E-1 Digital Control Surface

TECHNICAL MANUAL

Wheatstone Corporation

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Attention!

Federal Communications Commission (FCC) Compliance Notice:
Radio Frequency Notice

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take appropriate measures.

This equipment must be installed and wired properly in order to assure compliance with FCC regulations.

Caution! ***Any modifications not expressly approved in writing by Wheatstone could void the user's authority to operate this equipment.***

Attention!

PSE-1 Power Supply

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. This equipment must be installed and operated in a dry location free from dripping or splashing liquids. No objects filled with liquid (such as beverage containers and the like) shall be placed on or near the unit.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into an apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. DISCONNECTING DEVICE FROM MAINS – Main power cord plug is the disconnecting device. The power plug of an installed unit must remain readily accessible/operable at all times.

WARNING!

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

c UL us LISTED
(PRODUCT IDENTITY)
8D48

Attention!

PSE-1 Alimentation

Consignes De Sécurité Importantes

1. Lire ces instructions.
2. Conserver ces instructions.
3. Observer tous les avertissements.
4. Suivre toutes les instructions.
5. Ce matériel doit être installé et utilisé dans un endroit sec à l'abri d'éclaboussures de liquides ou de gouttes. Aucun objet rempli de liquides tel que breuvages ou autres, ne doit être placé sur le dessus ou à côté de cet appareil.
6. Nettoyer uniquement avec un linge sec.
7. Ne pas bloquer les ouvertures de ventilation. Installer d'après les instructions du manufacturier.
8. Ne pas installer près de sources de chaleur tels que des radiateurs, registres de chaleur, poêles ou autres appareils (incluant les amplificateurs) pouvant de la chaleur.
9. Ne pas contourner le dispositif de sécurité de la fiche polarisée ou de mise à la terre. Une fiche polarisée a deux lames dont une plus large que l'autre. Une fiche de terre a deux lames et une troisième broche de mise à la terre. La lame large ou la troisième broche est fournie pour votre sécurité. Si la fiche fournie ne rentre pas dans votre prise, consultez un électricien pour le remplacement de la prise obsolète.
10. Protéger le cordon d'alimentation en évitant qu'il ne soit piétiné ou écrasé notamment au niveau des fiches et le point de sortie de l'appareil.
11. N'utiliser que les fixations et accessoires spécifiés par le fabricant.
12. Débrancher cet appareil pendant les orages ou lorsqu'il n'est pas utilisé pendant de longues périodes de temps.
13. Confier toute réparation à un personnel qualifié. Une réparation est nécessaire lorsque l'appareil a été endommagé de quelque façon que ce, soit tel que : le cordon d'alimentation ou la fiche est endommagée, du liquide a été renversé ou des objets sont tombés dans l'appareil ou celuici a été exposé à la pluie ou à l'humidité ou ne fonctionne pas normalement ou s'il est tombé.
14. DÉBRANCHEMENT DE L'APPAREIL DU SECTEUR – Le cordon d'alimentation principal est le dispositif de déconnexion. Le cordon d'alimentation d'une unité installée doit rester facilement accessible / utilisable à tout moment.

ATTENTION!

Pour réduire le risque d'incendie ou de choc électrique, ne pas exposer cet appareil à la pluie ou à l'humidité.

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(PRODUCT IDENTITY)
8D48

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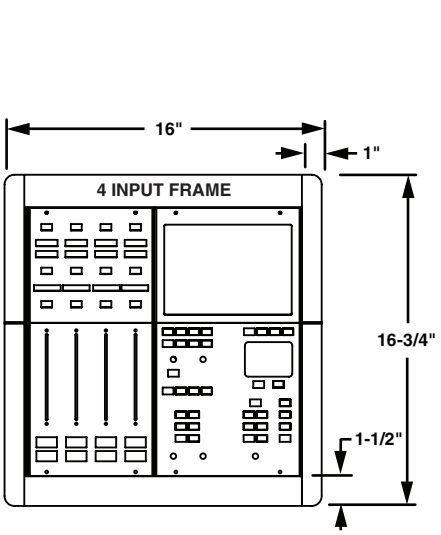
General Information

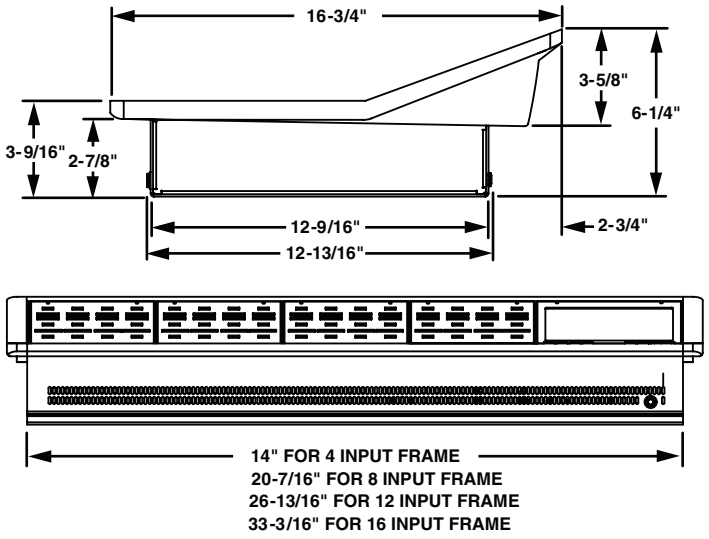
Introduction

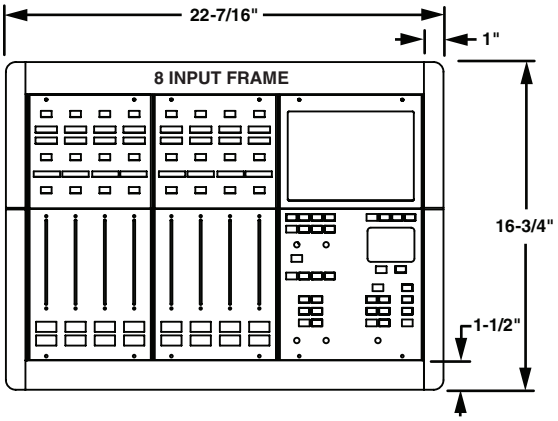
Evolution 1 is a new control surface that revolutionizes small footprint networkable consoles by including an integrated LCD display that eliminates the need for an external video monitor while still providing all the metering and control access needed in a surface of its class. Offering the full functionality of Wheatstone's large E-Series surfaces, the E-1, when paired with the WheatNet-IP 88cb audio console Blade/mix engine, creates a powerful networkable or standalone solution. Four mix output buses and individual fader bus minus with talkback are just two of the standard features. The E-1 also has event recall, three monitor outputs, and pan, and mode for each channel. It has an array of programmable master panel switches for customized functions like phone, intercom, salvos, or machine commands. The E-1 drives a LCD display, via the Embedded E-1 Graphic User Interface (GUI), providing hi-res REALTIME graphic displays, production tools, and set up screens (security protected by multilevel pass codes). An RJ-45 Audio Transport MIXER connector on the rear of the control surface serves as the link between the surface and the network system.

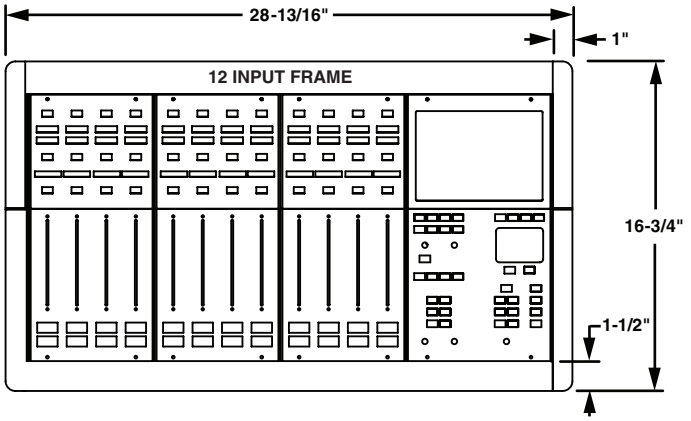
Unpacking and Installing the Control Surface

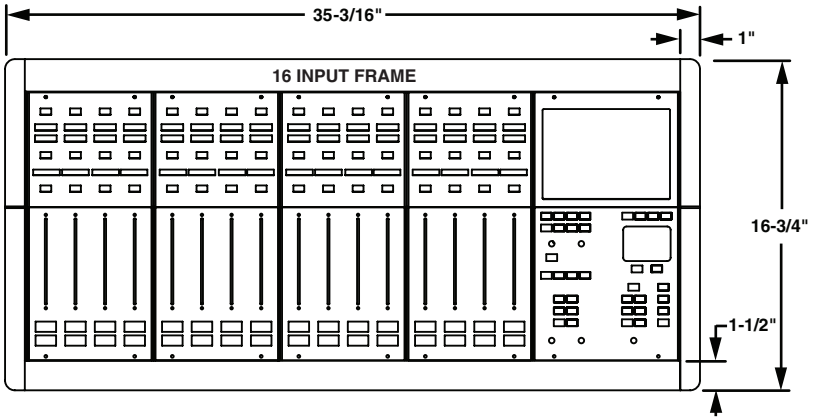
The E-1 digital audio control surface and its power supply are shipped in two packing boxes. One box contains the control surface and documention and the second box contains the power supply, power cord, and connecting cable. The control surface can be unpacked by one person by grasping the surface at both sides, and lifting it upward out of the box. Remove packing materials and store them in the box for future use. The E-1 is designed for simple drop-in installation in a counter top. Cutout dimensions (in inches) are shown in the drawings below. Avoid proximity to any electromagnetic fields, such as large power transformers, motors, and fluorescent lighting fixtures.











CUTOUT DIMENSIONS

4 INPUT FRAME - 14-3/8" x 13-1/8"
8 INPUT FRAME - 20-3/4" x 13-1/8"
12 INPUT FRAME - 27-1/8" x 13-1/8"
16 INPUT FRAME - 33-1/2" x 13-1/8"

Power Supply

Front view of the PSE-1 rackmount power supply

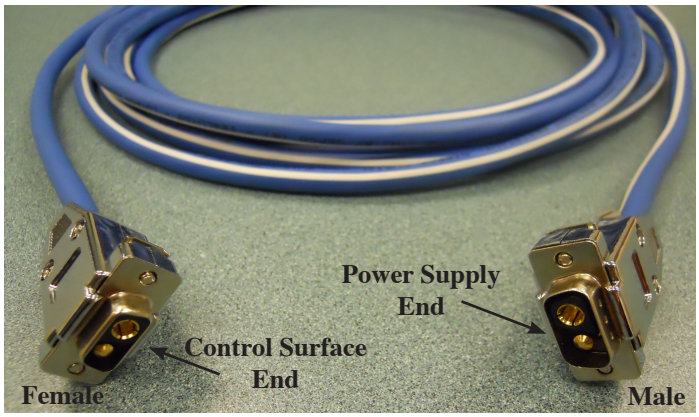
Rear view of the PSE-1 rackmount power supply

The E-1 control surface is powered by a Wheatstone Model PSE-1 rackmount power supply. This unit occupies a single 19" wide rack space. Convection cooled, it requires ample ventilation space above and below it.

Note the power supply (supplies) should be mounted in an equipment rack within fifteen feet of the control surface (but no closer than 3 feet). Avoid locating any high gain equipment (such as phono preamps, tape recorders, etc.) too near the rackmount supplies, to avoid magnetic interference into that equipment.

If failsafe redundant supplies have been ordered, you will be installing two PSE-1 units.

Once the supply is rackmounted, it should be connected to the control surface using the factory supplied cable. The cable has two "D-SUB 2V2" style connectors on it: a female connector that plugs into either one of the control surface's power supply connectors, and a male connector that plugs onto the power supply. In case of redundancy use two PSE-1 units. If you are using one supply, connect it to one of the control surface connectors (it doesn't matter which one). If you are using the failsafe option (two PSE-1 supplies), connect one end of a power supply cable to either control surface power connector and connect the other end of the cable to one of the two power supply units. Then use the other cable to connect the second power supply to the remaining control surface power supply connector.



Note each power supply is fitted with a 3-wire grounded AC cord that should be plugged into a "clean" AC power source, that is, an AC source that feeds only the control room audio gear. This source should be a separate feed from those powering lighting, air-conditioning, or any other non-audio machinery. The third pin ground wire of the AC source should be tied to the central system ground point.

The power feed recommended in the text is often installed and referred to in studios as an "isolated AC ground" outlet. It is usually orange in color.

Failsafe Dual Redundant Supply

Wheatstone failsafe power supply systems use two PSE-1 power supplies for each piece of powered equipment. Though either is capable of running a full load on its own, in failsafe operation both units run in tandem: if one fails, the other takes over, assuring uninterrupted operation.

In order for failsafe systems to perform as designed, always have BOTH rackmount supplies powered up and connected to their associated equipment.

Energizing

Assuming the E-1 control surface mainframe is properly placed, and its PSE-1 power supply (or supplies) correctly rackmounted and connected to the control surface, you may now energize the rackmount power supply by plugging it into the AC mains. The "GOOD" LED on the power supply front panel should light up to indicate the presence of the voltage. The control surface's switches will assume factory default settings.

Note: To de-energize the control surface, unplug the rackmount power supply's AC cord from the AC mains. ***Never de-energize the control surface by disconnecting the cable that connects the control surface and power supply together.***

Once you have verified proper power-up, unplug the rackmount power supply to de-energize the control surface. You may now proceed to wire up audio and control connections.

I/O Connections

All user wiring to and from the E-1 control surface is made via connectors located on the control surface's rear panel. Two 2-pin "D-SUB 2V2" style connectors at the center of the control surface's rear are for power supply connections. An external stereo, line level headphone signal plugs into the female DB-9 connector, located next to power supply jacks. This signal is routed to internal amplifiers that feed the headphone jack, located on the front right-hand side of the surface's pan. There are two RJ-45 connectors; the one labeled ENET connects to a standard Ethernet network switch and the MIXER connector connects to a specific DSP card in an E-Series SAT cage. A PS-2 connector for keyboard rounds out the rear panel. The photo below shows connector locations. For all wiring pinout connections refer to Chapter 4.

Getting Started

The E-1 control surface comes with the E-1 Embedded Graphical User Interface (GUI) program, intended to be straightforward in use, controlling and displaying graphics, production tools, and set up screens. All controls of the GUI's main screen are in fixed positions, except that the FUNCTION DISPLAY area contents change according to selected function.

Power up the surface, and the GUI will appear on the LCD display. The surface's Master Panel has a built-in touch pad to control the mouse pointer on the VGA screen for system software navigation.

We will also refer throughout this manual to the Navigator program. This program, which runs on a user-supplied PC running Windows XP, complements the embedded surface GUI program, providing additional programming and control functionality. Read more about Navigator in the *WheatNet-IP Audio Over IP Network* technical manual.

Log-In

When the surface boots, it enters the log in level that was last accessed. Look in the lower left corner of the VGA screen to see the button that display the current ACCESS AUTHORIZATION level. Pressing this button opens the PASSCODE ACCESS window. Select a user level - *Intern, Operator, Production, or Engineering* - with the mouse, then enter a numeric pass code and press the OK button. All default passcodes are "111." Please see the *Master Panel - Control Modes* section of this manual for detailed information regarding passcodes.

Tabbed Navigation

The E-1 features a "tabbed" navigation architecture to easily access features with a minimum number of mouse clicks. There are a few subtleties you need to be familiar with to efficiently get around the tabbed software screens. This section introduces you to the tabs; detailed function information is included in the *Input* and *Master* panel sections.

The E-1 VGA monitor is vertically divided into two halves with a METERING PANE on the left side and a FUNCTION PANE on the right side. The Main Menu Tab buttons are located across the top of the function display area. You may access any of the Main menu Tabs by simply clicking on them. To access Input functions you can also press an Input SET button, and the Function Pane will jump to settings for that input fader strip.

Notice the "Button Bar" at the bottom of the Input screen. You can access powerful programmable features here.

Main Tab - displays Timer/Clock, Current Event, Switched Meter, and the External Sources for monitors.

Input Tab - displays interactive Source window, Mode, and Pan settings for the selected channel. Note you must press an Input fader's SET button to show the settings for that channel, or click on a CHANNEL STATUS button in the lower left side of the VGA to access any fader.

Input Button Bar - click on *Source, VDip, Load, and Save* to access these features, described later.

Events Tab - the E-1 can store a "snapshot" of the entire control surface in a file called an EVENT. The Event Pane is divided into two sections. The Event Recall section lets you recall previously saved Events. The Event Editor is a manager for creating, editing, and deleting Events. Optional permissions let you limit access to Event Recall and Event Editor functions.

Options Tab - a wide variety of programmable options are found here to customize the E-1 for your application.

Note: Each Tab is described in detail in subsequent manual sections.

Surface Software Version

In the event that you need to consult the factory about the E-1 control surface, you may need to have the surface software version number available. Click the Wheatstone logo on the top of the start-up screen to display the "INFORMATION" form, which shows technical information about the surface's software version and connection status to its companion rack MT link, Ethernet link, and automation interface.

Input Panel (IPE-1)

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Input Panel (IPE-1)

Controls and Functions

Each input panel of the E-1 digital audio control surface has four identical strips representing four input channels. You control how each channel is set up by pressing physical switches on the surface and configuring software settings through the *Input* Tab.

A/B Button - Source Switching

The A/B button located at the top of each fader strip provides two different functions. The first use of the A/B button is as a source selector for the fader strip.

Each fader can be programmed to quickly switch between two different sources, designated as the A source and the B source. A quick press of the A/B button switches that fader between its A and B sources. The SOURCE display for that fader indicates the name of the source currently selected. Thus, if A is currently selected, its name is shown, and tapping A/B changes the source to the B source, and at the same time shows the new name in the display.

If you have the A source currently selected and have no source programmed as the B source, then a quick tap on the A/B button will switch off the A source to that fader, and the display will say NOSOURCE. If both A and B are programmed for the same source, tapping the A/B button will have no real effect.

Note that A and B designations are arbitrary, in the sense that the operator will not know if the current source is A or B, but will know only the name of the currently selected source, which is, after all, the important piece of information.

A/B Button - Select Mode

Aside from the A/B button, the fader strip has several other controls. Channel on and off, fader level, cueing, talkback, and output assign can all be done from the fader strip, and these functions are addressed in more detail below. However, there are other functions we may want to adjust for each fader. These additional functions are controlled from the master panel. But how does the master panel know which fader it's adjusting?

Press the fader's A/B switch and hold it until the button lights (as opposed to tapping it for source switching). This switches the VGA screen to the *Input* tab for this fader, where you can change the programmed sources for A and B, select the fader mode, adjust panning, and set up VDip. All of these functions are covered in the following paragraphs, with the exception of VDip, which is discussed in the next chapter on the master panel.

You can deselect the selected fader by pressing and holding the A/B button until the light goes out. You can also select a fader from the VGA screen by clicking on the CHANNEL STATUS button of the fader you want to select, or deselect an already selected fader by clicking on its CHANNEL STATUS button.

Once lit, the A/B button stays lit until you light A/B on a different fader, or deselect the fader, or until a timeout of approximately 20 seconds occurs. This timeout is optional, and can be defeated in the options text file, which is discussed in the appendix.

Input Tab Display

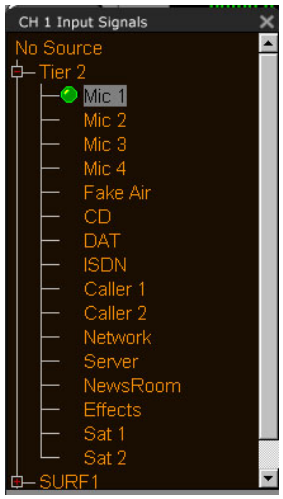
When you press and hold an Input fader's A/B button the Tab display switches to the *Input* Tab for that channel. You can click on various buttons to configure the channel for your application. Note that the Source window is interactive.

NOTE:
When A/B is pressed and held, the FUNCTION PANE displays the last feature selected from the Input Tab's "Button Bar" — Source - VDIP - Load - Save

A Button Bar located near the bottom of the *Input* Tab provides for navigation between the SOURCE, VDIP, and Preset LOAD-SAVE screens.

A typical *Input* Tab SOURCE screen is shown below, followed by descriptions for each of the functions. Other screens from the *Input* Tab are discussed at the end of Chapter 3.

Source Window

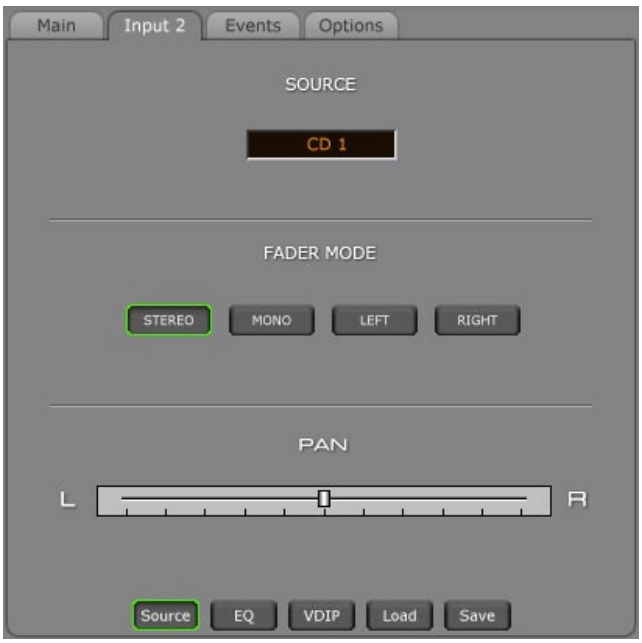


Click in the SOURCE window to open the signal tree. Highlight a source name in the tree and double-click to select it.

You may use the Visibility feature in Navigator to limit the signal list the user "sees" when selecting sources. This feature is especially useful in large systems with lots of sources.

Visibility for input sources can also be set from the surface. This procedure is outlined in Chapter 3.

Fader Mode Controls and Indicators



There are four available channel modes: Stereo, Mono, Left only, and Right only. Click on the desired mode and its virtual switch will light.

STEREO - selects stereo mode; Left in feeds fader L, right in feeds fader R. If a mono source is selected, it will feed both L and R.

MONO - selects mono mode. If a stereo source is selected it is summed to mono and reduced by 6dB.

LEFT (left only) - passes only the left channel of a stereo source to both L and R.

RIGHT (right only) - passes only the right channel of a stereo source to both L and R.

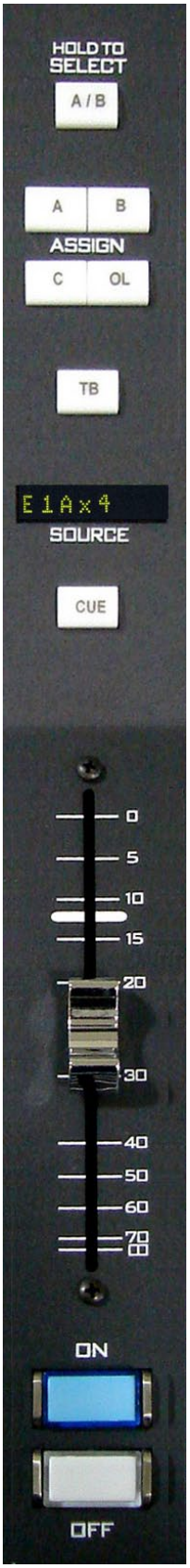
Pan

L/R - slider moves the signal left to right.

Save

The user can save all adjustments with the SAVE button. Pressing the SAVE button will bring up the "SAVE TO" form that allows all changes to be saved to a channel, a source, an event, or a preset.

Other Physical Switches and LEDs



Assign

Output switches assign the selected source signal to any combination of the surface's four stereo Program outputs—A, B, C, and D (also known as OL, or Off Line). The button will be lit when the source is assigned to its respective bus. To remove a source from the bus, press the button again; the light will go off to indicate that the source is no longer assigned to that bus.

TB Switch

The TB BUS- switch routes the TB BUS audio, typically the operator's microphone, to the BUS MINUS output for that channel, allowing the operator to talkback to the talent hearing that BUS MINUS signal.

LED Readout

An 8-character display shows the name of the audio source selected to the fader.

CUE Switch

The CUE switch assigns the selected source to the CUE bus, letting the control surface operator monitor the channel's pre-fader signal.

Bus-Minus / Direct Outputs

Each fader has a dedicated Bus-Minus output that includes all active faders on its selected source bus, except for itself. These auto generated monaural mix-minus signals may be routed to feed telephone hybrids, or other devices as required. Bus-Minus mix outputs for each surface fader appear as Sources in the Surface signal area of Navigator, typically. A typical Bus-Minus output signal name is *E1BM01* but the exact name depends on the fader and surface ID number.

Any of the four PGM busses may be selected in the VDip settings (see the section on VDIP Settings in Chapter 3) as the source bus. Also in VDip, the OL Bus (PGM D) may be selected as the source bus when the channel is off regardless of the bus selected as the (channel on) Bus-Minus source.

Another selection that can be made in VDip is to repurpose the fader's Bus-Minus output as a Direct Output.

