
G-5 Digital Control Surface

TECHNICAL MANUAL

 *Wheatstone Corporation*

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G-5 Digital Control Surface Technical Manual - 1st Edition

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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 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.

IMPORTANT!

Cleaning the Acrylic Surface

An acrylic surface is a beautiful, lustrous material that is outstanding in durability and break resistance. With proper care, it will retain its attractive appearance for many years to come. This care should include precautions against scratching or contact with objects of high temperature that might mar the surface. A few simple precautions will preserve the beauty of the acrylic.

- **FIRST** be sure the surface to be cleaned is powered off.
- **NEVER** spray or pour any liquid directly onto the surface.
- **TO AVOID** scratching these surfaces, use a soft brush or cloth to gently brush away any larger dirt particles. Alternately the larger particles can be blown from the surface with the use of canned air.
- **USE** a soft, clean lint free cloth or micro fiber cloth and clean lukewarm water to clean the surface. For stubborn dirt and stains use a mild, nonabrasive soap and water mixture with the gentle cleaning cloth. Use only light pressure when cleaning. Avoid rubbing dirt or grit into the surface. Turn the cloth often and replace with a clean cloth frequently. Dry by blotting gently with a clean, dry cloth.
- **AVOID** using kleenex, paper towels, sponges or other coarse shop towels, as these materials may contain abrasives that can scratch acrylic surface.
- **DO NOT USE** ketones, aromatics, esters, halogens, window cleaning sprays, alcohol, kitchen scouring compounds, or solvents (such as acetone, benzene, gasoline, carbon tetrachloride, or thinners).

Caution! Do not use ammonia based cleaning solutions as they can cause the surface to yellow, and become brittle and eventually cause structural damage to the acrylic surface.

Wheatstone will not be liable for damage resulting from improper cleaning and maintenance.



G-5 Technical Manual

Table of Contents

Chapter 1 – General Information

Introduction	1-2
Control Surface Placement	1-3
Power Supply	1-4
Failsafe Dual Redundant Supply	1-5
Energizing	1-5
I/O Connections	1-6
The Insulation Displacement Connector System	1- 6
Wiring Procedure - Double Connection to One Pin	1-8

Chapter 2 - Input Panel (IS-G5)

Controls and Functions	2-2
Input Sources	2-2
Mode Selector Indicator	2-2
Pan/Balance Knob	2-3
Main Bus Assign	2-3
SET Button	2-3
CUE Switch	2-3
Fader	2-4
ON/OFF Switches	2-4
LCD Display	2-4
Input Level	2-4
Selected Source	2-5
Channel Status	2-5
Null Indicators	2-5
Channel Number	2-5

Chapter 3 - Control Panel (EFS-G5)

Controls and Functions	3-2
Monitors	3-2
Control Room Section	3-3
Studio Section	3-3
Headphone Section	3-4
Talkback	3-4
CUE Section	3-4
Switched Meters Section	3-5
Mode Select Section	3-5
MXM Master Outputs	3-6
MXM Assign	3-6

Timer Section	3-6
Time of Day Clock	3-6
XY Controller Section	3-7
Selecting Input Channel Sources	3-7
Selecting Output Mix Destinations	3-7
Changing Output Mix Destinations	3-7
Removing Output Mix Destinations	3-8
X-Y Set Button	3-8
Event Controller Section	3-8
Storing an Event	3-8
Taking an Event	3-8
Undoing an Event	3-8
Modifying the Currently Selected Event	3-9
Deleting an Event	3-9
Previewing an Event	3-9
Event Default Button	3-9
Establishing the Default Setting	3-9
Naming an Event	3-10
Control Modes	3-10
Information Display	3-11

Chapter 4 - DCM Control Panel (DCM-G5)

Controls and Functions	4-2
Programmable Buttons	4-2
Display Buttons	4-3

Chapter 5 - Host CPU (HC-9)

Overview	5-2
HC-9 BIOS Settings/Format	5-2
Ethernet IP Addressing	5-2
Ethernet Interface Wiring	5-2
Mixer Link Wiring	5-3
Internal Programming Options	5-3
Switch Settings	5-3
SW6 - Master Reset	5-3
SW7 - CPU Reset	5-3
SW8 Position 1 - Sample Rate	5-3
SW8 Position 3 - Redundant CPU	5-3
SW8 Position 4 - CAT5 vs. Fiber	5-3
Hook-Ups	5-4
“ETH A” RJ-45 - Main Ethernet Connector	5-4
“ETH B” RJ-45 - Optional Redundant Computer Ethernet Connector	5-4
“CAT5” RJ-45 - Mixer Link Connector	5-4
Typical Ethernet Cable	5-5
Typical Crossover Cable	5-5



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

Optical Fiber Interface.....	5-6
Connector Type	5-6
Optical Fiber Cable.....	5-6
HC-9 Pinouts Drawing.....	5-7
Cue Speaker/Headphone Pinouts Drawing.....	5-8

Chapter 6 - Schematic and Load Sheet Drawings

IP-5 4 Inputs Panel Switch Card	
Schematic	6-2
Load Sheet	6-5
ONS-5 4 Inputs Panel On/Off Switch Card	
Schematic	6-6
Load Sheet	6-7
MN-5 Control Panel Switch Card	
Schematic	6-8
Load Sheet	6-13
DCM-5 DCM Panel Switch Card	
Schematic	6-14
Load Sheet	6-16
IQ-9 IQ Card	
Schematic	6-17
Load Sheet	6-18
HC-9 Host Controller Card	
Schematic	6-19
Load Sheet	6-26
BP-9 Back Plane Card	
Schematic	6-27
Load Sheet	6-28
BPR-9 Back Plane Repeater Card	
Schematic	6-29
Load Sheet	6-30
32VC5-5 +5V DC to DC Converter Card	
Schematic	6-31
Load Sheet	6-32
VU-9 VU Receiver Card	
Schematic	6-33
Load Sheet	6-34
PWI-5.1 Power Interface Card	
Schematic	6-35
Load Sheet	6-36
PSU-1 Power Supply	
Schematic	6-37
Load Sheet	6-38

Appendices

Appendix 1

Control Surface Clock.....	A-6
Setting the Time	A-3
Update Options	A-3
Synchronize.....	A-3

Appendix 2

Options Text File	A-6
Introduction	A-6
Modifying The Options Text File.....	A-6
A Sample Example From The File	A-7
A Second Example.....	A-8
An Example File - Complete.....	A-9

Appendix 3

Replacement Parts List.....	A-12
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General Information

Chapter Contents

Introduction	1-2
Control Surface Placement	1-3
Power Supply	1-4
Failsafe Dual Redundant Supply	1-5
Energizing	1-5
I/O Connections	1-6
The Insulation Displacement Connector System	1- 6
Wiring Procedure - Double Connection to One Pin	1-8

General Information



Introduction

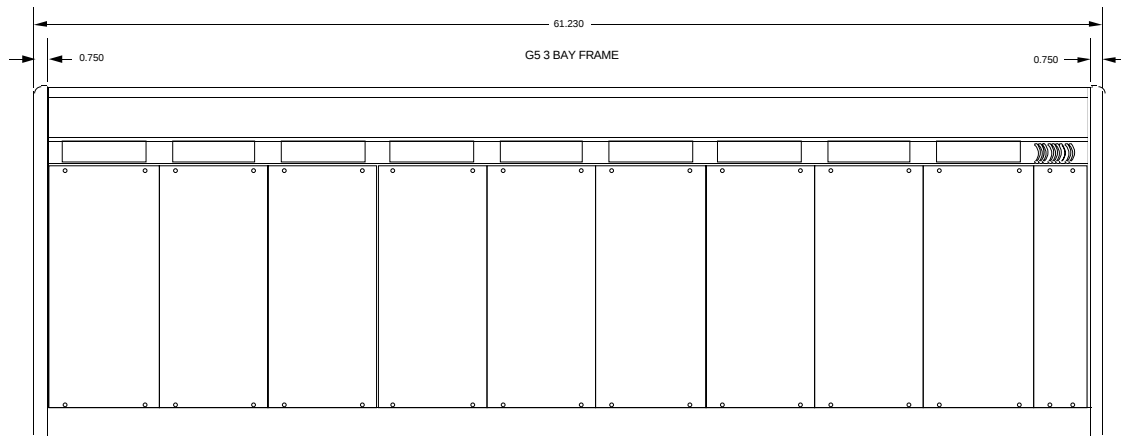
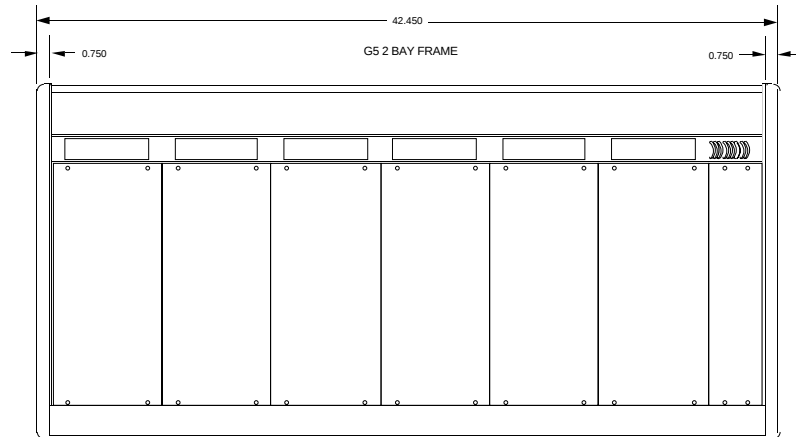
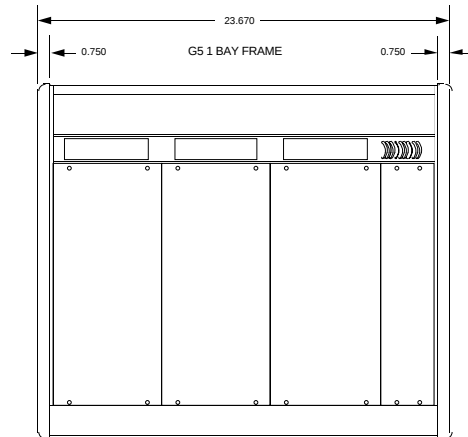
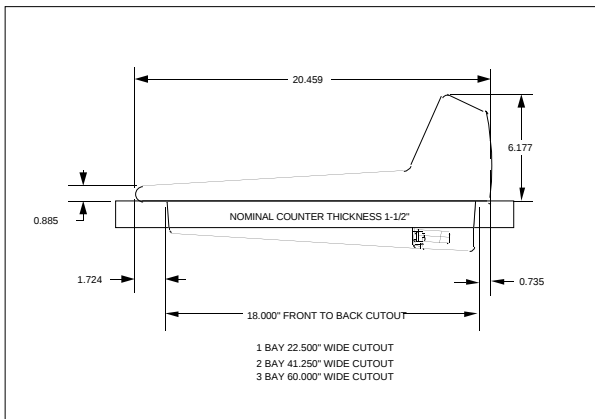
The G-5 Digital Control Surface is the next step in the continuing evolution of Wheatstone's proven BRIDGE technology. Designed to integrate flawlessly with the Wheatstone BRIDGE digital audio network router, the G-5 control surface allows you to easily create large or small platform-based systems that are exceptionally user-friendly and flexible. Wheatstone BRIDGE network cages house all I/O ports and engine cards, and may be wired in tandem within a single equipment room or interconnected to separate remote locations by means of fiber-optic or CAT-5 cables to provide single wire studio integration schemes.

Once configured, the system operates entirely independently of external computers. Configuration itself is intuitive and carried out onsite by means of user-friendly graphic interfaces provided by Wheatstone desktop software. The G-5 system also takes full advantage of Wheatstone's exclusive VDip configuration software, so that studio functions (like mutes, fader and timer starts, tally, etc.) are easily accomplished right at your desktop. Once completed, all settings are retained in non-volatile storage, allowing the entire system to run independently. Ethernet protocol is built in, providing interface with automation, scheduling, and hardware controllers as you require.

Control Surface Placement

The G-5 digital audio control surface is designed for simple drop-in installation in a countertop. Cutout dimensions (in inches) are shown in the drawings below for the three available frame sizes.

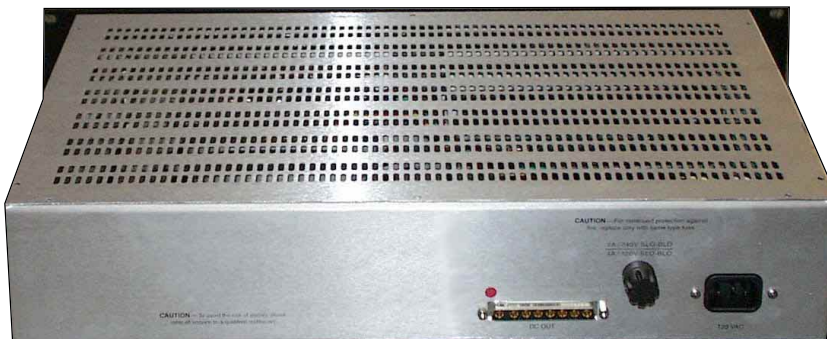
Do not connect the G-5 control surface to its power supply (and do not connect the power supply to the AC power line) until instructed to do so.



Power Supply



Front view of the PSU-1 rackmount power supply



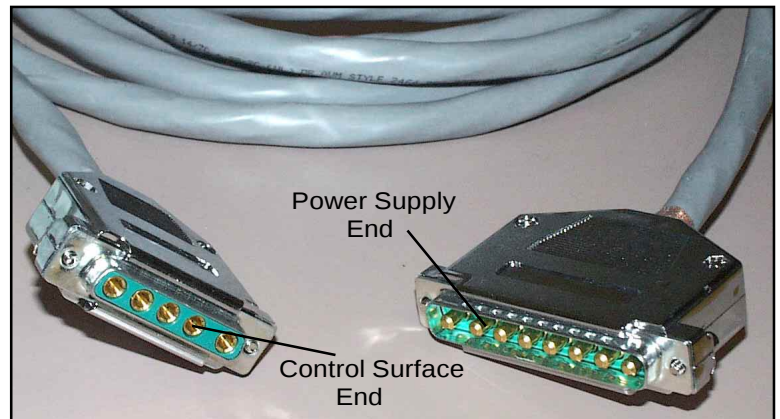
Rear view of the PSU-1 rackmount power supply

The G-5 control surface is powered by a Wheatstone Model PSU-1 rackmount power supply. This unit occupies two 19" wide rack spaces (total height 3-1/2"). Convection cooled, it requires ample ventilation space above and below it.

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

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.

Once the supply is rackmounted, it should be connected to the control surface using the factory supplied cable. The cable has two different types of connectors on it: a 5-pin female connector that connects to the control surface's power supply connector, and an 8-pin male connector that plugs into the power supply. The control surface's two power supply connectors are located at the rear of the control surface, in the middle of the meterbridge bottom pan. If you are using one supply, connect it to one of



PS Cable Pinout									
PIN				PIN					
RED	1	← +V in	→	8	RED, YEL	Power Supply End 8-pin Connector Male			
YEL	2	← -V in	→	7	BLU, BLK				
BLU	3			6	N/C				
BLK	4			5	N/C				
N/C	5			4	N/C				
					3	N/C			
					2	N/C			
					1	N/C			

the control surface connectors (it doesn't matter which one). If you are using the failsafe option (two PSU-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 connectors. Then use the other cable to connect the second power supply connector 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 PSU-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 G-5 control surface mainframe is properly placed, and its PSU-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" LEDs on the power supply front panel should light up to indicate the presence of their respective voltages. The control surface's LED meters will illuminate and individual module switches will assume factory default settings.

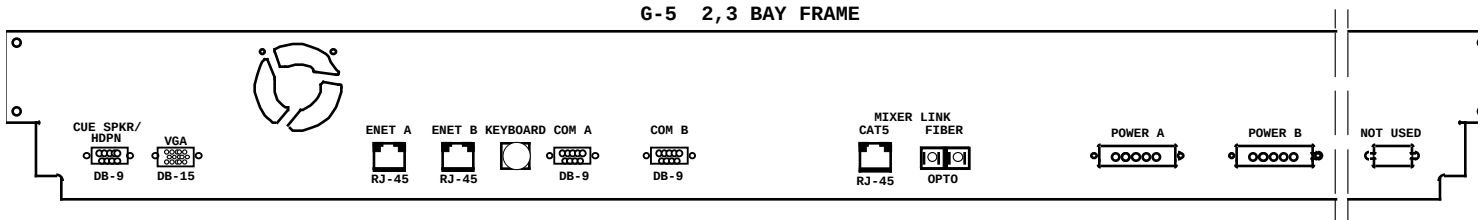
Note: To de-energize the control surface, unplug the rackmount power supply's AC cord from the AC mains. ***Never de-energize the control surface by disconnecting the cable that connects the control surface and power supply together.***

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.

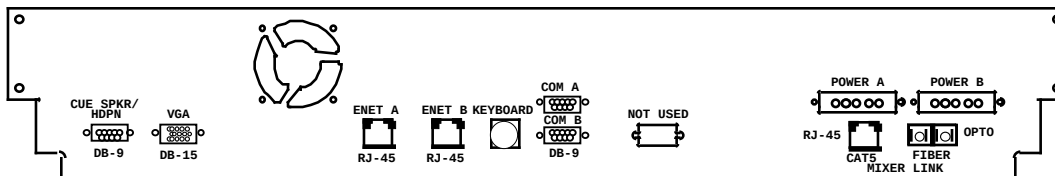
I/O Connections

All user wiring to and from the G-5 control surface is made via connectors located on the control surface's rear panel. Two 5-pin male connectors at the left end of the control surface's rear are for power supply connections. A cue speaker plugs into the female DB-9 connector, located next to power supply connectors. VGA connections are made via the female DB-15 connector that is mounted below the cue speaker connector. The female DB-9 connector at the left end of the control surface's rear connects to the internal cue speaker and headphone jack. There are also two RJ-45 connectors for main and failsafe ethernet connections. There are also two female DB-9 serial port connectors for use as RS-485/RS-232 communication links to the Wheatstone Bridge Router and XY controllers. CAT-5 or multi-mode optical fiber Mixer Link connections are made via RJ-45 or SC type optical connectors. For all wiring pinout connections refer to Chapter 5. Sketches below show connector locations.

G-5 2,3 BAY FRAME



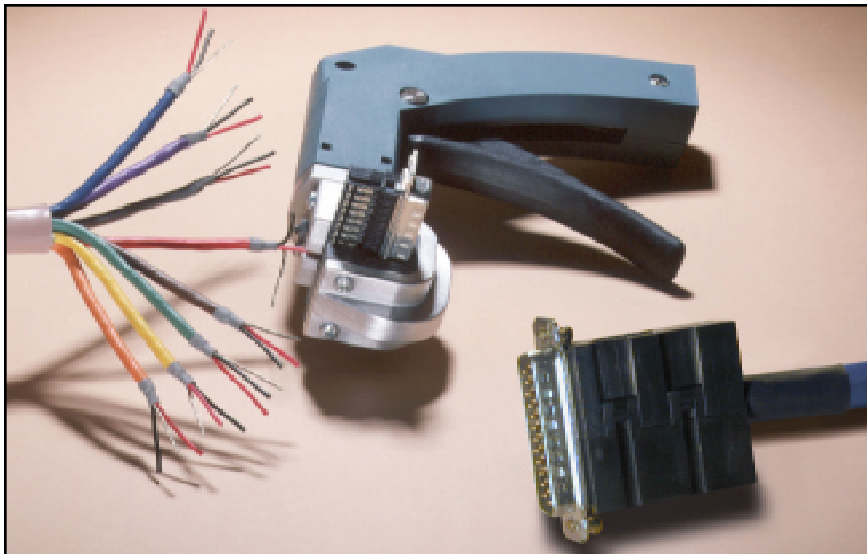
G-5 1 BAY FRAME



NOTE: Keyboard, VGA, and COM connectors for factory use only.

The Insulation Displacement Connector System

The I/O wiring interface system is based on insulation displacement technology. A special AMP wiring tool is included with each control surface; it is auto-indexing, and allows individual wire connections to be



The AMP tool insulation displacement connector system. Note the right angle hood with self-locking tabs. The tool, multipin connectors (with gold plated pins) and latching hoods are supplied with each control surface.

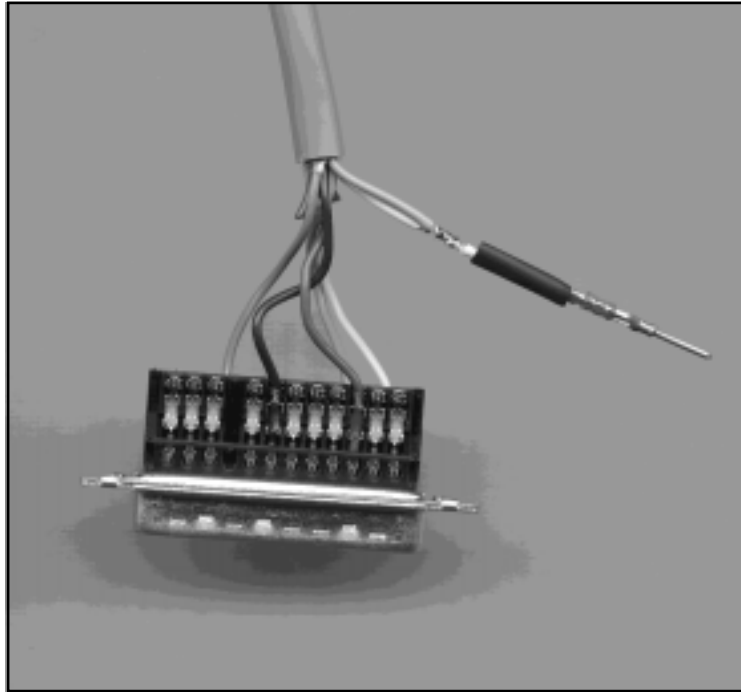
positively made with a single squeeze of the tool's trigger. The trigger action is ratchet controlled, and will not release until a full connection is made. Once released, the multipin connector held in the tool's jaw automatically indexes to the next connector pin. The technology is such that no stripping, soldering or tinning of wire ends is required; all that is needed is that the wires destined for the connector be snub cut and laid out in order (although tubing should be used on bare drain wires). An empty DB-9 connector is inserted into the tool, indexed to the first pin, and the wires are inserted one by one into the jaw and the trigger squeezed. In this way a single multipin connector can be completely wired up in a minute or two. These connectors will accept wire gauge 22 - 26 AWG.

