



**CITY MULTI**<sup>®</sup>  
VRFZ TECHNOLOGY

Building Comfort Solutions





# A world leader

For over half a century Mitsubishi Electric with its proven track record of quality and reliability all over the globe has been a leader in multiple industries. The company's leading-edge technology has not only led to numerous innovative products but has revolutionized the entire electronics field. Every Mitsubishi Electric product offers the ultimate state-of-the-art and aesthetics in design and engineering. Regardless of the Mitsubishi product you purchase, you can be assured that you've purchased the best.

## A tradition of quality.

Mitsubishi Electric stands for quality. We maintain our high quality standards by controlling our own research, development, design, materials, and manufacturing. Each of our products is made almost exclusively from components that were engineered and produced by Mitsubishi Electric. That's what makes our company a world leader in a wide variety of products. High-definition televisions, home theater systems, semi-conductors, elevators and escalators, opto-electronic devices, communication products, power generation systems, and air-conditioning and heating systems are all part of the global Mitsubishi Electric family.





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# CITY MULTI: the Benefits

Buildings are a lot like people: no two are alike. Each has its own characteristics and differences.

Each has its own design. They come in all sizes, shapes, and ages. So why is it that most air-conditioning systems are exactly the same? Why is it that even though each building has its own unique set of cooling and heating issues, the air-conditioning industry has made only one or two solutions available to you? Why should installing an HVAC system in your building be like trying to tailor the person to fit the suit? Shouldn't it be the other way around where the HVAC solution is tailored to fit the building? Yes, it should, or at least Mitsubishi Electric thinks so.

That's why we developed CITY MULTI.

From the beginning CITY MULTI was designed to be an intelligent, fully-customizable solution for providing comfort conditioning inside a building. In fact CITY MULTI is a comprehensive network of Variable Refrigerant Flow Zoning (VRFZ) technology products integrated with our advanced CITY MULTI Controls Network (CMCN). Not only is it the first of its kind; it's the only one of its kind. And like buildings no two CITY MULTI solutions are exactly alike. In fact there are over a million ways to configure and customize a CITY MULTI solution to meet your building's needs. One million. That's about 999,999 more ways than the other conventional options out there.

What's more, your CITY MULTI building comfort solution provides many outstanding features that offer you an unprecedented level of temperature and zone control. While our system can be designed to fit your needs exactly, it also gives you the ability to define the temperature for every room ... every floor... every building. Maybe you need 10 different temperature zones on the same floor. With CITY MULTI it's simple. Maybe you need to measure your entire building's HVAC energy consumption and separate air-conditioning usage in various rooms for billing purposes; not a problem. CITY MULTI puts you in control and is so intuitive and simple to operate that you won't need to call a technician every time you wish to make a change.

CITY MULTI has incredibly useful features that you probably didn't know were available in a cooling and heating system: an INVERTER-driven compressor that performs at the minimum energy level necessary to provide comfort in the zone, intelligent indoor units that operate to deliver complete comfort in each zone, distributed capacity for performance where you need it most, and integrated outside air ventilation because a comfortable indoor environment means a more productive space, all seamlessly tied together with our CITY MULTI Controls Network (CMCN).

Why can our CITY MULTI building comfort solution do so many things?

Because CITY MULTI is that customizable, it's meant to adapt to the needs of your building's cooling and heating requirements. It took the efforts of Mitsubishi Electric engineers to give the world a building comfort solution that fits the needs of the people and the building not the needs of the HVAC.





# What makes CITY MULTI the ultimate solution?

Simply put CITY MULTI is an entirely new class of air conditioning. When you choose CITY MULTI, you truly enter the new innovative age of HVAC. But CITY MULTI isn't entirely new. Mitsubishi Electric has been installing Variable Refrigerant Flow Zoning systems worldwide for over 20 years. And each solution has the proven Mitsubishi Electric quality and reliability you expect.

**No standard HVAC system on the market has our trademark flexibility** to be fully customized to fit your building's unique HVAC needs, including its own integrated controls network. No two CITY MULTI solutions are exactly alike because no two buildings are exactly alike in terms of loads, diversity, and occupants. Unique just like you.



## A complete, single, CITY MULTI system

consists of an outdoor unit with as many as 32 indoor units, of various styles, a BC Controller or manifold and a series of zone or system controllers. We also are your Indoor Environment Quality (IEQ) solution as well. Lossnay, Mitsubishi Electric's ventilation solution, can be integrated into any application to provide excellent ventilation with the added benefit of energy recovery. This complete system, or even a network of CITY MULTI systems, is controlled by our CITY MULTI Controls Network (CMCN), which ties all systems together and can be interfaced to an existing Building Management System (BMS) via LonWorks® or BACnet® for total building control.

## CITY MULTI is redefining expectations

of what you should experience in a building comfort solution. Within our building comfort solution a single CITY MULTI VRFZ system uses revolutionary heat recovery technology to simultaneously cool certain zones while heating others with unparalleled control. This great feature can help you take advantage of the spring and fall seasons when the outdoor conditions change more rapidly than the limited capability of most conventional building systems. Each CITY MULTI system is designed to maximize diversity and effectively use energy while delivering the ultimate comfort in each zone. CMCN ties together all of the CITY MULTI systems, each and every zone in your network of buildings, to provide intelligent, easy-to-use total building control.



# Why CITY MULTI?

## Easy to install.

With CITY MULTI, you aren't subject to a long or drawn-out installation process. Our comprehensive but simple, modular approach incorporates compact indoor and outdoor units, a BC Controller (R2-Series) or manifold (Y-Series), plus zone and central controllers. The beauty of this approach is that you greatly reduce the amount of ductwork needed and instead use refrigerant lines, which are much easier and quicker to run. And with minimal line connections required, this method works perfectly for either new or retrofit applications. It is especially advantageous for applications where you are retrofitting an older building that may lack the room for ductwork. Indoor units are available in various styles including ceiling-concealed, suspended or recessed, wall-mounted, and floor-mounted designs, which allow your engineer or architect to be as flexible as possible and respond to each zone's unique functional or aesthetic application requirements. Outdoor units have a small footprint and are of minimal weight, which means that you can easily mount them on the roof, in an alleyway, on a ledge, or in other creative places. Controllers, both zone and central types, are easy to install as well. There are just two nonpolar wires connecting all components in a system, which means fewer opportunities for miswiring. Fewer hassles mean faster installation, and the faster the install the sooner you will enjoy the trademarked CITY MULTI's comfort solution.

