PIN CONFIGURATION, CONNECTIONS and SETTINGS FOR ALL UTAH PRODUCTS

(Wiring pictures and charts for pin configurations can be found at the bottom of each device)

SC4

(SERIAL PORTS – see chart on next page for pin outs)

Serial Ports (6) – Labeled 'CONTROL 1 through 6'. All are configurable and usable as RS232 or RS422.

How to select RS232/422 - Move the jumper block on the SC4 card for each of the ports 1-6. The jumpers are located at the back left of the card as you pull the card from the chassis and are labeled RS232 and RS422.

How to change Baud/Parity - Go to the SC4 icon in the UCON software, right click on it and select configure. Go to serial ports and change settings. Note: ports are labeled on the chassis and match in the software.

Note: Select RCP1i for index and RCP1n for numeric in the serial port setup in UCON. Most common used mode is RCP1i. If the automation needs to select individual router levels, also called break away takes, then this would need to be the RCP1n numeric mode. Note: RCP-3 protocol is used over the Ethernet port and there is no setup required.

Additional procedures

- If serial jumpers must be changed for RS232 or RS422 then the best way to do this is to power down the SC4 chassis, move the jumpers and then apply power. If these jumper blocks must be moved after power has been applied, follow steps in section 2 of the SC4 guide for proper removal of SC4 cards.
- If a different baud rate and parity are required, see note above on 'how to change'. For more details on how this is done, follow the steps in section 2 of the SC4 guide for changing serial port settings.
- If attaching to a standard 9 pin PC port for RS232 simply use a straight through 9 pin cable.

(PARTY LINE)

Party Line Ports (4) – Labeled 'PARTY LINE 1 through 4'. Used for connecting to legacy style control panels using coax cable and can be daisy chained up to 128 panels across all 4 ports in no particular order. Note: Ports are not to have termination as these are data ports and it will lock up the SC4 control system.

(U-NET)

U-NET Ports (8) – Not Labeled. Used for connecting all Master Control systems as well as current style of UCP and legacy SCP control panels using standard 'straight through' CAT5 cable. Capable of connecting up to 32 panels on each port using daisy chain method for a total of 256 overall. Total overall length of CAT5 should not exceed 1000' feet. Note: Ports must have proper termination at the end of each chain of panels using the terminators provided with the system.

(SYNC)

SYNC Ports (3) – Labeled 'SYNC 1, SYNC 2 and SYNC 3'. Used for connecting house sync to provide correct vertical interval switching to all routers connected via MX bus to the SC4. Recommended application is analog black and should be applied to sync port 1 and terminated with a 75ohm termination. Note: Analog Tri Level may be used on sync ports 2 and 3 but require configuration in the SC4 config file which must be done manually and not using UCON.

(MX BUS)

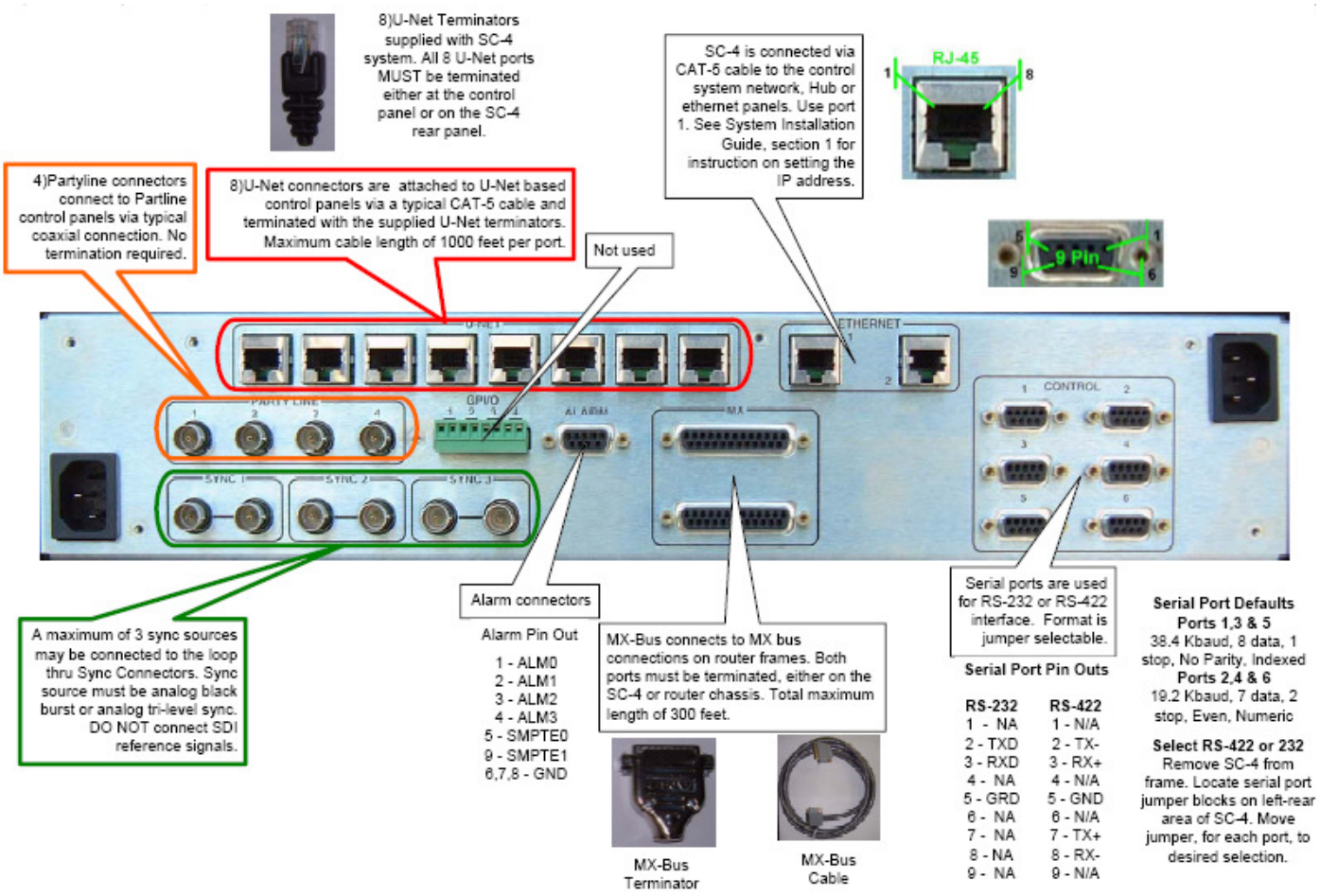
MX Ports (2) – Labeled 'MX'. Used for connecting all UT-200, UT300 and UT-400 router models including the MXLator. Either port may be used to daisy chain to all routers using proper MX cables. Standard 10' length cables are provided with each router. Custom cables may be purchased for longer lengths. Note: There must be two terminators (provided with SC4) applied across the overall MX chain which is not to exceed 300' feet.

(ETHERNET)

Ethernet Ports (2) – Labeled 'Ethernet' and are setup using the 'chassis' commands from a terminal either over a Telnet session to the SC4 or via the diagnostics port on the front of the card. (Refer to the System Installation Guide Appendix D) These are two separate standard NIC interfaces and must be used as such, having two separate subnets. Port 1 must be connected to the pc that is running UCON and is the only port that works with this application. Port 1 can also be used for Ethernet control panels or Soft Panels. Port 2 can be used to connect any Ethernet control panels or Soft Panels. Note: If Port 2 is activated then the syslogs must be applied to this port and will not work on Port 1.

(ALARM)

Alarm Port – Labeled 'Alarm' This port can be wired to an audible device that will sound whenever a major alarm is activated on the SC4 such as a power supply failure or fan failure.


8)U-Net Terminators supplied with SC-4 system. All 8 U-Net ports MUST be terminated either at the control panel or on the SC-4 rear panel.
SC-4 is connected via CAT-5 cable to the control system network, Hub or ethernet panels. Use port 1. See System Installation Guide, section 1 for instruction on setting the IP address.
RJ-45
1
8
4)Partyline connectors connect to Partline control panels via typical coaxial connection. No termination required.
8)U-Net connectors are attached to U-Net based control panels via a typical CAT-5 cable and terminated with the supplied U-Net terminators. Maximum cable length of 1000 feet per port.
Not used
9 Pin
U-NET
ETHERNET
CONTROL
PARTY LINE
GPIO
ALARM
MX
SYNC 1
SYNC 2
SYNC 3
A maximum of 3 sync sources may be connected to the loop thru Sync Connectors. Sync source must be analog black burst or analog tri-level sync. DO NOT connect SDI reference signals.
Alarm connectors
Alarm Pin Out
1 - ALM0
2 - ALM1
3 - ALM2
4 - ALM3
5 - SMPTE0
9 - SMPTE1
6,7,8 - GND
MX-Bus connects to MX bus connections on router frames. Both ports must be terminated, either on the SC-4 or router chassis. Total maximum length of 300 feet.
MX-Bus Terminator
MX-Bus Cable
Serial ports are used for RS-232 or RS-422 interface. Format is jumper selectable.
Serial Port Pin Outs
RS-232
1 - NA
2 - TXD
3 - RXD
4 - NA
5 - GRD
6 - NA
7 - NA
8 - NA
9 - NA
RS-422
1 - N/A
2 - TX-
3 - RX+
4 - N/A
5 - GND
6 - N/A
7 - TX+
8 - RX-
9 - N/A
Serial Port Defaults
Ports 1,3 & 5
38.4 Kbaud, 8 data, 1 stop, No Parity, Indexed
Ports 2,4 & 6
19.2 Kbaud, 7 data, 2 stop, Even, Numeric
Select RS-422 or 232
Remove SC-4 from frame. Locate serial port jumper blocks on left-rear area of SC-4. Move jumper, for each port, to desired selection.

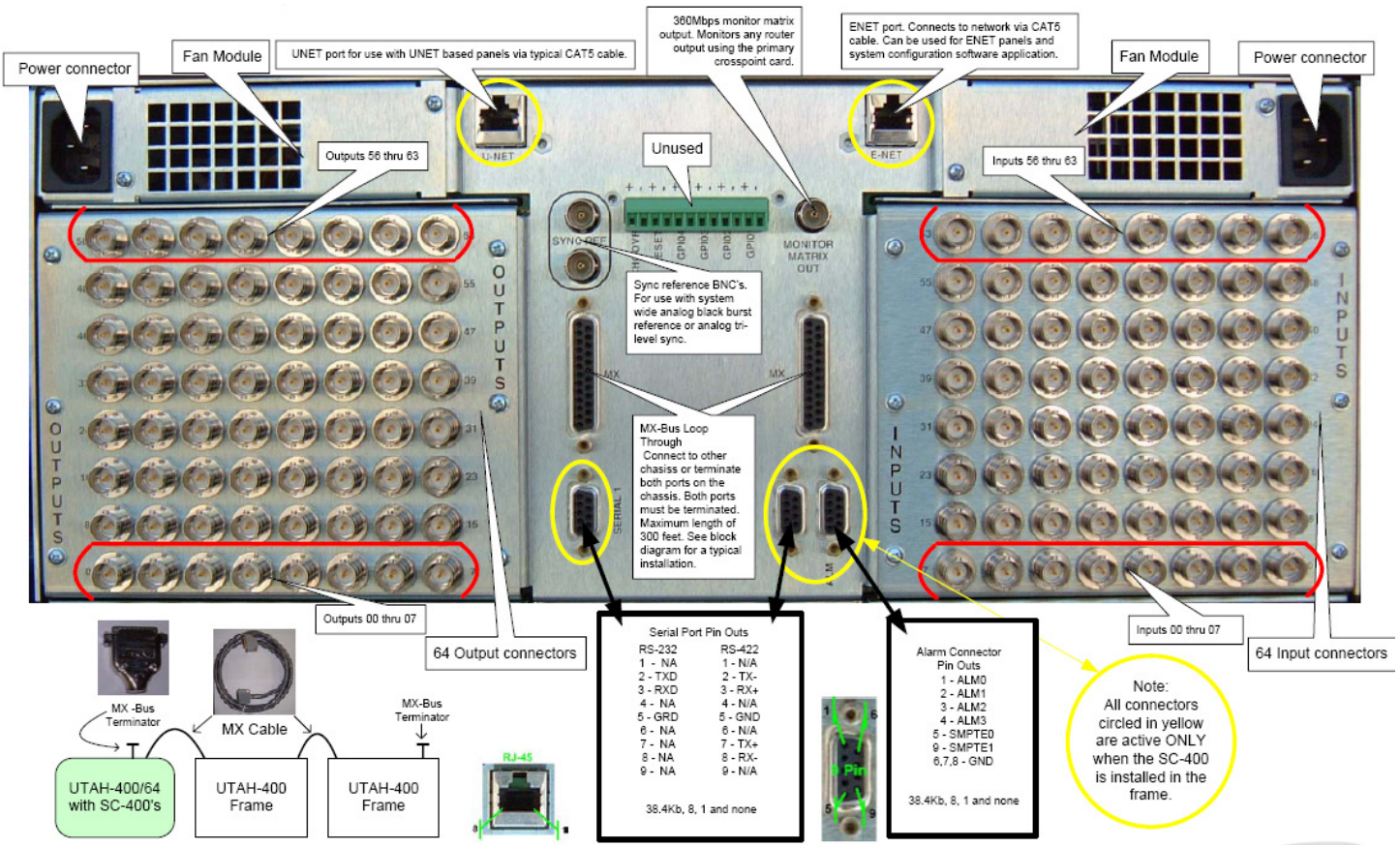
SC400 (Installed in UT400/64)

(SERIAL PORTS – see chart on next page for pin outs)
Serial Ports (2) – Labeled 'SERIAL 1 and SERIAL 2'. Both are configurable and usable as RS232 or RS422.
How to select RS232/422 - Move the jumper block on the SC400 card for each port. Jumpers are located at the back center of the card.
How to change Baud/Parity - Go to the SC400 icon in the UCON software, right click on it and select configure. Go to serial ports and change settings. Note: ports are labeled on the chassis and match in the software. UCON will have 6 ports and the first two are used for the SC400. The other four are unused.
Note: Select RCP1i for index and RCP1n for numeric in the config file in the serial port setup in UCON. Most common used mode is RCP1i.
Note: RCP-3 protocol is used over the Ethernet port and there is no setup required.

Notes and additional procedures

- NOTE: If the UT400/64 chassis was installed prior to June of 2010 and there are no labels covering the Serial 1 and Serial 2 port labels then the ports are actually reversed from the way they are etched onto the rear panel. Serial port 1 is on the right side facing the rear of the chassis and Serial port 2 is on the left side.
- If jumpers must be changed for RS232 or RS422 then the best way to do this is to power down the UT400 chassis, move the jumpers and then apply power however, this will take the router down during this time. If these jumper blocks must be moved after power has been applied, follow steps in section 2 of the SC4 guide for proper removal of SC4 cards. This procedure is the same for the SC400 cards.
- If a different baud rate and parity are required, see note above on 'how to change'. For more details on how this is done, follow the steps in section 2 of the SC4 guide for changing serial port settings. This procedure is the same for the SC400 cards.
- If attaching to a standard 9 pin PC port for RS232 simply use a straight through 9 pin cable.

(U-NET)
U-NET Port (1) – Labeled 'U-NET'. Used for connecting all Master Control systems as well as current style of UCP and legacy SCP control panels using standard 'straight through' CAT5 cable. Capable of connecting up to 32 panels using daisy chain method. Total overall length of CAT5 should not exceed 1000' feet. Note: Port must have proper termination at the end of the chain of panels using the terminator provided with the system.
(SYNC)
SYNC Port (1) – Labeled 'SYNC REF'. Used for connecting house sync to provide correct vertical interval switching to all routers connected via MX bus to the SC4. Recommended application is analog black and should be applied to sync port 1 and terminated with a 75ohm termination.
(MX BUS)
MX Ports (2) – Labeled 'MX'. Used for connecting all UT-200, UT300 and UT-400 router models. Either port may be used to daisy chain to all routers using proper MX cables. Standard 10' length cables are provided with each router. Custom cables may be purchased for longer lengths. Note: There must be two terminators (provided with SC400) applied across the overall MX chain which is not to exceed 300' feet.
(ETHERNET)
Ethernet Ports (1) – Labeled 'E-NET' and is setup using the 'chassis' commands from a terminal either over a Telnet session to the SC4 or via the diagnostics port on the front of the card. (Refer to the System Installation Guide Appendix D for more details).
(ALARM PORT – see chart on next page for pin outs)
Alarm Port – Labeled 'Alarm'. This port can be wired to an audible device that will sound whenever a major alarm is activated on the SC4 such as a power supply failure or fan failure.


