ELECTRONIC CONTROLLERS

Presevi Industries Pvt Ltd

An ISO certified BEE empaneled ESCO firm with an independent R&D division

(Designer and Manufacturer of Electronic Controllers)

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About Presevi Industries Pvt. Ltd.

Presevi Industries Pvt. Ltd., Chennai, India—established in 1985—is an Original Design Manufacturer (ODM) with an independent R&D division and two manufacturing facilities. The company specializes in designing, developing, and manufacturing highly reliable electronic controllers for appliance industries, including air conditioning, refrigeration, and washing machines. Presevi Industries serves diverse sectors such as energy, hospitality, agriculture, space and atomic research, railways, defense, telecommunication, research organizations and more. With 4 decades of cumulative knowledge and expertise in power electronics, instrumentation, and mechatronics-based system design, the company integrates reliability considerations like FMECA, FTA, MTTR, and MTBF at the very first phase of product design. Over the years, the firm has successfully completed numerous innovative, research-based product developments in mechatronics, power electronics, embedded controller development, instrumentation, and networking. These have been delivered for esteemed clients such as Indian Railways, ISRO, IGCAR, BSNL, IIT, and others.

Reliability & Quality

As mentioned earlier, Presevi provides cost-effective electronic control solutions to major OEMs in the appliance sector, including manufacturers of air conditioners, washing machines, domestic ovens, and to customers in the hospitality and energy-saving domains. What sets Presevi apart from its competitors is a steadfast commitment to **Design for Manufacturing (DFM)** with **built-in reliability**, a culture of **first-time-right execution**, and a continuous drive for innovation. The company rigorously applies quality measurement tools, defect elimination techniques, and adopts quality and reliability improvement policies as part of an ongoing process. At the **design stage**, we integrate reliability methodologies such as **FMECA (Failure Modes, Effects and Criticality Analysis)** and **FTA (Fault Tree Analysis)**. Parameters like **MTBF (Mean Time Between Failures)** and **MTRR (Mean Time between Repair and Replace)** are actively considered to ensure long-term dependability. During manufacturing, techniques such as **Statistical Quality Control (SQC)**, **in-house burn-in** of critical components, and **100% inspection** of finished products are employed to eliminate defects and ensure only the highest-quality components reach our customers.

Organization

R&D, product design, manufacturing, and servicing form the core pillars of Presevi Industries Pvt. Ltd. These functions are supported by a team of highly qualified and well-trained professionals with deep domain expertise. Their contributions are instrumental in achieving key outcomes such as defect reduction, extended product life, and enhanced customer satisfaction.

Research & Development

An independent R&D division of Presevi Industries Pvt. Ltd. is driven by a dynamic team of young, enthusiastic engineers and technicians with specialized expertise in **instrumentation**, **embedded controller design**, **power electronics**, **process automation**, and **manufacturing**. The team is deeply motivated and highly committed to innovation and professional excellence. Presevi invests significantly in **technology upgrades**, **personnel training**, and **infrastructure**, including a well-equipped technical library and modern lab equipment. Our strong belief in **teamwork** has enabled us to successfully complete numerous challenging projects and launch several innovative products. By embracing **state-of-the-art technologies**, we have not only strengthened our product portfolio but also achieved **patentable innovations**. In line with our commitment to industry-academia collaboration, we also **mentor and financially support university students** through internships and engineering project assistance.

Manufacturing

With two well-equipped factories, Presevi Industries Pvt. Ltd. manufactures electronic controllers for OEMs in the appliance industry, energy-saving applications and the hospitality sector. In addition to high-volume production, we also develop specialized low-volume controllers tailored to the unique requirements of defense, railways, space, and security applications. Our manufacturing facilities are equipped with advanced testing infrastructure to ensure consistent product quality. Every product undergoes burn-in testing to enhance reliability and extend operational life. Comprehensive, rigorous quality checks are conducted using specialized test equipment and procedures, handled by our skilled and qualified personnel. We also maintain a computerized inventory management system, which plays a key role in tracing defects, identifying substandard components, and eliminating unreliable vendors, further ensuring the delivery of dependable and high-performance products.

Sales and Services

After-sales service is a critical factor in achieving a favorable **Mean Time to Repair (MTTR)**, and Presevi Industries places strong emphasis on this aspect. Our **sales team works in close coordination with the service department**, ensuring prompt and effective response to customer field complaints and providing reliable backup support. Our **computerized service management system** enables precise identification of **defective components**, analysis of **defect patterns**, **repeatability**, and **failure mechanisms**. This data-driven approach supports the generation of key reports such as **Field Failure Analysis (FFA)**, **reliability predictions**, **product availability statistics**, **Mean Time Between Failures (MTBF)**, and **MTTR** estimates. These insights are crucial in enhancing the performance and reliability of our **tropically-hardened electronic controllers**, designed to meet the demanding **environmental challenges** faced by our **B2B customers** across various sectors.

Several products are manufactured worldwide to meet human needs. Only firms that incorporate reliability engineering at the design stage are likely to excel and survive over time. Reliability engineering provides both theoretical and practical tools to ensure that parts, components, equipment, systems, and subsystems can perform their required functions without failure for a specified duration and under defined environmental conditions. It also enables prediction of failure probabilities, incorporation of optimized reliability factors, and the calculation of maintainability, availability, safety, and quality metrics.

It is essential to be actively involved—both individually and in a team—with genuine interest, to bring ingenuity and creativity into the design and application of reliability principles. Quality, reliability, and cost are three independent yet critical business metrics. While cost and quality can be balanced relatively easily in manufacturing, designing a reliable product requires a deep understanding of potential failure modes, their types, and magnitudes. Despite thousands of failures being observed daily in the industry, our understanding of why things fail—and how to control such failures—remains limited. The key to improving reliability lies in systematic data collection spread over a period, various regions, circumstances, environments and a sincere Fault Tree Analysis (FTA).

Quality vs. Reliability

- **Quality** is a **time-independent**, **lot-dependent** measure. This means latent failures can often be detected and removed during production.
- **Reliability**, on the other hand, is **time-dependent** and **not lot-dependent**. Hence, latent failures must be addressed during the design phase, typically through redesign.

Numerical estimates such as **Mean Time Between Failures (MTBF)** can be used to compare the reliability of different designs

❖ Definition of Reliability:

"**Reliability** is the conditional probability, at a given **confidence level**, that equipment will perform its **intended functions satisfactorily—without failure and** within specified **performance limits—at a given age, for a specified duration**, under intended use and within **defined application and operational environmental stress levels.**"

At **Presevi Industries Pvt. Ltd.**, applying reliability techniques is a continuous process. We integrate reliability engineering right from the design stage. Our design and manufacturing teams are trained in reliability measurement and application.

We use FFA by analysing historical failure data, collected region wise, its mechanisms, along with Failure Mode Effects and Criticality Analysis (FMECA), tailored to specific environmental conditions. This data is applied to new product designs to improve metrics such as MTBF and overall product availability. We have found that **reliability cannot be improved unless it is designed in the product from the beginning**. As a result, our products are trusted, reliable, and consistently meet specifications.

❖ Availability

Another important term in reliability engineering is **availability**. It is defined as:

Availability (A) = MTBF / (MTBF + MTRR)

Where: **MTBF = Mean Time between Failures, MTRR = Mean Time To Rectify and Replace**

Availability is a critical metric when selecting a product, as it provides a combined measure of both **reliability** and **maintainability**. It reflects how long a product remains operational and accessible to the user. To maximize availability: **MTBF should be high** and **MTRR should be low**

For example, consider an air conditioner OEM that selects an electronic controller based solely on cost, without evaluating critical performance and reliability parameters. This approach carries a high risk of product failures, frequent service calls, and increased downtime. While the initial cost may be low, the total cost of ownership rises significantly due to maintenance expenses and poor consumer experience. In contrast, investing in a reliable controller—even if it is more expensive upfront—proves more economical over time through reduced failures, lower service needs, and improved product uptime. At Presevi Industries Pvt. Ltd., adherence to these principles has enabled us to remain a trusted OEM supplier for over 4 decades.

❖ From Concept to Production

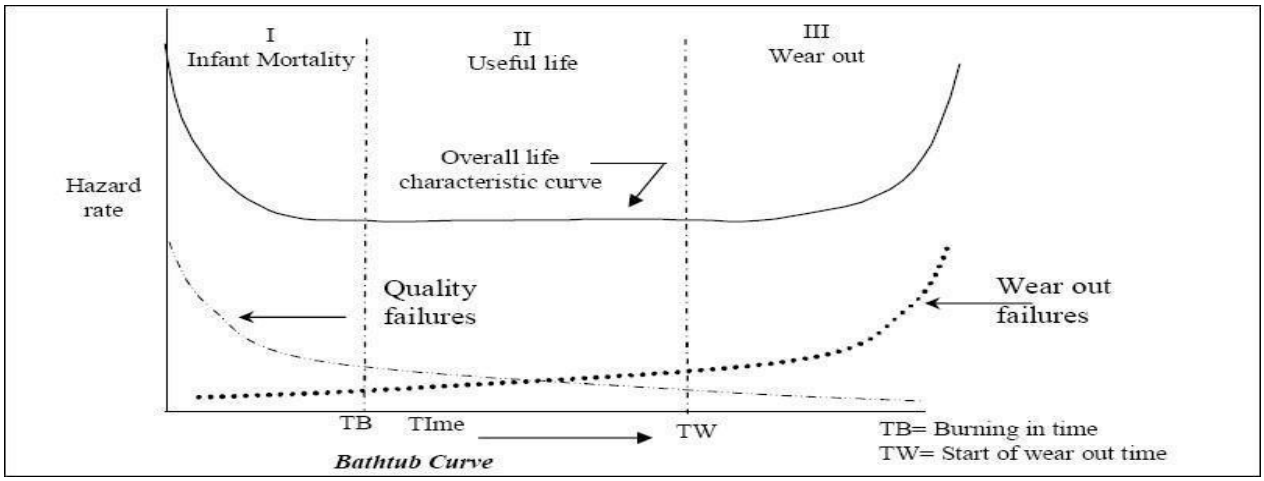
Our product development roadmap—from concept to manufacturing—is uniquely structured. Once a prototype is developed, it undergoes extensive hardware and software testing and few scalable prototypes, **pilot production** etc. are initiated. These test samples undergo strict manufacturing controls, BOM verification, vendor evaluation etc. Necessary improvements are made before full-scale production begins the results are evaluated and this method has proven highly effective in practice

❖ Reliability Prediction

At Presevi, we adopt scientific methods such as the **physics of failure** to predict product reliability. Our products are subjected to a series of tests to identify:

- The **infant mortality period**
- The **useful life phase**
- The **wear-out phase**
- These phases are represented using the **inverted bathtub curve**, whose duration we determine through empirical testing. Additionally, all products undergo:
- **100% burn-in testing**
- **Final inspection prior to dispatch**

These steps ensure that products reaching the customer **are reliable and have an extended operational life**



❖ Commitment to Quality and Reliability

At Presevi Industries Pvt. Ltd., the application of several field-proven techniques enhances reliability, quality, manufacturability, and product availability, while also increasing the confidence level of our customers. These practices directly contribute to excellent customer satisfaction and long-term business growth. We firmly believe in producing cost-effective, high-performance products—not merely cheaper alternatives. This commitment to quality and reliability has been the cornerstone of our success and industry reputation.

HEATING VENTILATION AIR CONDITIONING APPLICATION

An ISO certified BEE empaneled ESCO firm with an independent R&D division
(Designer and Manufacturer of Electronic Controllers)

Controllers for Window air conditioners
A1 –G306OG/A1-G351

A1 series ON/OFF controllers are designed using mixed-signal processing technology, targeted for **Window Air conditioners,** either for direct OEM application or for retrofitting to the existing air conditioners. These controllers cleared EMI/EMC compliance, by testing as per IEC standards, incorporates more energy and cost-saving features. A search on the product selection chart would help match the exact need any of these models. It is possible for us to design and add more features if the specific requirement demands.