## Effective use of energy.

Your CITY MULTI building solution has your best interests in mind. Our CITY MULTI VRFZ systems use INVERTER compressor technology in the outdoor units that allow the compressor to ramp up quickly to reach your desired temperature level faster and then finely adjust to the precise frequency that's right for maintaining the ideal comfort level in



each and every system's zone. Not only does this capability mean a more consistent environment but also represents a wiser use of energy than other systems as you rarely use the compressor at full power and are not repetitively turning it on and off.

In addition each intelligent indoor unit features advanced electronic expansion valve technology, which allows for the precise amount of cooling or heating to be delivered to each zone as defined by each zone's load at any given time: day or night. No wasted cooling or heating. No wasted energy.

In a building, not every room will need cooling or heating at the exact same time. CITY MULTI systems understand this fact. The connected capacity of each CITY MULTI R2-Series system can be up to 150% of the capacity of the outdoor unit by taking advantage of load diversity and simultaneous cooling and heating operation. Each CITY MULTI system efficiently distributes the capacity among the indoor units while effectively using energy.

**Spring and Fall.** These are the times when you really need a system to cool and heat on a zone-by-zone basis all at the same time. During the spring and fall seasons the CITY MULTI system's simultaneous cooling and heating operation means that you are minimizing the energy usage of the system, which

# Why CITY MULTI?

maximizes comfort with virtually no wasted energy. CITY MULTI building solutions reduce the ongoing expense and uncertainties associated with traditional systems during these seasons. When do you switch to cooling and to what expense and vice versa? CITY MULTI systems optimize energy usage during these partial-load conditions to provide absolute comfort to each and every room. Central boiler usage also can be minimized for increased savings. How do you feel about optimum energy usage?

When you incorporate Lossnay® Energy Recovery Ventilators (ERV), you are providing outside air, which contributes to the comfort value of your indoor environment while maximizing energy recovery. During the summer months Lossnay removes moisture from the outside air by transferring it to the exhaust air, making it easier (i.e. using less energy) to cool the zone. During the winter Lossnay recovers moisture from the room's exhaust air to keep the air inside from becoming too dry.

You can manage the entire building comfort solution using our CMCN, which has built-in intelligence to manage each and every indoor unit. Our TG-2000 software even has the capability to limit or reduce energy expenditure to provide energy savings!

## Zoning advantage.

There's no sense in cooling or heating rooms that aren't in use. That's why the CITY MULTI solution supplies air conditioning only to rooms that require it, which maximizes individual

comfort while using energy effectively. Each zone can have its own indoor unit that precisely controls the temperature while the system operates to optimize energy usage. All you have to do is set the temperature and relax. CITY MULTI uses advanced INVERTER technology that varies the speed of the compressor in the outdoor unit to meet the changing load requirements in each of the indoor zones. There are no energy-wasting dump zones that are so commonly found with other units that are





## Comprehensive building and zone control.

Since every building is unique, so are its cooling and heating requirements. And since your building's cooling and heating needs are unique, you deserve a complete solution that puts you in total control of your comfort in each and every zone.

Our collection of zone and central controllers places a wide array of control at your command. You can set and monitor operation mode, temperature, fan speed, and airflow direction and even an operating schedule that's tailored to the needs of the people and the building. Each indoor unit or group of indoor units in a zone can have its own zone controller. The ultimate system control can come from the centralized controller. But there is more.

The brilliance in our CITY MULTI VRFZ technology lies within the CITY MULTI Controls Network (CMCN). The CMCN connects multiple CITY MULTI systems and integrates them all into a Local Area Network (LAN), manageable from a single PC using a web browser interface or our exclusive TG-2000 integrated system software. By adding CITY MULTI's one-of-a-kind TG-2000 software, you can expand your range of control for up to 2,000 CITY MULTI indoor units and still monitor, schedule, manage, and troubleshoot the complete building comfort solution from a single central location. What's more, you can integrate the CMCN with a Building Management System (BMS) using LonWorks® or BACnet® for collective control of all building systems.

When you put your trust in CITY MULTI, you get a complete and fully integrated zoning solution, including our exclusive CITY MULTI Controls Network (CMCN). Everything you need for your system is included in one package to provide optimized cooling, heating, and ventilation.

unable to replicate CITY MULTI's great operational range. CITY MULTI is the one solution that can provide each individual zone with truly personalized comfort. Only CITY MULTI gives you the ability to zone your building with such a high degree of customization. Taking into account the diversity of usage, occupancy, or solar gain parameters of your work or living space, you can design zones to your exact needs. If your future needs change, it's not a problem; with CITY MULTI zones can be added, changed, or removed later, depending on your requirements.



# Why CITY MULTI?

## Quiet indoor and outdoor units.

CITY MULTI is designed to provide the quietest possible operation for both indoor and outdoor environments. Both our indoor and outdoor units operate at minimal sound levels: a major benefit for hospitals and other health care facilities, schools, churches, libraries, radio stations, and recording studios.

Our indoor units are super quiet, running from 24 decibels at low speed to about 47 decibels at high speed, which is the same sound level that you expect from a whisper, the inside of a library, or in secluded woods with rustling leaves. In fact our units easily meet indoor noise level standards, which tend to run between 45 and 55 decibels.

CITY MULTI outdoor units perform with a similarly amazing quietness. Units run at about 56 decibels: quiet enough to be placed under a window. In fact, you have to get very close to hear that a unit is even running.

## Multiple styles of indoor units.

Customize your CITY MULTI comfort solution to meet the needs of your building and your tenants by selecting from a wide variety of styles of indoor units. CITY MULTI indoor units are ready to meet the challenge. Indoor unit styles include ceiling-concealed, suspended or recessed, wall-mounted, and floor-mounted, exposed or concealed configurations. Additional ceiling space will allow you to use our concealed models so that multiple nearby spaces can be cooled or heated from one



ducted indoor unit. If you have at least a foot or so of space above your ceiling, then the recessed cassette models are perfect. The wall and floor-mounted types are perfect when space is a premium and you need a smart solution to get you through some tough application challenges like solid ceiling surfaces and walls. These options let you build a truly unique whole-building solution that fits the comfort needs of the people.

