I/A Series®

Packaged Equipment Module

The fully programmable Packaged Equipment Module (PEM™) is a direct digital controller designed to provide high-level performance for typical packaged or unitary control applications. The Packaged Equipment Module, through its advanced surface-mount technology, combines high reliability with unsurpassed equipment controllability in areas where electric, pneumatic, or electronic systems were the past control solution of choice.

The Packaged Equipment Module is designed to bring stand-alone DDC control to such equipment as unit ventilators, fan coils, water-source heat pumps, and a variety of other packaged equipment applications. Each Packaged Equipment Module is fully compatible with the I/A Series family of integrated facility management controls. A complete and highly advanced library of control applications is provided via an advanced block programming technology. Each application within the library can be simply downloaded to the Packaged Equipment Module through standard hand-held or desktop interfaces.

The Packaged Equipment Module's EEPROM memory technology assures error-free performance without the fear of program loss due to power outages or battery backup failure. You can rest assured that your packaged equipment, under the control of the Packaged Equipment Module, will provide countless hours of superior performance and, when integrated, all of the advantages of the I/A Series Facility Management System.

Applications

Applications for which the PEM is designed for include unit ventilators (Cycle II and Cycle III), fan coil units (two-pipe, three-pipe, and four-pipe), water-source heat pumps (one-stage), and satellite input/output control.

Features —

- Stand-alone operation of packaged equipment.
- Fully integrated with other I/A Series ASD devices.
- Accessible via the Personal System Interface (PSI™).
- Advanced surface-mount technology assures high reliability and unsurpassed performance.
- Easy two-point mounting.
- At-a-glance LED indication of proper performance.

invensys®
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Table-1 Model Chart.

Model	Description	Dimensions H x W in. (mm)
PEM-1	Panel (must be mounted within a NEMA 1 compartment at the controlled equipment)	8.5 x 4.43 (216 x 112)

Hardware Specifications

Dimensions See Table-1.

Enclosure See Table-1.

Power Supply Input 20 to 30 Vac, 50/60 Hz (Class 2).

Maximum Power Consumption 20 VA at 50/60 Hz.

Agency Approvals

UL-916 File #E71385 Category PAZX.

CSA File #LR 3728.

FCC Class B.

UL-864 File #S5381 Category UUKL.

Transient Compliance Tests IEEE-587 (ANSI C62-41), Categories A and B; UL-864.

Electrostatic Discharge Test

±15 kV to the case.

±5 kV to the field wiring terminals.

Ambient Limits

Temperatures

Operating 32 to 140 °F (0 to 60 °C).

Shipping and Storage -40 to 160 °F (-40 to 71 °C).

Humidity 10 to 95% RH, non-condensing.

Microprocessor 80C198 microcontroller, 7 MHz clock speed, 16 bit word size.

Memory

EPROM 64 KB for program memory.

Static RAM 8 KB.

EEPROM 512 bytes for application program storage.

Input to Output Response Time 0.5 seconds maximum.

Inputs

AS 1 (1) Setpoint Adjustment 55 to 85 °F (10 to 30 °C). From TS-90250-85X series sensor. Dry contact (DI) may be tied across input.

AT 1, AT 2 (2) Thermistor 20 to 140 °F (-6.6 to 60 °C) range. TS-5700-850 or equivalent or as a dry contact. Dry contact may be tied across input.

AV 1 (1) Analog Voltage 0.0 to 5.0 Vdc, 4 to 20 mA range (250 Ω resistor required).

DI 1, DI 2 (2) Digital Input Dry contact (once per second, 0.5 second minimum ON or OFF time per pulse).

Outputs

(2) Analog 0 to 20 mA into an 80 to 550 Ω load (momentary short circuit protection).

(4) Digital Form A (SPST) isolated, common with normally open. Ratings 24 Vac, 30 VA, Class 2, pilot duty.