Fader

Channel output level is set by a 100mm, professional, conductive plastic linear fader.

Channel ON Switch

The channel ON switch turns the channel signal ON and fires any channel ON (START) logic mapped with VDip to the fader's source signal. The switch LED lights to indicate the channel is ON.

Channel OFF Switch

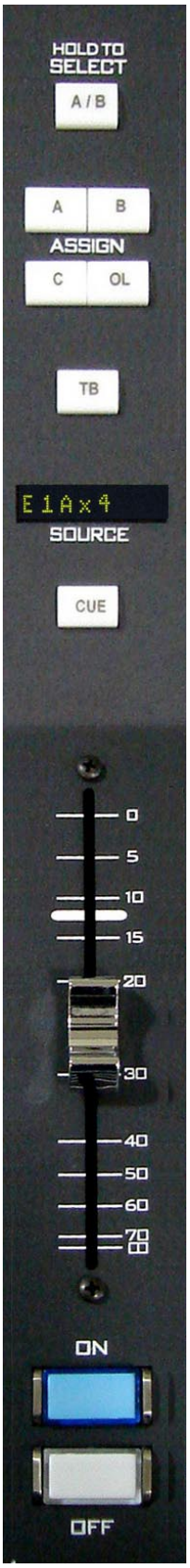
The channel OFF switch turns the channel signal OFF and fires any channel OFF (STOP) logic mapped with VDip to the fader's source signal. The switch LED lights to indicate the channel is OFF.

Channel Status Buttons Display

A row of numbered buttons along the bottom of the main VGA screen shows the status of each channel. When a channel is OFF with the fader down its corresponding button appears gray. If the fader is brought up with the channel remaining OFF the button turns yellow. If the channel is ON and the fader is down, or if the channel is ON with the fader up but not assigned to any of the four PGM buses, the button color becomes green. If the channel is ON, and the fader is up, and the channel is assigned to one of the four PGM buses, the button color becomes blue.

The CHANNEL STATUS button will also indicate a "logic lock" situation, which happens when a signal is assigned to multiple channels, either on the same surface or on different surfaces. As long as all of the affected channels are OFF there is no indication. But as soon as one of those channels is turned ON, the indicator, which consists of a padlock icon, will appear on the CHANNEL STATUS button of the rest of the affected channels. The purpose of the indicator is to tell the operator that the signal on that channel is in use elsewhere, and that logic control for the signal is owned by some other channel in the system. Operators should be made aware that logic associated with a signal will not act as expected when the logic lock indicator is ON.

When viewing the Input tab on the VGA screen, the CHANNEL STATUS buttons can also be used to select the channel that settings are displayed for.



Master Panel (MNE-1)

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Master Panel (MNE-1)

Controls and Functions

The E-1 digital audio control surface is equipped with one MASTER panel. This panel contains numerous controls, including INPUT SOURCE select, CUE control, TIMER control buttons, four PROGRAMMABLE buttons, and three MONITOR sections with buttons to select PROGRAM sources, plus two additional EXT (programmable) sources, as well as level controls. Add to that a TB button for STUDIO monitor, a group of four switches to deal with various operational modes, and a mouse pad with two buttons to aid in navigating the VGA screen.

SELECT Knob

The SELECT knob serves as a Source signal selector for fader strips.

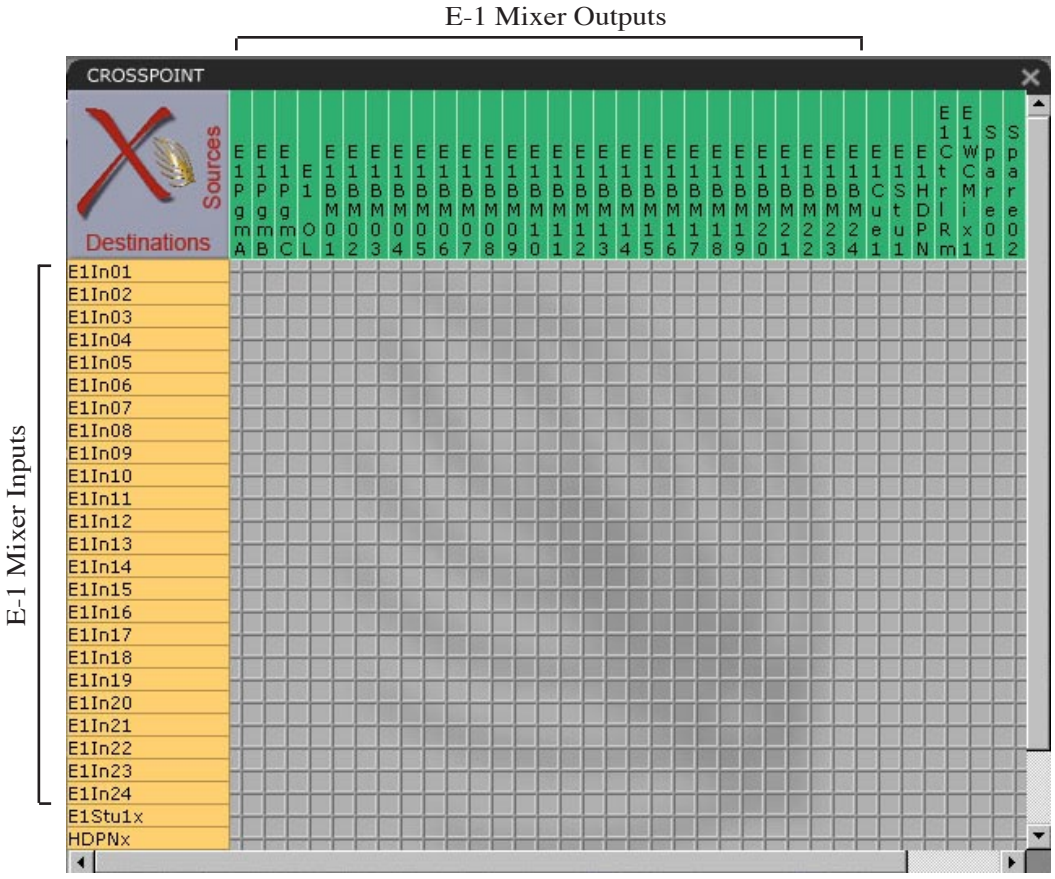
• When the A/B button is pressed and held on the desired fader strip AND the Input Tab is positioned on the main SOURCE screen, the SELECT knob can be used to select the desired source. By turning this knob, the available inputs are displayed in the 8-character SOURCE display for the selected channel. When the desired input source is scrolled into the SOURCE window, pressing the SELECT knob will cause that source to be switched to the input of the channel. If you fail to press the knob, the display will revert to its original setting after a timeout of approximately 4 seconds, and the original source remains in effect. Note you can also simply click in the SOURCE window on the Input Tab, or press the SELECT knob on the Master panel, and select the desired Source from the signal list.

• When no A/B button is lit, pressing the SELECT knob will open a screen showing a full list of input sources and locations for quick source selection on a fader, or for making other connections within the system. This operation may be denied to a user in the Access Authorization settings.

Sources can also be selected in the Navigator program.

The Crosspoint matrix is analagous to an electronic patch bay. Audio sources (router inputs) are located along the X axis at the top, audio destinations (router outputs) are vertically stacked along the Y axis on the left side. Simply click at the intersection of the desired Source and Destination signals to "patch" them. All surface mixes (eg. PGM busses, Bus-Minus, etc.) appear as Sources, usually beginning at signal ID1001. All surface inputs (faders, talk back, monitor source selects, etc.) appear as destinations, also beginning at signal ID1001. Surface signals may be routed just like any user I/O.

Source Visibility - use the Source Visibility Option setting to limit the sources the user "sees" in the signal tree. This feature is helpful, especially in large systems with lots of signals.



• Press the *Options* Tab on the VGA screen and choose Source Visibility from the AVAILABLE OPTIONS scroll down list to display the Source Visibilities form.

With this form the user can set the channel's source visibilities. Scroll up and down the source list and highlight the desired source signal(s) and click the *APPLY* button to save the visibility options. If you have made changes and then decided you don't want to put the changes into effect, click RESET. This will cancel any changes you made since entering the screen or since clicking APPLY, whichever happened most recently.

In addition to the eight character name of a signal, signals may also have a second identifier, an eight character location, which is typically set up in the Navigator program. Using the SHOW LOCATIONS button on the Source Visibility Options screen you can determine if the location identifier will show up in the Source list on the monitor when setting visibility. Click the SHOW LOCATIONS button to toggle between YES (show locations) and NO (don't show locations).

There are also "QUICK VISIBILITY" selection buttons. Clicking the ALL button will set all source signals to be visible. Clicking the *NONE* button will set all source signals to be hidden.

You can change the channel you are affecting visibility on by selecting the desired channel in the channel drop down box.

You can also make and use visibility SUBSETS. To apply a visibility subset to the current channel, select the subset from the SUBSETS drop down box, then press *LOAD*. After a subset is loaded, you can make changes to it by altering the visibility as described above, then press *SAVE TO*.

CUE Knob

The CUE master level control is located in the center section of the MNE-1 panel. The CUE signal is pre-fader, and is normally used to check signals. When a channel is CUEd, its pre-fader signal will appear in the external cue speaker, and the switched meter screen on the VGA, if visible, will show the level of the pre-fader signal.

The CUE level control determines the overall loudness of the cue signal.

The external cue speaker has the potential for feedback and should be muted whenever the control room speakers are. Use VDip to add the CUE MUTE attribute to any microphone signals located in the control room.

Monitor Speaker Controls

The Monitor section, at the bottom of the MNE-1 panel has the controls for three monitor outputs: CONTROL ROOM, STUDIO, and HEADPHONE. The VGA always displays the monitor level, muting, and options status.

Each monitor has a LEVEL control. CR and HEADPHONE share a bank of source select buttons for PROGRAM, as well as two programmable EXT buttons. The STUDIO section has a bank of source select buttons, and adds a TB button, allowing the operator to talkback to the studio. Each monitor output has options for Muting, Locking the output level, and interrupting the output with Cue audio.

Speaker Muting

To MUTE a monitor output you first need to configure the virtual dipswitches (VDip settings) for each microphone source signal. VDip is easily accessed by pressing and holding the mic input fader strip's A/B button. The VGA automatically switches to the *Input* Tab for that channel. Then choose VDip from the Button Bar near the bottom of the *Input* Tab. Check the Mute boxes as required to mute the CR or Studio outputs when the mic is turned ON. An Options Text File setting determines whether the Mute occurs when the fader is simply turned on or if the fader must be ON, up, and routed to the PGM bus (see Appendix 2 for more information about the Options Text File).

Speaker Level Controls

Monitor level can be controlled from the monitor panel or from the VGA screen controls. The CTRL ROOM, HEADPHONE, and STUDIO level meters on the VGA monitor will indicate the overall loudness.

NOTE: If a monitor output is muted and you turn the level control all the way up,

then remove the condition that has the monitor muted, the sound in the monitor speakers (or headphones) will suddenly be VERY LOUD!

Source Select Switches

Each monitor output section (one section for CR and HEADPHONE, the other for STUDIO) has its own bank of source select switches which select the audio signal sent to the speakers or headphones. Each bank includes dedicated switches for selecting PROGRAM A, B, C, or D (OL), and two programmable sources (EXT 1 and EXT 2). Simply press the desired switch to listen to that output bus or external source signal.

Programming External Source Switches

External switches may be programmed to select any Source signal on the router. Press the external button and hold it for few seconds; the list of the available external inputs will pop-up in the monitor display. Choose the desired external input from this list. You can also initiate the source programming for the external inputs by clicking the EXT source window on the VGA monitor.

While there are separate EXT 1 and EXT 2 buttons for each monitor select bank, the buttons really only represent two stored signal choices. Both EXT 1 switches are mapped to one source, and both EXT 2 buttons are mapped to a second source.

Control Room Section

The control room section of the monitor has a dedicated meter and level knob. The board operator's microphone is normally programmed using VDip to MUTE the control room output and prevent the occurrence of feedback. When MUTE is active, the word MUTE appears in the center of the monitor's meter display.

The CR level may also be locked to a user defined volume level. See the E-1 Monitor Options section below.

Headphone Section

The built in HP amp output signal appears at the headphone jack, mounted on the right-hand front of the control surface's lower mainframe pan. The jack is provided as a place to plug in user-supplied **stereo** headphones having an impedance of **60 Ohms or higher**. A DB-9 connector on the rear of the surface provides a stereo line level input to the HP amp. See Chapter 4 of this manual for pinout information. To get audio into the HP amp, wire any router analog output to the HP amp input. Use Navigator to cross connect the surface's HP mix source signal (e.g. E1HP) to the analog destination wired to the surface.

Studio Section

The Studio output section has a dedicated source select bank, metering, and a level knob. Microphones located in the studio are normally programmed using VDip to MUTE the Studio output to prevent the occurrence of feedback. When MUTE is active, the word MUTE appears in the center of the monitor's meter display. The Studio level control may be locked to a user defined volume level (see the E-1 Monitor Options section below).

Talkback to Studio

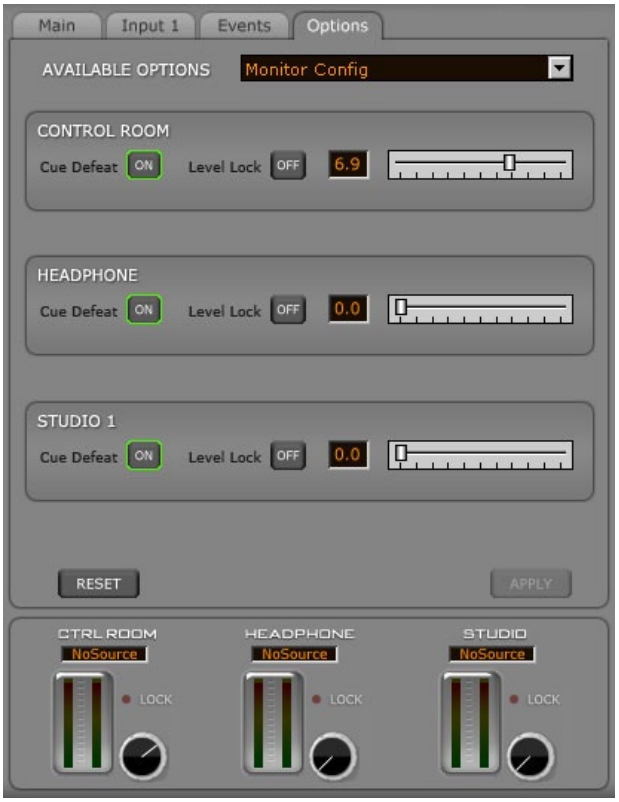
The Studio output has a dedicated TB button which lets the operator interrupt the normal feed to the studio speakers with a pre-determined TB signal. Note that the Talkback source, typically the board operator's mic, must first be cross connected to the surface's TB input using either Navigator software or the E-1's built in Route function. The TB signal may be any Source signal in the router, including MXM busses. The E-1's TB input signal is a factory defined surface Destination signal with a name similar to E1TBk. The actual name depends on how many surfaces you have. There is only one TB bus input on the E-1. You can use Programmable Buttons to momentarily route other sources to the Studio output.

E-1 Monitor Options

The Headphone, Control Room, and Studio outputs are normally subject to the control surface's muting and cue interrupt circuits. Use the *Options* Tab > Monitor Config screen to modify speaker behavior.

Cue Defeat - Click on the *Options* Tab, choose Monitor Config from the AVAILABLE OPTIONS scroll down list, and set the Cue Defeat option for Headphone, Control Room, and Studio. If you program a Cue Defeat option to be ON, that means that cue will <u>not</u> interrupt that monitor output.

Level Lock - You can lock any of the surface's monitor level control pots. Use the slider to set a level and switch the Level Lock to be ON. Press the APPLY button at the bottom to confirm. The corresponding LOCK LED will be lit in the monitor speaker section of the VGA.



Events

The E-1 includes a snapshot save and recall feature that saves all of the surface's switch, level, and DSP settings to a unique Event file. These saved Events may be recalled as required at any time. User access privileges may be configured to limit access to Event Save, Recall, or both. Click on the *Events* Tab or press either EVENT button (VIEW or SAVE) on the Monitor Panel to open the *Events* Tab.

The *Events* Tab is split into two sections - *Event Recall* and *Event Editor*. EVENT RECALL, located in the top section of the tab, allows users to select and recall a previously saved Event. Highlight the Event name in the list window, then press ARM, then press TAKE. Note that the board will completely reset to the previously saved state. In order to accommodate Event switching while OnAir, any faders which are ON when the Event is recalled will NOT be affected.

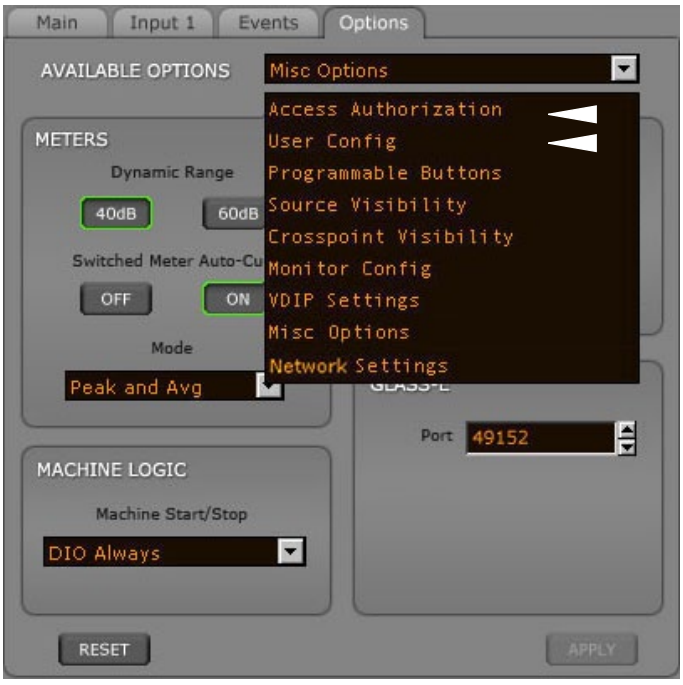
The EVENT EDITOR acts an Event file manager. This is where you create, save, rename, and delete Events. It is pretty easy to use. To create a new "snapshot," simply click NEW and enter an Event name using the pop-up virtual keyboard. Highlight an existing Event name and click SAVE TO to overwrite the Event with the current surface configuration, RENAME to retitle it, or DELETE to permanently remove it.

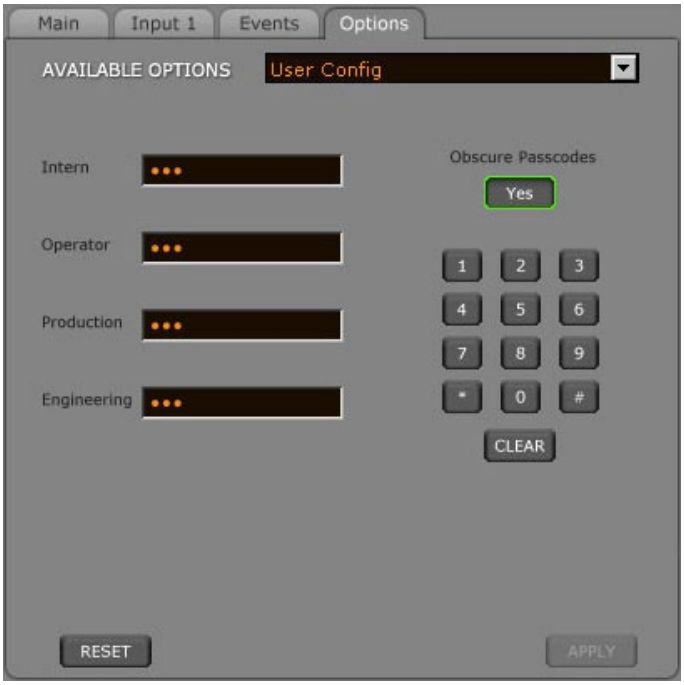
Deleted Events may NOT be restored.

NOTE: The following characters are forbidden to use in Event names: \, /, :, *, ?, ", <, >, |.

Control Modes - User Permissions

The E-1 control surface is operated in one of four modes: Intern, Operator, Production, and Engineering. Engineering mode, by default, allows the user to perform all surface functions. To set passcodes, press the *Options* Tab and choose User Config from the AVAILABLE OPTIONS scroll down list.





All four end user modes can have their permission levels modified by any user with permission to do so. This is done by pressing the GUI *Options* tab and choosing Access Authorization from the AVAILABLE OPTIONS scroll down list to bring up the Access Authorization dialog box. Personnel with the designated authority to set the permission levels should spend some time with this dialog box and experiment to see what levels of authority can be granted or denied.

To log in to a given mode, press the button on the lower left corner of the VGA screen that displays the current ACCESS AUTHORIZATION level.

This brings up the PASSCODE ACCESS dialog box. Select the desired mode, then enter the password for that mode. The default password for all four end user modes is "111" and can be changed for each mode by any user who knows the password for that mode. This can be done by clicking the EDIT button on the PASSCODE ACCESS form to bring up the EDIT PASSCODE box, where you enter the old (current) passcode and then enter the new passcode twice and click OK to effect the change.

Password Defaults: "111" for all users.

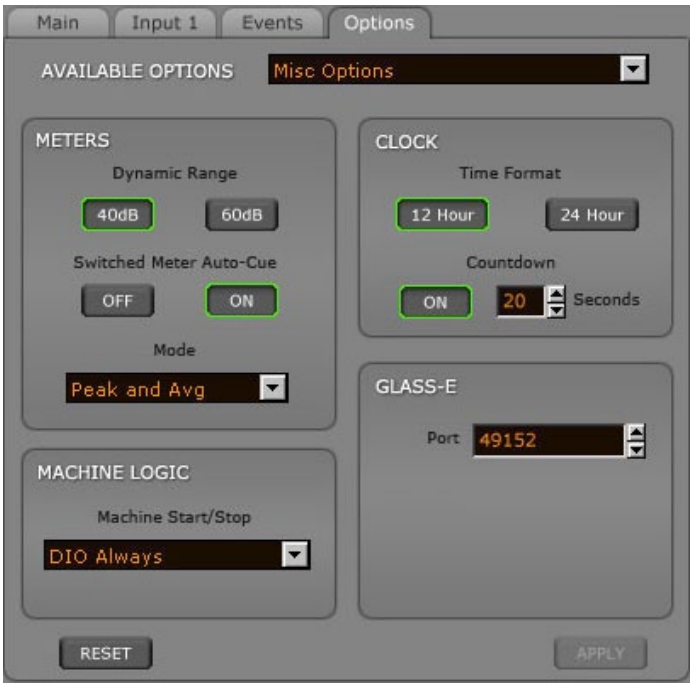
Once a given control mode is selected for a surface, that setting will persist through a power cycle or surface reset.

Switched Meters

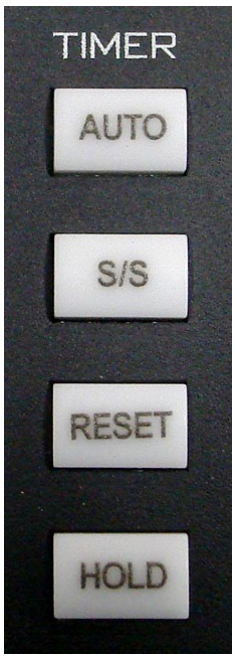
The control surface includes a switched meter on the Main Tab. The switched meter displays the signal level of a user selected source - any source on the router - or the CUE signal level when an input fader's CUE switch is activated (but see below to disable this Auto-Cue function). Pressing the METER button will switch the screen to the *Main* Tab if it is not there already.

The switched meter display shows the signal source name at the top. Click on this name to bring up the source selection window and change the signal as desired.

A METERS setting on the *Options* Tab allows you to turn off Auto-Cue to this meter.



Timer Section



The control surface timer is provided with an AUTO-RESTART function so that programmed (via the GUI) input modules can automatically reset the timer display (located on the upper-left side of the main E-1 GUI screen) to zero and start a new count, allowing the announcer to easily track his own pace. The AUTO button on the Monitor Panel must be lit to enable this function.

The S/S (start/stop) button halts the timer, holds the last count, and then restarts and accumulates the count when depressed again–perfect for compiling tapes of desired duration.

