CLIMA PROCESSORS®

CLOSE CONTROL UNITS PRECISION COOLING FOR

MISSION-CRITICAL ENVIRONMENTS

CP-W · CP-X · CP-WX

Celebrating 16 YEARS OF Energy efficiency and Indoor Air Quality

PRECISION AIR CONDITIONING UNIT
CHILLED WATER . DIRECT EXPANSION . DUAL COIL

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01

PRODUCT OVERVIEW

Precision cooling engineered for mission-critical environments

Clima Processors Close Control Units, equipped with DC inverter scroll compressors and advancedmicroprocessor control, deliver maximum efficiency, reliability and intelligent climate management for mission-critical environments.

CCU units maximise part-load efficiency compared to conventional fixed- speed systems, significantly reducing running costs throughout the operational life of the installation. The variable-speed inverter compressor and EC plug fans work in concert to deliver cooling precisely matched to load demand -- from early data centre fit-out through to full IT capacity.

Value of Clima Processors CCU Range

Feature	How You Benefit
DC Inverter scroll compressors	Power consumption reduced by up to 35% vs fixed-speed systems
Variable-speed condenser fans	Stable condensing pressure; lower compressor lift at cool ambients
EC plug fans -- variable airflow	Add this here: Modulate fan speed in all models such as cooling, dehumidification, humidification and Heating mode to achieve maximum energy efficiany and precise conditions.
Adaptive PID microprocessor control	Eliminates compressor cycling and overshoot; stable room conditions
High sensible heat ratio design	Minimal latent overcooling; reduces reheat energy requirements
Dual-circuit option (CP-X/WX)	N+1 cooling redundancy within a single cabinet footprint

1. **Inverter Scroll Compressor Technology**
   Improves annual efficiency by up to 35% compared to a fixed-speed compressor.
2. **Variable-Speed Outdoor Condensing Fans**
   Modulate via refrigerant pressure transducer -- maintaining stable condensing pressure and reducing compressor power across the full ambient range.
3. **New Generation EC Plug Fans**
   Continuously vary airflow to match room load -- reducing fan power consumption and noise at partial load conditions.
4. **High Sensible Heat Ratio (SHR) Design**
   Minimises latent overcooling, reducing reheat energy during dehumidification cycles.
5. **Adaptive PID Control**
   Eliminates compressor cycling and overshoot -- reducing energy waste and extending component life.

Up to 35%
energy saving vs fixed-speed at part-load

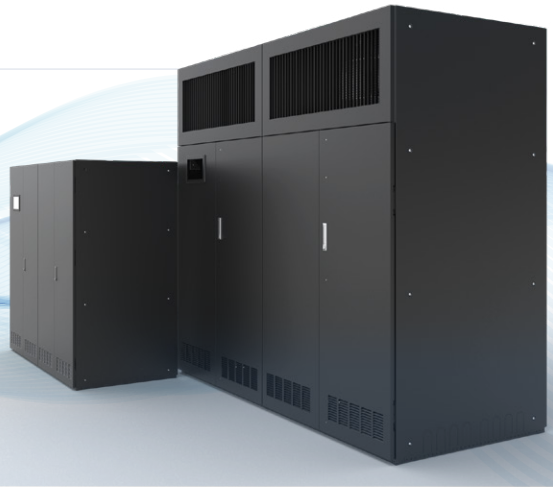
Inverter Compressor achieved precise conditions in the zone

SHR >= 0.90
sensible heat ratio achieved across all models

All units are factory-assembled, wired and tested prior to delivery.
Full frontal access. Upflow and downflow configurations supported across all series.

Applications

All series support upflow and downflow air distribution, with flexible configurations for under-floor, in-row, and perimeter cooling arrangements.



Data Centers

Maintain optimal temperature and humidity levels to ensure maximum uptime, equipment reliability, and energy efficiency.

- High Reilability
- Energy Efficient
- 24/7 Performance

Server Rooms

Compact and efficient cooling solutions designed for small to medium-sized server environments.

- Space Saving
- Low Noise
- Easy Maintenance

Telecom Rooms

Reliable cooling for telecom infrastructure to keep critical equipment running in all conditions.

- Stable Operation
- Power Protection
- Wide Compatibility

Flexible configurations. Reliable performance.
Built for every critical environment.

COMPRESSORTECHNOLOGY

DC Inverter Compressor

Performance Data Sheet

Variable-speed inverter compressor with electronic expansion valve (EEV), benchmarked against conventional fixed-speed + TEV + ON/OFF systems.

