the system, which prevents clogging.

Single-piece standard water flow switch: This can prevent the system from being froze-cracked due to poor water flow.

A multiple-compressor design

Each unit involves multiple compressors. The failure of a single unit won't affect the normal operation of another unit. This ensures reliable operation of the entire system.

Mutual backup of multiple modules

When multiple modules are running, the failure of a single module won't affect the operation of the entire system. Different modules are backup for each other. This can increase the reliability of system operation.

Flexible configuration

Each unit can be installed and operated separately. Multiple units can also be combined for optimal performance depending on the customer's need. Different models can combined with up to 8 units connected.

Compact design

The units can be moved using freight elevators to save the installation.

Water-cooled scroll chiller

YCWE 021 to 042

Technical features

Model			YCWE021	YCWE032	YCWE042
Performance	Nominal Cooling Capacity	kW	76.2	114.2	151.9
	Nominal Heating Capacity	kW	90.6	135.8	180.6
Refrigerant	Type		R410A		
	Amount Injected	kg	10	16	20
Compressor	Type		Scroll		
	Quantity	#	2	3	4
Water flow	Evaporator Side	m^3/h	13.1	19.6	26.1
	Condenser Side	m^3/h	16.4	24.6	32.7
Water Pressure Drop	Evaporator Side	kPa	73	28	30
	Condenser Side	kPa	72	60	60
Heat exchanger	Evaporator Type		Plate Heat Exchanger		
	Condenser Type		Efficient Shell and Tube		
	Inlet / Outlet Pipe	mm	DN50	DN65	
	Connection Style		Clamp Connection		
Dimensions and weight	Height	mm	1230		
	Length	mm	1480		
	Width	mm	840		
	Transportation weight	kg	360	520	670
	Operating weight	kg	380	555	715
Electrical	Power supply	V/ph/Hz	380/400V-3Ph-50Hz		

Notes:
1. Each unit must be installed with a Y-shaped filter that comes with the unit at the water inlet of the evaporator.
2. The cooling water and chilled water of the unit must be softened, to prevent the heat exchanger from scaling.
3. Cooling capacities in kW given for 12°C/ 7°C chilled water entering / leaving temperature and 30°C/ 35°C cooling water entering / leaving temperature.

Exceptional performance

A system design with parallel compressors: Such a design can effectively improve system unit performance, especially the performance part-load. The unit presents the highest efficiency under a partial load in the industry, and the annual operating cost is lower than that of competitive products.

Reliable design

Operating time of the compressors can be balanced: The operation status of each compressor is monitored in real time, and the operating time of each compressor is adjusted for balance, to extend the overall service life of the unit.

Schedule control

The system provides a calendar-like control mechanism to be automatically turned on or off at the specified time. The customer can set a time (day or week, except for holidays) to have the system automatically turned on or off.

Manufacturer reserves the rights to change specifications without prior notice.

YORK® YLAA
Air-Cooled Scroll Chiller

YLAA 0195 to 0517

A complete range from 199 kW up to 520.6 kW

R410A

Efficient Design

Brazed Plate Heat Exchanger (BPHE): Stainless steel high-efficiency BPHE ensures optimum heat transfer efficiency. This provides superior performance and longer life cycle. In addition, the cross and counter flow design supplies water to the refrigerant circuit for full heat transfer with each refrigerant system, maximizing chiller efficiency, especially under part-load operation.

The R410A scroll compressor: The low-pressure chamber structure is designed with crankcase in a low temperature area, and the motor is cooled by the refrigerant in the low temperature return gas, this extends the motor's life.

Corrosion-resistant condenser coils: The high-precision electronic expansion valves are used to make intelligent and adaptive adjustments to the flow of the refrigerant, ensuring the flow of the refrigerant is precise and the system's operation pressure and temperature are optimal.

Single-piece standard efficient all-copper filter: YLAA chillers use microchannel coils that have fins, tubes, and headers made with aluminum. These coils are lightweight, robust and can avoid galvanic corrosion as a result. The coils have an integral sub cooling system to improve the performance.

Optimized Configuration

Easy and economical maintenance: YLAA chillers use significantly less refrigerant compared to a typical chiller. For added convenience, isolation valves in the discharge and suction lines are standard. The microchannel coils are rugged and can be safely pressure-washed at up to 1500 psi, saving labor costs and simplifying maintenance cycles.

Wide range of operation:

- **Cooling:** Chilled water operation from - 12°C to 13°C for superior cooling perfor.
- **Heat Recovery:** Heat Recovery operation up to 60°C for superior heating performance.