1. Following explanations give a general idea/features built into the controller.

1.1 Mode Selection- Cool/ Dry/Fan

These modes allow operation of the air conditioner to meet the requirement. Following gives brief details of an operation.

1.1.1 Cool Mode- This mode lets air conditioner to maintain room temperature settable between 16 to 30°C (60.8 to 86 °F), and runs the fan at a previously selected speed. The intelligent time delay designed & developed by Presevi, give the compressor protection without sacrificing the comfort.

2. Product Highlights

- Cordless remote operation
- Modes - Auto/ Cool/ Fan / Dry
- Fan speed-Auto/Low/Medium/High
- Sweep function
- Sleep function
- Power down memory
- ON/ OFF timer selection
- 16 to 30°C (60.8 to 86 °F) temperature setting with digital display
- Room temperature display
- Zero initial time delay for compressor
- Gas equalization protection of compressor.

3. Application

- Home office cooling

Heat removal in cellular sites, ATMs etc.

Evaporator fan speed is selectable between Auto / Low / Medium / High. The built-in thermostat could give accuracy better than ±0.5°C (41°F) value and would result in saving energy and operational cost.

1.1.2 Dry Mode - This mode could be used for de- humidifying the conditioned space. A fan would run at low speed and cannot be changed. This would let water vapor content in the air, to condense and drop, during its movement through the evaporator coil.

1.1.3 Fan mode: - This mode lets the fan alone working to facilitate airflow. Fan speed could be selected from low/ medium/ high/auto as per need.

4. Other functions. Following give various other functions built into the controller.

4.1 Sweep function - Controls the louver for uniform distribution of air in the conditioned area.

4.2 Sleep function - Temperature set point of the air conditioner would be adjusted such that it would adjust the compressor operation to save power while maintaining comfort.

4.3 Timer- This function lets one to set the duration of air conditioning operation from 1 to 15 hours. Certain models are built in with real-time clock (RTC) for letting the air conditioning operation as per the time schedule.

4.4 Remote control: - All the functions could be selected using remote handsets. Presevi has several IR handsets, starting from blind to LCD versions to choose from.

4.5 Memory– Power down memory retains the previously set values, in case of black or brownouts of the power supply.

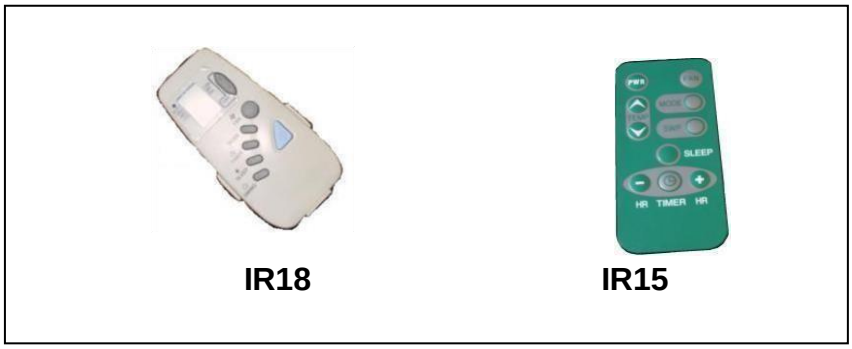
4.6 Energy Saver mode: - This lets air conditioner to be as per a selected schedule mode such that considerable energy could be saved at the cost of some comfort.

5. Product Selection Chart

Product no.	Mode					Sweep	Motor Louver		Fan speed				Ionizer	Timer		Memory	Temp. display	Temp. setting		Remote facility		
	Fan	Cool	Dry	Heat	Auto		Stepper	Synchronous	Low	Medium	High	Auto		Normal	RTC			Push button	Potentiometer	Corded	Cordless	
																					Blind	LCD
A1G306OG	✓	✓	✓	*	*	✓	*	✓	✓	✓	✓	✓	*	✓	*	✓	✓	✓	*	✓	IR15	*
A1-G 351	✓	✓	✓	*	*	✓	*	✓	✓	✓	✓	✓	*	✓	*	✓	✓	✓	*	✓	IR15	*

Fig 5.1 Product selection chart

✓ - Provided * - Not provided



6. Electrical Specifications

Input Voltage (V AC)			Frequency (Hz)			Power consumption (VA)	Compressor relay rating (A)		Fan relay rating (A)
Min.	Typ	Max.	Min.	Typ	Max.		Steady state	In rush	Steady state
180	220	270	45	50	55	3.6	30	70	5

Fig 6.1 Electrical specifications table

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A2 Series Corded / Cordless Controllers For Split Air Conditioners

A2 Series Corded / cordless ON/OFF controllers are designed using mixed signal processing technology. This series of controllers, cleared for EMI / EMC by testing as per IEC standards, are supplied to several major OEMs that manufacture split air conditioners by incorporating more energy & cost saving features. By looking at our product selection chart would help you to match your exact requirement from any of these models. It will be possible to design and add more features if your specific requirement demands. Following gives a general idea of the controller.

1. Mode Selection- Cool/ Dry/Fan

These modes allow operation of the air conditioner to meet the requirement. Following gives brief details of an operation.

1.1 Cool Mode- This mode lets air conditioner to maintain room temperature settable between 16 to 30^{0}C (60.8 to 86 °F), and runs the fan at a previously selected speed. The intelligent delay time designed & developed by Presevi, give the compressor protection without sacrificing the comfort.

In Auto speed, the fan speed will change automatically according to the cooling requirement. The thermostat has accuracy better than ±0.5°C (41°F) on the set value.

2. Product Highlights

- Cordless operation with power down memory
- Modes - Auto/ Cool/ Fan / Dry
- Fan speed - Auto/ Low/ Medium/ High
- Sweep and sleep function
- Filter Check function
- OFF timer/ ON-OFF timer with RTC
- 16 to 30°C (60.8 to 86 °F) temperature setting
- Room temperature display
- Zero initial time delay for a compressor.

1.2 Dry Mode - This mode could be used for de-humidifying the conditioned space. A fan will be run only at low speed. This would let water vapor content in the air, to condense and drop, during its movement through the evaporator coil.

1.3 Fan mode: - This mode lets Fan alone working to facilitate airflow. Fan speed could be selected from low/ medium/ high/auto speeds as per need.

3. Other functions. Following give various other functions built into the controller.

3.1 Sweep function - Controls the louver for uniform distribution of air in the conditioned area.

3.2 Memory– Power down memory retains the previously set values, in case of black and brownouts of the power supply.

3.3 Timer- This function lets one could set the duration of air conditioning operation from 1 to 15 hours. Certain models are built-in with a real-time clock (RTC) for letting the air conditioning operation as per the time schedule.

3.4 Remote control: - All the functions could be selected using remote handsets. Presevi has several IR handsets, starting from blind to LCD versions to choose from.

3.5 Energy Saver mode: - This lets air conditioner to be as per a selected schedule mode such that considerable energy could be saved at the cost of some comfort

4. Application

Home cooling, Industry, Office rooms, etc.

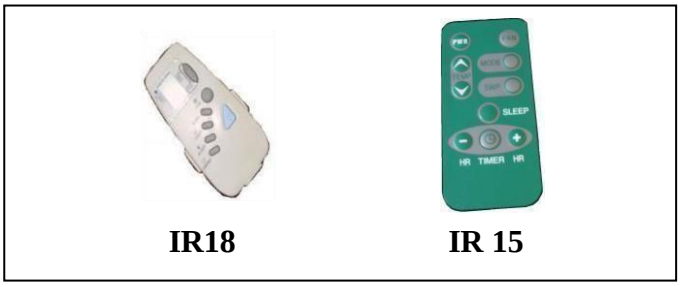
5. Product Selection Chart

A2 series corded / cordless controllers																						
Product no.	**Mode**					**Sweep**	**Motor Louver**		**Fan speed**				**Ionizer**	**Timer**		**Memory**	**Temp. display**	**Temp. setting**		**Remote facility**		
	Fan	**Cool**	**Dry**	**Heat**	**Auto**		**Stepper**	**Synchronous**	**Low**	**Medium**	**High**	**Auto**		**Normal**	**RTC**			**Push button**	**Potentiometer**	**Corded**	**Cordless**	
																					Blind	**LCD**
A2-G361	✓	✓	✓	*	*	✓	*	✓	✓	✓	✓	✓	*	✓	*	✓	✓	✓	*	✓	IR15	*
A2-G351	✓	✓	✓	*	*	✓	*	✓	✓	✓	✓	✓	*	✓	*	✓	✓	✓	*	✓	IR15	*
⌖A2-G350	✓	✓	✓	*	*	✓	*	✓	✓	✓	✓	✓	*	✓	*	✓	✓	✓	*	✓	IR15	*

Fig 5.1 Product selection chart

✓ Provided * Not provided

⌖ Control two compressor models with common evaporator fan * Retrofit model



IR18 **IR 15**

6. Electrical specifications

Input Voltage (V AC)			**Frequency (Hz)**			**Power consumption (VA)**	**Compressor Relay Rating (A)**		**Fan Relay Rating (A)**
Min.	**Typ**	**Max.**	**Min**	**Typ**	**Max.**		**Steady state**	**In rush**	**Steady state**
180	220	270	45	50	55	3.6	30	70	5

Fig 6.1 Electrical specifications table

Package Air conditioner controllers

PS-AX-XXX

The PS-A3-116 series electronic controllers are designed for package/ductable air-conditioning AHU systems, chillers etc. It is functional between 90 to 285 Volts power supply with 1 to 6 compressors and a single blower. We have models for DOL, Star-Delta, variable fan speed & Standby for a single blower motor/ pump (operable from with and without VFD). It also ensures safe operations with error interlock protections for SPP, blower protection, and HP/LP. Features such as loading/unloading of compressors, based on cooling demand, help to optimize energy consumption and reduce operational costs without compromising user convenience. Additional features include an intelligent gas equalization time delay, status display, and the. Fig.2 helps in selecting the right controller with or without an electrical control panel.

1. Product Highlights

- **Wide Operating Voltage Range:** Operating voltage in between 90 to 285 V AC/DC, ensures reliable operating under varying power supply conditions.
- **Multi-Mode Operation:** Supports Cooling, Fan modes as per the requirement.
- **Compressor & Blower Control:** Supports AHU operation up to six compressors with a single blower.
- **Intelligent Gas Time Equalization:** Optimized algorithm & logic for compressors during switching **ON** & **OFF,** loading & unloading, for individual compressor delays to minimize power line transients.
- **Blower Motor Control Flexibility:** options for Direct-On-Line (DOL), VFD, Star-Delta & Standby control operation
- **Temperature Control:** precise operation of compressors with set-point and cooling range selection for loading/unloading to save Energy and operational cost.
- **Advanced Protections:** Includes high/low-pressure (HP/LP) protection, blower failure and intelligent gas equalization.

Fig1. Figures of Package Air conditioner

- **Display & Indications:** Two-digit display and LED indicators show set/real temperature, modes, etc.
- **Additional Switches:** Added two more switches for show the status of compressors and health of compressors, blower &single-phase protection.
- **Uniform wear and tear** of compressors with Run Hour Equalization algorithm.