RESET has a dual-mode capability:

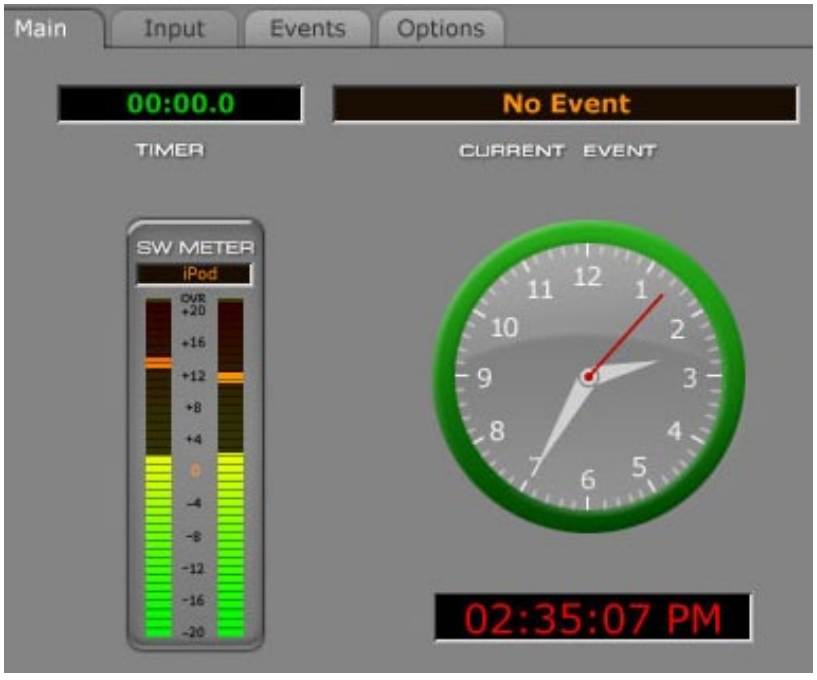
- if you depress it while the timer is counting, the display will instantly reset to zero and start a fresh count;

- if the timer is already stopped, depressing this button will reset the timer to zero, where it will hold until start is pressed.

The HOLD button allows you to hold the display for a longer viewing duration, while still allowing the counter to continue in the background. Releasing the button will then display the current count.

Time of Day Clock

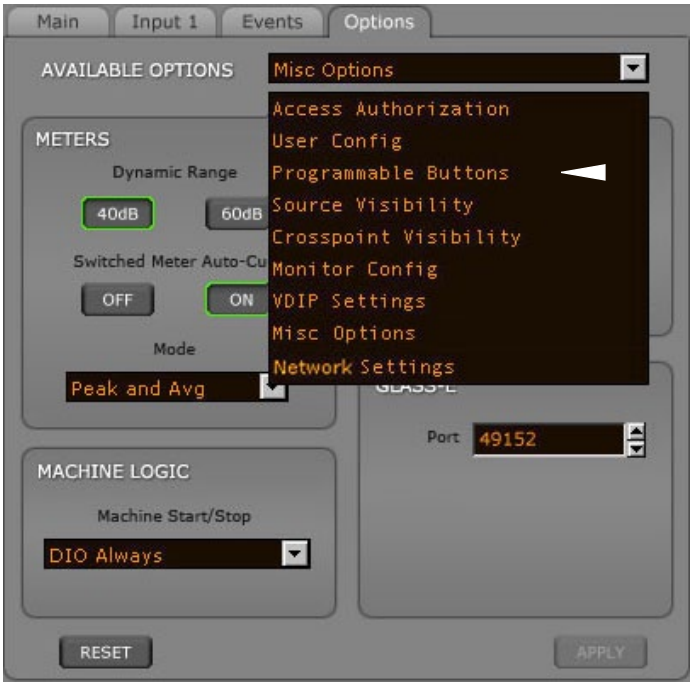
The main Embedded E-1 GUI screen includes the digital and analog displays of a time of day clock in 12 or 24 hour format. 12/24 operation is set by making the desired choice on the *Options* Tab - Misc Options.



The WheatNet-IP system automatically synchronizes the times on all Blades and all surfaces in the system. The system time can be synchronized to an NTP time server or to a particular PC connected to the system and running Navigator. Please refer to the *WheatNet-IP Audio Over IP Network Technical Manual*, Chapter 4 *(WheatNet-IP Navigator GUI)*, in the section titled *Set Date and Time*, for details.

Programmable Buttons

Also known as "Spare buttons," these four (4) switches and indicating LEDs are designed to perform user-programmable functions. Some functions, such as firing Salvos, making temporary connections, or interfacing with the logic input and output ports on system Logic I/O cards, must be configured through the Windows™ Navigator application. See the *WheatNet-IP Audio Over IP Network* manual for details.



Some of the spare button programming can be done via the E-1 GUI. Press the *Options* tab and choose Programmable Buttons from the AVAILABLE OPTIONS scroll down list to display the Programmable Buttons form. You will see a separate line on the form for each of the four buttons; each line has a drop down mode selector, a *FLASH* button, and an *EDIT* button.

- Mode selection - the spare buttons can be operated in various modes:
  - None - in this mode button presses are ignored - the button LED is controlled by DIO, which simply means that the LED can be turned on and off by a logic signal in the E-Series Network System - this control would be configured in Navigator
  - Toggle - in this mode the button acts like a toggle; one press turns it on and another press turns it off - the button's LED state is controlled by the surface, with the LED lit when the button is on and unlit when the button is off - the actual function performed by the button is configured in Navigator
  - Momentary / Surface LED - in this mode the button has a momentary action; it is on while pressed and off when released - the button's LED is controlled by the surface, with the LED on while the button is

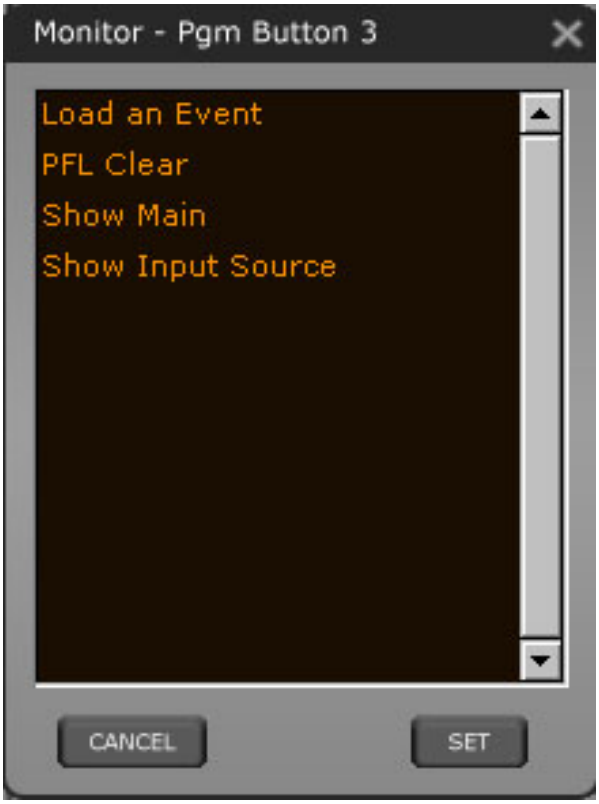
pressed and off when it is not being pressed - the actual function performed by the button is configured in Navigator

• Momentary / DIO LED - in this mode the button has a momentary action, with its function configured in Navigator - the button LED is controlled by a system DIO which is also configured in Navigator

• Software Controlled - in this mode the button's function is set up by the E-1 GUI using the EDIT button, as described below - the LED is controlled by the surface and is on while the button is pressed and off when released

• FLASH - press this button to make a particular spare button flash - this helps you see which button you are programming

• EDIT - this button is only active when the spare button mode is "Software Controlled" - in all other modes it is grayed out - when active, this button brings up the Monitor - Pgm Button Y form.

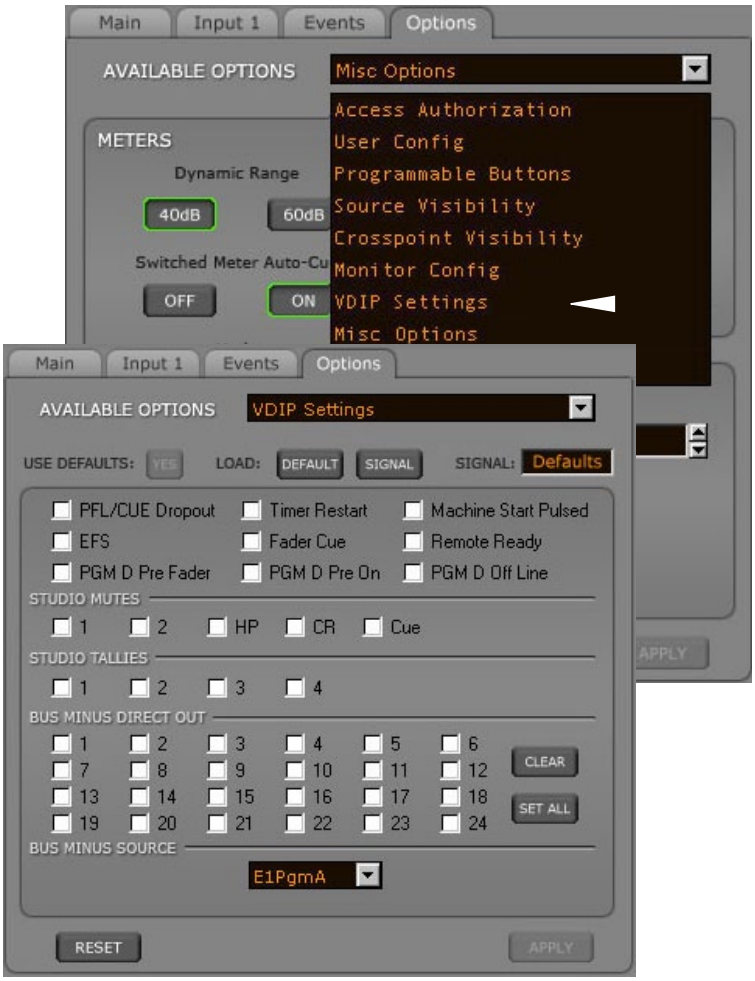


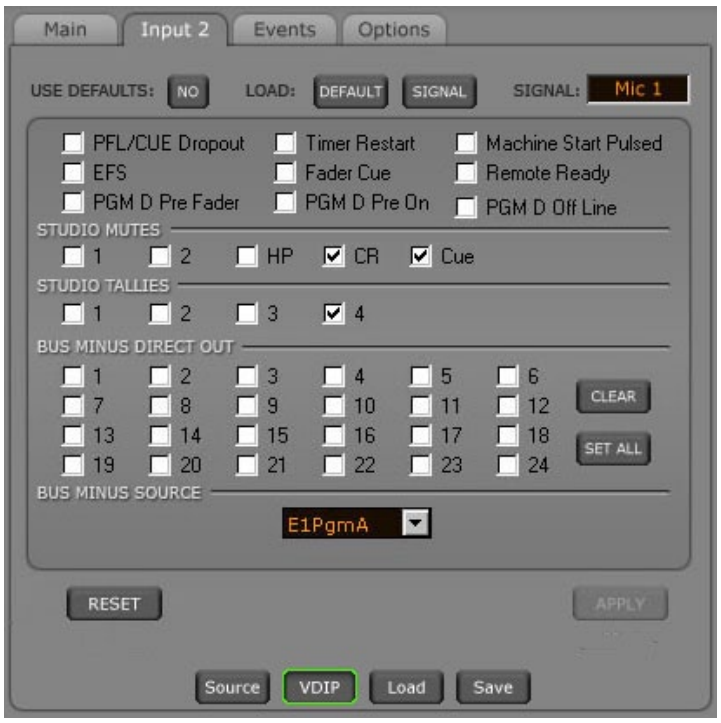
VDIP Settings

Many surface functions, such as Mute, Tally, and Machine Start Pulsed, are programmed from the VDIP Screen. VDip settings are attributes of the Source signal and will follow the signal onto different faders of the same console or even other surfaces, depending on how it is programmed. You may configure VDip from the E-1 directly.

To configure VDip DEFAULT on the E-1 press the *Options* tab and choose VDIP Settings from the AVAILABLE OPTIONS scroll down list and then check the functions that will be same for ALL signals.

To configure VDip for a particular source on the E-1, first make sure that the source you need to program with VDip is assigned to an input fader. Press and hold the fader's A/B button and the *Input* Tab will open to the last screen used. Select VDip from the Button Bar at the bottom. Make sure USE DEFAULTS is NO if you want this signal to work differently than the default settings, and then simply check the functions for this signal. If USE DEFAULTS is set to YES, that signal will





use the default settings. Once you have the settings you want, click APPLY.

To load other signals you want to to change the settings of, press and hold another fader's A/B button or click the SIGNAL button and choose which signal to load from the Signal List.

Click DEFAULT to change settings you want to be the same for ALL signals The default settings form then shows the default values used for any signal unless specifically overridden. If you have made changes and then decided you don't want to put the changes into effect, click RESET. This will cancel any changes you made since entering the screen or since clicking APPLY, whichever happened most recently.

PFL/CUE Dropout—When a channel's CUE button is pressed it will assign the channel's signal to the CUE bus. When "PFL/CUE Dropout" is checked it causes the channel's CUE function to be de-activated whenever the channel ON switch is pressed.

EFS—This function causes the channel to be OFF when the fader is fully down or ON when the fader is brought up from the fully down position. The ON and OFF switches can still control the channel.

Fader Cue—Assigns the signal to the Cue bus when the fader is moved all the way down. The CUE button can still be used to change the CUE status.

PGM D Pre Fader—When checked, causes the signal, when assigned to the surface's PGM D output, to be tapped before the fader.

PGM D Pre On—When checked, causes the signal, when assigned to the surface's PGM D output, to be tapped before the channel ON switch.

Timer Restart—The surface's digital timer can be programmed to automatically reset to zero and begin counting up when the channel's ON button is pressed. To enable this function the AUTO button in the timer section of the Monitor Panel has to be activated.

Machine Start Pulsed—This setting allows you to correct for differing source machine ON/OFF control signals to the input channel. The input channel will work with most standard source machines. Occasionally, the source machine, because of the way it is designed, will send overly long control closures to the channel's remote ON and OFF ports - closures so long that they will hang up the module's ON/OFF logic. When this kind of problem manifests itself, setting to "Machine Start Pulsed" will convert the closures to pulses before they get to the channel ON/OFF switch logic.

Remote Ready—The channel's OFF switch normally has its LED indicator controlled by the switch itself. This is the factory default setting. When "Remote Ready" is checked, the channel's OFF switch LED can be controlled by an external source machine. This requires additional configuration in Navigator to fully implement the feature.

PGM D Off Line—This function determines what will be heard at the fader's Bus Minus output when the fader is off. If the box is not checked, when the fader is off the same bus will feed the bus minus that feeds it when the fader is on, as determined by the BUS MINUS SOURCE selection below. But if the PGM D Off Line box is checked, when the fader is off the Bus Minus output will be fed from the PGM D bus instead.

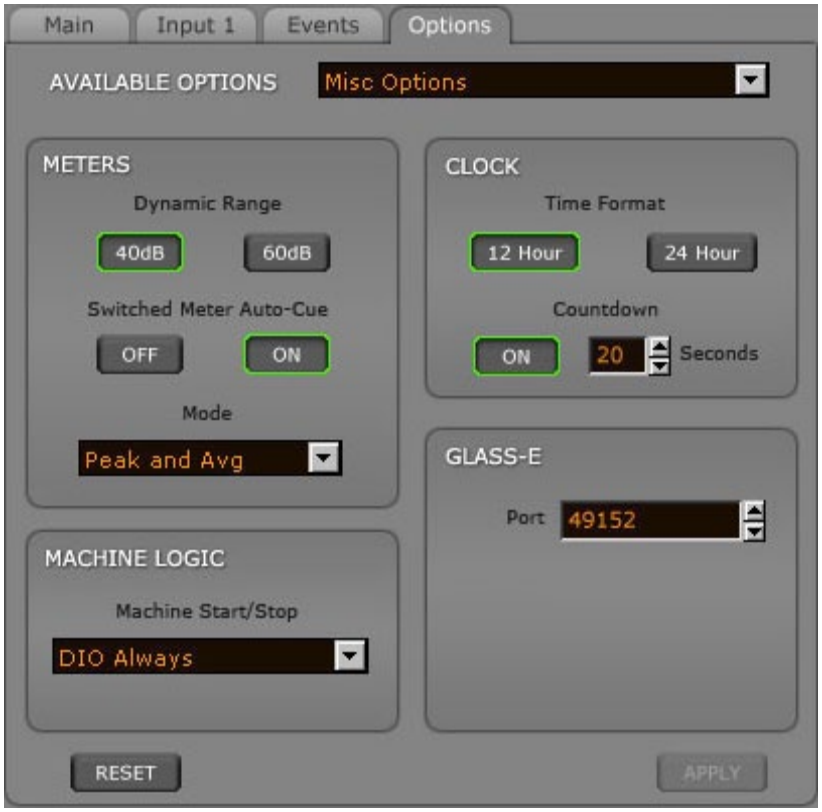
STUDIO MUTES—Input channels can be programmed to mute the various monitors when the channel is ON. There are five STUDIO MUTES checkboxes, one for each monitor section plus one for CUE. The checked boxes show which speakers are muted. Note that the Studio 2 mute has no effect on the E-1 surface.

STUDIO TALLIES—Turning the channel ON can activate a remote tally indicator. There are four tally control lines. The checked boxes show which tallies are activated. This requires additional configuration in Navigator to fully implement the feature.

BUS MINUS DIRECT OUT—For each signal, determines if the Bus Minus output is a mix-minus of the selected BUS MINUS SOURCE (unchecked) or is a Direct Output (checked). On signals where the BUS MINUS DIRECT OUT box is checked, the PGM D Off Line box (above) will have no effect.

BUS MINUS SOURCE—For each signal, determines which bus the Bus Minus output is a mix-minus of. Any of the four PGM busses can be selected as Bus Minus Source. If, for example, E1PgmA is selected, then the BUS MINUS output will consist of the audio on the E1PgmA bus, minus the signal assigned to the fader. This is true when the fader is turned on. It also true when the fader is turned off, **unless** the PGM D Off Line box is checked (above). This setting will have no effect on any signal where the BUS MINUS DIRECT OUT box is checked (above).

Machine Logic



The surface's start/stop logic options can be selected via the E-1 GUI. Press the *Options* tab and choose Misc Options from the AVAILABLE OPTIONS scroll down list to display MACHINE LOGIC choices.

The purpose of this option is to allow the privileged operator to determine the conditions under which START and STOP signals (referred to herein collectively as DIO signals) are sent in response to a command to turn a channel ON or OFF. Channel ON and OFF commands can come from three different sources:

- Surface - a channel can be turned ON or OFF by a surface action, such as pressing the ON or OFF switch, or moving a fader if EFS has been enabled
- Remote (RMT) - a channel can be turned ON or OFF by sending it a command from a system Logic I/O card via the RemOn and RemOff functions, configurable from within Navigator
- Automation Control Interface (ACI) - various automation systems are capable of sending ACI signals to the system via Ethernet to turn channels ON and OFF (and perform other functions as well).

There are four possible start/stop options:

DIO Always—START and STOP (DIO) signals are always sent in response to channel ON and OFF commands, regardless of the source.

No DIO w/ACI—DIO signals are blocked if the channel ON and OFF commands are from an automation system (ACI).

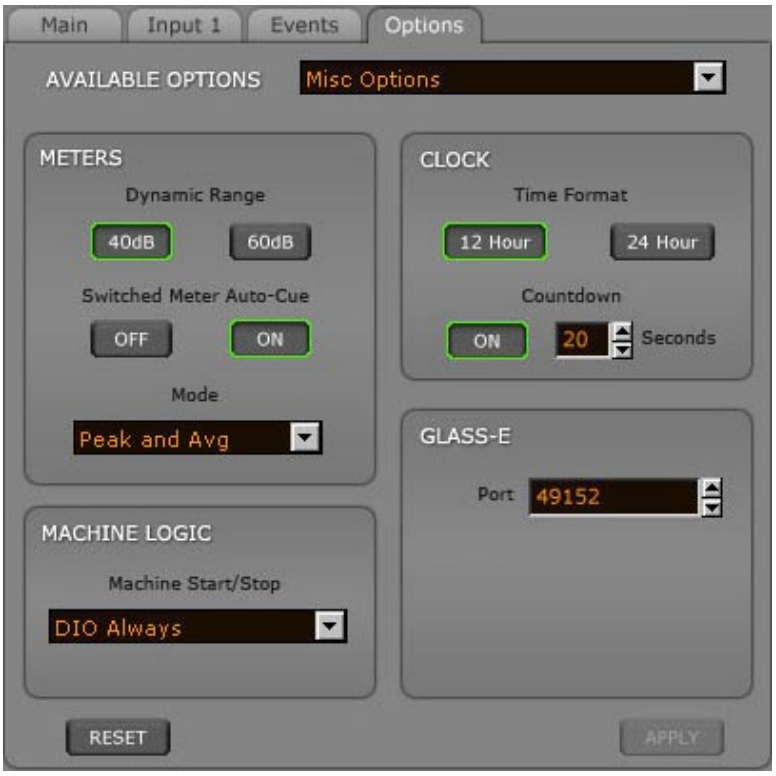
No DIO w/RMT—DIO signals are blocked if the channel ON and OFF commands are initiated from a system Logic I/O card.

No DIO w/ACI or RMT—DIO signals are blocked if the source of channel ON and OFF commands is either automation or Logic I/O.

Note that DIO signals are always issued if the corresponding channel ON or OFF command is initiated by a surface control.

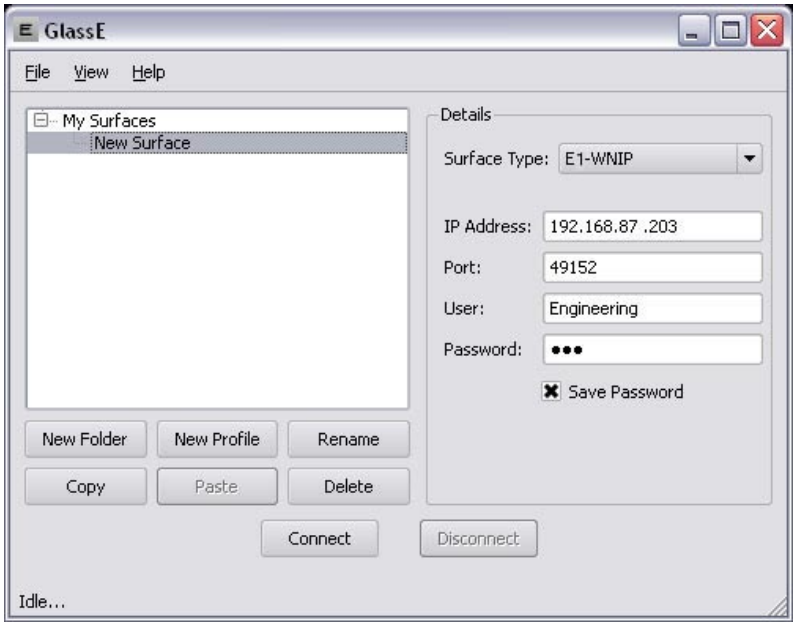
Optional Glass E Interface

Wheatstone offers the optional PC-based software, called "Wheatstone Glass E Virtual Control Surface," that controls the E-1 surface from a remote PC. The Windows XP-based PC software accesses remotely through a LAN/WAN. It brings studio control surfaces anywhere in the world under remote control of an internet-connected PC. Glass E is a graphical replication of the control surface to which it is assigned. All surface functions and features are accessed by the Glass E. The surface presets, system X-Y access, system programming, and configuration are password protected.

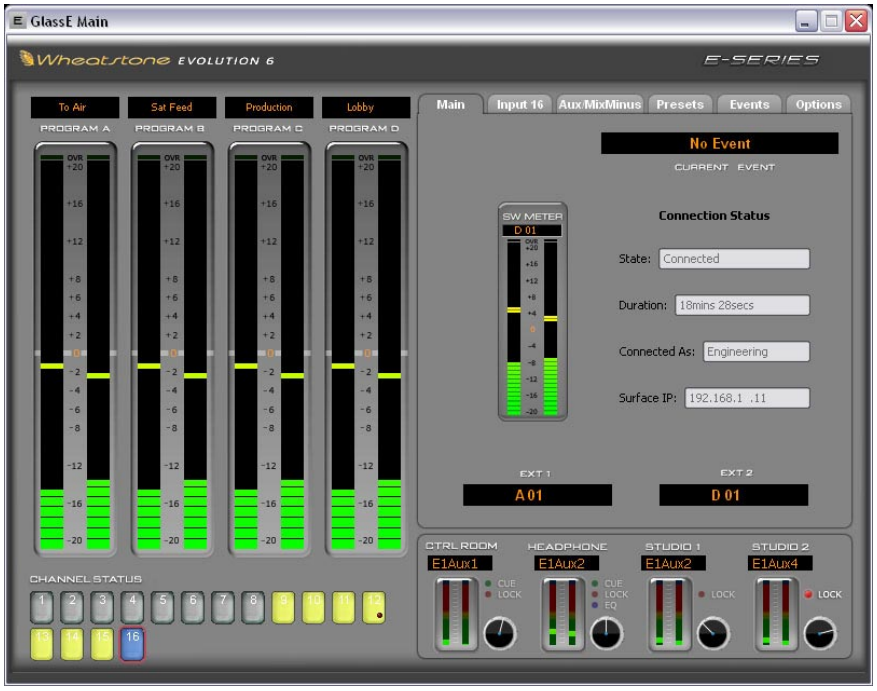


Before you can run the GLASS E software to control a particular surface, that surface needs to be set up to allow the Glass E interface to function. In the E-1 GUI press the *Options* Tab and choose Misc Options from the AVAILABLE OPTIONS scroll down list to display the screen that has the Glass E interface options. Enter a Port number (the default is 49152), then click APPLY. The surface is now ready to host a link to the Glass E software.