## Lossnay<sup>®</sup> ventilation with energy recovery.

Sufficient ventilation air is an important part of every building's design. In fact codes and standards like ASHRAE 62 require an Indoor Environment Quality (IEQ) solution. Lossnay Energy Recovery Ventilators (ERVs), integrated with CITY MULTI using CMCN, offer a unique, proven solution to ventilation and IEQ issues. Our Lossnay ERVs use the Lossnay natural-based energy transfer core to provide the ventilation air as controlled by our CMCN with the added benefit of energy recovery.

Lossnay technology creates an indoor environmental balance by refreshing the air in the building with ventilation air while keeping airborne contaminants outside of your building. Lossnay technology stabilizes the humidity level to improve building conditions for healthier living, working, and learning. These attributes promote a comforting solution to a healthier atmosphere that's ideal for everyone from students and teachers in schools to patients and caregivers in hospitals.



# Office Buildings

## FEATURES AND BENEFITS

### 1) **Building Comfort Solutions**

CITY MULTI VRFZ systems offer superior cooling and heating solutions that provide the ultimate in comfort and energy savings. Each individual zone operates independently; different zones can be quietly cooled or heated simultaneously and controlled via the CITY MULTI Controls Network (CMCN).

### 2) **Unprecedented Zone and Building Control**

You'll have unprecedented control over every zone in your building with the CMCN. With the addition of the TG-2000 software the system can be expanded to let you control up to 2,000 CITY MULTI indoor units from one location. The TG-2000 software lets building owners and facility managers monitor HVAC energy usage so tenants can be billed individually.

### 3) **Design Flexibility**

CITY MULTI building comfort solutions use a modular approach so each building area can enjoy superior performance no matter how big, small, or unusual the space. Multiple options for controls and indoor and outdoor units let you design a layout that works for your specific needs. Ceiling height is increased because no large ducts are necessary.

### 4) **Easy Installation and Maintenance**

Modular installation allows you to integrate the system either floor by floor or zone by zone so that the entire building doesn't have to shut down. Maintenance is made easy by the four-digit fault code on the outdoor unit's diagnostic display and other great features.

### 5) **Healthier Office**

Lossnay Energy Recovery Ventilators (ERVs) provide outside air ventilation with the added benefit of energy recovery for a healthier work environment.

The CITY MULTI building comfort solution is a more effective and efficient way to cool and heat your buildings. Variable Refrigerant Flow Zoning (VRFZ) technology allows different areas to operate independently because each zone can have



its own indoor unit and zone remote controller. Refrigerant is distributed from zone to zone as needed. This feature allows different people in different areas to enjoy their own ideal level of comfort. For example a fitness center may require year-round cooling to handle heat generated by exercise and moisture buildup. Break rooms can contain heat-generating appliances. Perimeter areas near windows are notorious for being too cold or too hot. Now all these challenges can be met with one comprehensive solution.

Individual zone comfort controllers allow tenants in their office to control temperature set point, operation mode, fan speed, and airflow direction. The facility manager can even program limits on the set temperature range. Temperature can be sensed from the controller or by the actual indoor unit.

Most buildings will use multiple VRFZ systems networked together, all controlled by the CITY MULTI Controls Network (CMCN). This configuration allows different systems to act in concert, adjusting for shifting heat loads as the sun passes from the east to west side of a building. This feature is especially important in the spring or fall when temperatures vary greatly from dawn to dusk. During winter months, CITY MULTI's powerful INVERTER technology can minimize boiler usage with its high heat output. Since indoor zones share heat energy (R2-Series) power usage by the outdoor unit is reduced. This technology manages energy usage most effectively when half of the system's zones are in cooling and half are in heating. In fact your building can appreciate a total applied connected capacity of up to 150 percent thanks to VRFZ technology.

# Controls

designed with you in mind

A single G-50A centralized controller can manage up to 50 indoor units across many systems, providing total system control from a single location. Multiple G-50A centralized controllers can be managed when connected to a Local Area Network (LAN) using Internet Explorer or TG-2000 on a PC. Tenants also can manage their own zone from their networked PC or MAC with parameters set by management to prevent misuse.

Advanced TG-2000 software allows you to manage as many as 40 different G-50A centralized controllers, giving you maximum control of up to 2,000 indoor units. This feature makes the CITY MULTI building comfort solution perfect for controlling an entire office park. Each and every unit is represented with an icon for easy-to-read and comprehensive monitoring. The CMCN also can integrate with your Building Management System (BMS) through LonWorks® and BACnet® industry standards.

The TG-2000 software, when used with Watt Hour Meters (WHM), also gives managers a way to bill tenants individually for their HVAC power usage, simplifying the recovery of operational costs. Billing can be sent to a network printer or saved as a spreadsheet. This capability can be used to create individual, customized HVAC energy bills for each tenant.



Operation monitoring via PC web browser



“The previous system ran 24/7, 365 days a year, with either the whole building in heating mode or cooling mode. Aside from the initial cost savings for both labor and materials, the monthly electric bill has been cut in half! This was a real win-win for everyone!”

-- HVAC CONTRACTOR, CIVIC CENTER PROFESSIONAL BLDG. MAYOR'S OFFICE  
Oxnard, California

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visit [www.mehvac.com](http://www.mehvac.com)

# Easy to install.

## Easy to maintain.

The CITY MULTI system's modular approach comprising a wide range of ductless and ducted indoor units make it an ideal fit for even the most challenging and unique buildings. Whether you need a discrete option for a conference room or a unit with the capacity to handle a large expanse of cubes, CITY MULTI systems offer the perfect comfort solution.

CITY MULTI systems are easy to install for both new construction and retrofits. Design software provides a detailed layout of equipment (including wiring) to help avoid delays. Solutions can be designed with multiple systems for one floor or multiple floors or a single system handling multiple floors. Our ductless models dramatically reduce installation time and the need to tear down walls. Only small holes are needed for refrigerant lines, which are easy to run and far less invasive than ducts. Control wiring is easy to connect, reducing installation time and hassle. Outdoor units are compact (smallest 490 lbs.) and can be installed easily on a roof, a platform, or the ground.

Maintenance has never been easier than with the CITY MULTI building comfort solution. The available Maintenance Tool assists in diagnosis of equipment not only during

commissioning but during day-to-day operation. Outdoor units have easy-to-read diagnostic displays that show numerical error codes specifying an anomaly. Controllers display four-digit error codes with component address to show you exactly what needs attention. G-50A centralized controllers also can generate emails notifying facility management or technicians when there is an abnormality with a unit. Since each zone has its own indoor unit, trouble-shooting is localized rather than system-wide. Only one zone will be affected unlike central blowers that are responsible for an entire floor.