2. UNIQUE FEATURES

a. **Shuffling Of Compressors:** This feature allows compressors to be shuffled at predefined intervals (1 to 24 hours), ensuring uniform wear and tear based on our built-in algorithm. The function can be disabled if desired.

b. **Cooling range:** The cooling range controls compressor ON/OFF operation to match load and reduce energy and operational costs. It can be set from 0 to 6°C (32 to 42.8 °F), offsetting the set point above the base temperature range of 16 to 30^0C (60.8 to 86 °F),

c. **Status & Error checking Switches:** Two buttons are provided to check compressor status and system errors. The **Status** button displays which compressors are currently active. The **Error Scan** button performs a diagnostic scan and shows faults in Compressors (C1–C6), Blower Fan (BF), and Single-Phase Protection (PF).

3. APPLICATION

The system is suitable for a wide range of applications, like:

- Convention centers
- Airports, railway stations
- Operation theatre in Hospitals
- Telecom exchanges
- Machining centers & server rooms
- Various industrial application.

4. ELECTRICAL SPECIFICATIONS

Input Voltage (V AC)		Frequency (Hz)		Power consumption	Compressor relay rating	Fan relay rating	Potential free relay	Mechanical dimensions (mm)					
								Power Box			Display box		
Min	Max	Min	Max	max	Steady state	Steady state	Steady state	L	B	H	L	B	H
90	285	45	55	6 VA	7A, 250V AC	7A, 250V AC	5A, 250V AC	255	130	85	120	120	15

Table 1. Electrical specifications

5. PRODUCT SELECTION CHART

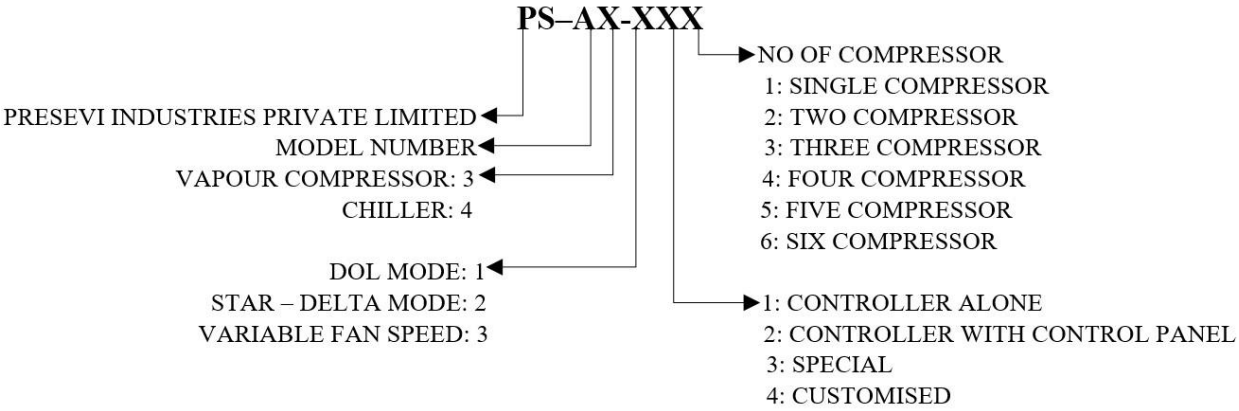


Fig 2. Product selection chart

6. ELECTRICAL CONNECTION DIAGRAM

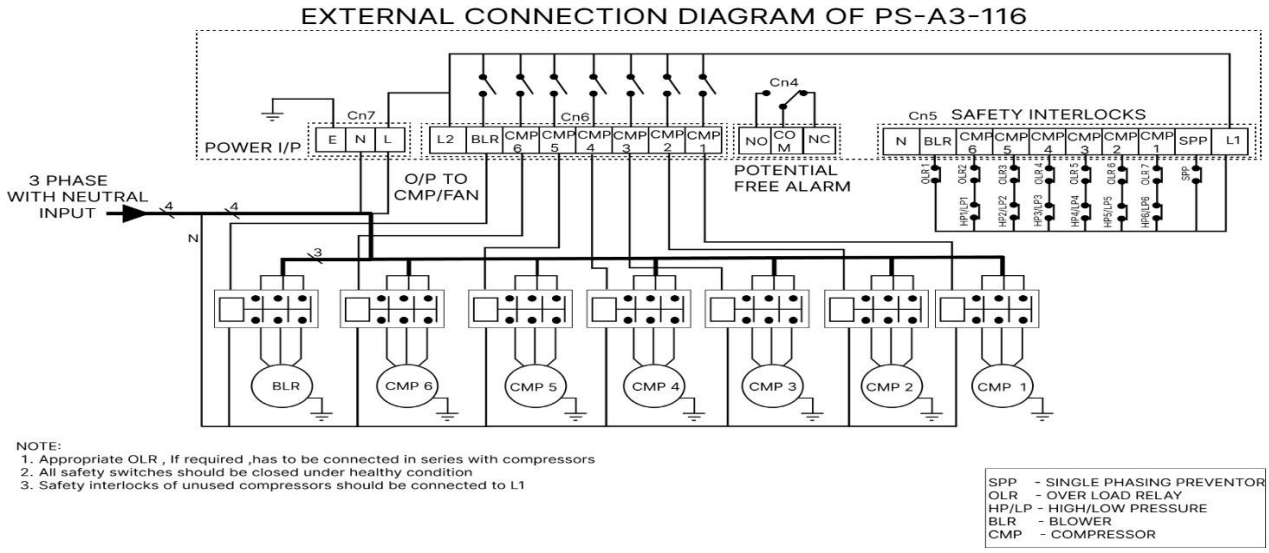


Fig 3. Connection diagram of Package Air conditioner (6 comp model)

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The model PS–BX-XXX-XX series of electronic controllers is designed for monitoring and controlling environmental parameters such as temperature, humidity & carbon dioxide. Parameters can be set within the following ranges: temperature from 16°C to 30°C (60.8 to 86 °F), Humidity between 10% and 99% RH, and CO_2 levels from 500 to 5000 ppm. The controller is equipped with a carefully calibrated sensor module capable of measuring parameter values from long distances—up to 1000 meters—allowing remote monitoring and control of the conditioned area. Relay outputs are available for two compressors, a blower fan, a heater circuit, a humidifier, and a fresh air damper. Precision sensors and monitoring displays make these controllers suitable for various applications such as smart farming, server rooms, laboratories, and dust-free environments. Our monitoring models feature digital displays, battery backup, and alarm generation when set parameters are exceeded. A suitable model, with or without a control panel, can be identified by referring to the selection chart provided in Fig 4.1 Great care has been taken in the manufacturing of this gadget, incorporating reliability factors such as protection against EMC/EMI and other electrical noise, proper sensor calibration, and sound workmanship

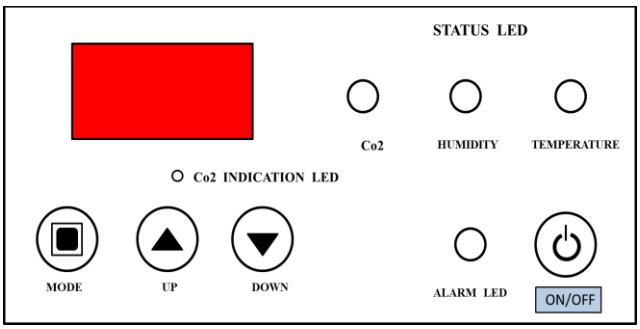

Fig .1 Temperature, Humidity & Co2 controller

1. Product Highlights

- Supports operation of two compressors, a heater bank, humidifier, and damper with loading/unloading algorithm.
- Controls temperature between 16°C and 30°C (60.8 to 86 °F), humidity between 10% and 99% RH, and CO_2 levels from 500 to 5000 ppm.
- Displays temperature, humidity, CO_2 levels, system operational status, errors, etc.
- Allows selection of compressor duty cycle time.
- Provides operational protections, including blower error detection with compressor interlock

2. Application

- Computer server rooms
- Environmentally controlled Agriculture

3. Electrical specifications

Input Voltage (V AC)			Frequency (Hz)			Power consumption (W)	Fan, Compressor, heater, humidity & Damper relay rating (Amps)	mechanical dimension (mm)		
Min	Typ	Max	Min	Typ	Max	Max	Steady State	L	B	H
85	220	275	45	50	55	3	7A, 250V AC	255	130	85

Fig 3.1 Electrical specifications table

4. Model Selection

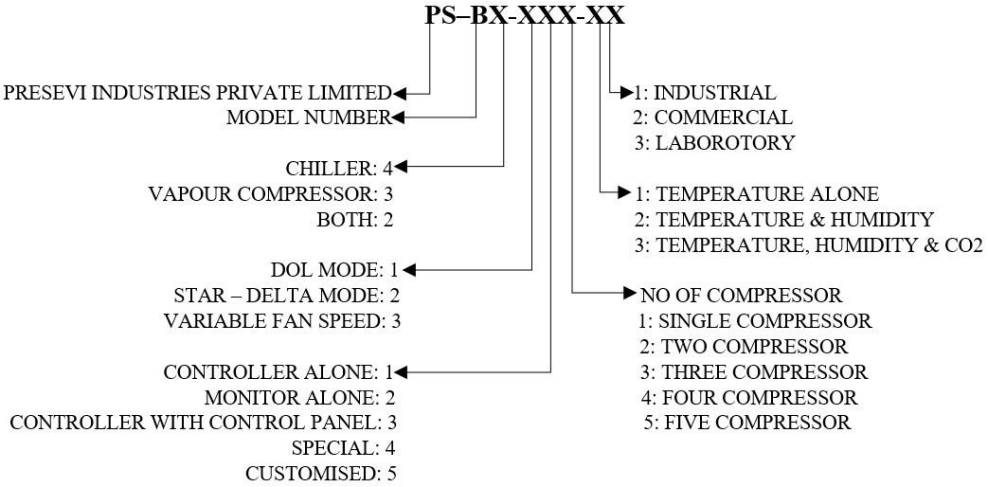

Fig 4.1 Model Selection Chart

Example to select a timer model

1. PS-B2-132-33- Both chiller and vapour compressor, DOL mode, Controller with Control panel, 2 Compressor, Temperature, Humidity & Co2, Laboratory.
2. PS-B3-113-21- Vapour compressor, DOL mode, Controller Alone, 2 Compressor, Temperature & Humidity, Industrial.

5. Electrical Connection Diagram

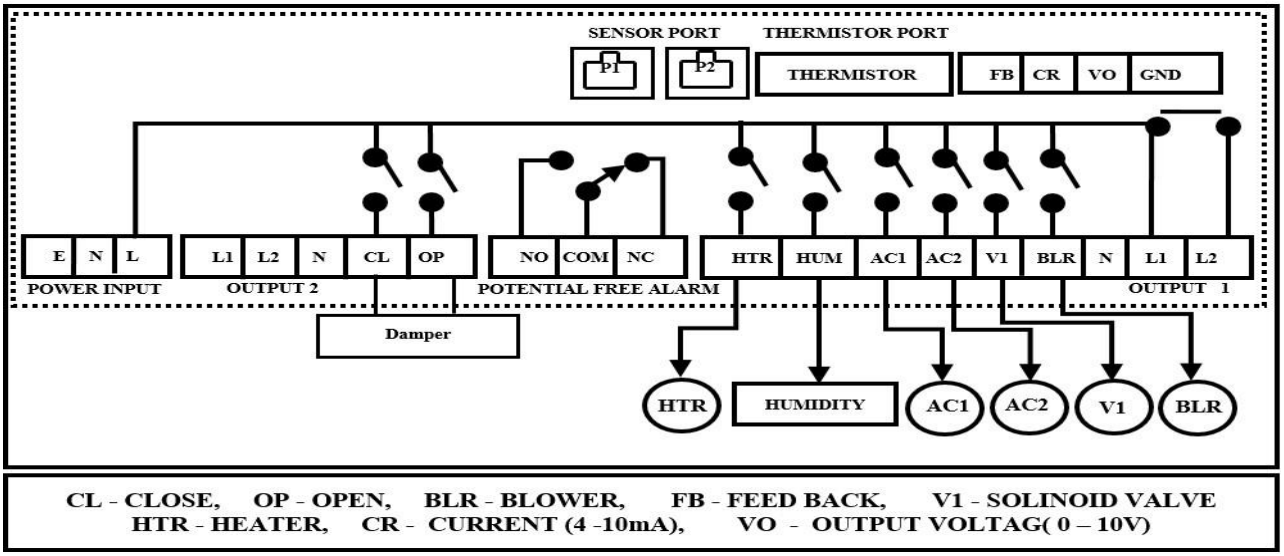

Fig 5.1 Connection Diagram of the controller

Precision Air Conditioning Controller with BMS connectivity using modulating valves

