

EM Solutions™ 96 Expander Box

Model Number: 65.1023



Applications

The EM Solutions Expander Box is an enclosure which provides a 96 input/output point capacity increase to the EM Solutions 96/193 micro-processor based energy management and direct digital controller. It is commonly used to monitor and control mechanical and electrical equipment in industrial and commercial heating, ventilating and air conditioning operations. Typical systems include boilers, chillers, single zone/multi-zone/variable air volume air handling units, circulation pumps, lighting, exhaust fans, clean rooms, and custom commercial and industrial control processes. Control Pak International's object oriented programming software uses powerful objects or building blocks to configure customized control sequences.

Description

The EM Solutions 96/193 Expander Box consists of a power supply, six (6) slot card cage, and a six (6) slot motherboard for sixteen (16) channel I/O cards. When added to an EM Turbo 96/193, the EM Solutions 96/193 Expander Box allows the user to choose virtually any combination of digital and analog points up to one hundred and ninety three (193) total I/O points via twelve (12) total cards with eight (8) maximum of any one I/O card type being used. I/O card types include analog input (AI), digital input (DI), analog output (AO), and a digital output (DO) cards. AO cards have eight (8) channels with an eight (8) channel expander card. The door unit is removable from the wall unit for easy installation and/or service and it contains the Power Supply. The wall unit contains the Motherboard, I/O card cage, cooling fan, and the I/O termination strips.

As an extremely reliable and flexible controller, the ability to program the unit while it is controlling is a key attribute of the EM Solutions 96. The flexible Input/Output (I/O) architecture of the EM Solutions 96 with the EM Solutions Expander Box results in a high volume of control points with tailored I/O point mixes. A high resolution Digital Input for accurate meter monitoring is standard.



The standard EM Turbo Local Area Network (LAN) communicates with up to 127 EM Solutions units via a two wire cable up to 4,000 feet at 9600 baud (115Kbaud*). Complete user programmability can be achieved via either the optional hand held Portable Operator's Terminal, hand held or wall mount Remote Terminal Unit (RTU), LTU or host software system. All peripheral communication ports are external on the door to allow direct connection of CRT terminal, printer, remote terminal unit (RTU), and telephone line (for optional internally mounted modem) to achieve a completely stand-alone or networked full-function Building Automation System. The optional ManagePak™ Engineering Workstation host software for Windows™ running on PCs in a TCP/IP Server/Client based Ethernet provides more addresses, faster communication, and enhanced user interface features.

SPECIFICATIONS:

Ambient Temperature Limits -

Shipping & Storage: 0°F (-17.8°C) to 140°F (60°C)

Ambient Humidity Limits -

Operating: 10 to 95 % RH, non-condensing.
Shipping & Storage: 10 to 95 % RH, non-condensing.

Power Requirements –

Input power 120 VAC, 60 HZ, single-phase, 150 Watt.

Equipment Protection -

Fuses: Included are fuses for +5, -15, +15, and an unregulated +12 VDC. Power supply utilizes crowbar circuitry to prevent damage to the EM unit. All regulated voltages have indicator lights (LEDs) showing current status.

Varistors: Metal Oxide Varistors (MOV's) protect every input/output point on the Motherboard. A MOV also protects the LAN port and the telephone line.

RF Filter: Filters RF signals on AC power line.

Partial Voltage Loss: Fail Safe board removes the I/O signals should any voltage fail, thus preventing inappropriate partial I/O operations, thereby protecting mechanical and electrical equipment.

Chassis -

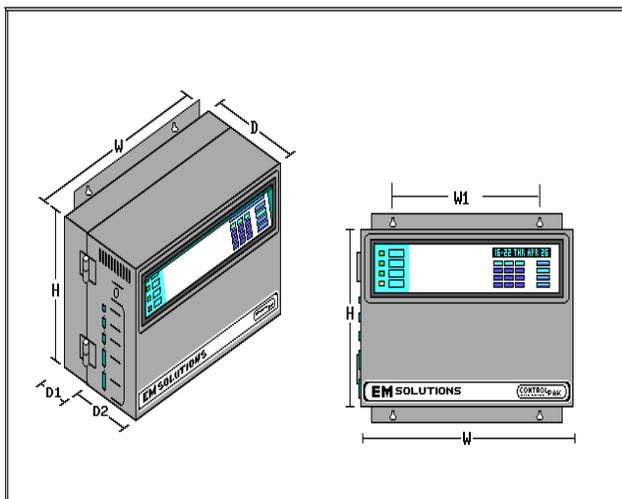
Main box dimensions are 20" W x 18" H x 12" D. The material is 16 gage welded steel. A removable, left-hinged door includes a key lock. The wall mount section's depth (D1) is 4", the door depth (D2) is 8", and the mounting dimension (W1) is 17". The enclosure's interior and exterior are completely painted glossy beige with white, blue and black trim.

EM Solutions 96/193 Features Reference -

All user features, control functions and peripheral communication specifications are as defined in the EM Solutions 96/193 technical cutsheet as the Expander Box is a full extension of the EM Solutions 96/193 I/O architecture. Therefore, all Expander I/O points and functions are achieved in a transparent manner when using the EM Solutions 96/193.

Motherboard –

Consists of 6 slots for plug-in I/O boards, an I/O wire trough, and 6 I/O termination strips, with screw terminal blocks.



ORDERING INFORMATION:

CONTROLLER OPTIONS:



EM Solutions Expander Box: M/N 65.1023
EM Solutions Expander Box with Blank Front.