In the event of a wiring error, connector pins may easily be removed from the shell with the wire still attached, and inserted into the correct position. Observe the side of the connector, with the metal part down. You will see a row of "Vees"—simply press the top of the vee together with a scribe or other sharp instrument; this will unlock the pin from the shell, and it can be removed and inserted into the correct position. Spread the vee apart to lock the pin in the new position. It should never be necessary to discard a connector due to a wiring error.

Note that mating hoods for each connector are also supplied with the system. These have locking screws that hold the connectors securely to their mates.

Wiring Procedure - Double Connection to One Pin

ref: DB-25 male multi-pin connector



Most audio equipment machine interfaces (as well as Wheatstone consoles) use subminiature D-type connectors. Sometimes the interfaces require making two connections to a single DB pin. If the wiring has been set up using punchblocks, this is not a problem; however, for situations where direct machine-to-console wiring is used, Wheatstone recommends the following procedure:

- 1) Connect the first wire to the desired pin as you normally would.
- 2) Note connector pins may easily be removed from the DB-25 shell with the wire still attached: Hold the connector with the metal part down and observe its side. You will see a row of "Vees"—simply press the top of the selected vee together with a scribe or other sharp instrument; this will unlock the pin from the shell, allowing it to be removed.
- 3) With the pin removed, strip out a short section of insulation from the connected wire and wrap and solder the second wire to the first as shown above.
- 4) A short piece of heatshrink tubing (pictured here before being slid into place) completes the connection.
- 5) Re-insert the pin into the DB-25 shell, spreading the vee apart to lock it in place.

Input Panel (IS-G5)

Chapter Contents

Controls and Functions	2-2
Input Sources	2-2
Mode Selector Indicator	2-2
Pan/Balance Knob	2-3
Main Bus Assign	2-3
SET Button	2-3
CUE Switch	2-3
Fader	2-4
ON/OFF Switches	2-4
LCD Display	2-4
Input Level	2-4
Selected Source	2-5
Channel Status	2-5
Null Indicators	2-5
Channel Number	2-5

Input Panel (IS-G5)

Controls and Functions

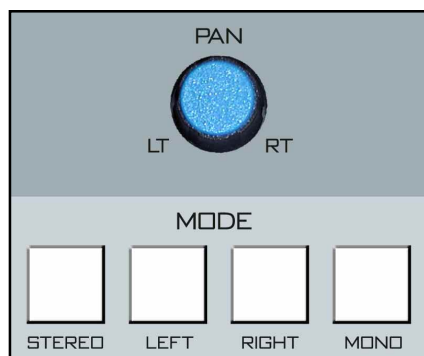
Each input panel of the G-5 digital audio control surface has four identical strips representing four input channels.

Input Sources

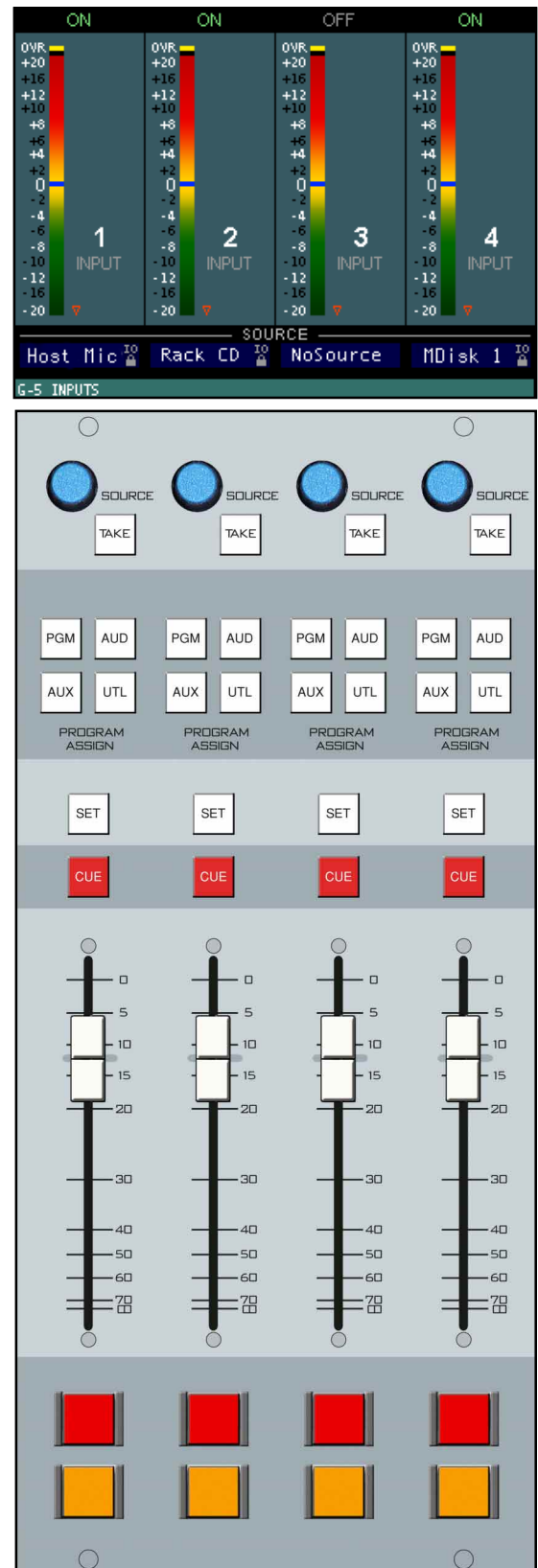
Each input panel controls four stereo sources. By turning SOURCE knobs, the available inputs are displayed in the SOURCE window of the LCD screen above the channel strip. When the desired input source is scrolled into the SOURCE window, pressing the TAKE button will cause that source to be switched to the input of the channel, and the source name will be displayed in the SOURCE window of the LCD screen.

Mode Selector Indicator

MODE selection switches in the EFS CONTROL panel (see Chapter 3) enable input channels to operate in Stereo, Mono, Left only, or Right only. The switch lights up to indicate the selected mode. This feature is activated for a given channel by pressing the channel's SET button (see page 2-3).



EFS-G5 Panel



PAN/BALANCE Knob

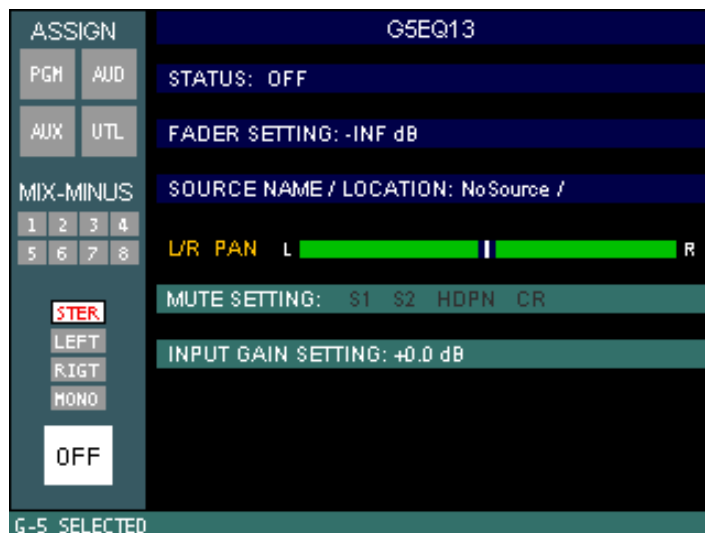
The PAN knob (in the EFS CONTROL panel) acts as a panpot in MONO, LEFT only and RIGHT only modes; and as a balance control in STEREO mode. Once again, this feature is activated for a given channel by pressing the channel's SET button. To easily set the PAN to center, you can press the control twice in rapid succession, like double-clicking a mouse button.

Main Bus Assign

PROGRAM ASSIGN buttons assign the input channel signal to the four main busses: PGM (program), AUD (audition), AUX (auxiliary), and UTL (utility) respectively. Note that the UTL bus can be set up during configuration to be pre/post fader or ON switch.

SET Button

This allows the operator to access various controls and displays in the EFS CONTROL panel and apply them to the selected channel. To use, press the SET button and then make your appropriate section settings in other areas of the control surface. Once a SET button has been pressed, the button lights up, and all the settings remain in effect **for that input channel** until a different input SET button is pressed, or until a timeout of about 10 seconds has occurred.



CUE Switch

The CUE switch lets the operator monitor the channel's pre-fader signal.

Fader

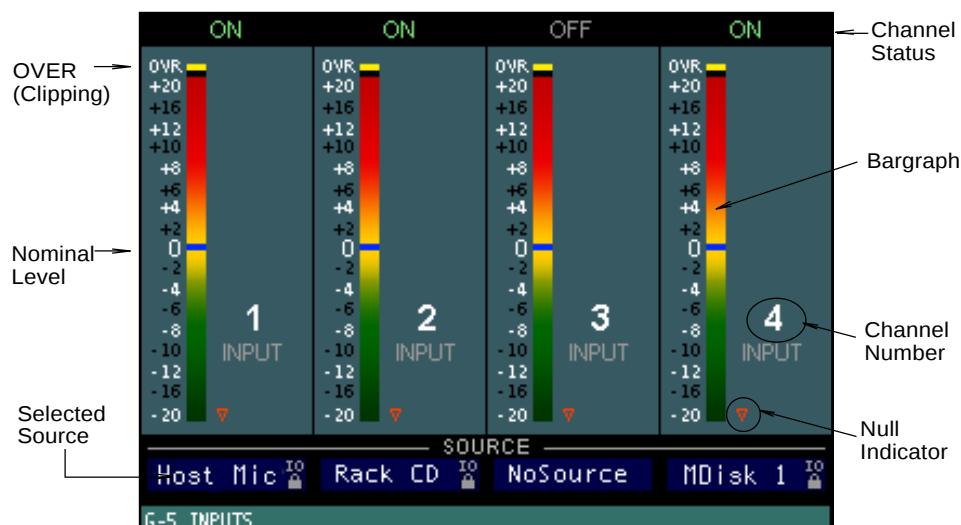
Channel output level is set by a long-throw fader. When the control surface has recalled a preset or is under external serial control from an automation system, the fader NULL indicators on the LCD display (see page 2-5) lights to show that the channel output level is actually different from what the fader indicates. The channel output level will remain at the computer directed value until the fader is moved to a matching level, after which the fader will control the level. The LCD display indicators show which direction to move the fader to regain level control. Once the fader has been moved to the matching level the NULL indicator will turn off.

ON/OFF Switches

Channel ON (red) and OFF (orange) switches are at the bottom of the input section. The ON switch turns the channel signal ON and fires the channel ON/START logic; the switch LED lights to indicate the channel is ON. The OFF switch turns the channel signal OFF and fires the channel OFF/STOP logic; the switch LED lights to indicate the channel is OFF.

LCD Display

Each input section has an associated LCD display located above the input section in the control surface meterbridge. This display shows input level, selected source, preset source, channel number, channel status, and other information.



Input Level

The pre-fader level of the input signal is shown by the large vertical bargraph on the display. The level is indicated in DB on a calibrated scale showing beside the bargraph. If the channel is stereo, the bargraph shows the sum of left and right signals. The bargraph is colored, with

green indicating lower levels and red indicating high levels. The nominal level position is in the middle of the range at the “0” scale marking, and shows as a thin blue band in the bargraph. The bargraph itself consists of a moving “DOT” over a solid “COLUMN” where the “DOT” indicates the peak value of the signal, and the “COLUMN” indicates the average value. On the G-5 control surface the average value column has been set to VU timing characteristics. In addition, a bright yellow rectangle will light at the top of the column if digital “OVER” or clipping is detected.

Nominal Level 0dB = +4dBu analog and -20dBFS digital.

Selected Source

The currently selected source name shows on the LCD display underneath the level bargraph. This name is the 8-character name as defined in the Wheatstone Bridge Router configuration.

Channel Status

Various indicators on the LCD display will show status information for the associated channel. Above the level bargraph the words “ON”, “OFF”, “ON-AIR”, or “MUTE” will appear as the channel status changes. “MUTE” indicates that the channel is turned ON and has a mute set. “ON-AIR” indicates that the channel is ON and the fader is up.

Null Indicators

These indicators (green upward pointing triangle or red downward pointing triangle) show the direction the fader must be moved to reach the level that a preset or external serial control has established.

Channel Number

A large white number shows near the center of the display area indicating the channel number.

Control Panel (EFS-G5)

Chapter Contents

Controls and Functions	3-2
Monitors	3-2
Control Room Section	3-3
Studio Section	3-3
Headphone Section	3-4
Talkback	3-4
CUE Section	3-4
Switched Meters Section	3-5
Mode Select Section	3-5
MXM Master Outputs	3-6
MXM Assign	3-6
Timer Section	3-6
Time of Day Clock	3-6
XY Controller Section	3-7
Selecting Input Channel Sources	3-7
Selecting Output Mix Destinations	3-7
Changing Output Mix Destinations	3-7
Removing Output Mix Destinations	3-8
X-Y Set Button	3-8
Event Controller Section	3-8
Previewing an Event	3-8
Taking an Event	3-8
Undoing an Event	3-9
Event Default Button	3-9
Establishing the Default Setting	3-9
Storing an Event	3-9
Naming an Event	3-9
Modifying the Currently Selected Event	3-10
Control Modes	3-10
Information Display	3-11

Control Panel (EFS-G5)

Controls and Functions

The G-5 digital audio control surface is equipped with one CONTROL panel. This panel contains MONITORS, CUE, SOLO, TALKBACK, MODE, MXM MASTER OUTPUTS, EVENT, TIMER, and SWITCHED METERS controller sections.

Monitors

There are three monitor outputs available: CONTROL ROOM, STUDIO, and HEADPHONE.

Each monitor has a LEVEL control, a SET button, and a MIX display that is located on the bottom section of the EFS-G5 panel. There is also a TB button.



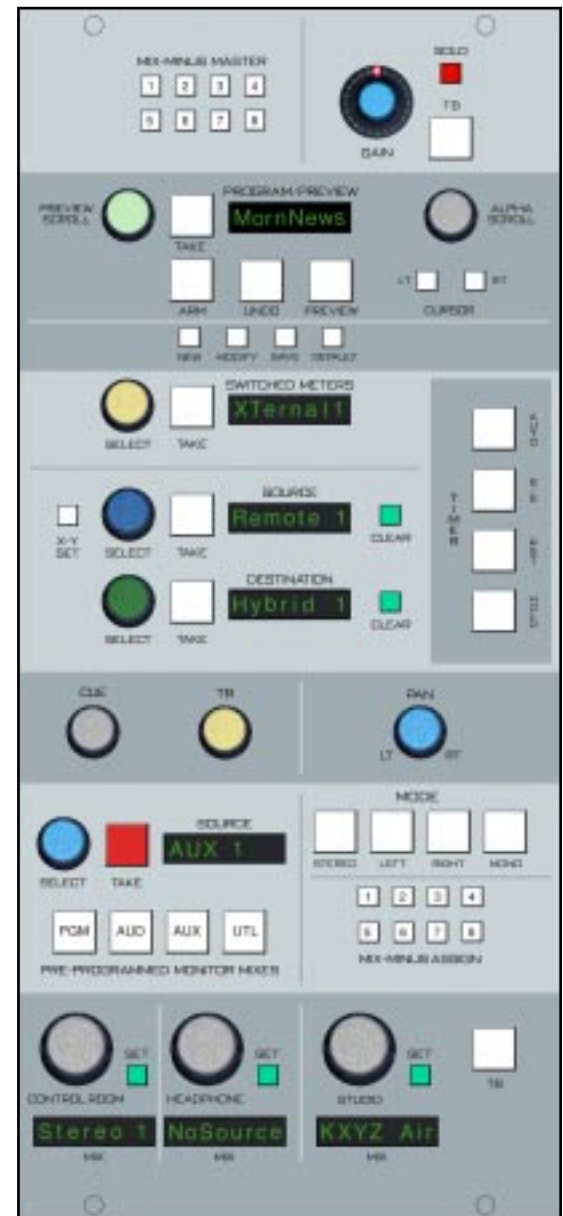
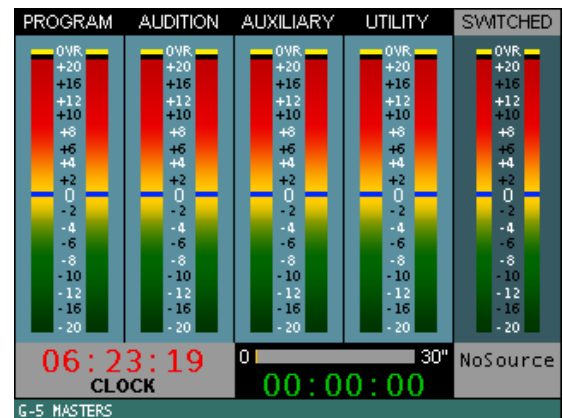
Monitor sources can be selected in the following ways:

- Four PRE-PROGRAMMED MONITOR MIX switches (PGM, AUD, AUX, and UTL) allow direct access to the main mixes most frequently monitored.



To select a source for a monitor, first press the SET button next to the knob for the desired monitor.

The knob controls the level of the monitor signal.



Control Room Section

In a typical radio application the control surface is located in the audio control room. Speakers in the control room allow the control surface operator to listen to the various control surface bus outputs to be assured that the control surface is performing as desired. These speakers are fed by a stereo signal routed from the control surface's control room output. In addition to the control room output, the operator may also desire to listen to specific isolated faders via the cue system and the control surface's internal or external cue speaker, or may want to listen via headphones.

In some instances the control surface operator may also be performing talent whose voice will be heard over the radio. The operator's microphone may thus provide a part of the signal that is going out over the air. If that signal is the one being monitored with the control room speakers, there is the potential for feedback. The amplified signal from the control room speakers is picked up by the microphone and reamplified to a new, higher, level, which then is once again picked up by the microphone. The signal quickly rises to an ear-splitting screech. To prevent this, the operator's microphone is normally set in the configuration software to MUTE the control room output to prevent the occurrence of feedback.

CR SET BUTTON - lets the operator select the source to be listened to in the control room speakers.

CR DISPLAY - the eight character display shows the source that is selected for monitoring in the control room.

CR LEVEL CONTROL - determines the overall loudness of the signal being monitored as it appears in the control room speakers.

Studio Section

In addition to the control room, there may be a studio in which one or more performers will be assembled, usually with microphones so that their voices can become part of the mix. Speakers may be provided in the studio to allow the talent to listen to the various control surface bus outputs at times that they are not actually on air. These speakers are fed from the control surface's stereo studio output.

As in the control room, the potential for feedback also exists in the studio. The talent microphones will usually provide a part of the signal that is going out over the air. If that signal is the one being monitored with the studio speakers, feedback will occur. To prevent this, the studio mic faders are usually set to MUTE the studio output in the configuration software to prevent the occurrence of feedback.

ST SET BUTTON - lets the operator select the source to be listened to in the studio.

ST DISPLAY - the eight character display shows the source that is selected for monitoring in the studio.

ST LEVEL CONTROL - determines the overall loudness of the signal being monitored as it appears in the studio speakers.

Headphone Section

HDPN SET BUTTON - lets the operator select the source to be listened to in the headphones.

HDPN DISPLAY - the eight character display shows the source that is selected for monitoring in the headphones.

HEADPHONE LEVEL CONTROL - determines the overall loudness of the headphone output signal.

Note that the headphone jack is mounted on the right-hand bottom of the control surface's lower mainframe pan.

Talkback

TALKBACK (TB) BUTTON - there may be times when the control surface operator wants to talk to one of the talent in the studio. When the TB button in the studio monitor section is pressed, a predefined signal, usually the operator's mic, will "interrupt" the speaker feed that is normally heard in the studio.

If there is a live mic in the studio which has activated the mute feature, talkback will also be muted in the speakers.

In the center of the EFS control panel is the TB master level control that sets the talkback output and the level of the talkback interrupt signal.



CUE Section

The CUE master level control is located in the center section of the EFS 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 cue speaker, and the switched meter array in the master LCD display will show the level of the pre-fader signal.

The CUE level control determines the overall loudness of the cue signal (normally wired to the cue speaker in the meterbridge).

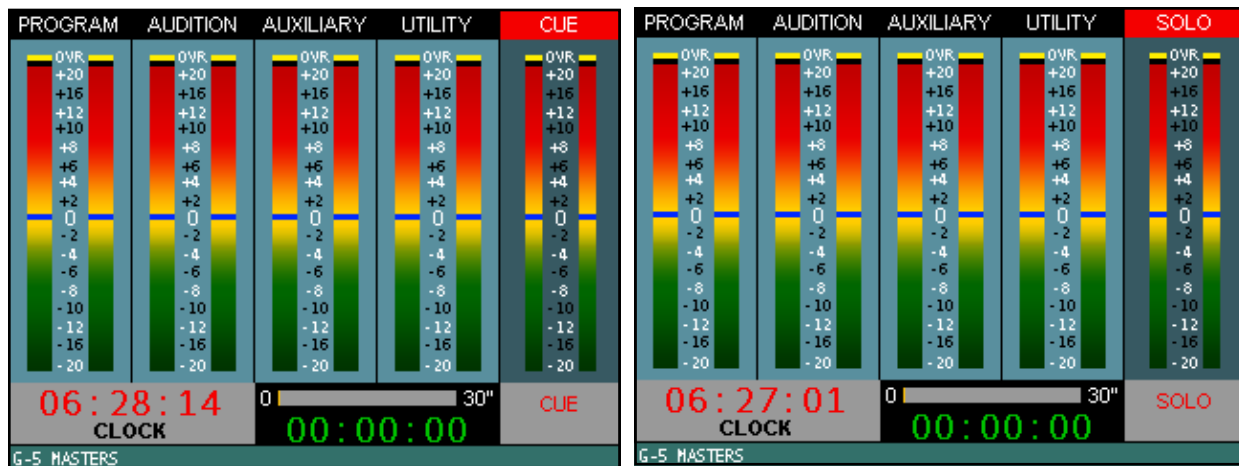
Similar to the control room speakers, the cue speaker also has the potential for feedback and should be muted (using the configuration software—VDIP menu) whenever the control room speakers are.

