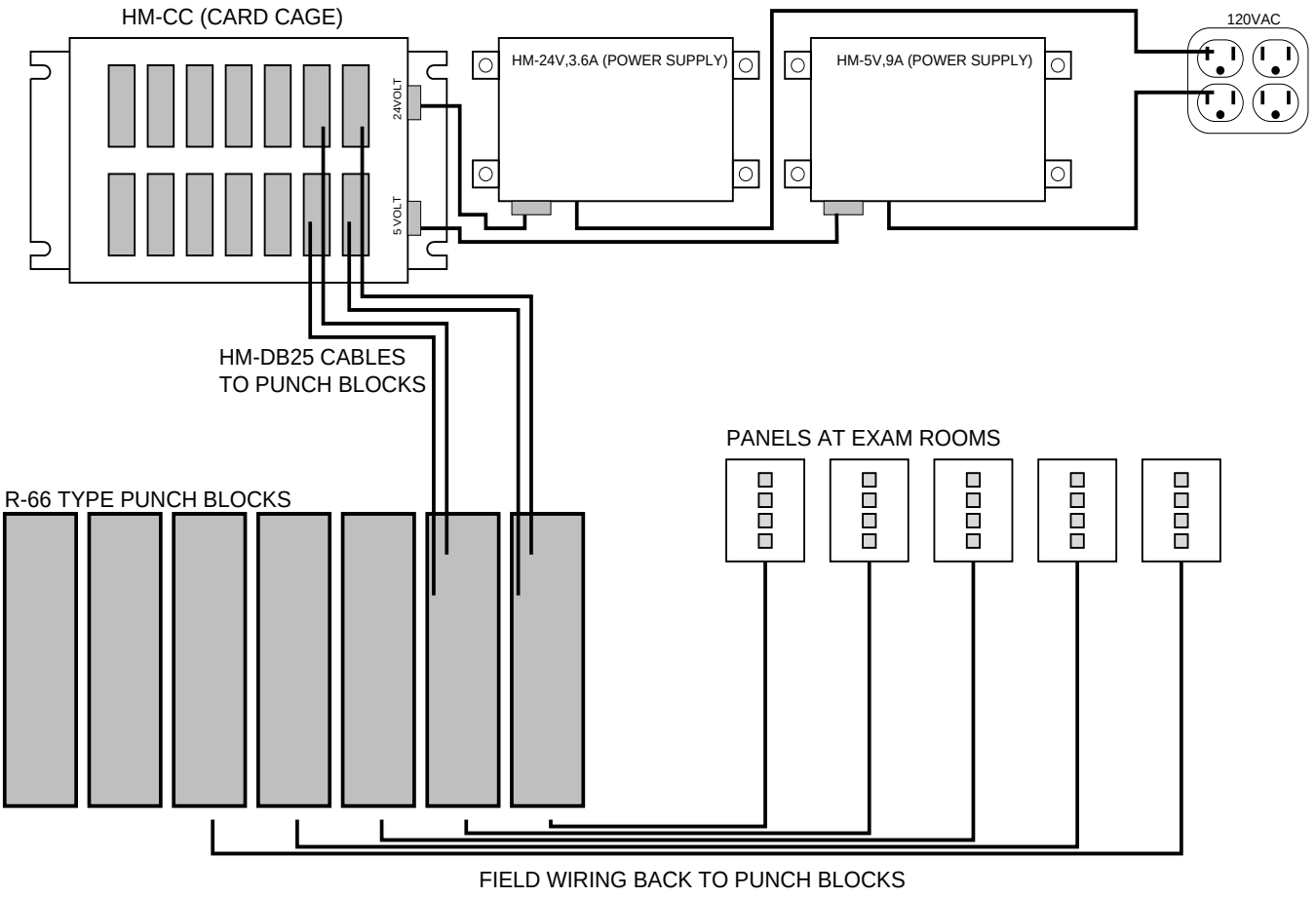
HERITAGE MEDCALL, INC.

INSTALLATION GUIDE:
CLINICOMM



Important:

This installation guide provides an overview of the operation and hook-up for a Heritage Medcall CliniComm system. Each system is configured by a custom program and must be installed according to the Program Listing for the particular system that is being installed. This document may only be used as a guide to installation. It is imperative that the person installing this system has a thorough knowledge of how the system, when completed, is to operate. System operation should be provided to the installer by the sales department that sold and configured the system.

Introduction:

The Heritage Medcall CliniComm System consists of the following basic components; microprocessor card (MPU8), input/output cards (IO16), card cage w/mother board (CC), a 5 VDC power supply and a 24 VDC power supply . The MPU8 is the microprocessor card that controls all system functions, contains the systems program and provides 8 input/output circuits. Each IO16 card provide 16 input/output circuits and receive their instructions from the MPU8 card via the mother board contained in the CC card cage. The CC card cage is a surface mounted housing that provides space for 1 - MPU8 card and up to 6 - IO16 cards for a total of 104 input/output circuits. The CC card cage also provides inputs for the 5 volt and the 24 volt power supplies as well as provisions for connecting multiple card cages together for larger systems. Power for the MPU8 and the IO16 is provided by the 5V power supply. Power for lighting the lamps within the system is provided by one or more 24V power supplies.

MPU8 Description:

The MPU8 is the microprocessor card that controls all system functions. System operation is dictated by the program that is running on the MPU8 card. Program information is written on a PC and then downloaded onto an EPROM that is then installed in the MPU8. When an input/output circuit is activated, the MPU8 looks to the program and decides how the output should react. The program may provide any number of outputs, for example, a steady output, flashing output, fast flashing output or start a timer. Input/output circuits are paired as a switch input and a lamp output per circuit. The switch input is held at a power supply ground level until the physical switch connected to that input is closed at which time the switch input is changed to +5 volts. When a switch input is at the +5 volt level, the circuit is activated. Momentary switches are physically connected to an input, between Switch Common (+5vdc) and the individual switch inputs. The lamp output is provided by a darlington power transistor that functions much like a relay. When the lamp output is turned "on" by the MPU8, the transistor closes and provides power supply ground to the output. When the lamp output is turned "off" by the MPU8, the transistor opens and removes ground from the output. Lamps are physically connected between Lamp Common (+24vdc) and the individual lamp outputs. The MPU8 provides 8 input/output circuits. The MPU8 connects to the mother board via a 44 pin edge connector which provides program and control information to all IO16 cards. Switch input, lamp output, Switch Common and Lamp Common connections are provided by a single DB-25 connector. A single DB-9 connector is provided as an RS232 serial port interface for connection of external devices such as a printer, CRT, modem, PC, LAN or digital pager system.

IO16 Description:

The IO16 card is an input/output expansion card. The input/output circuits function the same as described under the MPU8 section. Each IO16 provides 16 input/output circuits. Program and control information from the MPU8 is sent via the "data bus" contained on the mother board. Switch input, lamp output, Switch Common and Lamp Common connections are provided by two (2) DB-25 connectors. Each DB-25 connector allows connection to eight (8) input/output circuits.

CC Description:

The CC card cage is a surface mount enclosure that provides space for 1- MPU8 and up to 6 - IO16 cards for a total of 104 input/output circuits. The MPU8 and IO16 cards slide into card guide rails and push into an edge connector that is mounted on the mother board. Communication between cards is via the data bus on the mother board. Connections are provided for both the 5 volt and the 24 volt power supplies (2 -5volt and 2 -24volt). A side mounted DB-25 connector is for (data bus extension) of multiple card cages running off of the same MPU8, (example: 2 card cage system with 1 MPU8 + 6 IO16 in the first cage and 7 IO16 in the second card cage for a total of 216 circuits).

5V Power Supply Description:

The 5 volt DC, fully regulated, over-voltage and over-current protected, power supplies are rated for continuous current output of 10 amps. For multi-card cage systems a 5V Power Supply is required for each card cage. The 5 volt power supplies are only used to power the digital microprocessor circuitry and do not effect the "lamp outputs" in any way.

24V Power Supply Description:

The 24 volt DC, fully regulated, over-voltage and over-current protected, power supply are rated for continuous current output of 2.5 amps. The 24 volt power supply is only used to power the "lamp outputs" and does not effect the digital circuitry in any way. The quantity of 24V power supplies needed is dictated by the number of lamps that are in the system. Each lamp, push-button or annunciator, draws .040 amps or 40ma. Each dome lamp draws 0.100 amps or 100ma. Multiply the quantity of each type of lamp by it's current draw to calculate the total current draw and then divide that total by the 2.5 amps provided by each power supply and that will indicate the quantity of power supplies needed.

Example:

75 push-button lamps @ .040 = 3.0 amps
20 annunciator lamps @ .040 = 0.8 amps
20 dome lamps @ .100 = 2.0 amps

Total = 7.0 amps divided by 2.5 = 2.80

Quantity of 24V power supplies needed = 3

Program Guide, Function Description:

The program guide is a printed copy of the program listing and shows how the MPU8 and IO16 circuits are programed to work. The left side column shows the circuit function, in an abbreviated programming language. The right side column lists a description for each circuit as well as the circuit number. The following is a listing of the abbreviated program language and the associated function:

Abbreviation	Function Name
MEM	Memory Circuit.
PRI	Priority Circuit.
DMEM	Delayed Memory Circuit.
EMER	Emergency Circuit.
MERGE	Merge Circuit.
UP	Up Circuit.
DOWN	Down Circuit.
CLKSET	Clock Set Circuit.
MC	Medcall Circuit.
MMC	Momentary Medcall Circuit.
DMC	Delayed Medcall Circuit.
COME	Come Circuit.
RESETG	Reset Circuit.
ORG	Orgroup Circuit.
CHIME?	Chime Circuit.

Memory Circuit (MEM),

A group of Memory circuits (i.e. MEM 0) will remember the sequence in which they were activated (activation is accomplished by pressing the switches on the push-button panels located throughout the facility). The "first" circuit to be activated will give a slow flashing output, any other circuits activated will give a steady output. The slow flashing output shows the location of the "first" or "next" patient. The steady outputs will show that a patient is waiting to be seen. When a provider (doctor, nurse etc.) activates the slow flashing circuit, the output will change to fast flash, indicating that the provider is with the patient. After the provider is finished with the patient, they will activate the fast flashing circuit and it will turn it's self off and the circuit that was activated "next" will change from steady to slow flash. If more than one provider is to use Memory (i.e. Dr. 1 and Dr. 2) than separate memory groups are programmed (MEM, group 0 and MEM, group 1). The number of Memory circuits programmed usually follow the number of locations (exam rooms) that will be used. Example: One doctor with 10 exam rooms will need 10 circuits programmed as MEM, group 0. Two doctors using the same 10 exam rooms would need 20 circuits programmed as 10-MEM, group 0 and 10-MEM, group 1. Programming will accommodate 32 separate Memory groups with up to 127 circuits in each group.

Priority Circuit (PRI)

The Priority circuit works with all types of Memory circuits. Priority is used to modify the "sequence" of a Memory group. Only one (1) Priority circuit is needed for each system. Whenever the Priority circuit is activated, the program moves the next Memory circuit that is activated to the head of the sequence. Example: if Memory circuits were activated in the following sequence, (circuit / room # 1), (circuit / room # 2), (circuit / room # 3), (circuit / room # 4) and then the Priority circuit was activated and then Memory (circuit / room # 5) was activated, then the Memory (circuit / room # 5) would be "next" after (circuit / room # 1) instead of (circuit / room # 2). The sequence would be changed from circuit / room 1,2,3,4 to 1,5,2,3,4.