On the PC that's running the Glass E software, start the software. You should see the following screen:



Select the Surface Type, enter the surface's IP address, and enter the Port you previously set up at the E-1. Then enter the user name and password that corresponds to the user type you want to operate the surface as, and you should then see screens similar to following two screens (shown for E-6 surface) on the PC running Glass E:



The first screen is a duplicate of the surface's GUI as it appears on the surface's VGA screen. All controls and functions of the GUI that have been described in chapters 2 and 3 of this manual work the same on this Glass E screen.

The second screen is a replication of the actual surface panels, and is operated in much the same fashion as the actual physical controls in the surface.

Network Settings

When your surface is connected to the WheatNet-IP engine BLADE and first powered up, it will ask you to configure its network parameters.

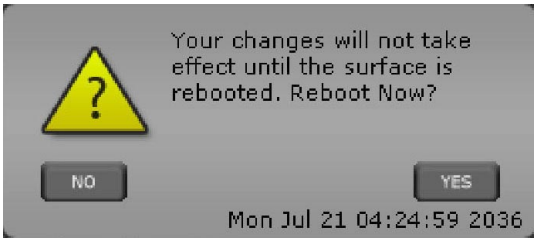
To configure the network settings for the E-Series surface select “YES” from the dialog box. The surface will now display the Network Settings screen, where you will set the Mix Engine ID and IP address of the Engine to which the surface will connect, along with the Surface IP Address, Subnet Mask, and Gateway. If Automatic mode is selected, enter the Mix Engine ID of the WheatNet-IP mix engine to be associated with the surface and the remaining settings are configured for you. You can manually enter this information by pressing the Manual button and using the numbered keypad on the screen. Pressing NEXT will advance to the next field.

For convenience, Wheatstone uses the following convention for IP Addressing in the WheatNet-IP system:

1. The IP Address of a BLADE is equal to the BLADE ID plus 100; i.e. BLADE 3 = 192.168.87.103
2. The IP Address of a control surface is equal to the Engine BLADE ID plus 200; i.e. Engine BLADE = 5, Surface IP Address = 192.168.87.205

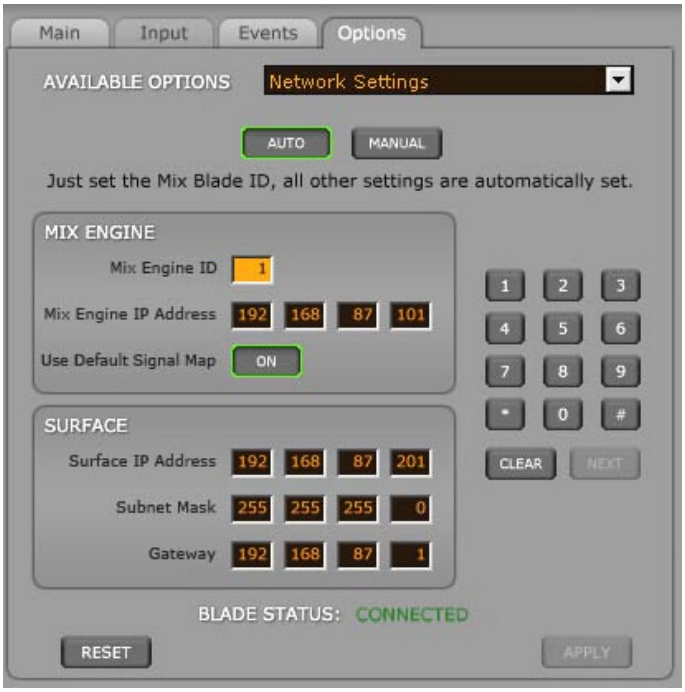
In most cases, you will want the Use Default Signal Map button to be ON, to insure that the output signals are properly mapped. This insures that the surface outputs appear at the designated connectors on the Console Blade. If you want to re-arrange or re-purpose the outputs, switch this button to OFF.

When done, simply press APPLY to finalize these settings and the surface will request a reboot.

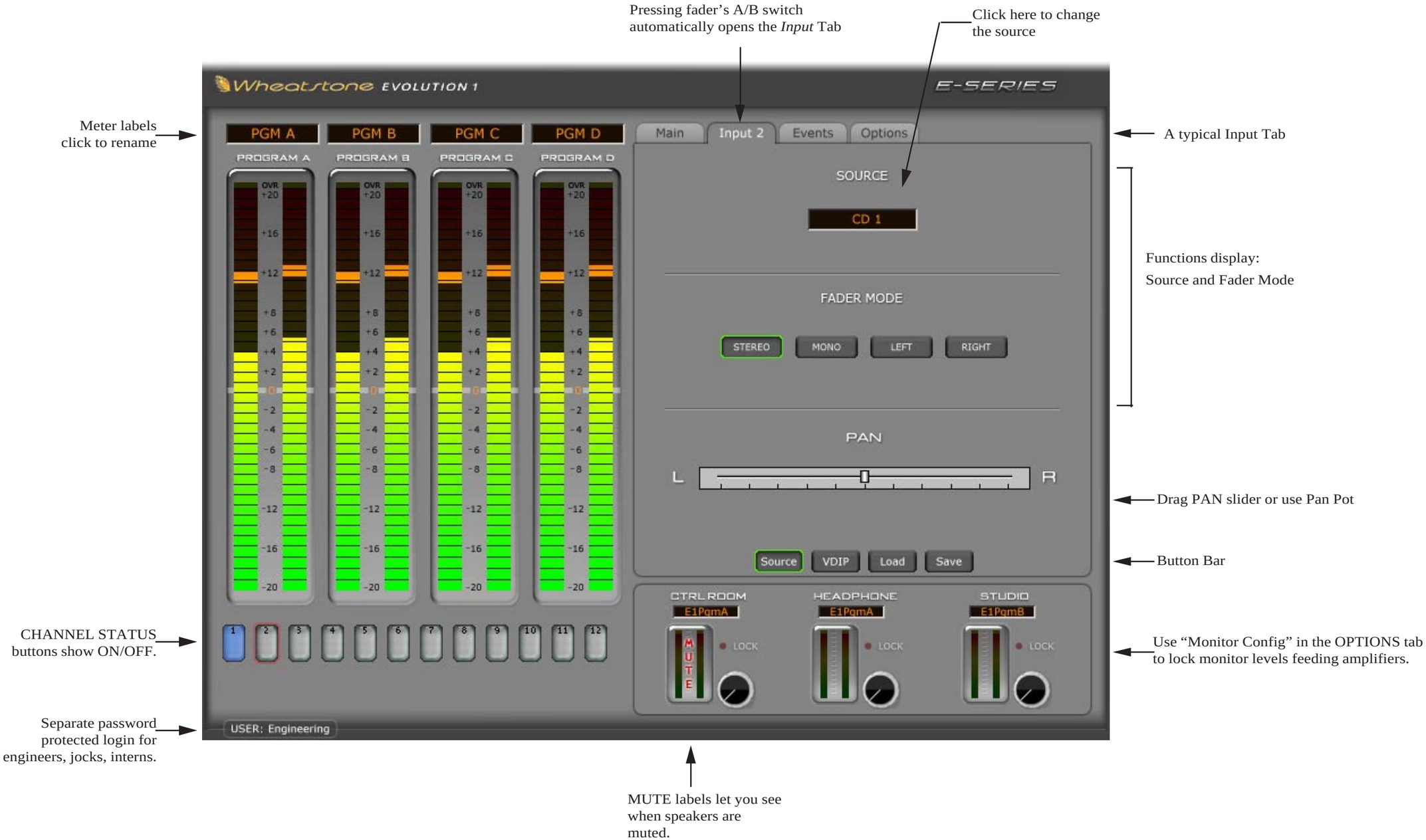


Select YES from the dialog box and the surface will reboot.

Once the surface has been rebooted navigate to the Options Tab and select Network Settings from the drop down menu. If all information was entered properly the BLADE STATUS will display CONNECTED. The E-Series surface has been successfully configured.



E-1 GUI Main Tab Screen Controls



E-1 GUI Input Tab Screen Controls

Events Manager tab — “Events” are snap-shots of the entire control surface.
All faders, switches, sources, etc. are stored and recalled.

← Last event taken

← Event Recall

To recall an event:

- click on event name
- click ARM
- click TAKE
- click UNDO to go back

← Event Editor

This section lets you manage:

NEW—Save current surface state to a new event.

SAVE TO—Lets you save current surface state to an existing event.

RENAME—3 guesses? Just click on the event name and the virtual keyboard opens up.

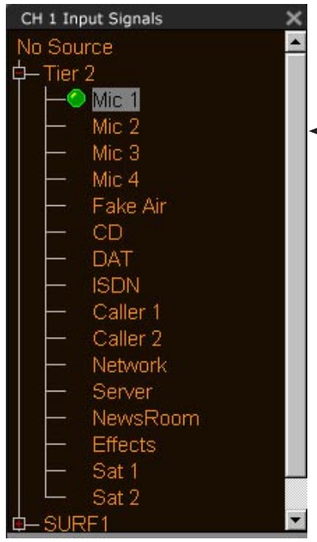
DELETE—Just click on the event name, click DELETE and confirm.

E-1 GUI Events Tab Screen Controls

Options Manager tab — Provides access to a whole host of system options. Some are self explanatory, but see the Options Details section for details.

E-1 GUI Options Tab Screen Controls

Choose fader sources



Press A/B on a fader to open main INPUT screen

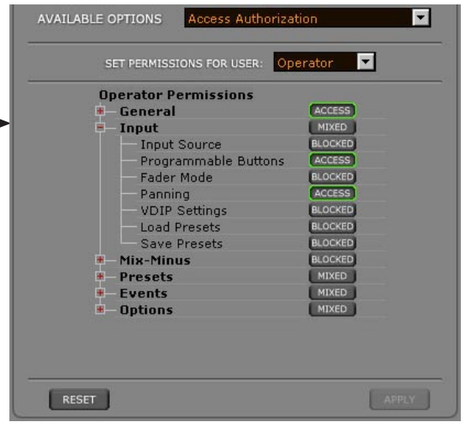
Use the Button Bar to navigate various input screens

VDIP

Preset Load

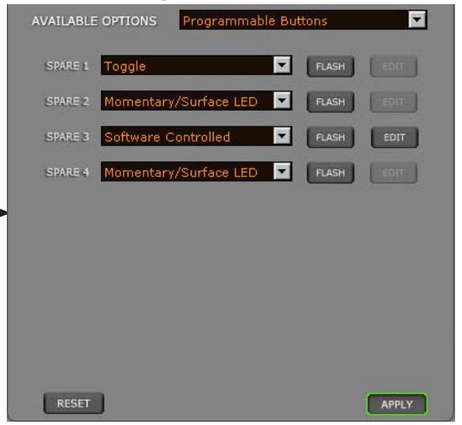
Save

Access Authorization



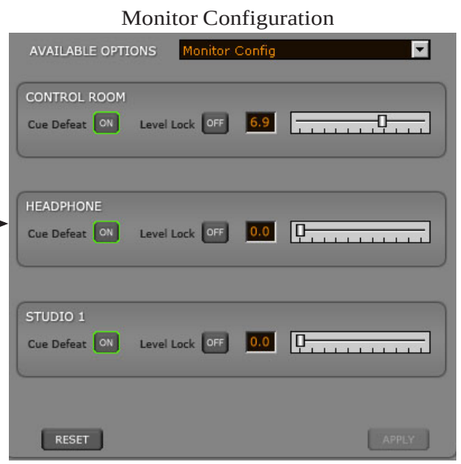
User Configuration

Programmable Buttons

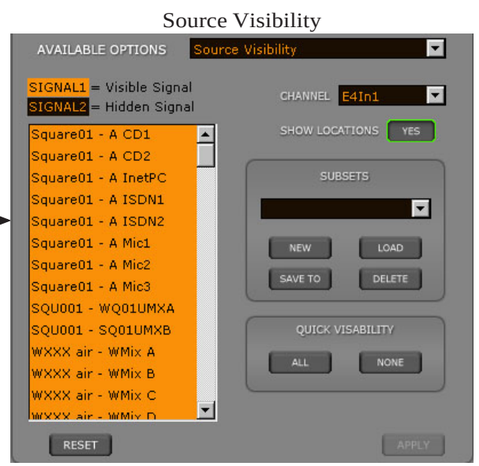


Crosspoint Visibility

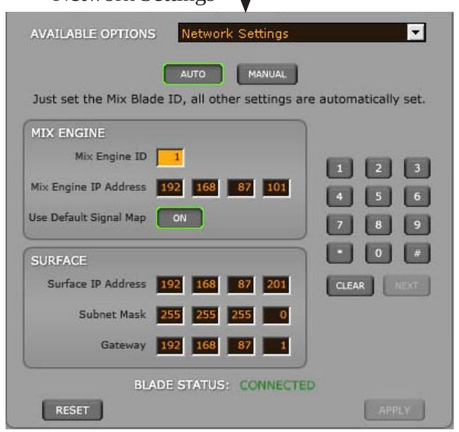
Monitor Configuration



Source Visibility



Network Settings



Miscellaneous Options

VDIP Settings

This screen available only for the system with WheatNet-IP engine BLADE.

Host CPU (HC-3)

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HC-3 BIOS Settings/Format 4-2

Ethernet IP Addressing 4-2

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Mixer Link Wiring 4-3

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Switch Settings 4-3

SW1 Position 1 - Sample Rate 4-3

SW1 Position 4 - CAT5 Enable 4-3

Hook-Ups

"ETH" RJ-45 - Main Ethernet Connector 4-4

"CAT5" RJ-45 - Mixer Link Connector 4-4

"HEADPHONE" DB-9 - Headphone Connector 4-4

Typical Ethernet Cable 4-5

Typical Crossover Cable 4-5

HC-3 Pinouts Drawing 4-6

All devices in the system must be set to the same sample rate!

Host Controller (HC-3)

Overview

The host controller card used in the E-1 incorporates a PC/104 computer mounted on the HC-3 PCB. The host computer utilizes RAM, a flash disk (which emulates a standard IDE hard drive), and an Ethernet port. There is no hard disk drive. A video port is provided for the user-provided VGA monitor, and a keyboard port is for factory use only.

The purpose of the host controller is to provide control of the E-1 control surface. The HC-3 communicates to the Navigator Configuration PC via TCP/IP over Ethernet through a standard ethernet hub or switch. It also communicates to the Bridge Router system via a special mixer link connection.

Hardware and software configuration, as well as real time crosspoint information, is saved in non-volatile storage on the HC-3 card and is restored at power up or reset. This configuration information provides details to the host application running on the HC-3, such as the specific audio hardware available.

HC-3 BIOS Settings/Format

BIOS Setup and formatting of the Host CPU is completed prior to the testing of your E-1 control surface at the Wheatstone factory. There are no user adjustable settings.

Ethernet IP Addressing

The Wheatstone E-1 control surface ships with the host controller IP address set. Stand-alone systems (not interfaced to a station's existing network) require no IP address changes.

Ethernet Interface Wiring

Networked systems are connected to the network hub or switch via a straight (pin to pin) CAT5 cable. Typical CAT5 cable pinouts are included in the "Hook-Ups" section near the end of this chapter. These connections are for communicating with the configuration computer; a separate ethernet connection should be provided for each control surface.

Mixer Link Wiring

This RJ-45 connection provides the control link between the control surface and the Bridge Router system. All settings and commands generated on the control surface pass through this link. A special CAT5 cable wired in "crossover" fashion is used for this link. This special cable connects the RJ-45 jack on the control surface to the matching RJ-45 jack on the Bridge Router system. Please note that, in a typical system, there will be many RJ-45 jacks in the Bridge Router, and for proper operation, the control surface must be connected to the specific RJ-45 jack defined for it in the system configuration.

Internal Programming Options

All internal programming options are made via PCB mounted switches.

Switch Settings

All devices in the system must be set to the same sample rate!

SW1 Position 1 - Sample Rate

This dipswitch position must be set to agree with the sample rate of the system. The switch is off for a sample rate of 44.1kHz and on for a sample rate of 48kHz.

SW1 Positions 2 and 3 - Not Used

These dipswitch positions are reserved for future use.

SW1 Position 4 - CAT5 Enable

Position 4 of SW1 must be in the on position in order to activate the CAT5 mixer link connections.

Hook-Ups

All user wiring to and from the host controller is made via I/O connectors located on the control surface rear. There are two RJ-45 connectors: one is for Ethernet connection, and the other is for the CAT5 Mixer Link connection. There is also a female DB-9 connector for feeding line level signals to the internal amplifiers that feed the headphone jack. The pinout drawing on page 4-6 shows all wiring connections at a glance.

"ETH" RJ-45—Main Ethernet Connector

Pin 1 – TXD +
Pin 2 – TXD -
Pin 3 – RXD +
Pin 4 – N/C
Pin 5 – N/C
Pin 6 – RXD -
Pin 7 – LN LED
Pin 8 – LK LED

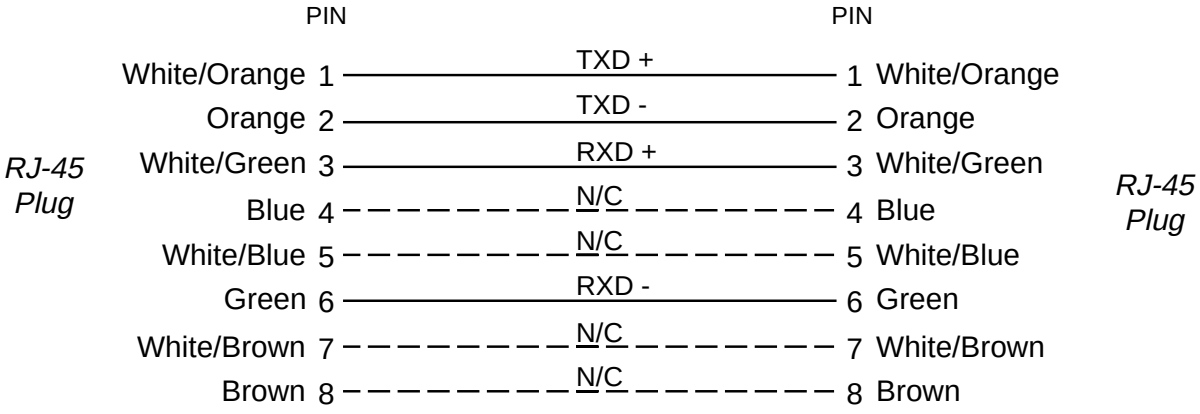
"CAT5" RJ-45—Mixer Link Connector

Pin 1 – TXD +
Pin 2 – TXD -
Pin 3 – RXD +
Pin 4 – N/C
Pin 5 – N/C
Pin 6 – RXD -
Pin 7 – N/C
Pin 8 – N/C

"HEADPHONE" DB-9—Headphone Connector

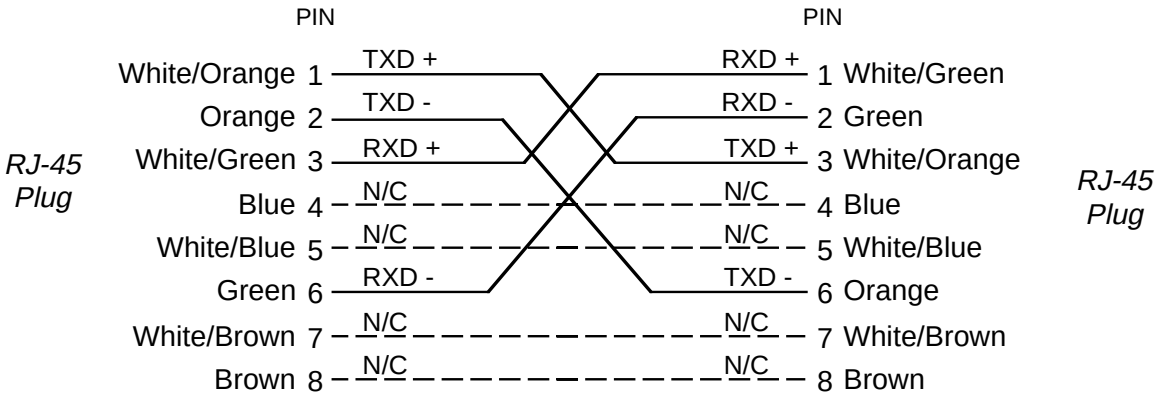
Pin 4 – HDPN LT HI
Pin 5 – HDPN LT SH
Pin 9 – HDPN LT LO
Pin 7 – HDPN RT HI
Pin 8 – HDPN RT SH
Pin 3 – HDPN RT LO
Pin 1 – N/C
Pin 2 – N/C
Pin 6 – N/C

TYPICAL ETHERNET CABLE



USED FOR CONNECTING THE HOST CONTROLLER TO YOUR NETWORK HUB.

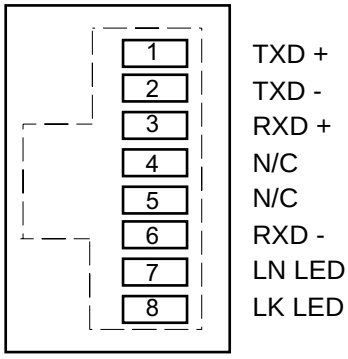
TYPICAL CROSSOVER CABLE



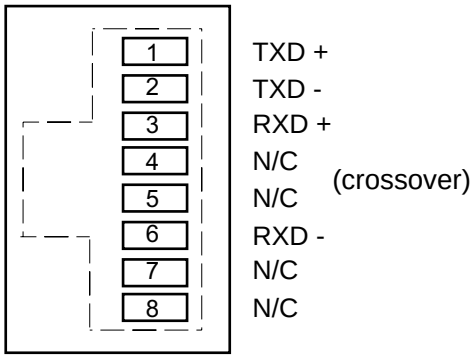
USED FOR MIXER LINK CONNECTOR.

HC-3 Host Controller I/O Connections

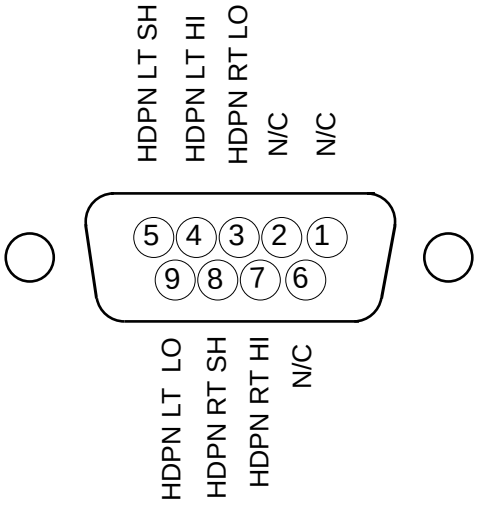
Ethernet Connector (RJ-45)



Mixer Link CAT5 Connector (RJ-45)



"HEADPHONE" Female DB-9



These are line level inputs to the internal amplifiers that feed the surface's headphone jack.