INPUT/OUTPUT BOARD OPTIONS:



Analog Input Board: P/N 50.1007

Sixteen (16) points per board; accepted inputs include 0 - 20 mA or 0 - 2.4 VDC current voltage (C/V) or RTD in the range of 500 to 5000 ohms. Eighteen (18) gage, twisted, shielded wire is recommended. The input impedance of the AI board is 100 ohms. The AI board's resolution is 13 bits.



Analog Output Main Board: P/N 50.1009

Eight (8) point main board, with expansion plug for an additional 8 point expander board (P/N 50.1010) for "piggyback" mount to the main board. The factory board setting is 0 - 12 VDC. Available upon request is 0 - 24 VDC or 0 - 20 mA. The AO board's resolution is 8 bits.



Analog Output Expansion Board: P/N 50.1010

There are eight (8) points on this board that piggyback to the main AO board.



Digital Input Board: P/N 50.1011

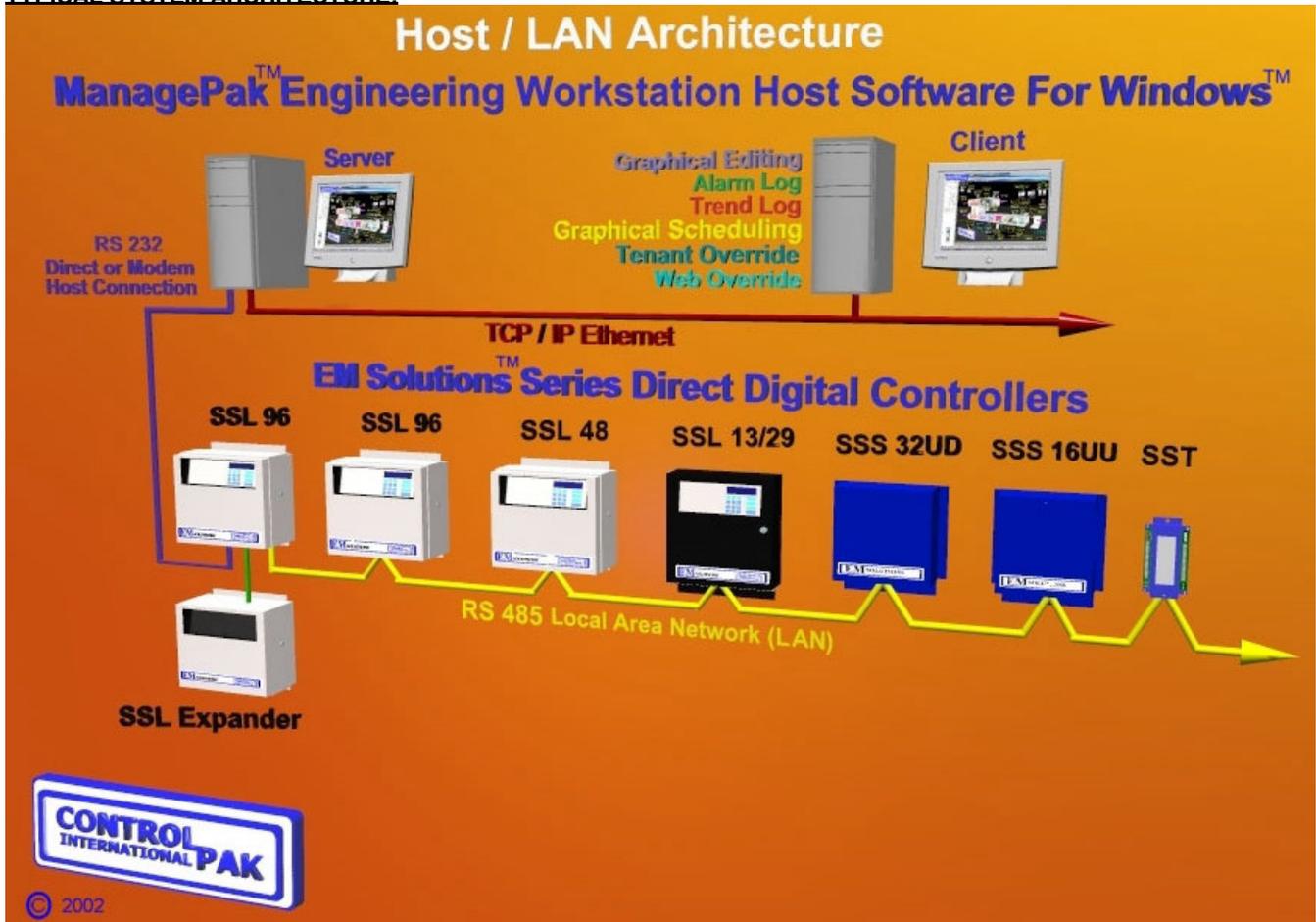
Sixteen (16) points per board; opto-isolated; externally powered 10 - 24 VDC or VAC; DI types include instantaneous, latch any ON, latch any OFF, and count pulses (fractional). Minimum input pulse width is 29.4 ms HIGH or LOW.



Digital Output Board: P/N 50.1074

Sixteen (16) points per board; isolated dry contact output; N.O. or N.C. jumper configurations; maximum rating 3 amps, 30 VDC or VAC resistive.

TYPICAL SYSTEM ARCHITECTURE:



Specifications and product offerings are subject to change without notice.



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