Delayed Memory Circuit (DMEM)

The Delayed Memory Circuits utilize three (3) separate functions (Timer, Priority, Memory) with the activation of a single circuit. When a Delayed Memory circuit is activated the program starts a pre-set timer and gives a steady output to the DMEM circuit. After the pre-set timer has expired, the program acts as if the Priority circuit was activated and then a Memory circuit. This feature is useful when a timed procedure (i.e. Novacaine, drops to dilate pupils, etc.) is needed before the provider is scheduled (by Memory) to see the patient.

Emergency Circuit (EMER)

The Emergency Circuit is almost identical to the Priority Circuit and is utilized the same as Priority. The only difference is that when Emergency is used, the slow flashing "next" Memory is changed to steady and the Emergency circuit starts out as slow flashing "next". If the provider is already with the "next" patient (i.e. fast flash) then no change is made until the fast flash is canceled. If the provider is not with the "next" patient (i.e. slow flash) then the current slow flash will automatically change to steady and the Emergency circuit will be slow flash.

Merge Circuit (MERGE)

Merge Circuits are used to merge (join) separate Memory groups. They may be used to merge any two (2) multi circuit memory groups (merge two 10 circuit Memory groups into one 20 circuit group) or to merge any number of single circuit Memory groups (merge individual single circuit Memory groups for Doctor Programmable Memory).

Up Circuit (UP)

Up Circuits are "count up" type circuits. The program remembers and counts each time the Up circuit is activated. The output of the Up circuit will change from "off" to "on" with the first "count", from "on" to "slow flash" with the second "count' and from "slow flash" to "fast flash" with three or more counts.

Down Circuits (DOWN)

Down Circuits are "count down" type circuits that work in conjunction with Up circuits. Each time the Down circuit is activated, it removes one of the Up counts (i.e. if the Up circuit is activated 5 times, then the Down circuit must be activated 5 times to clear the output of the Up circuit). The Down circuit has no lamp output of it's own. The lamp output from the Up circuit must be used to light the Down push-button. The output from the Up circuit will follow the reverse flashing sequence (3 or more = fast flash, 2 = slow flash, 1 = on steady and 0 = off).

Clock Set Circuit (CLKSET)

The MPU8 has an RS232 data port that may be connected to other microprocessor devices. The Clock Set circuits are defined as Hour, Minute and Seconds. When the Clock Set "hour" circuit is activated, is changes the internal clock of the MPU8 an hour per activation. The Clock Set "minute" circuit changes the internal clock of the MPU8 a minute per activation. The Clock Set "second" circuit changes the internal clock of the MPU8 a second per activation. The clock format (military "24 hr." vs "12 hr." AM, PM) is jumper selectable on the MPU8 board.

Medcall Circuit (MC)

Medcall circuits are flashing circuits that are programed with any output sequence of "on", "slow flash" or "fast flash". The outputs may be single, dual or triple (i.e. "off"-"on"-"off" , "off"-"on"-"slow flash"-"off" , "off-"on"-"slow flash"-"fast flash"-"off") or any combination of OSF. The "off" position may not be used in the middle of a sequence (i.e. you may not have "off"-"on"-"off"-"slow flash"). Many other types of features may be assigned to a Medcall circuit such as Chimes, Timers, Orgroups, etc.

Momentary Medcall Circuits (MMC)

Regular Medcall (MC) circuits are activated by a momentary switch closure and the output is "held" by the microprocessor. Momentary Medcall circuits are activated by a "locking" switch closure and are active only as long as the switch is held closed. Locking switch type devices such as Toilet Emergency, Shower Emergency, Code Blue and Staff Assist are used with Momentary Medcall circuits. Unlike regular (MC) circuits that may have multiple sequenced outputs (OSF) the (MMC) is a "single stage" only circuit. Most other features such as Chimes and Timers may be used with MMC circuits.

Delayed Medcall Circuits (DMC)

Delayed Medcall Circuits are "two stage" Medcall circuits that utilize multiple timers. Up to four (4) timers may be assigned to a DMC circuit. When the circuit is activated by one "push" of the push-button, the first timer starts and the output of the circuit is at the first stage (i.e. "on"). After the first timer has expired, the output goes to the second stage (i.e. "slow flash). If the circuit is activated by two "pushes" of the push-button, then the second timer starts and the output of the circuit is at the first stage. After the second timer has expired, the output goes to the second stage. The third and forth timers work the same way. Example: The DMC is programed with an output sequence of "on" then "fast flash", with Timer #1 set at 5 minutes, Timer # 2 set at 10 minutes, Timer # 3 set at 30 minutes and Timer # 4 set at 1 hour. If the push-button is pressed one (1) time the output will be "on" and then 5 minutes later the output will go to "fast flash". If the push-button is pressed three (3) times the output will be "on" and then 30 minutes later the output will go to "fast flash". Chimes may be attached to any DMC circuit. Timers may be of any length (from seconds to days) and may be single timer, dual timer, triple timer or quad timers. Delayed Medcall Circuits are useful when timing a procedure such as heat therapy or massage table therapy where the staff needs to be alerted to a room in which a patient has been on the given therapy for an elapsed amount of time.

Come Circuits (COME)

Come Circuits are single stage Medcall Circuits that are activated by either a momentary or locking switch closure that once activated may only be canceled by a separate Reset Circuit. The most common use for Come circuits are Emergency Help Needed calls that must be responded to before the call can be canceled. Example: Bathroom Emergency Call using a momentary push-button inside the bathroom and a separate cancel push-button on the outside of the bathroom. With any other type of circuit or if a manual locking switch were used, the patient could call for help and then fall against the call button and inadvertently cancel their own call, while being unable to place the call a second time. This would leave a patient needing help and no call on the system. With the Come circuit, the call placement could be from within the bathroom but not canceled from within the bathroom.

Reset Circuit (RESETG)

Reset Circuits are used to cancel or reset other circuits or groups of other circuits. Reset circuits may be used with Medcall Circuits, Momentary Medcall Circuits, Delayed Medcall Circuits and Come circuits.

Orgroup Circuits (ORG)

An Orgroup Circuit is programmed to "look" at another group of circuits and to provide an output based on the condition of that group. If an Orgroup were programmed to "look" at a Memory group, then the Orgroup would have no output as long as no Memory Circuits were active. As soon as any one of the Memory Circuits were activated, the Orgroup would provide an output. The Orgroup output may be programed to change states (flash rates) based on the number of activated circuits in the group (i.e. 1 Memory Circuit active = "on" , 2 Memory Circuits active = "slow flash" , 3 or more Memory Circuits active = "fast flash"). The previous example could be used as a patient waiting indicator for the provider responsible for that Memory group. Orgroups may be used with almost all types of circuits.

Chime Circuit (CHIME)

The Chime Circuit is almost always attached to some other type of circuit such as a Medcall circuit. Chimes are used any time that a tone is needed to audible alert staff members that a call has been placed on the system. Multi stage circuits may be programmed with Chimes executing at any or all of they're stages. Chimes may be used with all types of circuits. The Chime Circuit is an output only, their is no discreet switch input.

Sample Program Listing:

The following is a sample program listing for a small, five (5) exam room system with two Doctors using the Memory function, Priority function, Nurse call with Chime and Patient Waiting for each Doctor.

```
*************************************************************************
*
*
*  MPU BOARD                                                      CIRCUIT
     MEM       0                  DR # 1 MEMORY FOR ROOM 1           0
     MEM       0                  DR # 1 MEMORY FOR ROOM 2           1
     MEM       0                  DR # 1 MEMORY FOR ROOM 3           2
     MEM       0                  DR # 1 MEMORY FOR ROOM 4           3
     MEM       0                  DR # 1 MEMORY FOR ROOM 5           4
     MEM       1                  DR # 2 MEMORY FOR ROOM 1           5
     MEM       1                  DR # 2 MEMORY FOR ROOM 2           6
     MEM       1                  DR # 2 MEMORY FOR ROOM 3           7
*  I/O # 1
     MEM       1                  DR # 2 MEMORY FOR ROOM 4           8
     MEM       1                  DR # 2 MEMORY FOR ROOM 5           9
     PRI       0                  PRIORITY FOR ALL MEMORY CIRCUITS   10
     MC        OF,CHIME1+CNT3     NURSE CALL FOR ROOM 1              11
     MC        OF,CHIME1+CNT3     NURSE CALL FOR ROOM 2              12
     MC        OF,CHIME1+CNT3     NURSE CALL FOR ROOM 3              13
     MC        OF,CHIME1+CNT3     NURSE CALL FOR ROOM 4              14
     MC        OF,CHIME1+CNT3     NURSE CALL FOR ROOM 5              15
*  I/O # 2
     UNUSED                       CHIME OUTPUT FOR NURSE CALL        16
     ORG       0                  PATIENT WAITING FOR DR. 1
17
     ORG       1                  PATIENT WAITING FOR DR. 2
18
     UNUSED                                                          19
     UNUSED                                                          20
     UNUSED                                                          21
     UNUSED                                                          22
     UNUSED                                                          23
*  I/O # 3
```

Sample Program Listing (continued.):

The Program Listing on the previous page, along with the Pin-out for the MPU8 and IO16, and the Pin-out for the type of push-button panels being used, supply almost all of the information needed for the system inter-connects. When inter-connecting a system the following documents will need to be cross-referenced with each other:

Program Listing:

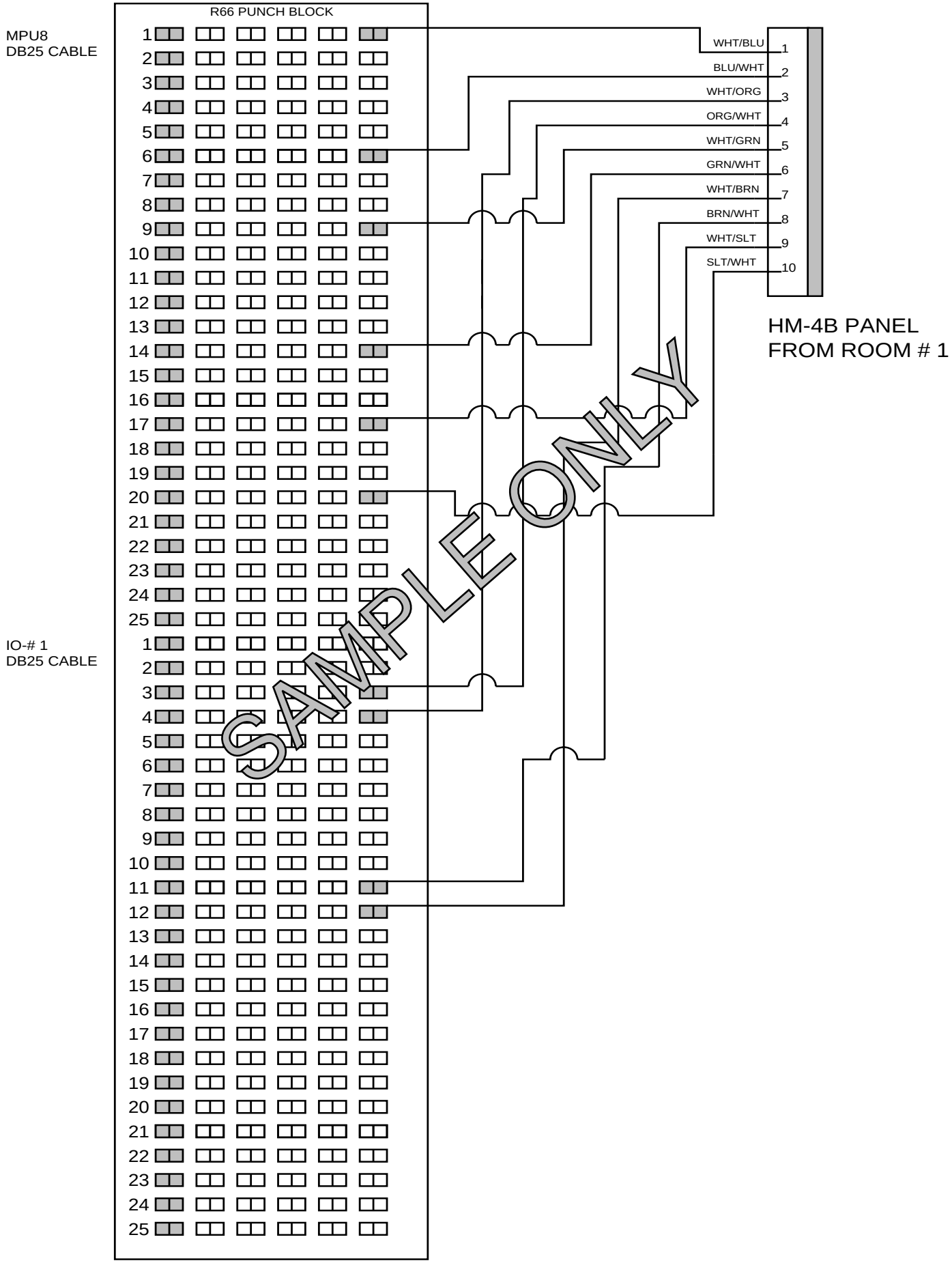
The program listings show how the circuits were programmed, the circuit number vs function and a brief description of how the circuits will be used. Example: On the sample program, the first doctor memory circuit for doctor # 1 is found on circuit number 0. The first doctor memory circuit for doctor # 2 is found on circuit number 5. The first Nurse call circuit is found on circuit number 11. The Priority circuit is found on circuit number 10. The Chime output circuit for Nurse call is found on circuit number 16. All circuit information is found on the Program Listing.

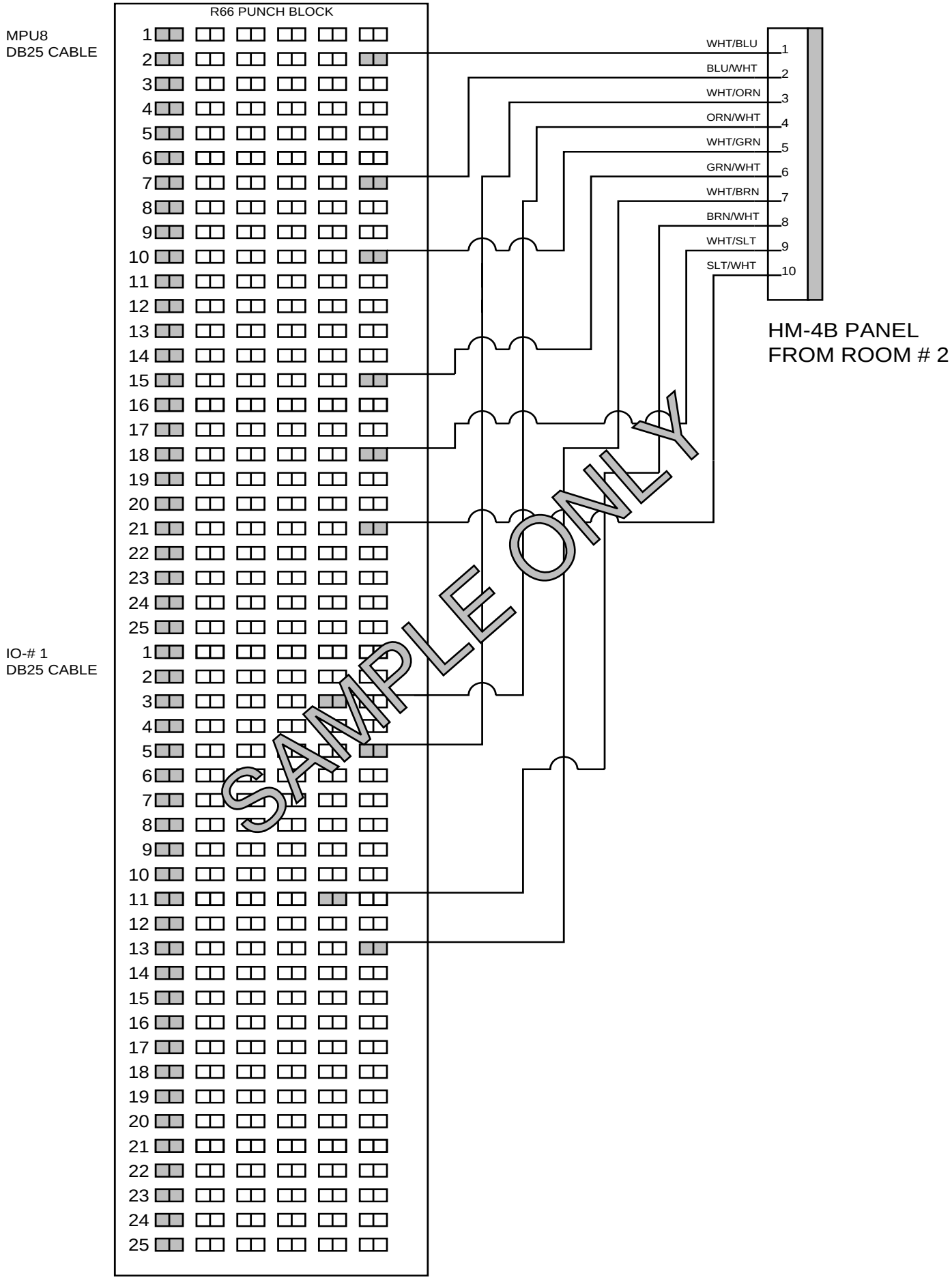
Pin-out for the MPU8 and IO16:

The pin-out sheets for the MPU8 and IO16 will show the exact color for color tie-in points for each circuit. If we want to connect to circuit 0, the Pin-out sheets show us that the "lamp" output of circuit 0 is pin # 1 (white/blue wire) from the MPU8 and the "switch" input for circuit 0 is pin # 9 (white/slate wire) from the MPU8. The Program Listing will tell us which circuit number that we want to tie into. If we want to connect to the first Nurse call circuit the Program Listing tells us that it is on circuit number 11. The Pin-out sheets show that the "lamp" output of circuit number 11 is pin 4 (orange/white wire) from IO # 1 and the "switch" input of circuit number 11 is pin 12 (blue/red wire) from IO # 1.

Pin-out for Push-button panels.

The pin-out for the Push-button panels show the color for color tie-in points for each lamp and each switch per panel. If we wanted to tie-in the first lamp and switch from a HM-4B panel at room number one, to the first Memory circuit for doctor number 1, we would take pin # 1, (white/blue wire) from the HM-4B and tie it to pin # 1, (white/blue wire) on the MPU8 and we would take pin # 5, (white/green wire) from the HM-4B and tie it to pin # 9, (white/slate wire) from the MPU8. To connect the second lamp and switch from the HM-4B panel to the first Memory circuit for doctor number 2, we would take pin # 2, (blue/white wire) from the HM-4B and tie it to pin # 5, (green/white wire) of the MPU8 and we would take pin # 6, (green/white wire) from the HM-4B and tie it to pin # 14, (orange/red wire) of the MPU8. To connect the third lamp and switch from the HM-4B to the first Nurse call circuit, we would take pin # 3, (white/orange wire) from the HM-4B and tie it to pin # 4, (orange/white wire) from IO # 1, and we would take pin # 7, (white/brown wire) from the HM-4B and tie it to pin # 12, (blue/red wire) from IO # 1. To connect the forth lamp and switch to the Priority Circuit, we would take pin # 4, (orange/white wire) from the HM-4B and tie it to pin # 3, (white/orange wire) from IO # 1, and we would take pin # 8, (brown/white wire) from HM-4B and tie it to pin # 11, (red/blue wire) from IO # 1. The last connections needed on the HM-4B are pin # 9, (white/slate wire) from the HM-4B tied to any Switch Common off of the microprocessor, and pin # 10, (slate/white wire) from the HM-4B tied to any Lamp Common off of the microprocessor. The HM-4B panel at room number two would connect as follows: first lamp and switch would tie into circuit number 1, second lamp and switch would tie into circuit # 6, third lamp and switch would tie into circuit # 12, forth lamp and switch would tie into circuit # 10, Switch Common from the HM-4B would tie to any Switch Common off of the microprocessor and the Lamp Common from the HM-4B would tie into any Lamp Common off of the microprocessor.


R66 PUNCH BLOCK
MPU8
DB25 CABLE
IO-# 1
DB25 CABLE
WHT/BLU 1
BLU/WHT 2
WHT/ORG 3
ORG/WHT 4
WHT/GRN 5
GRN/WHT 6
WHT/BRN 7
BRN/WHT 8
WHT/SLT 9
SLT/WHT 10
HM-4B PANEL
FROM ROOM # 1
SAMPLE ONLY


R66 PUNCH BLOCK
MPU8
DB25 CABLE
IO-# 1
DB25 CABLE
WHT/BLU 1
BLU/WHT 2
WHT/ORN 3
ORN/WHT 4
WHT/GRN 5
GRN/WHT 6
WHT/BRN 7
BRN/WHT 8
WHT/SLT 9
SLT/WHT 10
HM-4B PANEL
FROM ROOM # 2
SAMPLE ONLY

Pin-out for DB-25 Cable (MPU8):

Pin #	Wire color code	Function
1	white/blue	lamp output for circuit # 0
2	blue/white	lamp output for circuit # 1
3	white/orange	lamp output for circuit # 2
4	orange/white	lamp output for circuit # 3
5	white/green	lamp output for circuit # 4
6	green/white	lamp output for circuit # 5
7	white/brown	lamp output for circuit # 6
8	brown/white	lamp output for circuit # 7
9	white/slate	switch input for circuit # 0
10	slate/white	switch input for circuit # 1
11	red/blue	switch input for circuit # 2
12	blue/red	switch input for circuit # 3
13	red/orange	switch input for circuit # 4
14	orange/red	switch input for circuit # 5
15	red/green	switch input for circuit # 6
16	green/red	switch input for circuit # 7
17	red/brown	switch common *
18	brown/red	switch common *
19	red/slate	switch common *
20	slate/red	lamp common **
21	black/blue	lamp common **
22	blue/black	lamp common **
23	black/orange	lamp common **
24	orange/black	lamp common **
25	black/green	lamp common **

* Divide total switch common load evenly between all available switch common points.

