

IT COOLING PRODUCT OVERVIEW

▶ CLOSE CONTROL AIR CONDITIONERS

▶ EVAPORATIVE COOLING SYSTEMS

▶ AIR CONDITIONERS FOR HIGH DENSITY RACKS AND BLADE SERVERS

▶ DATA CENTER INFRASTRUCTURE

▶ CHILLERS

▶ UNITS FOR SIMULTANEOUS AND INDEPENDENT PRODUCTION OF HOT AND COLD WATER

▶ TELECOM SOLUTIONS

▶ CONTROL, SUPERVISION AND OPTIMISATION SYSTEMS

▶ ANCILLARY PRODUCTS

**NEW GREEN
REFRIGERANT SERIES**

R1234ze

**G04
SERIES**

R513A

**G05
SERIES**

RC IT COOLING'S MISSION



With over 50 years experience in the HVAC industry, RC has been a major player widely recognized for its leadership in IT Cooling solutions. Building on this strong legacy, Mitsubishi Electric Hydronics & IT Cooling Systems SpA has decided to turn RC into the Group's specialized brand for data center cooling, merging the experience of RC with Climaveneta's in this segment.

The result is a brand new business organisation providing the most complete product range, which combines the best technologies, solutions and innovations from RC and Climaveneta. This is enhanced by both brands' extensive experience, and by the advantages of integrated R&D, operations and central functions.

Over 50 years of experience

Dedicated products & specialized solutions

12 specialized manufacturing hubs

Worldwide distribution and service network

7 R&D and testing labs in Italy, China and India

Vast portfolio of proprietary & patented technologies

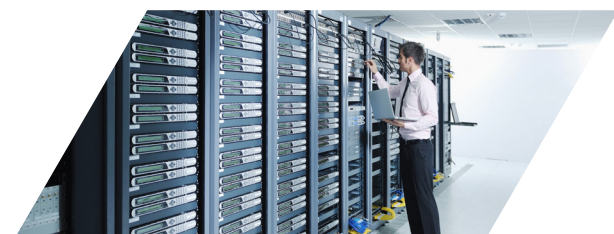
- Sales network
- Manufacturing hubs or R&D labs



COUNTLESS SUCCESSFUL PROJECTS WORLDWIDE

 **Wiit Spa** - Milano, Italy
Tier IV certified

 **Data Center proRZ**
Munich, Germany





RC IT COOLING

leading-edge cooling technologies and solutions for IT applications are designed to provide even the most challenging Data Center and Telecom projects with:



Smart integration of the most advanced technologies



Building on the experience of RC Group and Climaveneta both on HPAC and on chillers, RC IT Cooling solutions offer the smartest combination of the most advanced technologies such as: full inverter concept, free cooling, heat recovery management, adiabatic cooling.

Reduced operating costs



In infrastructures working 24 hours per day, 365 days per year, over an average of 10 years, every energy improvement allows for a significant reduction in OPEX (operating costs).

Complete reliability and extended lifetime



The uptime of server infrastructure and hence of most critical services in modern society, is tightly related to the reliability of the IT cooling system, which must guarantee Tier IV uptime standards over its whole lifetime.

Widest use of the available power capacity



In all installations where power feeds are at capacity, the key option to expand data center facilities is to significantly improve the energy performance of the whole data center.

Optimised footprint



A green, high efficiency approach to data centers is key also to enable a more effective use of available space thus delaying the need of building new rooms.

Increased sustainability

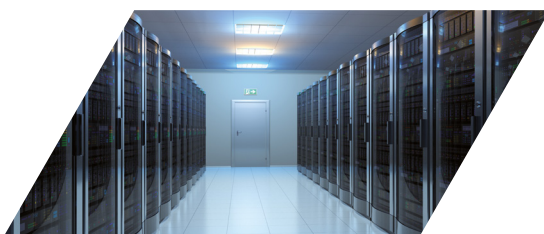


Intelligent energy management is crucial also for sustainability, considering the growing impact of data center industry in terms of total CO₂ emissions.

more on: www.rcitcooling.com

 **Fastweb** - Milano, Italy
Tier IV certified

 **China Construction Bank**
Data Center - Beijing China



 **ANZ Bank Server Room**
Auckland - New Zealand

 **SKY Studios**
Unterfoehring - Germany

CLOSE CONTROL AIR CONDITIONERS



- ▶ Highest energy efficiency
- ▶ Total dependability
- ▶ Ideal for high temp. IT environments