Switched Meters Section

The control surface has provision for a switched meter.

To select a signal to meter, rotate the encoder **SELECT**. Available sources will be displayed in the eight character **SWITCHED METERS** display. When the desired signal is displayed, press the **TAKE** button. The switched meter array will then display the signal level. If, however, after a timeout period of 5 seconds, the **TAKE** button is not pressed, the array will revert back to its previous selected program.

Any time a channel **SOLO/CUE** button is pressed, the **SOLO/CUE** level will be temporarily shown in the switched meter display until the **SOLO/CUE** button is deactivated.



Mode Select Section

The mode selector switchbank (ST, LT, RT, and MONO buttons) and mode knob (PAN) are located in the center of the Control panel. There are four available channel modes: **STEREO**, **LEFT ONLY**, **RIGHT ONLY** and **MONO**. When pressed, the switch will light up to indicate the selected mode.

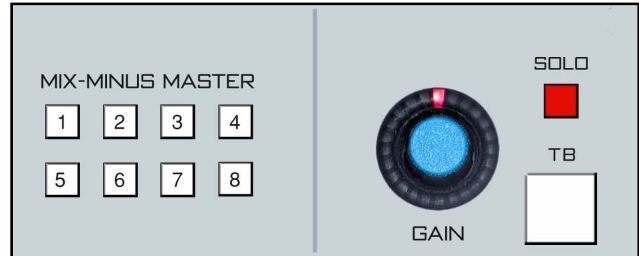
The **PAN** knob acts as a panpot in **MONO**, **LEFT ONLY** and **RIGHT ONLY** modes, and as a balance control in **STEREO** mode. The **PAN** knob is only used with input channels, and has no effect when setting the mode of the monitor signals.

Mode selection is set centrally. To select a **MODE**, press the **SET** button of the desired channel or mix; the **SET** button will illuminate, and the current mode setting for that channel will be displayed on the **MODE** switches. **MODE** can be reconfigured by pressing any allowable button.



MXM Master Outputs

This section is used to control the master GAIN, SOLO, TB, Mode selection, and DESTINATION routing (see Event Section) for the eight MXM mixes. It is comprised of a shared GAIN knob, TB button and SOLO switch. Additionally, there is a bank of eight MIX-MINUS MASTER buttons.



To set a GAIN, press any of the eight MIX-MINUS MASTER buttons and rotate the GAIN knob.

To set a SOLO, again press any of the eight MXM MASTER buttons and then press the SOLO button.

To interrupt a signal with the TB signal, press any of the eight MIX-MINUS MASTER buttons and then press the TB button.

MXM Assign

These buttons are used to control the makeup of the eight MIX-MINUS buses. Press the SET button on any input. If that input is assigned to feed an MXM bus, the corresponding MIX-MINUS ASSIGN switch will be lit. Pressing a MIX-MINUS ASSIGN switch will toggle that input's signal into or out of the corresponding MXM bus.



Timer Section

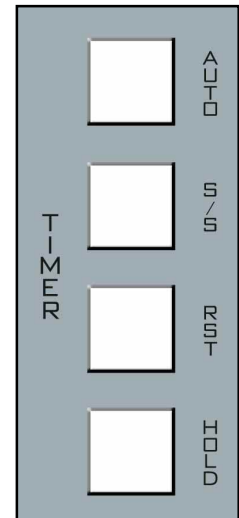
The control surface timer is provided with an AUTO-RESTART function so programmed (via GUI) input modules can automatically reset the timer display to zero and start a new count (if the timer is currently running), allowing the announcer to easily track his own pace.

The 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 MASTER LCD SCREEN includes the display of a time of day clock. To set the time on this clock you run a Wheatstone utility program, WSTimeSet.exe, on a network computer. The program allows you to set the clocks on multiple control surfaces by specifying the IP addresses of the

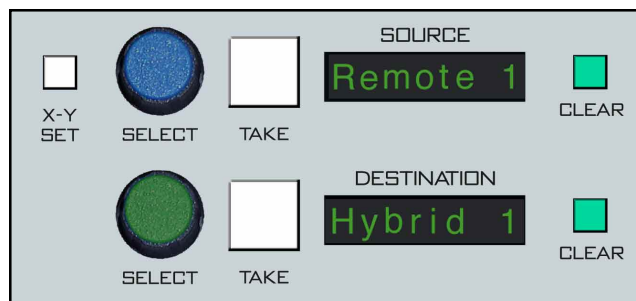
control surfaces in a list. A single command then updates all specified clocks. Program options allow auto updating at midnight or at the top of the hour. See Appendix 1 for details.

XY Controller Section

This section provides a means of selecting sources for input channels and destinations for output mixes.

Selecting Input Channel Sources

The operator designates the desired input channel by pressing its SET button in the input section. Its current input source is shown in the SOURCE display. Input channel meterbridge LCD displays will mirror that same information. A different input source may be chosen by rotating the SOURCE SELECT knob. When displaying the current source the CLEAR button lights; when displaying any other source the TAKE button lights. When the desired source is shown in the SOURCE display, pressing the TAKE button will execute the take command on the downstroke, and the new input will be shown in the SOURCE display and in the meterbridge LCD display. This function operates the same as the SOURCE SELECT knob on the input panels. To remove the input source from the input channel and leave nothing connected, press the CLEAR button. The connection will be broken and the display will show “NO SOURCE”.



Selecting Output Mix Destinations

When a SET button on an output mix channel (i.e., any of the monitors, or MXM masters) is pressed, its most current destination will be shown in the DESTINATION display. A mix is capable of being sent to one or many outputs. To see all the destinations that the mix feeds, rotate the DESTINATION SELECT knob. If the mix feeds the displayed destination the CLEAR button will light; if the mix doesn't feed the displayed destination the TAKE button will light. You may also “dobby” the DESTINATION knob to step through all of the currently routed destinations.

EXAMPLE: An example might be a MXM feed routed to several listeners participating in the program, or an AUD bus routed to multiple recording devices.

Tip: DOBBY (pronounce dah-bee) - means to quickly press and release an encoder knob.

Changing Output Mix Destinations

Rotate the DESTINATION SELECT knob until the desired destination is shown in the DESTINATION display. When the knob is rotated, the CLEAR button will light if the displayed destination is being fed by the mix, and the TAKE button will light if the displayed destination is not being fed by the mix. If the operator wishes to add the destination shown, press the TAKE button to execute the command and the new destination will become the current destination, shown in available displays elsewhere on the control surface. Disallowed destinations (established in the configuration software) will not be shown.

Removing Output Mix Destinations

Press the mix channel's SET button, rotate the DESTINATION selector knob, and the TAKE and CLEAR buttons will indicate which destinations are currently being fed by the mix (see above). When the required destination to be deleted is shown in the DESTINATION display, press the CLEAR button.



X-Y SET Button

Pressing the X-Y SET button allows the source and destination controls to act as a standard X-Y type router controller for making connections between sources and destinations that are not associated with the control surface.

Event Controller Section

This section provides a means for storage and retrieval of control surface settings, and naming those settings as “events”. In this manner complete configuration and setting information that is used repeatedly (for example, morning show) can be saved and recalled. Up to 100 different events can be stored.



Storing an Event

When an event is stored, all of the control surface's current settings are saved and will be recalled when that event is executed through the TAKE command. To create a new event from current control surface settings, hit the NEW button, and then hit the SAVE button. To overwrite an existing event with the current settings, turn the PREVIEW SCROLL knob until the desired event is displayed in the PROGRAM/PREVIEW window, then quickly press MODIFY, then SAVE.

Taking an Event

Rotate the PREVIEW SCROLL encoder until the desired event is shown in the PROGRAM/PREVIEW display. To prevent accidental takes, the ARM button must be pressed to arm the function. The TAKE button will now flash indicating that the panel is ready to act on a take. Then press the TAKE button to execute the EVENT.

Undoing an Event

To recover from a premature or erroneous EVENT take, press the ARM and UNDO buttons. This will return the system to its status prior to the last take, with the last program event being once again the current program event, and the last preview event (the one just taken) becoming

Undoing an Event

To recover from a premature or erroneous EVENT take, press the ARM and UNDO buttons. This will return the system to its status prior to the last take, with the last program event being once again the current program event, and the last preview event (the one just taken) becoming the preview event once again. There is only one level of undo. If undo has been done and a subsequent take has not been done, the undo function will do nothing.



Event Default Button

This control allows rapid access to a default or home control surface setting. Push it, and the TAKE button in the Preview section will flash. Hit the TAKE button and the default setting will be executed.

Establishing the Default Setting

This setting would normally be set only once. For example, it may be desirable to have all controls set to zero, or everything programmed to typical nominal settings. To establish the default setting, adjust all the control surface controls to their desired settings, press the NEW button and then the DEFAULT button. The default setting is stored.

Storing an Event

When an event is stored, all of the control surface's current settings are saved and will be recalled when that event is executed through the TAKE command. To create a new event from current control surface settings, hit the NEW button, and then hit the SAVE button. To overwrite an existing event with the current settings, turn the PREVIEW SCROLL knob until the desired event is displayed in the PROGRAM/PREVIEW window, then quickly press MODIFY, then SAVE.

Naming an Event

When events are saved, they receive a default event designation number. This way events can be saved quickly without having to name them. However, an event may be custom named when saved, or at a later time. To rename the displayed event, press the ALPHA SCROLL knob. The CURSOR LT and CURSOR RT buttons will light and the cursor, indicated by a flashing character, will be at the beginning of the name. Also, the SAVE button will begin to flash. At any time you can use CURSOR LT and CURSOR RT to move to a character you want to change. Once the cursor is at the desired character, rotate the ALPHA SCROLL encoder until the desired new character is displayed. Once all desired characters have been changed, simply press SAVE to save your changes. The event is stored with the desired name. At any time you can cancel the name edit by pressing the ALPHA SCROLL knob. Also, if you stop making name changes but fail to press the SAVE button, the name edit process will automatically cancel after a delay of several seconds.

Modifying the Currently Selected Event

It is presumed an event has already been executed on the control surface. Modifications to that event can be accomplished by simply adjusting the controls and switches as desired and then pressing the MODIFY button, then the SAVE button. In this way the modified event will overwrite the old event setting and be saved, with the same name, in its place.

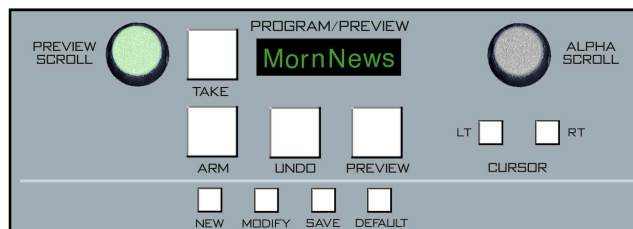
Control Modes

The G-5 control surface is operated in one of three modes. In Administrator mode access is allowed to all surface functions. In User mode a limited set of user functions is allowed. The set of functions allowed in User mode is set independently for each console using the Bridge XPoint software (see the Bridge Router manual for details). The third mode, Guest, blocks out MXM level, MXM assign, Event takes, and visibility changes from being controlled by the surface.

To change the control mode, begin by pressing and holding the PREVIEW SCROLL knob until the display reads “Admin” and the TAKE button lights (if the surface is currently in Admin mode the ARM button will also light). Turn PREVIEW SCROLL until the desired new mode (Admin, User, or Guest) is showing in the display and press TAKE. Turn PREVIEW SCROLL again to select the first digit of the password. Default passwords, which may be changed in XPoint, are “1234” for Admin, “2222” for User, and “0000” for Guest. After dialing up the first character of the password, press TAKE. Then dial up the second digit. Continue this procedure until the four characters have been entered. Upon pressing TAKE after entering the fourth character, the display will read “Okay...” if you were successful and “Sorry...” if you were not. When finished, turn PREVIEW SCROLL until the display reads “<<Exit” and press TAKE to finish the mode select operation.

The ARM button lights as you select the mode that the surface is currently in. If you press TAKE when displaying the current mode, the display will switch to “Okay...” and you will not need to enter the password. If you stop partway through the procedure, the mode selection process will time out after about 15 seconds.

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



Information Display

This control surface information display will appear in the right-hand LCD display when you push down the CONTROL ROOM, HEADPHONE, and STUDIO control knobs at the same time. Push down the same three knobs again to revert to the normal screen.



DCM Control Panel (DCM-G5)

Chapter Contents

Controls and Functions	4-2
Programmable Buttons	4-2
Display Buttons	4-3

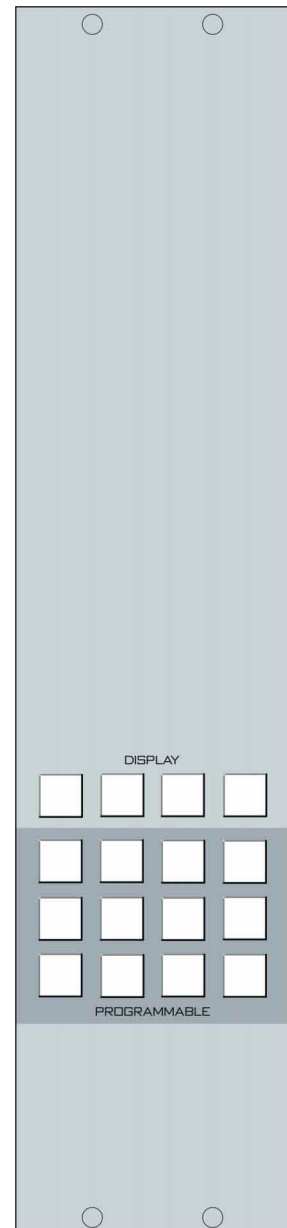
DCM Control Panel (DCM-G5)

Controls and Functions

The DCM panel contains the display and programmable buttons.

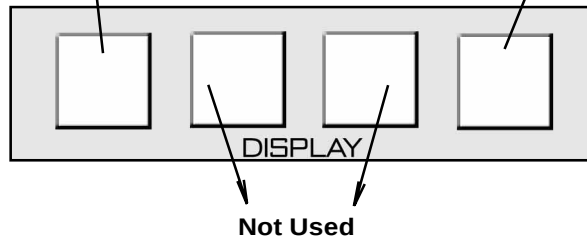
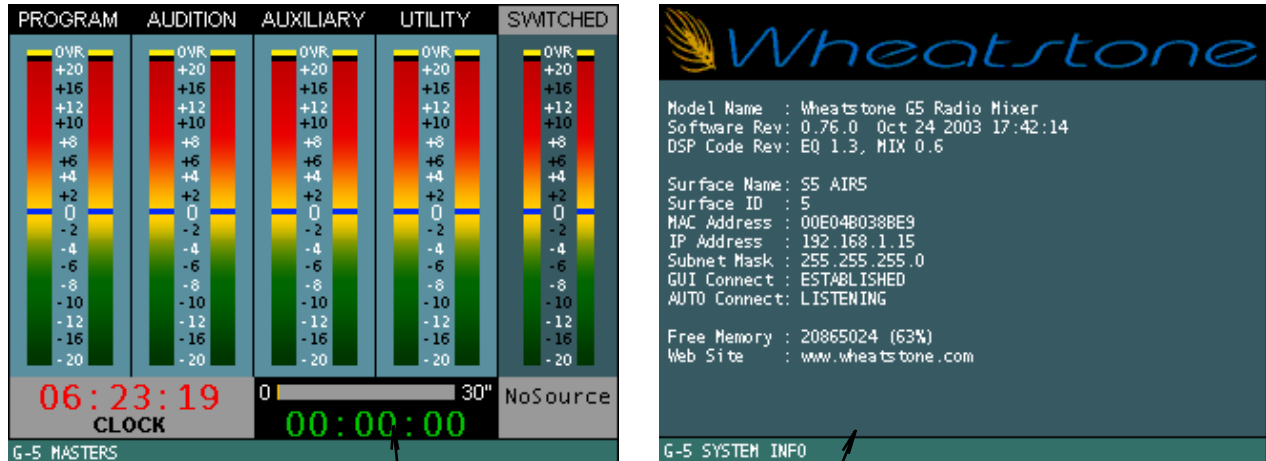
Programmable Buttons

These (12) momentary switches and indicating LEDs are designed for user accessible external functions (GPIs). With these switches the user can fire Salvos or make a temporary crosspoint without having to wire any physical logic ports. These switches may also be mapped to control physical Logic card output ports, and the LEDs on the Spare buttons may also be lit by a remote device connected to a Logic card input port. See the Bridge Router manual for details.



Display Buttons

These switches control the display modes for the LCD monitor.



Host CPU (HC-9)

Chapter Contents

Overview.....	5-2
HC-9 BIOS Settings/Format	5-2
Ethernet IP Addressing	5-2
Ethernet Interface Wiring.....	5-2
Mixer Link Wiring.....	5-3
Internal Programming Options.....	5-3
Switch Settings.....	5-3
SW6 - Master Reset	5-3
SW7 - CPU Reset.....	5-3
SW8 Position 1 - Sample Rate	5-3
SW8 Position 3 - Redundant CPU.....	5-3
SW8 Position 4 - CAT5 vs. Fiber.....	5-3
Hook-Ups.....	5-4
“ETH A” RJ-45 - Main Ethernet Connector	5-4
“ETH B” RJ-45 - Optional Redundant Computer Ethernet Connector.....	5-4
“CAT5” RJ-45 - Mixer Link Connector	5-4
Typical Ethernet Cable.....	5-5
Typical Crossover Cable.....	5-5
Optical Fiber Interface.....	5-6
Connector Type.....	5-6
Optical Fiber Cable.....	5-6
HC-9 Pinouts Drawing.....	5-7
Cue Speaker/Headphone Pinouts Drawing.....	5-8



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

Host Controller (HC-9)

Overview

The host controller card used in the G-5 incorporates a PC/104 computer mounted on the HC-9 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. Keyboard, floppy controller and video ports are for factory use only.

The purpose of the host controller is to provide control of the G-5 control surface. The HC-9 communicates to the XPoint 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-9 card and is restored at power up or reset. This configuration information provides details to the host application running on the HC-9, such as the specific audio hardware available and serial port allocation. The HC-9 host controller card can be fitted with an optional 2nd PC/104 computer for redundancy.

HC-9 BIOS Settings/Format

BIOS Setup and formatting of the Host CPU is completed prior to the testing of your G-5 control surface at the Wheatstone factory. There are no user adjustable settings. Please contact customer support with questions regarding the PC/104 SBC BIOS settings or flash disk formatting.

Ethernet IP Addressing

The Wheatstone G-5 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) CAT-5 cable. Typical CAT-5 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 (or optical) 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 CAT-5 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 dipswitches.

Switch Settings

DIPSW1-SW5 - Not Used

The four positions of dipswitches SW1-SW5 are reserved for future use.

SW6 - Master Reset

This switch can be used to force takeover by the backup CPU if the main CPU has failed and automatic failover has not been accomplished.

SW7 - CPU Reset

This switch can be used to reset the host controller’s main CPU without powering down the system. If the system is running from the backup CPU this switch will NOT cause the main CPU to take over again. To do that you must recycle the surface power.

SW8 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.



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

SW8 Position 2 - Not Used

This dipswitch position is reserved for future use.

SW8 Position 3 - Redundant CPU

To enable automatic failover from the main CPU to the backup CPU this switch position must be on.

SW8 Position 4 - CAT5 vs. Fiber

The mixer link can be connected via CAT5 cable or fiber optic cable. Set position 4 of SW8 on if you are using CAT5 or off if you are using fiber.

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 three DB-9 female serial interface connectors, and two RJ-45 Ethernet connectors. CAT5 or multi-mode optical fiber Mixer Link connections are made via RJ-45 or SC type optical connectors. The pinout drawing on page 5-7 shows all wiring connections at a glance.

