

**DUKANE****MODULAR  
COMMUNICATIONS SYSTEM****Features**

- *Advanced Microprocessor Design*
- *Simultaneous Program Distribution and Two-Channel Intercom*
- *Built-In and Remote Diagnostics*
- *Selectable Single-Queue Operation*
- *PC Interface for Remote System Programming*
- *Twenty-Five Programmable Tone Types*
- *User-Programmable Input Ports and Output Contacts*
- *RS-485 Serial Port*
- *User-Programmable, Battery-Backed Master Clock*

**General Description**

The Dukane MCS350 Series is a multichannel, microprocessor-controlled, programmable administrative communications system that provides a range of audio communications functions. These functions are initiated from any one of up to four Administrative Control Consoles (ACCs) that can be connected to the system. The entire system of ACCs and up to 256 remote stations are controlled by a Dukane Model MCS350 Central Control Unit (CCU). Two-way open voice communications can be initiated from an ACC to any remote speaker station or to another ACC. Paging and program distribution can also be initiated by an ACC to any one station or group of remote stations. The built-in master clock can be programmed to control time tone distribution to any or all remote stations. The master clock can correct selected synchronous clocks or selected digital clocks. The clock has a battery backup to maintain the correct time for seven days after power loss.

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**(General Description)**

The MCS350 has three independent audio communications paths: one program channel and two open-voice intercom channels. All three channels can be active simultaneously, without interruption. The program channel is used for paging, time signaling, and program distribution to multiple remote stations. The two intercom channels allow two simultaneous intercom conversations: one between an ACC and a remote station, the other between two ACCs. Two simultaneous ACC-to-ACC conversations are also possible. Program channel communications need not interrupt remote station intercom use.

The ACC is a desktop unit that initiates and displays all MCS350 functions. The ACC consists of a protective housing, a 31-key, color-coded, spillproof key pad, a 16-character alphanumeric LCD, a built-in microphone and speaker, and a two-way handset. ACC key pad entries are accompanied by both audio and visual feedback. The EMERGENCY, CUSTODIAN, PAGE, PROGRAM, CONSOLE, SYSTEM, and HOLD keys have accompanying LEDs to indicate the function status. The ACC also has speed dial, redial, manual time-tone generation, and program monitoring capabilities.

ACC users have program channel access for zone paging to preselected groups of remote stations or for all call paging. Remote stations can be assigned to more than one zone. ACC users can also program the entire system by entering the user-assigned access code. The built-in programmable master clock allows 256 discrete time event entries. Each event is assigned to one, a combination of any five, or all eight time zones; one of eight time schedules; one of eight user-programmable tone types; and any combination of days of the week. The system master clock can be synchronized by an external master clock system. All system programming is stored in non-volatile (EEPROM) memory and is retained in the event of power failure.

The 16-character LCD display keeps the user informed of current ACC status at all times. When no calls are in the system, the display shows the time of day in either 12- or 24-hour format. As calls are received by the ACC, the display shows the two-, three-, or four-digit alphanumeric room number of the calling station as well as the call's position in that ACC's call-in queue. Each ACC has its own individual queue for storing incoming calls. These queues are user-programmable so that any room can be programmed to call into any one of the ACCs. All rooms can also be programmed to call into a single ACC. The ACC indicates each call it receives by sounding a call-in tone and updating its queue status display. Calls into an ACC are inserted into the queue first according to their priorities, then in order of arrival. Five call-in priority levels are user-programmable for each remote station: emergency, ACC call-in, high priority, staff, and normal. The system has 100 percent queuing of incoming calls so no calls can be lost. Incoming calls can be scanned using the DISPLAY CALLS key and can be answered in any order desired. An ACC can place a call with calls waiting in its queue. A single queue mode that places all incoming calls into a single common queue can be selected. This allows directing all incoming calls to all ACCs during limited staff operation.

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**(General  
Description)**

For voice intercom or paging functions, the ACC is equipped with a handset, key pad, speaker, microphone, and a PUSH TO TALK key. The handset is engaged whenever it is in a non-horizontal position. Voice-activated switching (VOX) automatically switches audio direction. When the handset is not active, the direction of communication is controlled by the PUSH TO TALK key. The built-in microphone is active when the PUSH TO TALK key is pressed and the speaker is active when that key is released.

The system has user-programmable input ports that allow external devices to trigger time and emergency tones, external all call, door monitor, night transfer switch, and other system functions. User-programmable dry-contact outputs are provided to signal external devices when functions such as clock synchronization, all call, and remote annunciations occur.

The system tone generator provides 25 tones. The volume level and duration of each tone is programmable.