** Divide total lamp common load evenly between all available lamp common points.

Pin-out for DB-25 Cable (IO # 1):

Pin #	Wire color code	Function
1	white/blue	lamp output for circuit # 8
2	blue/white	lamp output for circuit # 9
3	white/orange	lamp output for circuit # 10
4	orange/white	lamp output for circuit # 11
5	white/green	lamp output for circuit # 12
6	green/white	lamp output for circuit # 13
7	white/brown	lamp output for circuit # 14
8	brown/white	lamp output for circuit # 15
9	white/slate	switch input for circuit # 8
10	slate/white	switch input for circuit # 9
11	red/blue	switch input for circuit # 10
12	blue/red	switch input for circuit # 11
13	red/orange	switch input for circuit # 12
14	orange/red	switch input for circuit # 13
15	red/green	switch input for circuit # 14
16	green/red	switch input for circuit # 15
17	red/brown	switch common *
18	brown/red	switch common *
19	red/slate	switch common *
20	slate/red	lamp common **
21	black/blue	lamp common **
22	blue/black	lamp common **
23	black/orange	lamp common **
24	orange/black	lamp common **
25	black/green	lamp common **

* Divide total switch common load evenly between all available switch common points.

** Divide total lamp common load evenly between all available lamp common points.

Pin-out for DB-25 Cable (IO # 2):

Pin #	Wire color code	Function
1	white/blue	lamp output for circuit # 16
2	blue/white	lamp output for circuit # 17
3	white/orange	lamp output for circuit # 18
4	orange/white	lamp output for circuit # 19
5	white/green	lamp output for circuit # 20
6	green/white	lamp output for circuit # 21
7	white/brown	lamp output for circuit # 22
8	brown/white	lamp output for circuit # 23
9	white/slate	switch input for circuit # 16
10	slate/white	switch input for circuit # 17
11	red/blue	switch input for circuit # 18
12	blue/red	switch input for circuit # 19
13	red/orange	switch input for circuit # 20
14	orange/red	switch input for circuit # 21
15	red/green	switch input for circuit # 22
16	green/red	switch input for circuit # 23
17	red/brown	switch common *
18	brown/red	switch common *
19	red/slate	switch common *
20	slate/red	lamp common **
21	black/blue	lamp common **
22	blue/black	lamp common **
23	black/orange	lamp common **
24	orange/black	lamp common **
25	black/green	lamp common **

* Divide total switch common load evenly between all available switch common points.

** Divide total lamp common load evenly between all available lamp common points.

Pin-out for DB-25 Cable (IO # 3):

Pin #	Wire color code	Function
1	white/blue	lamp output for circuit # 24
2	blue/white	lamp output for circuit # 25
3	white/orange	lamp output for circuit # 26
4	orange/white	lamp output for circuit # 27
5	white/green	lamp output for circuit # 28
6	green/white	lamp output for circuit # 29
7	white/brown	lamp output for circuit # 30
8	brown/white	lamp output for circuit # 31
9	white/slate	switch input for circuit # 24
10	slate/white	switch input for circuit # 25
11	red/blue	switch input for circuit # 26
12	blue/red	switch input for circuit # 27
13	red/orange	switch input for circuit # 28
14	orange/red	switch input for circuit # 29
15	red/green	switch input for circuit # 30
16	green/red	switch input for circuit # 31
17	red/brown	switch common *
18	brown/red	switch common *
19	red/slate	switch common *
20	slate/red	lamp common **
21	black/blue	lamp common **
22	blue/black	lamp common **
23	black/orange	lamp common **
24	orange/black	lamp common **
25	black/green	lamp common **

* Divide total switch common load evenly between all available switch common points.

** Divide total lamp common load evenly between all available lamp common points.

Pin-out for DB-25 Cable (IO # 4):

Pin #	Wire color code	Function
1	white/blue	lamp output for circuit # 32
2	blue/white	lamp output for circuit # 33
3	white/orange	lamp output for circuit # 34
4	orange/white	lamp output for circuit # 35
5	white/green	lamp output for circuit # 36
6	green/white	lamp output for circuit # 37
7	white/brown	lamp output for circuit # 38
8	brown/white	lamp output for circuit # 39
9	white/slate	switch input for circuit # 32
10	slate/white	switch input for circuit # 33
11	red/blue	switch input for circuit # 34
12	blue/red	switch input for circuit # 35
13	red/orange	switch input for circuit # 36
14	orange/red	switch input for circuit # 37
15	red/green	switch input for circuit # 38
16	green/red	switch input for circuit # 39
17	red/brown	switch common *
18	brown/red	switch common *
19	red/slate	switch common *
20	slate/red	lamp common **
21	black/blue	lamp common **
22	blue/black	lamp common **
23	black/orange	lamp common **
24	orange/black	lamp common **
25	black/green	lamp common **

* Divide total switch common load evenly between all available switch common points.

** Divide total lamp common load evenly between all available lamp common points.

Pin-out for DB-25 Cable (IO # 5):

Pin #	Wire color code	Function
1	white/blue	lamp output for circuit # 40
2	blue/white	lamp output for circuit # 41
3	white/orange	lamp output for circuit # 42
4	orange/white	lamp output for circuit # 43
5	white/green	lamp output for circuit # 44
6	green/white	lamp output for circuit # 45
7	white/brown	lamp output for circuit # 46
8	brown/white	lamp output for circuit # 47
9	white/slate	switch input for circuit # 40
10	slate/white	switch input for circuit # 41
11	red/blue	switch input for circuit # 42
12	blue/red	switch input for circuit # 43
13	red/orange	switch input for circuit # 44
14	orange/red	switch input for circuit # 45
15	red/green	switch input for circuit # 46
16	green/red	switch input for circuit # 47
17	red/brown	switch common *
18	brown/red	switch common *
19	red/slate	switch common *
20	slate/red	lamp common **
21	black/blue	lamp common **
22	blue/black	lamp common **
23	black/orange	lamp common **
24	orange/black	lamp common **
25	black/green	lamp common **

* Divide total switch common load evenly between all available switch common points.

** Divide total lamp common load evenly between all available lamp common points.

Pin-out for DB-25 Cable (IO # 6):

Pin #	Wire color code	Function
1	white/blue	lamp output for circuit # 48
2	blue/white	lamp output for circuit # 49
3	white/orange	lamp output for circuit # 50
4	orange/white	lamp output for circuit # 51
5	white/green	lamp output for circuit # 52
6	green/white	lamp output for circuit # 53
7	white/brown	lamp output for circuit # 54
8	brown/white	lamp output for circuit # 55
9	white/slate	switch input for circuit # 48
10	slate/white	switch input for circuit # 49
11	red/blue	switch input for circuit # 50
12	blue/red	switch input for circuit # 51
13	red/orange	switch input for circuit # 52
14	orange/red	switch input for circuit # 53
15	red/green	switch input for circuit # 54
16	green/red	switch input for circuit # 55
17	red/brown	switch common *
18	brown/red	switch common *
19	red/slate	switch common *
20	slate/red	lamp common **
21	black/blue	lamp common **
22	blue/black	lamp common **
23	black/orange	lamp common **
24	orange/black	lamp common **
25	black/green	lamp common **

* Divide total switch common load evenly between all available switch common points.

** Divide total lamp common load evenly between all available lamp common points.

Pin-out for DB-25 Cable (IO # 7):

Pin #	Wire color code	Function
1	white/blue	lamp output for circuit # 56
2	blue/white	lamp output for circuit # 57
3	white/orange	lamp output for circuit # 58
4	orange/white	lamp output for circuit # 59
5	white/green	lamp output for circuit # 60
6	green/white	lamp output for circuit # 61
7	white/brown	lamp output for circuit # 62
8	brown/white	lamp output for circuit # 63
9	white/slate	switch input for circuit # 56
10	slate/white	switch input for circuit # 57
11	red/blue	switch input for circuit # 58
12	blue/red	switch input for circuit # 59
13	red/orange	switch input for circuit # 60
14	orange/red	switch input for circuit # 61
15	red/green	switch input for circuit # 62
16	green/red	switch input for circuit # 63
17	red/brown	switch common *
18	brown/red	switch common *
19	red/slate	switch common *
20	slate/red	lamp common **
21	black/blue	lamp common **
22	blue/black	lamp common **
23	black/orange	lamp common **
24	orange/black	lamp common **
25	black/green	lamp common **

* Divide total switch common load evenly between all available switch common points.

** Divide total lamp common load evenly between all available lamp common points.

Pin-out for DB-25 Cable (IO # 8):

Pin #	Wire color code	Function
1	white/blue	lamp output for circuit # 64
2	blue/white	lamp output for circuit # 65
3	white/orange	lamp output for circuit # 66
4	orange/white	lamp output for circuit # 67
5	white/green	lamp output for circuit # 68
6	green/white	lamp output for circuit # 69
7	white/brown	lamp output for circuit # 70
8	brown/white	lamp output for circuit # 71
9	white/slate	switch input for circuit # 64
10	slate/white	switch input for circuit # 65
11	red/blue	switch input for circuit # 66
12	blue/red	switch input for circuit # 67
13	red/orange	switch input for circuit # 68
14	orange/red	switch input for circuit # 69
15	red/green	switch input for circuit # 70
16	green/red	switch input for circuit # 71
17	red/brown	switch common *
18	brown/red	switch common *
19	red/slate	switch common *
20	slate/red	lamp common **
21	black/blue	lamp common **
22	blue/black	lamp common **
23	black/orange	lamp common **
24	orange/black	lamp common **
25	black/green	lamp common **

* Divide total switch common load evenly between all available switch common points.

** Divide total lamp common load evenly between all available lamp common points.

Pin-out for DB-25 Cable (IO # 9):

Pin #	Wire color code	Function
1	white/blue	lamp output for circuit # 72
2	blue/white	lamp output for circuit # 73
3	white/orange	lamp output for circuit # 74
4	orange/white	lamp output for circuit # 75
5	white/green	lamp output for circuit # 76
6	green/white	lamp output for circuit # 77
7	white/brown	lamp output for circuit # 78
8	brown/white	lamp output for circuit # 79
9	white/slate	switch input for circuit # 72
10	slate/white	switch input for circuit # 73
11	red/blue	switch input for circuit # 74
12	blue/red	switch input for circuit # 75
13	red/orange	switch input for circuit # 76
14	orange/red	switch input for circuit # 77
15	red/green	switch input for circuit # 78
16	green/red	switch input for circuit # 79
17	red/brown	switch common *
18	brown/red	switch common *
19	red/slate	switch common *
20	slate/red	lamp common **
21	black/blue	lamp common **
22	blue/black	lamp common **
23	black/orange	lamp common **
24	orange/black	lamp common **
25	black/green	lamp common **

* Divide total switch common load evenly between all available switch common points.

** Divide total lamp common load evenly between all available lamp common points.

Pin-out for DB-25 Cable (IO # 10):

Pin #	Wire color code	Function
1	white/blue	lamp output for circuit # 80
2	blue/white	lamp output for circuit # 81
3	white/orange	lamp output for circuit # 82
4	orange/white	lamp output for circuit # 83
5	white/green	lamp output for circuit # 84
6	green/white	lamp output for circuit # 85
7	white/brown	lamp output for circuit # 86
8	brown/white	lamp output for circuit # 87
9	white/slate	switch input for circuit # 80
10	slate/white	switch input for circuit # 81
11	red/blue	switch input for circuit # 82
12	blue/red	switch input for circuit # 83
13	red/orange	switch input for circuit # 84
14	orange/red	switch input for circuit # 85
15	red/green	switch input for circuit # 86
16	green/red	switch input for circuit # 87
17	red/brown	switch common *
18	brown/red	switch common *
19	red/slate	switch common *
20	slate/red	lamp common **
21	black/blue	lamp common **
22	blue/black	lamp common **
23	black/orange	lamp common **
24	orange/black	lamp common **
25	black/green	lamp common **

* Divide total switch common load evenly between all available switch common points.