“ETH A” 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

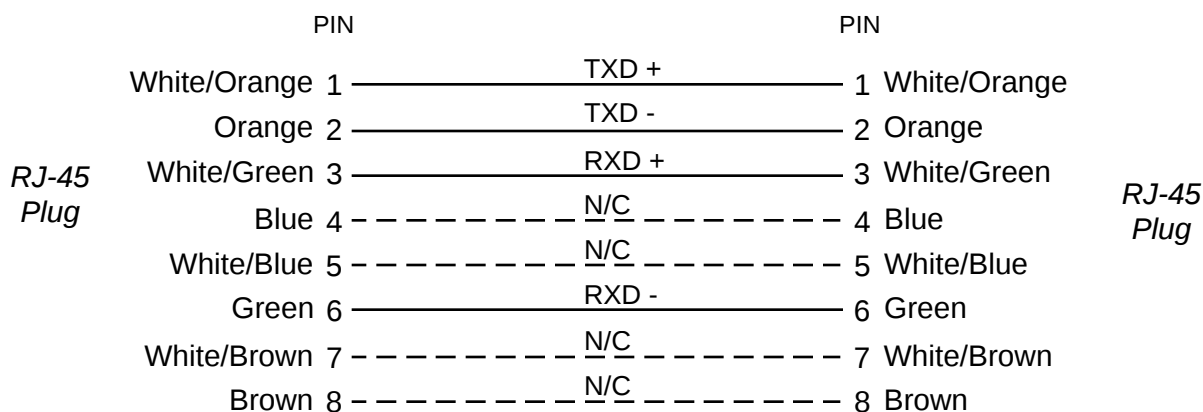
“ETH B” RJ-45—OPTIONAL REDUNDANT COMPUTER ETHERNET CONNECTOR

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

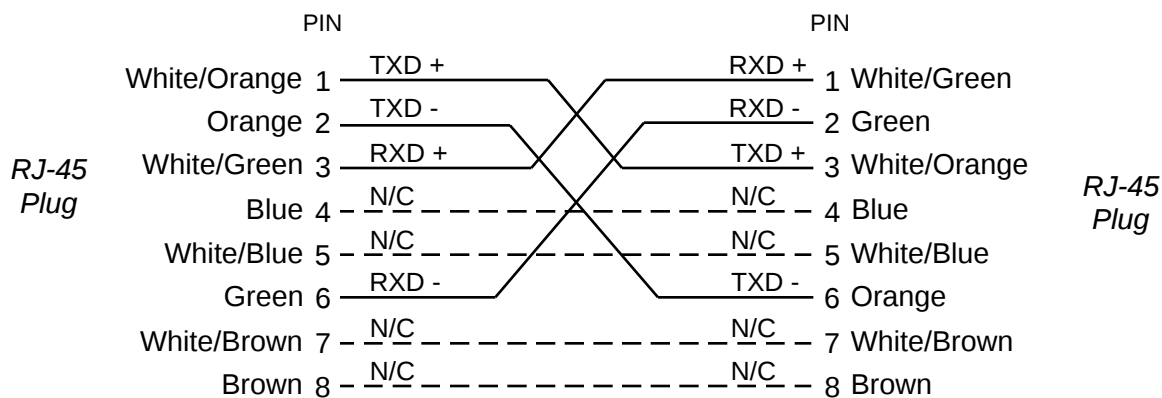
Pin 1 – TXD +
 Pin 2 – TXD -
 Pin 3 – RXD +
 Pin 4 – N/C
 Pin 5 – N/C
 Pin 6 – RXD -
 Pin 7 – N/C
 Pin 8 – N/C

TYPICAL ETHERNET CABLE



USED FOR CONNECTING THE HOST CONTROLLER TO YOUR NETWORK HUB.

TYPICAL CROSSOVER CABLE



USED FOR MIXER LINK CONNECTOR.

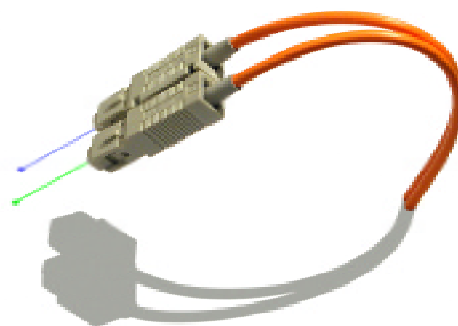
Optical Fiber Interface

The G-5 control surface supports an optional fiber connection to the Bridge Router.

Connector Type

An *SC Duplex* style connector is provided for interfacing optical fiber. The SC (subscription channel) connector is a low insertion loss, locking mechanism with excellent strain relief characteristics. The following AMP® part number may be used to reference the physical characteristics of the required mating connector.

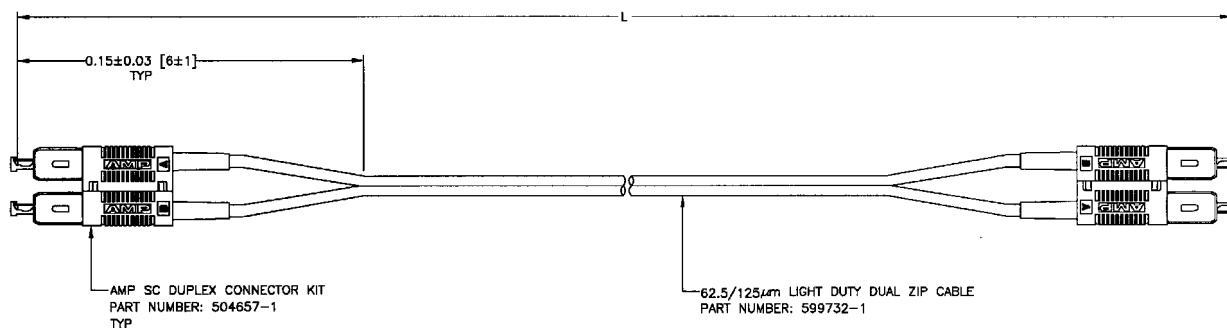
AMP SC Duplex connector Kit Part Number:
504657-1



Optical Fiber Cable

The typical optical fiber cable required in this application is a multimode, glass core cable, with a core/cladding size of $62.5/125\ \mu\text{m}$, suitable for low-to-moderate-speed data links ($\leq 100\text{Mbps}$). The full-duplex nature of the audio network interface requires one fiber for transmit, and one for receive; hence dual zip cables are recommended.

Optical fiber cables are manufactured with a variety of jacket materials, which directly affect cable cost, including Thermoplastic Elastomer (TPE), Kynar® and Teflon® FEP. Physical properties of the jacket material determine a cable's resistance to abrasions, flame retardancy, etc. *Check local codes to be sure the cable you plan on using is compliant in your application.*

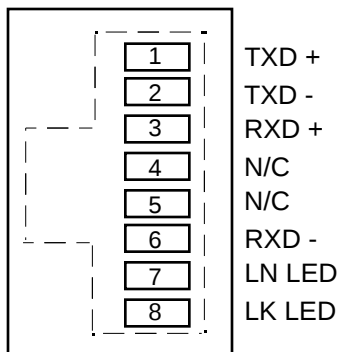


DIMENSIONS IN [] ARE IN INCHES.