● CP-X ● CP-WX

COMPRESSORTYPE
DC Inverter
vs. fixed speed (conventional)

EXPANSIONDEVICE
EEV
vs. TEV (conventional)

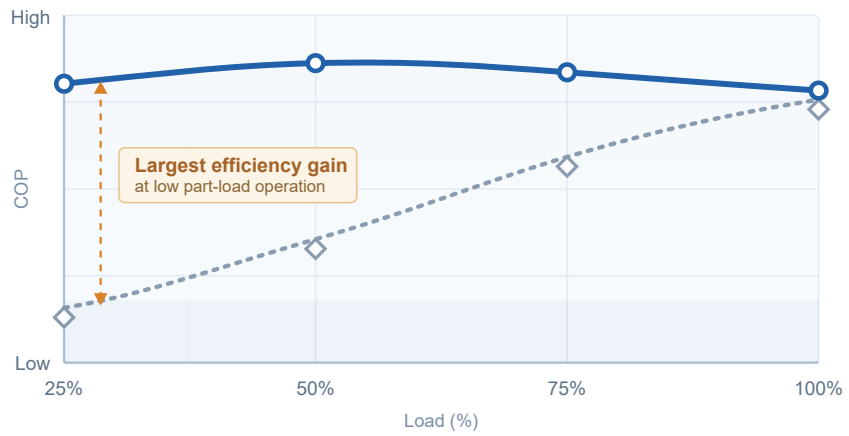
PART-LOADCOP
EEV vs. low
maintained across full load range

CAPACITYCONTROL
Continuous
vs. stepped ON/OFF cycling

CHART01

COP vs. Load (%)

Coefficient of Performance across the full operating range



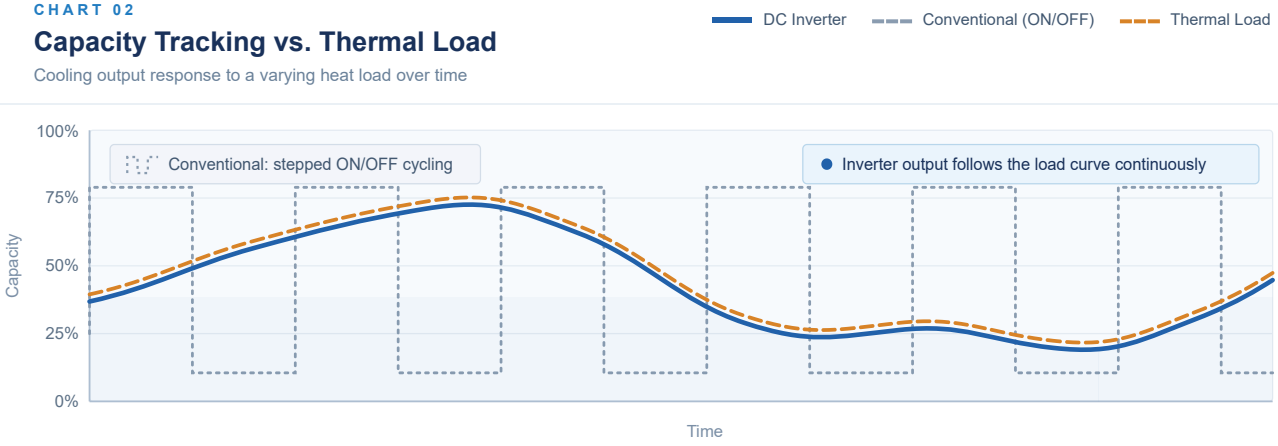
KEY ADVANTAGES

- **Superior COP maintained** — Across the full load range
- **Tighter temperature control** — No cycling overshoot
- **Reduced compressor wear** — Fewer start cycles
- **Quieter operation** — No compressor kick-in surges
- **Lower energy consumption** — At part-load operation
- **Stable, reliable operation** — Precision control in mission-critical rooms

CHART 02

Capacity Tracking vs. Thermal Load

Cooling output response to a varying heat load over time



01 — Continuous capacity modulation
Output adjusts in real time to match thermal load, eliminating start-stop cycling.

02 — High part-load efficiency
COP remains high across the full operating range — ideal for precision cooling.

03 — Extended compressor lifespan
Smooth speed modulation eliminates high-inrush start cycles, reducing stress.

04 — Quieter operation
Without repetitive start-stop surges, the DC Inverter runs smoothly and quietly.

05 — Reduced maintenance burden
Fewer mechanical cycles mean less internal wear and longer service intervals.