X TYPE



Direct expansion close control units

Model	Description	Efficiency	Capacity Range	Options
b-NEXT DX / t-NEXT DX	with remote air cooled condenser	6,37 ▶ ◀ 149	50 - 150 kW	AIR COOLED, AXIAL, EC FAN
b-NEXT DW / t-NEXT DW	with built-in water cooled condenser	7,89 ▶ ◀ 156	50 - 150 kW	WATER COOLED, AXIAL, EC FAN
t-NEXT DF DX	dual fluid / air cooled	12,2 ▶ ◀ 136	50 - 150 kW	AIR COOLED, DUAL FLUID, EC FAN
t-NEXT DF DW	dual fluid / water cooled	11,2 ▶ ◀ 145	50 - 150 kW	WATER COOLED, DUAL FLUID, EC FAN
t-NEXT FC DW	free cooling / water cooled	7,88 ▶ ◀ 157	50 - 150 kW	WATER COOLED, FREE COOLING, EC FAN
i-NEXT DX	inverter compr./ with remote air cooled condenser	10,4 ▶ ◀ 135	50 - 150 kW	INVERTER, AIR COOLED, EC FAN
i-NEXT DW	inverter compr./with built-in water cooled condenser	11 ▶ ◀ 140	50 - 150 kW	INVERTER, WATER COOLED, EC FAN
i-NEXT DF DX	inverter compr./dual fluid/air cooled	12,3 ▶ ◀ 142	50 - 150 kW	INVERTER, AIR COOLED, DUAL FLUID, EC FAN
i-NEXT DF DW	inverter compr./dual fluid/water cooled	12,3 ▶ ◀ 147	50 - 150 kW	INVERTER, WATER COOLED, DUAL FLUID, EC FAN
i-NEXT FC DW	inverter compr./free cooling/water cooled	11 ▶ ◀ 140	50 - 150 kW	INVERTER, WATER COOLED, FREE COOLING, EC FAN

Chilled water close control units

Model	Description	Efficiency	Capacity Range	Options
w-NEXT S	chilled water	7,03 ▶ ◀ 234	50 - 200 kW	CHILLED, EC FAN
w-NEXT DF	dual coil	13,6 ▶ ◀ 140	50 - 200 kW	CHILLED, DUAL COIL, EC FAN
w-NEXT HD S/K	high density	14,3 ▶ ◀ 183	50 - 200 kW	CHILLED, HIGH DENSITY, EC FAN
w-NEXT2 S/K	chilled water, 2-section	57,8 ▶ ◀ 227	50 - 200 kW	CHILLED, EC FAN
w-NEXT2 DF	chilled water, 2-section, dual coil	58,2 ▶ ◀ 227	50 - 200 kW	CHILLED, DUAL COIL, EC FAN

Close control units for low thermal load applications

Model	Description	Efficiency	Capacity Range	Options
i-NEXT MTR PRECISE DX	inverter compr. / air cooled	11,1 ▶ ◀ 16,6	10 - 20 kW	INVERTER, AIR COOLED, EC FAN
i-NEXT MTR PRECISE DW	inverter compr. / water cooled	11,7 ▶ ◀ 18,6	10 - 20 kW	INVERTER, WATER COOLED, EC FAN

Close control units for high temperature, high Delta T

Model	Description	Efficiency	Capacity Range	Options
NEXT-X-TYPE	chilled water, X coil technology	49,3 ▶ ◀ 173	50 - 150 kW	X COILS, CHILLED, EC FAN

Close control units with displacement air delivery

Model	Description	Efficiency	Capacity Range	Options
t-NEXT DL DX	with remote air cooled condenser	7,63 ▶ ◀ 42,6	10 - 50 kW	AIR COOLED, EC FAN
w-NEXT DL	chilled water	11,6 ▶ ◀ 41,3	10 - 50 kW	CHILLED, EC FAN
i-NEXT DL DX	inverter compr. / with remote air cooled cond.	21,7 ▶ ◀ 53	10 - 50 kW	INVERTER, AIR COOLED, EC FAN