Power connector
Fan Module
UNET port for use with UNET based panels via typical CAT5 cable.
360Mbps monitor matrix output. Monitors any router output using the primary crosspoint card.
ENET port. Connects to network via CAT5 cable. Can be used for ENET panels and system configuration software application.
Fan Module
Power connector
Outputs 56 thru 63
U-NET
Unused
E-NET
Inputs 56 thru 63
SYNC REF
MONITOR MATRIX OUT
Sync reference BNC's. For use with system wide analog black burst reference or analog tri-level sync.
OUTPUTS
INPUTS
MX
MX-Bus Loop Through
Connect to other chasiss or terminate both ports on the chassis. Both ports must be terminated. Maximum length of 300 feet. See block diagram for a typical installation.
SERIAL 1
Outputs 00 thru 07
64 Output connectors
Inputs 00 thru 07
64 Input connectors
MX -Bus Terminator
MX Cable
MX-Bus Terminator
UTAH-400/64 with SC-400's
UTAH-400 Frame
UTAH-400 Frame
RJ-45
Serial Port Pin Outs
RS-232 RS-422
1 - NA 1 - N/A
2 - TXD 2 - TX-
3 - RXD 3 - RX+
4 - NA 4 - N/A
5 - GRD 5 - GND
6 - NA 6 - N/A
7 - NA 7 - TX+
8 - NA 8 - RX-
9 - NA 9 - N/A
38.4Kb, 8, 1 and none
9 Pin
Alarm Connector Pin Outs
1 - ALM0
2 - ALM1
3 - ALM2
4 - ALM3
5 - SMPTE0
9 - SMPTE1
6,7,8 - GND
38.4Kb, 8, 1 and none
Note:
All connectors circled in yellow are active ONLY when the SC-400 is installed in the frame.

SC400 (Installed in MXLATOR – Note: only the half labeled SC400 is used)

(SERIAL PORTS – see chart on next page for pin outs)

Serial Ports (2) – Labeled 'SERIAL 1 and SERIAL 2'. Both are configurable and usable as RS232 or RS422.

How to select RS232/422 - Move the jumper block on the SC400 card for each port. Jumpers are located at the back center of the card.

How to change Baud/Parity - Go to the SC400 icon in the UCON software, right click on it and select configure. Go to serial ports and change settings. Note: ports are labeled on the chassis and match in the software. UCON will have 6 ports and the first two are used for the SC400. The other four are unused.

Note: Select RCP1i for index and RCP1n for numeric in the config file in the serial port setup in UCON. Most common used mode is RCP1i.

Note: RCP-3 protocol is used over the Ethernet port and there is no setup required.

Notes and additional procedures

- If jumpers must be changed for RS232 or RS422 then the best way to do this is to power down the UT400 chassis, move the jumpers and then apply power however, this will take the router down during this time. If these jumper blocks must be moved after power has been applied, follow steps in section 2 of the SC4 guide for proper removal of SC4 cards. This procedure is the same for the SC400 cards.
- If a different baud rate and parity are required, see note above. For more details on how this is done, follow the steps in section 2 of the SC4 guide for changing serial port settings. This procedure is the same for the SC400 cards.
- If attaching to a standard 9 pin PC port for RS232 simply use a straight through 9 pin cable.

(U-NET)

U-NET Port (1) – Labeled 'U-NET'. Used for connecting all Master Control systems as well as current style of UCP and legacy SCP control panels using standard 'straight through' CAT5 cable. Capable of connecting up to 32 panels using daisy chain method. Total overall length of CAT5 should not exceed 1000' feet. Note: Port must have proper termination at the end of the chain of panels using the terminator provided with the system.

(SYNC)

SYNC Port (1) – Labeled 'SYNC'. Used for connecting house sync to provide correct vertical interval switching to all routers connected via MX bus to the SC4. Recommended application is analog black and should be applied to sync port 1 and terminated with a 75ohm termination.

(MX BUS)

MX Ports (2) – Labeled 'MX'. Used for connecting all UT-200, UT300 and UT-400 router models. Either port may be used to daisy chain to all routers using proper MX cables. Standard 10' length cables are provided with each router. Custom cables may be purchased for longer lengths. Note: There must be two terminators (provided with SC400) applied across the overall MX chain which is not to exceed 300' feet.

(ETHERNET)

Ethernet Ports (1) – Labeled 'E-NET' and is setup using the 'chassis' commands from a terminal either over a Telnet session to the SC4 or via the diagnostics port on the front of the card. (Refer to the System Installation Guide Appendix D). Used for RCP3 automation, Ethernet panels, Soft Panels and diagnostics.

(ALARMS – see chart on next page for pin outs)

Alarm Port – Labeled Alarm. This port can be wired to an audible device that will sound whenever a major alarm is activated on the SC4 such as a power supply failure or fan failure.

MXLator (Installed in MXLATOR chassis)

(ETHERNET)

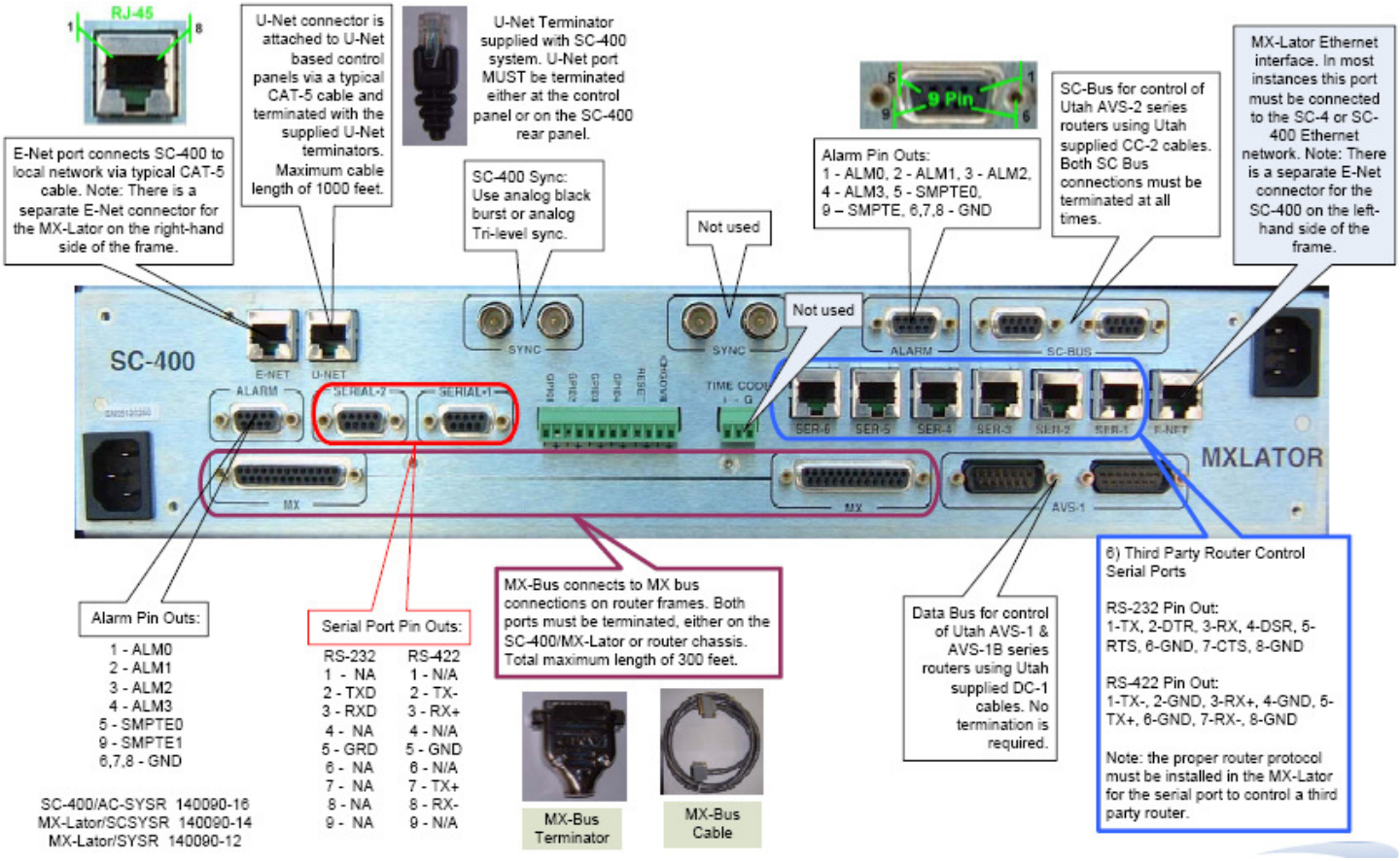
Ethernet Ports (1) – Labeled 'E-NET' and is setup using the 'chassis' commands from a terminal either over a Telnet session to the SC4 or via the diagnostics port on the front of the card. (Refer to the System Installation Guide Appendix D). Used for third party automation and diagnostics.

(THIRD PARTY SERIAL PORTS – see chart on next page for pin outs)

Serial Ports (6) – Labeled 'SER-1 through SER-6'. These are used to interface with third party routers.

SC-BUS Ports (2) – Labeled 'SC-BUS'. Used to interface with AVS-2 legacy routers.

Data Bus Ports (2) – Labeled 'AVS-1'. Used to interface with AVS-1/1B legacy routers.


RJ-45
1
8
E-Net port connects SC-400 to local network via typical CAT-5 cable. Note: There is a separate E-Net connector for the MX-Lator on the right-hand side of the frame.
U-Net connector is attached to U-Net based control panels via a typical CAT-5 cable and terminated with the supplied U-Net terminators. Maximum cable length of 1000 feet.
U-Net Terminator supplied with SC-400 system. U-Net port MUST be terminated either at the control panel or on the SC-400 rear panel.
SC-400 Sync: Use analog black burst or analog Tri-level sync.
Not used
9 Pin
Alarm Pin Outs:
1 - ALM0, 2 - ALM1, 3 - ALM2,
4 - ALM3, 5 - SMPTE0,
9 – SMPTE, 6,7,8 - GND
SC-Bus for control of Utah AVS-2 series routers using Utah supplied CC-2 cables. Both SC Bus connections must be terminated at all times.
MX-Lator Ethernet interface. In most instances this port must be connected to the SC-4 or SC-400 Ethernet network. Note: There is a separate E-Net connector for the SC-400 on the left-hand side of the frame.
SC-400
E-NET
U-NET
SYNC
SYNC
Not used
ALARM
SC-BUS
SERIAL-2
SERIAL-1
SER-6
SER-5
SER-4
SER-3
SER-2
SER-1
E-NET
MX
MX
AVS-1
MXLATOR
Alarm Pin Outs:
1 - ALM0
2 - ALM1
3 - ALM2
4 - ALM3
5 - SMPTE0
9 - SMPTE1
6,7,8 - GND
SC-400/AC-SYSR 140090-16
MX-Lator/SCSYSR 140090-14
MX-Lator/SYSR 140090-12
Serial Port Pin Outs:
RS-232 RS-422
1 - NA 1 - N/A
2 - TXD 2 - TX-
3 - RXD 3 - RX+
4 - NA 4 - N/A
5 - GRD 5 - GND
6 - NA 6 - N/A
7 - NA 7 - TX+
8 - NA 8 - RX-
9 - NA 9 - N/A
MX-Bus connects to MX bus connections on router frames. Both ports must be terminated, either on the SC-400/MX-Lator or router chassis. Total maximum length of 300 feet.
MX-Bus Terminator
MX-Bus Cable
Data Bus for control of Utah AVS-1 & AVS-1B series routers using Utah supplied DC-1 cables. No termination is required.
6) Third Party Router Control Serial Ports
RS-232 Pin Out:
1-TX, 2-DTR, 3-RX, 4-DSR, 5-RTS, 6-GND, 7-CTS, 8-GND
RS-422 Pin Out:
1-TX-, 2-GND, 3-RX+, 4-GND, 5-TX+, 6-GND, 7-RX-, 8-GND
Note: the proper router protocol must be installed in the MX-Lator for the serial port to control a third party router.

SCX400 (Installed in UT400/32)

(SERIAL PORTS – see chart on next page for pin outs)

Serial Ports (2) – Labeled 'SERIAL 1 and SERIAL 2'. Both are configurable and usable as RS232 or RS422.

How to select RS232/422 - Move the jumper block on the SCX400 card for each port. Jumpers are located at the back right of the card.

How to change Baud/Parity - Go to the SC400 icon in the UCON software, right click on it and select configure. Go to serial ports and change settings. Note: ports are labeled on the chassis and match in the software. UCON will have 6 ports and the first two are used for the SC400. The other four ports are unused.

Note: Select RCP1i for index and RCP1n for numeric in the config file in the serial port setup in UCON. Most common used mode is RCP1i.

Note: RCP-3 protocol is used over the Ethernet port and there is no setup required.

Notes and additional procedures

- If jumpers must be changed for RS232 or RS422 then the best way to do this is to power down the UT400 chassis, move the jumpers and then apply power however, this will take the router down during this time. If these jumper blocks must be moved after power has been applied, follow steps in section 2 of the SC4 guide for proper removal of SC4 cards. This procedure is the same for the SCX400 cards.
- If a different baud rate and parity are required, see note above. For more details on how this is done, follow the steps in section 2 of the SC4 guide for changing serial port settings. This procedure is the same for the SCX400 cards.
- If attaching to a standard 9 pin PC port for RS232 simply use a straight through 9 pin cable.

(U-NET)

U-NET Port (1) – Labeled 'U-NET'. Used for connecting all Master Control systems as well as current style of UCP and legacy SCP control panels using standard 'straight through' CAT5 cable. Capable of connecting up to 32 panels using daisy chain method. Total overall length of CAT5 should not exceed 1000' feet. Note: Port must have proper termination at the end of the chain of panels using the terminator provided with the system.

(SYNC)

SYNC Port (1) – Labeled 'SYNC'. Used for connecting house sync to provide correct vertical interval switching to all routers connected via MX bus to the SC4. Recommended application is analog black and should be applied to sync port 1 and terminated with a 75ohm termination.