** Divide total lamp common load evenly between all available lamp common points.

Pin-out for DB-25 Cable (IO # 11):

Pin #	Wire color code	Function
1	white/blue	lamp output for circuit # 88
2	blue/white	lamp output for circuit # 89
3	white/orange	lamp output for circuit # 90
4	orange/white	lamp output for circuit # 91
5	white/green	lamp output for circuit # 92
6	green/white	lamp output for circuit # 93
7	white/brown	lamp output for circuit # 94
8	brown/white	lamp output for circuit # 95
9	white/slate	switch input for circuit # 88
10	slate/white	switch input for circuit # 89
11	red/blue	switch input for circuit # 90
12	blue/red	switch input for circuit # 91
13	red/orange	switch input for circuit # 92
14	orange/red	switch input for circuit # 93
15	red/green	switch input for circuit # 94
16	green/red	switch input for circuit # 95
17	red/brown	switch common *
18	brown/red	switch common *
19	red/slate	switch common *
20	slate/red	lamp common **
21	black/blue	lamp common **
22	blue/black	lamp common **
23	black/orange	lamp common **
24	orange/black	lamp common **
25	black/green	lamp common **

* Divide total switch common load evenly between all available switch common points.

** Divide total lamp common load evenly between all available lamp common points.

Pin-out for DB-25 Cable (IO # 12):

Pin #	Wire color code	Function
1	white/blue	lamp output for circuit # 96
2	blue/white	lamp output for circuit # 97
3	white/orange	lamp output for circuit # 98
4	orange/white	lamp output for circuit # 99
5	white/green	lamp output for circuit # 100
6	green/white	lamp output for circuit # 101
7	white/brown	lamp output for circuit # 102
8	brown/white	lamp output for circuit # 103
9	white/slate	switch input for circuit # 96
10	slate/white	switch input for circuit # 97
11	red/blue	switch input for circuit # 98
12	blue/red	switch input for circuit # 99
13	red/orange	switch input for circuit # 100
14	orange/red	switch input for circuit # 101
15	red/green	switch input for circuit # 102
16	green/red	switch input for circuit # 103
17	red/brown	switch common *
18	brown/red	switch common *
19	red/slate	switch common *
20	slate/red	lamp common **
21	black/blue	lamp common **
22	blue/black	lamp common **
23	black/orange	lamp common **
24	orange/black	lamp common **
25	black/green	lamp common **

* Divide total switch common load evenly between all available switch common points.

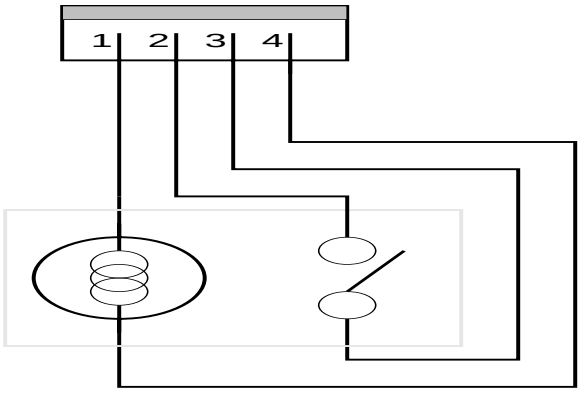
** Divide total lamp common load evenly between all available lamp common points.

Connector requirements for Push-Button and Annunciator panels.

Panel Model	Connector	Quantity needed
HM-1B	HM-4P	1
HM-1B/K2	HM-4P	1
HM-2B	HM-6P	1
HM-2B/K2	HM-4P	2
HM-3B	HM-8P	1
HM-3B/K2	HM-4P	3
HM-4B	HM-10P	1
HM-4B/K2	HM-4P	4
HM-2-3B	HM-8P	2
HM-2-3B/K2	HM-4P	6
HM-2-4B	HM-10P	2
HM-2-4B/K2	HM-4P	8
HM-2-5B	HM-12P	2
HM-2-5B/K2	HM-4P	10
HM-A10	HM-11P	1
HM-A20	HM-11P	2
HM-A20PB	HM-12P	4
HM-A20PB/K2	HM-4P	20
HM-A30	HM-11P	3
HM-A30PB	HM-12P	6
HM-A30PB/K2	HM-4P	30
HM-A40	HM-11P	4
HM-A40PB	HM-12P	8
HM-A40PB/K2	HM-4P	40
HM-A50	HM-11P	5
HM-A50PB	HM-12P	10
HM-A50PB/K2	HM-4P	50
HM-A60	HM-13P	5
HM-A60PB	HM-4P	60
HM-A60PB/K2	HM-4P	60

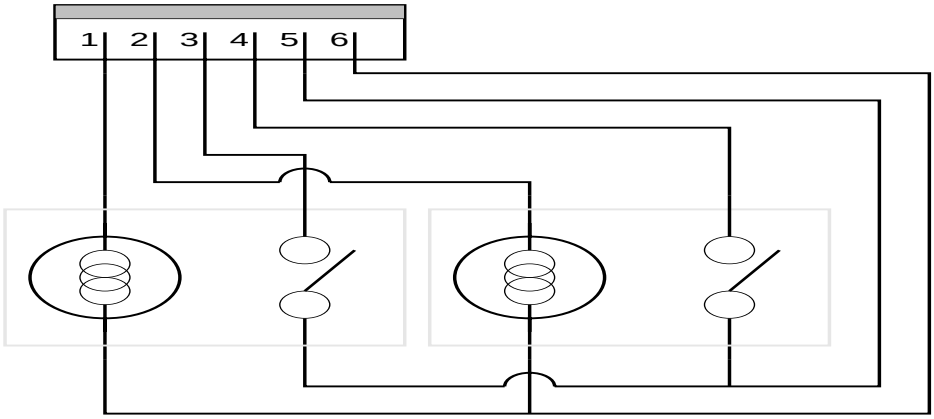
Pin-out for HM-1B Panel.

Pin #	Wire color code	Function
1	white/blue	Lamp # 1
2	blue/white	Switch # 1
3	white/orange	Switch Common
4	orange/white	Lamp Common



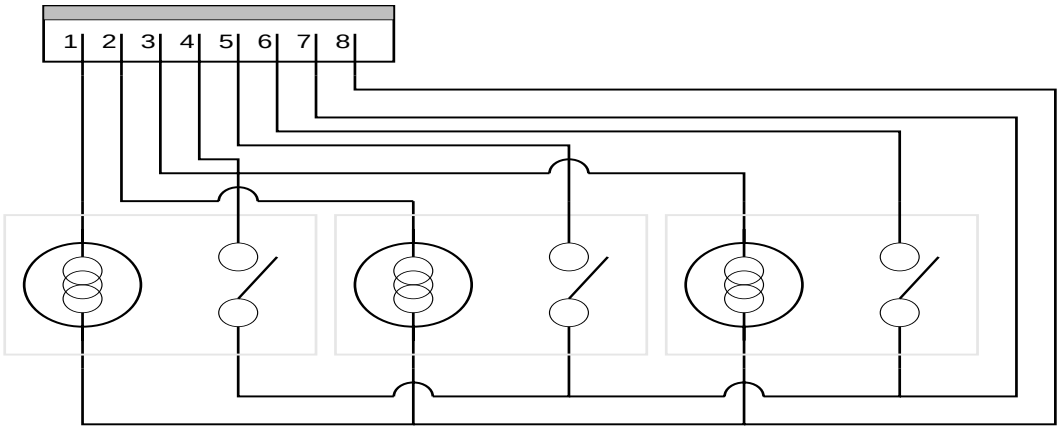
Pin-out for HM-2B Panel.

Pin #	Wire color code	Function
1	white/blue	Lamp # 1
2	blue/white	Lamp # 2
3	white/orange	Switch # 1
4	orange/white	Switch # 2
5	white/green	Switch Common
6	green/white	Lamp Common



Pin-out for HM-3B & HM-2-3B Panels.

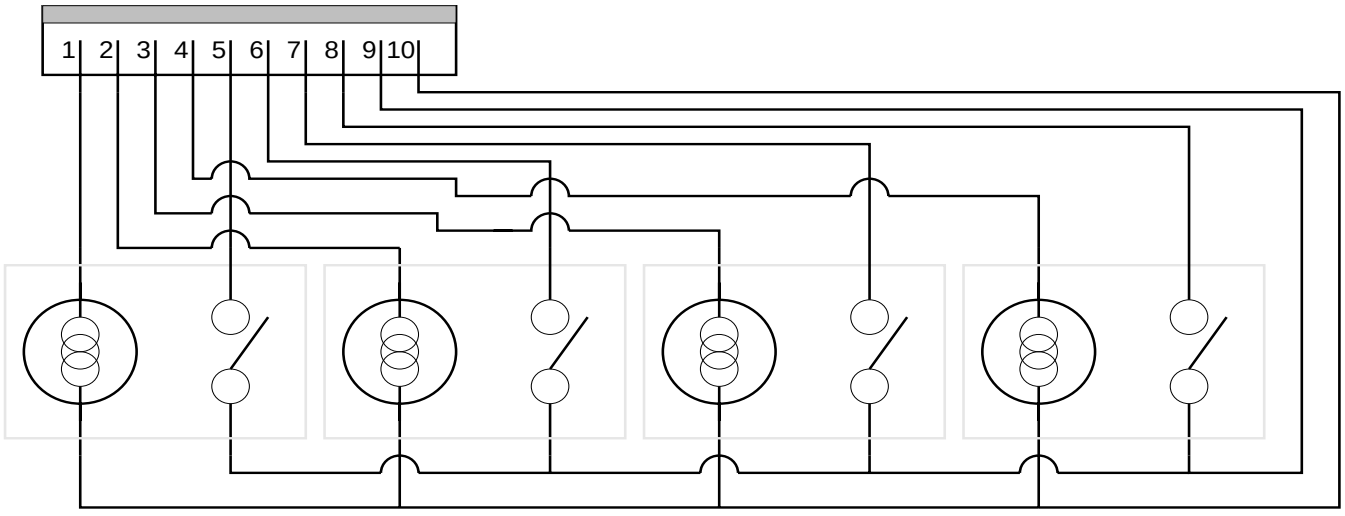
Pin #	Wire color code	Function
1	white/blue	Lamp # 1
2	blue/white	Lamp # 2
3	white/orange	Lamp # 3
4	orange/white	Switch # 1
5	white/green	Switch # 2
6	green/white	Switch # 3
7	white/brown	Switch Common
8	brown/white	Lamp Common



* Note: HM-2-3B Panels have two circuit boards per panel. Each circuit board controls 3 lamps and 3 switches.

Pin-out for HM-4B , HM-2-4B Panels.