REMOTE CONDENSERS AND DRY COOLERS

Model	Description	Efficiency	Capacity Range	Options
T-MATE DX-A	air cooled remote condenser with AC axial fans	9,50 ▶ ◀ 302	50 - 300 kW	OUTDOOR, AXIAL
T-MATE DX-E	air cooled remote condenser with EC axial fans	9,50 ▶ ◀ 302	50 - 300 kW	OUTDOOR, EC AXIAL
T-MATE DX-PF-E	air cooled remote condenser with EC plug fans	9,90 ▶ ◀ 156	50 - 300 kW	OUTDOOR, CENTRIE
T-MATE DC-A	dry cooler with AC axial fans	6,40 ▶ ◀ 172	50 - 300 kW	OUTDOOR, AXIAL
GR-Z A	dry cooler with EC plug fans	9,41 ▶ ◀ 156	50 - 300 kW	OUTDOOR, AXIAL
BR-Z E	air cooled remote condenser with AC axial fans	8,30 ▶ ◀ 156	50 - 300 kW	OUTDOOR, EC AXIAL
BRRE	air cooled remote condenser with EC axial fans	6,93 ▶ ◀ 187	50 - 300 kW	OUTDOOR, AXIAL
i-BRRE	air cooled remote condenser with EC plug fans	13,4 ▶ ◀ 187	50 - 300 kW	OUTDOOR, EC AXIAL
BRDC	dry cooler with AC axial fans	7,50 ▶ ◀ 210	50 - 300 kW	OUTDOOR, AXIAL
i-BRDC	dry cooler with EC plug fans	14,0 ▶ ◀ 210	50 - 300 kW	OUTDOOR, EC AXIAL

ADVANCED TECHNOLOGIES FOR EFFICIENT DATA CENTERS

RC IT Cooling leadership in data center cooling systems is backed by 50 years of experience in the smart integration of premium technologies for complex IT cooling projects.



Magnetic Levitation

An extended range of chillers with magnetic levitation centrifugal compressors from 200kW to 4MW, both air source and water source, available also in free cooling and evaporative free cooling versions, to deliver highest efficiency in every application.

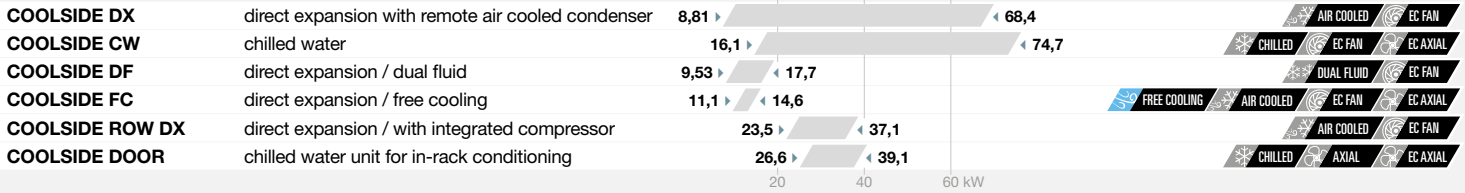
AIR CONDITIONERS FOR HIGH DENSITY RACKS AND BLADE SERVERS



- ▶ Maximization of the internal capacity of the infrastructure
- ▶ Elimination of hot spots
- ▶ Minimum floorspace occupancy



Close-coupled air conditioners



DATA CENTER INFRASTRUCTURE

- ▶ **RC RACK**
High quality cabinets for the protection and housing of servers
- ▶ **RC AISLE CONTAINMENT**
Aisle Containment solutions for high density applications
- ▶ **RC PDUs**
Premium Rack Power Technology
- ▶ **RAISED FLOORS**
Raised floor solutions for high efficiency data centers



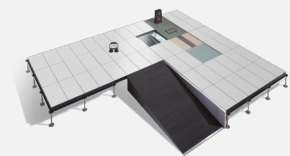
Floor-standing cabinets suitable for the housing of the server. The supporting structure is made of sheet steel with a thickness of 20/10 and can reach a capacity of 2000 kg.



Aisle Containment solutions for the physical separation of the hot and cold air streams.



Power distribution units (PDUs) that manage power usage for servers, storage and network equipment.