A9-G 343-01-02

The model **A9-G-343-01-02** is an electronic controller that could be integrated into BMS was designed and built for meeting **precision air conditioning**, using chilled water three-way modulation valve, heaters, humidifier etc. Two independent and intelligent slave controllers under the direct supervision of a master controller operate individual three-way modulating valves, heaters, humidifiers for precision air conditioning. Exclusive communication ports for LAN for integrating to the in-house BMS using CAT 6 cable or FOC, RS 485 ports is also provided. The master controller interacting with the intelligent slave controllers is used for setting and displaying parameters using its four-line LCD screen, LED displays, operating keys etc. It is also provided with common error inputs, smoke & fire, alarms various other electrical & electronic interlocks for fire damper, evaporator fan, SPP, power good signal and so on. The controller is also provided with logging of temperature/humidity/errors data for three months (if configured to sample at every 15 minutes interval) with RTC time stamping. The controller working on PID control loop algorithm, outputs 0-10V or 4-20mA or two relay outputs (for forward & backward operation of the motor). This would facilitate controlling of chilled water flow and hence the temperature. BMS connectivity provided on the system would enable monitoring and controlling the system from a remote location using LAN or FOB network. The slave controllers could operate either independently, simultaneously, or at pre-defined time intervals. The detailed write-up and user manual provide more information about this field-proven controller and its various facilities, configuring etc.

2. Application

- Precision controlling of laboratories.
- Storage of critical items
- Libraries

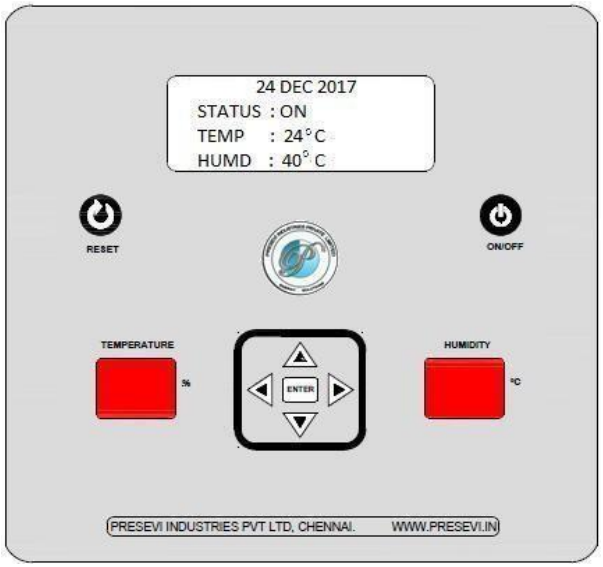

Fig.1 Air handling unit with BMS

1. Product Highlights

- 16 to 30°C(60.8 to 86 °F) temperature 30 to 80% humidity setting and controlling
- Facility to monitor& control the operation of the fire damper, blower, modulating valve, electrical damper, heaters and humidifier etc., from a remote location using BMS.
- Number of slave units accessible- (1 to 16)
- Two independent modulating controllers operating on PID algorithm.
- 0-10V or 4/20mA or three position control for modulation valve control.
- Real-time clock and calendar.
- LED and LCD to set and display room temperature and humidity.
- RS 485 and LAN port for BMS interface.
- Data logging of temperature, humidity, the status of functioning unit, fault with data and time sequence for up to three month on this menu drove system with password protection.
- Status indication.
- Auto or manual ON/OFF
- Alarm indication for critical error.
- Power down memory.
- Unique address ID selection of slaves.
- Duty cycle selection from 1 to 12 hrs. It is Scheduling or time based.
- Run/Test mode.

3. Product selection chart

Model Number	No. of slave units	No. of modulating valve	Cyclic timers(Hrs)	Outputs						Error Indication									
				Fire Damper	EL. Damper	Blower	Humidifier	Heater	Alarm	Blower Fail	MCCB	SPP	Sensor Communication error	Slave Communication error	Fire/smoke	High Temp.	High Humidity	Display type	
A9-G-343-01-02	2	2	1 to 12	3	2	2	2	4	3	✓	✓	✓	✓	✓	✓	✓	✓	LCD	LED

Fig.2 Product chart

4. Mechanical dimension (in mm)

L x B x H: 710 x 605 x 148

5. Electrical specification

Input Voltage	Frequency	Output Current
230 V AC	2Hz	5A, 250 v AC

Fig.3 Electrical ***specification***

Dual Set Thermostat for FCU/DX systems

PS- DT-01-FW/ PS-DT-01-FD/PS-DT-02-FD

Dual-set thermostat models PS-DT-01/02 are meant for controlling temperature in Hotel guest rooms that uses chilled water or the DX type air conditioner using compressor. This means that this product could be used for cooling guest room application in hotels either by using chilled water (FCU and three-way mixing valve with fan) or by normal air conditioner using compressor (up to 2 tons). It is provided with setting modes of Cool, Dry, Fan, Heat. It allows temperature setting between 16 to 30º C (60.8 to 86 °F), for the guests and 22 to 30ºC (71.6 to 86°F) for the hotel engineering staff, to operate in energy save mode, when Key tag is removed. The gadget could be operated either by using a control box of two-module size or by using IR remote.

The gadget, provided with **energy save** mode, would reduce the operating cost of guest rooms by saving energy, without compromising comfort. Switching over to energy save mode happens, automatically, once guest leaves the room by removing the Key tag of the ESU. The fan will be switched over to low speed and would maintain a positive air pressure in the room. We have three models in this category- **PS-DT-01-FW (FCU for water)**, **PS-DT-01-FD** (cool only with compressor), **PS-DT-02-FD** (heat and cool function with compressor).

1. Operation

As said earlier, this gadget keeps the guest ON-rooms, as per the set temperature, by operating three-way valve (in case of chilled water FCU) or by switching. OFF the air conditioner (that uses compressor). Required Gas equalization delay is provided for the DX model.

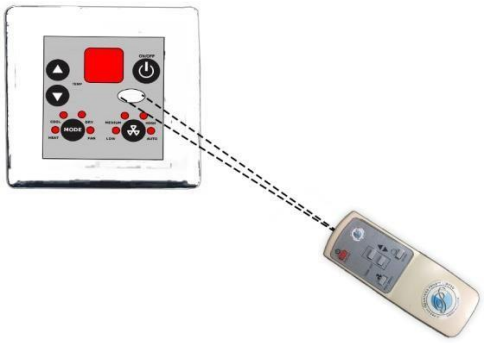

Fig1: Dual Thermostat

2. Product Highlights

- Could operate as Three/two way ON / OFF valve to optimize the flow of water or the DX type air conditioners up to two tons.
- Fan speed selection of Low / Medium / High/Auto.
- 16 to 30°C (60.8 to 86 °F) temperature selection for the guests and 22 to 30ºC (71.6 to 86 °F) for the engineering staff, to save operational cost, on removing the Key tag switch of the ESU.
- Operation either from the control box (Two module size) of using Cordless operation using blind IR remote.
- Two models to select from - cool only and heat & cool.
- Provision to display temperature either by blanking or in continuous modes.

3. Applications

- Hotel guest rooms
- Student hostels
- Old age homes

4. Product Selection Chart

Model no.	Temperature Selection	Modes				Energy Saving Function	Safety	
		Heat	Cold	Fan	Dry		Fire	Door Open
PS-DT-01-FW	✓	×	✓	✓	✓	✓	✓	✓
PS-DT-01-FD	✓	×	✓	✓	✓	✓	✓	✓
PS-DT-02-FD	✓	✓	✓	✓	✓	✓	✓	✓

Fig 4.1 Product selection chart

Note: ✓- Available
×- Not Available

5. Electrical Connection Diagram

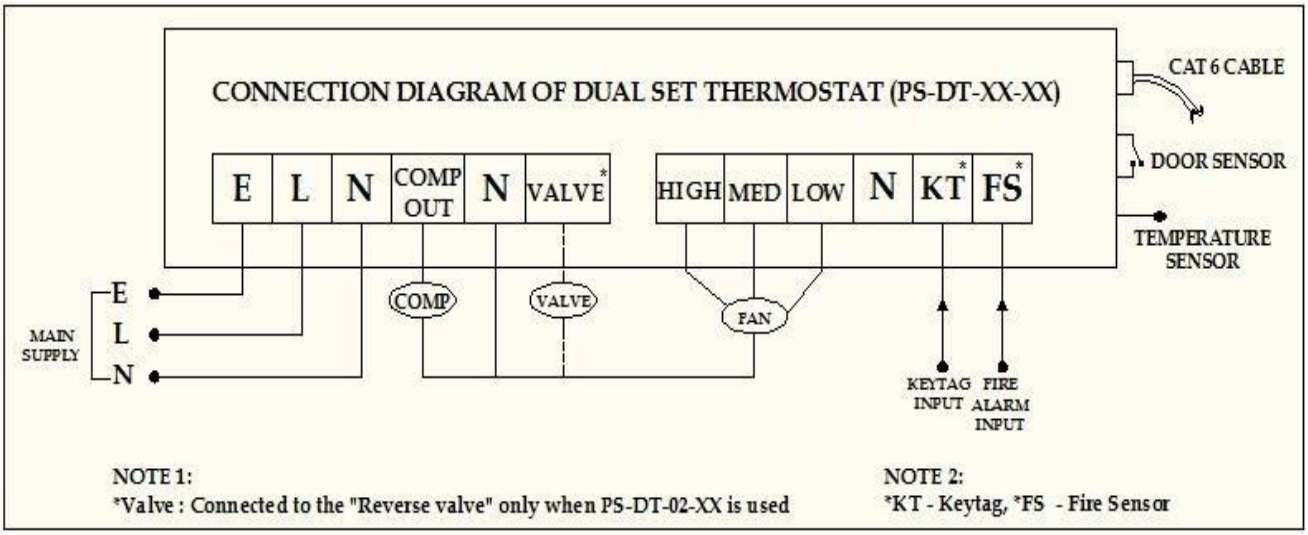

Fig 5.1 Electrical connection diagram

6. Electrical Specification

Input Voltage (V AC)			Frequency (Hz)			Power consumption (VA)	Fan relay rating	ON/OFF valve relay rating
Min.	Type	Max.	Min.	Type	Max.		Steady state	Steady state
90	220	270	45	50	55	1.2	5A, 250VAC	5A, 250VAC

Fig 6.1 Electrical specifications table

Aircon Controllers for Telecom Application

An ISO certified BEE empaneled ESCO firm with an independent R&D division
(Designer and Manufacturer of Electronic Controllers)

Shelter Guard

PS-BX-02-Series

The PS-BX-02 series of controllers are designed to manage the operation of two air conditioner loads. The controller is equipped with a timer function that alternates the operation of the air conditioners, based on a set time range of 1 to 12 hours. It features thermostatic operation, which switches the air conditioners on or off based on a temperature set point range of 16 to 30°C (60.8 to 86 °F). Provisions are made to allow both air conditioners to operate simultaneously if the conditioned room temperature exceeds the set value by a significant margin, or to operate only one air conditioner, as per the customer's preference. PS-BT-02 series models generate alarms through the two potential free relays, if any one or both air conditioners fail. The PS-BU-02 series models generate additional high temperature alarm whenever the temperature exceeds the settable value, ranging from 30 to 40°C. Both the models have provision to operate with the battery backup power, even if the utility power gets interrupted.