Continuous modulation. Precision control. Lower lifetime energy cost.
DC inverter compressor with EEV — engineered for mission-critical precision cooling.

02

KEY FEATURES & TECHNOLOGY

Premium-grade components selected for reliability and efficiency

DC Inverter Scroll Compressor

EC Plug Fan Variable Speed

Electronic Expansion Valve

10" Colour Touchscreen Controller

Casing & Construction

The Clima Processors CCU cabinet is engineered to the highest structural standards for mission-critical environments. Outer panels are fabricated from 1.0 mm thick galvanised steel, powder-coated in a satin black finish (RAL 9005 or equivalent) for durability and corrosion resistance. The structural frame is constructed from 2.0 mm thick galvanised steel channel sections, providing rigidity under both static and dynamic loading conditions.

All panel fixings are stainless steel. Doors are hinged with a 180-degree opening arc and fitted with a quarter-turn safety-key lock mechanism. All door and panel joints incorporate EPDM gaskets providing an airtight seal to prevent air bypass ensuring all supply air passes through the cooling coil and filter assembly.

Internal insulation consists of a minimum 10 mm acoustic/thermal lining bonded to all internal surfaces -- reducing heat gain from the environment and attenuating airborne noise from the fans and compressor. The base is fabricated from welded steel sections with M12 adjustable levelling feet (4 off), with plus or minus 25 mm of adjustment.

1 LV Electrical Panel
2 V shaped coil
3 HV Electrical panel
4 G4 Filter
5 Electric Heater
6 Inverter Compressor
7 Steam Humidifier
8 Electronic Expansion Valve
9 EC Plug Fans

Key Components

■ DC Inverter Scroll Compressor

Continuous capacity modulation via DC inverter drive eliminates on/off cycling from 25% to 100% load. Advanced internal oil management with gear pump and oil separator. Crankcase heater standard for cold-start protection. High and low pressure switches with auto/manual reset. Oil separator and filter drier in liquid line. Sight glass with moisture indicator. Compressor thermal overload protection.

■ Electronic Expansion Valve (EEV)

Stepper motor-driven EEV for wide modulation range and precise superheat control. Inline molecular sieve refrigerant filter and sight glass with integral moisture indicator in each circuit.

■ Chilled Water Valve & Actuator

Factory-installed 2-way modulating ball valve -- forged brass PN40, stainless steel ball/stem, PTFE/EPDM seat, ANSI Class IV leakage. Electric actuator: 0-10 VDC or 4-20 mA signal; manual override lever. Valve sized and Kvs factory-set for coil and flow conditions.

■ PTC Self-Regulating Heater

PTC ceramic elements in aluminium heat sink -- self-regulating, intrinsic overheat protection. No localised hotspots. Maintenance-free. Safety thermostat with manual reset as backup.

■ Condensate Management

Stainless steel drain pan with 3% drain slope and syphon trap. Optional condensate pump for upward drainage. Steel, copper, or PPR drain pipework recommended.

■ EC Plug Fans - Variable Airflow

Backward-curved EC plug fans, IP54 rated, Class F insulated, anti-vibration mounted. Continuously modulated to match room load. EC fan is field-lowered below the raised floor, discharging directly into the sub-floor plenum to minimise pressure drop and deliver laminar airflow. Integrated IPM motor protection with automatic speed derating.

■ Chilled Water / DX Cooling Coil

Seamless copper tube / hydrophilic aluminium fin coil. Face velocity and fin spacing optimised for high sensible heat ratio (SHR 0.90 or above). Positioned above stainless steel drain pan with 3% minimum slope and syphon trap.

■ G4 Air Filtration

Synthetic fibre washable G4 filters (EN 779) in aluminium frames -- accessible slide-in filter bank. Differential pressure switch monitors condition and generates clogged filter alarm output.

■ Electrode Steam Humidifier

Immersed electrode type, plus or minus 3% humidity accuracy. Anti-aging PP cylinder rated 120 degrees C. Steam distribution tube in copper. Solenoid valve for water inlet and drain pump for automatic cylinder drain. Designed for potable (tap) water; conductivity 125-1,250 uS/cm. Cylinder replaceable without tools.

Outdoor Condensing Unit

The Clima Processors outdoor condensing unit is designed for reliable operation across the full range of ambient conditions.

■ Casing & Frame

Fabricated from 1.0 mm thick galvanised steel, powder-coated over zinc phosphate primer for enhanced durability. All external fixings are stainless steel. Suitable for outdoor installation without additional weather protection.