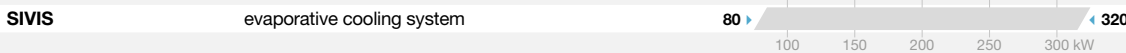
The raised floor is designed to easily adapt to future evolutions of IT spaces, avoiding expensive building work. This solution fulfills the need for versatile design of data centers.

EVAPORATIVE COOLING SYSTEMS

- ▶ Variable air flow and cooling capacity
- ▶ Fully aluminum structure (20-year warranty against corrosion)
- ▶ Low pPUE index: 1,025



2-Stage indirect evaporative cooling system for large data centers



ANCILLARY PRODUCTS



Remote condensers



Active Free Cooling
An advanced free cooling system available both as direct and indirect free cooling (no glycol), to exploit the outdoor air to cool the data center.



Smart Thermal Energy Management
An innovative heat recovery system that allows the smart use of rejection heat from the data center for comfort heating and other neighbouring applications.



Active Redundancy
Real active redundancy delivered through the combined adoption of innovative EC PUL fans, inverter DC brushless compressors and a smart algorithm that balances heating load also among stand-by units.

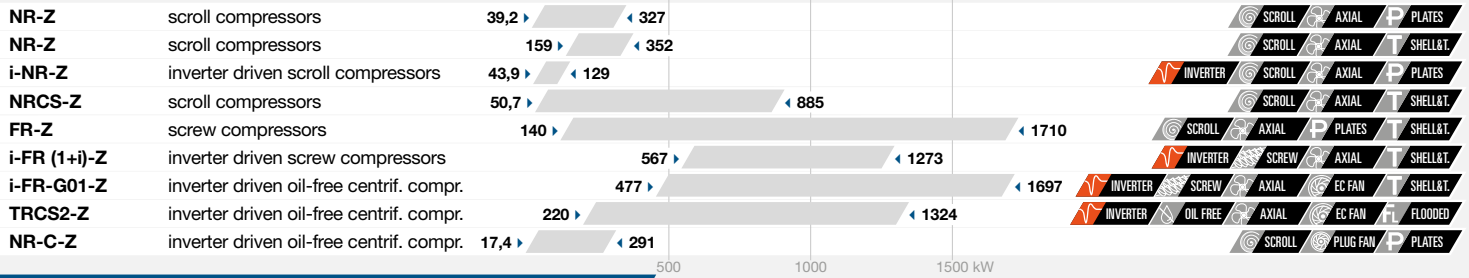
CHILLERS



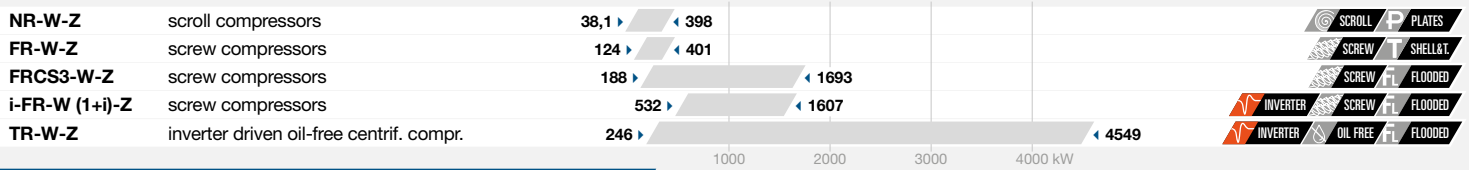
- ▶ Highest energy efficiency
- ▶ Ideal for IT environments
- ▶ Lowest noise emissions