(MX BUS)

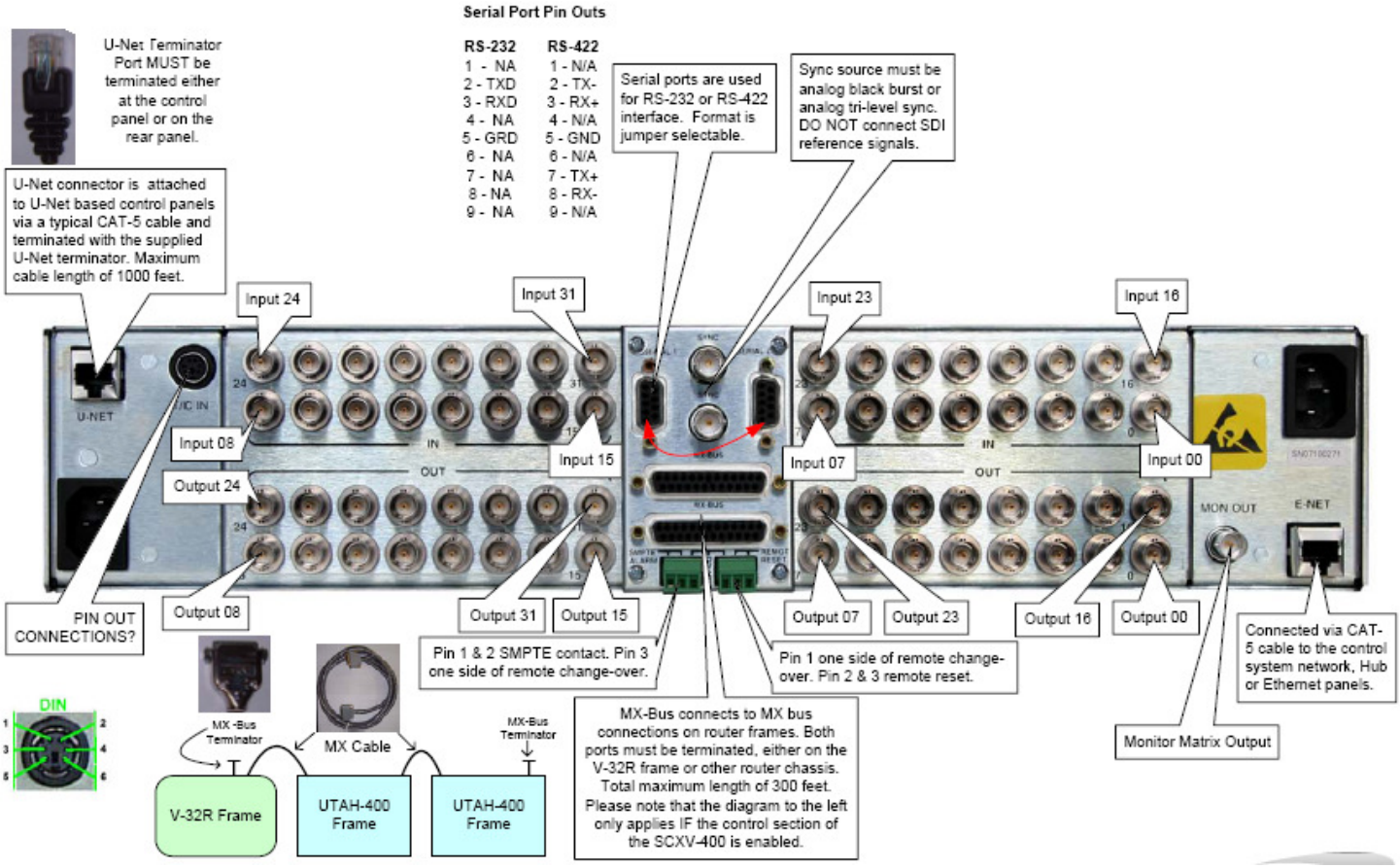
MX Ports (2) – Labeled 'MX-BUS'. Used for connecting all UT-200, UT300 and UT-400 router models. Either port may be used to daisy chain to all routers using proper MX cables. Standard 10' length cables are provided with each router. Custom cables may be purchased for longer lengths. Note: There must be two terminators (provided with SC4/400) applied across the overall MX chain which is not to exceed 300' feet.

(ETHERNET)

Ethernet Ports (1) – Labeled 'E-NET' and is setup using the 'chassis' commands from a terminal either over a Telnet session to the SC4 or via the diagnostics port on the front of the card. (Refer to the System Installation Guide Appendix D).

(ALARM PORT – see chart below for pin outs)

Alarm Port – Labeled 'SMPTE ALARM'. This port can be wired to an audible device that will sound whenever a major alarm is activated on the SC4 such as a power supply failure or fan failure.


Serial Port Pin Outs
RS-232
1 - NA
2 - TXD
3 - RXD
4 - NA
5 - GRD
6 - NA
7 - NA
8 - NA
9 - NA
RS-422
1 - N/A
2 - TX-
3 - RX+
4 - N/A
5 - GND
6 - N/A
7 - TX+
8 - RX-
9 - N/A
U-Net Terminator Port MUST be terminated either at the control panel or on the rear panel.
U-Net connector is attached to U-Net based control panels via a typical CAT-5 cable and terminated with the supplied U-Net terminator. Maximum cable length of 1000 feet.
Serial ports are used for RS-232 or RS-422 interface. Format is jumper selectable.
Sync source must be analog black burst or analog tri-level sync. DO NOT connect SDI reference signals.
Input 24
Input 31
Input 23
Input 16
Input 08
Input 15
Input 07
Input 00
Output 24
Output 08
Output 31
Output 15
Output 07
Output 23
Output 16
Output 00
PIN OUT CONNECTIONS?
DIN
Pin 1 & 2 SMPTE contact. Pin 3 one side of remote change-over.
Pin 1 one side of remote change-over. Pin 2 & 3 remote reset.
Connected via CAT-5 cable to the control system network, Hub or Ethernet panels.
MX -Bus Terminator
MX Cable
MX-Bus Terminator
MX-Bus connects to MX bus connections on router frames. Both ports must be terminated, either on the V-32R frame or other router chassis. Total maximum length of 300 feet. Please note that the diagram to the left only applies IF the control section of the SCXV-400 is enabled.
Monitor Matrix Output
V-32R Frame
UTAH-400 Frame
UTAH-400 Frame
U-NET
I/C IN
IN
OUT
MON OUT
E-NET

MCP400 (used with MC400 and MC40)

(SERIAL PORTS – see chart on next page for pin outs)

Serial Ports (4) – Labeled 'COM 1 through COM 4'. All ports are configurable and usable as RS232 or RS422.

How to select RS232/422 – Jumpers are located through the access port (metal cover), located on the top of the panel. Remove the plate and move the jumper block for each of the 4 ports to the desired position, which are labeled next to the jumpers for each port.

How to change Baud/Parity – Use the MCconfig program to change protocol, baud rate and parity settings. Go to 'Panels' from the top menu and select 'Configure Master Control Panels'. Choose device type, port, baud rate and parity. Note: ports are labeled on the rear and match in the software. Note: Most common used protocol is TAS_AUTO_EXTEND however this will depend on the driver being used for that port from the automation. The other two options are TAS_AUTO_PANEL or TAS_AUTO_REV2. Any others are for custom use only and most likely don't apply.

Notes and additional procedures

- To check the jumper settings from a terminal connect via Telnet to the MCP400 IP address or use serial connection to the diagnostics port on the rear of the panel. At the prompt type the command HDconfig status and this will show the status of the 4 ports.
- For more details on how to change the port settings and protocol, follow the steps in section 1 of the MCConfiguration guide.
- As mentioned above the jumpers for setting the serial port to RS232 or RS422 are located inside the MCP400 panel. There is an access port (metal cover) located on the top of the MCP400. Remove the cover and the four serial port jumper blocks are labeled and need to be moved to the desired position for RS232 or RS422.
- If attaching to a standard 9 pin PC port for RS232 simply use a NULL MODEM 9 pin cable.

(U-NET)

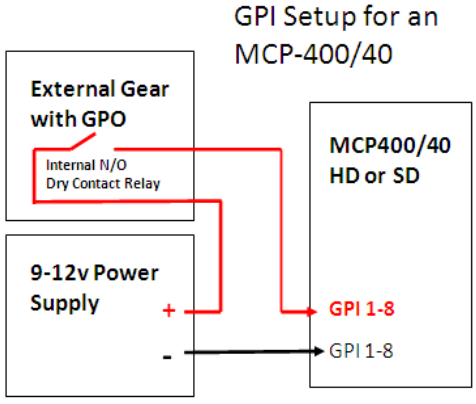
U-NET Ports (2) – Labeled 'U-NET'. Used for connecting the single Master Control channel to the SC4 or SC400 control system using standard 'straight through' CAT5 cable. Note: Port must have proper termination at the end of the chain if other UNET devices are looped through. If only one cable is run to this MCP400 panel from the controller then the 2nd Unet port on this MCP400 must have the terminator installed which was provided with the system.

(ETHERNET)

Ethernet Ports (1) – Labeled 'E-NET' and is setup using the 'chassis' commands from a terminal either over a Telnet session to the MCP400 or via the diagnostics port on the rear of the panel. (Refer to the System Installation Guide Appendix D). Note: This port must be connected to the same LAN that the MC400 card is on and must be on the same subnet.

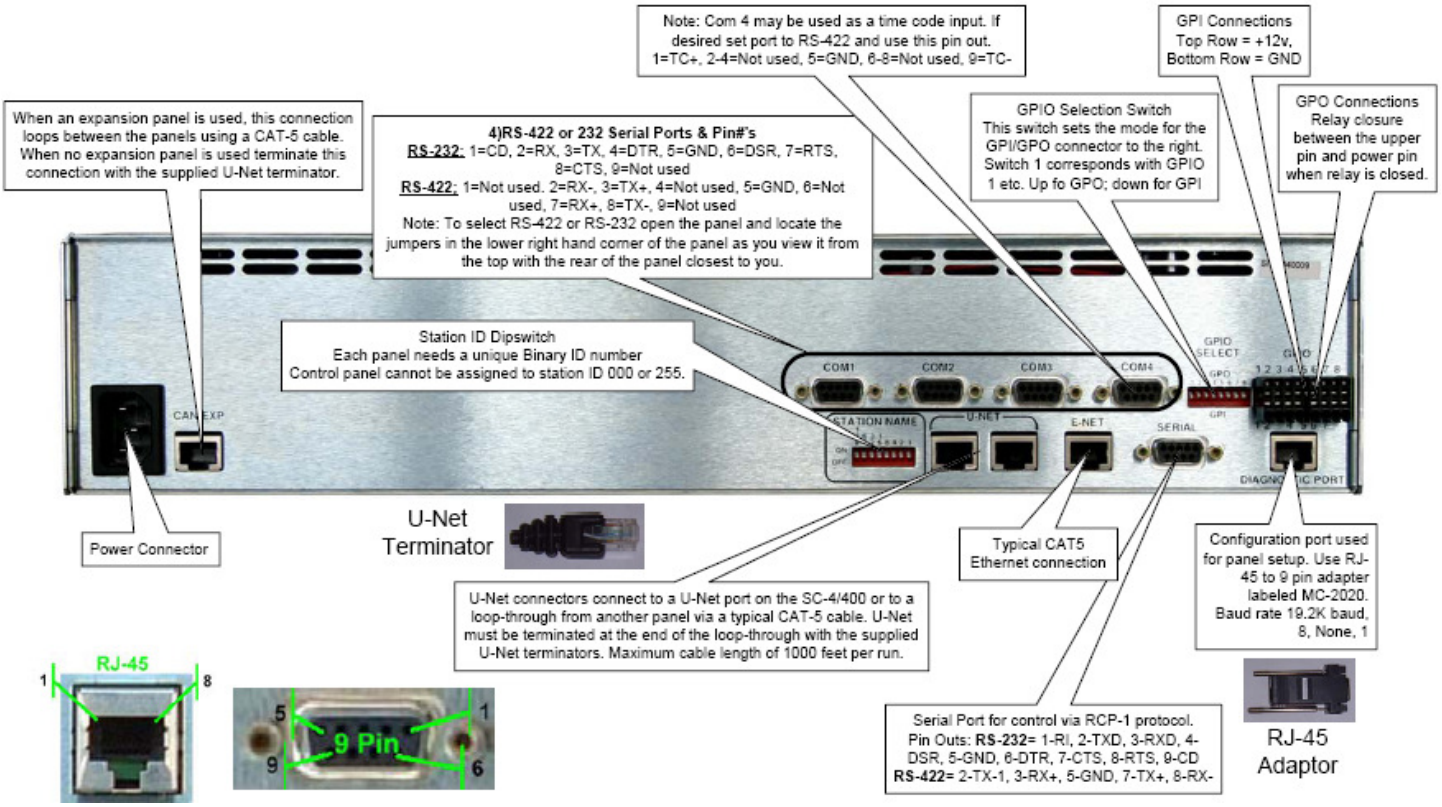
(GPI/O CONNECTIONS)

GPIO's (8) – Labeled 'GPIO'. There are 8 total GPIO's that can be used as either GPO relays or GPI Opto inputs. There is a dip switch next to the connector that needs to be moved to the correct position for each of the 8 GPIO's. Note: For use as a GPO place a 1k pull up resistor in line with the upper or lower pin on the MCP400 and then connect both pins to the external device. For use as a GPI an additional 9-12 volt supply must be applied to the connection. Apply the positive side of the voltage source to one side of the external device's GPO. Apply the other side of the external device's GPO to the top side of the GPI on the MCP400. Apply the bottom side of the GPI on the MCP400 to the negative side of the power source. Additional setup must be done in the MC400 configuration file to enable the functionality for either use.



(STATION ID)

Station Node ID – Labeled 'STATION NAME'. This dip switch setting must be set to a unique number which is different than all other Unet panel or MC numbers. Note: The dip switch settings add up using the numbers on the metal and the switch needs to be moved towards those numbers. Example: Node number 7 would have switches 1, 2 and 4 all moved toward the number on the metal and all other switches moved to the other position.



MCP40 (used with MC40)

(SERIAL PORTS – see chart on next page for pin outs)

Serial Ports (4) – Labeled 'COM 1 through COM 4'. All ports are configurable and usable as RS232 or RS422.

How to select RS232/422 – Jumpers are located through the access port (metal cover), located on the top of the panel. Remove the plate and move the jumper block for each of the 4 ports to the desired position, which are labeled next to the jumpers for each port.

How to change Baud/Parity – Use the MCconfig program to change protocol, baud rate and parity settings. Go to 'Panels' from the top menu and select 'Configure Master Control Panels'. Choose device type, port, baud rate and parity.

Note: ports are labeled on the rear and match in the software. Note: Most common used protocol is TAS_AUTO_EXTEND however this depends on the driver being used for that port from the automation. The other two options are TAS_AUTO_PANEL or TAS_AUTO_REV2. Any others are for custom use only and most likely don't apply.

Notes and additional procedures

- To check the jumper settings from a terminal connect to the MCP40 IP address or use serial connection to the diagnostics port on the rear of the panel. At the prompt type the command HDconfig status and this will show the status of the 4 ports.
- For more details on how to change the port settings and protocol, follow the steps in section 1 of the MCConfiguration guide.
- As mentioned above the jumpers for setting the serial port to RS232 or RS422 are located inside the MCP40 panel. There is an access port (metal cover) located on the top of the MCP40. Remove the cover and the four serial port jumper blocks are labeled and need to be moved to the desired position for RS232 or RS422.
- If attaching to a standard 9 pin PC port for RS232 simply use a NULL MODEM 9 pin cable.

(U-NET)

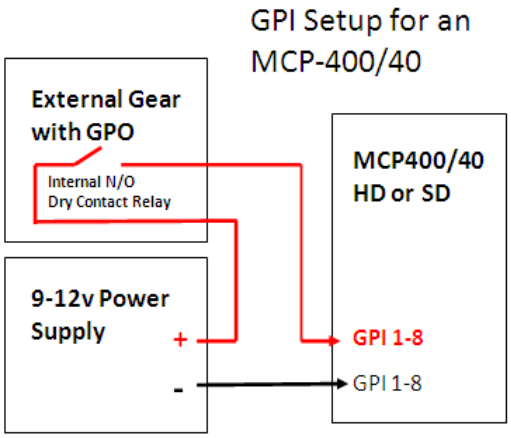
U-NET Ports (2) – Labeled 'U-NET'. Used for connecting the single Master Control channel to the SC4 or SC400 control system using standard 'straight through' CAT5 cable. Note: Port must have proper termination at the end of the chain if other Unet devices are looped through. If only one cable is run to this MCP40 panel from the controller then the 2nd Unet port on this MCP40 must have the terminator installed which was provided with the system.

(ETHERNET)

Ethernet Ports (1) – Labeled 'E-NET' and is setup using the 'chassis' commands from a terminal either over a Telnet session to the MCP400 or via the diagnostics port on the rear of the panel. (Refer to the System Installation Guide Appendix D). This port must be connected to the same LAN that the MC400 card is on and must be on the same subnet.