1. Product Highlights

- **Reliable & precise** switching operation of two air conditioners as per the set cyclic times between1 to 12 Hrs and temperature between 16 to 30 °C (60.8 to 86 °F).
- **Resumes current operation** only for the balance of the duty-cycle, in the event of power interruption and restoration
- **Test / Run Mode** that would set the timer operation by scaling down by a factor of 20.
- **Fire Alarm** Integration for safety.
- **Switches back** if the swapped unit is defective and generates Alarm 1. Alarm 2 is generated if both air conditioners are defective.
- **High-temperature Alarm 3** is triggered when the temperature exceeds the selected threshold.
- **Gas Equalization Protection** with intelligent time delay
- **System operation from 85 to 265 volts AC with** EMC/EMI compatibility and **battery power back up**.
- **Model selection with single and three-phase** electrical loads with Auto or both auto & Manual.
- **Provision to select switching ON/OFF** both air conditioners, when temperature is high, or skip if not preferred.

Fig 1.1 Shelter Guard
PS-BX-02-S-A-20-WPX

Fig 1.2 Shelter Guard With Rotary Switch
PS-BX-02-X-B-XX-XXM

Fig 1.3 Shelter Guard With IP- 65 Grade Enclosure
PS-BX-02-X-B-XX-XXW

Fig .1 Shelter Guard

2. Application

- Cellular sites, Server rooms, data centers, Security/railway gate cabins.
- ATM cabins, Industrial or commercial applications, FOC repeater stations.
- Places like efficient & uninterrupted cooling management with two air conditioners, fire safety.

3. Electrical Connection Diagram

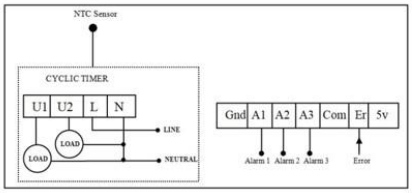

Fig 3.1 General Cyclic Timer With Temperature Controller
PS-BX-02-S-A-20-WPX

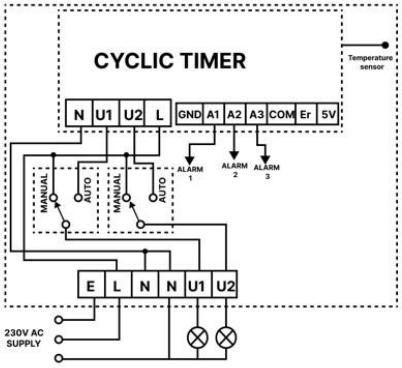

Fig 3.2 Cyclic Controller With Rotary Switch
PS-BX-02-X-B-XX-XXM

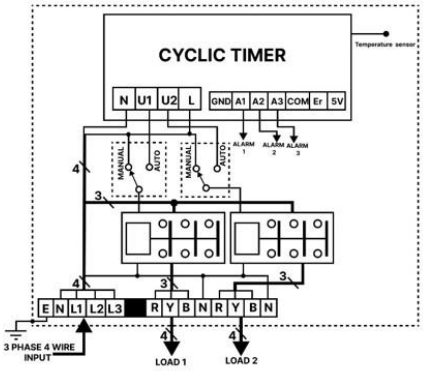

Fig 3.3 Cyclic Controller With IP- 65 Grade Enclosure
PS-BX-02-X-B-XX-XXW

Fig 3.1 Connection Diagram of Shelter Guard

4. product Selection Table

Model No.	Power Supply (V)				Frequency (Hz)		Product Name (A = Auto, B = Auto & Manual switch)	Mechanical Dimension (cm)			Load Current (Amps)
	Min		Max		Min	Max		L	W	H	
	S	T	S	T							
PS-BX-02-S-A-20-WPX	90	-	270	-	45	65	General Cyclic Timer With Temperature Controller **(A)**	12	12	1	**Single-phase**
*PS-BX-02-X-B-XX-XXM	90	160	270	460	45	65	Cyclic Controller With Rotary Switch **(B)**	240	176	103	**Single Phase Or Three Phase**
*PS-BX-02-X-B-XX-XXW	90	160	270	460	45	65	Cyclic Controller With IP- 65 Grade Enclosure **(B)**	310	210	140	**Single Phase Or Three Phase**

S-*Single Phase*, **T**-*Three Phase*, **L**- *Length*, **W**-*Width*, **H**-*Height*

***Note*:1)** PS-BX-02-X-B-XX-XXM – In cases of auto manual selection, Rotary switch of 25 Amps capacity and three phase Contactors of adequate capacity, as the case may be, will be is used.

2) PS-BX-02-X-B-XX-XXW – The model PS-BX-02-X-B-XX-XXM will be enclosed inside IP – 65 grade enclosure if this model is selected .

Air Conditioning Controller with Free Cooling

A5-G323-01

Air conditioning controller with free cooling take place by using the window or split air-conditioners in a normal case. It saves considerable amount of energy and operational cost, if the free cooling is done by utilizing the enthalpy available on the atmosphere. There are many places on the earth, as well many hours of the day/months where this free energy of the ambient could be utilized.

The model **A5-G323-01** is a free cooling system of controller that could utilize normal, free and a combination of both. This means the controller would either select free energy available from the ambient, if suitable, or by use the conventional air conditioner or both. Fig.1 gives an overall idea.

This field-proven controller with its main features like Normal / Free / Emergency cool modes exhibits an excellent and efficient operation. This controller, meant for un- manned cellular sites, communications huts and similar applications saves considerable energy and operational cost.

1. Basic operation

As mentioned earlier, this controller has three modes of operation – Normal, free cooling and emergency cooling.

Normal mode: -The system removes the heat from the site by placing the conventional air conditioners. It cycles the air conditioners, generates the alarms, switches on the healthy air conditioner (in case the duty air conditioner is faulty) etc.

Free cool mode: - The controller cross checks the cooling energy requirement of the site with the available enthalpy at the ambient air out side. It then puts the controller into free cool mode automatically, instead of using conventional air conditioner. It switches ON the motorized dampers and both the inlet and outlet fans. Moisture filters of proper, ambient and room sensors aid it in the effective operation.

Emergency mode: - This mode would be helpful keep the room temperature at least around the ambient level, in cases of power interruption, air conditioner failure etc.

Batteries meant for Communication equipment provide power for the fans, during this time. The controller puts the system into any of this mode or a combination of these for heat removal from these sites. The controller is provided with proper displays to indicate room & ambient temperature, interlock status etc. User friendly keyboards, power down memory, potential free alarm said in accessing these from remote locations.

All these operations help in diagnosing & eliminating faulty operation, help in saving energy, operate with optimal cost, while maintaining the communication site temperature.

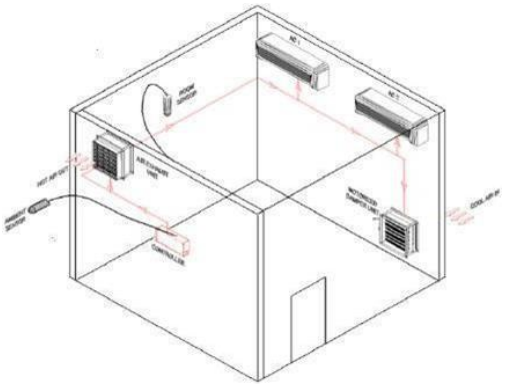

Fig.1.Cellular shelter fitted with free cooling system

2. Product Highlights

- Considerable saving of operational cost of Cellular sites with reliable and field proven system.
- Suitable air filters to avoid entry of moisture through inlet and outlet.
- Error interlocks such as DC fan, air conditioner, DC fan under / over current, door open, criticality of inverter etc.
- Display of room/ambient temperature, error & status of cooling, DC fan fail. etc.
- Faulty alarms through potential free contacts.
- Automatic selection of Normal / Free / Emergency cooling modes.
- Independent Control outputs for air cons, Dampers, DC fan operation etc.
- Power down memory for set values, cycling of air conditioners, running time equalization etc.

3. Applications

- Unmanned cellular shelters
- Cooling cabins
- ATM centers
- Server room

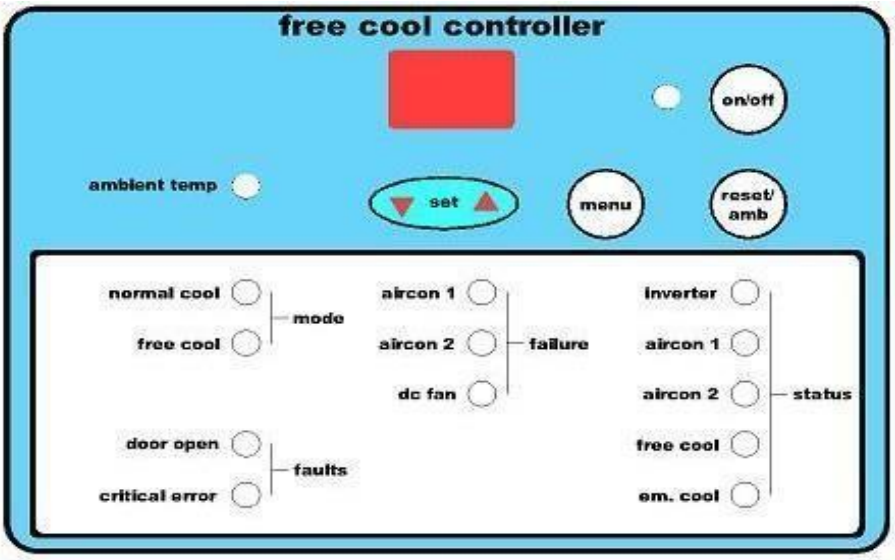

Fig.2 Details of deco panel of the system

4. Electrical specification

DC Power input (Volts)			Power consumption	Output relay rating			
Min	Typ.	Max		Aircon	DC Fan	Inverter	Alarms
40	48	56	6.5W max.	20A, 250VAC	10A, 48VDC	5A, 250VAC	5A, 250VAC

Other Allied Products for HVAC

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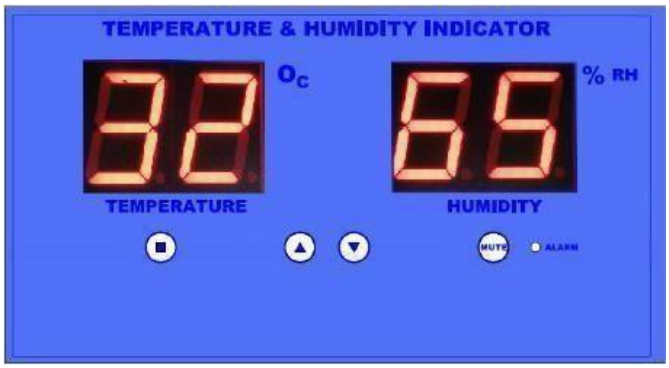
Temperature and humidity Indicator

A9-G331-SM

A9-G331-SM is a temperature and humidity indicator display both temperature and humidity on a continuous basis. It is provided with the calibrated sensor to measure both temperature & humidity. It is provided with arrangement to offset the parameters, if required.

The model **A9-G331-SM** could measure and display the parameters. It could be integrated to the BMS system using its RS 485/LAN port. Sensor module **A9-SHT-SM** of the system could be connected up to a distance of 1000 meters using CAT 6 cable. It is provided with a facility to set the Maximum and Minimum values of the operating range such that it would generate an alarm whenever the values go out of range.
This field-proven indicator, operating from 80 to 250V AC. It is also provided with a backup power to support for about 3 Hrs., in the event of utility failure. We have taken care of designing as per **IEC** standards and are cleared for **EMC/ EMI**.