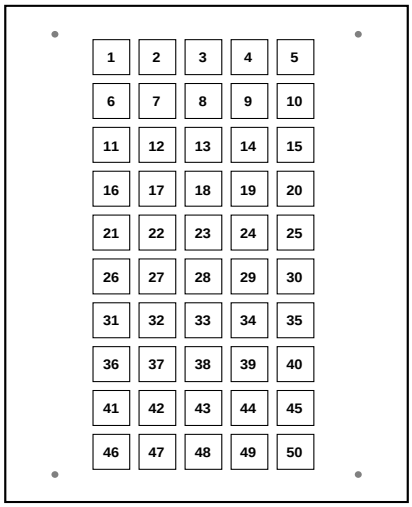
Pin #	Wire color code	Function
1	white/blue	Lamp # 1
2	blue/white	Lamp # 2
3	white/orange	Lamp # 3
4	orange/white	Lamp # 4
5	white/green	Switch # 1
6	green/white	Switch # 2
7	white/brown	Switch # 3
8	brown/white	Switch # 4
9	white/slate	Switch Common
10	slate/white	Lamp Common



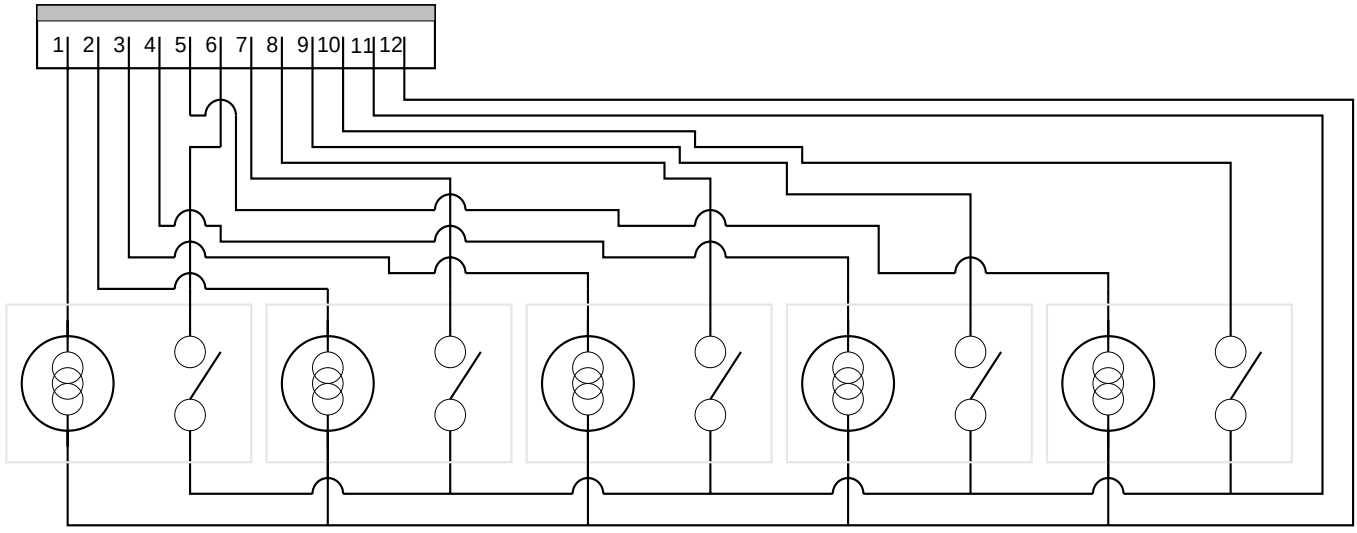
* Note: HM-2-4B Panels have two circuit boards per panel. Each circuit board controls 4 lamps and 4 switches.

Pin-out for HM-5B , HM-2-5B and HM-A20PB thru HM-A50/PB.

Pin #	Wire color code	Function
1	white/blue	Lamp # 1
2	blue/white	Lamp # 2
3	white/orange	Lamp # 3
4	orange/white	Lamp # 4
5	white/green	Lamp # 5
6	green/white	Switch # 1
7	white/brown	Switch # 2
8	brown/white	Switch # 3
9	white/slate	Switch # 4
10	slate/white	Switch # 5
11	red/blue	Switch Common
12	blue/red	Lamp Common



Use this illustration for identifying lamp positions for the 10 lamp annunciator panel through the 50 lamp annunciator panel.



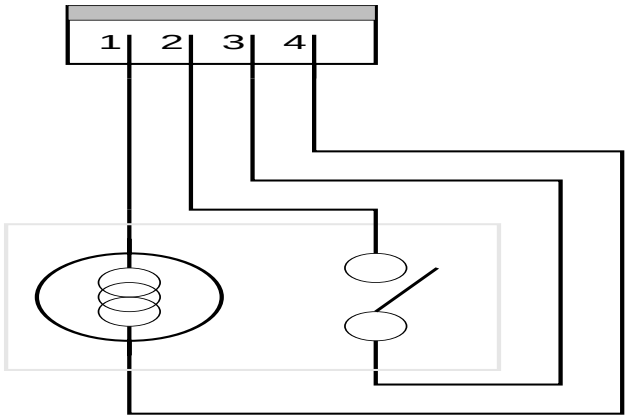
* Note: HM-2-5B Panels have two circuit boards per panel. Each circuit board controls 5 lamps and 5 switches.

* Note: Each HM-A20/PB to HM-A50/PB will have one (1) circuit board per 5 switches.

Pin-out for all "K2" type panels and for HM-A60PB.

(HM-1B/K2, HM-2B/K2, HM-3B/K2, HM-4B/K2, HM-2-3B/K2, HM-2-4B/K2, HM-2-5B/K2, HM-A20PB/K2, HM-A30PB/K2, HM-A40PB/K2, HM-A50PB/K2, HM-A60PB/K2)

Pin #	Wire color code	Function
1	white/blue	Lamp # 1
2	blue/white	Switch # 1
3	white/orange	Switch Common
4	orange/white	Lamp Common



* Note: All "K2" type panels have a separate circuit board for each lamp/switch. The "K2" versions are SPST locking switches.

Example.

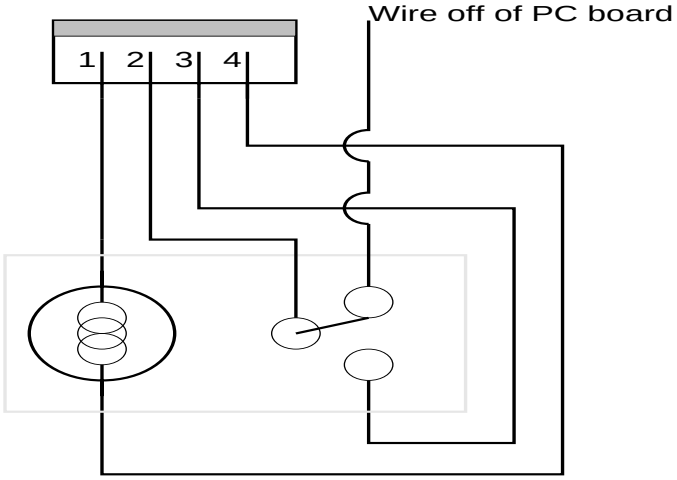
HM-1B/K2 has one (1) circuit board
HM-4B/K2 has four (4) circuit boards
HM-A50PB/K2 has fifty (50) circuit boards.
HM-A60PB has sixty (60) circuit boards.

FACTORY DISCONTINUED - FOR REFERENCE ONLY

Pin-out for all "K3" type panels.

(HM-1B/K3, HM-2B/K3, HM-3B/K3, HM-4B/K3, HM-2-3B/K3, HM-2-4B/K3, HM-2-5B/K3, HM-A20PB/K3, HM-A30PB/K3, HM-A40PB/K3, HM-A50PB/K3, HM-A60PB/K3)

Pin #	Wire color code	Function
1	white/blue	Lamp # 1
2	blue/white	Switch # 1
3	white/orange	Switch Common
4	orange/white	Lamp Common
Discrete white wire off of PC board		2nd Pole from Switch



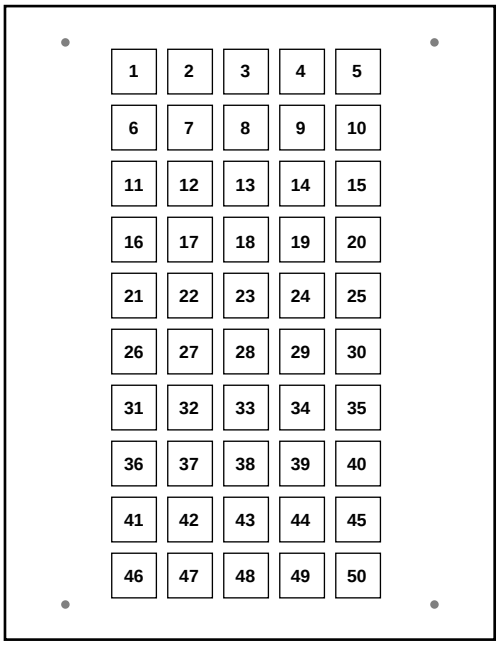
* Note: All "K3" type panels have a separate circuit board for each lamp/switch. The "K3" versions are SPDT locking switches.

Example.

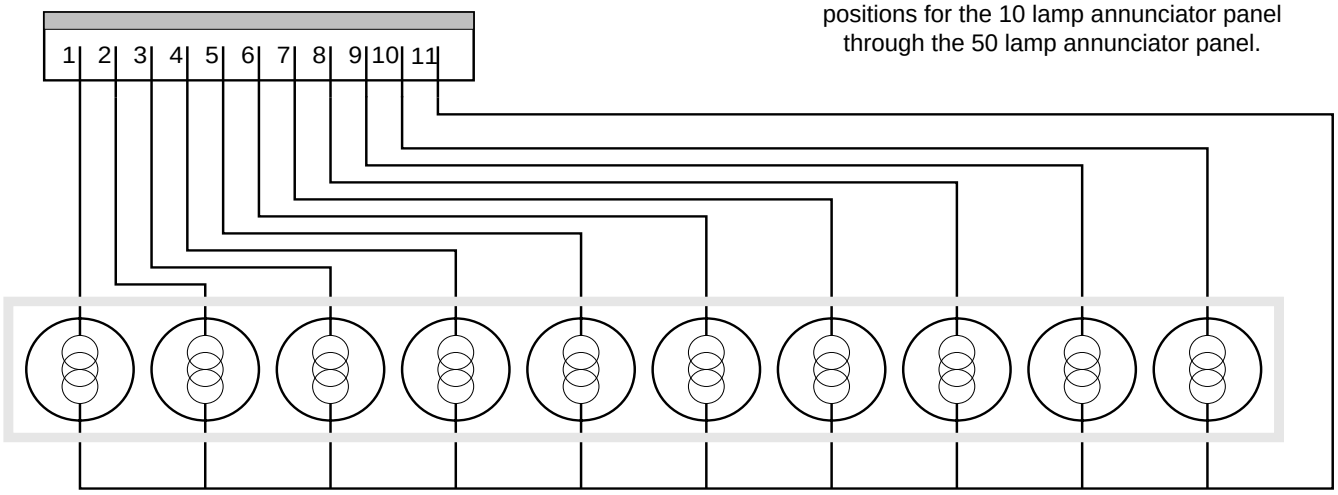
HM-1B/K3 has one (1) circuit board
HM-4B/K3 has four (4) circuit boards
HM-A50PB/K3 has fifty (50) circuit boards.