Schematic and Load Sheet Drawings

Chapter Contents

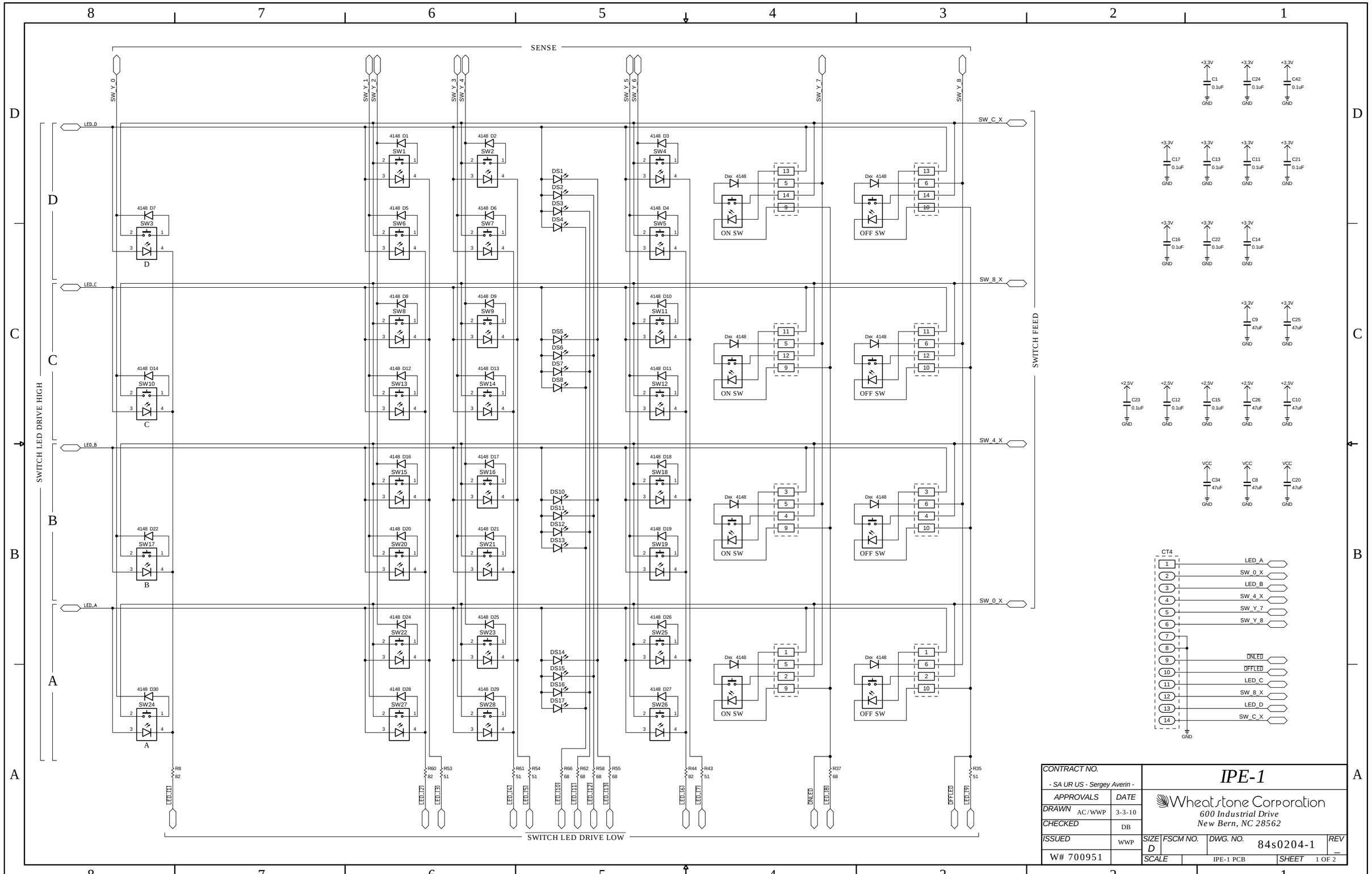
IPE-1 4 Input Panel Switch Card
Schematic 5-2
Load Sheet 5-4

ONSE-1 4 Input Panel On/Off Switch Card
Schematic 5-5
Load Sheet 5-6

MNE-1 Master Panel Switch Card
Schematic 5-7
Load Sheet 5-11

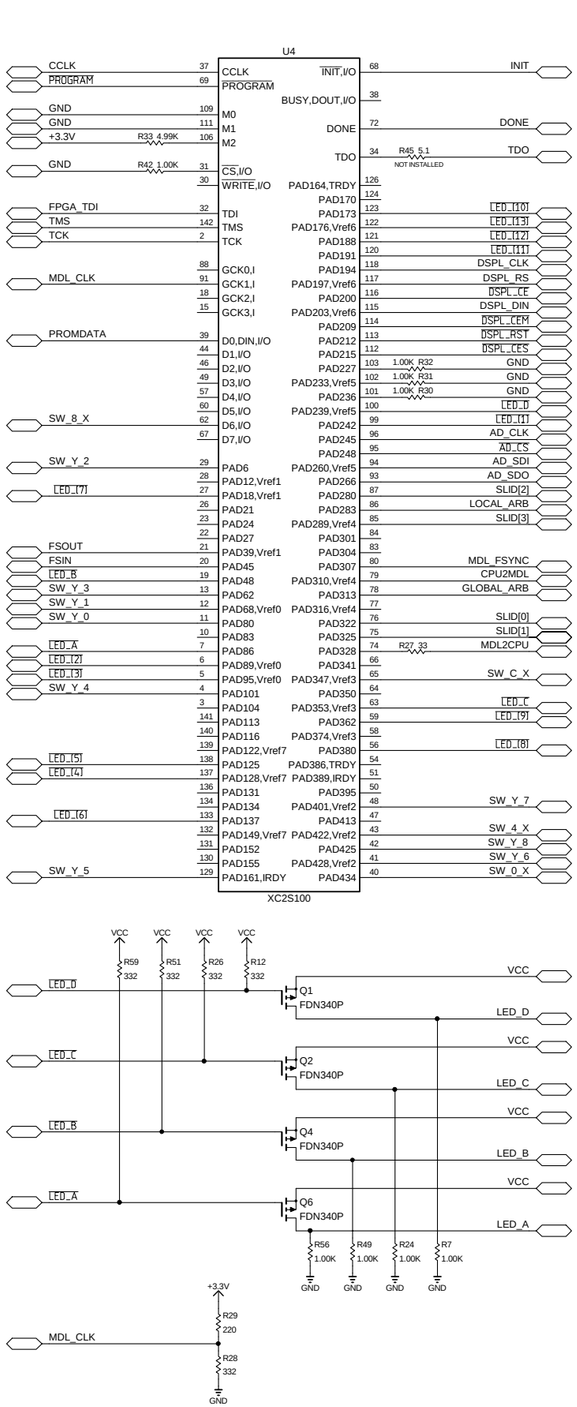
HC-3 Host Controller Card
Schematic 5-12
Load Sheet 5-16

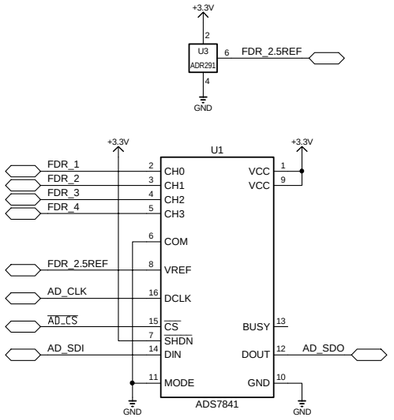
PSE-1 Power Supply
Schematic 5-17
Load Sheet 5-18

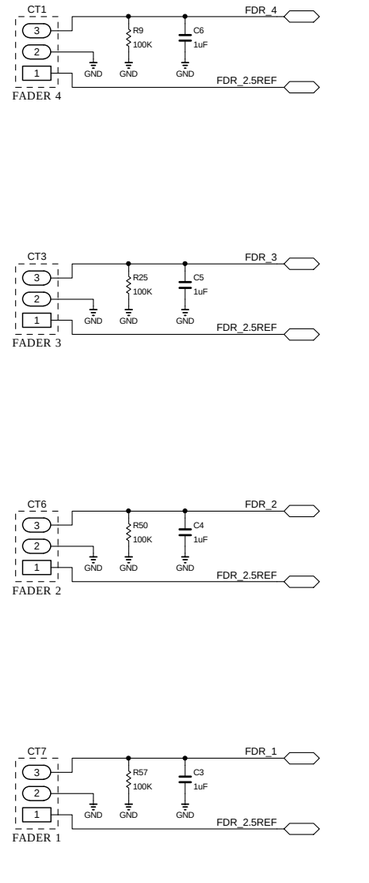


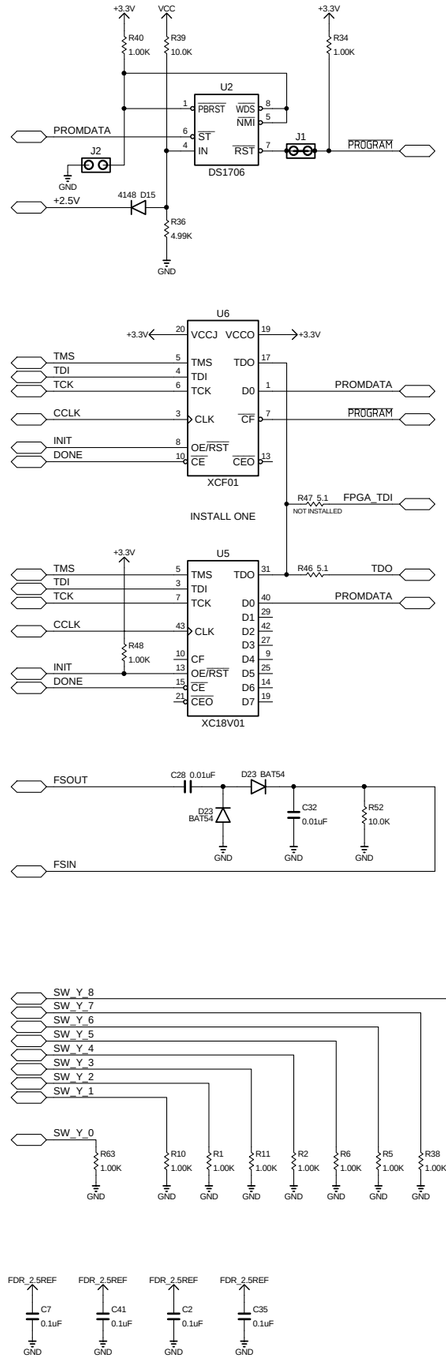
CONTRACT NO.		IPE-1	
- SA UR US - Sergey Averin -			
APPROVALS	DATE	Wheatstone Corporation	
DRAWN AC/WWP	3-3-10	600 Industrial Drive	
CHECKED	DB	New Bern, NC 28562	
ISSUED	WWP	SIZE D / FSCM NO. / DWG. NO. 84s0204-1 / REV —	
W# 700951		SCALE IPE-1 PCB / SHEET 1 OF 2	

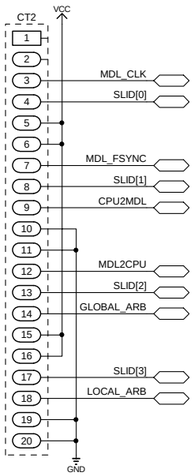
IPE-1 4 Input Panel Switch Card Schematic - Sheet 1 of 2

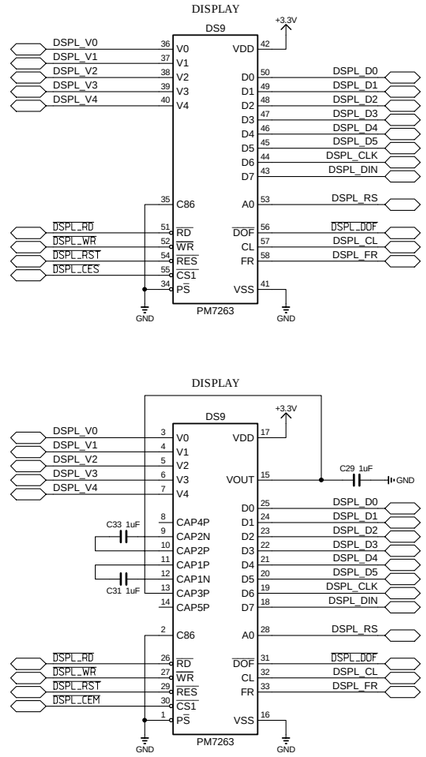


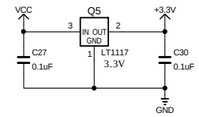


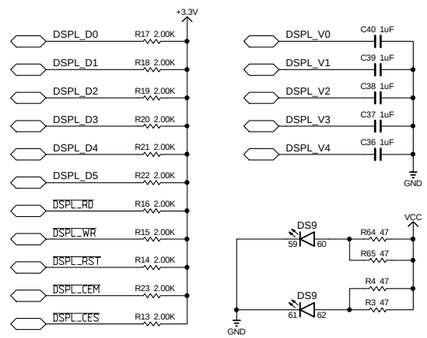




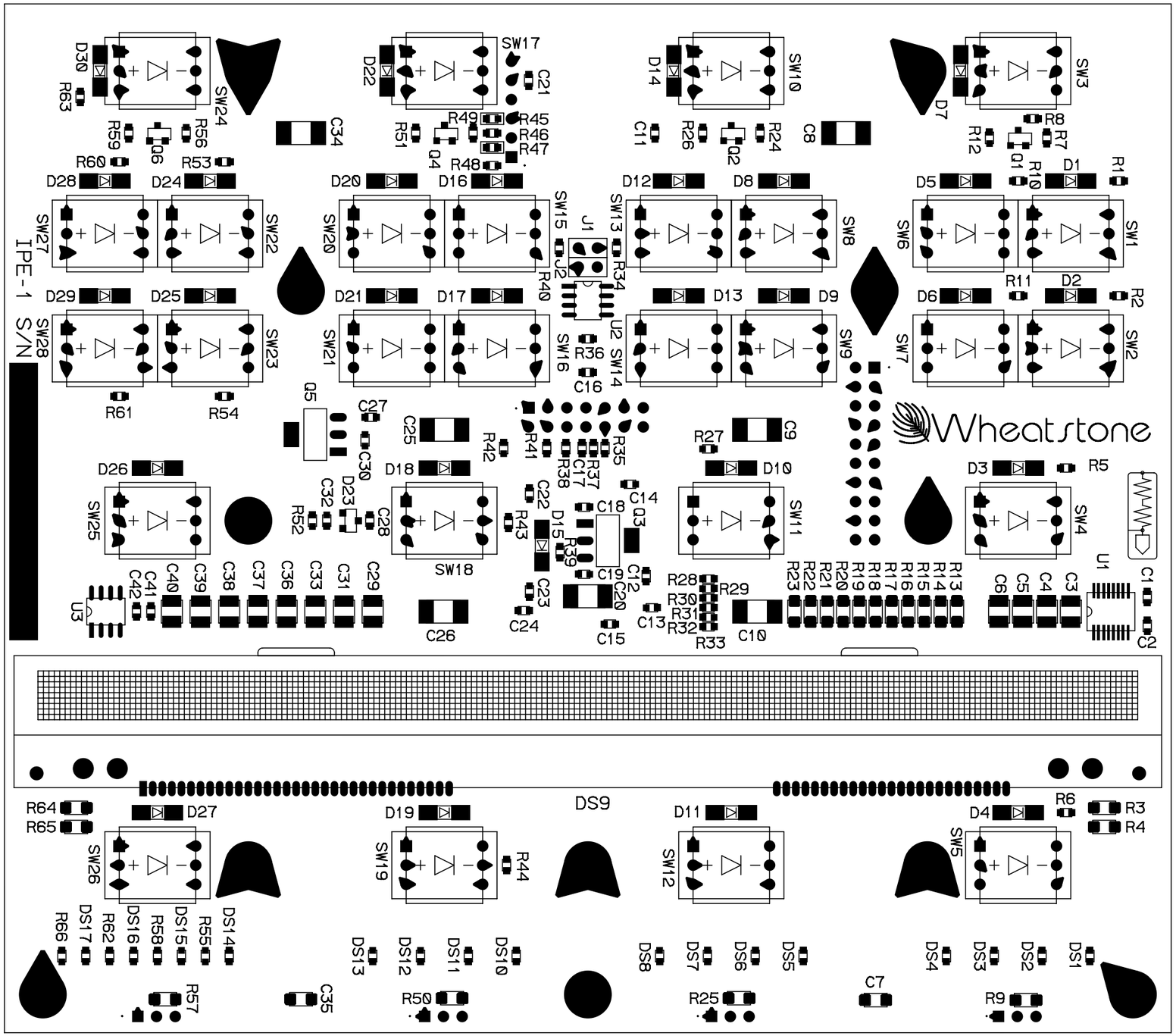


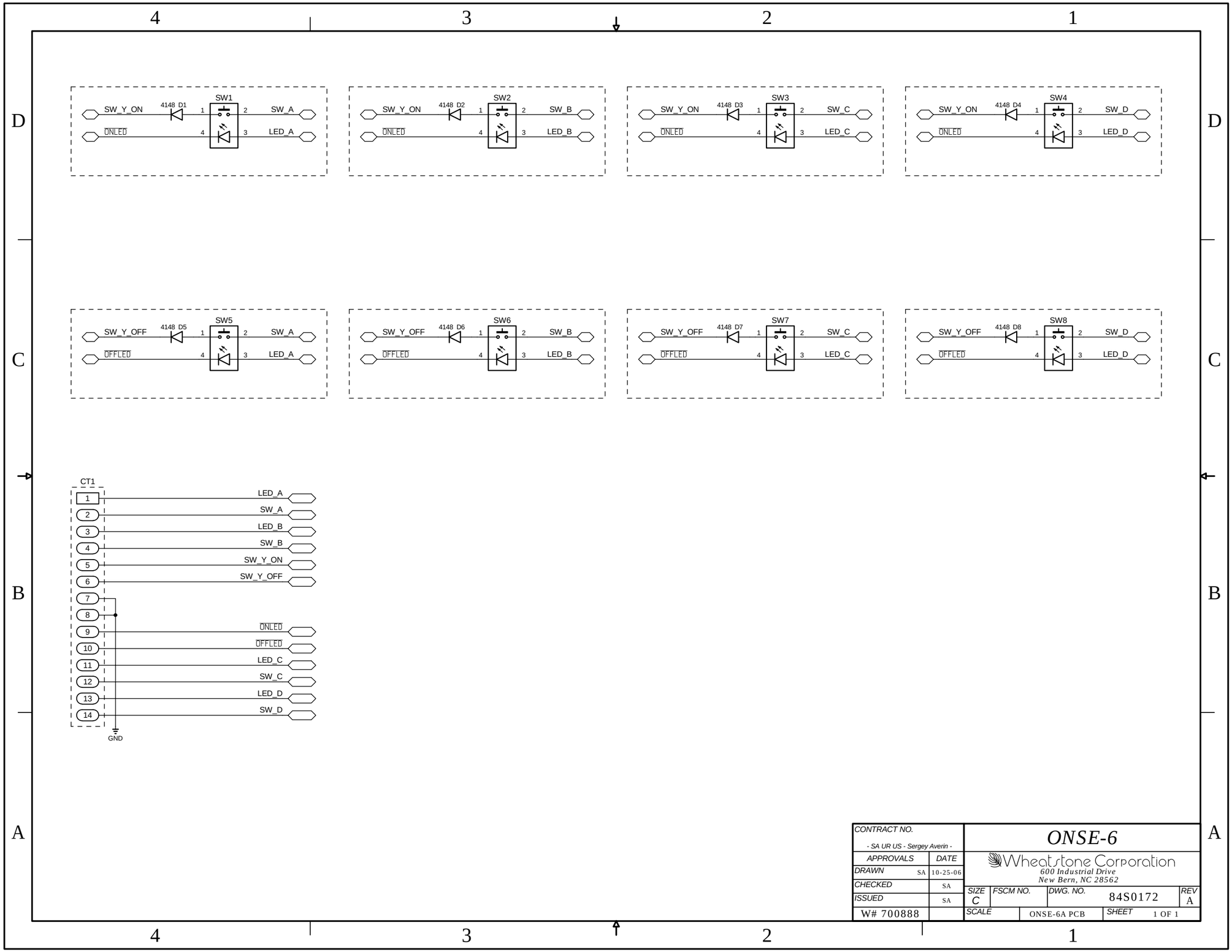




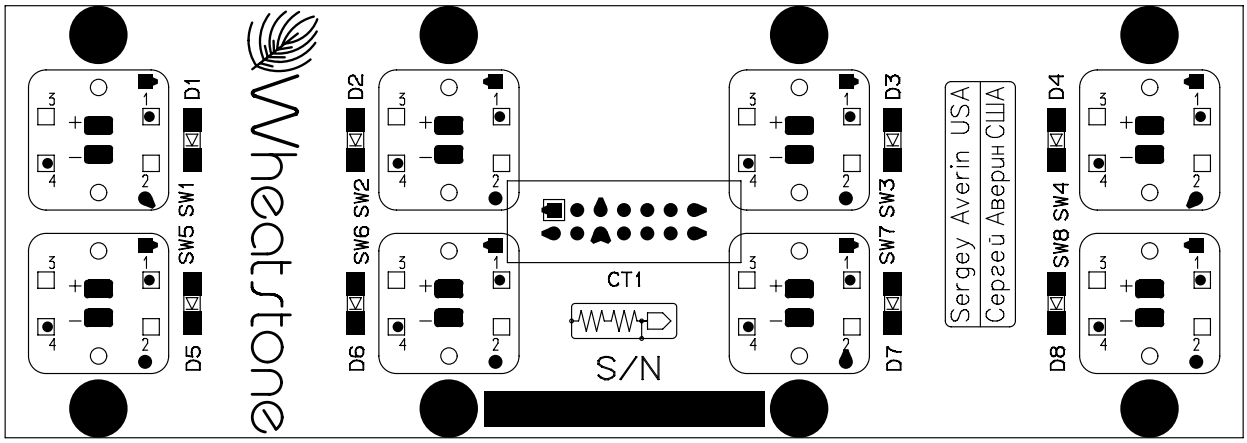


CONTRACT NO. - SA UR US - Sergey Averin -		IPE-1
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562
DRAWN AC/WWP	3-3-10	
CHECKED	DB	
ISSUED	WWP	SIZE D / FSCM NO. / DWG. NO. 84S0204-2 / REV —
W# 700951		SCALE / IPE-1 PCB / SHEET 2 OF 2

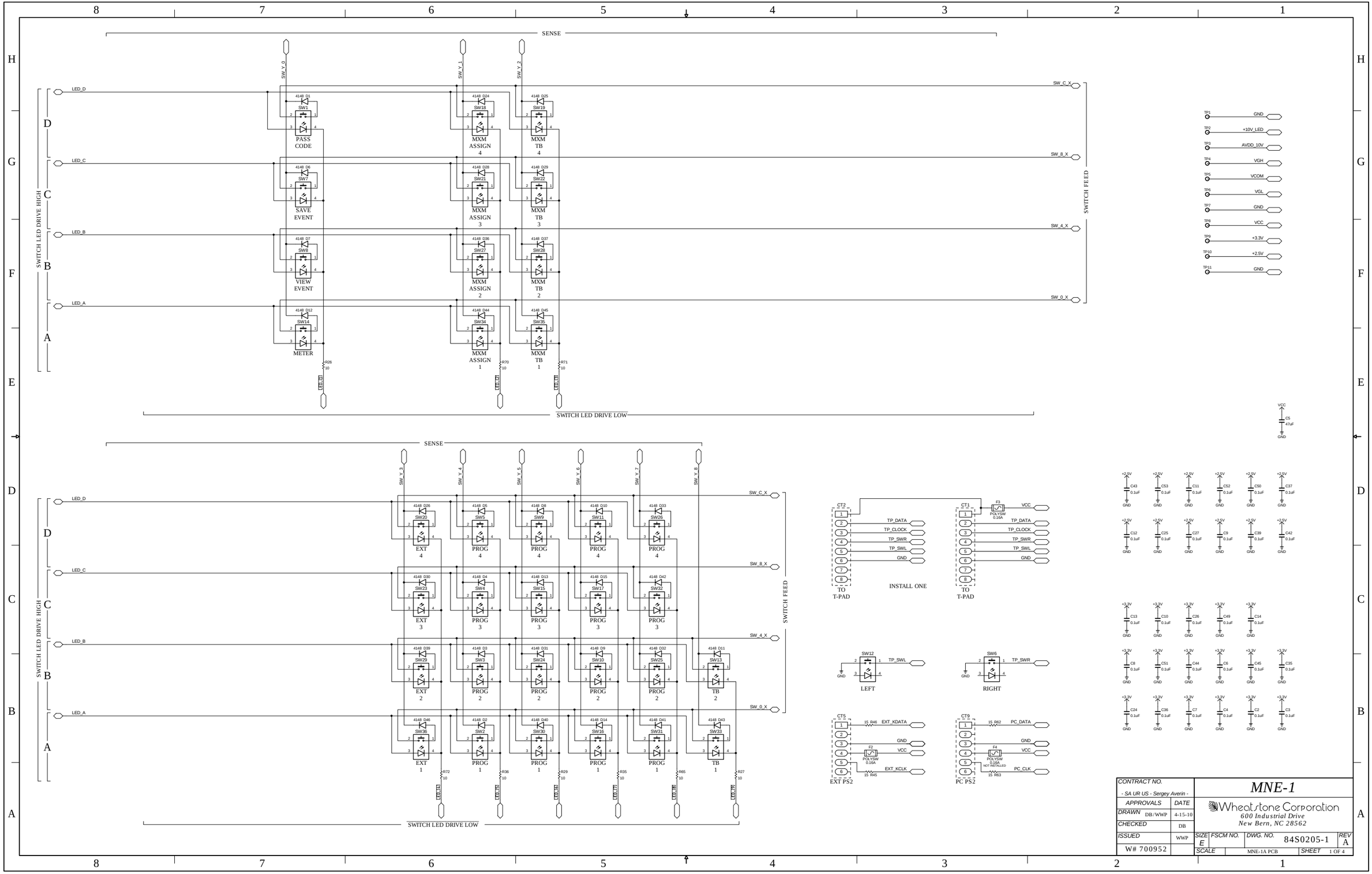

IPE-1
S/N
Wheatstone
SW1
SW2
SW3
SW4
SW5
SW6
SW7
SW8
SW9
SW10
SW11
SW12
SW13
SW14
SW15
SW16
SW17
SW18
SW19
SW20
SW21
SW22
SW23
SW24
SW25
SW26
SW27
SW28
J1
J2
U1
U2
U3
DS9

