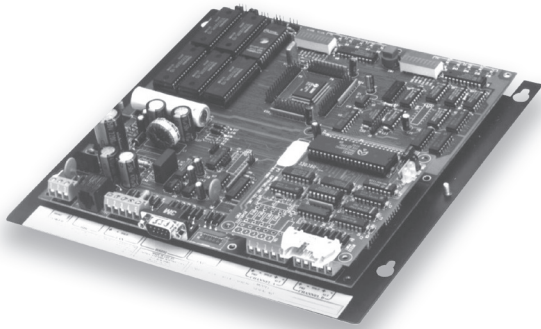


TAC I/NET™ 7793 MCI

MicroController Interface

The TAC I/NET™ 7793 MicroController Interface provides a "Gateway" between TAC's token passing, Peer-to-Peer Controller LAN and a network of standalone MicroControllers.



TAC I/NET 7793 MCI

MicroController Interface

Features



PRODUCT AT A GLANCE

- Integration
 - Environmental
 - Access Control
 - General Purpose
- MicroControl units supported
 - 123 Series MicroRegulators™
 - Universal Series MicroRegulators
 - 7910A Series Door Processing Units (DPU)
 - 7920 Series Door Processing Units (DPU)
 - 7930 Series Digital Input Unit (DIU)
 - 7940 Series Digital Input Output Unit (DIO)
- Peer-to-Peer, Token Passing LAN standard
- Dual MicroController Sub-LANs
 - 32 DPUs per MCI
 - 64 MRs per MCI
 - 64 MicroControl Units per MCI (DPU and MR combined)
 - Mix and Match Controllers on the Sub-LANs
- Counter-Scanning Loop Option
- Front End Controller for Standalone System
 - Supports up to 64 Doors
 - Supports up to 64 HVAC Equipment Units
- Remote Operation over Dial-Up Phone Lines
- Fiber Optic Compatible
- Local Ports for PC or Modem
- Auto Dial/Auto Answer Modem-Option Board
- Modular, Object-Oriented Programming
- Gateway for Global Control Functions
- Resident Programs for:
 - Access Initiated Control
 - Elevator Control
 - Environmental Control
 - Energy Management
 - Historical Data Collection

The MCI also functions as a network controller for a standalone system.

Description

The 7793 MCI serves a dual role. It can be a standalone network controller for a system of MicroControl Units or it can function as a gateway between a network of MicroControl Units and other controllers in a larger I/NET Distributed Control System.

An RS-232 port is standard for either a local PC or a modem. An option board adds a second port so that a local PC and an Auto Dial/Auto Answer (AD/AA) modem may operate concurrently. Both the PC and the AD/AA modem have access to any point on the Controller LAN or the sub-networks of MicroControl Units. The MCI supports up to eight telephone numbers for use with the AD/AA modem function.

The MCI provides global functions for the MicroControl Units. These global functions include: Access Initiated Control, Elevator Control, Event Initiated Control, Trending, Runtime Accumulation, Automatic Time Scheduling, Calculations, Anti-Passback and periodic synchronization of the local clocks in the MicroControl Units.

Controller Design

The 7793 MCI is based on a monolithic board design combining processing, memory, and communications functions on a single printed circuit board. The controller features removable terminal blocks, downloadable firmware, optional on-board modem drivers, three RS-485 ports, one or two RS-232 ports, and a TTL port for a Hand Held Console. The inherent reliability of this monolithic design is further enhanced with extensive transient protection, automatic self-test features, and a fiber optics communications option.

TAC I/NET 7793 MCI MicroController Interface Features (continued)

Access Controller Functions

Distributed Access Control downloads all “local” access control parameters from the Host PC to the DPU so that it may operate in a standalone basis. This ensures rapid access processing and minimal dependence on a single point of failure. This includes all “Who...Goes Where...When” parameters. The MCI not only monitors the DPU but also backs up the database of the DPU for many parameters. The following functions are resident in both the MCI and the DPU:

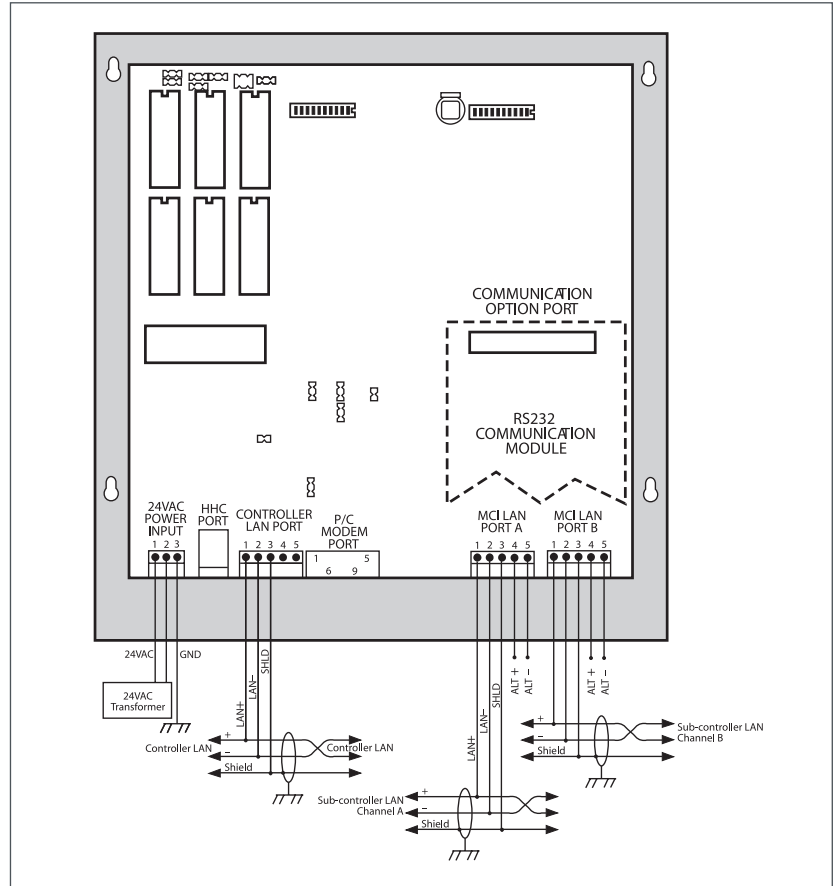
– **Personnel Schedules:** 31 time schedules with a seven-day week, plus seven special days and two temporary schedules. Each schedule contains seven intervals with user-defined begin and end times. One or more Personnel Schedules are assigned to each door for access control operation.

– **Door parameters:** Allows determination of what reader technology will be used, anti-pass-back operation, elevator operation, door prop alarm timers, door strike activation timers, first key auto-unlock active, and what activity and alarms are desired to be forwarded to which Host PCs for printout, display, or permanent archiving.

– **Door mode Schedules:** Determines at what time a door will be under access control, locked, or unlocked. Each Door Mode Schedule has a seven-day week, plus special days and temporary schedules.

Access Initiated Control causes a user-specified point to change state based on access control related events including: Reader Entry, Reader Exit, Elevator Entry and Denials of Entry or Exit for Invalid Schedules, PINs, Anti-Passback, Issue number, or Floor Selection. Access Initiated Control Sequences may be assigned to activate only for specific tenants, specific doors, specific groups of people, or a designated individual. It may also be used to create a graphic display showing who is in the building by name or to turn

Dimensional Drawing



on a tenant’s HVAC and lighting upon entering a building after hours. When using an I/DISCTM reader as a push button on a control panel and assigning operators to an I/DISC touch memory device, Access Initiated Control can initiate a pre-defined control sequence that records in the permanent history file who initiated the sequence and when it was initiated.

The Elevator Control Program supports elevator cabs with up to 64 floor buttons and up to 31 Personnel Schedules per cab. Upon activating a reader in the cab during authorized time intervals, user-defined floor buttons will be active. These buttons will remain active until a user-defined timer expires (0-255 seconds) or until any one button is pressed to prevent “tailgating.”

TAC I/NET 7793 MCI

MicroController Interface

Features (continued)

Environmental Control

Direct Digital Control is provided by “Object Modules” that are used to develop global logic sequences. These Object Modules emulate pneumatic/electronic components and may be “linked” to create a wide variety of custom control sequences. Object Modules are available for: PID, Floating, High/Low Selector, 2-Position, Relay (with timer), and Reset (dual input).

Automatic Temperature Control, working in conjunction with Automatic Time Scheduling, self adjusts the heating or cooling providing normal temperature control as well as setup/set back control including user-specified deadbands.

Predictive Central Plant Start allows plant startup based on inputs from other optimized start routines in controllers serving AHUs, heat pumps, VAV terminals, and other equipment.

Demand Limiting continuously monitors the rate of electrical power consumption and predicts the demand during each demand interval. If the predicted demand exceeds a preset level, controlled loads are shed or setpoints changed in a user-defined priority sequence. As peak demand passes and electrical power consumption decreases, the controller restores the loads or setpoints to their normal routines. Multiple power meters are supported in each MCI, with 64 loads specified for each meter. Maximum Off, Minimum On-Off, and seven levels of shed priority ensure efficient Demand Limiting while protecting environment control objectives.

General Functions

Automatic Time Scheduling provides a full year’s schedule including multiple start/stop times, special days, and temporary days for each load.