1. Product Highlights

- Indoor temperature and humidity display
- Possibility to offset both temperature and humidity
- Sensor failure indication
- Dew point temperature display
- Ease of operation
- 4 hours battery power backup
- Alarm indication with a mute option
- RS-485 port to interface sensor

2. Applications

- Telecom Exchanges (RLUs)
- Computer server rooms
- Calibration laboratories
- Machining Centers
- Processing

3. Sensor specification

- Supply Voltage : 9 to 24V DC
- Mode of communication: RS485(Full-duplex)
- Baud rate : 9600 b/s
- Type of cable : CAT 6
- Maximum Cable length: 1000 m
- Unique identification number: up to 8 combination

- **Relative Humidity**

Parameter	Value
Operating range	0 to100% RH
Accuracy	± 3%
Response time	10 sec

- **Temperature**

Parameter	Value
Operating range	-40 to120ºC (40 to 248°F)
Accuracy	± 0.4ºC (32.72 °F)
Response time	5 to 30 sec

4. Product Selection Chart

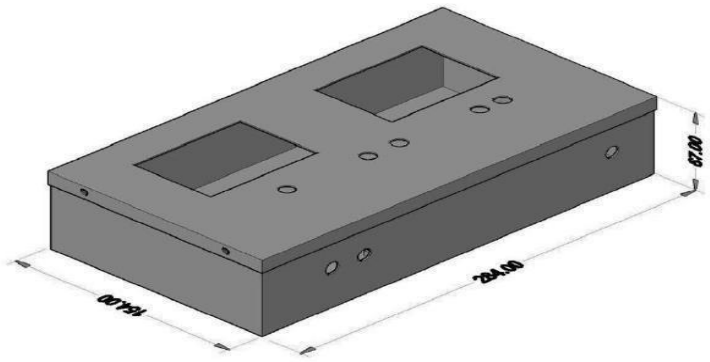
Model number	Indication		Alarm output	Input		Alarm Generation						Display
						Temperature			Humidity			
	Temperature	Humidity	Relay (5A)	Battery backup	RS485 port	Low ((1°C) (33.8 °F))	High ((99°C) (210.2°F))	Offset ((±5°C)(41°F))	Low (1%)	High (99%)	Offset (15%)	
A9-G331-SM*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	LED

Fig 4.1 Product selection chart

***** This model is coming with the Temp/RH sensor module **A9-SHT-SM** that could be connected up to a length of 1000 meters away from the indicator.

5. Mechanical Dimensions (in mm)

Length × Breadth × Height: 284 × 154 × 67



6. Electrical Specifications

Input Voltage			Frequency	Alarm relay rating (A)	Power consumption (VA)
Min.	Typ.	Max.			
85	220	270	50 ± 5Hz	5A, 230V AC	2VA

Fig 6.1 Electrical specification

Cyclic Timer
PS-AT-02-Series

The **PS-AT-02-Series** of timers is designed to manage the operation of two air conditioners (ACs) alternately. A summary of its features and functions is provided below. The **PS-AT-02-S-A-20-PWX** model is intended for cyclic 2 single-phase loads of 20 Amps each, while the **PS-AT-02-X-B-XX-XXX** model is designed for switching three-phase loads. These models come with automatic and automatic & manual operation. These are available in metal or waterproof enclosures. Please refer to the product selection chart for more details.

1. Product Highlights

- Microcontroller-Based Design**:** Ensures reliable and precise operation of the timer which would swap the switching operation of two air conditioners after a preset time interval ranging from 1 to 12 hours.
- Test / Run Mode**: Operation time will be scaled down by 20 times when put in test mode.**
- Power down Memory**:** The system is equipped with power-down memory that seamlessly resumes operation from the last state once power is restored. Additionally, the built-in algorithm accounts for the previous ON period to ensure continuity of the selected time period, once the power is restored.
- Auto / Manual Operation: Individual Load could be operated either in Auto or manual mode
- Fire Alarm Integration: The system is equipped with fire alarm detection contacts that trip the units upon receiving a fire detection signal. This feature enhances safety operation of the unit.
- EMI/EMC Operation: **Wide voltage operation with EMI/EMC compatibility.**

General Cyclic Timer

Cyclic Timer With Rotary Switch

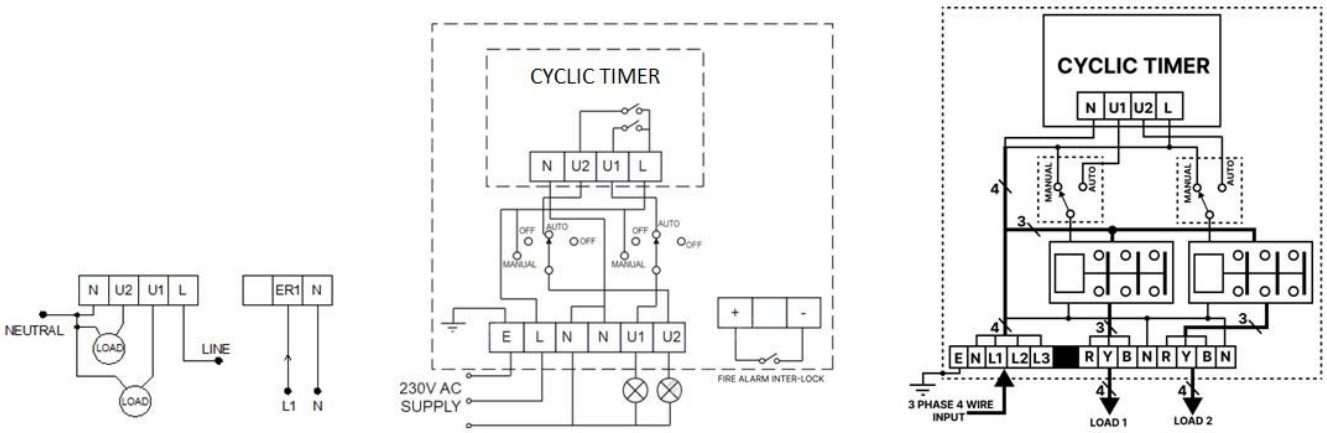
IP- 65 Grade Waterproof

Fig1. Figures of Cyclic Time

2. Application

- Places like Automated Teller Machine (ATM), Cellular sites, industrial or commercial applications, where efficient & uninterrupted cooling management with two air conditioners, fire safety are prioritized.
- Server rooms, data centers, and other environments where Security cabins and application of this nature.

3. Electrical Connection Diagram



General Timer
PS-AT-02-S-A-20-WPX

Single Phase Timer With Switch
PS-AT-02-S-B-XX-XXX

Three Phase Timer With Switch
PS-AT-02-T-B-XX-XXX

Fig 2. Connection Diagram Of Cyclic Timer

4. Product Selection Table

Model No.	Power Supply (V)		Frequency (Hz)		Product Name (A = Auto, B = Auto & Manual switch)	Mechanical Dimension (cm)			Load Current (Amps)
	Min	Max	Min	Max		L	W	H	
PS-AT-02-S-A-20-WPX	90	270	45	65	General Timer **(A)**	12	12	1	20Amps **(Single Phase)**
PS-AT-02-S-B-XX-XXX	90	270	45	65	Single phase Timer With Switch **(B)**	240	176	103	Rotary switch of 25 Amps capacity **(Single Phase)**
*PS-AT-02-T-B-XX-XXX	160	460	45	65	Three phase Timer With Switch **(B)**	240	176	103	**Three Phase**

Fig 4.1 Product selection table

*Note:1) PS-AT-02-T-B-XX-XXX Three phase contactors for adequate the capacity of auto manual selection switch.
2) PS-AT-02-S-B-XX-XXX, PS-AT-02-T-B-XX-XXX – These two models have a provision for IP – 65 grade protection enclosure of 310 x 210 x 140 (Lx W x H).

Energy Saving Products

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Precision Timer Controller
PS-OT-X-XX-X-X-XXX

The models PS-OT-X-XX-X-X-XXX are precision timer switches designed for switching ON/OFF a single electrical load of up to 20A, whereas the 3Ø models can switch loads of up to 32A per phase. Variants in this series, as listed in the selection chart, can be configured for either daily or weekly schedules. The daily configurable models allow the load to be switched ON/OFF based on the Real-Time Clock (RTC) as well as cyclic operations. The cyclic operation enables switching the load in minute/hour cycles. Users can configure and store up to 25 switching cycles for operations. The weekly configurable models, also RTC-based, can be programmed to operate the load on specific weekdays, including holidays. There is a manual override feature that allows the timer to be switched ON when it is OFF and switched OFF when it is ON. Additionally, the model PS-OT-T-XX-S-A-XXP includes an emergency button that can temporarily switch the load ON for 30 minutes when it is OFF

1. Product Highlights

- Automatic ON/OFF of the load to a maximum of 25 operation, either based on the Real-Time Clock (RTC) or for a specified time duration
- Supports both daily and weekly schedules
- Emergency provision to manually turn the load ON when OFF, or OFF when ON
- Permanent ON/OFF mode for uninterrupted control
- Emergency switch to turn the load ON for a duration of 30 minutes
- Compatible with single-phase and three-phase loads
- Power-down memory to retain settings during power outage
- Easy installation
- Saves energy & operational cost

Fig.1 Precision Timer Controller

2. Applications

- Security and energy-saving applications in homes, hotels, and industries
- Streetlight control
- Garden light control
- Control of advertisement displays
- Automatic operation of geysers, air conditioners, and similar types of loads
- Bore well pump automation
- Scheduling of single/three phase Air-conditioning units with auto by pass option.
- Automatic defrosting in refrigerators and deep freezers
- Fatigue and reliability studies of equipment.

3. Product selection Table

Model No.	Power Supply (V)		Frequency (Hz)		Product Name (A = Auto, B = Auto & Manual switch)	Mechanical Dimension (cm)			Load Current (Amps)
	Min	Max	Min	Max		L	W	H	
PS-OT-X-20-S-A-XXW	90	270	450	650	General purpose Timer **(A)**	87	87	58	20Amps **(Single Phase)**
PS-OT-X-XX-S-A-XXP	90	270	450	650	Timer With Power Socket **(A)**	155	87	63	5/16 Amps (selectable) **(single Phase)**
PS-OT-T-20-S-B-XXW	90	270	450	650	Timer with Bypass Switch **(B)**	155	87	63	20 Amps **(Single Phase)**
PS-OT-T-XX-T-B-MGW	160	460	450	650	Metallic Enclosure **(B)**	306	210	140	18/25/32 Amps per phase (selectable) **(Three Phase)**
PS-OT-T-XX-T-B-WGW	160	460	450	650	IP – 65 Grade Enclosure **(B)**	245	180	170	18/25/32 Amps per phase (selectable) **(Three Phase)**