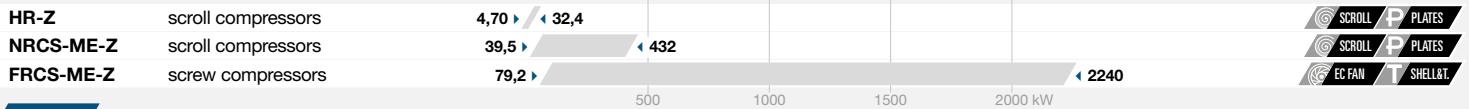
Air cooled chillers



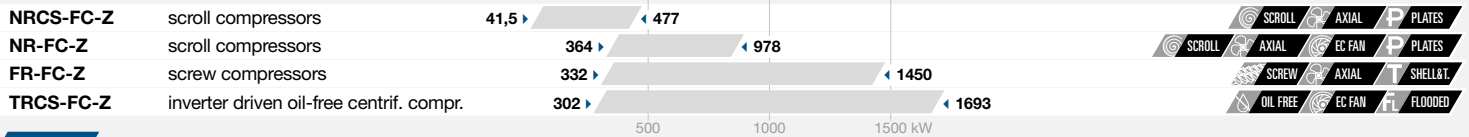
Water cooled chillers



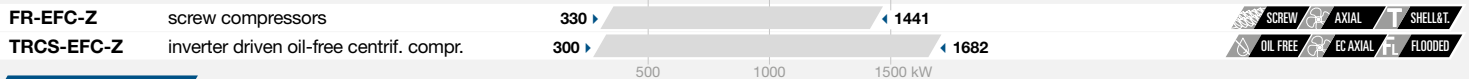
Condenserless chillers



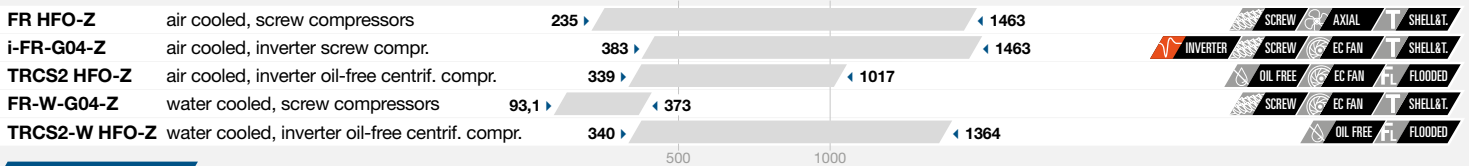
Air cooled chillers with free-cooling technology



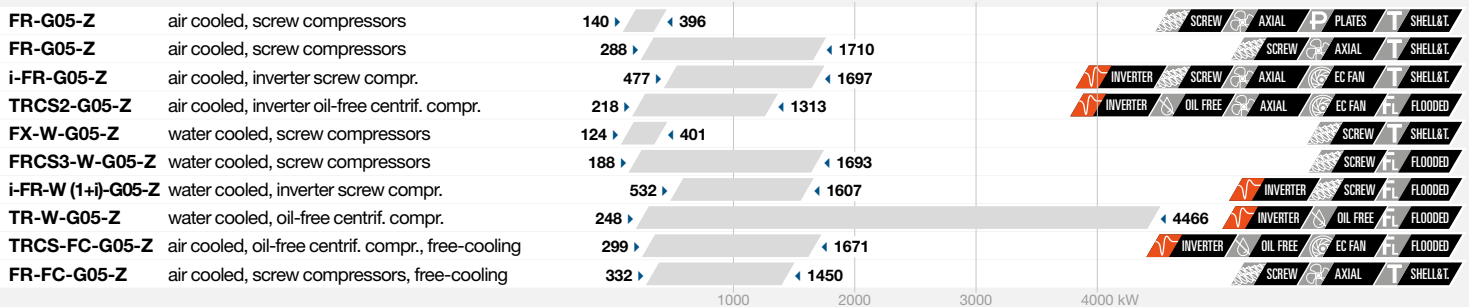
Air cooled chillers with evaporative free-cooling technology



G04 SERIES Air and water cooled chillers with HFO 1234ze



G05 SERIES Air and water cooled chillers with R513A



X TYPE

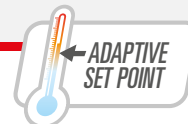
X-type System

The revolutionary double stage design applied to the heat exchangers in order to achieve top level efficiency and pPUE levels down to 1,07.



Evaporative Cooling

The latest AHR solution with 2-stage indirect adiabatic free-cooling section. pPUE down to 1,025.



Adaptive set point

An advanced algorithm instantaneously detects the real thermal loads of indoor units and conveys this information to chiller, for selection of the most efficient operating mode (e.g. dynamic variation of chillers set points and operating mode, free cooling mode, active redundancy mode).