Components are easy to service. Outdoor units have multiple access points. Ceiling-concealed units feature convenient side access to coils and blowers. Ceiling-recessed units can be accessed from below. Wall and floor-mounted units offer easy access from the front.



“Not only was CITY MULTI a fraction of the competitors’ cost, but it forced out old baseboard heating energy hogs, giving us a reserve fund to run our air conditioning in the summer.”

-- BUILDING MANAGER,  
PROFESSIONAL BUILDING  
Vail, Colorado

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# Create a healthier, more comfortable, and more productive environment.

Absenteeism is one of the biggest detractors to a company's productivity level. By incorporating the proper use of outside air ventilation, you can contribute to better employee health through improved Indoor Environmental Quality (IEQ), which directly boosts your company's bottom line. Lossnay Energy Recovery Ventilators (ERVs) introduce pre-conditioned outside air while removing stale room air with the added benefit of recovering energy. The state-of-the-art Lossnay ERV core uses no moving parts, resulting in a reliable system that transfers heat and moisture energy from one air stream to another, and then distributes ventilation to the zones that need it. By creating a healthier, more enjoyable environment, you've addressed common concerns, comfort for employees and productivity for employers.



“What’s really impressive is the engineering on the variable speed compressor; it works like clockwork. And it’s so quiet that you can hold a normal conversation standing right next to the compressor.”

-- HVAC AND ELECTRICAL  
ENGINEER, EXECUTIVE PARK  
New England, Massachusetts

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# Educational and Religious Facilities

## FEATURES AND BENEFITS

### 1) Flexible Zoning System

Allows different zones to operate independently so in different areas of the facility like classrooms, offices, and worship halls people can enjoy an ideal level of individualized comfort.

### 2) Unprecedented Zone, Building or Campus Control

Customizes your control over individual zones, buildings, or the entire campus. Our integrated system software allows a facility manager to control a single room all the way up to 2,000 indoor units from the comfort of the office.

### 3) Quiet Performance

Allows classrooms to meet interior sound level requirements while delivering superior performance. A quiet environment is paramount for schools and religious facilities.

### 4) Healthier Learning Environment with Lossnay ERVs

Allows for the introduction of outside air while recapturing the heat energy from exhaust air stream, creating a more comfortable and overall improved learning environment. ASHRAE standard 62 requires a certain volume of outdoor air per person per application type.

### 5) Installation and Maintenance

Installs faster and more easily with minimal disruption because less time and fewer materials are needed. Maintaining CITY MULTI system is easier and requires less money, time and resources.

CITY MULTI building comfort solutions offer flexible configuration options so systems can be customized for any educational or religious building. Each outdoor unit can connect to multiple styles of indoor units, including ceiling (recessed, suspended and ducted concealed), wall-mounted, and floor-standing (exposed and concealed) options. Outdoor units of



multiple sizes can fit most ground, floor, or rooftop spaces. Indoor and outdoor units are compact and can fit into tight spaces. This design flexibility makes CITY MULTI the ideal choice when retrofitting older buildings where conventional ducted systems can require a drop-ceiling or where ducted system components can be hard to reach. CITY MULTI ductless indoor units are perfect when trying to work around a solid wall or ceiling.

Maintaining comfort throughout various school and church buildings isn't easy. Some zones may require heating while the other rooms of a building need cooling. Variable Refrigerant Flow Zoning (VRFZ) technology allows each zone to operate independently. With CITY MULTI large spaces such as worship halls can be divided into smaller zones with multiple indoor units. A pulpit area may require heat while an area with lit candles or a choir loft may need additional cooling. Whatever the challenge, CITY MULTI can provide everyone with the ideal level of comfort.

A CITY MULTI R2-Series system can simultaneously cool and heat different zones within the system by recovering heat energy from one zone and sharing it with another. For example, a computer room will require cooling 24/7. The heat energy removed from the computer room can be transferred to and used in other zones. This simultaneous operation can result in energy savings. CITY MULTI's economic advantages don't end here. Our systems can be scaled to fit the growing demands of your building or campus. And because CITY MULTI is designed to operate the majority of the time in partial-load conditions, it's more efficient than conventional systems that can operate only at full capacity.

# Customize your level of control.

CITY MULTI offers infinite ways to configure and control your system. Zones can be controlled individually, or you can control multiple units with one zone controller, which works well for larger areas like a library or fellowship hall.

Choose from a multiple range of controllers that vary based on different levels of need. Full-function controllers allow you to set temperature level, fan speed, airflow direction, and operation mode including COOL, HEAT, AUTO (R2-Series), FAN, or DRY. AUTO mode allows the indoor unit to switch automatically between cooling and heating to maintain a stable environment in each zone based on the zone's condition. DRY mode reduces humidity in the zone and protects books and furnishings.

Simplified controllers are an excellent option for classrooms or other zones where limited control is needed. Available functions are ON/OFF, fan speed, and set-temperature level.

With CITY MULTI systems, you have the option to customize the level of control to fit your precise needs. Individual zones

can be controlled using that zone's controller, or you can choose more centralized control options. One G-50A controller can monitor and operate up to 50 indoor units through the CITY MULTI Controls Network (CMCN). Multiple central controllers can be connected to a Local Area Network (LAN) and managed through a networked PC. When using TG-2000 software, you can control up to 40 G-50A controllers, allowing you to manage up to 2,000 indoor units. The software's icons alert you to the operating condition of each unit. That solution is perfect for overall control of an entire educational or religious campus. The CMCN integrates seamlessly with Building Management Systems via LonWorks® and BACnet®.



“While other contractors called the project too difficult, we were able to get an effective heating and cooling solution that operates well within our limited budget with CITY MULTI.”

-- *INSTALLING CONTRACTOR,  
PRESBYTERIAN CHURCH  
Doylestown, Pennsylvania*

*For more great CITY MULTI success stories  
visit [www.mehvac.com](http://www.mehvac.com)*



## We make installation and maintenance as easy as A, B, C.

Because of its modular design and modest installation requirements, adding a CITY MULTI building comfort solution is easy and creates minimal disruption to school or church activities. Since no ducts are required, fewer tools are needed and less time is required. Regular service is as easy as cleaning the washable filters, which are easy to access, remove or replace.