Calculated Points are used to perform special calculations required by the system. Calculated points allow development of “equations” using math, logic, Boolean, time, and other specialized operators.

Model Number	Description	Comments
7793	MicroController Interface	Baseplate Mounted
RS232EXP	Synchronous two-way modem card (w/o modem)	Plugs on to 7793 base card
CBL072	Cable, Controller DE9 to PC DE9, 6 ft (2 m)	
CBL073	Cable, Controller DE9 to PC DB25, 6 ft (2 m)	
CBL074	Cable, Controller DE9 to Modem DB25, 6 ft (2 m)	
TCON109	7790 LAN Interface Unit Installation Guide	Hardware platform for MCI

All operator entries on I/NET PCs use menus with self-prompting, fill-in-the-blank editors. Context sensitive help screens are available with the touch of the “F1” key. There is no need to learn a custom computer language or generate programming statements.

Event Initiated Control provides “IF-THEN-ELSE” control sequences, with time delay options, based on state changes, value crossings, alarms, returns to normal, or specified states of one or more points.

Downloadable Firmware

Complete executable software is downloaded through a locally connected PC, LAN, or a modem. This eliminates the need to visit the controller to replace EPROMs for enhancements or revisions.

On-line editing Capability

The 7793 MCI provides direct online edit capability for instant modification of all parameters. An operator with the appropriate password authorization may make changes online that are as simple as time schedule changes or as comprehensive as chiller optimization strategies. There is no need to use archaic techniques that require compiling, debugging, or reloading the software. The operator will observe the results of the changes instantly.

TAC I/NET 7793 MCI

MicroController Interface

Specifications

7793 MCI

Communication Ports

Controller LAN

RS-485; 19,200 or 9600 baud, SDLC, token-passing

Door Controller LAN:

RS-485; 9600 baud, asynchronous, polling

Hand Held Console Port

RJ-11 Modular, 1200 baud, TTL

RS-232 Port

PC @ 9600 baud (7801 tap function) or Hayes direct-dial asynchronous modem @ 1200, 2400, or 9600 baud

Rs-232 Expansion Board Port

Supports synchronous modem, direct or two-way dial, SDLC @ baud rates of 1200 to 9600 baud. Requires optional plug on module.

Network Wiring Requirements

Controller LAN Length

5,000 ft (1500 m) per segment.
25,000 ft (7600 m) with repeaters

Microcontroller Sub-lan Length

5,000 ft (1500 m)

Cable Supported

Twisted pair, shielded
22 AWG(0.324 mm²) or larger,
30 pF/ft or less between conductors,
55 pF/ft or less conductor to shield,
85 to 150 Ohm impedance

Capacity

Channels

2 per MCI

Controllers

- 32 DPUs per MCI
- 64 DIUs per MCI
- 64 DIOs per MCI
- 64 MRs per MCI
- Total of 64 MicroControl Units per MCI

Station Addresses

One per channel used

Processor

Processor

Zilog Z181

Clock/Calendar

Battery-backed, includes seconds, minutes, hours, day, month, year, leap year

Memory

EPROM

32KB

Static RAM

256KBytes

NOVRAM

512Bytes

RAM Battery Backup

On-board Ni-cad, rechargeable.
Maintains RAM for 300 hours

Firmware

Binary Files

Downloadable to battery-backed RAM

Auto Dial Support

Telephone Numbers

8, stored in NOVRAM

Number Of Digits

31 per phone number

Supported

Phone, Beeper, Pager

Physical Description

PCB Dimensions

8.5" L x 8.5" W x 1.8" H
(21.6 cm x 21.6 cm x 4.5 cm)

Baseplate Dimensions

10.0" L x 9.6" W (25.4 cm x 24.13 cm)

Rs-232 Expansion Board Dimensions

4.3" L x 3.4" W (10 cm x 8.8 cm)

Weight

2 lbs

Power Requirements

24Vac, +10%, 50/60 Hz (40VA max)

Operating Temperature

32°F to 122°F (0°C to 50°C)

Operating Humidity

10 – 90% RH, non-condensing

Terminations

Terminal Blocks

Removable screw terminal connectors

Indication

LEDs

LAN port activity (transmitting & receiving),
MicroController Sub-LAN channel activity
(transmitting & receiving – each channel),
Hand Held Console port activity
(transmitting & receiving), RS-232 PC port
activity (transmitting & receiving), operating
status (alarm, reconfiguration, low power)

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On October 1st, 2009, TAC became the Buildings Business of its parent company Schneider Electric. This document reflects the visual identity of Schneider Electric, however there remains references to TAC as a corporate brand in the body copy. As each document is updated, the body copy will be changed to reflect appropriate corporate brand changes.

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