Air-cooled scroll chiller

YLAA 0195 to 0517

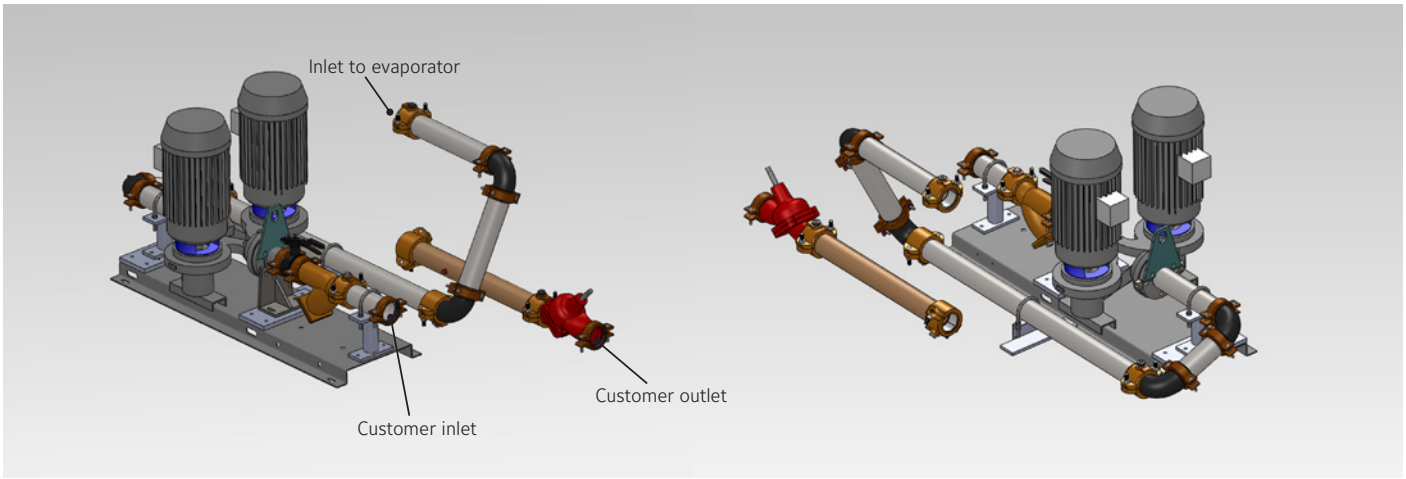
Technical features

Model			YLAA0195	YLAA0221	YLAA0262	YLAA0301	YLAA0350	YLAA0392	YLAA0442	YLAA0457	YLAA0517
Performance	Nominal Cooling Capacity	kW	199	212	244.8	296	344.6	380.8	427.3	456.9	520.6
Refrigerant	Type		R410A								
	Amount Injected	kg	41	48	50	53	56	61	66	72	79
Compressor	Type		Scroll								
	Quantity	#	5	5	6	5	4	5	5	6	6
Fan	Fan Type		AC Motor Fan								
	Quantity	#	4	4	4	5	6	6	7	8	8
Heat exchanger	Evaporator Type		Plate Heat Exchanger								
	Condenser Type		Microchannel								
	Inlet / Outlet Pipe	inch	3						4		
Dimensions and weight	Height	mm	2393								
	Length	mm	3024			3730			4856		
	Width	mm	2242								
	Transportation weight	kg	1681	1696	1818	2087	2301	2467	3294	3443	3561
	Operating weight	kg	1706	1721	1851	2120	2339	2517	3343	3481	3615
Electrical	Power supply	V/ph/Hz	380/400V-3Ph-50Hz								

Notes:
Rating conditions at AHRI 551/591 Standard conditions with ambient temperature of 35°C and a leaving chilled water temperature of 7°C.

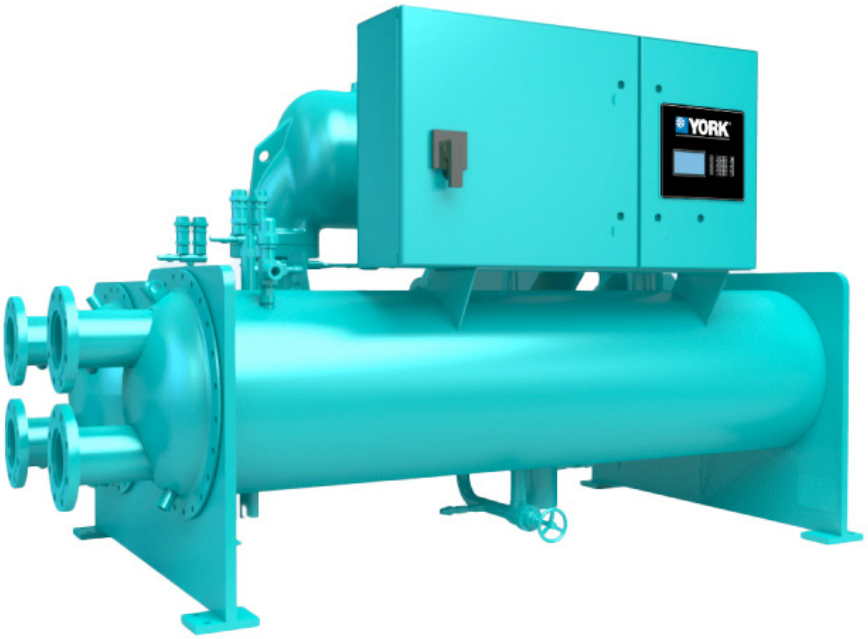
YLAA Pump Kit

- Fixed or VSD water pump
- Single or Dual water pump
- Two option levels - basic and full featured - for maximum flexibility
- More impeller size options for better match to customer requirements
- New, smaller pump motors suitable for primary-secondary systems