Often problems can be identified easily from a central location thanks to Maintenance Tool and the CITY MULTI Controls

Network. With Maintenance Tool and our TG-2000 software you can identify issues and monitor an entire campus. This capability makes your maintenance staff more efficient, as they can often troubleshoot a problem from all the way on the other side of campus without leaving the central location.

The Maintenance Tool – used during installation, commissioning, troubleshooting, and service – helps to pinpoint operational anomalies while outdoor units will display a numerical code specifying what exactly is wrong if there is a problem. G-50A controllers can also generate emails to notify your maintenance staff when a problem exists. If there is a problem with an indoor unit, it will be limited to that zone. Inconvenience is thus minimized. CITY MULTI's design limits any problem to a single zone unlike conventional systems utilizing a central blower where a problem will affect an entire floor.



“Teachers love the individual zoning control, no noise, minimized pollutants and humidity. My indoor air quality is greatly improved.”

-- HVAC OPERATIONS MANAGER,  
UNIVERSITY  
Atlanta, Georgia

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# Provide a healthy and quiet environment.

It's a fact. Nearly one in thirteen school-aged children suffers from asthma. This condition has become the leading cause of school absenteeism, accounting for more than 10 million missed school days each year.

CITY MULTI systems provide a good way for schools and churches to promote a healthier environment. Available ceiling-recessed and concealed indoor models can introduce outside air to help keep the environment from becoming stale. Lossnay Energy Recovery Ventilators (ERVs) introduce outside air to areas that need it while also recovering almost half of the heat energy from the exhaust air stream. This feature helps you improve Indoor Environmental Quality (IEQ) while also making more efficient use of energy resources, thus saving you money.

CITY MULTI helps protect books and other items by removing moisture from the zones. The indoor air handlers are located in the zone, which helps in the removal of moisture. By using DRY mode, you are able to keep each zone comfortable while also protecting your institution's

furnishings and keeping them in good condition. And since a quiet environment is a requirement for many school and church buildings, CITY MULTI units keep sound to a minimum. Indoor units create on average about 35 dB(A) but can be as low as 24 dB(A) while outdoor units create just 56 dB(A). For comparison a typical conversation creates around 60 dB(A).



“Though we initially chose CITY MULTI for its cooling performance, its heating capabilities surpassed our expectations. We no longer use water to heat the facility.”

-- EXECUTIVE DIRECTOR  
RELIGIOUS TRAINING CENTER  
Bull Valley, Illinois

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visit [www.mehvac.com](http://www.mehvac.com)

# Multifamily Residential Buildings



## FEATURES AND BENEFITS

### 1) Flexible Zoning Comfort

Variable Refrigerant Flow Zoning (VRFZ) technology distributes refrigerant from zone to zone as needed for maximum comfort control. This technology works in conjunction with INVERTER technology and multiple indoor unit options for powerful and quiet performance while managing energy usage effectively. Flexible control options enhance control of individual comfort levels.

### 2) Reliable Performance

CITY MULTI systems have been used around the world for over 20 years and have contributed to Mitsubishi Electric's reputation for innovation and reliability. Enjoy the peace of mind that comes from working with the industry leader.

### 3) Adaptive System Design

CITY MULTI building comfort solutions are flexible enough to be successfully installed into almost any kind of multi-family residence or adaptive reuse project. This flexibility also allows you to maintain a building's aesthetics. Available design software assists in the selection of proper equipment and even integrates with AutoCAD® to assist engineers and architects.

### 4) Customizable Control Options (With Tenant Billing)

The CITY MULTI Controls Network (CMCN) enables you to assign zone control to individual tenants and building-wide control to maintenance or facility management staff from a central location. Add the optional TG-2000 software, and the facility manager can control up to 2,000 indoor units and tally individual electrical usage per tenant. So you can bill for the HVAC energy consumption as opposed to a *best guess* estimate.

### 5) Amazingly Quiet

Indoor and outdoor units operate at very low sound levels. This feature often is the main reason for selecting CITY MULTI.

enjoy their ideal level of comfort. Using the Variable Refrigerant Flow Zoning (VRFZ) technology of the R2-Series, heat energy is shared between zones as needed via refrigerant lines so that your system will operate at peak efficiency. This function enables CITY MULTI to cool and heat different zones simultaneously to maximize individual tenant comfort.

At any given time different areas of a building and different tenants have specific cooling and heating needs. Zones that receive plenty of sun will need more cooling while those that stay in the shade often need less cooling and heating. Thanks to the superior performance of CITY MULTI's INVERTER technology, tenants can enjoy their ideal set temperature quickly thanks to high speed motor rotation inside the compressor. Temperature easily is maintained without operating at full capacity during non-peak loads unlike conventional systems. This kind of performance makes your building an attractive choice for potential new tenants and will help to ensure existing tenants stay comfortable. The CITY MULTI R2-Series even recovers heat energy from one zone and shares it with another within the same self-contained system to further increase energy savings.

Temperature, fan speed, vane direction, and mode of operation can all be adjusted with individual zone controllers. You can place control over all systems with facility management or single systems with individual tenants. Comprehensive zone or centralized controllers allow for the operation modes of COOL, HEAT, DRY (for humid days), FAN or AUTO (R2-Series) modes. These functions can be operated either by using the controllers or via a PC when interfaced with the CITY MULTI Controls Network (CMCN). The CMCN can be integrated with existing Building Management Systems (BMS) via LonWorks® and BACnet® industry standards. Use the TG-2000 software in conjunction with G-50A controllers for complete control of up to 2,000 indoor units.

Meeting all the different demands of cooling and heating a multiunit residential building can be quite a challenge. Luckily you have the CITY MULTI building comfort solution to make sure all tenants

# System flexibility.

Before, during, and after you install it.

We understand that no two multiunit dwellings or building types are alike. Whether the project is new construction or renovation, whether the building is a brownstone apartment, warehouse-style loft, or a high-rise condominium, CITY MULTI provides the kind of installation flexibility that architects, engineers, and building managers love even before the system is installed. Smart division of living and public spaces within a building call for many unique cooling and heating options. Mitsubishi Electric provides design software to assist with selecting the proper system components and create an AutoCAD® drawing to help integrate CITY MULTI into their building plans. System information needed for the installation is identified, including wiring terminals, addressing, piping accessories, and pipe sizes.