Communications

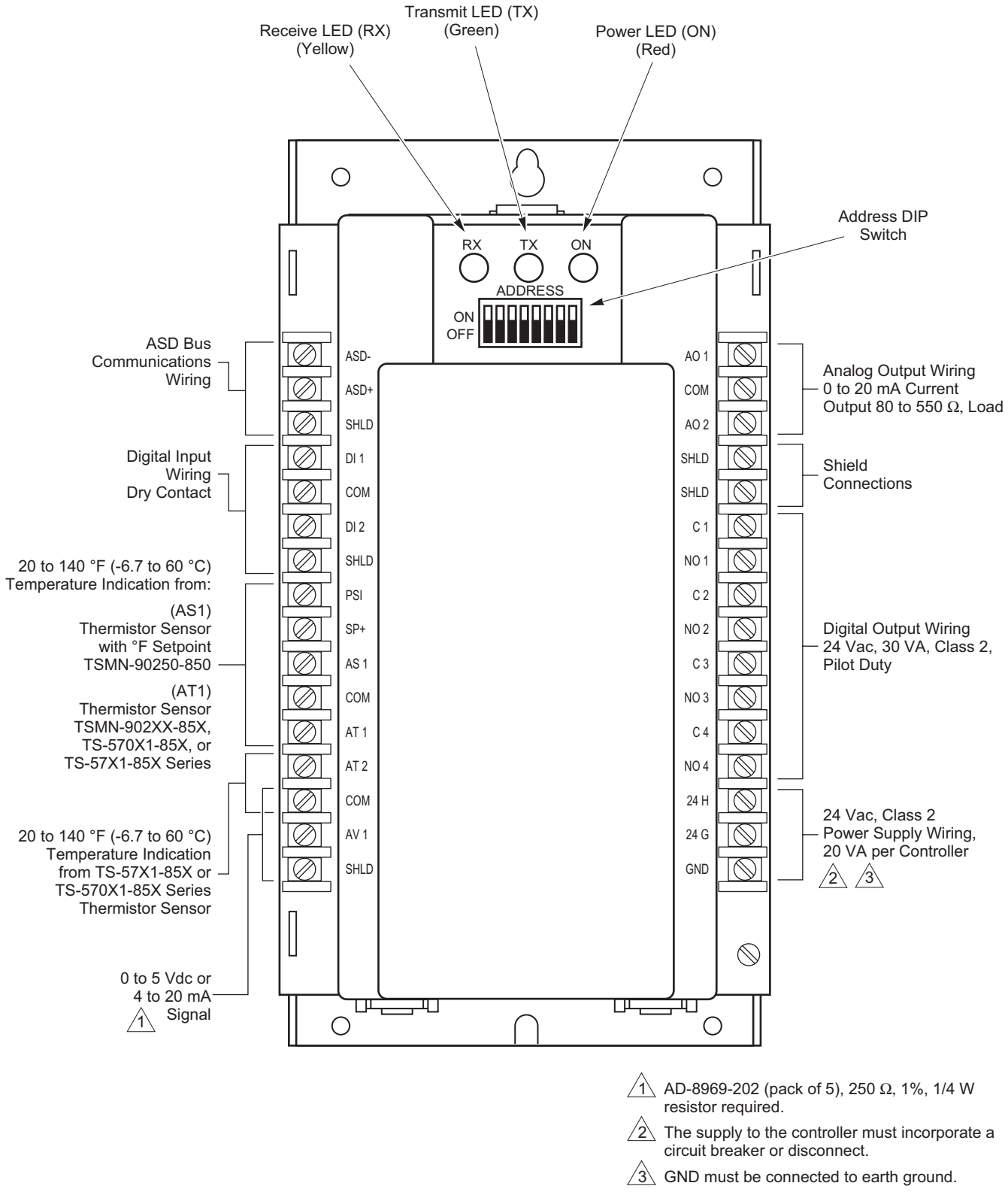
Port RS-485 asynchronous at 9,600 baud for connection to the Universal Network Controller (UNC) and/or the PSI through the ASD communications bus.

PSI Access (hand-held interface) The hand-held device operating the Personal System Interface can monitor all input/output points as well as all device control parameters. This allows simple input/output point overriding and graphical trending as well as upload and download capabilities for program archiving. Connection to the Packaged Equipment Module does not interrupt communications. When connected within the network to any ASD bus, any Packaged Equipment Module can be accessed immediately.

NETWORK 8000 Access Up to 128 PEMs, or any combination of ASD products, per UNC. All input/output and control parameters may be utilized or shared throughout the network.

Accessories

AD-8969-202	250 Ω shunt resistor kit for 4 to 20 mA analog input conditioning
AD-8969-206	11 kΩ shunt resistor kit for 10 k thermistor sensor (non-850 series)
AD-8961-220	Voltage divider (converts 1 to 11 Vdc signal to 0.5 to 5 Vdc signal)
AE-690	Mounting enclosure, 10-7/8 x 8-1/2 x 4-1/4 in. (276 x 216 x 108 mm)
EMSC-515	Pre-terminated wiring harness kit



1 AD-8969-202 (pack of 5), 250 Ω, 1%, 1/4 W resistor required.

2 The supply to the controller must incorporate a circuit breaker or disconnect.

3 GND must be connected to earth ground.

Figure-1 Terminal Connections and Performance Indicators.