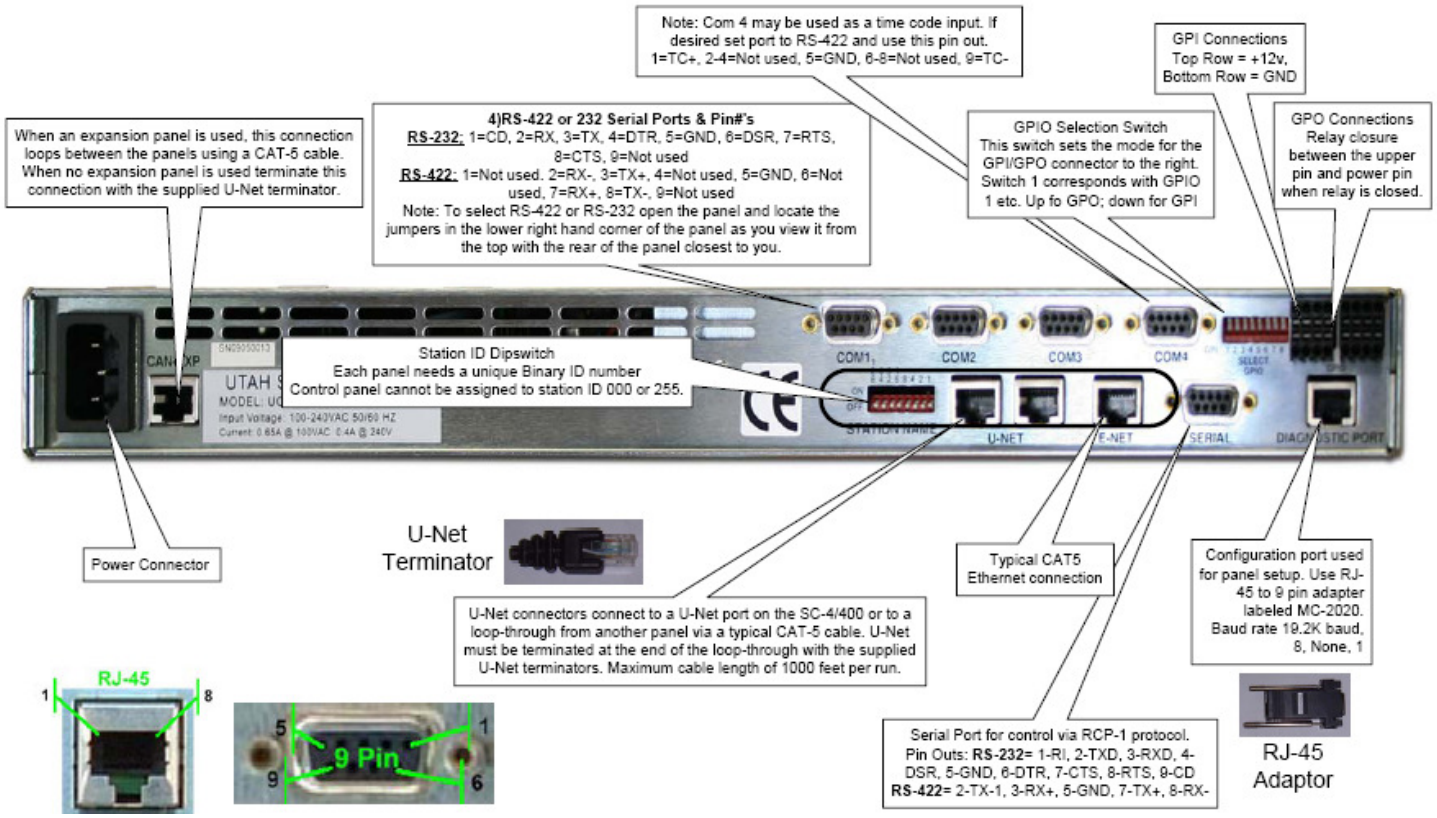
(GPI/O CCONNECTIONS)

GPIO's (8) – Labeled 'GPIO'. There are 8 total GPIO's that can be used as either GPO relays or GPI Opto inputs. There is a dip switch next to the connector that needs to be moved to the correct position for each of the 8 GPIO's. Note: For use as a GPO place a 1k pull up resistor in line with the upper or lower pin on the MCP40 and then connect both pins to the external device. For use as a GPI an additional 9-12 volt supply must be applied to the connection. Apply the positive side of the voltage source to one side of the external device's GPO. Apply the other side of the external device's GPO to the top side of the GPI on the MCP40. Apply the bottom side of the GPI on the MCP40 to the negative side of the power source. Additional setup must be done in the MC400 configuration file to enable the functionality for either use.



(STATION NUMBER)

Station Node ID – Labeled 'Station Name'. This dip switch setting must be set to a unique number which is different than all other Unet panel or MC numbers. Note: The dip switch settings add up using the numbers on the metal and the switch needs to be moved towards those numbers. Example: Node number 7 would have switches 1, 2 and 4 all moved toward the number on the metal and all other switches moved to the other position.



MC4000

(SERIAL PORTS – see chart on next page for pin outs)

Serial Ports (4) – Labeled 'CHANNEL 1 and 2 SERIAL PORTS 1-4'. All ports are configurable and usable as RS232 or RS422.

How to select RS232/422 – Jumpers are located at the rear of the card in the center area. They are actually labeled JP7 through JP10 which are ports 1 through 4 in that order. I.e. JP7 = Port 1, JP8 = Port 2, JP9 = Port 3, JP10 = Port 4.

How to configure Baud/Parity – Currently these must be configured manually from the config file using the Utsci Install Utility by retrieving and then editing the config file in the [CONTROL_PANEL_TYPE_DEFINITIONS_START] section. It will soon be done using the MCconfig software. At that point, use the MCconfig program to change protocol, baud rate and parity settings. Go to 'Panels' from the top menu and select 'Configure Master Control Panels'. Choose device type, port, baud rate and parity. Note: ports are labeled on the rear and match in the software. Note: Most common used protocol is TAS_AUTO_EXTEND however this will depend on the driver being used for that port from the automation platform. The other two options are TAS_AUTO_PANEL or TAS_AUTO_REV2. Any others are for custom use only and most likely don't apply.

Notes and additional procedures

- To check the jumper settings from a terminal connect to the MCP4000 IP address or use a serial connection to the diagnostics port on the front of the MC4000 card. At the prompt type the command HDconfig status and this will show the status of the 4 ports.
- For more details on how to change the port settings and protocol, this must be done manually as the GUI is not usable with this yet.
- The Unet port must be terminated. The MC4000 chassis has only one Unet port and must have a terminator either in the port directly or at the end of a chain of Unet devices that start at this port. If the MC4000 is being controlled by an external SC4/SC400 then a Unet Y cable (provided with system) must be placed in the Unet port. Then one side of the Y cable will come from the controller and the other end terminated or looped to other Unet devices.
- Video reference must be a constant HD/SDI video source such as black or bars for the video format to be used with that channel and brought into the MC4000 (see manual for details). This source must be locked to house reference and generally comes from the house generator. Example: If the channel is going to be HD1080i then a source coming from the house generator that is 1080i such as black or bars will need to be connected as an input on the MC4000 to be used for reference.
- If attaching to a standard 9 pin PC port for RS232 simply use a NULL MODEM 9 pin cable.

(U-NET)

U-NET Port (1) – Labeled 'U-NET'. Used for connecting the single Master Control channel to the external SC4 or SC400 control system using standard 'straight through' CAT5 cable. If the controller is internal in the MC4000 then this port only requires a terminator unless other Unet devices are to be used from this controller. Note: Port must have proper termination at the end of the chain if other Unet devices are looped through. If only one cable is run to this MC4000, applied to the Unet Y cable from the controller, then the 2nd Unet port on this MC4000 must have the terminator installed which was provided with the system. See notes above.

(SYNC)

SYNC Port (1) – Labeled 'SYNC'. Used for connecting house sync to provide correct vertical interval switching to all routers connected via MX bus to the SCX400. Recommended application is analog black and should be applied to sync port 1 and terminated with a 75ohm termination. Note: This port is only used if there is an internal SCX400 controller.

(MX BUS)

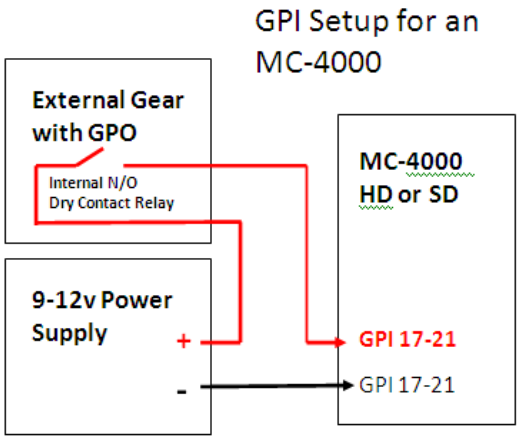
MX Ports (2) – Labeled 'MX-BUS'. Used for connecting all UT-200, UT300 and UT-400 router models. Either port may be used to daisy chain to all routers using proper MX cables. Standard 10' length cables are provided with each router. Custom cables may be purchased for longer lengths. Note: There must be two terminators (provided with SCX400) applied across the overall MX chain which is not to exceed 300' feet. Note: The MX bus is only used if there is an internal SCX400 controller.

(ETHERNET)

Ethernet Ports (1) – Labeled 'PROC 1 and PROC 2'. These ports are for each of the two channels and is setup using the 'chassis' commands from a terminal either over a Telnet session to the MCP400 or via the diagnostics port on the rear of the panel. (Refer to the System Installation Guide Appendix D). This port must be connected to the same LAN that the MCP2020 panel is on and must be on the same subnet.

(GPI/O CONNECTIONS – see picture below for pin outs)

GPIO's (21) – Labeled 'GPIO 1-10 and GPIO 11-21' for each channel. There is a circuit on the MC4000 card with either 21 relays or mix of 16 relays and 5 optos. The 21 relays is for GPO's only and require a pull up resistor of at least 1k to be attached in line with the external device to be triggered by the relay. The 16/5 mixed card provides 16 GPO's and 5 GPI's. Note: For GPI use, an additional 9-12 volt supply must be applied to the connection. Apply the positive side of the voltage source to one side of the external device's GPO. Apply the other side of the external device's GPO to one of the two connections on the GPI of the MC2020. Apply the other side of the GPI on the MC2020 to the negative side of the power source. Additional setup must still be done in the configuration file for the MC2020 to enable the functionality for either use.

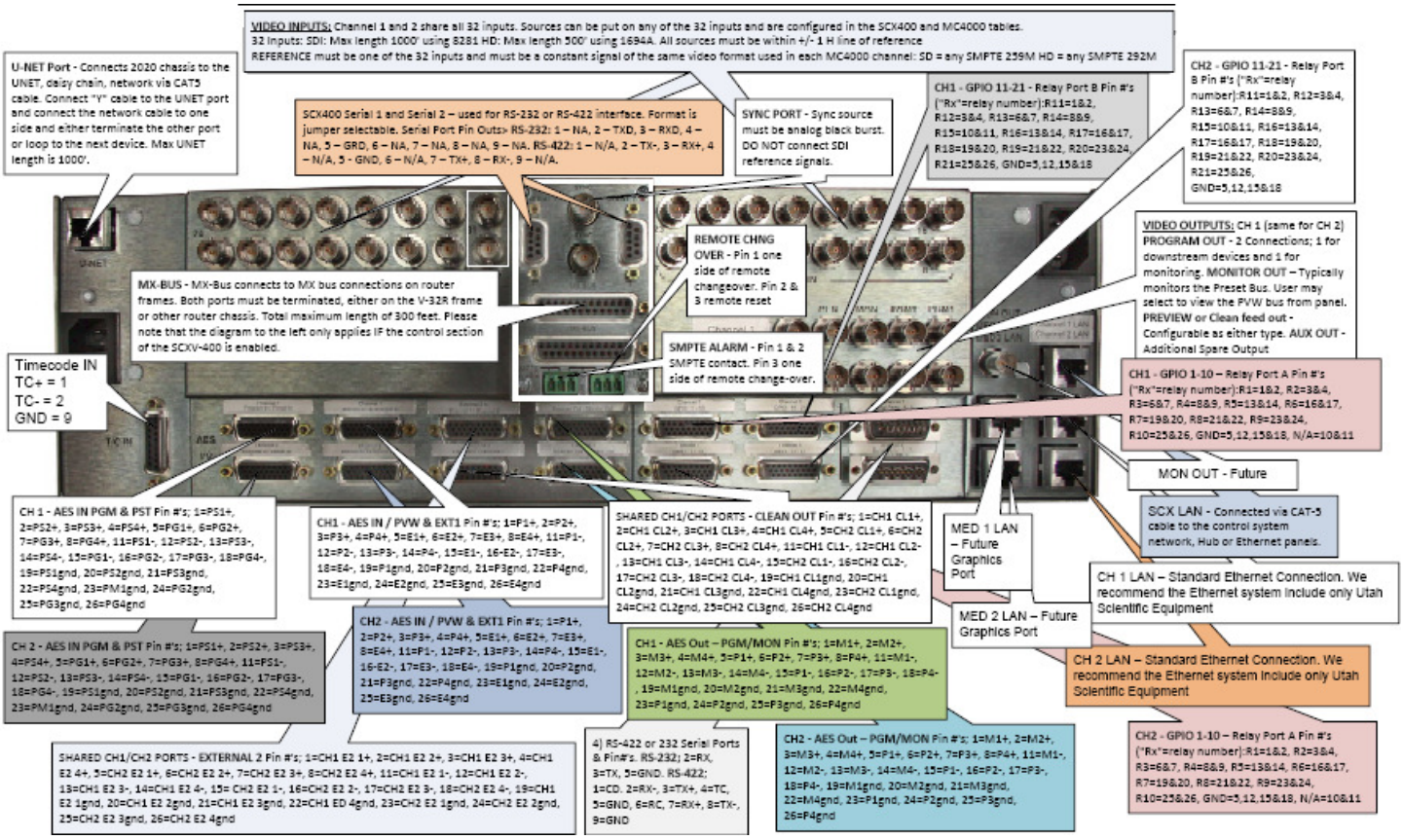


(Alarm Port – see chart on next page for pin outs)

Alarm Port – Labeled 'SMPTE ALARM'. This port can be wired to an audible device that will sound whenever a major alarm is activated on the SC4 such as a power supply failure or fan failure. Note: This port is only used if there is an internal SCX400 controller.

(AES Audio Ports – see chart on next page for pin outs)

AES Connectors – Labeled according to specific use. Multiple ports for inputs and outputs. Each port can be used with up to 8 channels (4 pairs) of AES audio for all input, output and monitor use.