Installation into existing buildings does not require that ceiling or walls be torn down to find places to install ductwork. All indoor and outdoor units are compact and easily can fit into almost any space regardless of the design challenge. Our ductless indoor units require only small openings for refrigerant lines and wiring. With CITY MULTI you don't need an oversized central air handler that conventional systems depend on or smaller blowers in closets. You also have flexibility to expand the system later without performing a major overhaul so you can decide to divide a larger area into smaller zones to maximize comfort. CITY MULTI gives you so many options to enhance your new building design like added interior space thanks to the lack of large volume ducting. And the outdoor units can be neatly tucked away and become virtually invisible. With CITY MULTI all your tenants will notice is their comfort.

## Choose from the following indoor styles:

**Wall-mounted** – A sleek, ductless design that mounts high on a wall and provides great air distribution to the far corners of the room.

**Ceiling-suspended** – A compact design that is perfect when your building lacks available above-ceiling space. They mount flush against the ceiling and the wall and provide powerful air distribution.

**Ceiling-recessed Cassette** – A ceiling-recessed unit that requires only about 12 inches of clearance above the ceiling. The decorative panel easily is removed for service and included is a built-in pump that removes condensation out to a local drain. Either a single discharge model or four-way discharge model is available among the different cassette types.

**Ceiling-concealed Ducted** – A compact ducted design using short duct runs, this unit spreads air over greater areas and is a good choice when you have the shallow above-ceiling space available. Their discrete design means only the small duct registers are visible.

**Floor-standing** – A floor-standing model is ideal for when you lack open wall or ceiling space. Perfect when upgrading from PTAC-type systems found in many hotels, for the unit can occupy the floor space or be mounted inside a wall.

“I was attracted to CITY MULTI’s advanced heat pump INVERTER technology, efficiency, flexibility, simultaneous heating and cooling, separate controls, and the prospects of long term savings.”

-- OWNER, ASSISTED LIVING FACILITY  
Rice Lake, Wisconsin

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## Manage HVAC operating costs easier with individual tenant billing.

You have the option of enhancing your CITY MULTI building comfort solution with TG-2000 software. This advanced software package allows you to control up to 2,000 individual indoor units for total and comprehensive building control. The TG-2000 software allows the input of your building's floor plan, and icons for each indoor unit display dynamic performance information or alert you if an anomaly is detected.

Additionally, you can tally electrical usage per system or per indoor unit, depending how your building and systems are configured. This feature gives you the ability to bill out for HVAC electricity consumption per tenant rather than resorting to approximate usage.



Photo by Alex Hayden

"Actually it was the tenant billing feature that helped me make my final selection. Once I knew this could be done, and with all the other CITY MULTI benefits, the decision was easy."

-- HVAC CONTRACTOR, LUXURY CONDOMINIUMS  
Issaquah, Washington

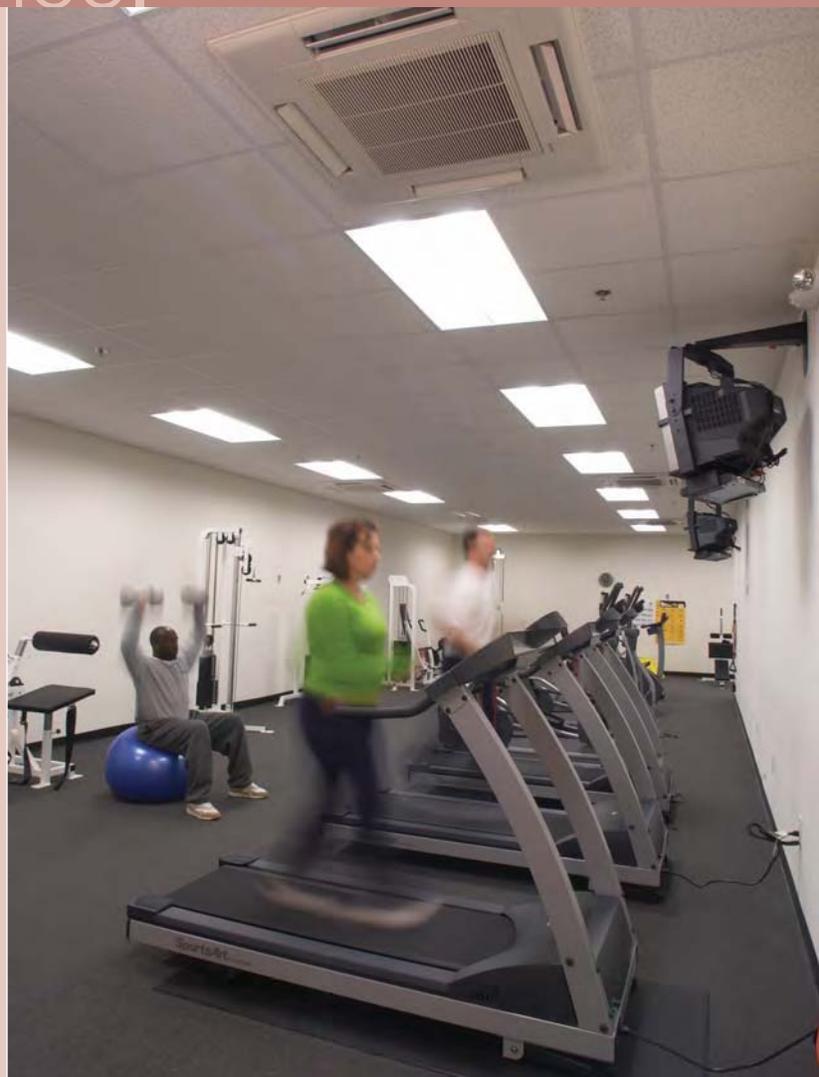
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# Quiet, reliable performance.

A peaceful indoor living environment can help attract new tenants while helping to convince existing tenants to renew their contracts. Indoor units operate at sound levels lower than a typical library: about 40 dB(A). Actual average sound levels are closer to 35 dB(A) with the quietest unit running at about 24 dB(A). Outdoor units run at about 56 dB(A), which is the sound level of a normal conversation.

Perhaps best of all CITY MULTI systems have been used around the world for more than 20 years. This long history and established position as the technology leader gives you peace of mind that your system will operate reliably for years to come. Integrated microprocessors help safeguard against failures and reduce downtime.

Mitsubishi Electric stands by CITY MULTI products with a limited six-year compressor warranty and one-year warranty for parts. An extended warranty also may be available. Our trained network of engineers and contractors will help you design, install, and maintain any of our systems with the unique confidence that comes from working with the industry leader.



“When I first hit the CITY MULTI switch, I was stunned by the silence. In all my 33 years, I have never installed a system that runs so quietly.”