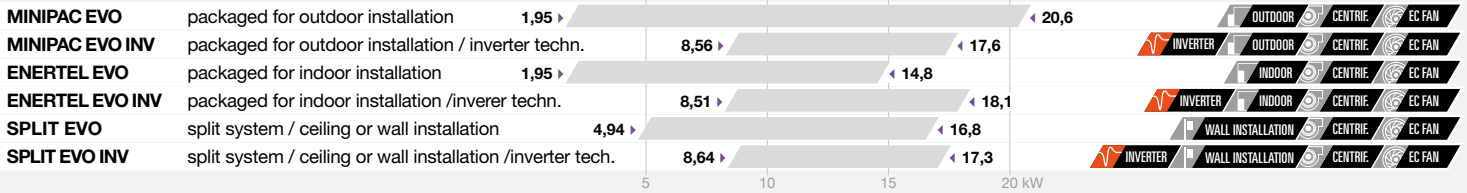
TELECOM SOLUTIONS



- ▶ Reliability and extended operation
- ▶ High capacity sensitive cooling
- ▶ Black out management



Air conditioners for telecom applications with free-cooling and full DC inverter technology



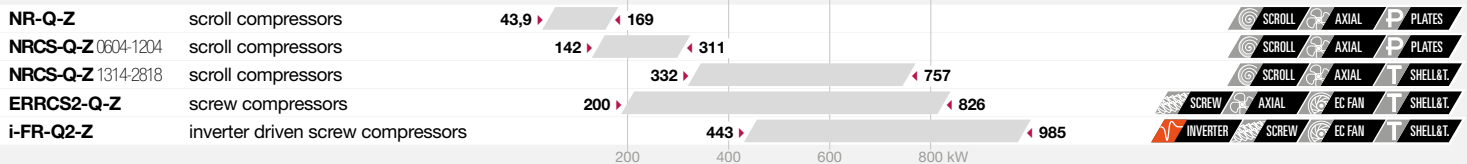
UNITS FOR SIMULTANEOUS AND INDEPENDENT PRODUCTION OF HOT AND COLD WATER



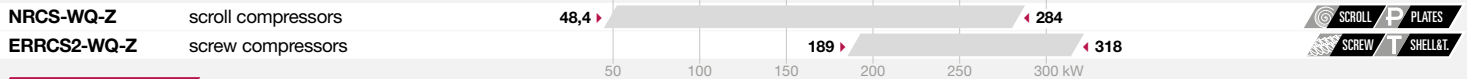
- ▶ Smart heat recovery system
- ▶ A single unit for multiple uses
- ▶ System simplification



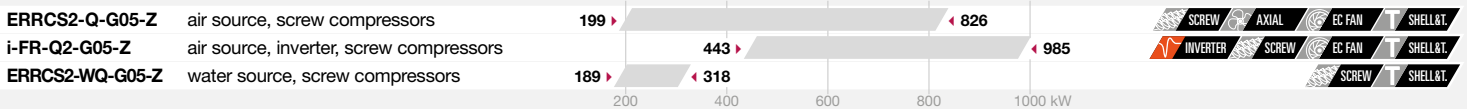
Air source heat pumps



Water source heat pumps



G05 SERIES Air and water source 4-pipe heat pumps with R513A



CONTROL, SUPERVISION AND OPTIMISATION SYSTEMS



Group devices

- ▶ **ClimaPRO DCO Plant Room Optimisation System**
Plant Room Optimiser for real time, smart management of energy indexes for the single units and the entire plant room.
- ▶ **MANAGER 3000**
Specialized group control for the data center air conditioners.



Supervision and monitoring systems

- ▶ **FWS3 / FWS3000**
Remote monitoring systems.
- ▶ **RC Cloud**
Cloud based remote monitoring system.



Human Machine Interfaces

- ▶ **KIPLink**
Control interface for smart phones and tablets.



Inverter Driven Compressor

The possibility to modulate cooling capacity results in increased efficiency as well as in the possibility to effectively implement smart management solutions such as active redundancy.

New G04 and G05 Series using green refrigerants

Following on vast experience in using green refrigerants, RC has already employed extensively green HFO refrigerants such as HFO1234ze and R513A in many ranges, in order to continue to be at the forefront with green best practices.

V-AIR

High efficiency EC technology fans are extensively adopted for their advantages both in internal units as well as in remote condensers with energy reduction up to 15% compared to traditional EC fans.



for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.



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