Fig3.1 Product selection table

4. Electrical connection diagram

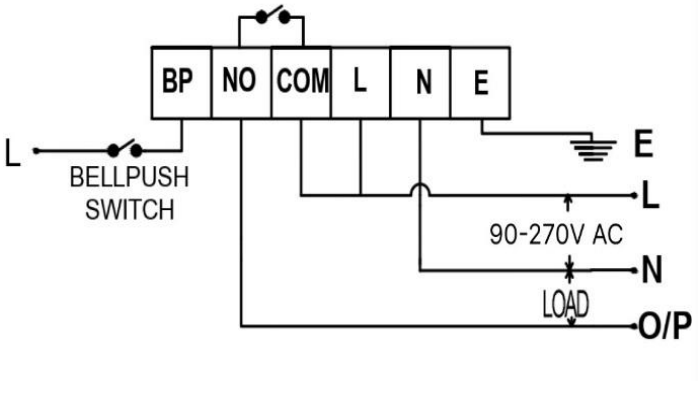


Fig 4 .1 – Single Phase

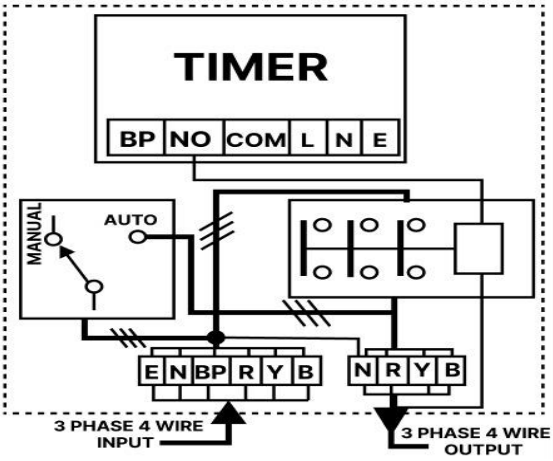


Fig 4.2 – Three Phase

Welding Energy Saver

PS-WES-XX

PS-WES-XX is a microcontroller based ON/OFF controller that could be used for saving energy of the Welding Machine. Most of the welding sets consume the fairly high idling current when the machine is not in operation

1. **Operation:** - The system working on 3 phase supply switches the contactor (placed inside the welding machine) ON/OFF. A timer, whose operational delay could be set from 0-59 sec, shuts down the welding unit whenever the welding machine is idling. The machine would be switch ON automatically, as soon as the welding electrode touches the work-piece. This means the controller would switch on the welding machine, whenever the operator attempts to weld and would switch it off automatically, after the preset time between (0-59 seconds). These actions are field-proven controller to ensure a trouble-free welding, saving energy which is wasted otherwise. The control panels, provided with feather touch buttons, LED displays, by-pass switch to enable manual operation etc. assures a trouble-free operation, with the help of our user-friendly & well-documented user manual.

Fig. 1 Welding Energy Saver

2. Product Highlights

- Time setting between 0 to 59 secs
- Two-digit seven segment display
- Status indications
- Power down memory
- Easy to install

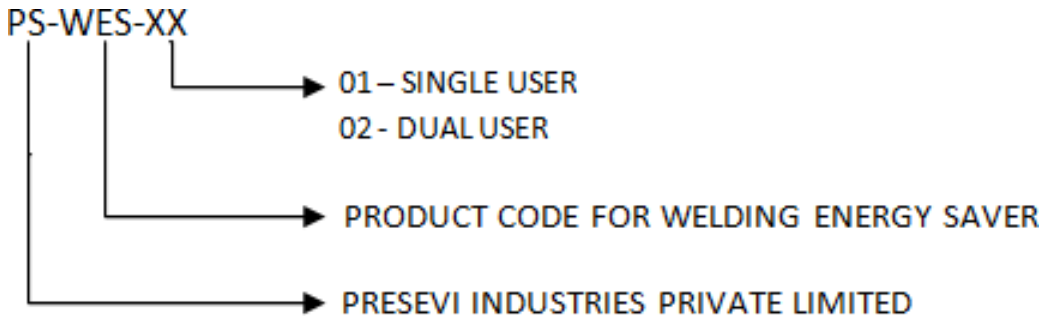
3. Application

- Welding Machines

4. Mechanical dimensions

- L × B × H (in mm) : 120 × 120 × 62

5. Product Selection Chart



6. Connection diagram of PS-WES-01/PS-WES-02

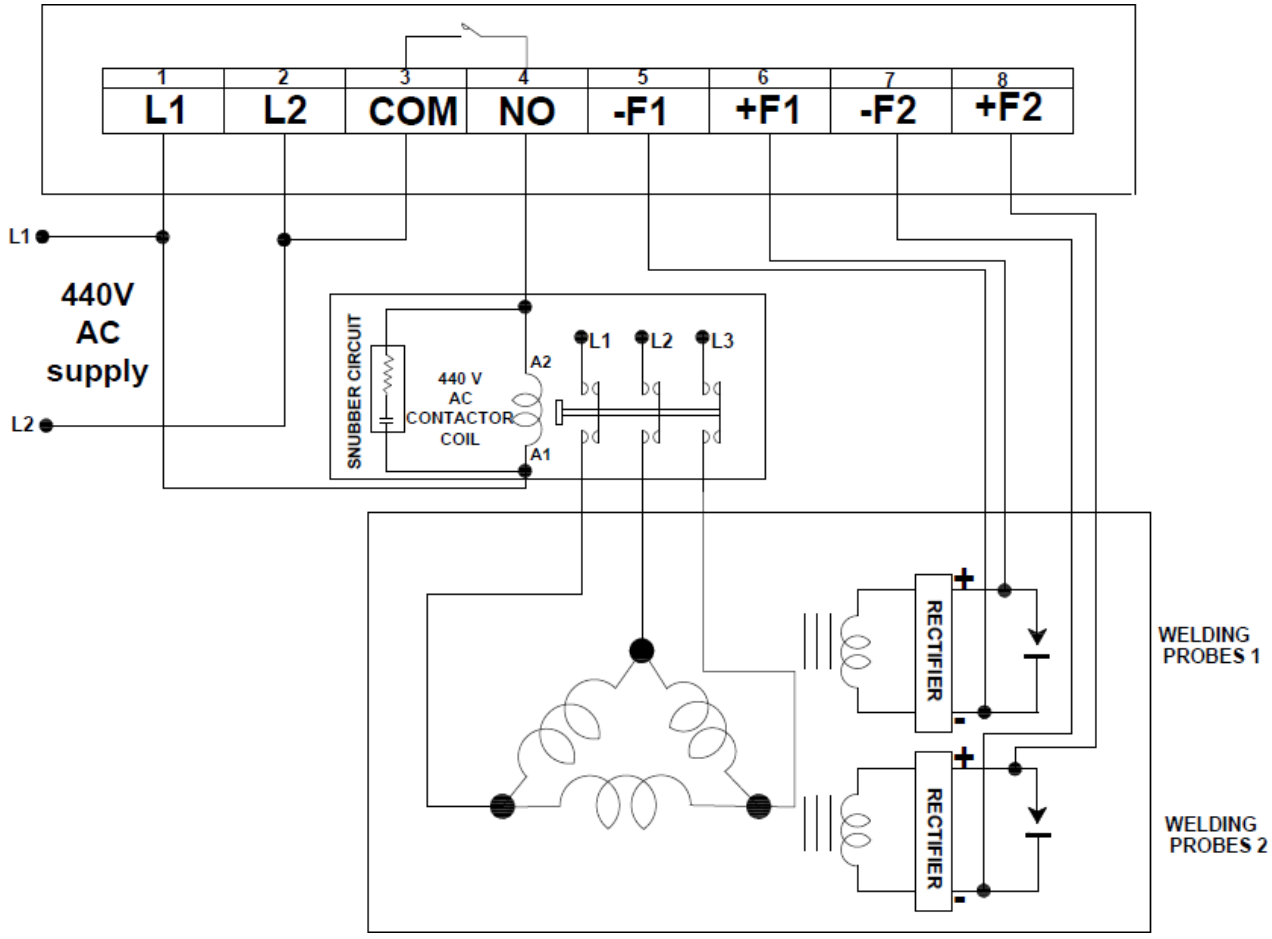


Fig 6.1 Connection diagram

Note: 1.Connect Neutral to contactor terminal A1 if the contactor coil voltage is 230V (or) connect L1 supply if it is 440V coil

2. For PS-WES-01, connections 7(-F2) and 8(+F2) are not required.

7. Electrical specifications

Input Voltage (V AC)			Frequency (Hz)			Output relay rating	Power Consumption (VA)
Min.	Typ	Max.	Min.	Typ	Max.	Max	Max
350	415	440	45	50	55	7A, 230V AC	2.5

Fig7.1 Electrical specification

Hospitality Products

An ISO certified BEE empaneled ESCO firm with an independent R&D division
(Designer and Manufacturer of Electronic Controllers)

Key card series switches (ESU)
PS-KT-XX-XX

PS-KT-XX-XX Key Tag series of ESUs are designed for regulating electric power in hotel rooms or similar areas to save power by switching the unwanted loads of the room OFF whenever the guest is not present. This automatic operation saves a lot of electrical energy and operational cost. These gadgets that have 20 amperes of switching capacity, would switch ON the load, on inserting the "**guest key card"** on the key slot and would switch it OFF after 30 seconds, whenever the key card is removed. The indication lamp kept on the face plate of **PS-KT-00-XX** model blinks RED if when the key card is not inserted and it turns to glow continuously green otherwise. The model PS- KT-01-XX is provided with a privacy button, in addition. On pressing privacy button, it glows green to indicate the action.

This ESU is manufactured in two standard colors in the normal case but could match the color on special request.

Fig. 1 Keycard switch

1. Product Highlights

- Capability to switch ON/OFF electrical loads up to 20 A to saves Energy.
- Built-in delay of 30 seconds for switching OFF the load.
- DND/Privacy button provided
- Three standard & special colors on request.

2. Applications

- Guest rooms in hotels to switch ON/OFF the electrical load automatically
- Student hostel rooms
- Patient consulting rooms in hospitals

3. Mechanical Dimensions

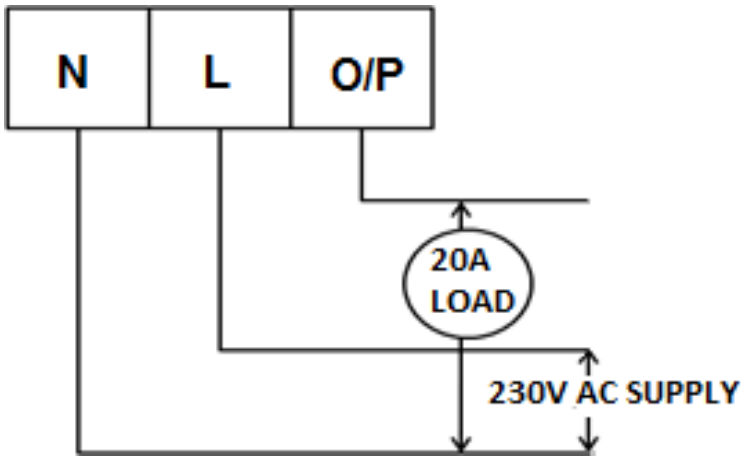
L × B × H (in mm): 88 × 48 × 88

4. Product selection chart

PS – KT – 00 – XX

- XX → BK-BLACK, GY-GREY, WT-WHITE, SP- SPECIAL COLOUR
- 00 → 00-NO SWITCH, 01- ONE
- KT → SWITCH PRODUCT CODE
- PS → PRESEVI

5. Electrical Connection Diagram



6. Electrical specifications

Input voltage (V AC)			Frequency			Output current
Min	**Typ.**	**Max**	**Min**	**Typ.**	**Max**	
85	230	264	45	50	55	20 A

Fig 6.1 Electrical specification

Room Control Systems – RCS
PS-PSSC-XX

Presevi designs, develops and manufactures several models of controllers for application in guest room, star hotels, resorts, posh houses etc. The system not only adds the aesthetics but also the safety operation of the guest rooms, the comfort of operation etc., while saving energy and operational cost. Our model series PS-PSSC-XX with push button control uses the feather touch buttons to control various control circuits. The use of the electro mechanical switches, considering safety of the guests.

Few of our models have android based smart mobile phone application, which would facilitate the guests to operate the switches from remote location.