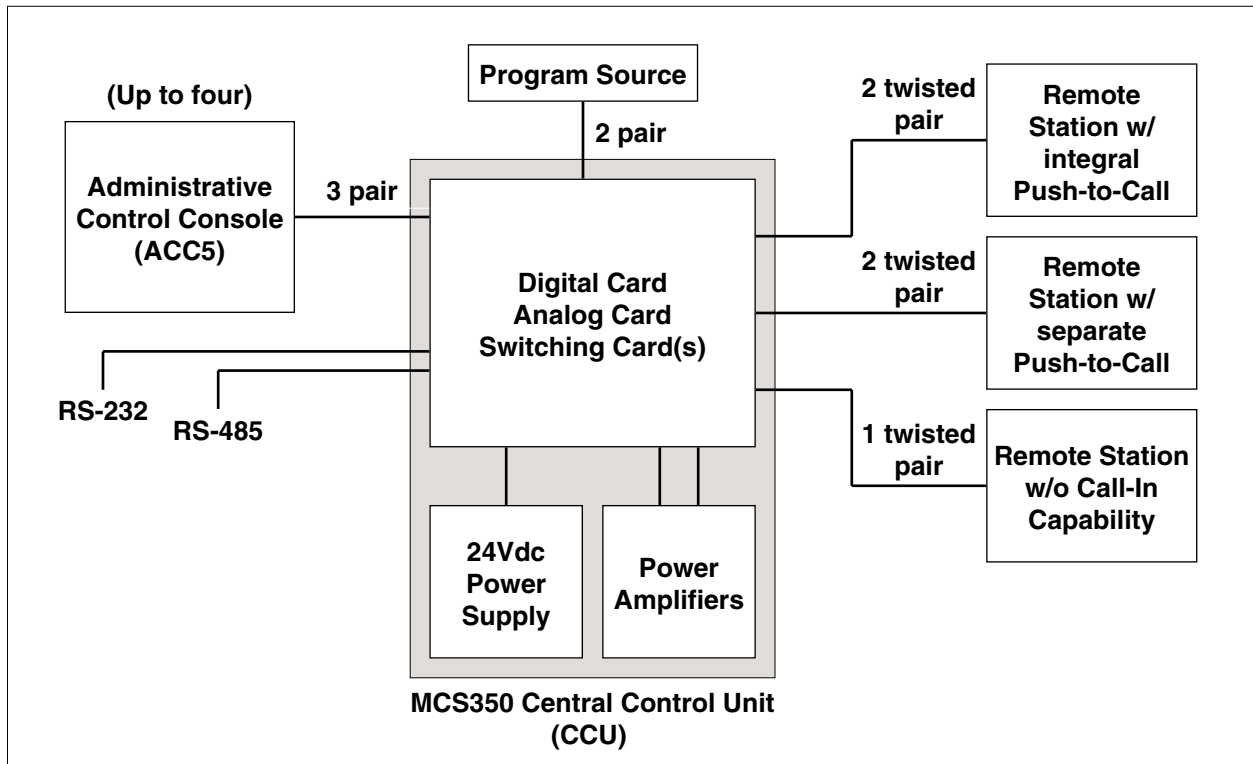
The MCS350 System includes off-hour door alert, a programmable alarm tone for sounding a door alarm in all or selected zones by the closure of a single switch contact.

The Model MCS350 Central Control Unit consists of one digital card, one analog card, one or more SC16 or SCX16 Switching Cards, one 24Vdc power supply, and one or more 60-watt power amplifiers. A single switching card can handle up to 16 remote stations. The MCS350 can contain up to 16 switching cards, resulting in a system capacity of 256 remote stations. The MCS350 performs self-diagnostic tests for detection of various system errors or invalid keystroke sequences. If a system error is detected, a message is displayed on each ACC in the system.

The MCS350 System has an RS-232 port for a PC or a Dukane SmartSystem® interface that allows menu-driven programming of system information (room numbers, zones, events), storing system programming on diskette, establishing a system directory of teacher names with room numbers, adding and deleting rooms from zones, logging and storing priority system activity, and retrieving data for review and printing. An RS-485 port provides for long distance serial communications with future equipment.

The Dukane MCS350 is available in two models: a wall-mount version and floor rack version. The wall-mount version can accommodate up to four switching cards (64 remote stations), a 24Vdc power supply, and a 60-watt power amplifier. The floor rack version is an upright 19-inch (48.3 cm) rack unit that houses the Central Control Unit as well as an optional AM-FM tuner/cassette player (with or without preamp).

The 19-slot card cage in the rack model can contain up to 16 switching cards (256 remote stations). The rack also houses the 24Vdc power supply, and up to six 60-watt power amplifiers. A single power amplifier is recommended for each set of 64 remote stations.



*System Block Diagram*

## System Expansion Options

### APC16 Annunciator Point Card

This card provides the capability to connect alarm inputs to the MCS350 System.

### SC16 Four Wire Switching Card (16-circuit expander)

This card controls system switching to remote stations. Each SC16 card can handle up to 16 remote stations.

### SCX16 Two Wire Switching Card

Useful in existing facilities where only a twisted-pair cable is present from each speaker location and call-in capabilities are desired. The normally closed loop supervises speaker lines for open conditions as call-ins.