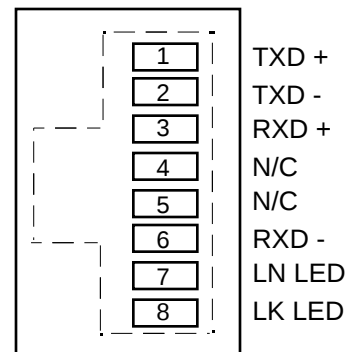
HC-9 Host Controller I/O Connections

Ethernet Connections

**"A" Main Ethernet
Connector
(RJ-45)**

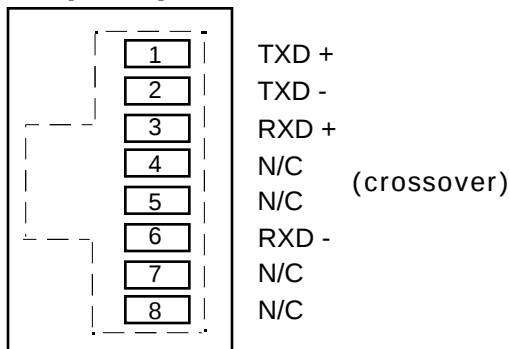


**"B" Optional Redundant Computer
Ethernet Connector
(RJ-45)**

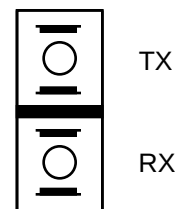


Mixer Link Connections

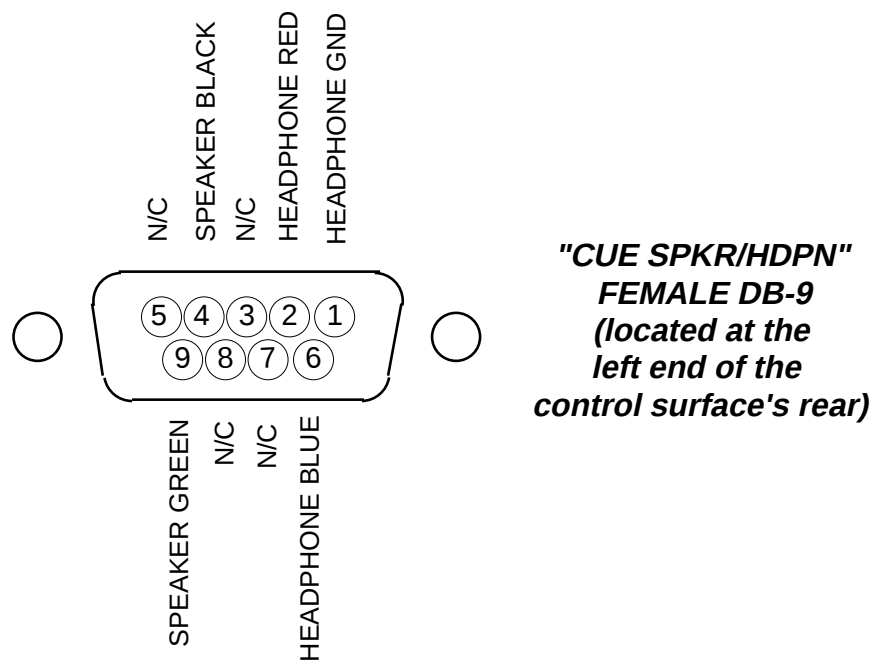
**CAT5
Connector
(RJ-45)**



**Optional Optical
FIBER
(SC Connector)**



Cue Speaker /Headphone Pinouts



Schematic and Load Sheet Drawings

Chapter Contents

IP-5 4 Inputs Panel Switch Card

Schematic 6-2

Load Sheet..... 6-5

ONS-5 4 Inputs Panel On/Off Switch Card

Schematic 6-6

Load Sheet..... 6-7

MN-5 Control Panel Switch Card

Schematic 6-8

Load Sheet..... 6-13

DCM-5 DCM Panel Switch Card

Schematic 6-14

Load Sheet..... 6-16

IQ-9 IQ Card

Schematic 6-17

Load Sheet..... 6-18

HC-9 Host Controller Card

Schematic 6-19

Load Sheet..... 6-26

BP-9 Back Plane Card

Schematic 6-27

Load Sheet..... 6-28

BPR-9 Back Plane Repeater Card

Schematic 6-29

Load Sheet..... 6-30

32VC5-5 +5V DC to DC Converter Card

Schematic 6-31

Load Sheet..... 6-32

VU-9 VU Receiver Card

Schematic 6-33

Load Sheet..... 6-34

PWI-5.1 Power Interface Card

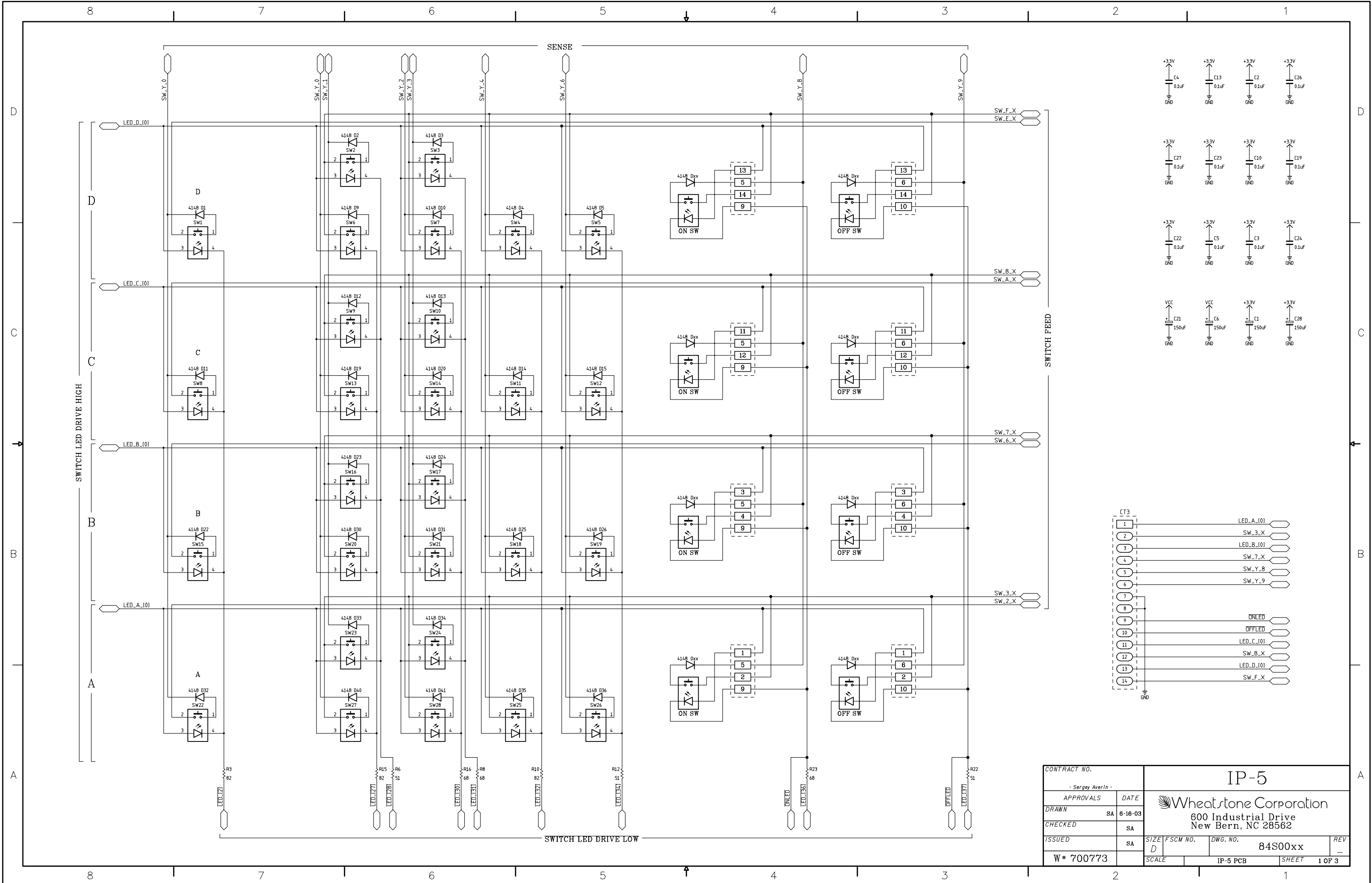
Schematic 6-35

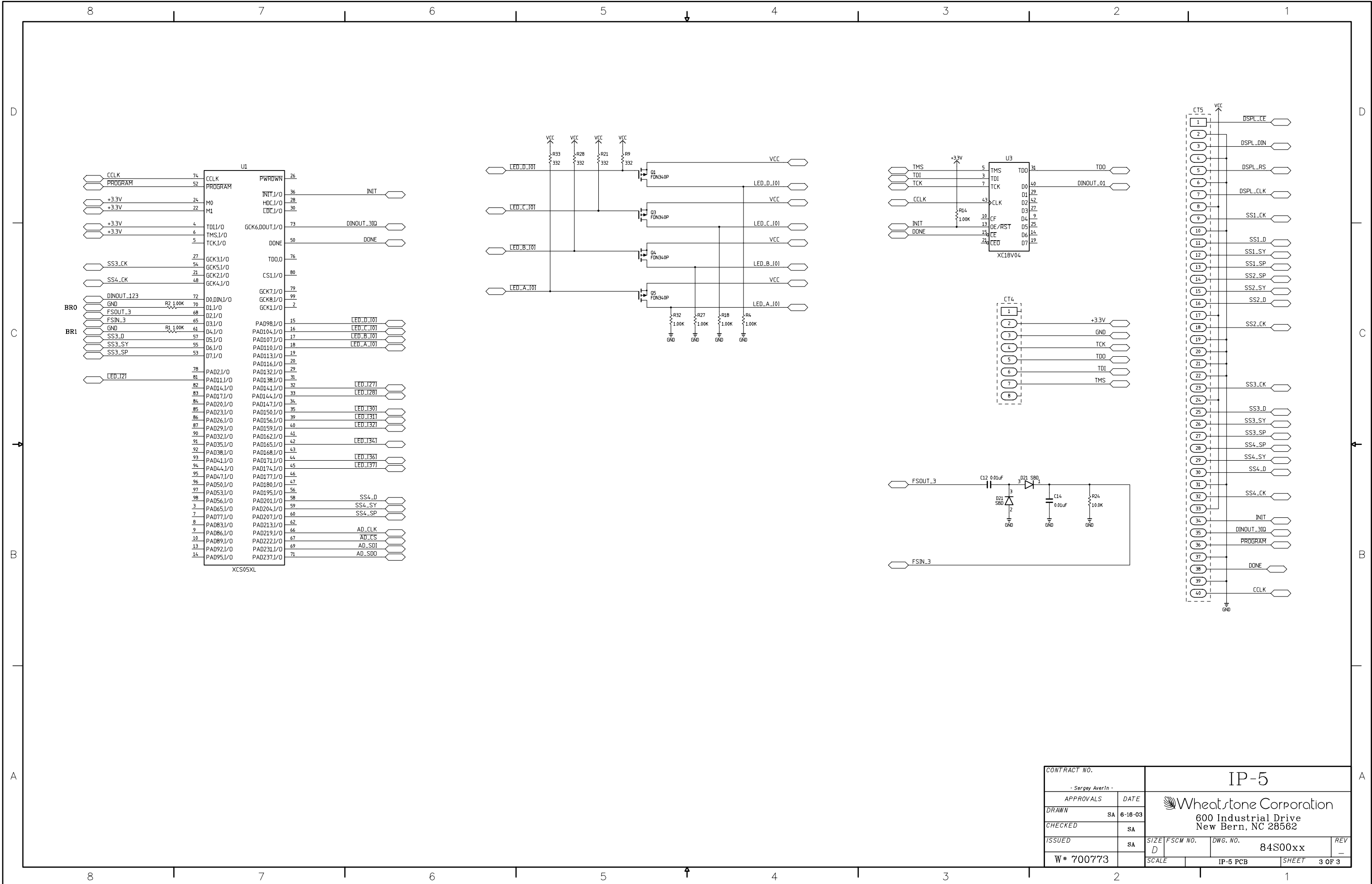
Load Sheet..... 6-36

PSU-1 Power Supply

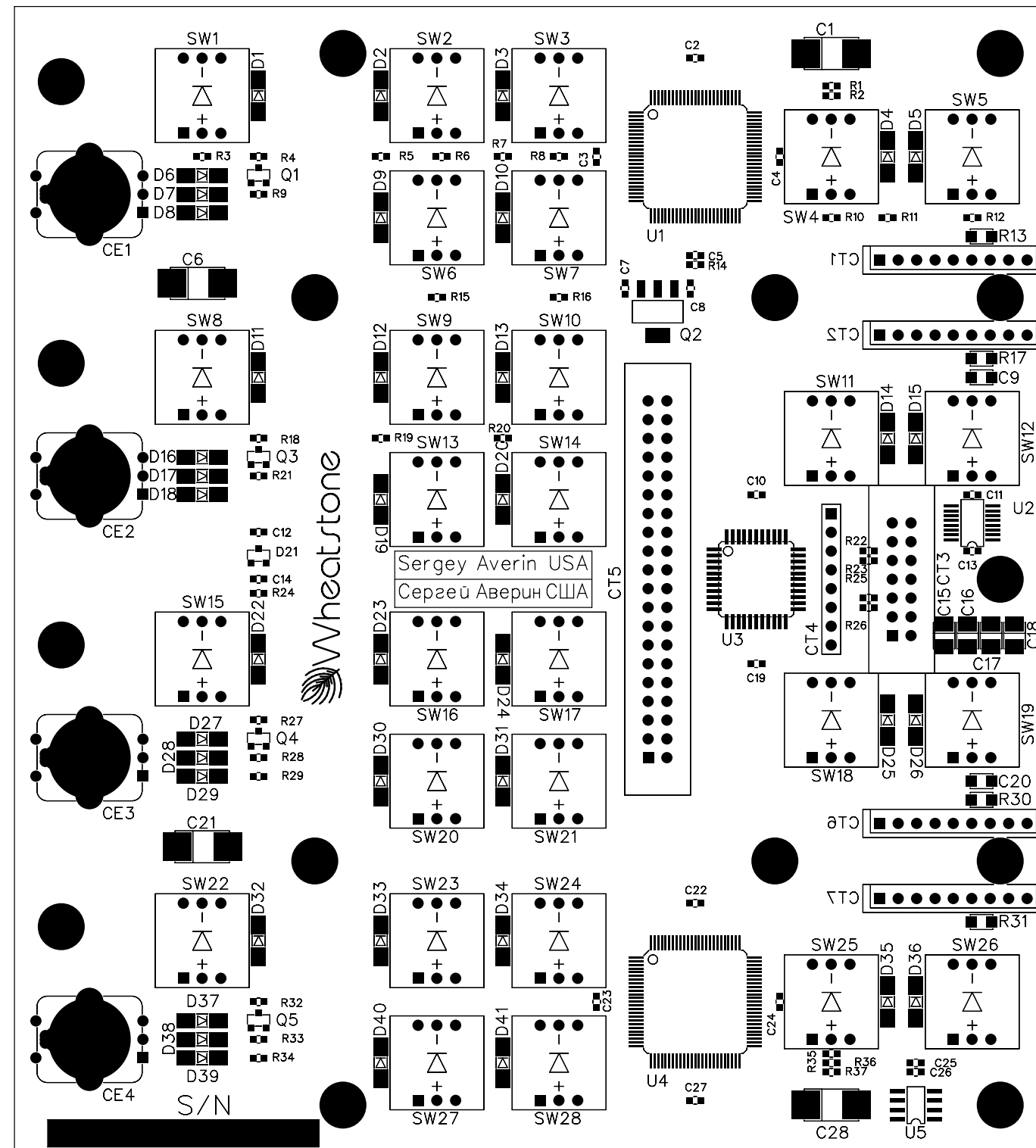
Schematic 6-37

Load Sheet..... 6-38

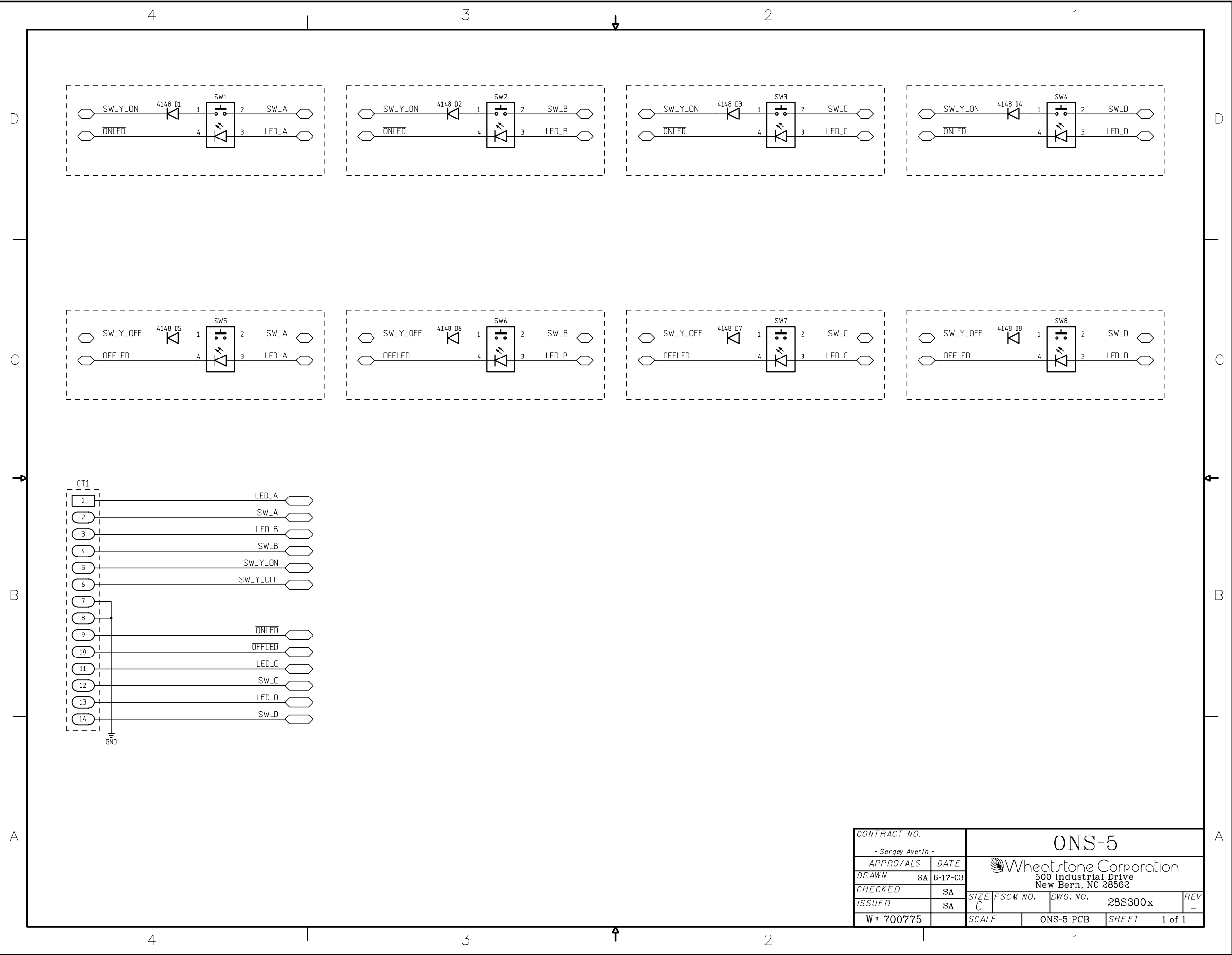




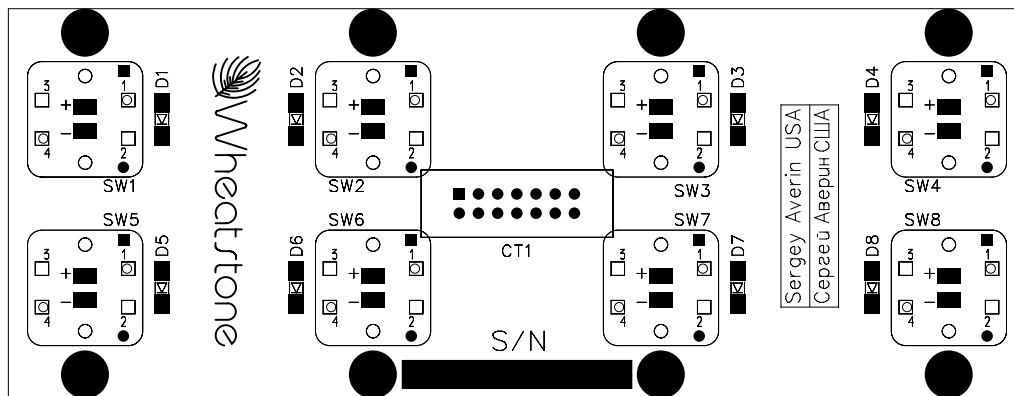
IP-5 4 Inputs Panel Switch Card Schematic - Sheet 3 of 3



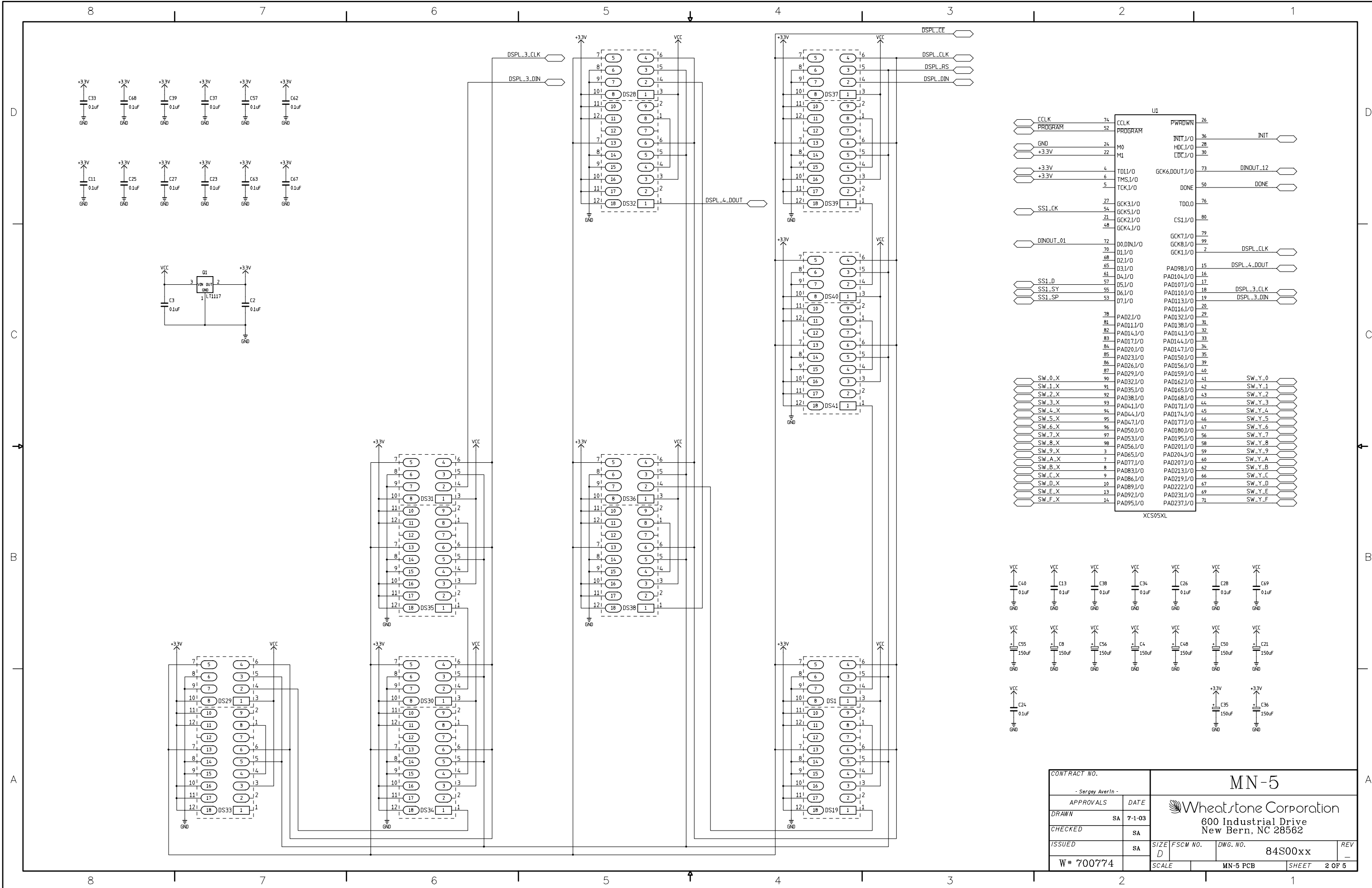
IP-5 4 Inputs Panel Switch Card Load Sheet



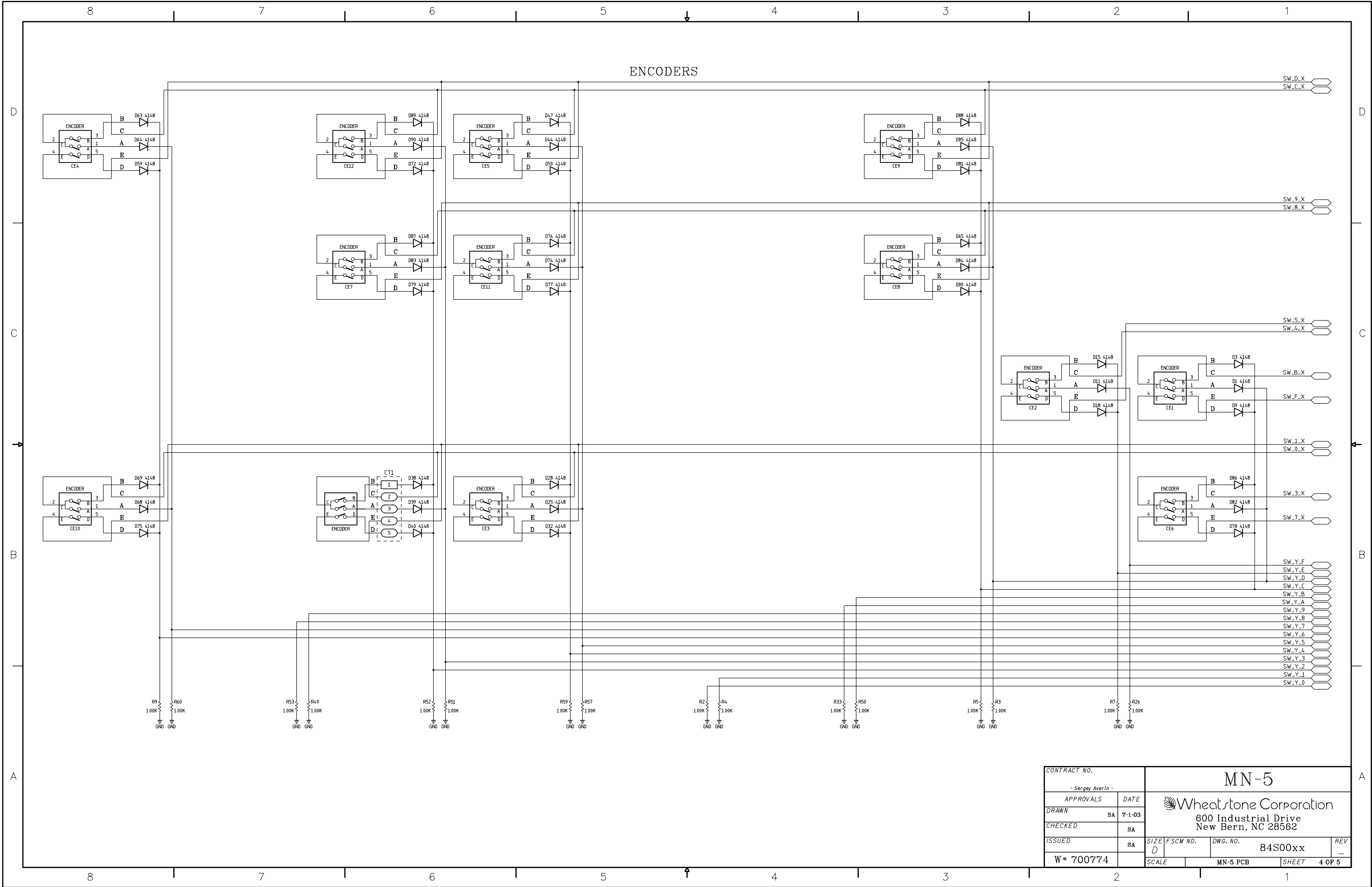
4 Inputs Panel On/Off Switch Card Schematic - Sheet 1 of 1

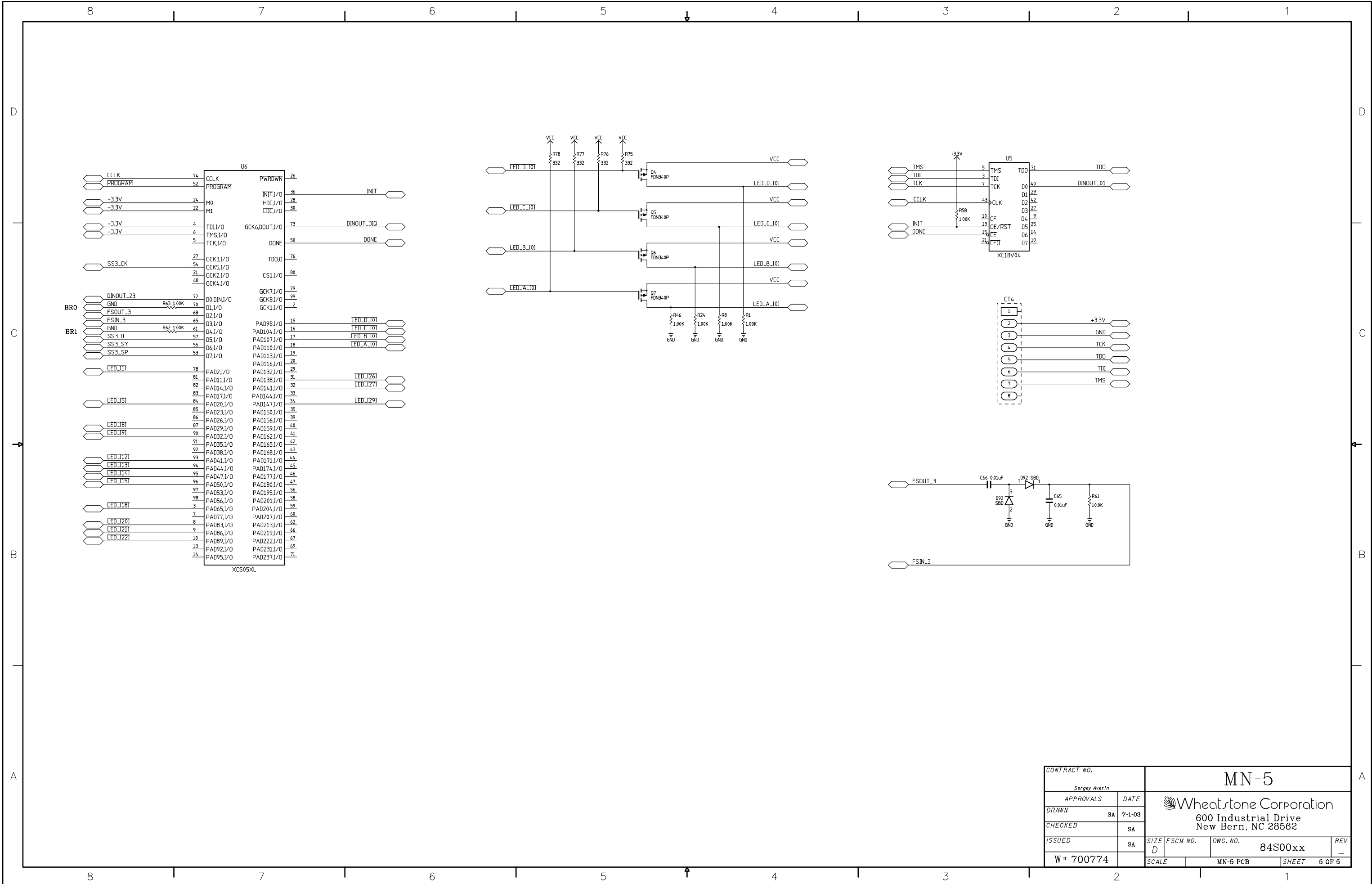


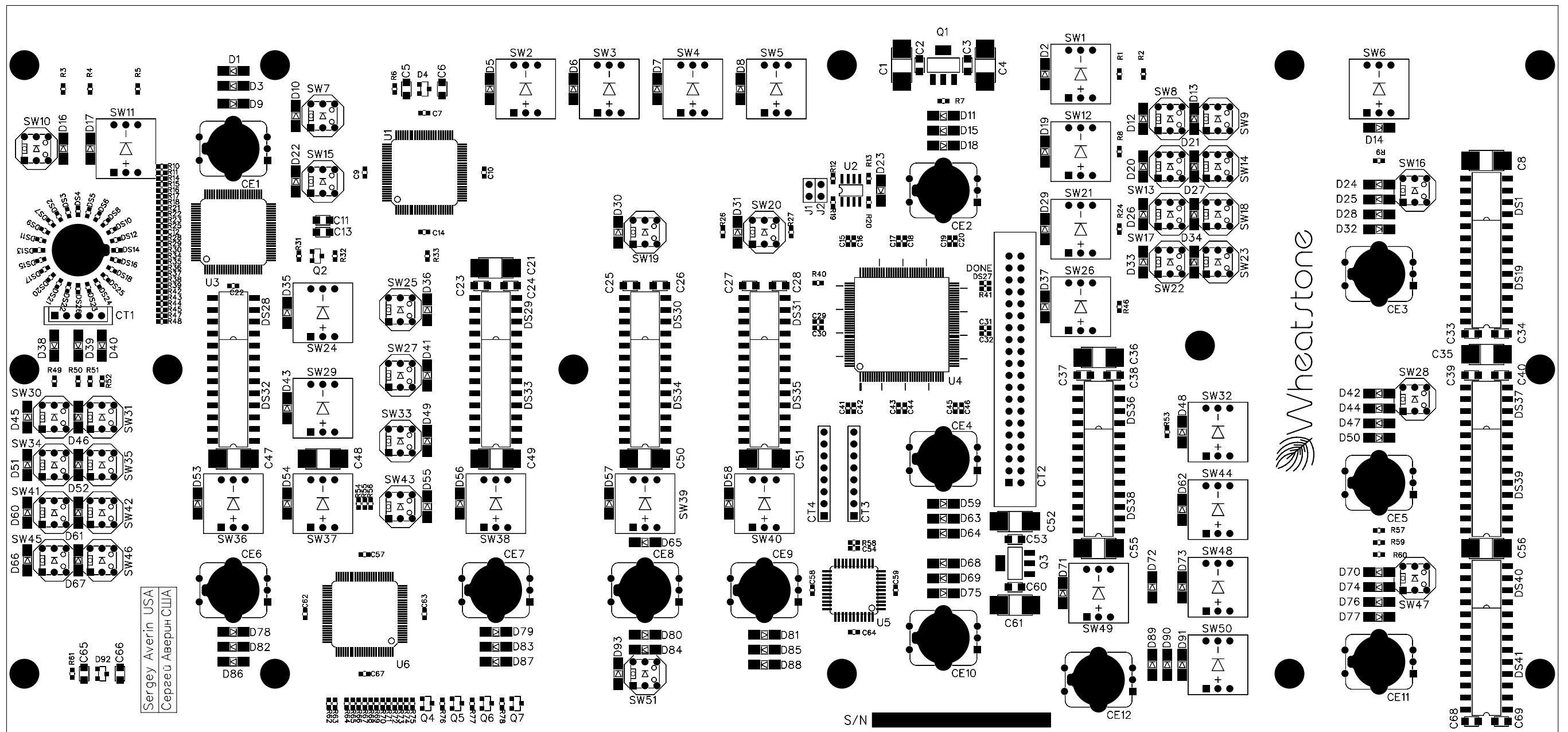
ONS-5 4 Inputs Panel On/Off Switch Load Sheet