1. Brief description

Fig 1. Shows the control panel at the bed room side of a typical RCS with built in features to control individual lights and air conditioning. It is also provided with controls like Do Not Disturb (DND), clean my room for operating from bed side. While the corridor panel kept at the outside of the room indicates the request of the guest, it would prevent ringing of the calling bell if the DND is pressed. Temperature of the room could be kept at 16 to 30°C (60.8 to 86 °F) by making use of the FCU and the fan speed. The feature named pre-cooling lets the room temperature to be kept between 28 and 30 degrees, whenever the guest room is not occupied, saves considerable energy and operational cost. There are individual control panels for bath room, passage lights etc. Fig.2 shows certain typical switch panels. All these are interfaced to a central control console named MMU by using CAT 6 cable. Fig.3 shows an android app screen. Fig. 4 shows a multi- media hub to facilitate guests use various control panels of TV and internet.

The various RCS for the application has different built in features and are specified on its individual pamphlet. It is advised to go through these pamphlets for more information and is available from us on request. All these controllers are designed and built as per IEC standards and field proven.

2. Product Highlights

- Key tag operated centralized controlling of lights, fan and FCUs to save energy and operational cost
- Soft touch keys with backlight
- Android application onrequest
- Thermostatic and fan control of FCU with interface to the Key Guard with pre-cooling operation.
- RTC timer with power down memory

Fig. 1 Privacy switch and indication

Fig. 2 Bathroom switches for Light and Mirror

Fig. 3 Android RCS Central Panel

Fig.4 Multi Media jack

Dimmers with illumination Scene Setting

PS-DR-08-XX

Presevi designs, develops and manufactures several controllers for air conditioners, refrigeration systems and other home appliances, room control systems, dimmers for illumination control etc. We have developed three types of dimmers and its associated button panels for catering to this segment. These dimmers that has higher capacity is meant for hotels, restaurants, many public areas, air ports etc.

1. Basic operation

Presevi has four types of illumination dimmers that have eight individual outputs channels. Any of these on these dimmers could be put to use, either in combination or individually, using the RS 485 communication ports on the dimmers and the **button panels**. Button panels, as it is named in colloquial parlance, could be configured to create the pre-defined illumination scenes of the area, using combination of these dimmers. For example, the illumination scenes required for the area while power point presentation will be different from a product presentation, general talk etc. Button panels of the model PS-BP-01 let's configuring the dimmers to obtain eight pre-defined illumination levels using combination of these dimmers. Button panels are also provided with RS 485 communication ports.

2. Brief description about these dimmers

As said earlier, Presevi has four varieties of dimmers. All these dimmers are provided with eight individual electrical channels, RS 485 communication ports, indication of the active channel, ON/OFF button, real time clock etc. This could be integrated together, using common RS 485 port.

Light Dimmers

All These dimmer models have eight independent electrical channels, RS 485 communication ports for integrating to other dimmers, button panels (for selecting required illumination scenes), its own display and LED indication (for real time clock), configuration button panels etc. as shown in Fig.1.

The model PS-DR-08-16 is 16A dimmer working on single phase uses the phase cutting principle. It could handle up to 16 Amps per circuit

The model PS-DR-08-05 is 5A dimmer working on single phase uses the phase cutting principle. It could handle up to a maximum of 5 Amps per circuit.

Fig. 1 front panel of the Dimmer

The model PS-AN-08-16 gives out 0 to 10 volts DC signal to the tube light/Led lamp. Lamp luminaire has built in electronic controller that could illuminate based on the dimming signal. It is possible to use this model along with DALI controller, if required.

The model of the dimmer PS-DL-08-16 is used for switching ON/OFF of the lamps in the system. Maximum current carrying capacity of this model is 16 Amps per channel

3. Dimmer Mode setting

As said earlier, these dimmers have 8 independent outputs that configured to eight pre-defined intensity level settings except the ON/OFF dimmer. It is used to for setting the ON/OFF action. Following explains the possible mode setting and brief description. Figure.1 gives a brief idea about the control panel on the dimmers.

3.1 Auto mode: In auto mode the scenes will be changed automatically as per the real time settings. The scene setting could be done using a Laptop / PC and dump to the memory of the controller through the RS485 port of the dimmer. The dimmer become independently controllable as per the scene requirement, once the data gets downloaded.

3.2 Manual mode: In manual mode, nine scenes could be changed, using remotely placed button panel, as per the pre-defined setting. This would help to use the specific outputs of the dimmer at different power level outputs.

3.3 Self-mode: In self-mode, the scenes could be selected as per the requirement and set through the dimmer front panel

4. Other features: - These dimmers are provided with an automatic emergency operation, in case of utility power failure, and to place any of its two outputs to give 100 % output power, irrespective of the present illumination level setting. It is provided with separate utility and emergency power supply terminals for the purpose. Certain models of these dimmers are provided with over heat protection by making use of forced cooling. A temperature sensor, provided on each heat sink, operates a cooling fan, if the heat sink temperature goes above the safety level. The operation becomes normal automatically, whenever the temperature comes below the safety level.

Fig.3 below gives an over view of the complete set up of system. It gives details of the dimmers, button panels, computer systems etc. connected in RS 485 network. These field proven and time-tested dimmers are designed by adopting IEC standards.

More details about individual dimmers and button panels could be given on request.

Fig. 2 Button panel that indicates scene

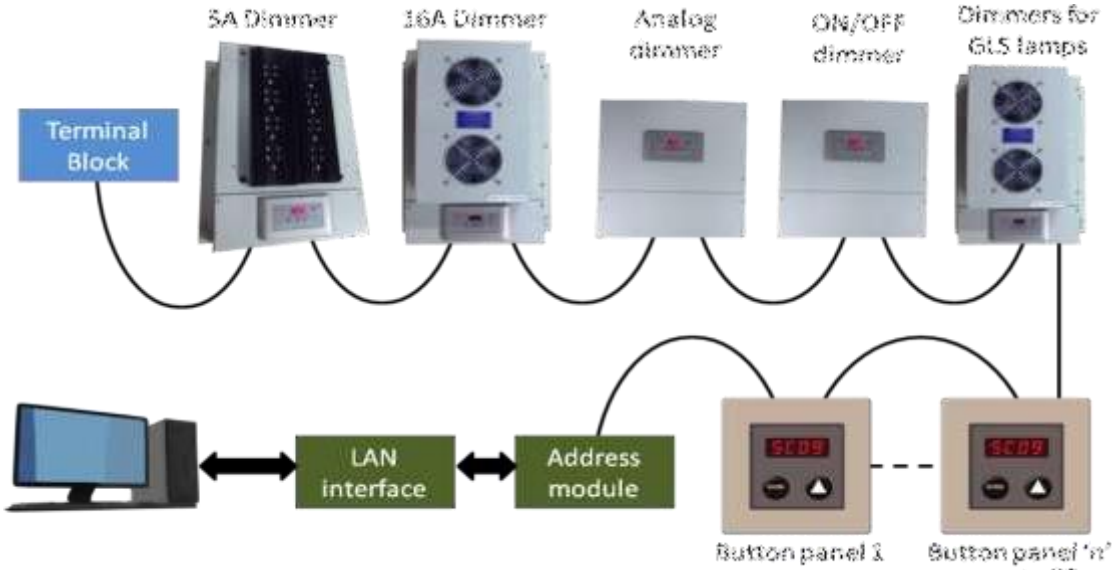


Fig. 3 Typical connection of multiple dimmers, button panels and computer

5. Mechanical dimensions (in mm)

16A dimmer (L×W×H)	: 480 × 350 × 140
5A dimmer (L×W×H)	: 480 × 350 × 108
Analog dimmer (L×W×H)	: 420 × 385 × 86
ON/OFF dimmer (L×W×H)	: 420 × 385 × 86

Other General Products

An ISO certified BEE empaneled ESCO firm with an independent R&D division

(Designer and Manufacturer of Electronic Controllers)

Liquid Level Controller

A-LLC-01

ALLC-01 is an electronic liquid level controller (LLC) that controls all types of motor pumps, automatically, to maintain the desired liquid level in the tank. It switches the pump ON/OFF considering the requirement of the water level on the overhead tank and safe level on the sump. In other words, it would ensure the water level on the overhead tank (low or high), and the sump water level (high or low) before switching ON the pump. It has got provision to sense the air lock and dry running and to shut down the pump within few minutes.

Although the controller and the sensors are designed for electrically conducting liquids like water, it could be used for other liquids as well, by modifying the sensors suitably. Fig.2 gives a brief explanation of the controller.

Fig.1 Liquid Level Controller

1. Product Highlights

- Controls the water level in the overhead tank automatically
- Switches ON the pump only if sump water level is safe.
- Protects motor from dry run/ High & Low voltage
- Saves water and electricity considerably
- Cost Effective
- Easily installable
- Both Overhead tank and Sump level indications
- Air lock protection
- Emergency switch ON

2. Applications

- Houses and flats
- Hotels and Hospitals
- Chemical plants
- Cooling towers
- Effluent treatment plants
- Pharmaceutical industries
- Beverages and Distilleries

***** *Extra features like driving higher capacity motor; 3-phase motor driving, overload protection etc. can be added as per the customer requirement.*

3. Mechanical dimensions of the box (in mm)

L × B × H: 120 × 120 × 62

4. Electrical connection diagram

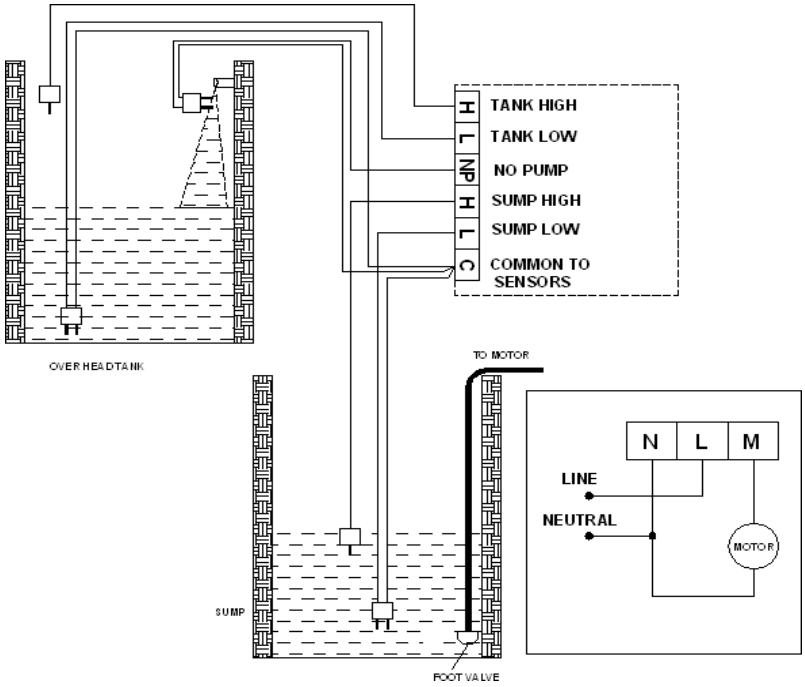


Fig. 2 Wiring scheme of the LLC

Short terms Used	***Location of Sensors (Refer figure)***
N-Neutral	*Over Head Tank High Sensor-Just below the overflow pipe*
L-Line	*Over Head Tank Low Sensor- Just above the Outlet pipe*
M-Motor	*No pump Sensor- At the mouth of the inlet pipe*
H-High level Sensor	*Sump High level Sensor-Above the sump low level sensor*
L-Low level Sensor	*Sump Low level Sensor- Just above the foot valve*
C-Common	*Sump Common –Below the foot valve level*
NP-No pump Sensor	*Overhead tank Common-Below the Low level Sensor*

5. Electrical specifications

Input Voltage (V AC)			**Frequency (Hz)**			**Power consumption (VA)**	**O/P Relay rating (A)**
Min.	**Typ**	**Max.**	**Min.**	**Typ**	**Max.**		**Steady state**
180	220	270	45	50	55	3	30

Fig 5.1 Electrical Specification

Some of our Major Clientele