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## Specifications

### RATED OUTPUT

25V line or 45 $\Omega$  system  
PROGRAM:  
Wall cabinet: 60W (rms)  
Rack mount: 60W to 360W (rms)  
INTERCOM: 4W (rms)

### POWER REQUIRED

MCS350 WALL CABINET: 105Vac to 132Vac @ 3A  
MCS350/R RACK: 105Vac to 132Vac @ 10A

### INPUTS

External program source

### INPUT SENSITIVITY

EXTERNAL PROGRAM SOURCE: 500mV nominal  
INTERCOM: 500mV nominal

### FREQUENCY RESPONSE

PROGRAM: 50Hz to 15kHz  
INTERCOM: Voice-filtered for maximum intelligibility

### COMPRESSORS

Automatic level control of both talk and listen

### DISTORTION

PROGRAM: Less than 2% at full load  
INTERCOM: Less than 2% at full load

### NOISE LEVELS

EXTERNAL PROGRAM SOURCE: -60dB  
INTERCOM: -60dB

### OUTPUT REGULATION

PROGRAM: Better than 2dB from no load to full load  
INTERCOM: Better than 2dB from no load to full load

### FUSES

WALL CABINET POWER SUPPLY: AC—0.75A slow blow, DC—3A fast blow  
RACK MOUNT POWER SUPPLY: AC—1.25A slow blow, DC—5A fast blow  
60W POWER AMPLIFIER: AC—1.25A slow blow, DC—5A fast blow  
CENTRAL CONTROL UNIT (MCS350) MAIN: 5A slow blow  
SWITCHING CARDS: 0.25A slow blow  
ACC: Four 0.25A slow blow  
EXTERNAL PROGRAM SOURCE: One 0.5A slow blow

### INTERFACES

RS-232 port  
RS-485 port  
Clock correction  
Input port: Four input closures  
Output port: Two digital, two relay

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## (Specifications)

### TERMINATIONS

EXTERNAL: "BIX" Telecommunication-type

INTERNAL: "MAS-CON," "LAT-CON," "CHAMP" and screw terminal types

### DIMENSIONS

MCS350 WALL CABINET:

21" (53.3 cm) wide x 28" (71.1 cm) high x 4-3/8" (11.1 cm) deep

MCS350/R RACK:

Standard 19" (48.3 cm) rack, 54" (137.2 cm) high x 21" (53.3 cm) wide x 17" (43.2 cm) deep

### NET WEIGHT

MCS350 WALL CABINET: 47 to 50 pounds (21.2 to 22.5 kg)

MCS350/R RACK: 139 to 228 pounds (62.6 to 102.6 kg)

### FINISH

MCS350 WALL CABINET:

16-gauge steel backbox finished in matte gray baked epoxy

MCS350/R RACK:

Steel floor rack finished in charcoal black baked epoxy

### TONES

Intercom Call-In

Intercom Call-Out

Privacy

Page Preannounce

Emergency Page Preannounce

Civil Emergency

Custodian

Eight Time Tones

Door Alert

### CONTROLS

Full system control from any ACC

### ENVIRONMENTAL PARAMETERS

32° F (0° C) to 90° F (32° C), relative humidity 0 to 90%

### CAPACITY

MCS350 WALL CABINET:

Sixteen stations expandable to 64 stations

One to four SC16 or SCX16 switching cards, 16 circuits per card

Up to four Administrative Control Consoles (ACCs)

One 60W power amplifier

MCS350/R RACK:

Sixteen stations expandable to 256 stations

One to sixteen SC16 or SCX16 switching cards, 16 circuits per card

Up to four Administrative Control Consoles (ACCs)

Up to six 60W power amplifiers

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**ACC5**

Administrative Control Console

**Associated  
Equipment****9A1765**

Call Switch (Pushbutton)

**PCS499**

Call Switch, Three-Position Rocker

**PCSG3IWSE-25**

Speaker Assembly (Flush) Square Baffle with Call-In Switch

**PCSB303SE-25**

Speaker Assembly (Surface) with Call Switch

**PCS819**

Dynamic Transmitter; Magnetic Receiver; 6' (1.8 m) Coiled Cord; for Two-Gang Backbox

**PCS822**

Dynamic Transmitter; Magnetic Receiver; 6' (1.8 m) Coiled Cord; for Single-Gang Backbox

**PCS821**

Dynamic Transmitter; Magnetic Receiver; 6 (1.8 m) Coiled Cord; Rocker Call-In Switch; for Single-Gang Backbox

**RTC350**

AM-FM Tuner/Cassette Player (Rack Mount)

**RTC350P**

AM-FM Tuner/Cassette Player (Rack Mount) Including Preamp and Monitor Speaker

**TC350**

AM-FM Tuner/Cassette Player (Desk Mount Cabinet)

**TC350P**

AM-FM Tuner/Cassette Player (Desk Mount Cabinet) Including Preamp and Monitor Speaker

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**(Associated  
Equipment)**

**17-PS8-24**

Digital Time Power Supplies

**24D20, 24D40**

Digital Secondary Clock (2" or 4")

**24SS Series**

Analog Secondary Clocks