■ Condenser Fans

Direct-driven axial fans, IP54 rated, Class F insulated -- rated for continuous outdoor operation. Thermally protected motors. Units available in both horizontal discharge (upward) and vertical discharge (side) configurations to suit site constraints.

■ Condensing Coil

Seamless copper tube with ripple-profile aluminium fins, factory-cleaned and dehydrated. Coil face optimised for low air-side pressure drop. Schrader service valves on liquid and suction lines.

■ Variable-Speed Fan Control

Fan speed continuously modulated via refrigerant discharge pressure transducer. Maintains optimal condensing pressure across the full ambient range -- reducing compressor lift at cool ambients and improving overall system efficiency.

03

CP-X SERIES - DIRECT EXPANSION CCU

Self-contained DX precision cooling -- 25 to 100 kW

The CP-X Series is a self-contained direct expansion CCU with an integrated DC inverter scroll compressor and matched air-cooled condensing unit. AEER 4.0 W/W or above across the full range.

Technical Specifications - CP-X Series (Single Compressor System)

Test conditions: Return air 24 deg C DB / 50% RH. Outdoor ambient 35 deg C. Refrigerant: R410A. Data subject to confirmation -- contact Clima Processors for selection datasheets.

Parameter	Unit	CP-X 025	CP-X 030	CP-X 035	CP-X 040	CP-X 045	CP-X 050
Total Cooling Capacity	kW	27.5	31.2	38.0	40.0	45.6	50.0
Sensible Cooling Capacity	kW	25.8	28.3	35.1	38.0	39.9	46.0
Sensible Heat Ratio (SHR)	--	0.94	0.91	0.92	0.95	0.88	0.92
Fan Airflow Rate	CMH	8,000	9,000	10,000	12,000	12,500	13,500
AEER	W/W	4.0+	4.0+	4.0+	4.0+	4.0+	4.0+
Compressor	--	DC Inv. Scroll	DC Inv. Scroll	DC Inv. Scroll	DC Inv. Scroll	DC Inv. Scroll	DC Inv. Scroll
Refrigerant	--	R410A	R410A	R410A	R410A	R410A	R410A
Heating Capacity (PTC)	kW	6	6	6	10	10	10
Humidification	kg/h	6	6	6	10	10	10
Power Supply	--	380V/3N	380V/3N	380V/3N	380V/3N	380V/3N	380V/3N
Full Load Current	A	42	45	48	48	56	56
Unit Width	mm	900	900	900	900	1,100	1,100
Unit Height	mm	1,975	1,975	1,975	1,975	1,975	1,975
Net Weight (Indoor)	kg	320	325	350	370	450	470

CP-X Series - Extended Range (Dual Compressor System)

Parameter	Unit	CP-X 060(D)	CP-X 070(D)	CP-X 080(D)	CP-X 090(D)	CP-X 100(D)
Total Cooling Capacity	kW	62.4	76.0	80.0	91.2	100.0
Sensible Cooling Capacity	kW	56.6	70.3	76.0	79.8	92.0
Fan Airflow Rate	CMH	18,000	20,000	24,000	25,000	27,000
AEER	W/W	4.0+	4.0+	4.0+	4.0+	4.0+
Heating Capacity	kW	10	10	12	12	12
Humidification	kg/h	10	10	10	10	10
Power Supply	--	380V/3N	380V/3N	380V/3N	380V/3N	380V/3N
Refrigerant Circuits	--	2x Single	2x Single	2x Single	2x Single	2x Single
Full Load Current	A	70	78	78	88	88
Unit Width	mm	1,800	1,800	1,800	2,200	2,200
Unit Depth	mm	995	995	995	995	995
Unit Height	mm	1,975	1,975	1,975	1,975	1,975
Net Weight (Indoor)	kg	550	600	650	690	880

(D) = Dual compressor system. Configuration: Constant Temp/Humidity. Fan type: EC Fan. Refrigerant: R410A.

04

CP-WX SERIES - DUAL COIL CCU

CHW duty + DX standby -- custom range

The CP-WX Series combines a chilled water coil (duty/primary) and a direct expansion refrigerant coil (standby/backup) within a single cabinet -- providing the highest level of cooling redundancy without additional floor space.