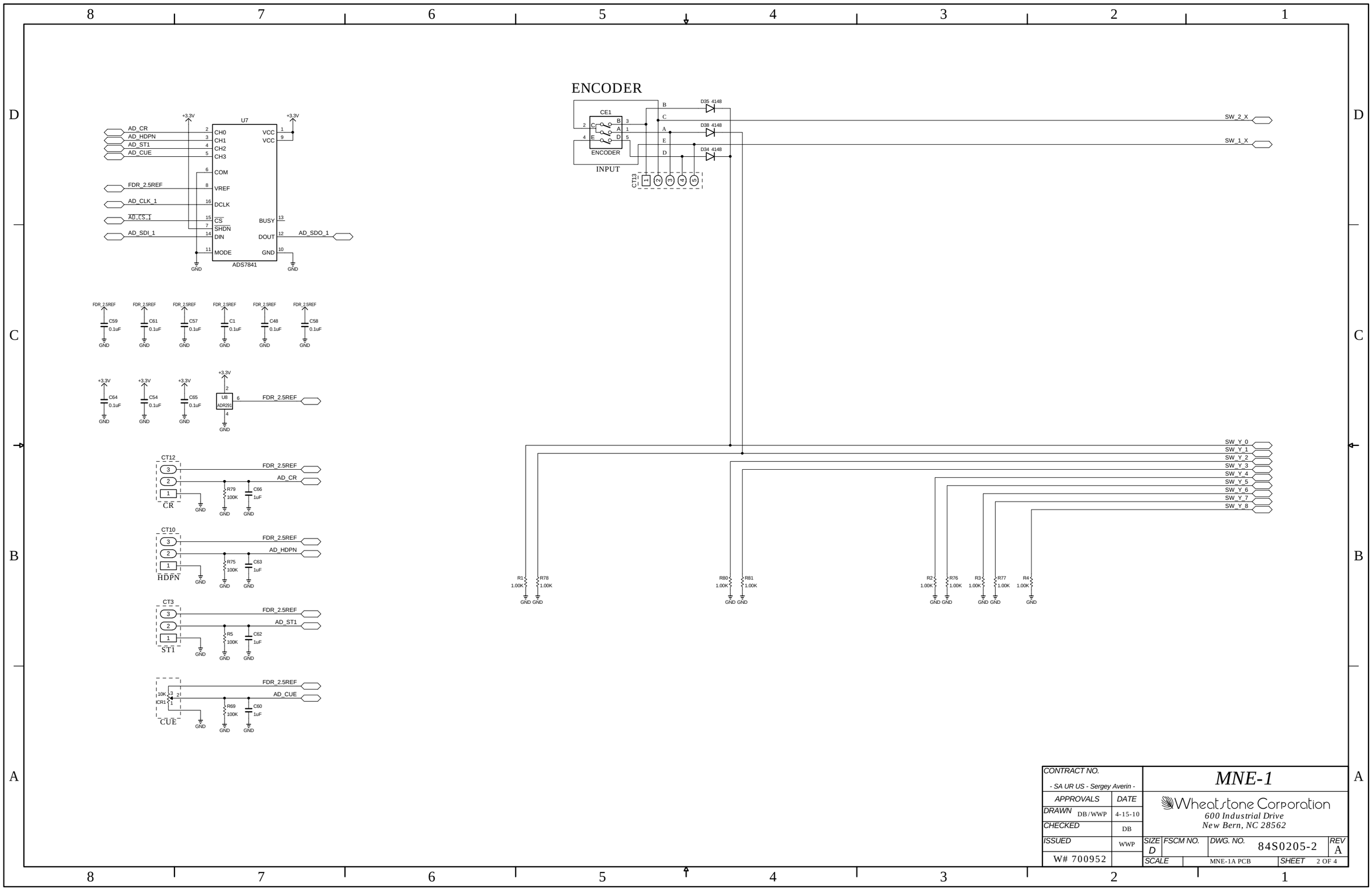


4 Input Modules On/Off Switch Card Schematic - Sheet 1 of 1

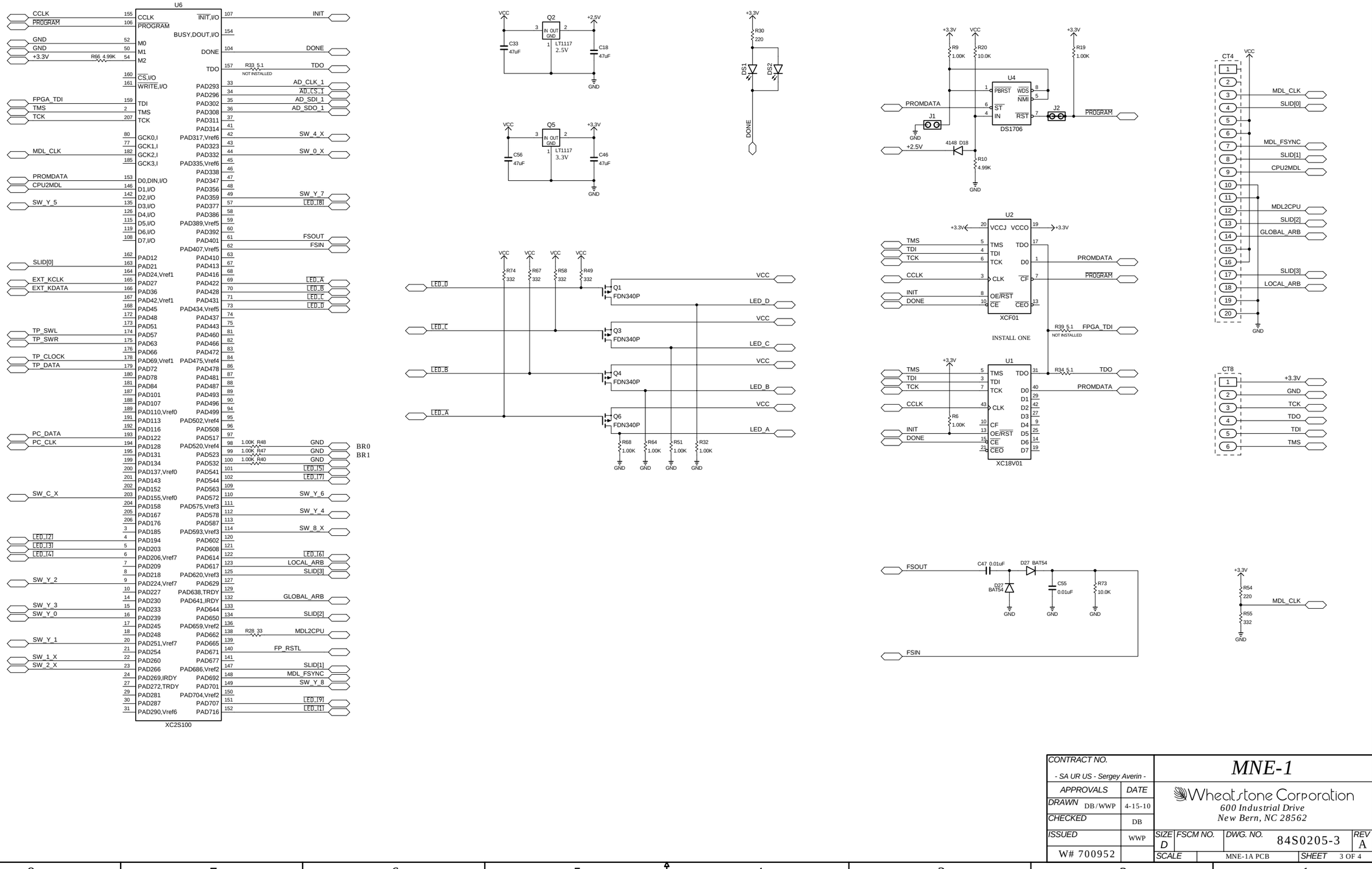


ONSE-1 4 Inputs Panel On/Off Switch Load Sheet

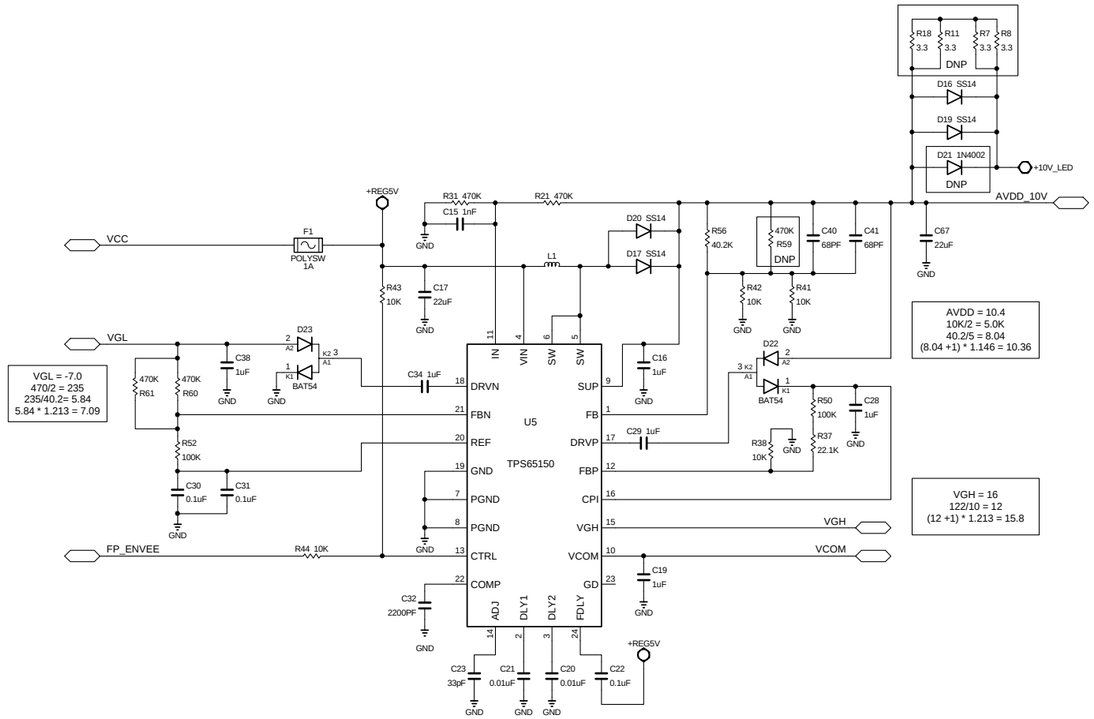

SENSE
SW_V_0
SW_V_1
SW_V_2
LED_D
LED_C
LED_B
LED_A
SWITCH LED DRIVE HIGH
SW_C_X
SW_8_X
SW_4_X
SW_0_X
SWITCH FEED
4148 D1
SW1
PASS CODE
4148 D24
SW18
MXM ASSIGN 4
4148 D25
SW19
MXM TB 4
4148 D6
SW7
SAVE EVENT
4148 D28
SW21
MXM ASSIGN 3
4148 D29
SW22
MXM TB 3
4148 D7
SW8
VIEW EVENT
4148 D36
SW27
MXM ASSIGN 2
4148 D37
SW28
MXM TB 2
4148 D12
SW14
METER
4148 D44
SW34
MXM ASSIGN 1
4148 D45
SW35
MXM TB 1
R26 10
R70 10
R71 10
LED_D1
LED_D2
LED_D3
SWITCH LED DRIVE LOW
TP1 GND
TP2 +10V_LED
TP3 AVDD_10V
TP4 VGH
TP5 VCOM
TP6 VGL
TP7 GND
TP8 VCC
TP9 +3.3V
TP10 +2.5V
TP11 GND
VCC
C5 47uF
GND
SENSE
SW_V_3
SW_V_4
SW_V_5
SW_V_6
SW_V_7
SW_V_8
SW_C_X
SW_8_X
SW_4_X
SW_0_X
SWITCH FEED
4148 D26
SW20
EXT 4
4148 D5
SW5
PROG 4
4148 D8
SW9
PROG 4
4148 D10
SW11
PROG 4
4148 D33
SW26
PROG 4
4148 D30
SW23
EXT 3
4148 D4
SW4
PROG 3
4148 D13
SW15
PROG 3
4148 D15
SW17
PROG 3
4148 D42
SW32
PROG 3
4148 D39
SW29
EXT 2
4148 D3
SW3
PROG 2
4148 D31
SW24
PROG 2
4148 D9
SW10
PROG 2
4148 D32
SW25
PROG 2
4148 D11
SW13
TB 2
4148 D46
SW36
EXT 1
4148 D2
SW2
PROG 1
4148 D40
SW30
PROG 1
4148 D14
SW16
PROG 1
4148 D41
SW31
PROG 1
4148 D43
SW33
TB 1
R72 10
R36 10
R29 10
R35 10
R65 10
R27 10
LED_D4
LED_D5
LED_D6
LED_D7
LED_D8
LED_D9
SWITCH LED DRIVE LOW
CT2
TP_DATA
TP_CLOCK
TP_SWR
TP_SWL
GND
INSTALL ONE
TO T-PAD
CT1
F3 POLYSW 0.16A
VCC
TP_DATA
TP_CLOCK
TP_SWR
TP_SWL
GND
TO T-PAD
SW12
TP_SWL
GND
LEFT
SW6
TP_SWR
GND
RIGHT
CT5
R46 15
EXT_KDATA
GND
F2 POLYSW 0.16A
VCC
EXT_KCLK
R45 15
EXT PS2
CT9
R62 15
PC_DATA
GND
F4 POLYSW 0.16A NOT INSTALLED
VCC
PC_CLK
R63 15
PC PS2
+2.5V
C43 0.1uF
C53 0.1uF
C11 0.1uF
C52 0.1uF
C50 0.1uF
C37 0.1uF
C12 0.1uF
C25 0.1uF
C27 0.1uF
C9 0.1uF
C39 0.1uF
C42 0.1uF
+3.3V
C13 0.1uF
C10 0.1uF
C26 0.1uF
C49 0.1uF
C14 0.1uF
C8 0.1uF
C51 0.1uF
C44 0.1uF
C6 0.1uF
C45 0.1uF
C35 0.1uF
C24 0.1uF
C36 0.1uF
C7 0.1uF
C4 0.1uF
C2 0.1uF
C3 0.1uF
GND
CONTRACT NO.
- SA UR US - Sergey Averin -
APPROVALS
DRAWN DB/WWP 4-15-10
CHECKED DB
ISSUED WWP
W# 700952
DATE
MNE-1
Wheatstone Corporation
600 Industrial Drive
New Bern, NC 28562
SIZE E
FSCM NO.
DWG. NO. 84S0205-1
REV A
SCALE
MNE-1A PCB
SHEET 1 OF 4



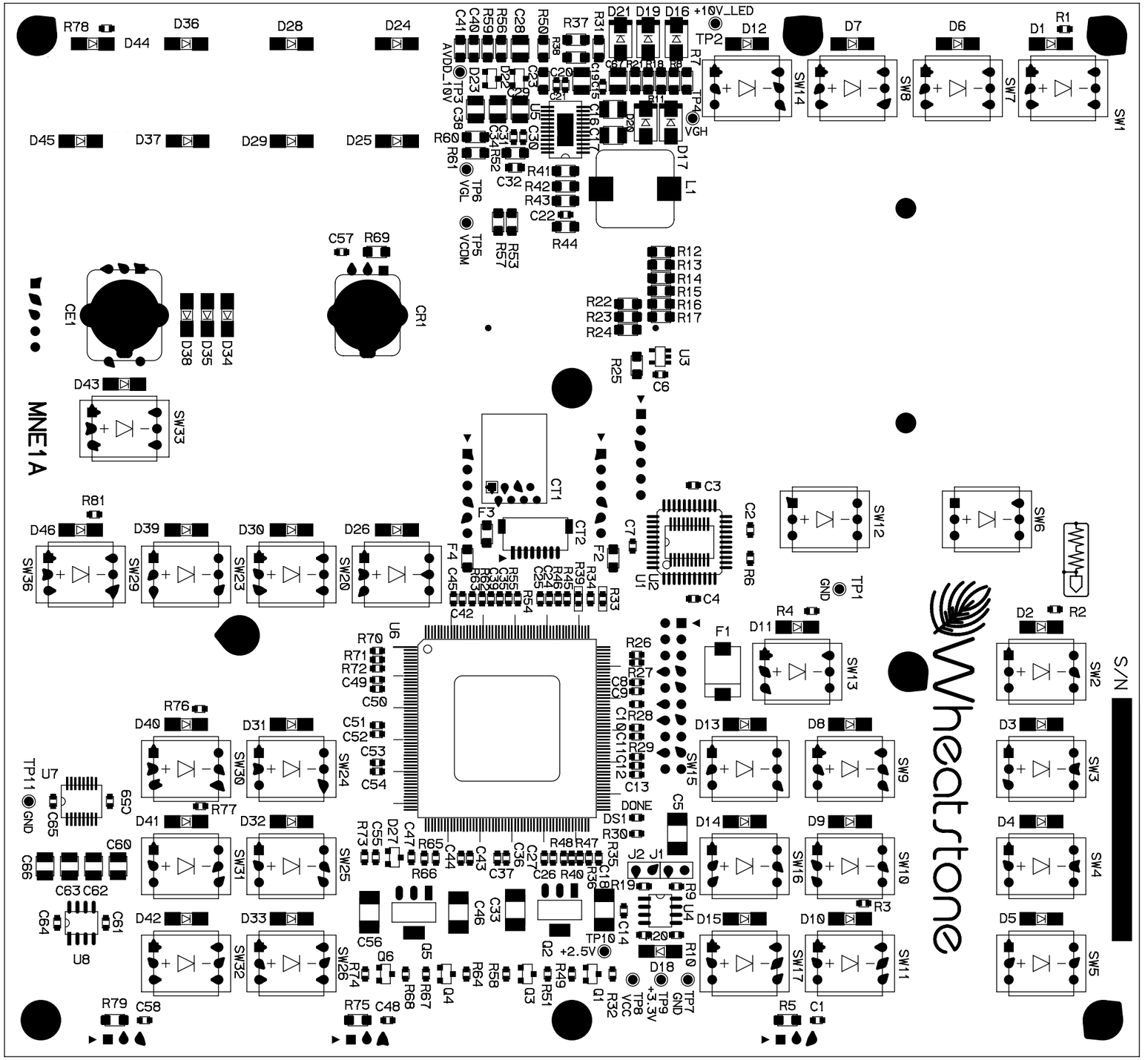
CONTRACT NO. - SA UR US - Sergey Averin -	MNE-1
APPROVALS / DATE	Wheatstone Corporation, 600 Industrial Drive, New Bern, NC 28562
DRAWN DB/WWP 4-15-10	
CHECKED DB	
ISSUED WWP	SIZE D · FSCM NO. · DWG. NO. 84S0205-2 · REV A
W# 700952	SCALE MNE-1A PCB · SHEET 2 OF 4

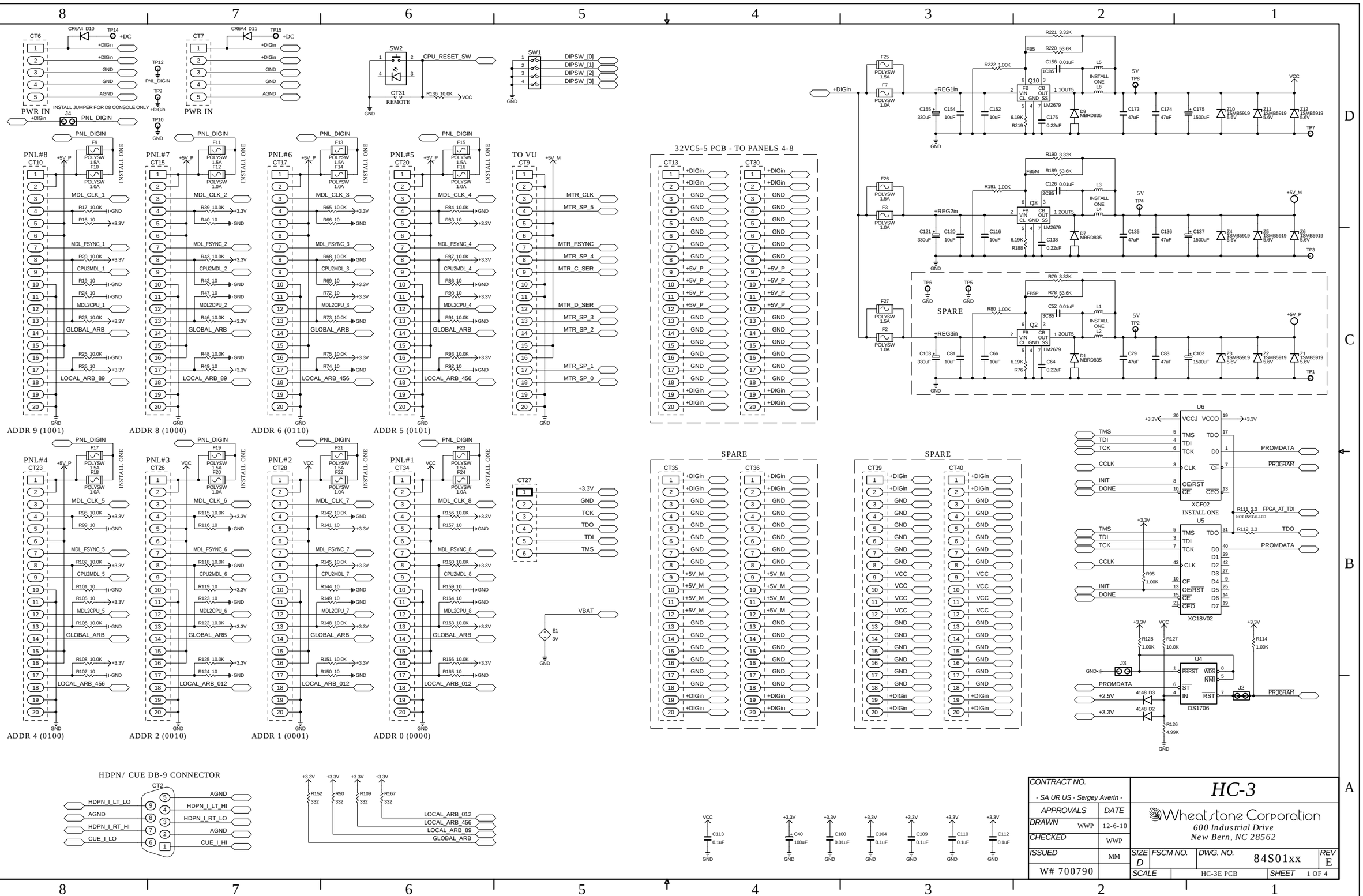


CONTRACT NO.	MNE-1
- SA UR US - Sergey Averin -	
APPROVALS / DATE	Wheatstone Corporation
DRAWN DB/WWP 4-15-10	600 Industrial Drive
CHECKED DB	New Bern, NC 28562
ISSUED WWP	SIZE D · FSCM NO. · DWG. NO. 84S0205-3 · REV A
W# 700952	SCALE MNE-1A PCB · SHEET 3 OF 4

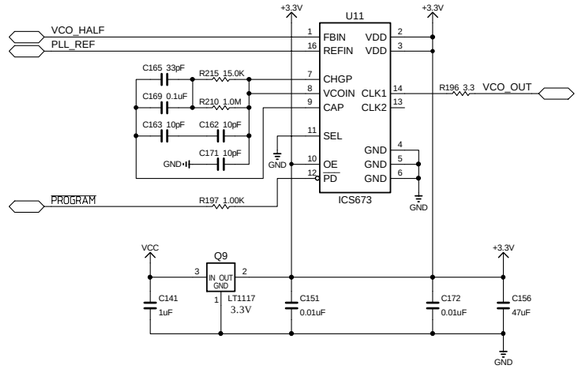


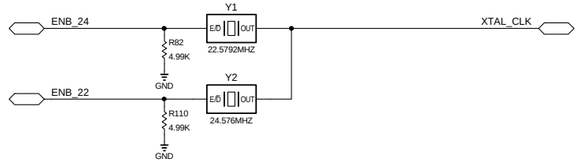
CONTRACT NO.	MNE-1
- SA UR US - Sergey Averin -	
APPROVALS / DATE	Wheatstone Corporation
DRAWN DB/WWP 4-15-10	600 Industrial Drive
CHECKED DB	New Bern, NC 28562
ISSUED WWP	SIZE D / FSCM NO. / DWG. NO. 84S0205-4 / REV A
W# 700952	SCALE MNE-1A PCB / SHEET 4 OF 4

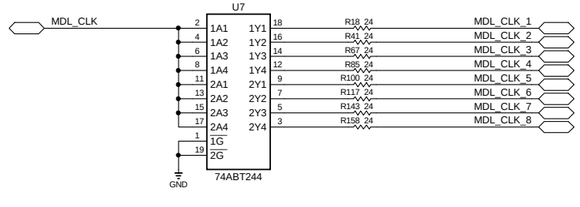

MNE1A
Wheatstone
S/N
+10V_LED
AVDD_10V
VGH
VGL
VCDM
+2.5V
+3.3V
GND
VCC
DONE

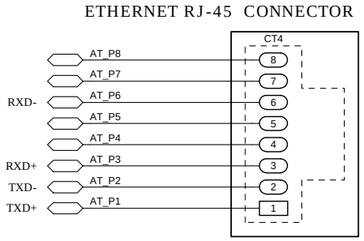


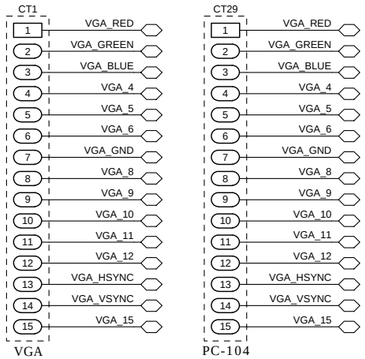
HC-3 Host Controller Card Schematic - Sheet 1 of 4