YORK® YGWS
Water-Cooled Screw Chiller

YGWS 100 to 330
A complete range from 350.4 kW up to 1150 kW



R134a

Efficiency
- High efficiency semi-hermetic screw compressor.
- Patented hybrid falling film evaporator offers excellent efficiency of heat transfer with optimized heat exchanger design and compact structure.
- Step-less capacity control keeps the compressor operating efficiently at every load point.

Flexibility
- Button start, easy to install and operate.
- Supports remote monitoring and control via Modbus protocol.
- Compact design yields a small footprint saving customer installation cost.

Reliability
- Every chiller undergoes functional tests to ensure key parameters meet specific requirement.
- Internal oil system provides adequate protection to the unit's compressor.

Sustainability
- YGWS chiller uses environment-friendly refrigerant R134a which has no phase-out schedule under Montreal Protocol.
- Patented hybrid falling film evaporator operates with less refrigerant charge.

Water-cooled screw chiller

YGWS 100 to 330

Technical features

Model			YGWS100	YGWS130	YGWS160	YGWS175	YGWS200	YGWS230	YGWS260	YGWS300	YGWS330
Performance	Nominal Cooling Capacity	kW	350.4	438.6	571.6	640.9	692.1	816.5	929.1	1073	1150
Refrigerant	Type		R134a								
	Amount Injected	kg	75	90	95	110	110	150	150	200	210
Compressor	Type		Screw								
	Quantity	#	1								
Water flow	Evaporator Side	m^3/h	54.6	68.4	89.2	100	108	127.4	144.9	167.5	179.5
	Condenser Side	m^3/h	69.7	87	113.4	127	137	162.5	184.1	213.5	228.2
Water Pressure Drop	Evaporator Side	kPa	34	52.5	42	37.1	38.4	51.2	49.5	80.4	80.1
	Condenser Side	kPa	45	62.9	52.4	61.7	59.2	75.5	74.8	46.1	44.4
Heat exchanger	Type		Efficient Shell and Tube								
	Evaporator Inlet / Outlet Pipe	mm	125			150					
	Condenser Inlet / Outlet Pipe	mm	125			150				200	
	Connection Style		Flange type connection								
Dimensions and weight	Height	mm	1483	1492	1554	1604		1897		2003	
	Length	mm	2427	2726	2726	2749		3114		3595	
	Width	mm	1280	1280	1300	1380		1630		1680	
	Transportation weight	kg	2470	2710	3010	3210	3300	4540	4600	5410	5440
	Operating weight	kg	2600	2850	3190	3410	3520	4900	4990	5910	5940
Electrical	Power supply	V/ph/Hz	380/400V-3Ph-50Hz								

Notes:
1. Chilled liquid leaving / entering temperature 44F/54F, fouling factor 0.0001hr ft² °F / Btu.
2. Condenser liquid entering / leaving temperature 85F/94.3F, fouling factor 0.00025hr ft² °F / Btu.

HVAC - Useful formulas & Conversion

PLANT ROOM EQUIPMENT

Water Flow Measurements

USGPM = m^3/hr x 4.404

USGPM = l/s x 15.85

l/s x 3.6 = m^3 / hr

Air Flow Measurements

CFM = l/s x 2.118

CFM = m^3/hr x 0.588

Pressure Measurements

1 bar = 100 kPa = 10.2m of water = 14.5 PSIG

1 kPa = 0.1m of water column

1 PSIG = 2.31 feet of water column

Chillers

1 TR = 12000 Btu / hr = 3.516 kW

$$\text{Chiller Capacity (TR)} = \frac{\text{Evaporator Flow (USGPM) x Delta T(*F)}}{24}$$

$$\text{Coefficient Of Performance (COP)} = \frac{\text{Output Cooling Capacity (kW)}}{\text{Input Electric Energy (kW)}} = 3.516 / (\text{iKW/TR})$$

EER = 12 / (iKW/TR) = 3.4 x COP

$$\text{IPLV / NPLV} = \frac{1}{\frac{0.01}{\text{COP at 100\%}} + \frac{0.42}{\text{COP at 75\%}} + \frac{0.45}{\text{COP at 50\%}} + \frac{0.12}{\text{COP at 25\%}}}$$