Pin-out for HM-A10 , HM-A20 , HM-A30 , HM-A40 , HM-A50 Panels.

Pin #	Wire color code	Function
1	Brown	Lamp # 1
2	Red	Lamp # 2
3	Orange	Lamp # 3
4	Yellow	Lamp # 4
5	Green	Lamp # 5
6	Blue	Lamp # 6
7	Purple	Lamp # 7
8	Slate	Lamp # 8
9	White	Lamp # 9
10	White/Brown	Lamp # 10
11	White/Red	Lamp Common



Use this illustration for identifying lamp positions for the 10 lamp annunciator panel through the 50 lamp annunciator panel.



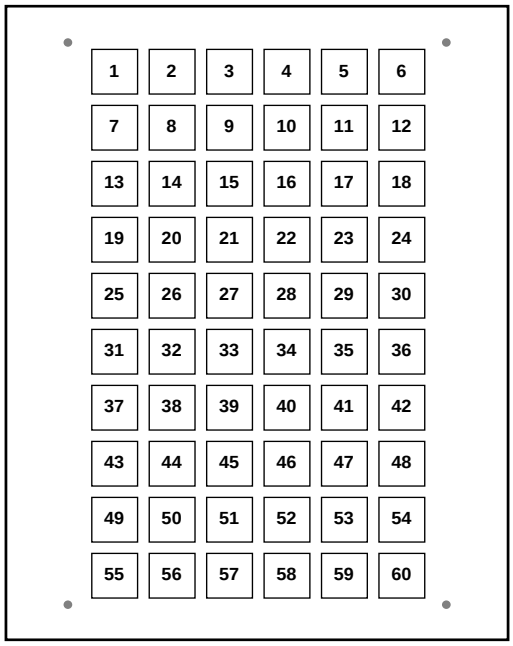
* Note: Each bank of ten (10) lamps are controlled by a separate circuit board.

Example:

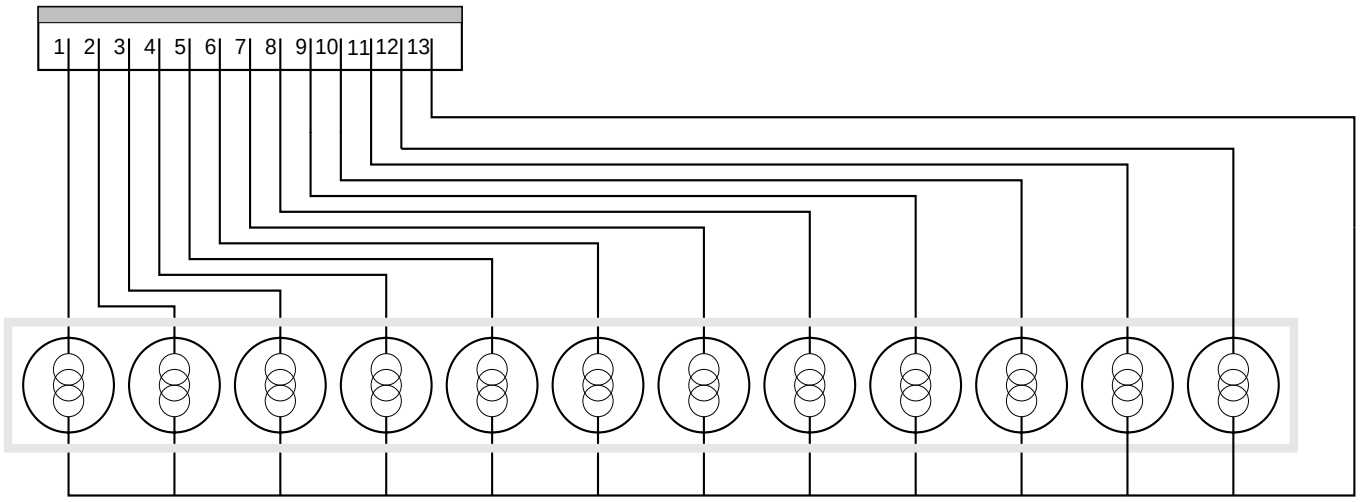
HM-A10 Has one (1) circuit board.
HM-A20 Has two (2) circuit boards.
HM-A50 Has five (5) circuit boards.

Pin-out for HM-A60 Panels.

Pin #	Wire color code	Function
1	Brown	Lamp # 1
2	Red	Lamp # 2
3	Orange	Lamp # 3
4	Yellow	Lamp # 4
5	Green	Lamp # 5
6	Blue	Lamp # 6
7	Purple	Lamp # 7
8	Slate	Lamp # 8
9	White	Lamp # 9
10	Black	Lamp # 10
11	White/Brown	Lamp # 11
12	White/Blue	Lamp # 12
13	White/Red	Lamp Common



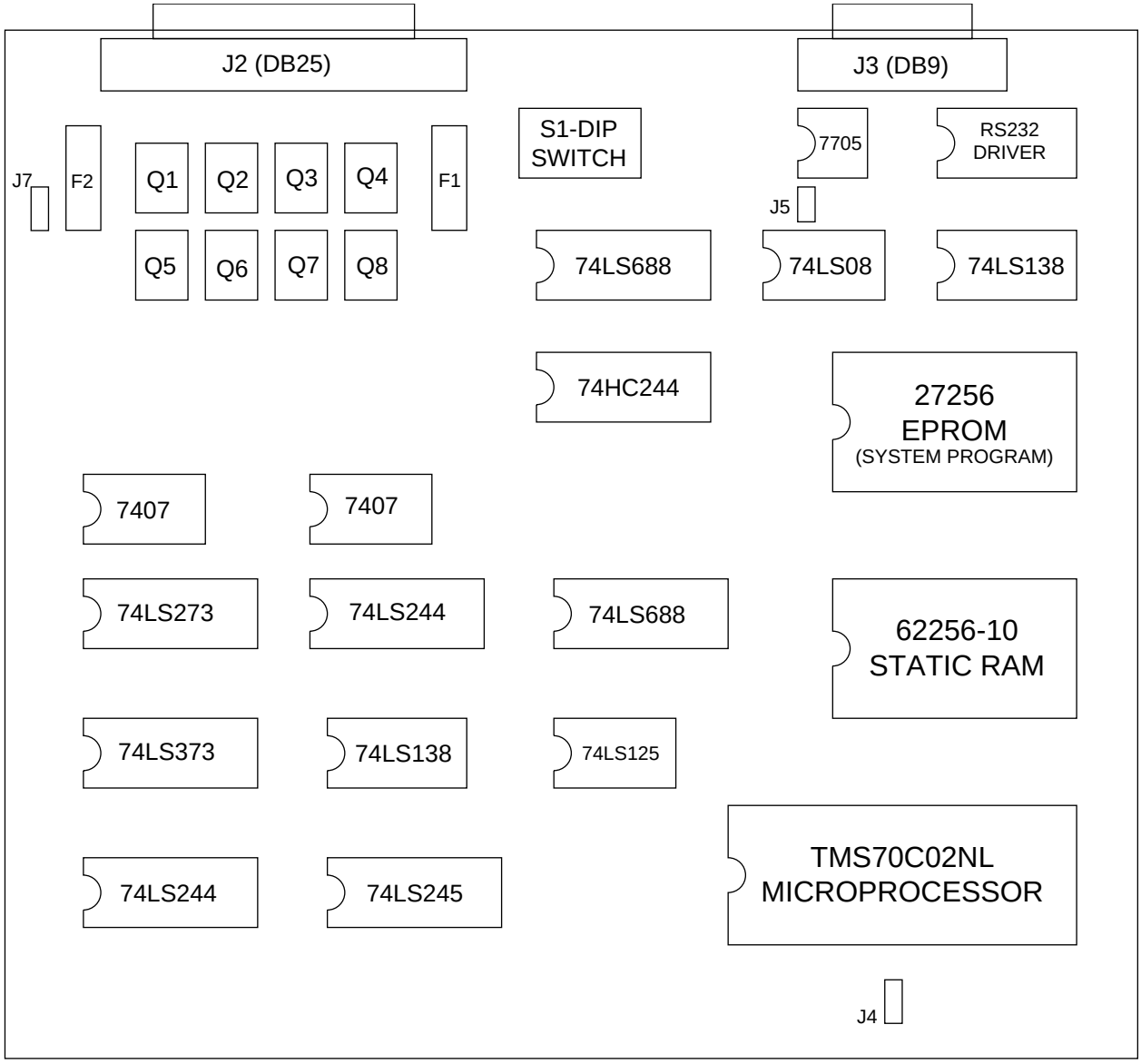
Use this illustration for identifying lamp positions for the 60 lamp annunciator panel.



* Note: Each bank of twelve (12) lamps are controlled by a separate circuit board.

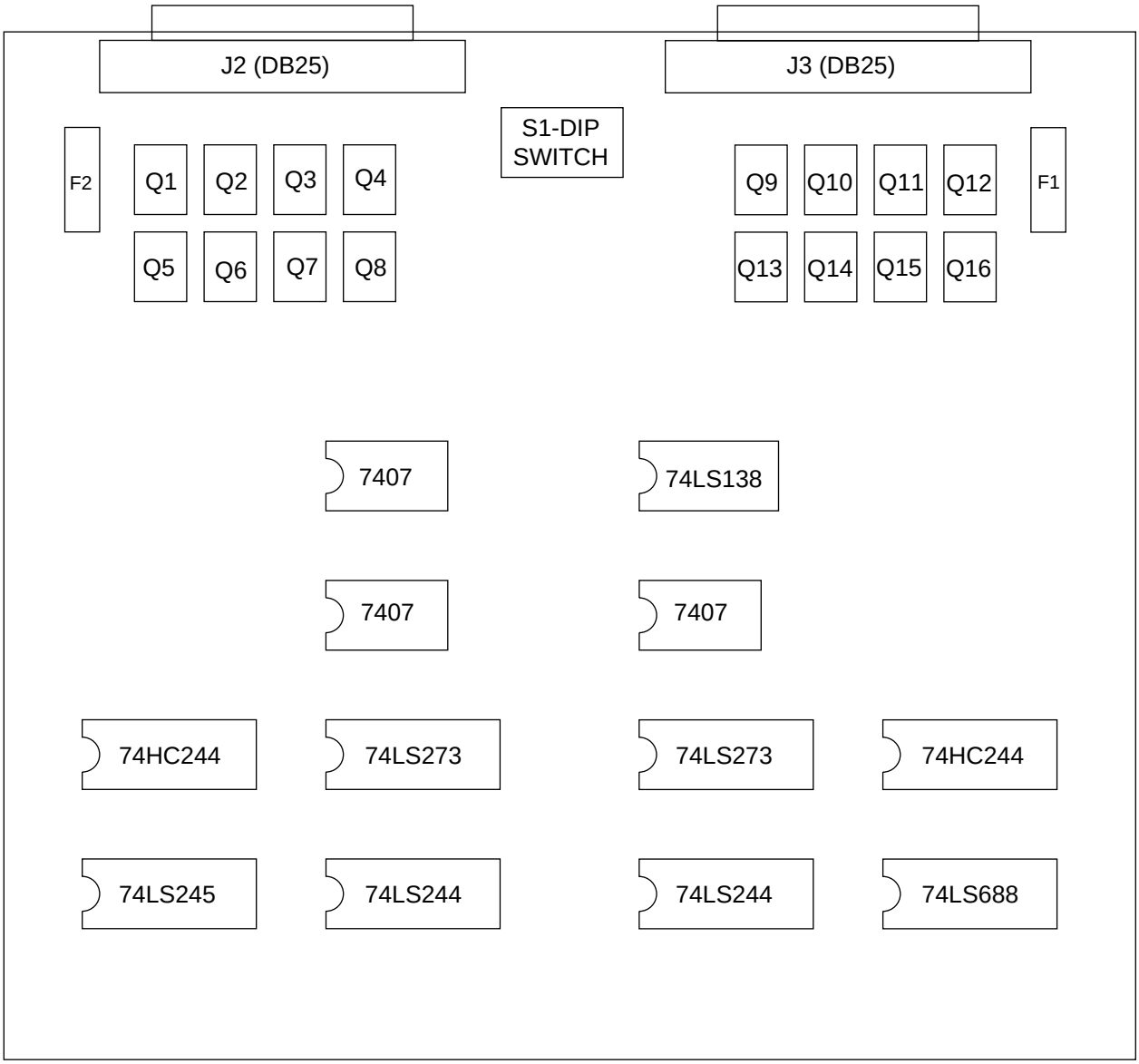
Example:

HM-A60 Has five (5) circuit boards.