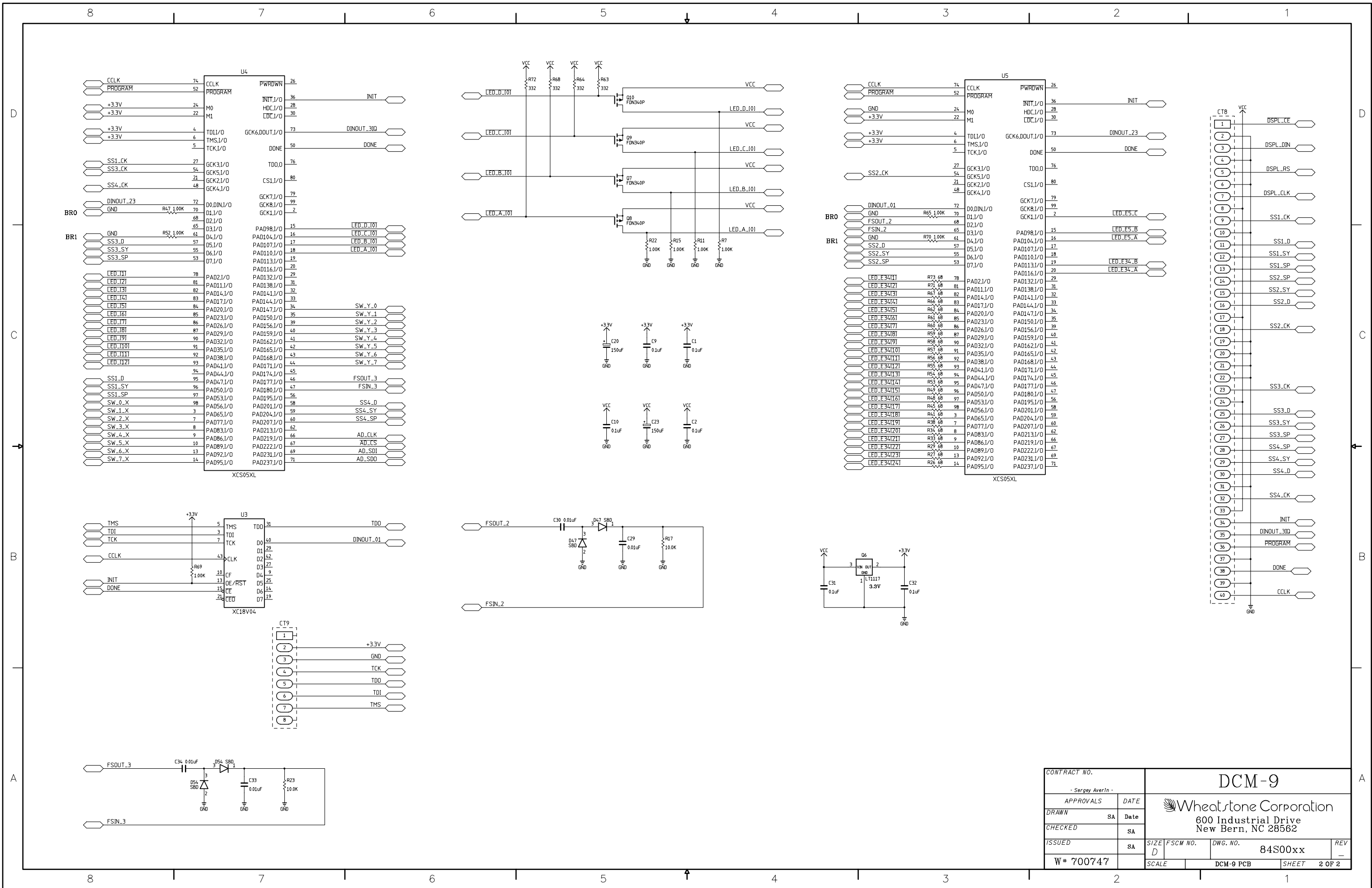


MN-5 Control Panel Switch Card Schematic - Sheet 2 of 5

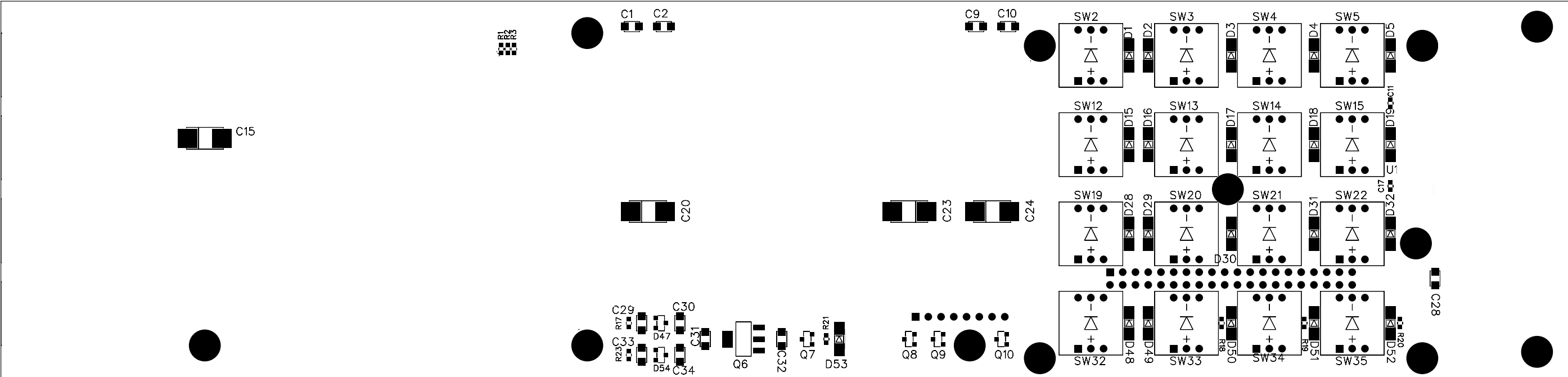


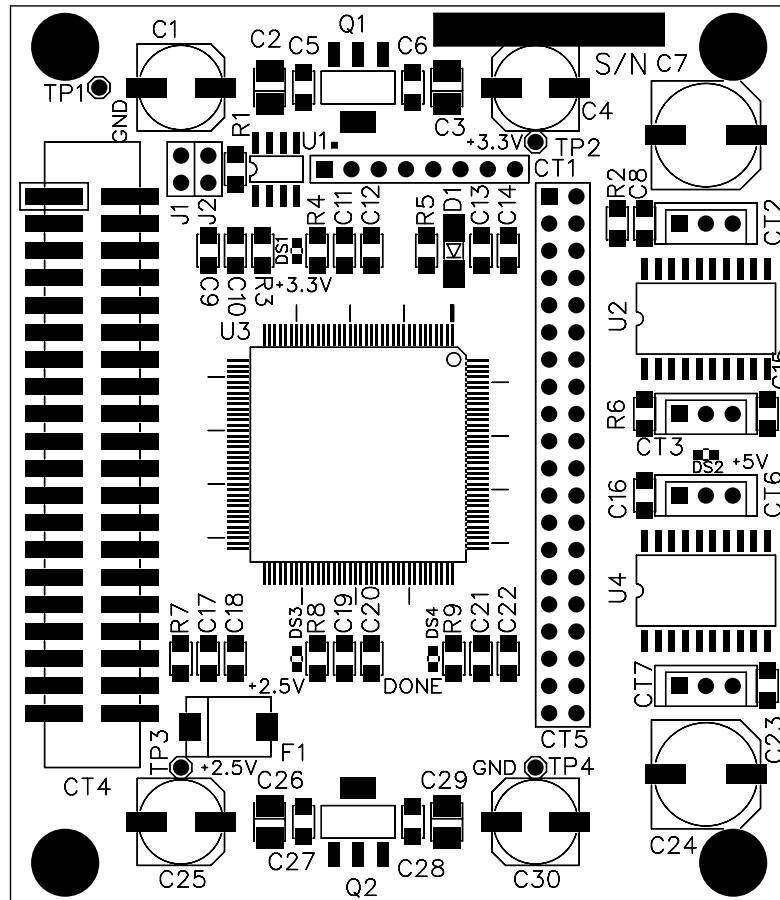




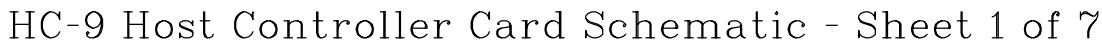


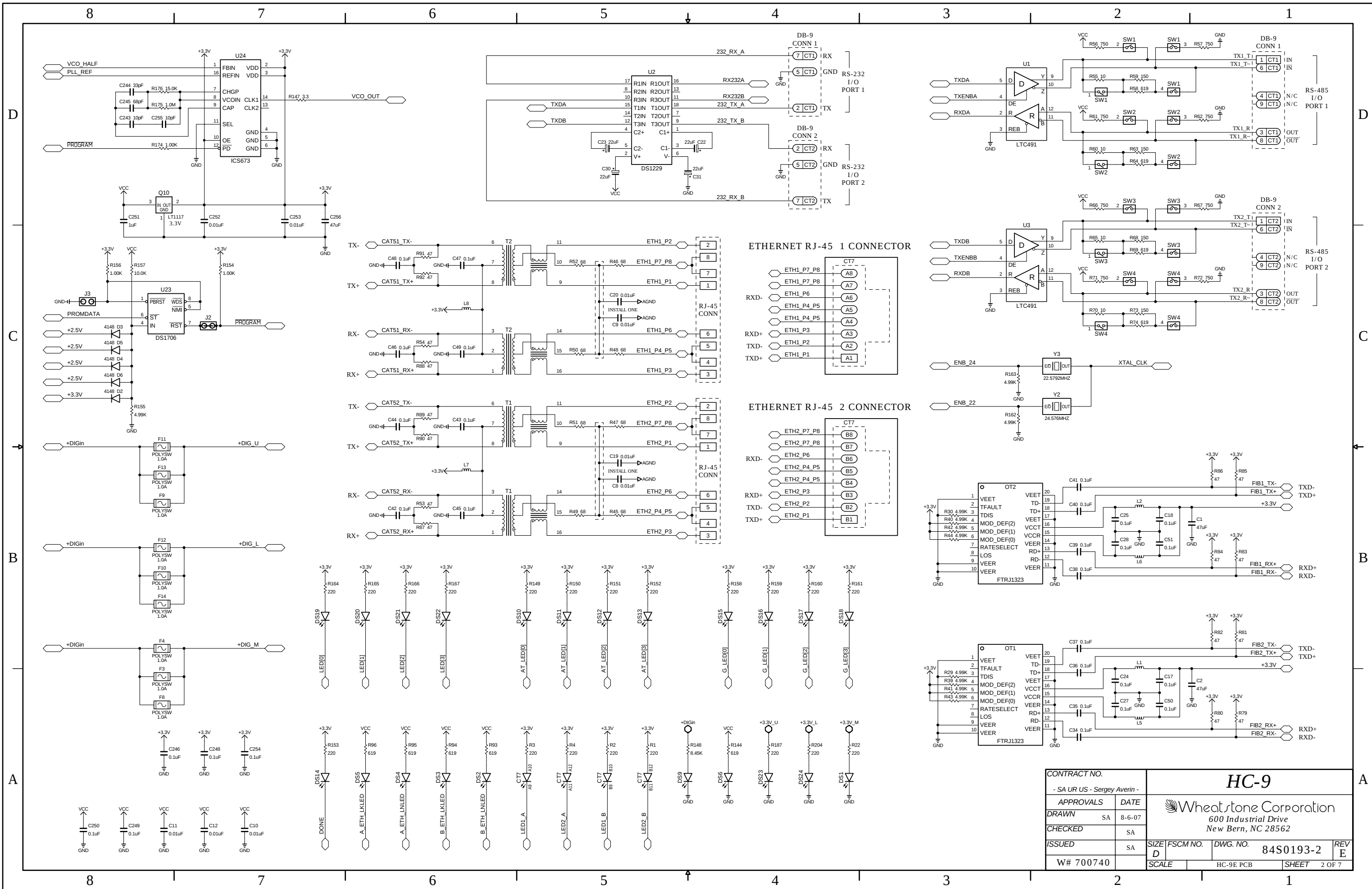
DCM-5 DCM Panel Switch Card Schematic - Sheet 2 of 2