Pumps

$$\text{Pressure (PSI)} = \frac{\text{Head (Feet) x Specific Gravity}}{2.31}$$

$$\text{Brake Horsepower (BHP)} = \frac{\text{GPM x Head (Feet) x Specific Gravity}}{3960 \times \text{Pump Efficiency}}$$

Affinity Law

Law 1a: Flow is proportional to shaft speed $\frac{Q_1}{Q_2} = \frac{N_1}{N_2}$

Law 1b: Pressure or head is proportional to the square of shaft speed $\frac{H_1}{H_2} = \left(\frac{N_1}{N_2}\right)^2$

Law 1c: Power is proportional to the cube of shaft speed $\frac{P_1}{P_2} = \left(\frac{N_1}{N_2}\right)^3$

Where Q = GPM, H = Head, P = BHP, N = RPM

Cooling Tower

$$\text{Heat Rejected by Machine (TR)} = \text{Evaporator Capacity (TR)} + \frac{\text{Compressor Thermal Load (kW)}}{3.516}$$

$$\text{Cooling Tower Approach} = \left(\text{Entering Condenser water temperature}\right) - \left(\text{Ambient Wet Bulb Temperature}\right)$$

$$\text{Cooling Tower Efficiency (\%)} = 100 \times \frac{\text{Range}}{(\text{Range} + \text{Approach})}$$

Electrical

1 Horsepower (HP) = 746 Watts

1 kW = 3412 Btu

Power (P) = Voltage (V) x Current (I)

Power (3 Phase) = 1.732 x Voltage x Current x Power Factor

$$\text{Speed of Electric Motor (RPM) (N)} = \frac{120 \times \text{frequency of power (f)}}{\text{Number of motor poles (P)}}$$

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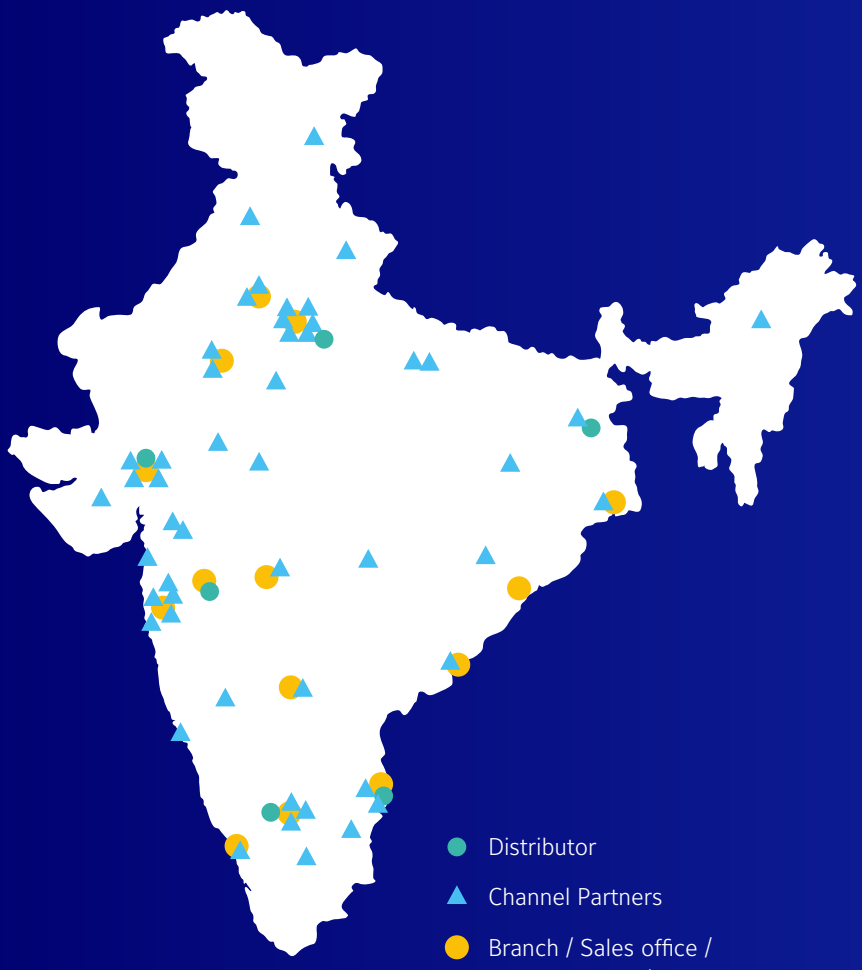
Our Presence in India



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Building on a proud history of 140 years of innovation, we deliver the blueprint of the future for industries such as healthcare, schools, data centers, airports, stadiums, manufacturing and beyond through OpenBlue, our comprehensive digital offering.

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