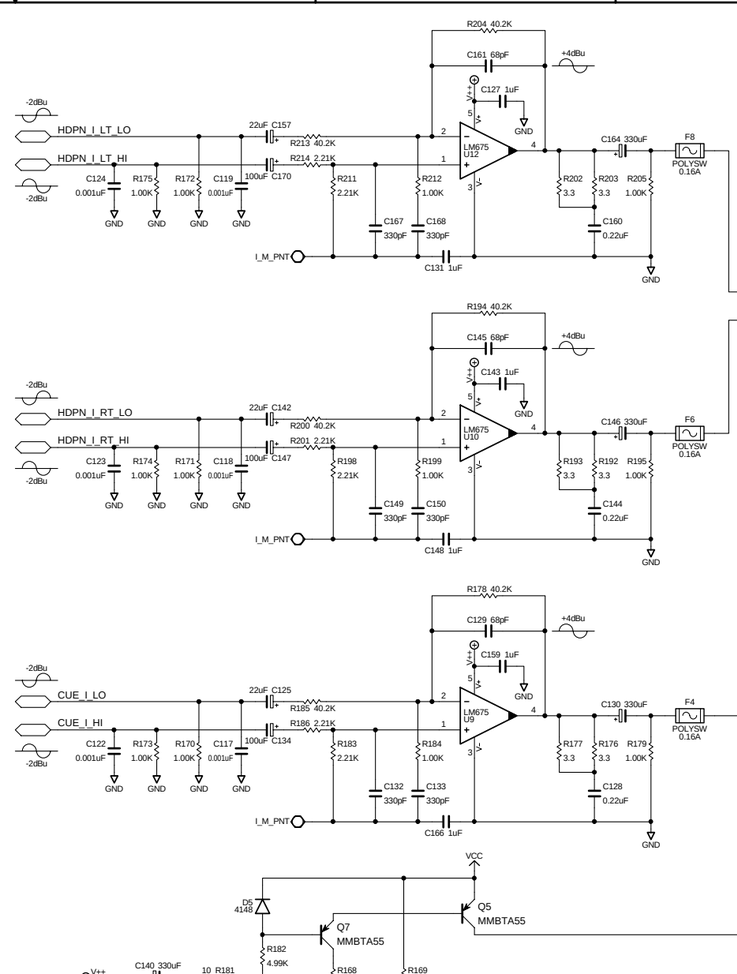


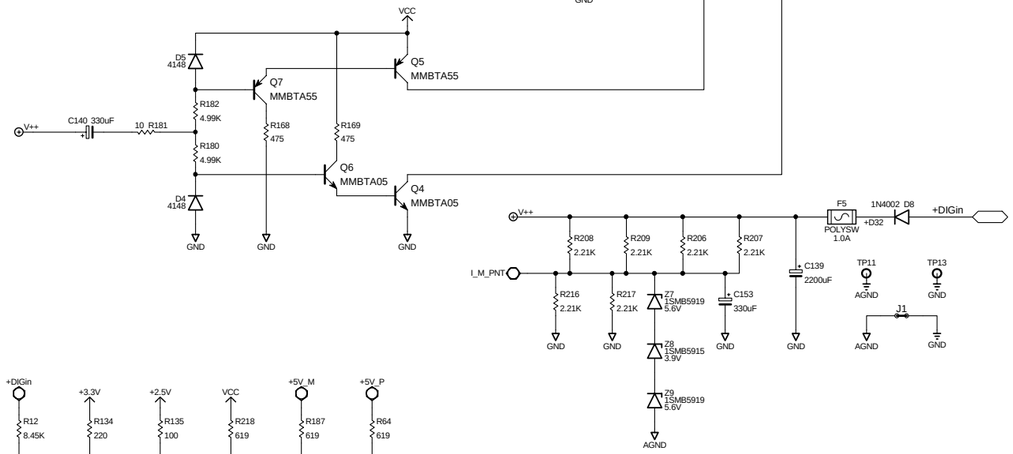


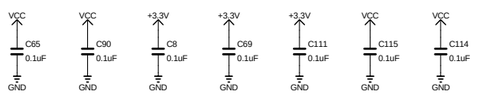


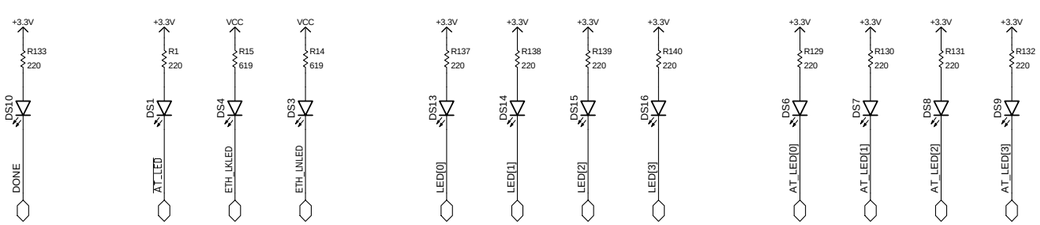


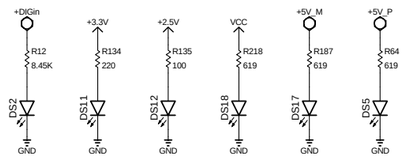




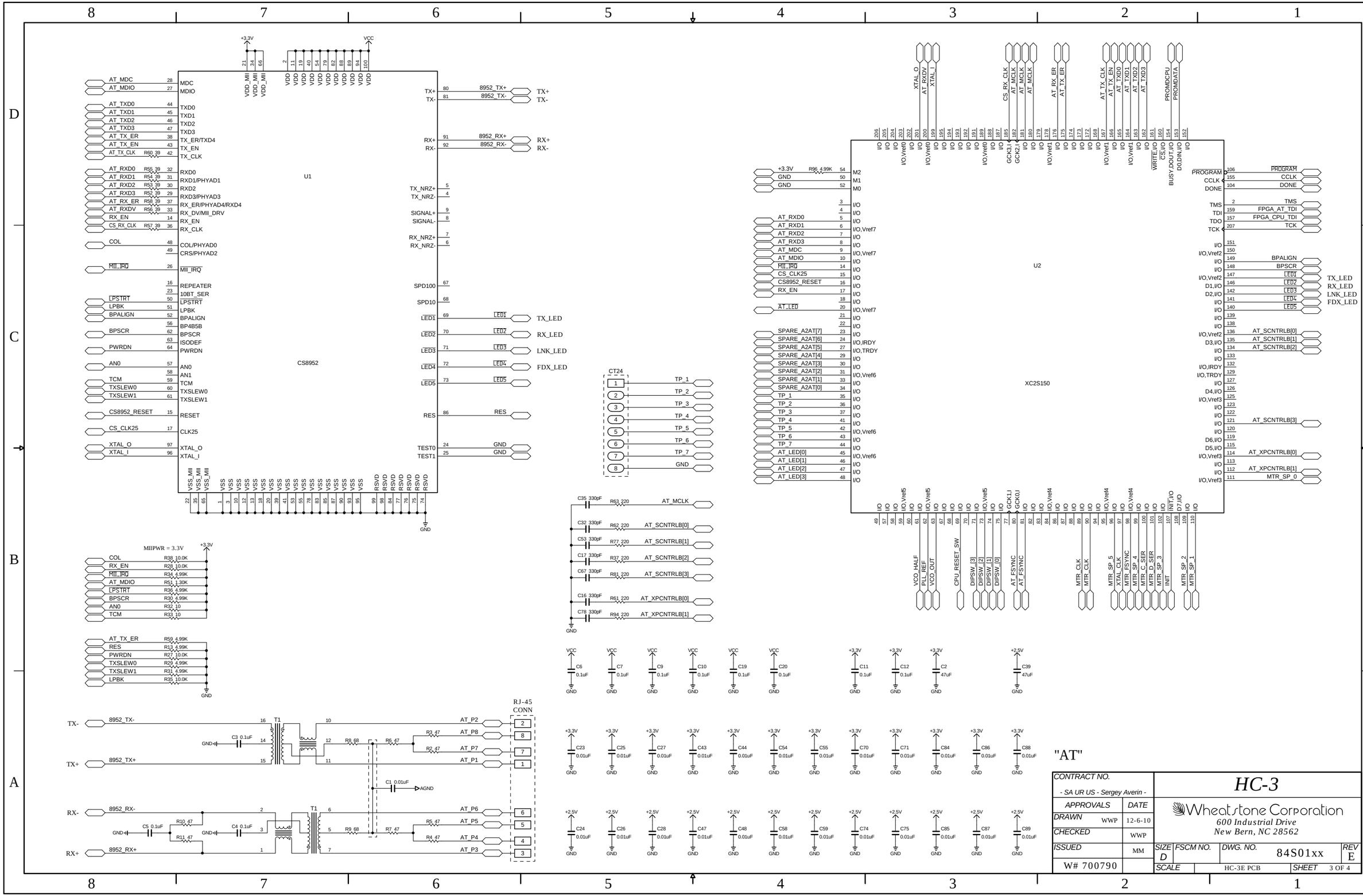




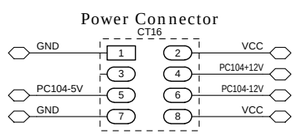


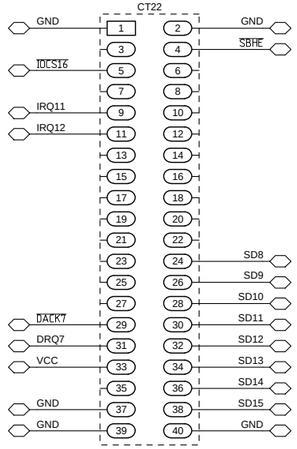


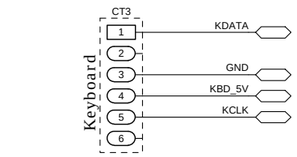
CONTRACT NO. - SA UR US - Sergey Averin -		HC-3	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN WWP	12-6-10		
CHECKED	WWP		
ISSUED	MM	SIZE D / FSCM NO. / DWG. NO. 84S01xx / REV E	
W# 700790		SCALE HC-3E PCB / SHEET 2 OF 4	

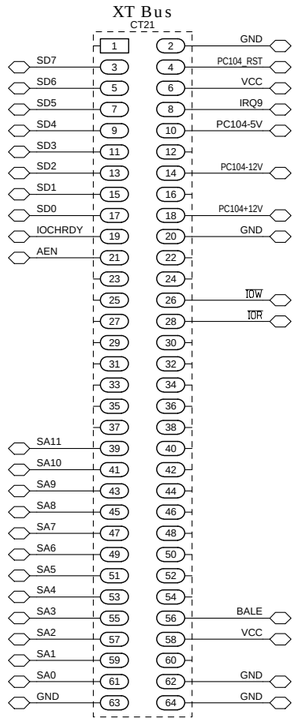


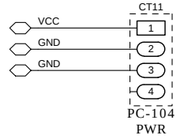
HC-3 Host Controller Card Schematic - Sheet 3 of 4

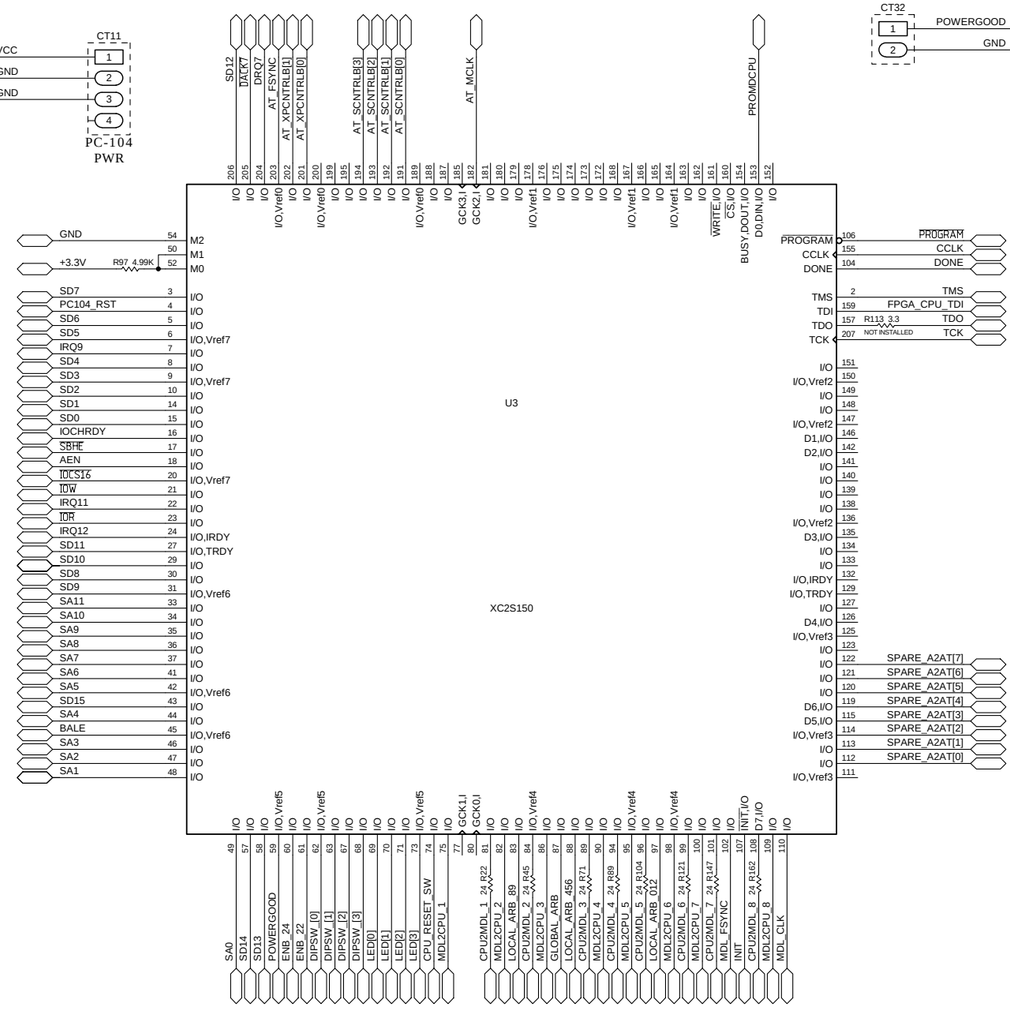


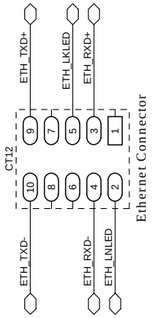


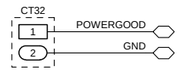


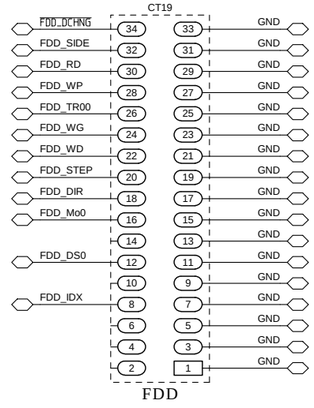


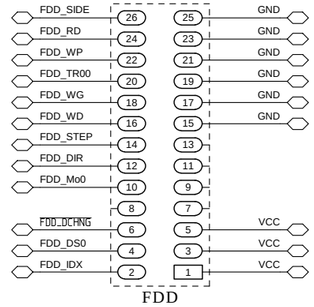


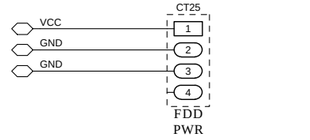


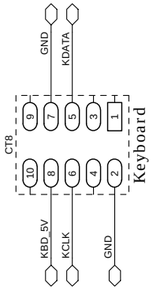


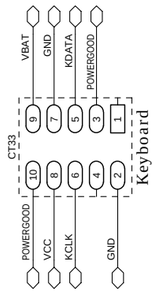


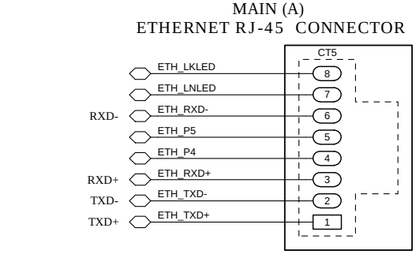


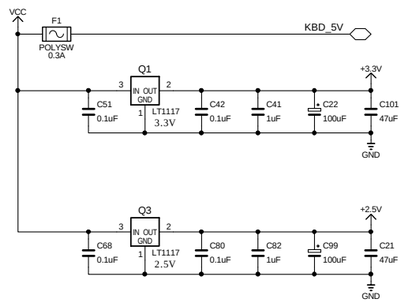


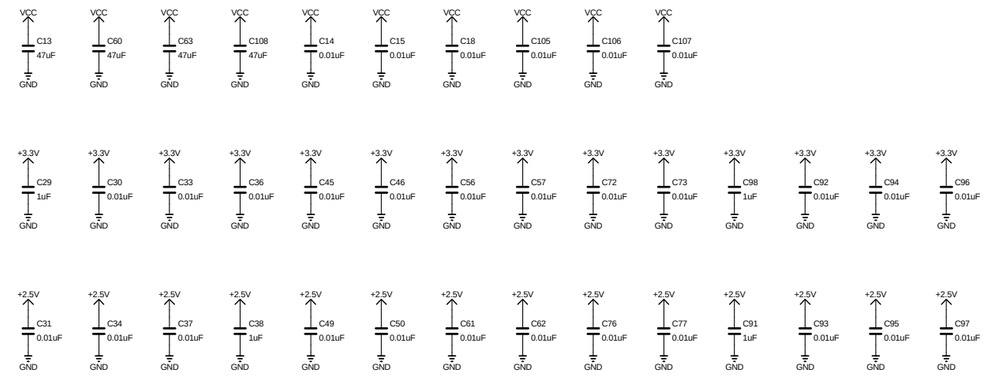






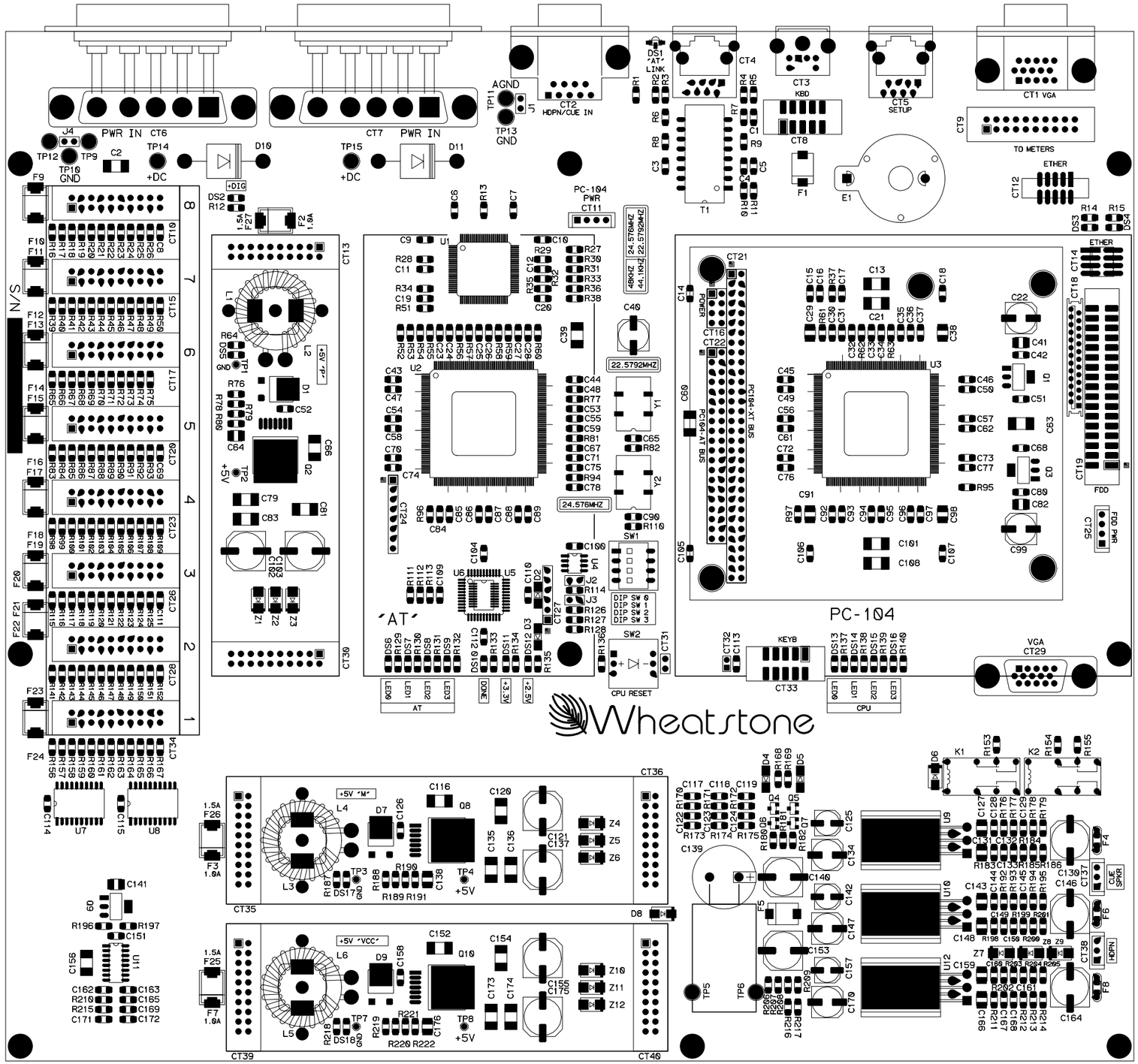


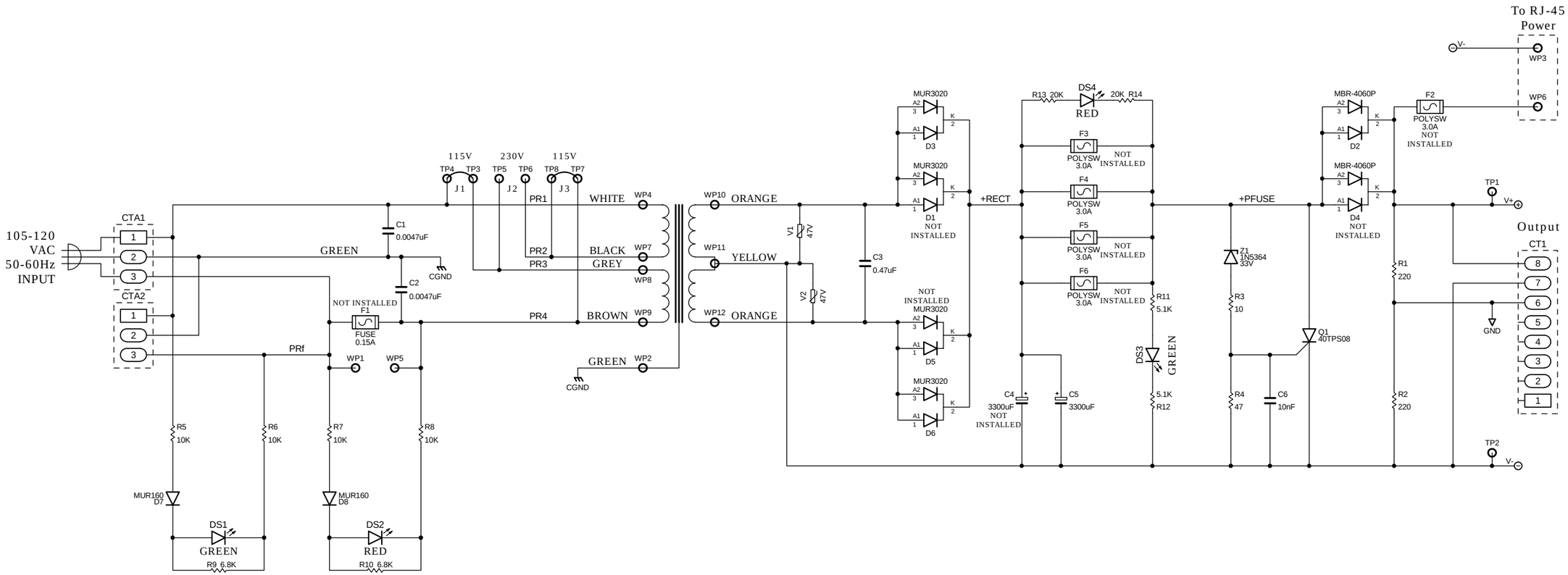




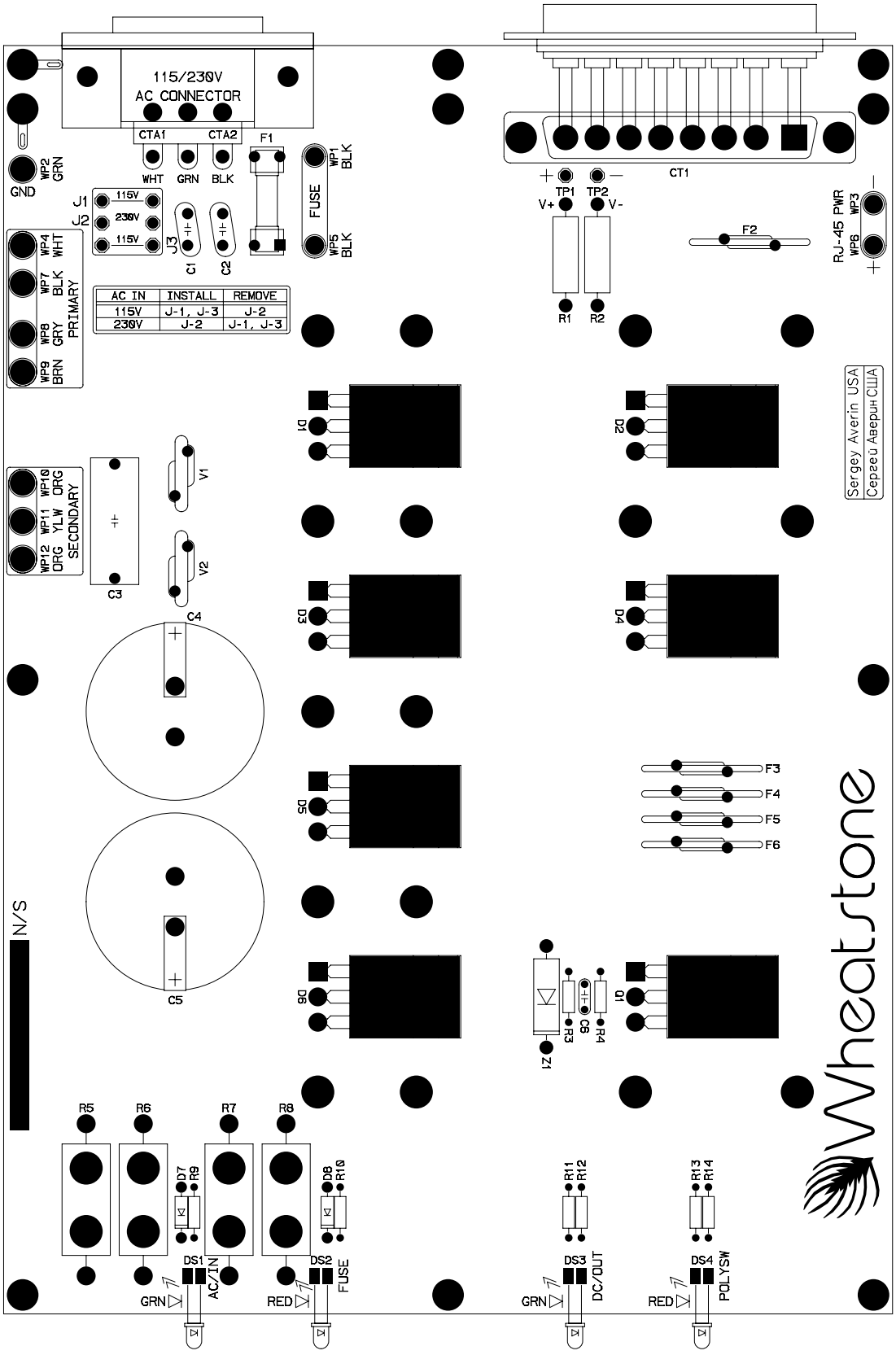
MAIN (A) PC-104

CONTRACT NO. - SA UR US - Sergey Averin -		HC-3	
APPROVALS	DATE	Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562	
DRAWN WWP	12-6-10		
CHECKED	WWP		
ISSUED	MM	SIZE D / FSCM NO. / DWG. NO. 84S01xx / REV E	
W# 700790		SCALE / HC-3E PCB / SHEET 4 OF 4	