-- 33-YEAR HVAC VETERAN CONTRACTOR,  
RONALD McDONALD HOUSE

*New Haven, Connecticut*

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visit [www.mehvac.com](http://www.mehvac.com)*

# Additional Applications

## FEATURES AND BENEFITS

### 1) Healthier, More Comfortable and Quiet Environments

Lossnay® Energy Recovery Ventilators (ERVs) exhaust stale indoor air while simultaneously introducing outside air with the added benefit of energy recovery. You're not only creating a more comfortable environment; you're also creating a healthier environment. CITY MULTI is extremely quiet and contributes to a tranquil living or working environment.

### 2) Flexible Zoning System

Zones within a building have unique cooling and heating challenges. Our advanced VRFZ technology distributes resources where they're needed so each zone can operate with greater effectiveness and independence. One zone can be cooled while another is heated, both being performed simultaneously (R2-Series).

### 3) The Power of CITY MULTI Controls Network

Tie all of your systems together including Lossnay. With CMCN and optional TG-2000 software, you can control up to 2,000 units from one central location. CITY MULTI can integrate into existing Building Management Systems (BMS) via LonWorks® or BACnet® industry standards.

### 4) Low Impact and Easier Installations

CITY MULTI's ductless indoor units don't require drop down ceilings or the tearing down of walls to accommodate a new central-ducted system. The staged approach that is used by CITY MULTI allows installations to affect only individual zones instead of entire floors so businesses can remain uninterrupted.

### 5) Easy Maintenance

The available Maintenance Tool and TG-2000 software can help you identify problems from a networked PC, saving your maintenance personnel time and effort. Outdoor units display numerical codes diagnosing any problems therefore making any changes quick and easy.



solutions overcome these challenges with technology that delivers design flexibility and superior performance.

If you need to renovate an older building, CITY MULTI allows you to maintain its architectural integrity: you won't need to incorporate long runs of ductwork or space-hogging central blower units. Drop ceilings may not be needed, and you won't have to plan for a large mechanical room or the loss of closet spaces. Installation will create minimum disruption due to CITY MULTI's modular design. Both ductless and short-run ducted indoor units require only refrigerant lines, which are much smaller and easier to install than larger traditional ductwork. Large chiller units are not needed either. This bonus saves you installation time and labor. Modular design and staged installation mean only individual zones are affected instead of entire floors or buildings.

CITY MULTI offers various indoor unit styles (wall-mounted, ceiling-recessed cassette, suspended, and concealed ducted, and floor-standing) that can fit into the most challenging spaces. Outdoor units are so compact that in some cases they can be installed without the use of a crane or special lift if there's an available freight elevator with roof access. Outdoor units are compact so it's easy to find a place to install them, no matter how tight the space.

Once installed, each and every CITY MULTI system uses Variable Refrigerant Flow Zoning (VRFZ) technology that allows for maximum comfort in each zone while using energy effectively. Control over your systems can be customized and integrated into your current Building Management System (BMS). Many restored, older buildings have upgraded windows and seals which can inhibit natural ventilation. A Lossnay® Energy Recovery Ventilator (ERV) can introduce pre-conditioned outdoor air to help maintain Indoor Environmental Quality (IEQ). But, perhaps, best of all you can expect years of trouble-free and reliable service thanks to Mitsubishi Electric's heritage of innovation and quality.

## Historical Renovations

Adaptive reuse and renovation of historic buildings present many challenges for HVAC systems. CITY MULTI building comfort

# Libraries, Museums, Recording Studios

## CITY MULTI has a solution for multiple building applications

Every type of building offers its own unique challenges when an effective and efficient cooling and heating solution is required. Luckily CITY MULTI building comfort solutions have the flexibility to meet any kind of challenge.

## Libraries, Museums, Recording Studios

Libraries, museums, and recording studios need to maintain quiet and comfortable environments. CITY MULTI delivers superior performance, effectively uses energy, and operates at extremely quiet sound levels. Most indoor models measure about 35 dB(A) or the approximate sound level of a whisper. Even outdoor units are extremely quiet and can be placed near windows or entrances without disrupting or distracting activities happening inside.

Buildings like libraries and museums have a wide variety of spaces: theater spaces, open forums, smaller study areas, and computer rooms are just a few examples. Regardless of the

space's size or layout, CITY MULTI provides each zone with its own unique comfort solution. This controlled environment increases people's comfort levels and their experience.

CITY MULTI allows you to customize the level of control over system operations. Zones can be controlled individually or via a centralized controller. When connected to a Local Area Network (LAN), the operation and monitoring of multiple systems can be handled with a networked PC. Ultimately the CITY MULTI Controls Network (CMCN) can be interfaced with a Building Management System (BMS) via LonWorks® or BACnet® industry standards.

One feature of particular interest for libraries and museums is CITY MULTI's DRY mode. This feature keeps humidity levels low to protect books, documents, and furnishings. For added security ceiling units offer a drain lift mechanism that carries condensation up and away from the ceiling. Built-in fail-safe features mean these units are a good choice for use near sensitive areas that are used for document storage, display of art, or computer equipment.



“CITY MULTI was a great choice for our spaces. The system is well suited for our nine rooms and multiple users needing various degrees of comfort throughout the day. And the sound of silence is wonderful!”

-- CHIEF ENGINEER,  
UNIVERSITY RADIO STATION  
Ann Arbor, Michigan

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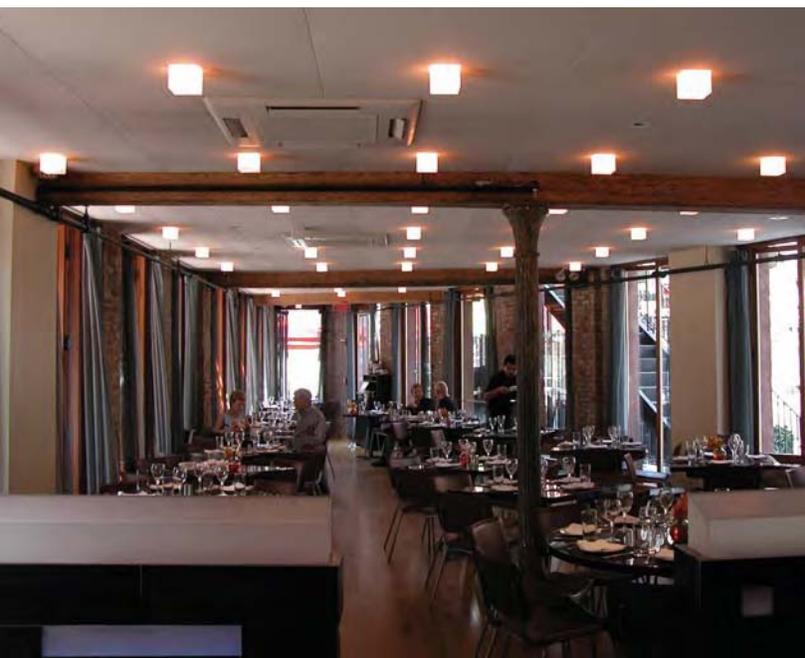
# Whatever the space CITY MULTI has a solution