CHILLED WATER -- DUTY (PRIMARY)	DX REFRIGERANT -- STANDBY / SUPPLEMENTARY
Activated when chilled water inlet temperature is below the return air temperature AND cooling demand exceeds the CHW activation threshold (default: 50% of setpoint deviation). CHW valve opens progressively in response to PID output.	DX compressor activates when cooling demand exceeds 100% of CHW capacity, or upon CHW fault or loss of chilled water supply. Upon CHW restoration, the controller ramps DX capacity down while re-opening the CHW valve, ensuring bumpless transfer back to primary CHW operation.

Custom Selection -- Contact Factory

The CP-WX Dual Coil series is available across the full 25-100 kW capacity range. As each unit integrates both a CHW coil and a complete DX refrigeration circuit, each unit is factory-configured to project specifications. Capacity, valve sizing, pipe connections, and refrigerant circuit design are confirmed at order stage.

CP-WX Series -- Factory Selection Required

All CP-WX Dual Coil units are engineered to order. Please provide project load data, chilled water temperatures, refrigerant pipe run data, and site constraints. Contact Clima Processors for a selection datasheet.

CP-WX units are available in the same cabinet sizes as the CP-W and CP-X series. Factory-assembled, wired, and tested prior to despatch. IOM documentation supplied with each unit.

05 CONTROLS & COMMUNICATION

Intelligent microprocessor control with full BMS integration

Integrated Microprocessor Controller

All Clima Processors CCU models incorporate an advanced integrated microprocessor controller with a 10-inch colour capacitive touchscreen (1024x600 px), managing all operating modes via adaptive PID control algorithms.

The controller communicates with all internal devices compressor inverter drive, EC fan controllers, EEV driver, CHW valve actuator, and humidifier module via a dedicated internal CAN bus, ensuring fast, noise-immune control response.

3.1 Control Sensors & Monitored Parameters

The integrated controller continuously reads and displays the following sensor inputs and operational parameters. All values are available via Modbus RTU for BMS integration.

Parameter / Sensor	Description	Applicability
AIR & ROOM SENSORS		
Return Air Temperature (RAT)	NTC sensor -- primary control input for cooling/heating mode activation and PID modulation	All Series
Return Air Relative Humidity (RARH)	Capacitive RH sensor -- primary input for humidification and dehumidification mode control	All Series
Supply Air Temperature	NTC sensor at unit discharge -- monitors supply air condition and assists in dehumidification reheat control	All Series
REFRIGERATION CIRCUIT SENSORS		
Suction Pressure	Pressure transducer on suction line -- used for compressor protection and EEV superheat calculation	CP-X / CP-WX
Discharge Pressure	Pressure transducer on discharge line -- high pressure protection and condensing temperature derivation	CP-X / CP-WX
Liquid Line Temperature	NTC sensor on liquid line -- subcooling monitoring and refrigerant charge assessment	CP-X / CP-WX
Discharge Gas Temperature	NTC sensor on compressor discharge -- overtemperature protection and system performance monitoring	CP-X / CP-WX
Condensing Temperature	Derived from discharge pressure transducer -- outdoor fan speed modulation and head pressure control	CP-X / CP-WX
CHILLED WATER SENSORS		
CHW Inlet Temperature	NTC sensor on CHW supply line -- used for CHW activation logic; activates when CHW inlet temp is below return air temp and demand exceeds activation threshold	CP-W / CP-WX

Parameter / Sensor	Description	Applicability
CHW Outlet Temperature	NTC sensor on CHW return line -- delta-T monitoring and coil performance tracking	CP-W / CP-WX
CHW Valve Opening (%)	0-100% modulating position feedback from actuator -- displayed on controller Home screen and available via Modbus	CP-W / CP-WX
ELECTRICAL MONITORING		
Voltage -- Phase 1, 2 & 3	Three-phase voltage monitoring -- phase loss, undervoltage, and overvoltage detection with alarm output	All Series
Frequency -- All Phases	Supply frequency monitoring across all three phases -- out-of-range frequency alarm and protection	All Series
ACTUATOR & DRIVE FEEDBACK		
Compressor Frequency	Inverter drive feedback -- actual operating frequency in Hz; used for capacity modulation logging	CP-X / CP-WX
EEV Opening Position	Stepper motor position feedback -- expansion valve opening in steps (0-480 steps typical)	CP-X / CP-WX
Fan Running Speed	EC motor feedback -- actual fan speed in RPM; variable speed confirmation and alarm detection	All Series

3.2 Communication & Integration

■ Adaptive PID Control

Configurable proportional bands, dead bands, and control modes for all operating functions -- cooling, heating, humidification, dehumidification. All setpoints adjustable via touchscreen.