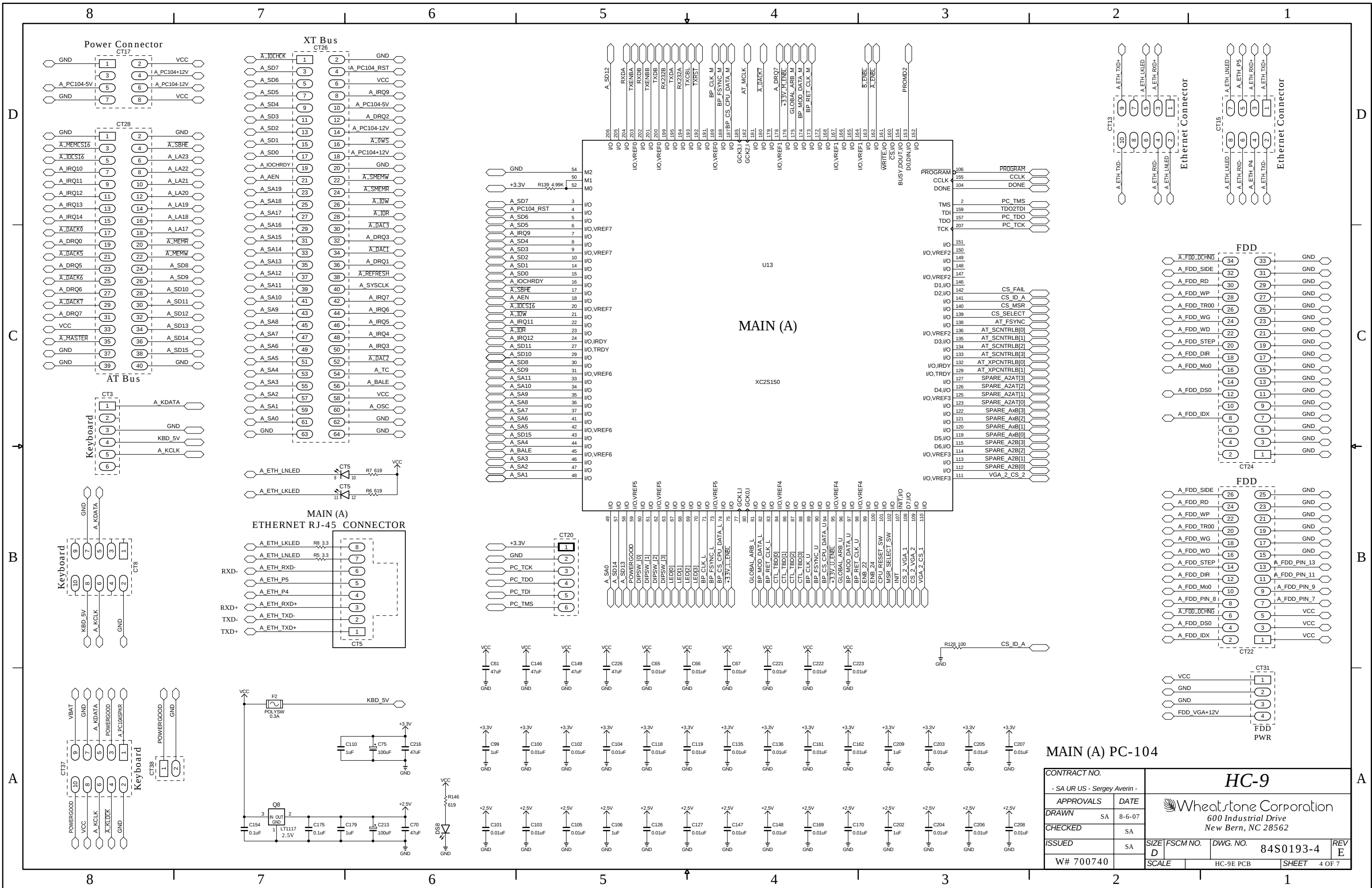


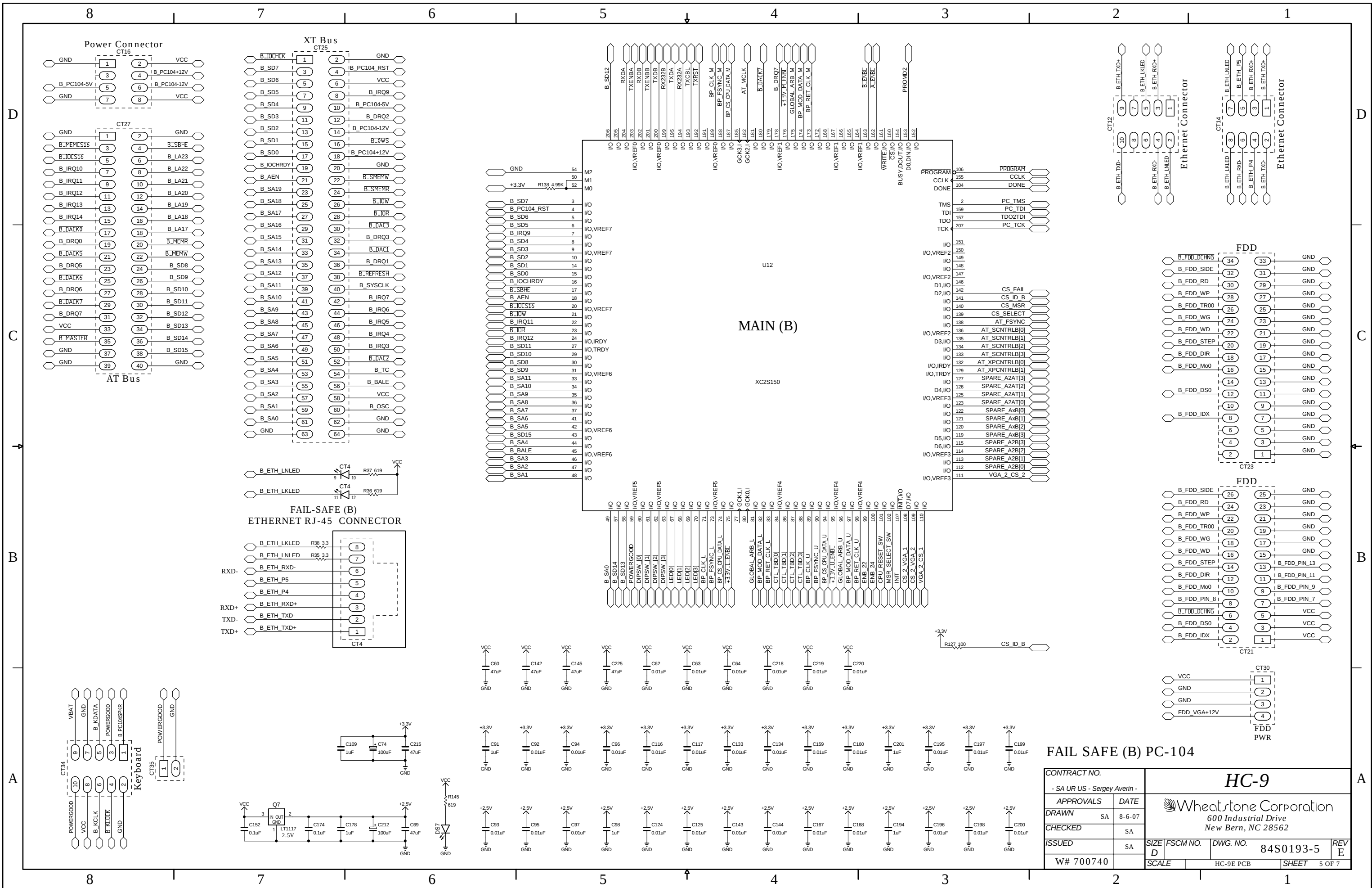
IQ-9 IQ Card Load Sheet



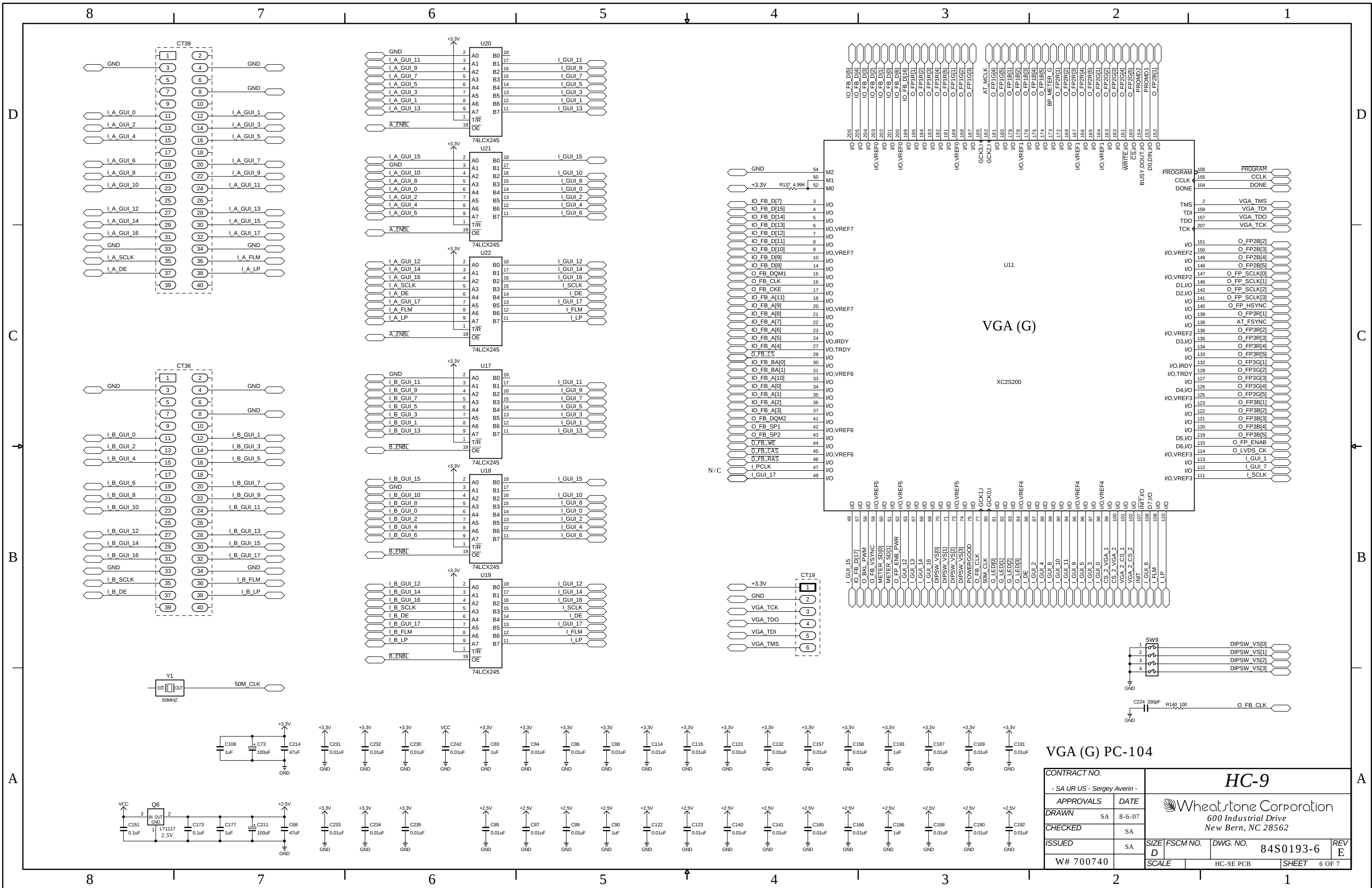


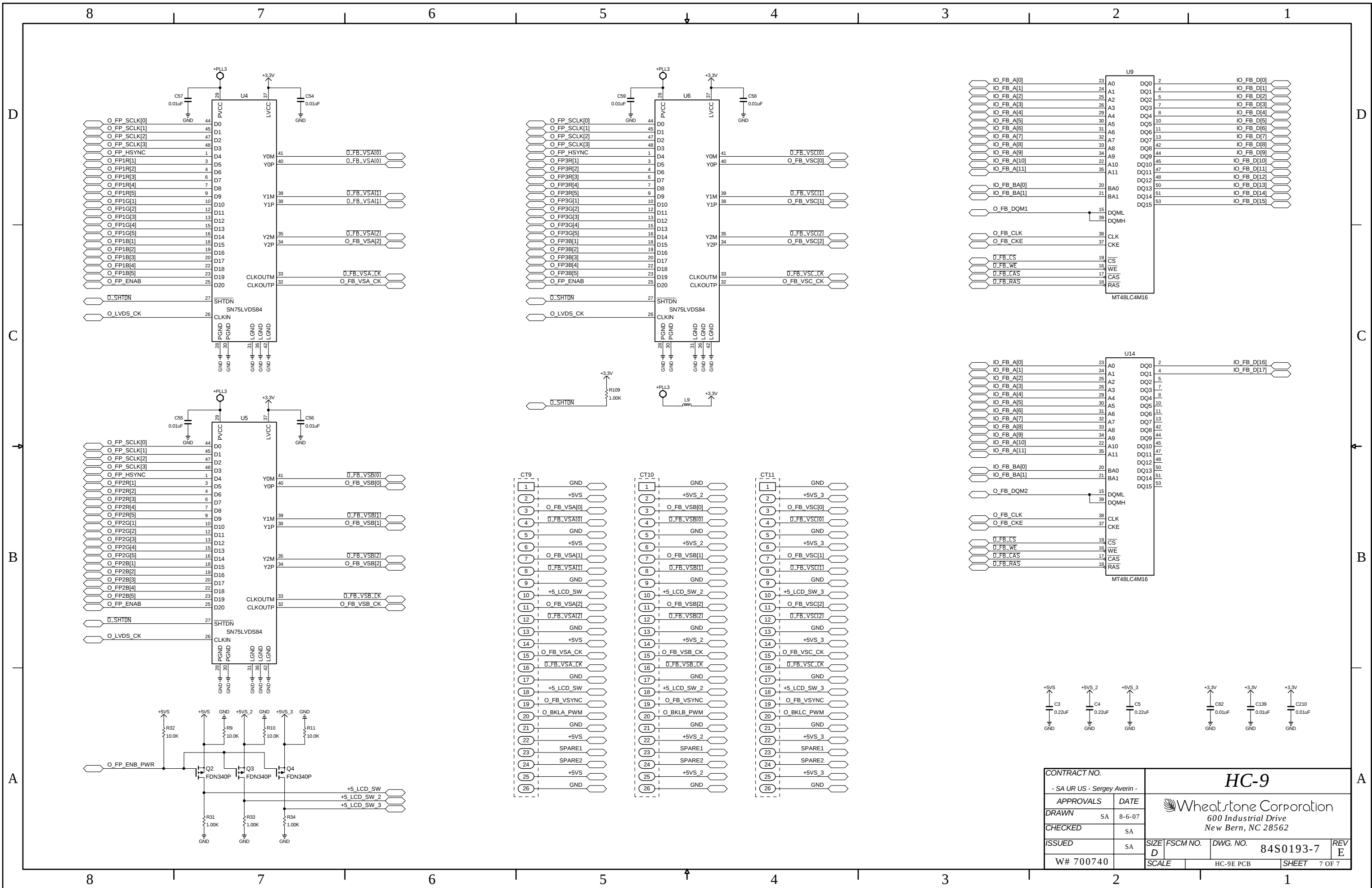
HC-9 Host Controller Card Schematic - Sheet 2 of 7

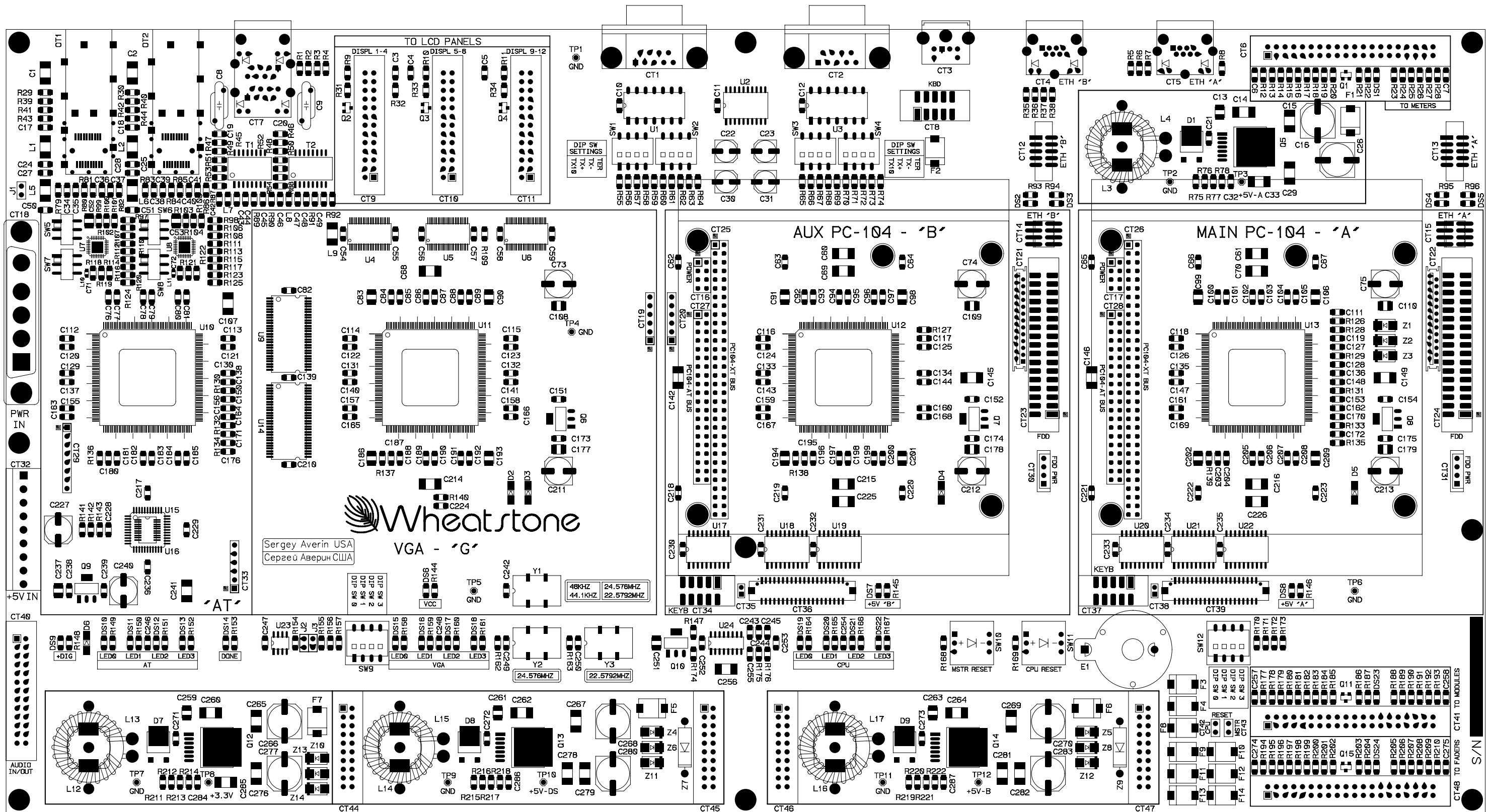




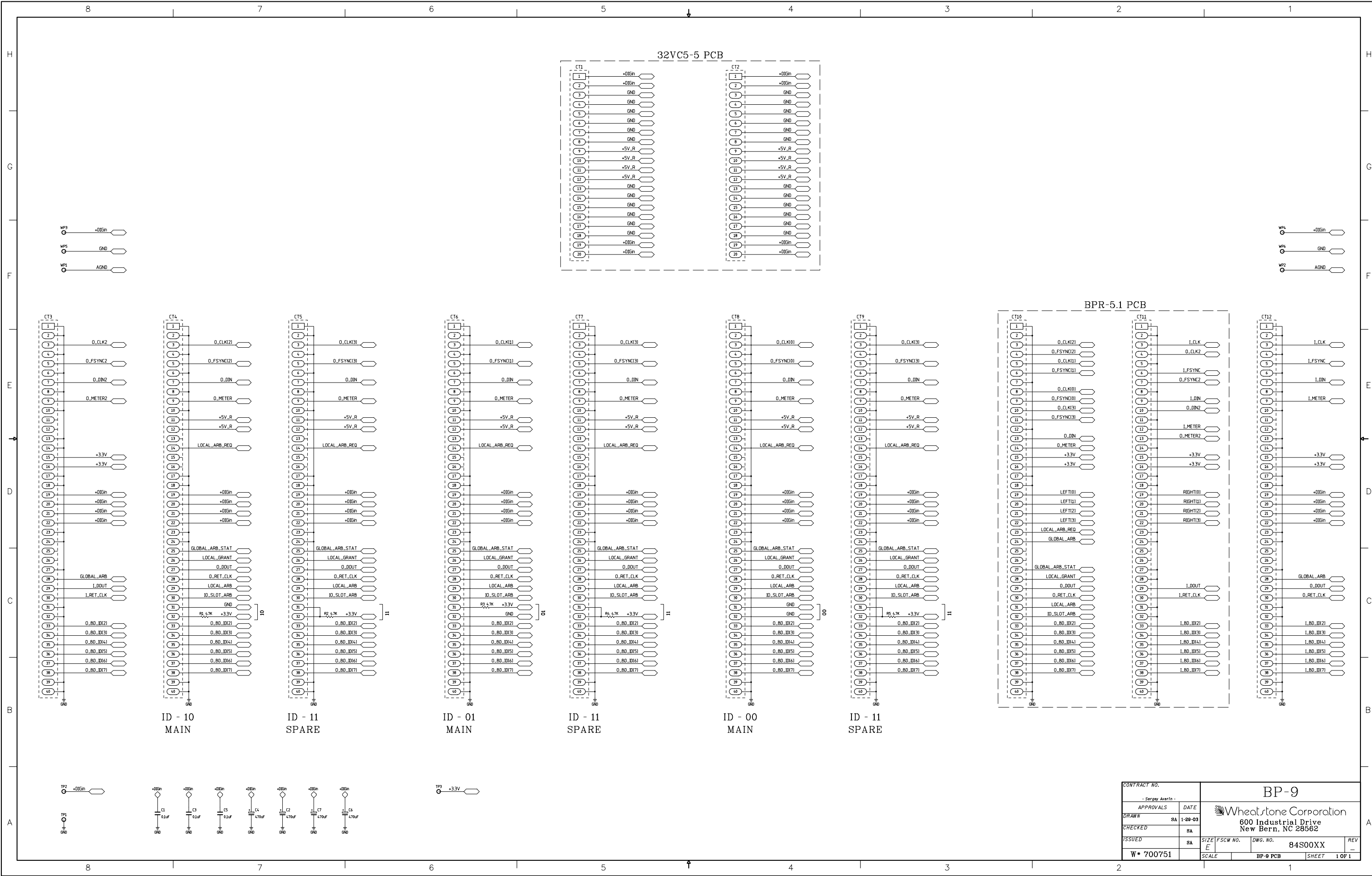
HC-9 Host Controller Card Schematic - Sheet 5 of 7