HM-MPU8 Circuit layout.

IC Chips indicated as "LS" must always be replaced with "LS" versions. (Do not substitute with "HC")
IC Chips indicated as "HC" must always be replaced with "HC" versions. (Do not substitute with "LS")
F1 and F2 are "2AG" type fast acting 2Amp fuses. (Do not substitute)
F1 is "Lamp Common" (+24vdc).
F2 is "Switch Common" (power supply ground).
J4- Jumper pins 1 & 2 for 24 hour military time. Jumper pins 2 & 3 for 12 hour AM/PM time.
J5- Jumper pins 1 & 2 to reset microprocessor. (Pins 1 & 2 MUST BE OPEN for normal operation).
J7- Jumper pins 2 & 3 if power is supplied from card cage mother board (normal operation).
J7- Jumper pins 1 & 2 if power is supplied to optional J6 connector. (Demo Units Only).
J2- Is the lamp outputs and switch inputs for the eight circuits contained on the MPU8.
J3- Is an RS232 port for external communication with other RS232 devices. (Must have RS232 Driver, optional, installed in U5 and special programming to become functional).
S1 Is used to set the MPU cards memory address. (see address listing on page 37).



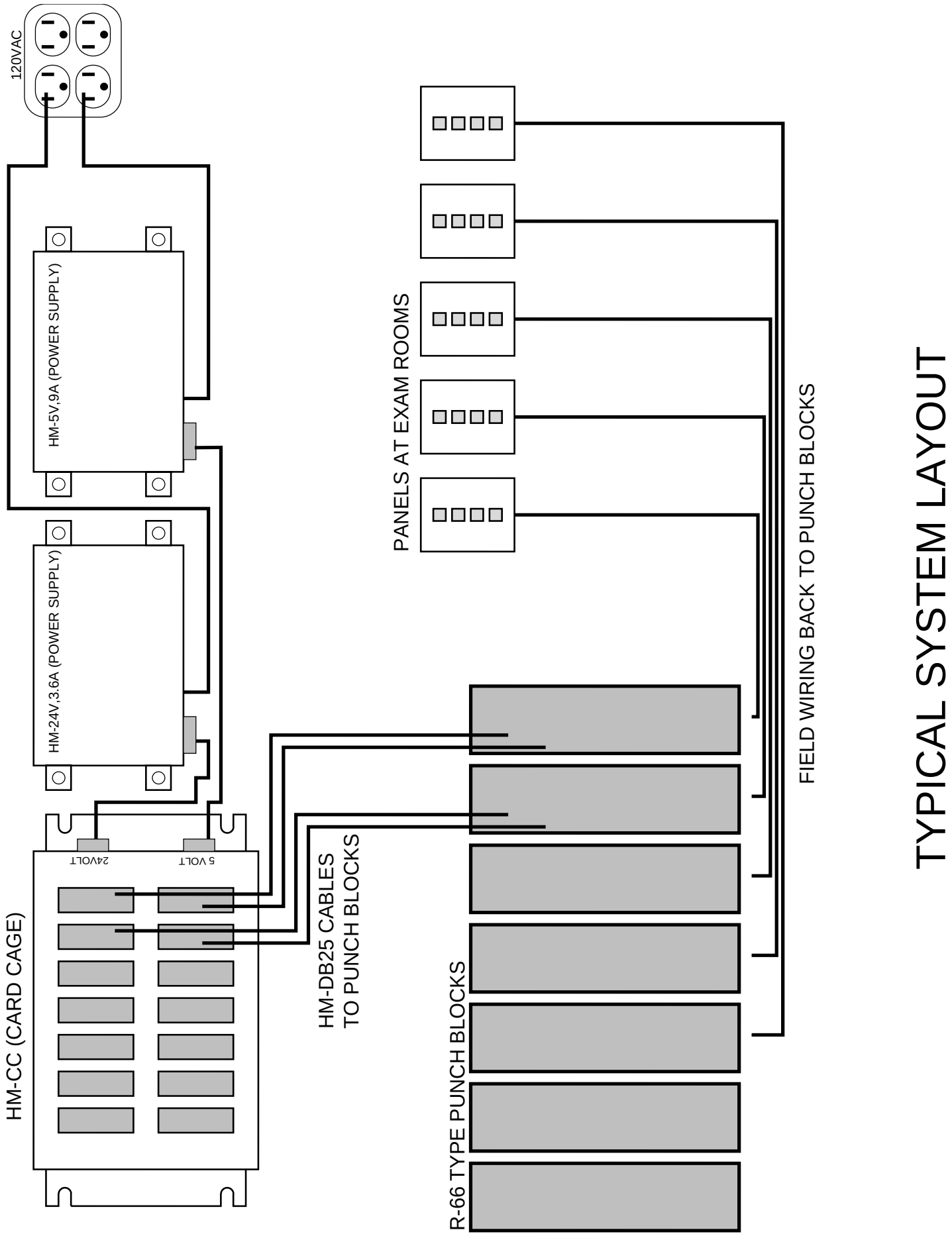
HM-IO16 Circuit layout.

IC Chips indicated as "LS" must always be replaced with "LS" versions. (Do not substitute with "HC")
IC Chips indicated as "HC" must always be replaced with "HC" versions. (Do not substitute with "LS")
F1 and F2 are "2AG" type fast acting 2Amp fuses. (Do not substitute)
F1 Is "Lamp Common" (+24vdc).
F2 Is "Switch Common" (power supply ground).
J2 Is the lamp outputs and switch inputs for the first eight circuits contained on the IO16.
J3 Is the lamp outputs and switch inputs for the second eight circuits contained on the IO16.
S1 Is used to set the IO cards memory address. (see address listing on page 37)

Dip Switch Settings for the MPU-8 and IO-16 Boards.

Cage # 1	SW1	SW2	SW3	SW4	SW5	SW6
MPU	ON	ON	OFF	ON	OFF	ON
IO #1,2	ON	ON	OFF	ON	OFF	OFF
IO #3,4	ON	ON	OFF	OFF	ON	ON
IO #5,6	ON	ON	OFF	OFF	ON	OFF
IO #7,8	ON	ON	OFF	OFF	OFF	ON
IO #9,10	ON	ON	OFF	OFF	OFF	OFF
IO #11,12	ON	OFF	ON	ON	ON	ON

Cage # 2 (two card cage systems only)						
IO #13,14	ON	OFF	ON	ON	ON	OFF
IO #15,16	ON	OFF	ON	ON	OFF	ON
IO #17,18	ON	OFF	ON	ON	OFF	OFF
IO #19,20	ON	OFF	ON	OFF	ON	ON
IO #21,22	ON	OFF	ON	OFF	ON	OFF
IO #23,24	ON	OFF	ON	OFF	OFF	ON
IO #25,26	ON	OFF	ON	OFF	OFF	OFF


TYPICAL SYSTEM LAYOUT
120VAC
HM-5V,9A (POWER SUPPLY)
HM-24V,3.6A (POWER SUPPLY)
24VOLT
5 VOLT
HM-CC (CARD CAGE)
HM-DB25 CABLES
TO PUNCH BLOCKS
R-66 TYPE PUNCH BLOCKS
PANELS AT EXAM ROOMS
FIELD WIRING BACK TO PUNCH BLOCKS

System TroubleShooting Guide

The Heritage CliniComm System is very well protected from damage that may occur during installation. If the system does not seem to be working properly check the following items:

1) Make sure that the 24 volt power supply (HM-24-2.5A) and the 5 volt power supply (HM-5V-10A) are connected to a "live" 120 vac outlet and that the power is ON.

2) Check for proper power cable connections from the power supplies to the card cage.

3) Use a voltage meter to measure the output of the power supplies. Measurements need to taken at the card cage's spare power input connectors with the system under load (power supplies connected to and powering the MPU8 and IO16 cards). The 5 volt power supply measurement should be 4.9vdc to 5.25vdc (under load). The 24 volt power supply measurement should be in the 21.5vdc - 26.4vdc range. If either power supply measures no voltage, power down the entire system and refer to item 4.

4) If no voltage is measured from the power supplies, check the fuses at the power supplies (power supplies must be disconnected from the 120vac lines). If a blown fuse is found at either power supply, disconnect it from the card cage and replace the fuse with one of the same value and type. With the power supply disconnected from the card cage, re-connect to the 120vac outlet, and measure the output voltage directly from the power supply. If the voltage at the power supply measures correctly than re-connect it to the card cage and proceed. If the fuse blows a second time or if the voltage measurement is not correct, when measured at the power supply, DO NOT reuse the power supply and call Heritage for technical assistance (preferably from the installation site).

5) If, after all power supply output voltages have been measured and verified, and all connections have been checked, and the system is still not working. Power down the entire system, disconnect all DB25 cables from the MPU8 and IO16 cards to the punch blocks (no connection to the punch blocks) and connect an HM-TEST panel directly to the DB-25 port on the MPU-8. Power up the system and test the MPU-8 card by pressing switches 1 through 8 on the HM-TEST panel. The switches and lamps should light as they are pressed (this will test the 8 input and output circuits of the MPU-8). If the MPU-8 circuits are working, move the TEST panel to the DB-25 port on IO # 1 and test the 8 circuits on that IO. Continue testing until all circuits (all DB-25 ports) have been tested. You will need to refer to the Program Listing sheets to determine if the circuits are testing as good. If the HM-TEST panel does not activate the circuits, or if the tested circuits do not follow the Program Listing, then contact Heritage Technical Support. If all circuits test as good, than the problem is in the field wiring, punch block interconnects or with the cross connections. Check all connections, field wiring and cross connects BEFORE contacting Heritage Technical Support.

NOTE: Do not remove the cover from the Card Cage, or from the power supplies without first contacting Heritage Technical Support. Removal of the covers may expose personnel to dangerous voltages, shock hazards, and may void the equipments warranty.

Microprocessor System Service Log

Customers Name: _____

Program Number: _____

Date	Room/ Station	Condition	Cause	Service Rendered	Technician