■ Data Logging & Trend Analysis

Temperature and humidity trend curves logged over selectable windows. Supply/return air T and RH graphed on the Data screen.

■ Alarm Management

Current and historical alarms with date/time stamps -- HP/LP, fan overload, filter blockage, T/RH deviation, heater over-temp, humidifier fault, drainage failure, water leakage, and electrical faults.

■ RS485 Modbus RTU

Standard BMS integration -- all sensor values, setpoints, alarms, and mode outputs accessible via configurable Modbus register map.

■ SNMP Interface

IP-based monitoring for DCIM/NMS platforms -- alarm notification and status monitoring over Ethernet.

■ Group Control & Unit Rotation

CAN bus networking up to 16 units: automatic rotation (lead/lag), duty/standby, demand synchronisation, and cascading.

■ Password-Protected Access

Three access levels: user, maintenance, factory. 7-day timer with daily on/off scheduling.

■ Navigation Screens

Home / State / Data / Alarm / Set. State: live sensor readings. Data: logged trends. Alarm: current and historical faults.

06

OPTIONS & ACCESSORIES

Available options for all Clima Processors CCU series

G4 filter, Modbus RTU, and SNMP are standard on all units. All other items listed are optional -- confirm configuration at order stage.

Accessory / Option	Description	Status
G4 Air Filter	Synthetic fibre washable G4 filter (EN 779), aluminium frame, differential pressure switch included.	**Standard**
RS485 Modbus RTU	BMS communication interface -- configurable address and baud rate.	**Standard**
SNMP Interface	IP-based monitoring for DCIM/NMS platforms.	**Standard**
Fire Alarm Input	Dry contact input -- all units shut down on fire alarm activation.	Optional
PTC Electric Heater	Self-regulating ceramic PTC, aluminium heat sink, integral safety thermostat.	Optional
Electrode Steam Humidifier	Immersed electrode type, potable water, anti-aging PP cylinder rated 120 deg C.	Optional
Water Leakage Detection	Zone-sensing induction cable -- 3 m, 5 m, or 10 m. Alarm output to controller/BMS.	Optional
Condensate Pump	Internal pump for upward condensate drainage where gravity drain is not available.	Optional
Upflow Supply Air Kit	Factory or field-installed kit for top front discharge mode in raised floor applications.	Optional
Supply Air Plenum	Fabricated steel plenum for connection to underfloor distribution system.	Optional
Steel Base Frame	Heavy-duty welded steel base frame with forklift channels and levelling feet (+150 mm height).	Optional
Extension Refrigerant Kit	Solenoid valve + check valve for pipe runs exceeding 30 m equivalent length (DX/WX only).	Optional (DX/WX)

Standard = Included on all units. Optional = Available as factory-fitted option at time of order.

07

MODEL NOMENCLATURE & ORDERING GUIDE

How to read and specify Clima Processors model numbers

Every Clima Processors CCU model number fully defines the cooling type and nominal capacity.

CP	-	X	-	025
Brand Clima Processors		Cooling Type W = Chilled Water X = Direct Expansion WX = Dual Coil		Nominal Capacity e.g. 025 = 25 kW 100 = 100 kW

Model Number Examples

Model Number	Description
CP-W-025	Chilled Water CCU -- 27.5 kW total cooling, single fan system
CP-W-060(D)	Chilled Water CCU -- 62.4 kW total cooling, dual fan system
CP-X-025	Direct Expansion CCU -- 27.5 kW, single DC inverter compressor, air-cooled
CP-X-080(D)	Direct Expansion CCU -- 80 kW, dual independent compressor system, air-cooled
CP-WX-025	Dual Coil CCU -- 27.5 kW range -- contact factory for selection
CP-WX-060(D)	Dual Coil CCU -- 60 kW range, dual circuit -- contact factory for selection

Ordering Information

When specifying or ordering, please provide:

- Model number with capacity suffix (e.g. CP-X-040)
- Air supply mode -- upflow or downflow
- Required accessories -- humidifier, heater, water leakage detection, condensate pump, base frame, supply air plenum
- Communication protocol -- Modbus RTU standard
- Refrigerant pipe run length and elevation data (for DX and CP-WX models)
- Any special site conditions or project-specific requirements

CLIMA PROCESSORS

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For technical enquiries, project specifications, and ordering information, contact Clima Processors.

Specifications subject to change without notice. All dimensions and weights are nominal. Certified drawings available on request.

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CCU-12082026

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CHILLED WATER . DIRECT EXPANSION . DUAL COIL