PWR IN CT6
PWR IN CT7
AGND
TP11
TP13 GND
J1
CT2 HDPN/CUE IN
DS1 'AT' LINK
CT4
CT3 KBD
CT5 SETUP
CT1 VGA
CT9 TO METERS
ETHER
CT12
J4
TP12
TP9
TP10 GND
C2
TP14 +DC
D10
TP15 +DC
D11
T1
F1
E1
PC-104 PWR CT11
DS2
R12
+DIG
F27 1.5A
F2 1.0A
C6
R13
C7
N/S
F9
F10
F11
F12
F13
F14
F15
F16
F17
F18
F19
F20
F21
F22
F23
F24
CT10
CT15
CT17
CT20
CT23
CT26
CT28
CT34
U7
U8
CT13
L1
L2
+5V-PC
D1
C52
R64
DS5
TP1
GND
R76
R78
R80
R79
C64
C66
Q2
TP2
+5V
C79
C83
C81
C82
C80
Z1
Z2
Z3
CT30
C9
U1
C10
R28
C11
R34
C19
R51
R29
R27
R30
R31
R33
R36
R38
C12
R35
R32
C20
C40
C39
48MHZ
44.1MHZ
24.576MHZ
22.5792MHZ
R52
R53
R54
R55
C24
C23
C22
C29
C28
C26
C25
R58
R59
R60
R69
C27
C43
U2
C47
C54
C58
C70
C74
C44
C48
R77
C53
C55
C59
R81
C67
C71
C75
R94
C78
Y1
C65
R82
Y2
24.576MHZ
C90
R110
SW1
C84
R84
C85
C86
C87
C88
C89
CT24
C104
C100
U4
U6
U5
R111
R112
R113
C109
C110
D2
D3
U3
R114
C127
R126
R127
R128
R136
DIP SW 0
DIP SW 1
DIP SW 2
DIP SW 3
'AT'
SW2
CPU RESET
CT31
DS6
R129
R130
DS8
R131
DS9
R132
DS10
C112
R133
DS11
R134
DS12
R135
LED0
LED1
LED2
LED3
DONE
+3.3V
+2.5V
AT
CT13
CT30
PC-104
CT21
CT16
CT22
POWER
PC104-XT BUS
PC104-AT BUS
C14
C69
C15
C16
R37
C17
C13
C18
C21
C29
R61
C30
C31
C35
C36
C37
C38
C32
R62
C33
C34
R63
U3
C22
C41
C42
C45
C49
C56
C61
C72
C76
C46
C50
C57
C62
C73
C77
R95
C51
C63
C68
C80
C82
C99
C91
R97
C92
C93
C94
C95
C96
C97
C98
C105
C106
C101
C108
C107
CT14
CT18
CT19
FDD
CT25
FDD PWR
CT32
CT113
KEYB
CT33
DS13
R137
DS14
R138
DS15
R139
DS16
R140
VGA
CT29
CPU
Wheatstone
CT36
CT35
CT39
CT40
+5V "M"
+5V "VCC"
1.5A
F26
F3 1.0A
F25
F7 1.0A
L4
L6
D7
D9
C126
C158
C116
C152
Q8
Q10
C120
C154
C135
C136
C121
C137
C173
C174
C155
C175
Z4
Z5
Z6
Z10
Z11
Z12
TP3
TP4
TP7
TP8
+5V
GND
R187
DS17
R188
R190
R189
R191
C138
R218
DS18
R219
R221
R220
R222
C176
D8
C117
C118
C119
D4
R168
R169
D5
R170
Q4
Q5
R160
Q6
R181
Q7
R182
R176
R171
R172
R173
R174
R175
C122
C123
C124
C125
C134
C139
C140
C142
C147
C153
C157
C170
TP5
TP6
F5
U9
U10
U12
K1
K2
R153
R154
R155
D6
C127
C128
R177
C129
R178
R179
C131
C132
R184
C133
R185
R183
R186
C130
C137
C146
C148
R198
C159
R200
Z8
Z9
Z7
C166
R203
R204
R205
C167
R211
R212
R213
C168
R214
C164
C141
6D
R196
R197
C151
C156
U11
C162
C163
R210
C165
R215
C169
C171
C172
F4
CLK SPKR
F6
HDPN
F8



CONTRACT NO. - SA UR US - Sergey Averin -		PSE-1	
APPROVALS	DATE	Wheatstone Corporation, 600 Industrial Drive, New Bern, NC 28562	
DRAWN SA	3-26-12		
CHECKED	MM		
ISSUED	KP		
W# 700828		SIZE C / FSCM NO. / DWG. NO. 00S0034 / REV B	
		SCALE / PSU-1B PCB / SHEET 1 OF 1	



PSE-1 Power Supply Load Sheet

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Options Text File

Introduction

There are a number of operational features on the E-1 surface that are controlled by the contents of the Options Text File (E1_OPTS.TXT) that resides on the surface's flash drive. In order to configure these features it is necessary to modify this file.

Modifying The Options Text File

There are several steps involved in modifying the file:

1. Establish an FTP (File Transfer Protocol) session with the surface. This is best done using an FTP program with a graphical interface, such as FileZilla or FTP Surfer by Whisper Technology. You will set up an anonymous session using the following information:

   Name: something useful, assuming you will save the setup
   Address: use the IP address of the surface
   User name: knockknock
   Password: whosthere

2. When the FTP session connects you will see a list of files and folders that are on the surface. One of those files is the Options Text file, named as specified above. Drag this file over to your PC's desktop so you can save a copy.
3. Make any required changes to the copy of the file on your desktop, according to the information in the following sections, then save the file and drag its icon back to the FTP window to send the modified file back to the surface.
4. Once the modified file is on the surface, wait a minute to be sure that the file has actually been written to the surface's flash memory. Then close the FTP session.
5. Reboot the surface for the changes to take effect.
6. If the surface has a backup CPU you should also save the same modified file to the backup CPU, which needs to be accessed by a separate FTP session using its IP address. You can wait to reboot the surface until you have sent the modified file to both surfaces; in this way you need only reboot the surface once.

A Simple Example From The File

As a simple example let's look at the MUTE_METHOD option. Scroll through the Options Text File (or look at the sample file listing at the end of this Appendix) until you see the following three lines of code:

```
// Syntax: MUTE_METHOD:?
// ? 0 (default) = ON button, 1 = ON AIR.
MUTE_METHOD:0
```

The first line describes the syntax for this option. It starts with two slashes, which are interpreted as the start of a comment line. Comment lines are made for **us** to read, and the surface CPU ignores them. This line shows that the syntax for the option is the keyword MUTE_METHOD followed by a colon (:) followed by some character, as represented by the '?' character.

The next line indicates that the '?' can be replaced by a '0' (a zero, not the letter O) if a muting channel being ON will trigger the mute, or a '1' if the muting channel must be both ON and assigned to a main bus (thus making it ON AIR) before it will trigger the mute. This specific example shows that the default setting is '0' for this option. Please note that this may or may not be the case for your particular surface, as the default option is subject to change. The **idea** of how to use the file remains true.

The third line is not a comment; this is the line the surface CPU actually reads from the file. This line, as shown, sets the muting method to ON (channel must be ON to activate a mute, but need not be ON AIR). If this is not the desired operation, this line must be edited. Change the '0' to a '1' and the muting method will change so that a channel is required to be ON AIR before it will activate a mute. As indicated in the instructions above for modifying the file, the actual change to operation will not happen until the surface has been rebooted and has read the modified file.

The edited line must follow the established syntax precisely or the surface may not behave as expected.

A Second Example

As a second example, lets look at something a little more involved. Once again, scroll through the Options Text File to find the following code (please note that some surfaces may have a different number of code lines in this section; the following is just for the purposes of example):

```
// Syntax: SPARE#:?
// # is the spare button number (1 - 12)
// ? is the mode (default = 2)...
//   0 = None, Button presses are ignored, LED controlled by DIO
//   1 = Toggle, Button state toggles on each press, LED controlled by Surface
//   2 = Momentary, Button is active when held down, LED controlled by Surface
//   3 = Momentary, Button is active when held down, LED controlled by DIO
//   4 = Automation, Button & LED are controlled by automation interface
//   5 = Preset Select, Button selects pre-configured preset, LED controlled by Surface
SPARE1:2
SPARE2:2
SPARE3:2
SPARE4:2
SPARE5:2
SPARE6:2
SPARE7:2
SPARE8:2
SPARE9:2
SPARE10:2
SPARE11:2
SPARE12:2
```

Once again, our first line is a comment line that shows the syntax used for this particular option. In this case there are several code lines, each one referring to a different spare (or programmable) button. Thus the '#' in the example syntax is replaced with a number on the actual code line to indicate which of the spare buttons that particular code line refers to. This fact is described on the second comment line.

The third comment line explains that a number indicating button mode will be used in place of the '?' on each actual code line.

The next few comment lines explain the possible modes that the spare buttons can operate in. You may have fewer or greater modes available depending on the surface model and vintage. In any event you can select the same or a different mode from the available modes for each programmable button on the surface.

An Example File - Complete

The following listing shows a typical Options Text File for the surface type covered by this manual. Your actual Options Text File may be somewhat different, depending on vintage, but the general ideas involved in editing the file will apply.

```
// Syntax: METERMODE:?
// ? is the meter mode (default = 0)
//   0 = PEAK & AVG
//   1 = PEAK only
//   2 = AVG only
METERMODE:0
// Syntax: DYNRANGE:?
// ? is the Dynamic Range (default = 0)
//   0 = 40dB
//   1 = 60dB
DYNRANGE:0
// Syntax: AUTOCUE:?
// ? is the mode (default = 1)
//   0 = Auto Cue Off
//   1 = Auto Cue On
AUTOCUE:0
// --------------------------------
// MIX MINUS OPTIONS
// --------------------------------
// Syntax: MM#:?
// # is the mix minus bus number (1 - 8)
// ? is the mode (default = 0)...
//   0 = Post Fader, Post ON (default mode)
//   1 = Pre  Fader, Post ON
//   2 = Post Fader, Pre  ON
//   3 = Pre  Fader, Pre  ON
MM1:0
MM2:0
MM3:0
MM4:0
// --------------------------------
// SPARE OPTIONS
// --------------------------------
// Syntax: SPARE#:?
// # is the spare button number (1 - 12)
// ? is the mode (default = 2)...
//   0 = None, Button presses are ignored, LED controlled by DIO
//   1 = Toggle, Button state toggles on each press, LED controlled by Surface
//   2 = Momentary, Button is active when held down, LED controlled by Surface
//   3 = Momentary, Button is active when held down, LED controlled by DIO
//   4 = Automation, Button & LED are controlled by automation interface
//   5 = Preset Select, Button selects pre-configured preset, LED controlled
by Surface
SPARE1:2
SPARE2:2
SPARE3:2
SPARE4:2
```

```
MASTER_SPARE1:6
MASTER_SPARE2:6
MASTER_SPARE3:6
MASTER_SPARE4:6
MASTER_SPARE5:6
MASTER_SPARE6:6
MASTER_SPARE7:6
MASTER_SPARE8:6
// -------------------------------
// MISC OPTIONS
// -------------------------------
// Syntax: SET_TIMEOUT:?
// ? 1 (default) = 20 sec set button timeout enabled, 0 = no timeout.
SET_TIMEOUT:0
// Syntax: ALPHA_SORT:?
// ? 1 (default) = XY controller alpha sorting enabled, 0 = no sort.
ALPHA_SORT:1
// Syntax: INVERT_MM:?
// ? 1 (default) = MM button state inverted, 0 = no invert.
INVERT_MM:0
// Syntax: CUE_DEFEAT_STU1:?
// Syntax: CUE_DEFEAT_STU2:?
// Syntax: CUE_DEFEAT_HDPN:?
// Syntax: CUE_DEFEAT_CR:?
// ? 1 = cue defeat to this monitor, 0 cue enabled to this monitor.
CUE_DEFEAT_STU1:1
CUE_DEFEAT_STU2:1
CUE_DEFEAT_HDPN:0
CUE_DEFEAT_CR:1
// Syntax: MUTE_METHOD:?
// ? 0 (default) = ON button, 1 = ON AIR.
MUTE_METHOD:0
// Syntax: HDW_LOGGER:?
// ? 1 = use hardware logger, 0 (default) no hardware logger.
HDW_LOGGER:0
// Syntax: XYC_CHECKSUM:?
// ? 1 (default) = use checksum in XYC messages, 0 no checksum.
XYC_CHECKSUM:1
// Syntax: XCHAN_VIS_DISABLE:?
// ? 0 = do not allow X visibility disable, 1 (default) allow X visibility disable.
XCHAN_VIS_DISABLE:1
// Syntax: MXM_BY_SIGNAL:?
// ? 0 = (default) MxM assigns stored by fader, 1 change MxM assigns as sources
change.
MXM_BY_SIGNAL:0
// Syntax: MXM_LVL_CTL:?
// ? 0 = (default) No Mix Minus level control on Monitor card.
//   1 Monitor card has Mix Minus control.
MXM_LVL_CTL:0
// Syntax: BM_BY_SIGNAL:?
// ? 0 = Bus Minus return assigns stored by fader, 1 (default) change Bus Minus return
                                                    assigns as sources change.
```

```
BM_BY_SIGNAL:1
// Syntax: INPUT_GAIN_SLIDERS:?
// ? 0 (default) = No input gain sliders, 1 = Input gain sliders.
INPUT_GAIN_SLIDERS:0
// Syntax: GLE_CONTROLS:?
// ? 0 = No GLE Controls, 1 = (default) = GLE Controls.
GLE_CONTROLS:0
// Syntax: GLE_PORT:?
// ? Port Number to listen for Glass E connections on - default=49152.
GLE_PORT:49152
// Syntax: MOUSE_TYPE:?
// ? PS2 = PS/2 Mouse, COM2 = (default) = Serial Mouse.
MOUSE_TYPE:PS2
// Syntax: ACI_DISABLE_MSS:?
// ? 0 (default) = send machine start/stop DIOs whenever input channels go on/off.
//   1 = supress machine start/stop DIOs when input channels on/off via ACI.
//   2 = supress machine start/stop DIOs when input channels on/off via remote on/
off DIO.
//   3 = supress machine start/stop DIOs when input channels on/off via ACI and/or
DIO.
ACI_DISABLE_MSS:0
// Syntax: PCI_NORMAL:0xRRGGBB
// 0x848484 (default) = Color for dialog backgrounds.
PCI_NORMAL:0x848484
// Syntax: PCI_SELECTED:0xRRGGBB
// 0xfff0c0 (default) = Color for selected item background.
PCI_SELECTED:0xfff0c0
// Syntax: PCI_NTEXT:0xRRGGBB
// 0x000000 (default) = Color for text.
PCI_NTEXT:0x000000
// Syntax: PCI_STEXT:0xRRGGBB
// 0x000000 (default) = Color for selected text.
PCI_STEXT:0x000000
// Syntax: READOUT_NORMAL:0xRRGGBB
// 0x190e01 (default) = Color for readout backgrounds.
READOUT_NORMAL:0x190e01
// Syntax: READOUT_SELECTED:0xRRGGBB
// 0xfa9007 (default) = Color for selected readout background.
READOUT_SELECTED:0xfa9007
// Syntax: READOUT_NTEXT:0xRRGGBB
// 0xfa9007 (default) = Color for readout text.
READOUT_NTEXT:0xfa9007
// Syntax: READOUT_STEXT:0xRRGGBB
// 0x000000 (default) = Color for selected readout text.
READOUT_STEXT:0x000000
// Syntax: ACTIVE_TAB_TEXT:0xRRGGBB
// 0xffffff (default) = Color for text on the active tab
ACTIVE_TAB_TEXT:0xffffff
// Syntax: INACTIVE_TAB_TEXT:0xRRGGBB
// 0x333333 (default) = Color for text on inactive tabs
INACTIVE_TAB_TEXT:0x333333
DEBUG_FLAGS:0x00000000
CLOCK_MODE:12
CLOCK_SECONDS_COUNTDOWN:20
```

```
CR_LEVEL_LOCK:-1
HDPN_LEVEL_LOCK:-1
STU1_LEVEL_LOCK:-1
STU2_LEVEL_LOCK:-1
PGMA_LABEL:PGM A
PGMB_LABEL:PGM B
PGMC_LABEL:PGM C
PGMD_LABEL:OL
EVENTS_SAVE_ON_OFF:0
STARTUP_CHANNELS_OFF:0
VISIBILITIES_SHOWS_LOCATIONS:1
PFL_EXCLUSIVE_MODE:0
PFL_PRE_ON:1
PFL_PRE_FADER:1
```

Appendix 2

Contents

Replacement Parts List A-11

For the most part there are no user-replaceable parts in the E-1 control surface. Exceptions are those controls and components that in the course of normal use may need maintenance (i.e., faders, pots, ON switches, etc.). A complete list of available components is shown on the next page. Contact Wheatstone technical support for further information.

Wheatstone Corporation (600 Industrial Drive, New Bern, North Carolina, USA 28562) may be reached by phone at 252-638-7000, fax 252-637-1285, electronic mail “techsupport@wheatstone.com”.

REPLACEMENT PARTS — E-1 CONTROL SURFACE

COMPONENT	DESCRIPTION	*WS P/N*
IPE-1 PANEL	COMPLETE INPUT PANEL	***"009610"***
MNE-1 PANEL	COMPLETE MASTER PANEL	***"009611"***
IPE-1 LOADED CARD	INPUT PANEL LOADED CARD ASSEMBLY	***"009607"***
MNE-1 LOADED CARD	CONTROL PANEL LOADED CARD ASSEMBLY	***"009609"***
ONSE-6 LOADED CARD	ON/OFF SWITCH LOADED CARD ASSEMBLY	***"009519"***
HC-3E1NC LOADED CARD	LOADED CARD ASSEMBLY W/O COMPUTER	***"009619"***
POWER SUPPLY	PSE-1 1RU RACKMOUNT POWER SUPPLY	***"007370"***
POWER CABLE	POWER CABLE WITH TWO D-SUB-2V2 CONNECTORS	***"007375"***
POWER CORD	16 AWG TWO CONDUCTOR SHIELDED POWER CORD	***"150217"***
REPLACEMENT FADER ASSEMBLY	WIRED FADER	***"055200"***
REPLACEMENT FADER	INPUT FADER	***"540052"***
REPLACEMENT FADER KNOB	METALLIZED SHINY CHROME FADER KNOB 11MM	***"520128"***
REPLACEMENT SWITCH	ON/OFF SWITCH	***"510109"***
SWITCH BLUE BUTTON	ON BUTTON ASSEMBLY	***"530355"***
SWITCH WHITE BUTTON	OFF BUTTON ASSEMBLY	***"530356"***
BLUE LED LAMP REPLACEMENT	ON LED LAMP	***"600078"***
WHITE LED LAMP REPLACEMENT	OFF LED LAMP	***"600079"***
NKK SWITCH	LOW PROFILE PUSHBUTTON SWITCH W. GREEN LED	***"510037"***
NKK SWITCH	LOW PROFILE PUSHBUTTON SWITCH W. RED LED	***"510038"***
NKK SWITCH	LOW PROFILE PUSHBUTTON SWITCH W. YELLOW LED	***"510039"***
LUMA BUTTON	CUSTOM MILKY WHITE STYRENE WITH UV INHIBITOR LIGHT PIPE BUTTON	***"530274"***
LUMA BUTTON	LUMA-4 WHITE BUTTON	***"530354"***
POT	CONDUCTIVE PLASTIC SINGLE LINEAR 10K POT NO C/D, 1/8" SHAFT ROHS COMPLIANT	***"500126"***
POT	10K SINGLE LINEAR PC VERTICAL MOUNT 9MM POT ROHS COMPLIANT	***"500127"***

REPLACEMENT PARTS — E-1 CONTROL SURFACE

COMPONENT	DESCRIPTION	*WS P/N*
ENCODER	11MM ROTARY ENCODER WITH THREADED BUSHING, 17MM SHAFT LENGTH	***"560004"***
ENCODER KNOB	21MM GREY COLLET KNOB FOR 1/8" SHAFT	***"520108"***
ENCODER KNOB	15MM GREY COLLET KNOB FOR 6MM SHAFT	***"520110"***
ENCODER KNOB	15MM GRAY PUSH-ON KNOB FOR 6MM SHAFT	***"520129"***
ENCODER CAP	11MM BLACK/005 CAP W/ LINE FOR 15MM KNOB	***"530037"***
ENCODER CAP	PLAIN 11MM BLACK CAP FOR 15MM KNOB	***"530279"***
ENCODER CAP	21MM BLACK CAP WITH WHITE LINE	***"530319"***
PLUG	3 PIN PLUG FOR #26 AWG	***"230028"***
PLUG	6 PIN PLUG FOR #26 AWG	***"230031"***
PLUG	9 PIN PLUG FOR #26 AWG	***"230032"***
PLUG RIBBON	14 PIN DIP RIBBON PLUG	***"250034"***
PLUG RIBBON	20 PIN RIBBON PLUG	***"250041"***
HEADER	3 PIN JST HEADER	***"250062"***
HEADER	5 PIN JST HEADER	***"250064"***
HEADER	6 PIN JST HEADER	***"250065"***
HEADER	14 PIN BOXED HEADER, STRAIGHT	***"250073"***
HEADER	20 PIN BOXED HEADER, STRAIGHT	***"250074"***
PHONE JACK	RTS JACK	***"260005"***
DISPLAY	CUSTOM LCD ALPHA/NUMERIC DISPLAY	***"610026"***
CABLE	LCD CABLE 9"	***"940079"***
SOFTWARE	XPOINT PROGRAM FOR WHEATSTONE E-SERIES	***"071800"***
MANUAL	OWNER'S MANUAL	***"009596"***