VIDEO INPUTS: Channel 1 and 2 share all 32 inputs. Sources can be put on any of the 32 inputs and are configured in the SCX400 and MC4000 tables.
32 Inputs: SDI: Max length 1000' using 8281 HD: Max length 500' using 1694A. All sources must be within +/- 1 H line of reference
REFERENCE must be one of the 32 inputs and must be a constant signal of the same video format used in each MC4000 channel: SD = any SMPTE 259M HD = any SMPTE 292M
U-NET Port - Connects 2020 chassis to the UNET, daisy chain, network via CAT5 cable. Connect "Y" cable to the UNET port and connect the network cable to one side and either terminate the other port or loop to the next device. Max UNET length is 1000'.
SCX400 Serial 1 and Serial 2 – used for RS-232 or RS-422 interface. Format is jumper selectable. Serial Port Pin Outs> RS-232: 1 – NA, 2 – TXD, 3 – RXD, 4 – NA, 5 – GRD, 6 – NA, 7 – NA, 8 – NA, 9 – NA. RS-422: 1 – N/A, 2 – TX-, 3 – RX+, 4 – N/A, 5 - GND, 6 – N/A, 7 – TX+, 8 – RX-, 9 – N/A.
SYNC PORT - Sync source must be analog black burst. DO NOT connect SDI reference signals.
CH1 - GPIO 11-21 - Relay Port B Pin #'s ("Rx"=relay number):R11=1&2, R12=3&4, R13=6&7, R14=8&9, R15=10&11, R16=13&14, R17=16&17, R18=19&20, R19=21&22, R20=23&24, R21=25&26, GND=5,12,15&18
CH2 - GPIO 11-21 - Relay Port B Pin #'s ("Rx"=relay number):R11=1&2, R12=3&4, R13=6&7, R14=8&9, R15=10&11, R16=13&14, R17=16&17, R18=19&20, R19=21&22, R20=23&24, R21=25&26, GND=5,12,15&18
REMOTE CHNG OVER - Pin 1 one side of remote changeover. Pin 2 & 3 remote reset
VIDEO OUTPUTS: CH 1 (same for CH 2) PROGRAM OUT - 2 Connections; 1 for downstream devices and 1 for monitoring. MONITOR OUT – Typically monitors the Preset Bus. User may select to view the PVW bus from panel. PREVIEW or Clean feed out - Configurable as either type. AUX OUT - Additional Spare Output
MX-BUS - MX-Bus connects to MX bus connections on router frames. Both ports must be terminated, either on the V-32R frame or other router chassis. Total maximum length of 300 feet. Please note that the diagram to the left only applies IF the control section of the SCXV-400 is enabled.
SMPTE ALARM - Pin 1 & 2 SMPTE contact. Pin 3 one side of remote change-over.
Timecode IN
TC+ = 1
TC- = 2
GND = 9
CH1 - GPIO 1-10 – Relay Port A Pin #'s ("Rx"=relay number):R1=1&2, R2=3&4, R3=6&7, R4=8&9, R5=13&14, R6=16&17, R7=19&20, R8=21&22, R9=23&24, R10=25&26, GND=5,12,15&18, N/A=10&11
MON OUT - Future
SCX LAN - Connected via CAT-5 cable to the control system network, Hub or Ethernet panels.
CH 1 - AES IN PGM & PST Pin #'s; 1=PS1+, 2=PS2+, 3=PS3+, 4=PS4+, 5=PG1+, 6=PG2+, 7=PG3+, 8=PG4+, 11=PS1-, 12=PS2-, 13=PS3-, 14=PS4-, 15=PG1-, 16=PG2-, 17=PG3-, 18=PG4-, 19=PS1gnd, 20=PS2gnd, 21=PS3gnd, 22=PS4gnd, 23=PM3gnd, 24=PG2gnd, 25=PG3gnd, 26=PG4gnd
CH1 - AES IN / PVW & EXT1 Pin #'s: 1=P1+, 2=P2+, 3=P3+, 4=P4+, 5=E1+, 6=E2+, 7=E3+, 8=E4+, 11=P1-, 12=P2-, 13=P3-, 14=P4-, 15=E1-, 16-E2-, 17=E3-, 18=E4-, 19=P1gnd, 20=P2gnd, 21=P3gnd, 22=P4gnd, 23=E1gnd, 24=E2gnd, 25=E3gnd, 26=E4gnd
SHARED CH1/CH2 PORTS - CLEAN OUT Pin #'s; 1=CH1 CL1+, 2=CH1 CL2+, 3=CH1 CL3+, 4=CH1 CL4+, 5=CH2 CL1+, 6=CH2 CL2+, 7=CH2 CL3+, 8=CH2 CL4+, 11=CH1 CL1-, 12=CH1 CL2-, 13=CH1 CL3-, 14=CH1 CL4-, 15=CH2 CL1-, 16=CH2 CL2-, 17=CH2 CL3-, 18=CH2 CL4-, 19=CH1 CL1gnd, 20=CH1 CL2gnd, 21=CH1 CL3gnd, 22=CH1 CL4gnd, 23=CH2 CL1gnd, 24=CH2 CL2gnd, 25=CH2 CL3gnd, 26=CH2 CL4gnd
MED 1 LAN – Future Graphics Port
CH 1 LAN – Standard Ethernet Connection. We recommend the Ethernet system include only Utah Scientific Equipment
MED 2 LAN – Future Graphics Port
CH 2 LAN – Standard Ethernet Connection. We recommend the Ethernet system include only Utah Scientific Equipment
CH 2 - AES IN PGM & PST Pin #'s; 1=PS1+, 2=PS2+, 3=PS3+, 4=PS4+, 5=PG1+, 6=PG2+, 7=PG3+, 8=PG4+, 11=PS1-, 12=PS2-, 13=PS3-, 14=PS4-, 15=PG1-, 16=PG2-, 17=PG3-, 18=PG4-, 19=PS1gnd, 20=PS2gnd, 21=PS3gnd, 22=PS4gnd, 23=PM1gnd, 24=PG2gnd, 25=PG3gnd, 26=PG4gnd
CH2 - AES IN / PVW & EXT1 Pin #'s; 1=P1+, 2=P2+, 3=P3+, 4=P4+, 5=E1+, 6=E2+, 7=E3+, 8=E4+, 11=P1-, 12=P2-, 13=P3-, 14=P4-, 15=E1-, 16-E2-, 17=E3-, 18=E4-, 19=P1gnd, 20=P2gnd, 21=P3gnd, 22=P4gnd, 23=E1gnd, 24=E2gnd, 25=E3gnd, 26=E4gnd
CH1 - AES Out – PGM/MON Pin #'s; 1=M1+, 2=M2+, 3=M3+, 4=M4+, 5=P1+, 6=P2+, 7=P3+, 8=P4+, 11=M1-, 12=M2-, 13=M3-, 14=M4-, 15=P1-, 16=P2-, 17=P3-, 18=P4-, 19=M1gnd, 20=M2gnd, 21=M3gnd, 22=M4gnd, 23=P1gnd, 24=P2gnd, 25=P3gnd, 26=P4gnd
SHARED CH1/CH2 PORTS - EXTERNAL 2 Pin #'s; 1=CH1 E2 1+, 2=CH1 E2 2+, 3=CH1 E2 3+, 4=CH1 E2 4+, 5=CH2 E2 1+, 6=CH2 E2 2+, 7=CH2 E2 3+, 8=CH2 E2 4+, 11=CH1 E2 1-, 12=CH1 E2 2-, 13=CH1 E2 3-, 14=CH1 E2 4-, 15= CH2 E2 1-, 16=CH2 E2 2-, 17=CH2 E2 3-, 18=CH2 E2 4-, 19=CH1 E2 1gnd, 20=CH1 E2 2gnd, 21=CH1 E2 3gnd, 22=CH1 ED 4gnd, 23=CH2 E2 1gnd, 24=CH2 E2 2gnd, 25=CH2 E2 3gnd, 26=CH2 E2 4gnd
4) RS-422 or 232 Serial Ports & Pin#'s. RS-232; 2=RX, 3=TX, 5=GND. RS-422; 1=CD. 2=RX-, 3=TX+, 4=TC, 5=GND, 6=RC, 7=RX+, 8=TX-, 9=GND
CH2 - AES Out – PGM/MON Pin #'s; 1=M1+, 2=M2+, 3=M3+, 4=M4+, 5=P1+, 6=P2+, 7=P3+, 8=P4+, 11=M1-, 12=M2-, 13=M3-, 14=M4-, 15=P1-, 16=P2-, 17=P3-, 18=P4-, 19=M1gnd, 20=M2gnd, 21=M3gnd, 22=M4gnd, 23=P1gnd, 24=P2gnd, 25=P3gnd, 26=P4gnd
CH2 - GPIO 1-10 – Relay Port A Pin #'s ("Rx"=relay number):R1=1&2, R2=3&4, R3=6&7, R4=8&9, R5=13&14, R6=16&17, R7=19&20, R8=21&22, R9=23&24, R10=25&26, GND=5,12,15&18, N/A=10&11

MC2020

(Serial Ports – see chart on next page for pin outs)

Serial Ports (4) – Labeled 'Serial 1 through Serial 4'. All ports are configurable and usable as RS232 or RS422.

How to select RS232/422 – Jumpers are located on the CP2020 card at the top rear of the card as it is removed from the chassis.

How to change Baud/Parity – Use the MCconfig program to change protocol, baud rate and parity settings. Go to 'Panels' from the top menu and select 'Configure Master Control Panels'. Choose device type, port, baud rate and parity.

Note: ports are labeled on the rear and match in the software. Note: Most common used protocol is TAS_AUTO_EXTEND however this will depend on the driver being used for that port from the automation platform. The other two options are TAS_AUTO_PANEL or TAS_AUTO_REV2. Any others are for custom use only and most likely don't apply.

Notes and additional procedures

- To check the jumper settings from a terminal connect to the MC2020 IP address or use serial connection to the diagnostics port on the front of the CP2020 card. At the prompt type the command HDconfig status and this will show the status of the 4 ports.
- For more details on how to change the port settings and protocol, follow the steps in section 1 of the MCConfiguration guide.
- The Unet port must be terminated. The MC2020 chassis has only one Unet port and must have a Unet Y cable (provided for each channel) installed in the port and can be daisy chained to other Unet devices or a terminator can be placed in the 2nd port on the Y cable.
- Video reference must be a constant HD/SDI video source like black or bars for the video format to be used with that channel. This source must be locked to house reference. Example: If the channel is going to be HD1080i then a source coming from the house generator that is 1080i such as black or bars will need to be connected to the reference input on the MC2020. Termination of the 2nd reference port is not necessary. The lock LED will light green with a good source and the other LED will be green if it is an HD source and amber if it is an SD source.
- If attaching to a standard 9 pin PC port for RS232 simply use a NULL MODEM 9 pin cable.

(U-NET)

U-NET Port (1) – Labeled 'U-NET'. Used for connecting the single Master Control channel to the SC4 or SC400 control system using standard 'straight through' CAT5 cable. Note: Port must have proper termination at the end of the chain if other Unet devices are looped through. If only one cable is run to this MC2020, applied to the Unet Y cable from the controller, then the 2nd Unet port on this MC2020 must have the terminator installed which was provided with the system.

(Ethernet)

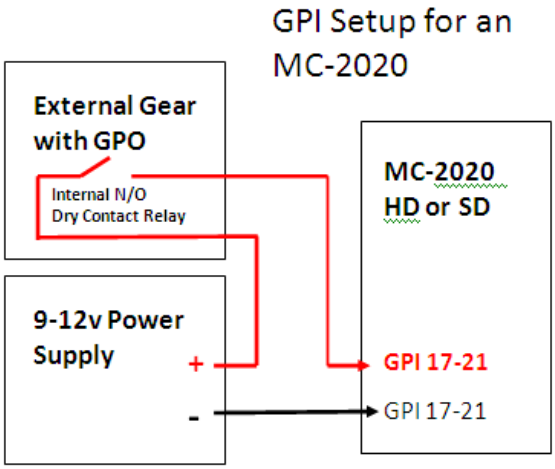
Ethernet Ports (1) – Labeled 'CNTL ENET' and is setup using the 'chassis' commands from a terminal either over a Telnet session to the MCP400 or via the diagnostics port on the rear of the panel. (Refer to the System Installation Guide Appendix D). This port must be connected to the same LAN that the MCP2020 panel is on and must be on the same subnet.

(GPI/O Connections – see picture below for pin outs)

GPIO's (21) – Labeled 'RELAYS/OPTOS A and B'. There is a daughter card installed on the CPU2020 card with either 21 relays or mix of 16 relays and 5 optos. The 21 relay card is for GPO's only and requires a pull up resistor of at least 1k to be attached in line with the external device to be triggered by the relay. The 16/5 mixed card provides 16 GPO's and 5 GPI's. **Note:** For GPI use, an additional 9-12 volt supply must be applied to the connection. Apply the positive side of the voltage source to one side of the external device's GPO. Apply the other side of the external device's GPO to one of the two connections on the GPI of the MC2020. Apply the other side of the GPI on the MC2020 to the negative side of the power source. Additional setup must still be done in the configuration file for the MC2020 to enable the functionality for either use.

(Time Code In)

Time Code – Labeled 'T/C IN AES REF'. This port can be connected to the house clock for accurate time code read out and for use in comparing the automation time with events in the log files. The AES Ref is unused.

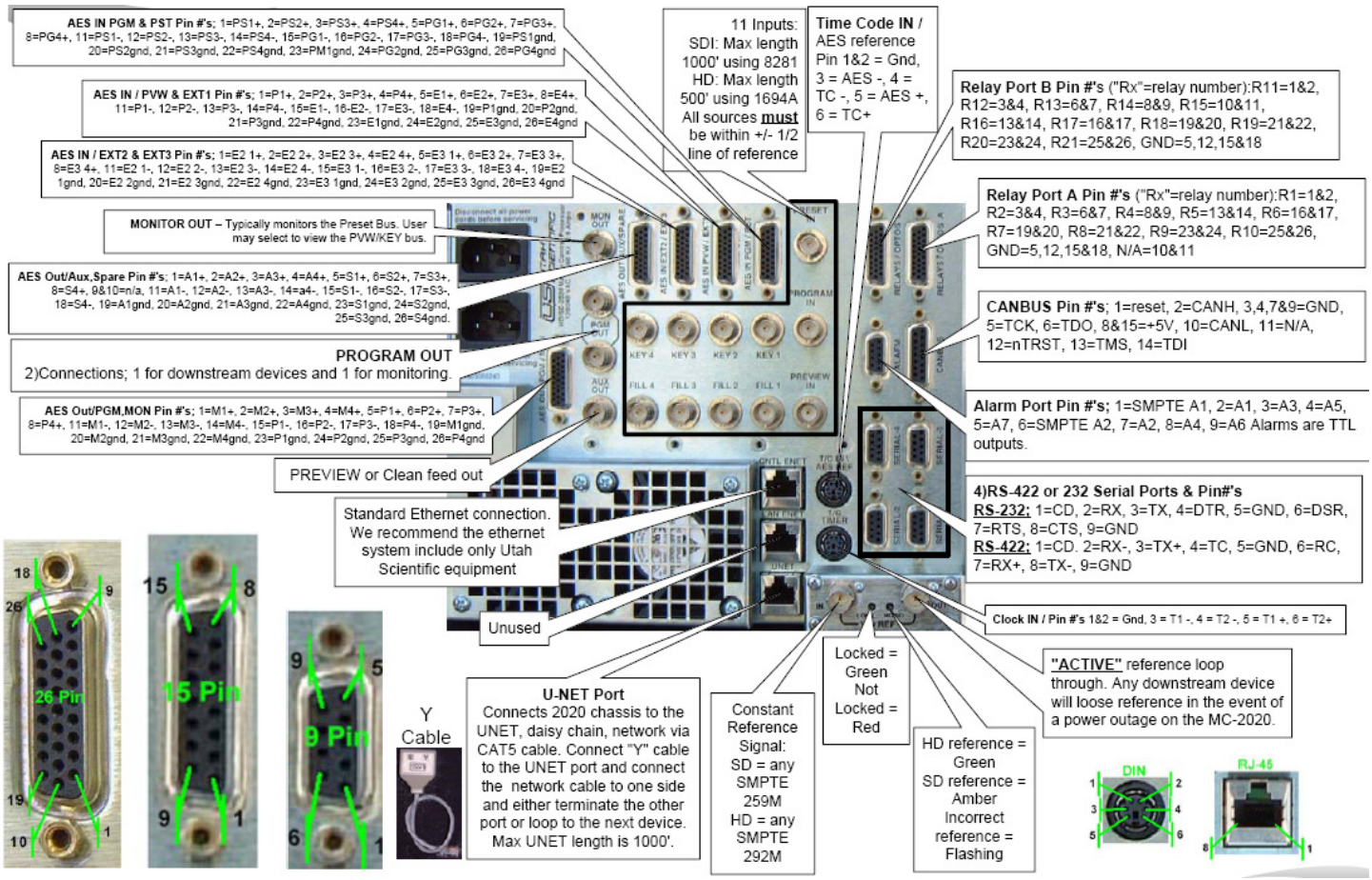


(Alarm Port – see chart on next page for pin outs)

Alarm Port – Labeled 'ALARM'. This port can be wired to an audible device that will sound whenever a major alarm is activated such as a power supply failure or fan failure. Note: This alarm is not used for loss of video signal or card malfunctions.