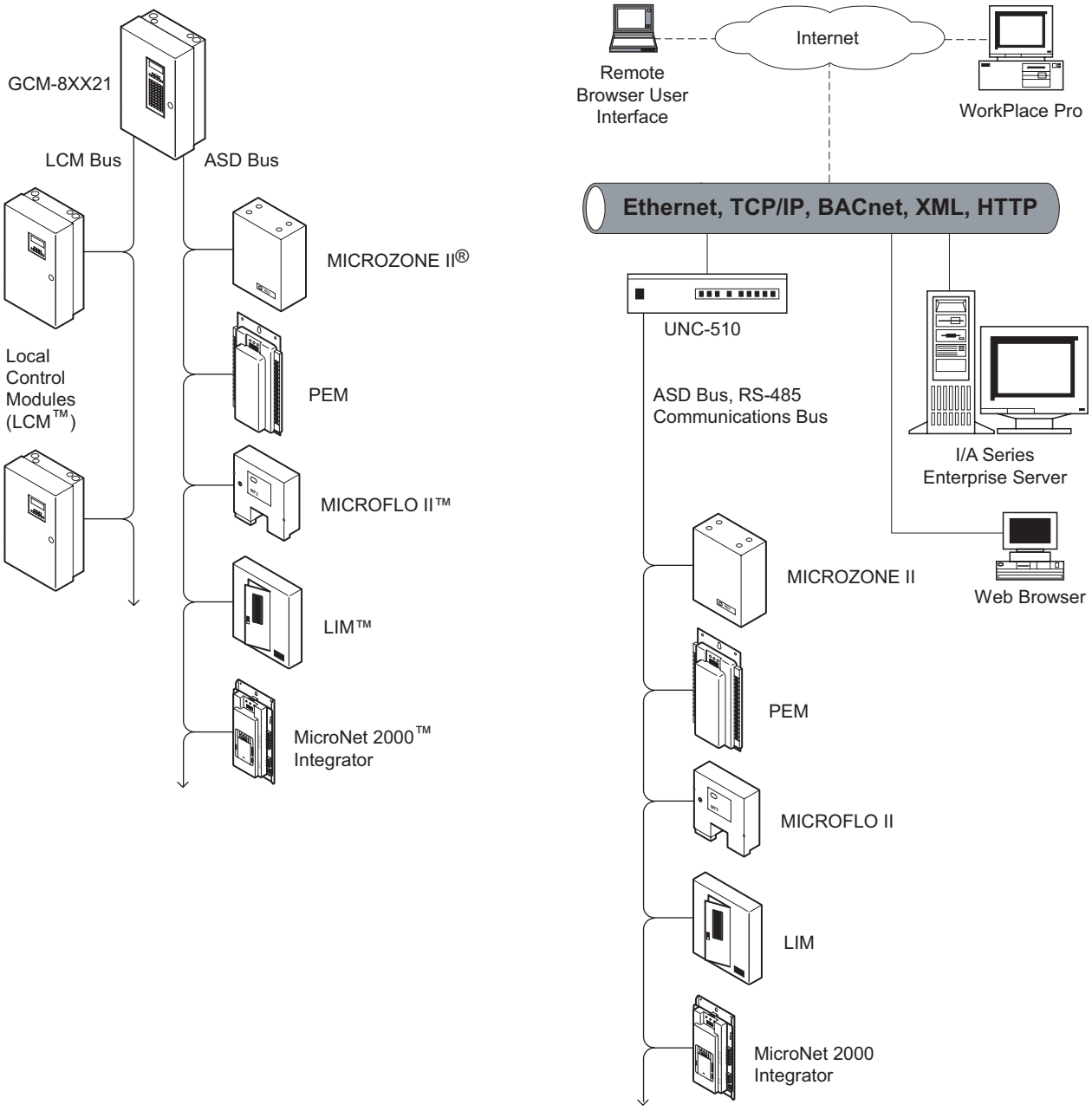


Figure-2 Packaged Equipment Module with Other ASD Devices in the I/A Series System.