## Restaurants

Kitchens generate an overabundance of heat while the dining area may be drafty and cool. CITY MULTI can simultaneously cool the kitchen while heating a dining area so that both employees and customers can enjoy an ideal level of comfort. Separate indoor units can be employed and individually controlled to handle each zone's unique challenges.

## Hospitals

Instead of trying to keep many different patients comfortable with a single temperature setting as with conventional systems, CITY MULTI can divide the patient rooms into individual zones. Each zone can be controlled by someone in each zone or at a central location using the CITY MULTI Controls Network (CMCN). This capability ensures that each patient can be comfortable, which can be a great aid in the healing process. Ductless models filter air and



“The installation was absolutely ingenious, and was one of the best start-ups I have ever seen. Since the grand opening, the system has been running trouble-free.”

-- HVAC REGIONAL MANAGER  
TRENDY RESTAURANT  
New York City, New York

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# Quiet, reliable performance.

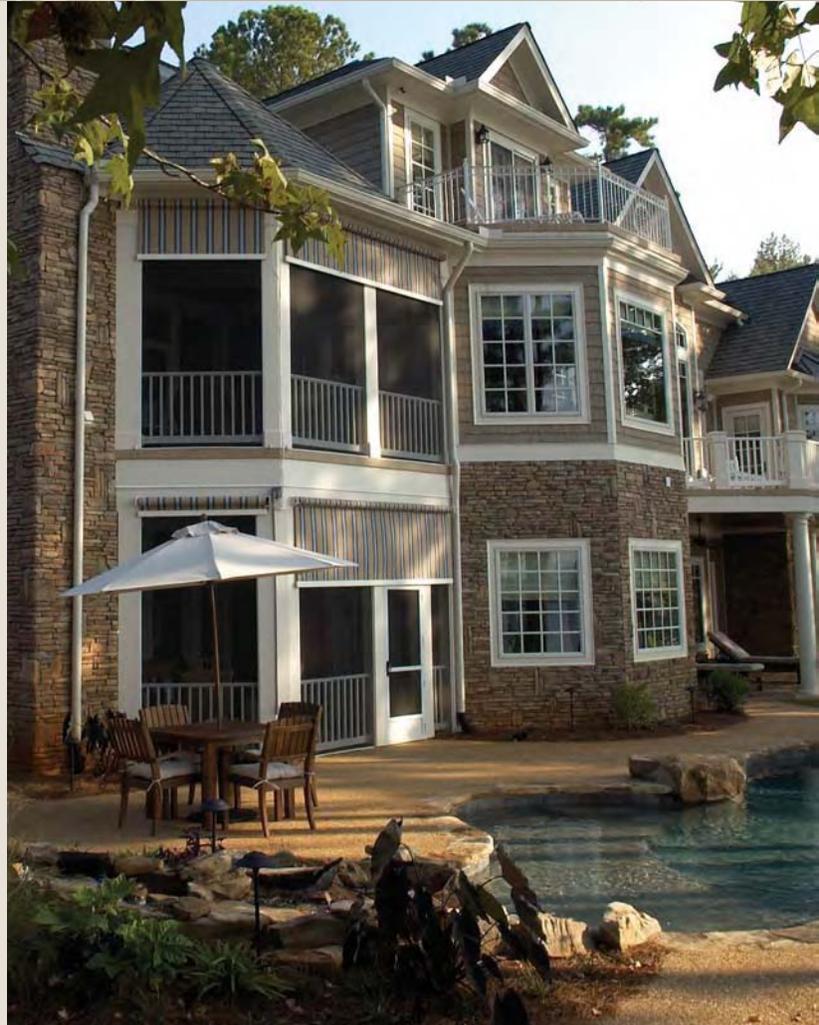
help to improve air quality and minimize the cross contamination between rooms because shared air through ducting can be avoided.

## Radio/TV Stations

When you're broadcasting live ambient noise must be kept to a minimum. CITY MULTI delivers superior cooling and heating performance at whisper-quiet levels. DJ's and TV personalities won't have to compete with a loud, conventional HVAC system during the cold winter or hot summer months.

## Health Clubs

When people exercise, they can generate a lot of heat, which can require additional cooling. Meanwhile the reception area may feel cool and need heating. Locker rooms or cardio-fitness rooms can add heat and moisture into the environment. Luckily CITY MULTI and Lossnay ERVs can provide a maximum level of comfort for each area while also removing excess moisture from the air.



**"There is no other system in the world capable of such total flexibility."**

**-- PROJECT MANAGER,  
HISTORIC PERFORMING ARTS CENTER  
Ephrata, Pennsylvania**

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visit [www.mehvac.com](http://www.mehvac.com)*



No HVAC system is as advanced, versatile, reliable, and quiet as the CITY MULTI Building Comfort Solution from Mitsubishi Electric.

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Mitsubishi Electric Air Conditioning & Refrigeration Systems Works acquired ISO 9001 certification under Series 9000 of the International Standard Organization (ISO) based on a review of Quality warranties for the production of refrigeration and air conditioning equipment.

**ISO Authorization System**

The ISO 9000 series is a plant authorization system relating to quality warranties as stipulated by the ISO. ISO 9001 certifies quality warranties based on the "design, development, production, installation and auxiliary services" for products built at an authorized plant.

Mitsubishi Electric Air Conditioning & Refrigeration Systems Works acquired environmental management system standard ISO 14001 certification.

The ISO 14000 series is a set of standards applying to environmental protection set by the International Standard Organization (ISO).

See complete warranty for terms, conditions, and limitations.

A copy is available from Mitsubishi Electric, 3400 Lawrenceville Suwanee Road, Suwanee, GA 30024.

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