(AES Connections – see chart on next page for pin outs)

AES Connectors – Labeled according to specific use. Multiple ports for inputs, outputs and monitor. Each port can be used with up to 8 channels (4 pairs) of AES audio for all input, output and monitor use. Note: the port labeled SPARE is the actual monitor output (see MC2020 guide for details) and the port labeled MON is the preset bus output.


AES IN PGM & PST Pin #'s; 1=PS1+, 2=PS2+, 3=PS3+, 4=PS4+, 5=PG1+, 6=PG2+, 7=PG3+, 8=PG4+, 11=PS1-, 12=PS2-, 13=PS3-, 14=PS4-, 15=PG1-, 16=PG2-, 17=PG3-, 18=PG4-, 19=PS1gnd, 20=PS2gnd, 21=PS3gnd, 22=PS4gnd, 23=PM1gnd, 24=PG2gnd, 25=PG3gnd, 26=PG4gnd
AES IN / PVW & EXT1 Pin #'s; 1=P1+, 2=P2+, 3=P3+, 4=P4+, 5=E1+, 6=E2+, 7=E3+, 8=E4+, 11=P1-, 12=P2-, 13=P3-, 14=P4-, 15=E1-, 16-E2-, 17=E3-, 18=E4-, 19=P1gnd, 20=P2gnd, 21=P3gnd, 22=P4gnd, 23=E1gnd, 24=E2gnd, 25=E3gnd, 26=E4gnd
AES IN / EXT2 & EXT3 Pin #'s; 1=E2 1+, 2=E2 2+, 3=E2 3+, 4=E2 4+, 5=E3 1+, 6=E3 2+, 7=E3 3+, 8=E3 4+, 11=E2 1-, 12=E2 2-, 13=E2 3-, 14=E2 4-, 15=E3 1-, 16=E3 2-, 17=E3 3-, 18=E3 4-, 19=E2 1gnd, 20=E2 2gnd, 21=E2 3gnd, 22=E2 4gnd, 23=E3 1gnd, 24=E3 2gnd, 25=E3 3gnd, 26=E3 4gnd
MONITOR OUT – Typically monitors the Preset Bus. User may select to view the PVW/KEY bus.
AES Out/Aux,Spare Pin #'s; 1=A1+, 2=A2+, 3=A3+, 4=A4+, 5=S1+, 6=S2+, 7=S3+, 8=S4+, 9&10=n/a, 11=A1-, 12=A2-, 13=A3-, 14=a4-, 15=S1-, 16=S2-, 17=S3-, 18=S4-, 19=A1gnd, 20=A2gnd, 21=A3gnd, 22=A4gnd, 23=S1gnd, 24=S2gnd, 25=S3gnd, 26=S4gnd.
PROGRAM OUT
2)Connections; 1 for downstream devices and 1 for monitoring.
AES Out/PGM,MON Pin #'s; 1=M1+, 2=M2+, 3=M3+, 4=M4+, 5=P1+, 6=P2+, 7=P3+, 8=P4+, 11=M1-, 12=M2-, 13=M3-, 14=M4-, 15=P1-, 16=P2-, 17=P3-, 18=P4-, 19=M1gnd, 20=M2gnd, 21=M3gnd, 22=M4gnd, 23=P1gnd, 24=P2gnd, 25=P3gnd, 26=P4gnd
PREVIEW or Clean feed out
Standard Ethernet connection. We recommend the ethernet system include only Utah Scientific equipment
Unused
11 Inputs: SDI: Max length 1000' using 8281 HD: Max length 500' using 1694A All sources **must** be within +/- 1/2 line of reference
Time Code IN / AES reference Pin 1&2 = Gnd, 3 = AES -, 4 = TC -, 5 = AES +, 6 = TC+
Relay Port B Pin #'s ("Rx"=relay number):R11=1&2, R12=3&4, R13=6&7, R14=8&9, R15=10&11, R16=13&14, R17=16&17, R18=19&20, R19=21&22, R20=23&24, R21=25&26, GND=5,12,15&18
Relay Port A Pin #'s ("Rx"=relay number):R1=1&2, R2=3&4, R3=6&7, R4=8&9, R5=13&14, R6=16&17, R7=19&20, R8=21&22, R9=23&24, R10=25&26, GND=5,12,15&18, N/A=10&11
CANBUS Pin #'s; 1=reset, 2=CANH, 3,4,7&9=GND, 5=TCK, 6=TDO, 8&15=+5V, 10=CANL, 11=N/A, 12=nTRST, 13=TMS, 14=TDI
Alarm Port Pin #'s; 1=SMPTE A1, 2=A1, 3=A3, 4=A5, 5=A7, 6=SMPTE A2, 7=A2, 8=A4, 9=A6 Alarms are TTL outputs.
4)RS-422 or 232 Serial Ports & Pin#'s
RS-232: 1=CD, 2=RX, 3=TX, 4=DTR, 5=GND, 6=DSR, 7=RTS, 8=CTS, 9=GND
RS-422: 1=CD. 2=RX-, 3=TX+, 4=TC, 5=GND, 6=RC, 7=RX+, 8=TX-, 9=GND
Clock IN / Pin #'s 1&2 = Gnd, 3 = T1 -, 4 = T2 -, 5 = T1 +, 6 = T2+
"ACTIVE" reference loop through. Any downstream device will loose reference in the event of a power outage on the MC-2020.
Locked = Green Not Locked = Red
HD reference = Green SD reference = Amber Incorrect reference = Flashing
Constant Reference Signal: SD = any SMPTE 259M HD = any SMPTE 292M
U-NET Port
Connects 2020 chassis to the UNET, daisy chain, network via CAT5 cable. Connect "Y" cable to the UNET port and connect the network cable to one side and either terminate the other port or loop to the next device. Max UNET length is 1000'.
Y Cable
26 Pin
15 Pin
9 Pin
DIN
RJ-45

BPS-2020

(Serial Ports – see chart on next page for pin outs)

Serial Port (1) – Labeled 'Serial'. This port is configurable and usable as RS232 or RS422. It is used primarily for external control of the 8 inputs using either the Utah protocol RCP1 or the Grass Valley protocol GVG10XL.

How to select RS232/422 – The Jumpers are located on the BPS2020 card at the right side of the card as it is removed from the chassis and are labeled J1 and J2. Set both jumpers to the 232 position for RS232 and both jumpers to the 422 position for RS422.

How to change Baud/Parity – Use the dip switch located on the front edge of the video card to change baud rate and parity settings. Switch 5 of SW2 sets the baud rate of the serial interface. On = 19.2KBaud, off = 38.4Kbaud. Both baud rate settings use 8, none and 1 for parity control.

How to change Protocol – Use the dip switch located on the front edge of the video card to change protocol between RCP1 (Utah protocol) and GVG10XL (Grass Valley protocol). Switch 4 of SW2 sets the protocol of the serial interface. On = GVG10XL, OFF = USI RCP-1.

Notes and additional procedures

- For more details on how to change the port settings and protocol, follow the steps in section 1 of the BPS-2020 guide.
- If the Clean Quiet module is installed then a video reference must be applied to one of the eight inputs. It must be a constant HD/SDI video source like black or bars for the video format to be used with that channel. This source must be locked to house reference. Example: If the channel is going to be HD1080i then a source coming from the house generator that is 1080i such as black or bars will need to be connected to the reference input on the MC2020.
- To configure the reference port and all other ports connect to the RJ45 serial port located on the front of the video card using the RJ45 to 9 pin adapter labeled 'UT400' (provided with system). Use terminal program such as TeraTerm or HyperTerminal and remote in serially. Baud rate and parity is 38400 8N1 with no flow control. Follow the menu item for configuring the inputs. Note: for more details on how to set up the inputs and ports refer to section 2 of the BPS2020 guide.
- If the BPS2020 is a 16 input system then an additional Bypass video card is required. In this case the lower inputs on the rear panel become inputs 8-15 and the upper ones remain 0-7.
- If attaching to a standard 9 pin PC port for RS232 simply use a straight through 9 pin cable.

(AES Connections – see chart on next page for pin outs)

AES Connectors – Labeled 'Audio Ins and Outs'. Each port can be used with up to 8 channels (4 pairs) of AES audio for all input, output and monitor use.

(GPI Connections)

GPI's (8) – Labeled 'GPI'. Only GPI 7 and 8 are used and can be configured from the terminal port to switch any of the eight bypass inputs from an external device (see note above). These are switched by applying a contact between the inputs labeled COM and the GPI number 7 or 8 that needs to be switched. Note: a reset of the video input controller card can be performed from the inputs labeled reset by applying 5 volts across the two pins.

(Tally)

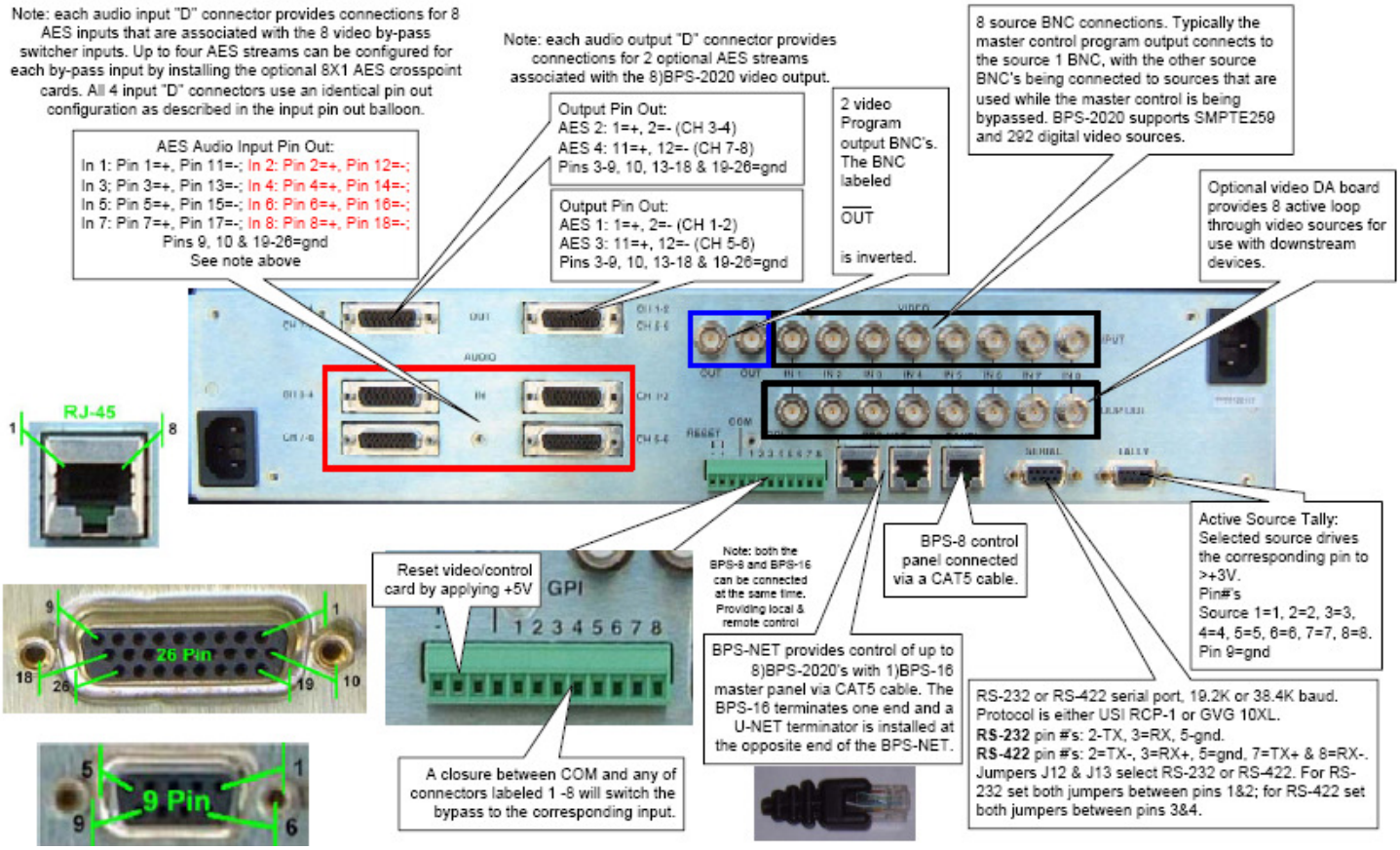
Tally Port – Labeled 'TALLY'. This 9 Pin D-SUB connector is used for connection to a tally system to show which input of the BPS is active. When the signal polarity is low then the button is off and when the polarity is high then the button is on. Lows are less than 5V and highs are greater than 3V.

(BPS-NET)

BPS-NET Port – Labeled 'BPS-NET' and is used to daisy chain up to seven additional BPS-2020 routers. A single standard CAT5 cable is connected on one port and from the first router and to the BPS-NET of the next panel. A Unet terminator must be placed in the second port on the first router and another terminator must be placed in the unused port of the second router. Note: If more than one additional router is to be used then continue daisy chaining from the second port of the second router to the next router and terminate the unused port at the end of the chain of routers.

(BPS-8)

BPS-8 Port – Labeled 'PANEL'. This port is to be connected to an external 8 button control panel using a standard CAT5 cable.


Note: each audio input "D" connector provides connections for 8 AES inputs that are associated with the 8 video by-pass switcher inputs. Up to four AES streams can be configured for each by-pass input by installing the optional 8X1 AES crosspoint cards. All 4 input "D" connectors use an identical pin out configuration as described in the input pin out balloon.
AES Audio Input Pin Out:
In 1: Pin 1=+, Pin 11=-; In 2: Pin 2=+, Pin 12=-;
In 3: Pin 3=+, Pin 13=-; In 4: Pin 4=+, Pin 14=-;
In 5: Pin 5=+, Pin 15=-; In 6: Pin 6=+, Pin 16=-;
In 7: Pin 7=+, Pin 17=-; In 8: Pin 8=+, Pin 18=-;
Pins 9, 10 & 19-26=gnd
See note above
Note: each audio output "D" connector provides connections for 2 optional AES streams associated with the 8)BPS-2020 video output.
Output Pin Out:
AES 2: 1=+, 2=- (CH 3-4)
AES 4: 11=+, 12=- (CH 7-8)
Pins 3-9, 10, 13-18 & 19-26=gnd
Output Pin Out:
AES 1: 1=+, 2=- (CH 1-2)
AES 3: 11=+, 12=- (CH 5-6)
Pins 3-9, 10, 13-18 & 19-26=gnd
2 video Program output BNC's. The BNC labeled
OUT
is inverted.
8 source BNC connections. Typically the master control program output connects to the source 1 BNC, with the other source BNC's being connected to sources that are used while the master control is being bypassed. BPS-2020 supports SMPTE259 and 292 digital video sources.
Optional video DA board provides 8 active loop through video sources for use with downstream devices.
RJ-45
1
8
9
1
26 Pin
18
26
19
10
5
1
9 Pin
9
6
Reset video/control card by applying +5V
GPI
1 2 3 4 5 6 7 8
A closure between COM and any of connectors labeled 1 -8 will switch the bypass to the corresponding input.
Note: both the BPS-8 and BPS-16 can be connected at the same time. Providing local & remote control
BPS-NET provides control of up to 8)BPS-2020's with 1)BPS-16 master panel via CAT5 cable. The BPS-16 terminates one end and a U-NET terminator is installed at the opposite end of the BPS-NET.
BPS-8 control panel connected via a CAT5 cable.
Active Source Tally: Selected source drives the corresponding pin to >+3V.
Pin#'s
Source 1=1, 2=2, 3=3, 4=4, 5=5, 6=6, 7=7, 8=8.
Pin 9=gnd
RS-232 or RS-422 serial port, 19.2K or 38.4K baud. Protocol is either USI RCP-1 or GVG 10XL.
RS-232 pin #'s: 2-TX, 3=RX, 5-gnd.
RS-422 pin #'s: 2=TX-, 3=RX+, 5=gnd, 7=TX+ & 8=RX-.
Jumpers J12 & J13 select RS-232 or RS-422. For RS-232 set both jumpers between pins 1&2; for RS-422 set both jumpers between pins 3&4.

ESI2020

(Serial Ports – see chart on next page for pin outs)

Serial Ports (12) – Labeled 'PORT 1 - 12'. There are 12 ports that are used for connecting either straight to machines or up to six machines and six automation controlled devices. Use standard CAT5 cable to connect between the serial port and the RJ45 to 9 pin adapter (provided with system and labeled) that either connects to the machine or the automation computer.

Notes and procedures

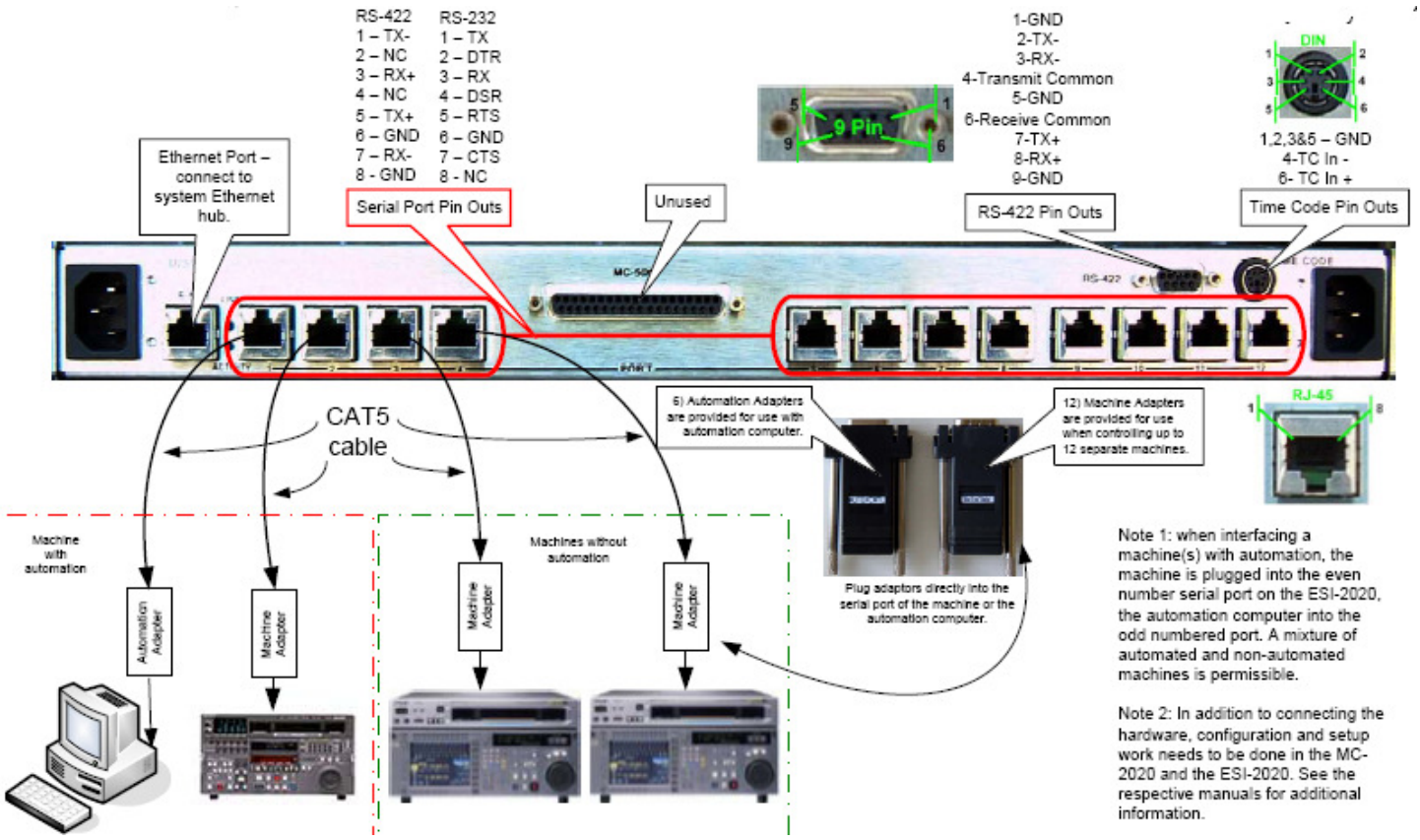
- When automation is used to control machines then the automation computer must be connected to the odd numbered ports and the machines must be connected to the even numbered ports. Note: Refer to chapter 3 in the ESI-2020 guide on how to configure the ports.

(Ethernet)

Ethernet Ports (1) – Labeled 'E-NET' and is setup using the 'chassis' commands from a terminal either over a Telnet session to the ESI2020 or via the diagnostics port on front of the device. (Refer to the System Installation Guide Appendix D). This port must be connected to the same LAN that the MC4000, MC2020, MC400 or MC40 is on and must be on the same subnet.

(Time Code In)

Time Code – Labeled 'TIME CODE'. This port can be connected to the house clock for accurate time code read out and for use in comparing the automation time with events in the log files. The AES Ref is unused.



UT400 DATA

(Serial Ports – see chart on next page for pin outs)

Serial Ports (64) – Labeled ‘PORT 0 through PORT 63’. These ports are used to connect to RS422 devices for machine control such as VTR’s, whether used as remote or local equipment as well as controlling devices which are always used to control other devices.

Notes and procedures

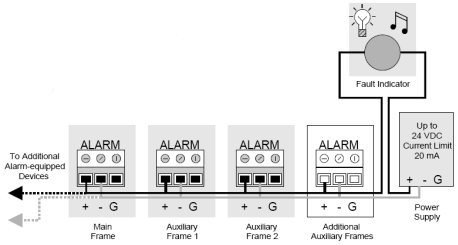
- Make sure level in UCON is created as ‘Auto Disconnect’.
- There are eight attributes that can be set for each destination port. The four that end in ‘Std’ are used if the cables are built per the manual which is most common. Use Tributary for all devices that are to be controlled. Use Controller for all devices that will control. If all devices can be in either mode then use Auto Dst or Auto Src. Use Dst or SRC depending on how the control devices are selected from the control panel.
- All input and output ports must be setup with the exact same port name and number and programmed into the SC4/400 with the UCON software application. (Refer to the ?? guide on how this is to be done)
- There are no diagnostic menu items for configuration or setup. All of this is done via the SC4/400 control system.
- There are four sizes of data routers that can be used. Each of these must be attached using the chart layout below for ports A, B and C. The sizes are 64, 128, 192 and 256.

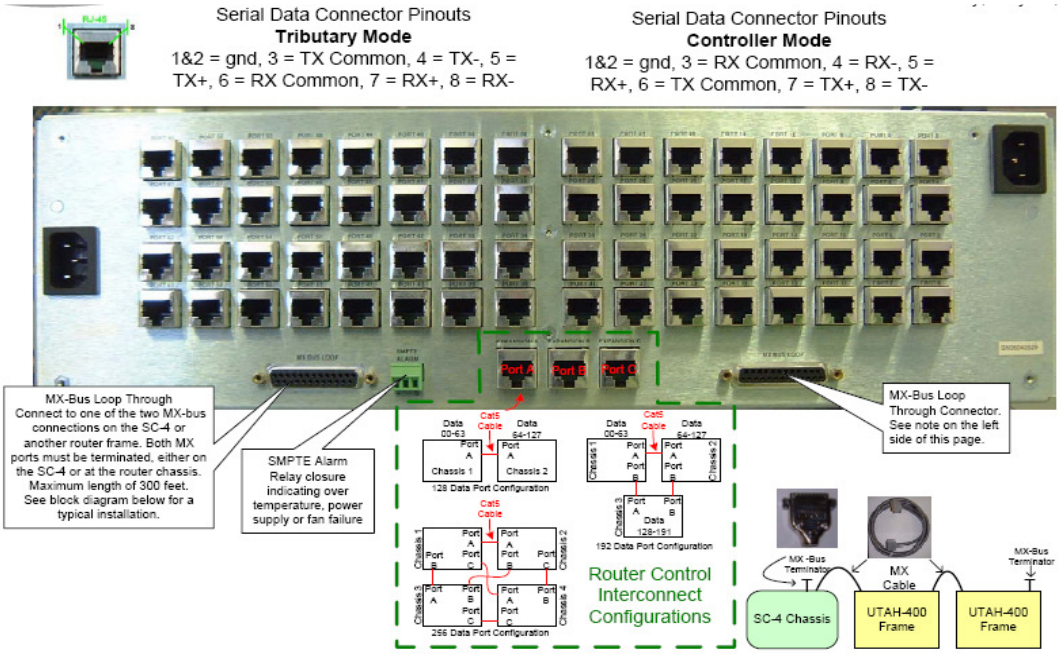
(MX Bus)

MX Ports (2) – Labeled ‘MX-BUS’. Used for connecting all UT-200, UT300 and UT-400 router models. Either port may be used to daisy chain to all routers using proper MX cables. Standard 10’ length cables are provided with each router. Custom cables may be purchased for longer lengths. Note: There must be two terminators (provided with SC4/400) applied across the overall MX chain which is not to exceed 300’ feet.

(Alarm Port – see chart below for pin outs)

Alarm Port – Labeled ‘SMPTE ALARM’. This port can be wired to an audible device that will sound whenever a major alarm is activated on the SC4 such as a power supply failure or fan failure.



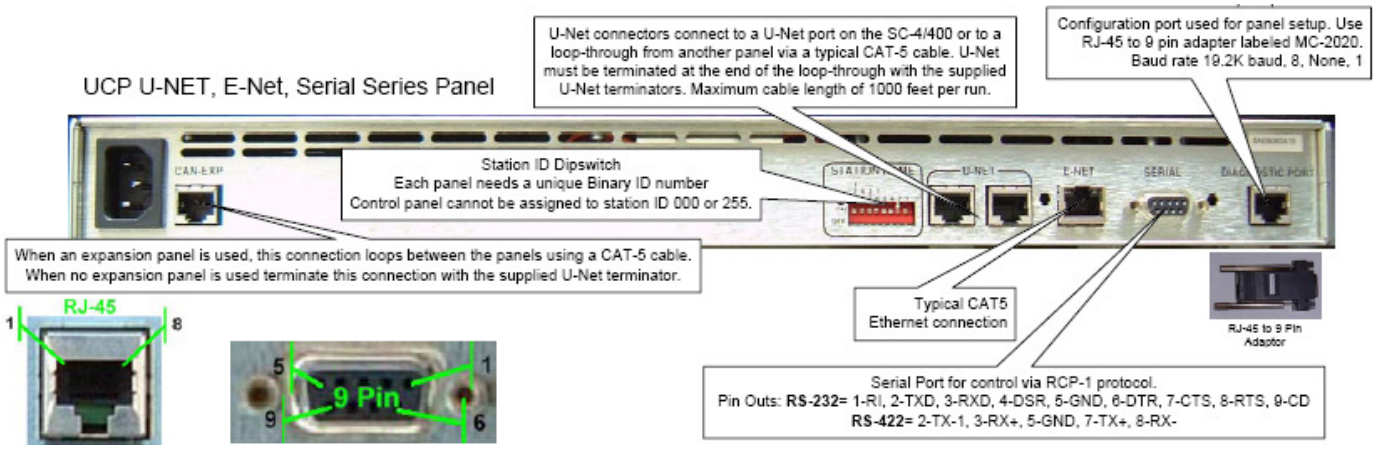


UCP (UNET, E-NET and SERIAL CONTROL PANEL)

Notes and procedures

- To check panel version, upgrade panel SW/FW and to set up panel functionality such as Ethernet, Unet and serial modes, use of the diagnostics port is necessary. Refer to the diagnostic connection chart found on the last page of this guide for cable pin configuration. Note: for more specific details refer to the UCP series guide related to the specific panel type to be used.
- Ethernet panels can be used on both local area networks or on wide area networks using standard Ethernet protocols for assigning subnets and gateways. Total of 256 panels can be connected to a single SC4/400 system.
- The RJ45 CAN bus port is used on select panel types for increasing the amount of input buttons using these panels. One example would be the UCP-64 panel type for adding multiple same type panels to increase the buttons by 64 with each expansion type.

(Ethernet)
Ethernet Ports (1) – Labeled 'E-NET' and is setup using the diagnostics port. The menu must be accessed using the diagnostic port. Note: for more specific details refer to the UCP series guide related to the specific panel type to be used.
(U-NET)
U-NET Port (2) – Labeled 'U-NET'. Used for connecting directly to the SC4 or SC400 control system using standard 'straight through' CAT5 cable. Note: Port must have proper termination at the end of the chain either if it is used alone or if other Unet devices are looped through.
(Serial)
Serial Port (1) – Labeled 'SERIAL'. This port is used solely for remote switching either by direct connect or using modems from one location to another.
(Station Number)
Station Node ID – Labeled 'Station Name'. This dip switch setting must be set to a unique number which is different than all other Unet panel or MC numbers. Note: The dip switch settings add up using the numbers on the metal and the switch needs to be moved towards those numbers. Example: Node number 7 would have switches 1, 2 and 4 all moved toward the number on the metal and all other switches moved to the other position.



SC3

Serial Ports 1-4 – Labeled COMM Port 1 through COMM Port 4. All are configurable and usable as RS232 or RS422.
Third Party Ports 1-8 – Labeled '3rd Party Router Control 1 through 8'. All are configurable and usable as RS422 only. These are used specifically for GV Horizon and Nvision Probel routers but can also be used from any automation system that uses the RCP1 protocol.
How to select RS232/422 – This is set using the RMS software and only for the 25 pin ports. Go to Panels\CSP Tables and select the desired port 1-4 only from the UDI Object Status drop down window. Then choose the soft setting of RS232/422 just below the baud rate selections. Note: if these settings are already set and need to be changed then you must first 'Destroy' the object just below all the settings and then 'Create' the object and put the values all in as new.
How to change Baud/Parity - This is set using the RMS software for all serial ports. Go to Panels\CSP Tables and select the desired port 1-4 or 3rd Party 1-8 from the UDI Object Status drop down window. Then choose the baud rate and parity settings from the drop down windows just below this section. Note: if these settings are already set and need to be changed then you must first 'Destroy' the object just below all the settings and then 'Create' the object and put the values all in as new.

PORT PIN OUT for 25p	
RS232pins	RS422pins
TX = (2) RX = (3) GND = (7)	TX+ = (9) TX- = (11) RX+ = (18) RX- = (25)

PORT PIN OUT for 9p	
RS232pins	RS422pins
Unused	TX+ = (2) TX- = (7) RX+ = (8) RX- = (3)

PROTOCOLS	SERIAL PORT Default Baud	Default Parity
RCP-1 (Serial) RCP-3 (E-NET)	Odd ports 38400 Even ports 19200	Odd = 8N1 Even = 7E2

Notes and additional procedures

- The diagnostics port is used specifically for viewing and setting IP addresses in the SC3. Note: IP addresses are stored on each of the SC3 cards and that card must be active when using the remote diagnostics port. Use the pin out chart at the end of this guide for details on connecting to the diagnostics port. For more details contact Utah Scientific and request the SC3 Remote Diagnostics guide.
- Unet ports are enabled using the RMS software under the section called 'Panels\SCP Tables'. Here you must create the object with the correct router size and then build the mapping tables according to the different levels.
- Party Line ports are enabled using the RMS software under the section called 'Panels\CSP Tables'. Here you must create the object with the number of panels and the correct router size and then build the mapping tables according to the different levels.

(Party Line)
Party Line Ports (4) – Labeled '1 through 4'. Used for connecting to legacy style CSP control panels using coax cable and can be daisy chained up to 128 panels across all 4 ports in no particular order. Note: Ports are not to have termination as these are data ports and it will lock up the SC3 control system.
(U-NET)
U-NET Ports (8) – Not Labeled. Used for connecting all Master Control systems as well as legacy SCP control panels using standard 'straight through' CAT5 cable. Capable of connecting up to 32 panels on each port using daisy chain method for

a total of 256 overall. Total overall length of CAT5 should not exceed 1000' feet. Note: UCP style panels are not functional with an SC3. Note: Ports must have proper termination at the end of each chain of panels using the terminators provided with the system.

(SYNC)

SYNC Ports (2) – Labeled '525 SYNC and 625 SYNC'. Used for connecting house sync to provide correct vertical interval switching to all routers connected via MX bus to the SC4. Recommended application is analog black and terminated with a 75 ohm termination. 525 Sync is used for NTSC and 625 are used for PAL. Note: The default is 525. If 625 needs to be configured then this is done using the sync table in the RMS software. Go to the UT300 router type on the left in RMS and then click the tab called 'Sync Source Table'. Click on each blue square for the desired outputs found on the left that require 625. The square should turn green. Then click 'Set Table' when done to send the changes to the SC3.

(MX Bus)

MX Ports (2) – Labeled 'MX'. Used for connecting all UT-200, UT300 and UT-400 router models. Either port may be used to daisy chain to all routers using proper MX cables. Standard 10' length cables are provided with each router. Custom cables may be purchased for longer lengths. Note: There must be two terminators (provided with SC3) applied across the overall MX chain which is not to exceed 300' feet.

(SC Bus)

SC Ports (2) – Labeled 'SC BUS'. There are two 9 pin ports used to connect to AVS-2 style router chassis. These can be daisy chained between chassis or can be separately ran to both ports. An SC Bus terminator must be placed at the end of both ports regardless of how the various routers are connected.

(Ethernet)

Ethernet Ports (1) – Labeled 'Ethernet' and is setup either over a Telnet session to the SC3 or via the diagnostics port on the front of the card. A menu will appear once the connection is made. Refer to the cable pin out for the diagnostics port found at the end of this guide.

(Alarm Status)

Alarm Port – Labeled 'ALARM STATUS'. This port can be wired to an audible device that will sound whenever a major alarm is activated on the SC3 such as a power supply failure or fan failure.

NO QUICK START PICTURE IS AVAILABLE

UT200 (WITH SC200)

(Serial Ports – see chart on next page for pin outs)

Serial Ports (2) – Labeled 'RS232 and RS422'. Both are configurable and usable as RMS200 and UDI protocols. Each is only usable as what they are electrically as RS232 and RS422.

How to change Baud/Parity – This can only be done from the diagnostics port if there is not a UT200 control panel or from the display menu on the UT200 control panel. Go to the SC4 icon in the UCON software, right click on it and select configure. Go to serial ports and change settings. Note: ports are labeled on the chassis and match in the software.

Note: RCP-3 protocol is used over the Ethernet port and there is no setup required.

Notes and procedures

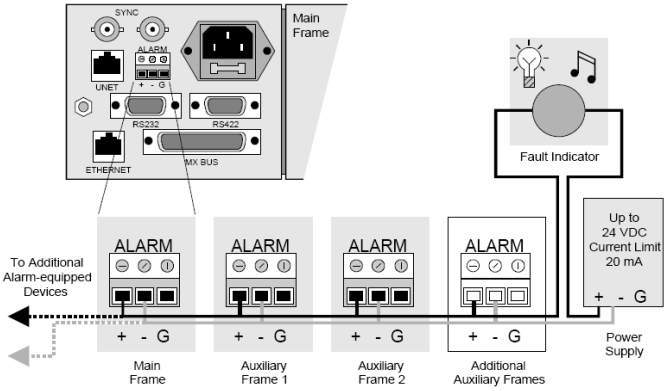
- RMS200 can be used either over Ethernet or serially from one of the serial ports. If an Ethernet module is not installed on the SC200 then RMS200 can only be used over the serial port. Note: Unless the PC using RMS200 has an RS422 port (which most don't) then it must be used in RS232 mode. And if automation is used over RS232 then you will need an Ethernet module in order to use RMS200.

(Sync)

Ports (2) – Labeled 'SYNC'. Two connectors are provided for a sync reference signal which should be analog black burst. One for input and one for loop-through (either can be used). If black burst is not looped to another device in your system, the open connector must be terminated (standard 75 ohm terminator).

(Alarm)

Alarm Port – Labeled 'ALARM' This port can be wired to an audible device that will sound whenever a major alarm is activated on the SC4 such as a power supply failure or fan failure.



(U-NET)

U-NET Ports (1) – Labeled 'UNET'. Used for connecting UT200, UCP32 and UCP-SD16 control panels using standard 'straight through' CAT5 cable. Capable of connecting up to 32 panels using daisy chain method. Total overall length of CAT5 should not exceed 1000' feet. Note: Port must have proper termination at the end of the chain of panels using the terminator provided with the system. Note: UCP style panels are not functional with this controller.

(Ethernet)

Ethernet Ports (1) – Labeled 'ETHERNET' and is setup using the diagnostics port from a terminal either over a Telnet session to the SC200 (Ethernet module required) or via the diagnostics port on the front of the card. The Ethernet connector (RJ-45) is used for communications with the RMS-200 application. Note: An optional Ethernet module must be installed on the SC200 card for this port to work.

(MX Bus)

MX Ports (2) – Labeled 'MX'. Used for connecting up to eight levels of UT-200 routers. Either port may be used to daisy chain to all routers using proper MX cables. Standard 10' length cables are provided with each router. Custom cables may be purchased for longer lengths. Note: There must be two terminators (provided with SC200) applied across the overall MX chain which is not to exceed 300' feet. If only one router is used then the terminators must be applied to only that frame.

RS232 Connector Pinouts

The table below lists pinouts for the RS232 connector.

RS232 Connector Pinouts

Pin #	Signal	Pin #	Signal
1	Ground	6	RS232 DTR
2	RS232 TX	7	RS232 CTS
3	RS232 RX	8	RS232 RTS
4	RS232 DSR	9	no connection
5	Ground		

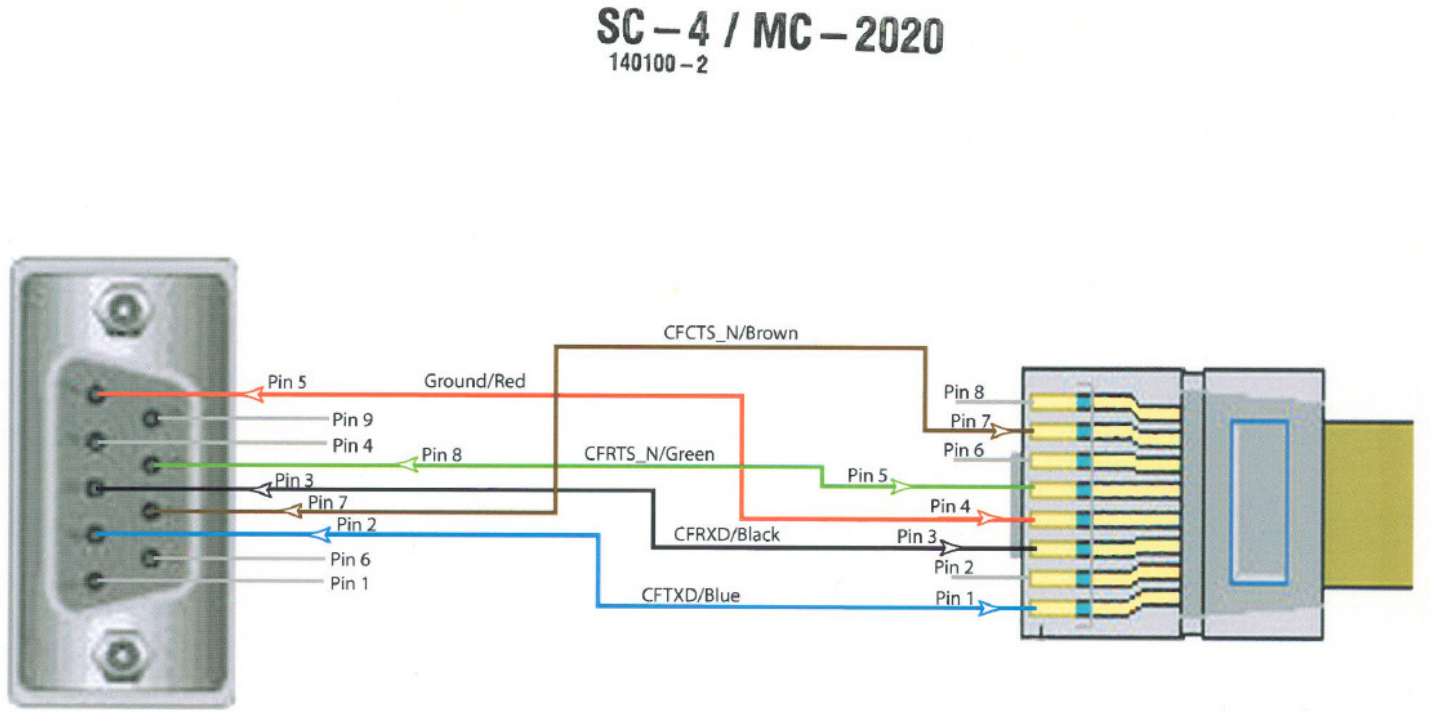
RS422 Connector Pinouts

The table below lists pinouts for the RS422 connector.

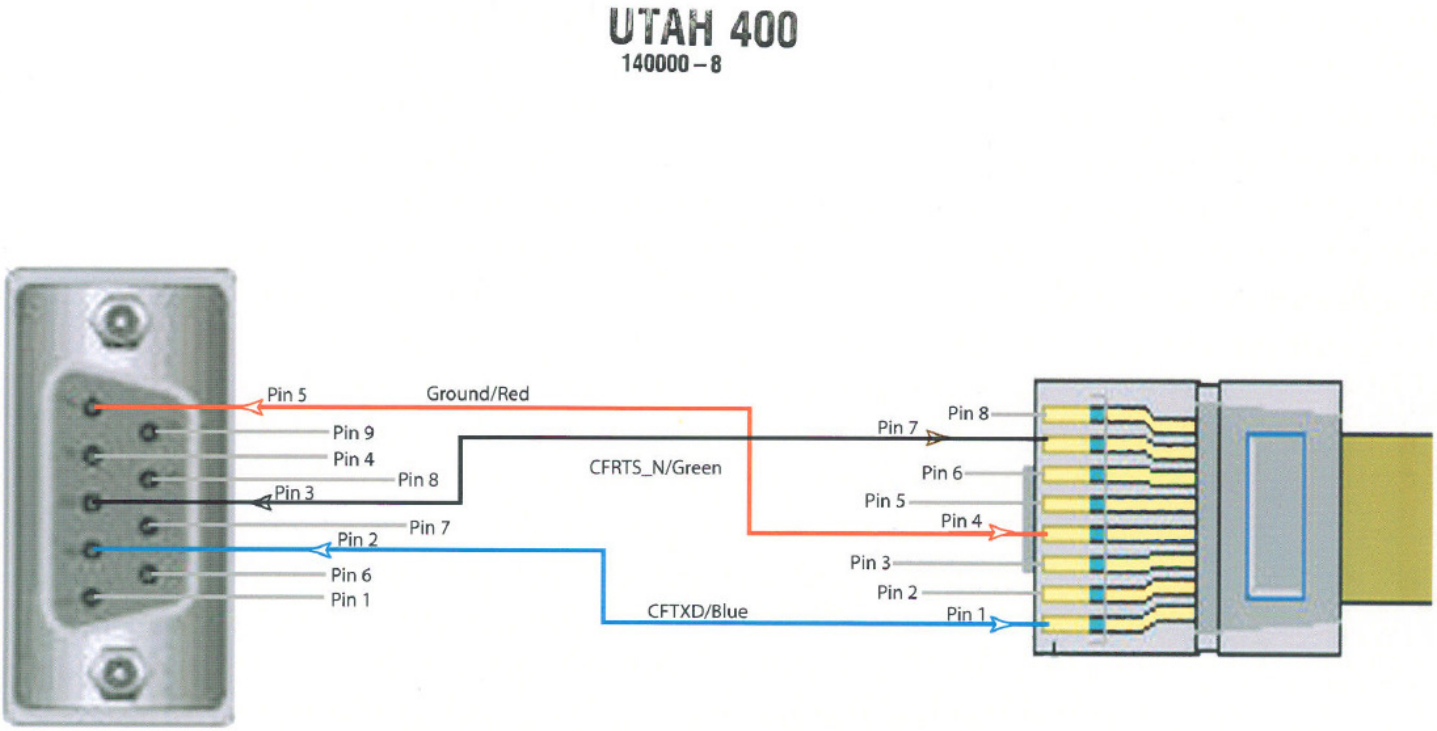
RS422 Connector Pinouts

Pin #	Signal	Pin #	Signal
1	Ground	6	Ground
2	RS422 TX+	7	RS422 TX-
3	RS422 RX-	8	RS422 RX+
4	Ground	9	Ground
5	no connection		

SC4 ADAPTER



UT400 ADAPTER



DIAGNOSTIC PORTS, SETTINGS and PIN OUT CHARTS

NOTE: These are serial ports and use standard serial cable (9 or 25 pin). Use TeraTerm (serial connection) program to access all of these devices. TCP connection can be used if IP address is known for all devices.

Serial Connector	**SC3**	**SC4/SC400**	**SD2020/ HD2020**	**MC4000**	**MCP400/40**	**UT400 Crosspoint**	**MCP2020**	**ESI-2020**
Port	Comm 0	RJ45 port	RJ45 port	RJ45 port	RJ45 port	RJ45 port	RJ45 port	RJ45 port
Baud Rate	38400	19200	19200	19200	19200	38400	19200	19200
Parity	8N1	8N1	8N1	8N1	8N1	8N1	8N1	8N1
Cable	25-9p null	CAT-5	CAT-5	CAT-5	CAT-5	CAT-5	CAT-5	CAT-5
Adapter	none	RJ45-9p	RJ45-9p	RJ45-9p	RJ45-9p	RJ45-9p	RJ45-9p	RJ45-9p
Part #	none	140100-2	140100-2	140100-2	140100-2	140000-8	140100-2	140100-2
Cbl/Adapt Pin Out	2-2;3-3;7-5	1-2,3-3,4-5 ,5-8,7-7	1-2,3-3,4-5, 5-8,7-7	1-2,3-3,4-5, 5-8,7-7	1-2,3-3,4-5, 5-8,7-7	1-2,7-3,3-5	1-2,3-3,4-5 ,5-8,7-7	1-2,3-3,4-5,5-8, 7-7
Serial Connector	**MXLATOR**	**UCP Panels**	**UT400 DATA**	**UT200 SC200**	**PL160/320**	**SC-1/SC-2**	**SCP Enet Panel**	**PC Port Pins**
Port	RJ45 port	RJ45 port	RJ45 port	9 pin port on SC200	Terminal	Sys Term	9 pin on Rear	RS232 Only
Baud Rate	19200	19200	????	38400	Selectable	Selectable	19200	
Parity	8N1	8N1	????	8N1	72E	72E	8N1	
Cable	CAT-5	CAT-5	CAT-5	straight cbl	25-9p null	9-9p null	9-9p strght	
Adapter	RJ45-9p	RJ45-9p	RJ45-9p	none	None	None	none	
Part #	140100-2	140100-2	????	none	None	None	none	
Cbl/Adapt Pin Out	1-2,3-3,4-5, 5-8,7-7	1-2,3-3,4-5, 5-8,7-7	????	2-2;3-3;5-5	2-2;3-3;7-5	2-3;3-2;5-5	2-2;3-3;5-5	TX(3) RX(2) GND (5)