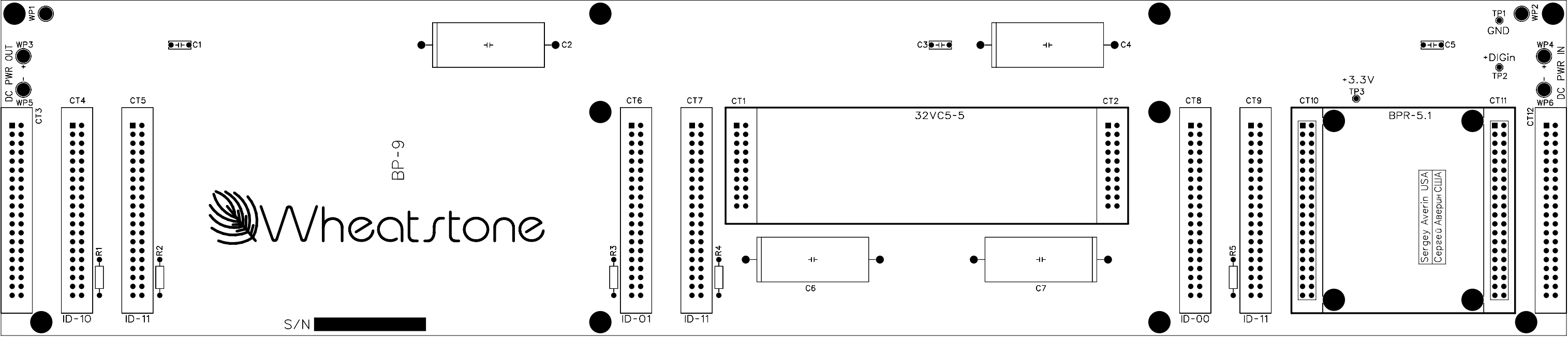


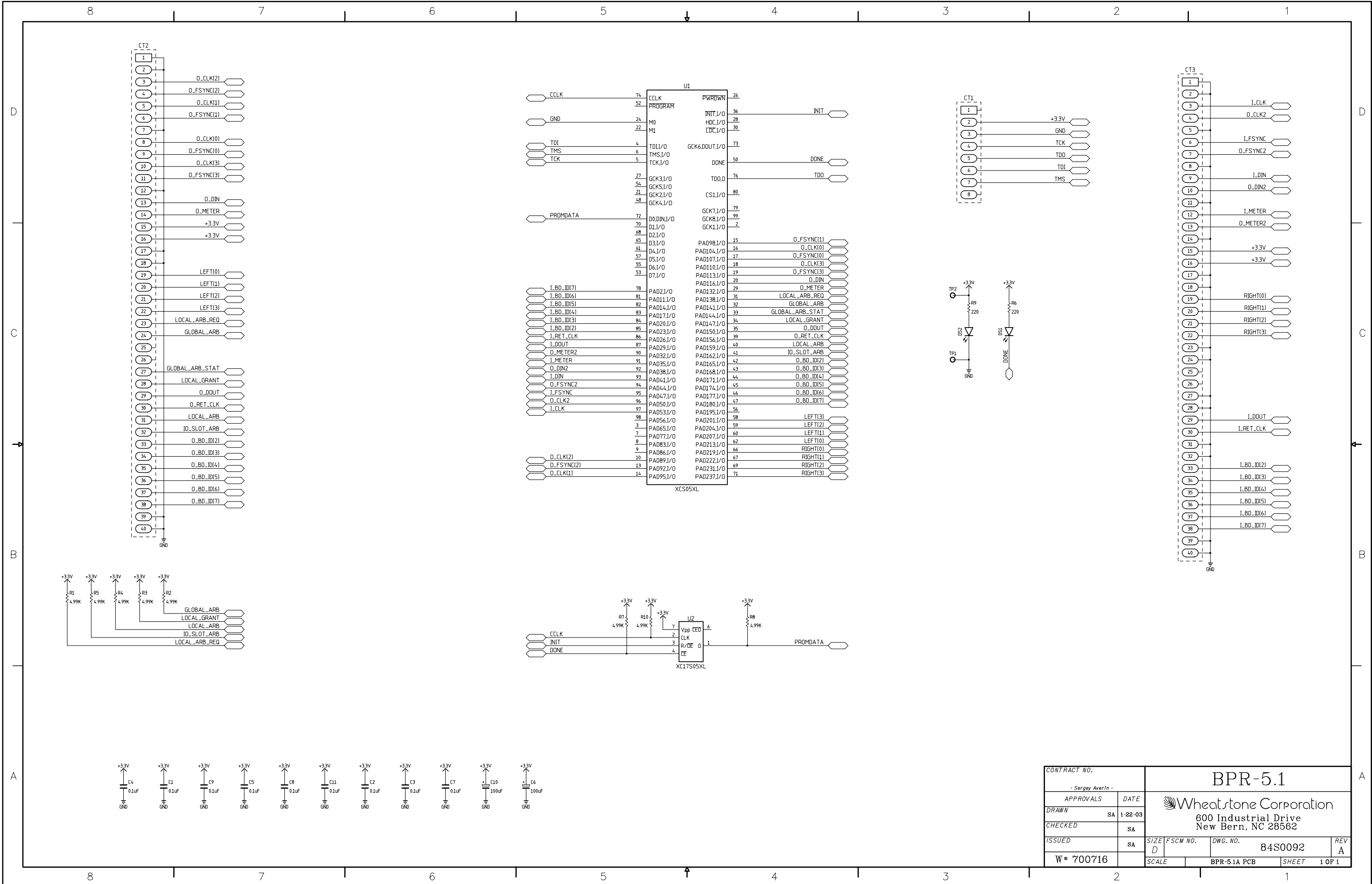




HC-9 Host Controller Card Load Sheet

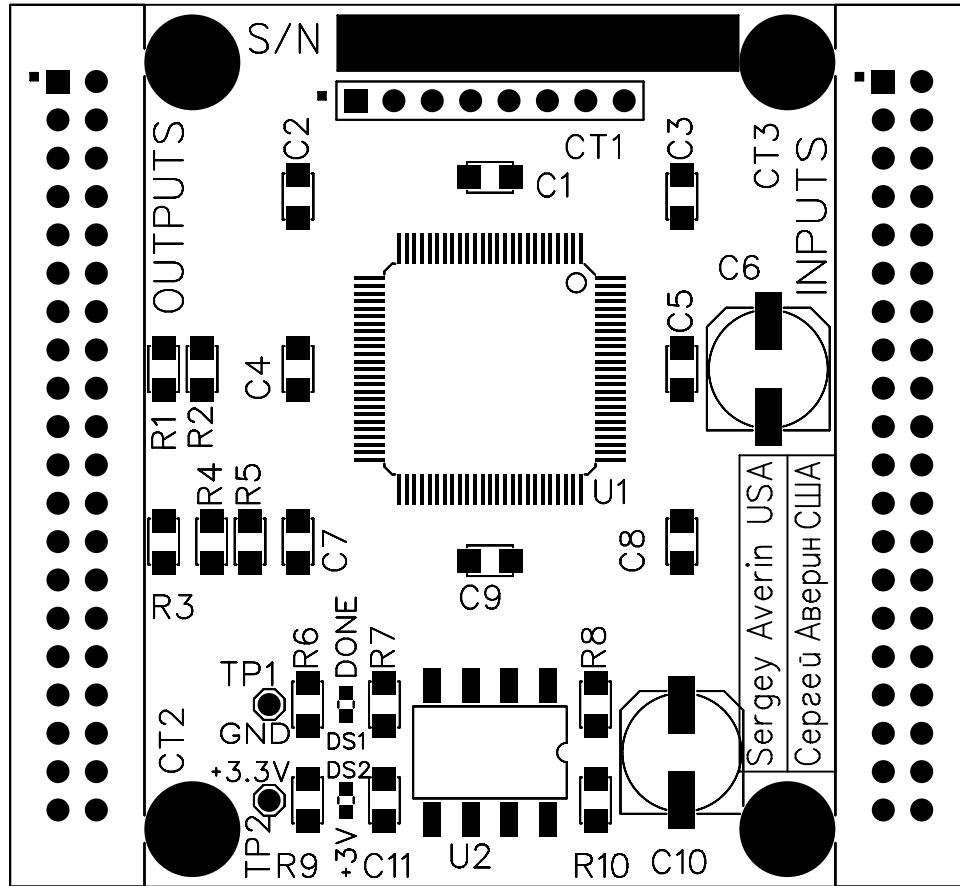




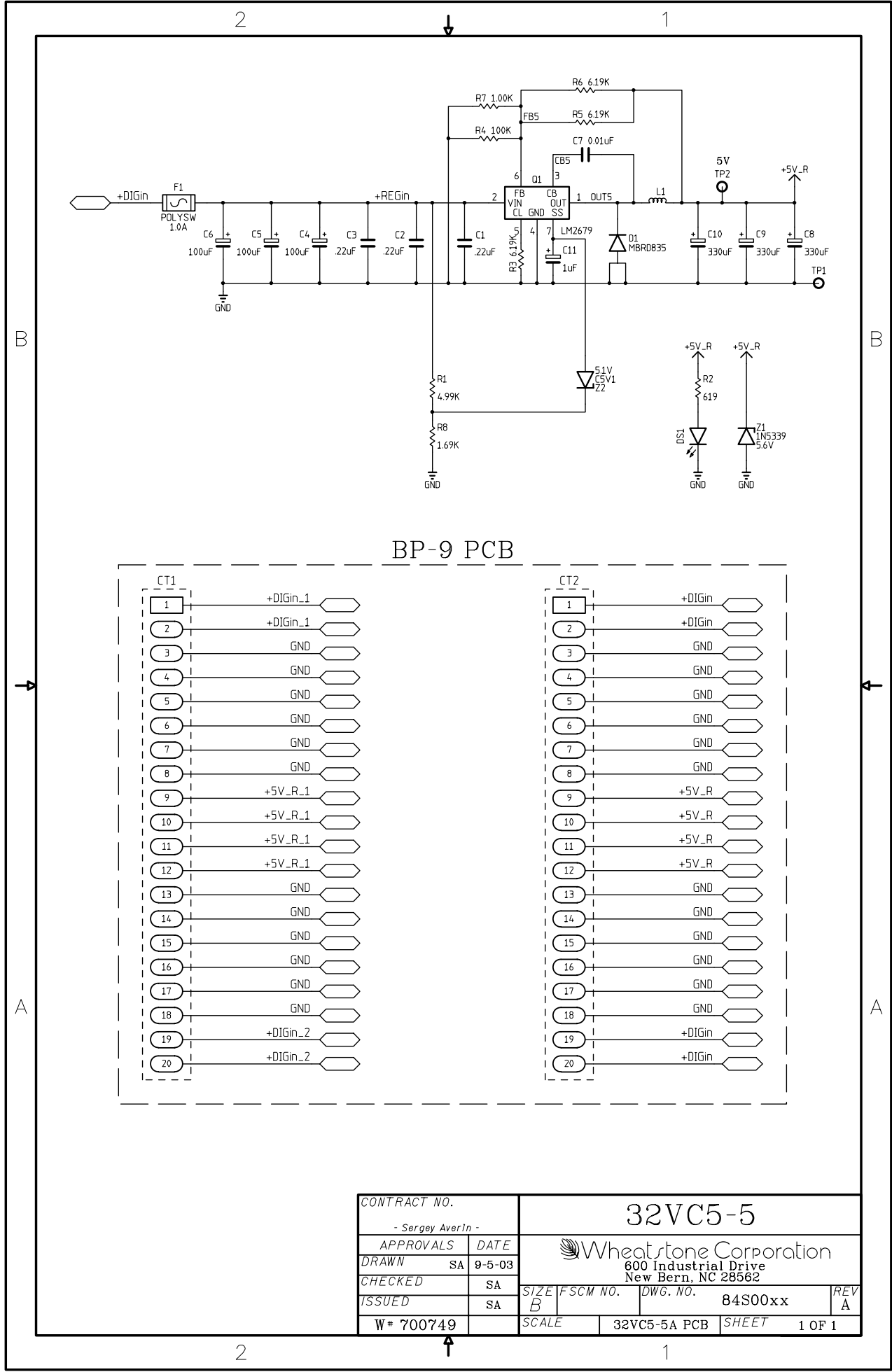


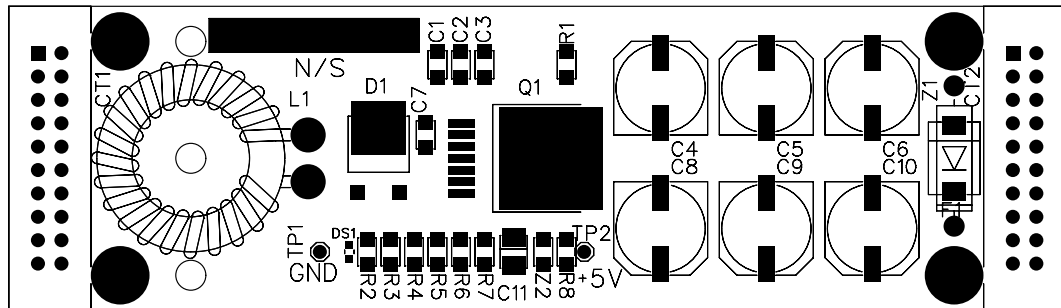
CONTRACT NO.		BPR-5.1			
- Sergey Averin -		Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562			
APPROVALS	DATE				
DRAWN	SA 1-22-03				
CHECKED	SA				
ISSUED	SA				
W# 700716		SIZE D	FSCM NO.	DWG. NO. 84S0092	REV A
		SCALE	BPR-5.1A PCB		SHEET 1 OF 1

BPR-9 Back Plane Repeater Card Schematic - Sheet 1 of 1

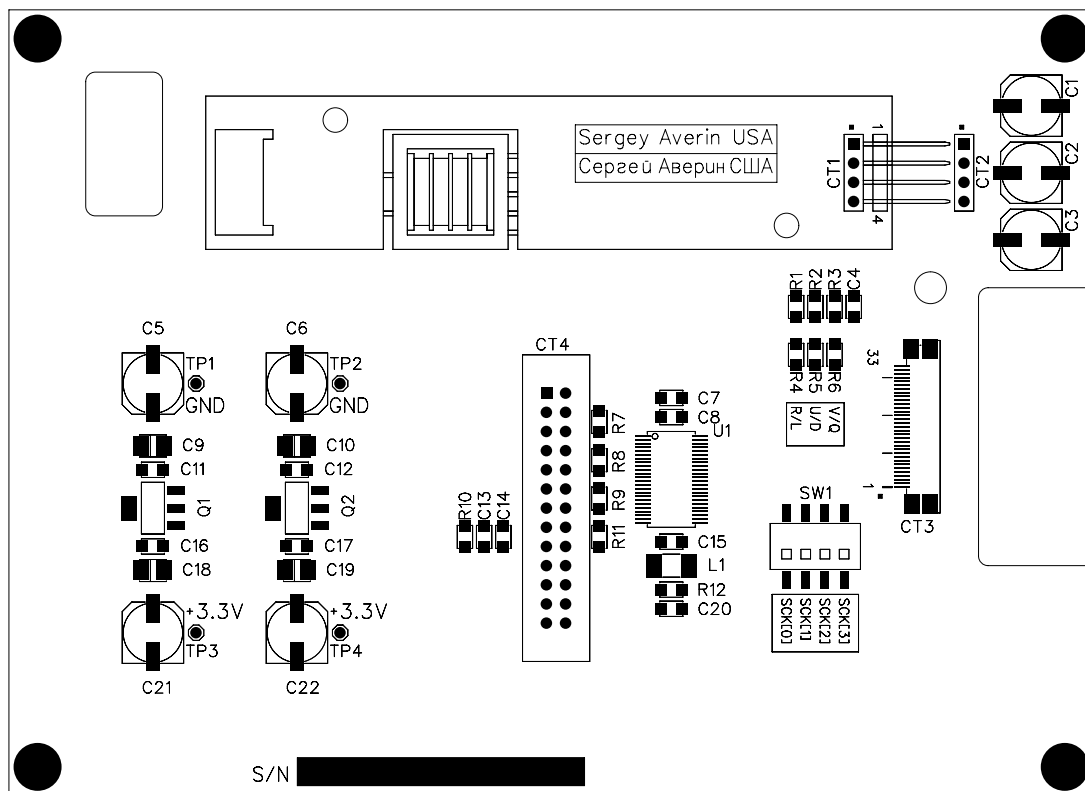


BPR-9 Back Plane Repeater Card Load Sheet

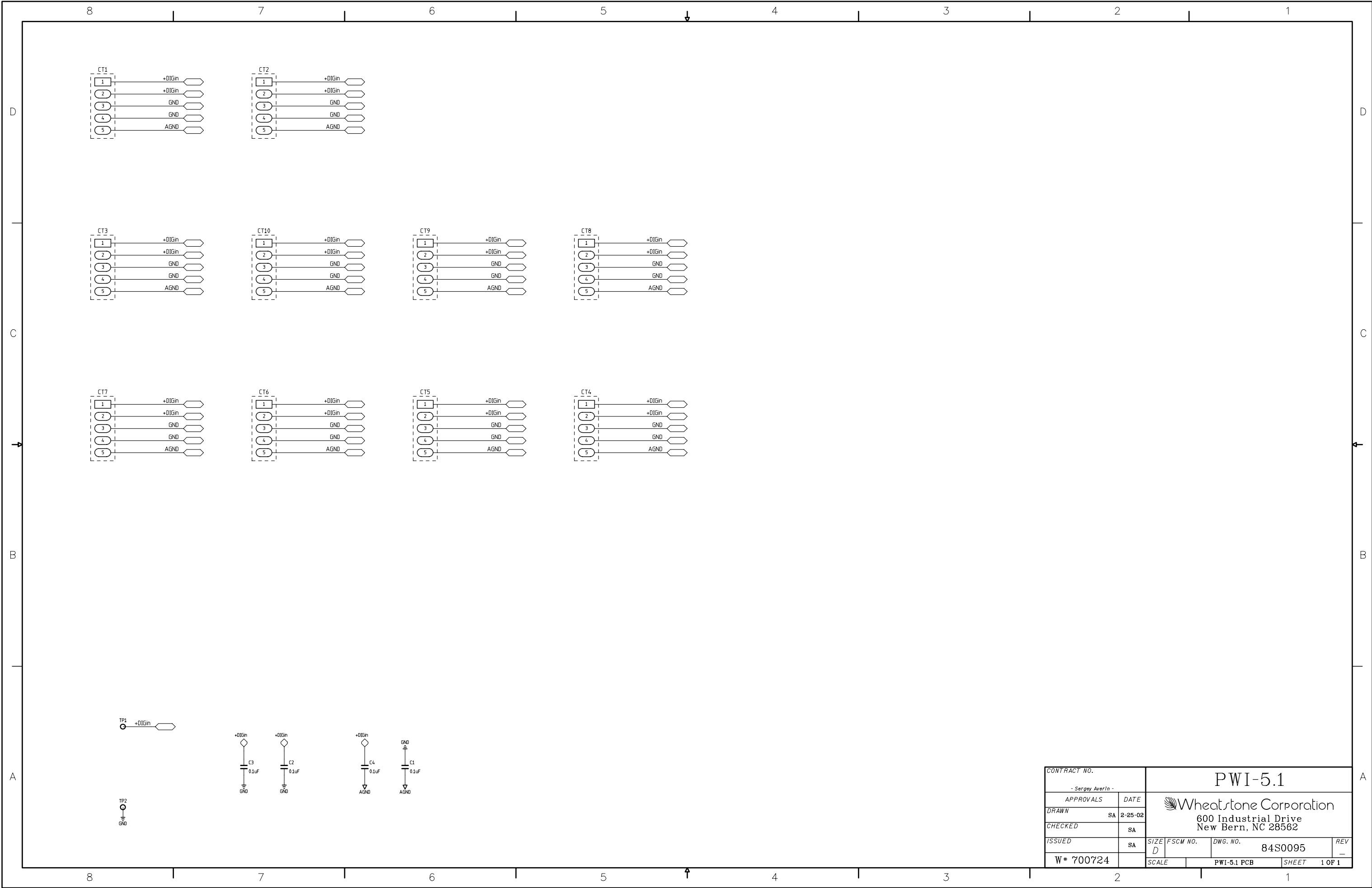




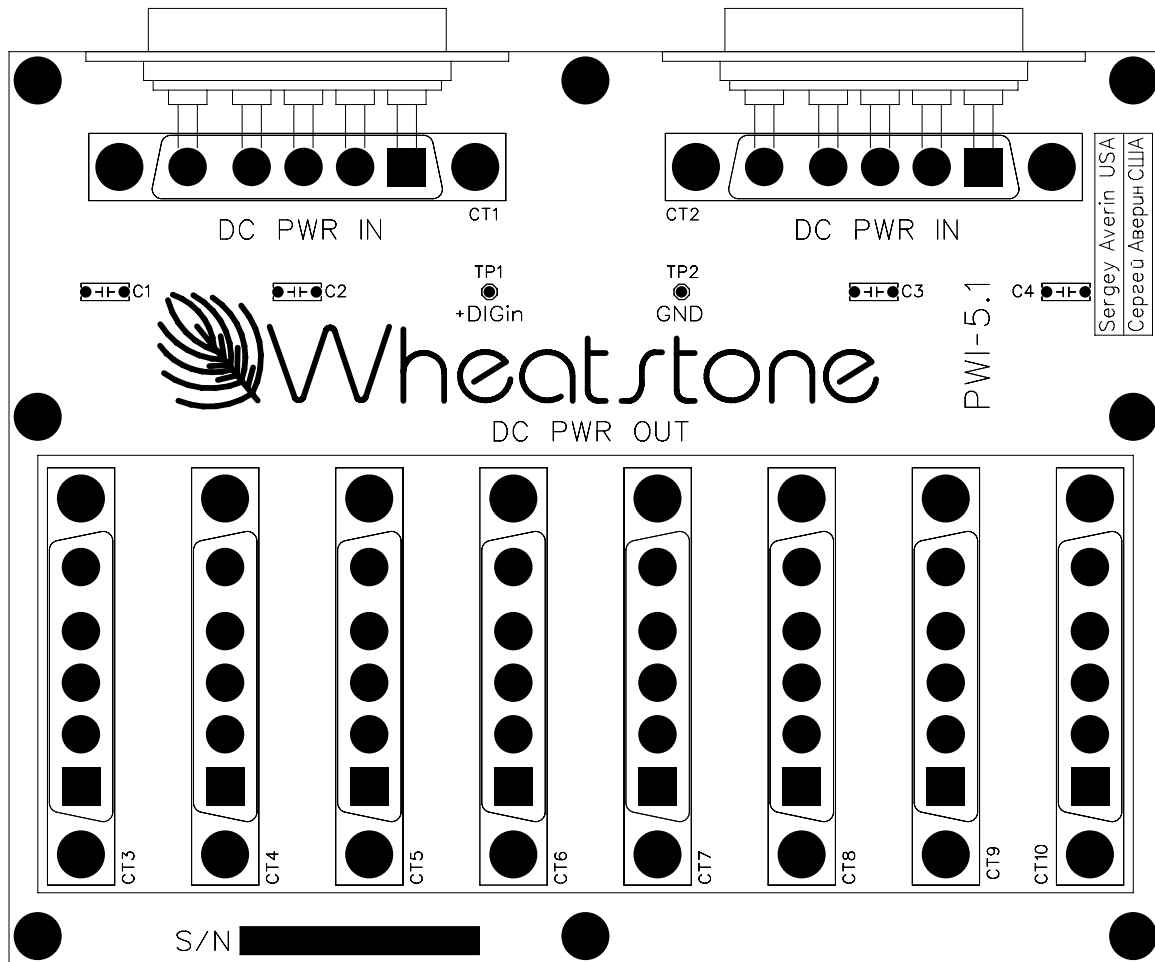
32VC5-5 +5V DC to DC Converter Card Load Sheet



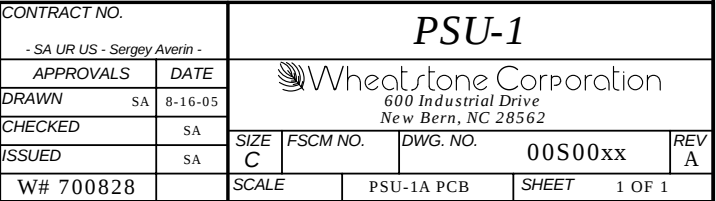
VU-9 VU Receiver Card Load Sheet

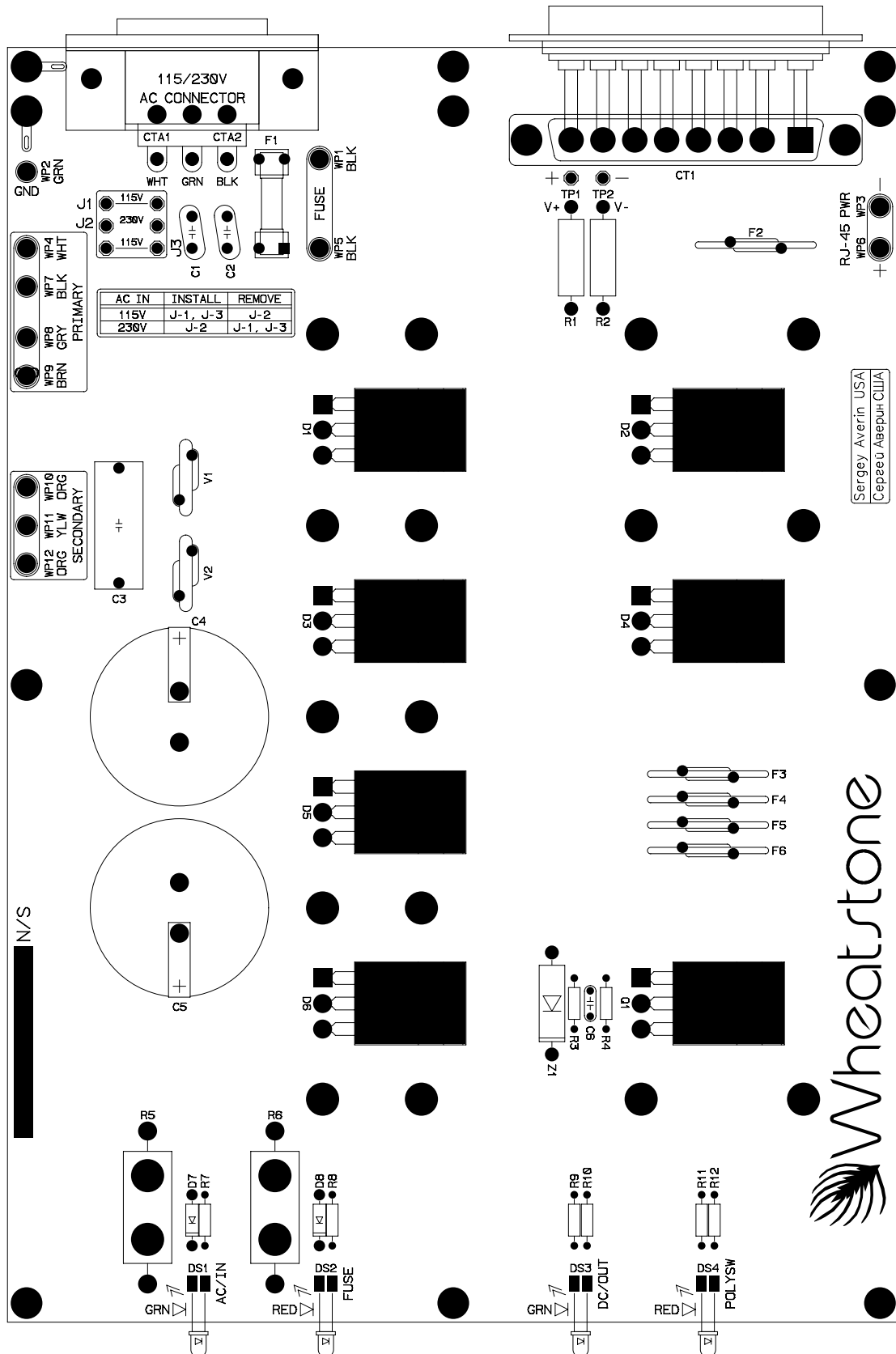


CONTRACT NO.		PWI-5.1			
- Sergey Averin -		 Wheatstone Corporation 600 Industrial Drive New Bern, NC 28562			
APPROVALS	DATE				
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CHECKED	SA	SCALE		REV	-
ISSUED	SA	FSCM NO.		SHEET 1 OF 1	
W* 700724		PWI-5.1 PCB			



PWI-5.1 Power Interface Card Load Sheet





PSU-1 Power Supply Load Sheet

Appendices

Appendix 1

Control Surface Clock.....	A-3
Setting the Time	A-3
Update Options	A-3
Synchronize	A-3

Appendix 2

Options Text File	A-6
Introduction	A-6
Modifying The Options Text File.....	A-6
A Sample Example From The File	A-7
A Second Example.....	A-8
An Example File - Complete.....	A-9

Appendix 3

Replacement Parts List.....	A-12
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Appendix 1

Contents

Control Surface Clock.....A-3
Setting the TimeA-3
Update OptionsA-3
Synchronize.....A-3

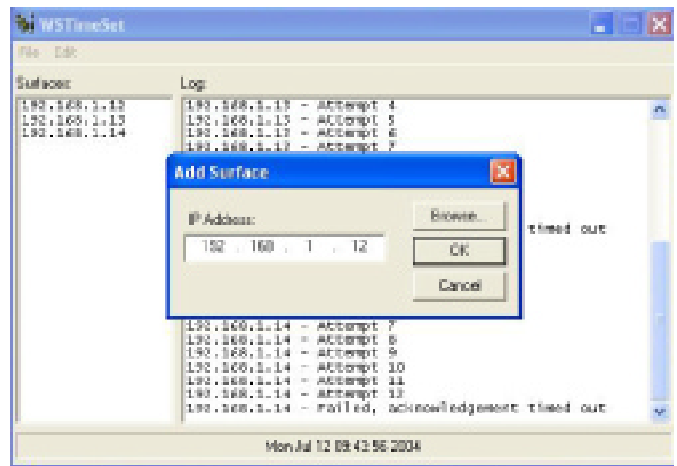
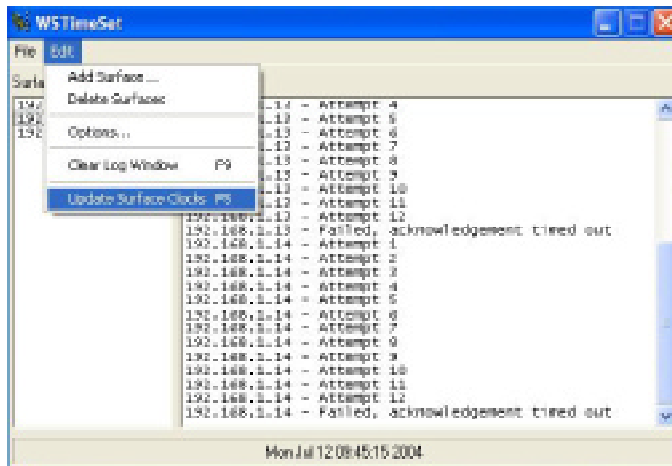
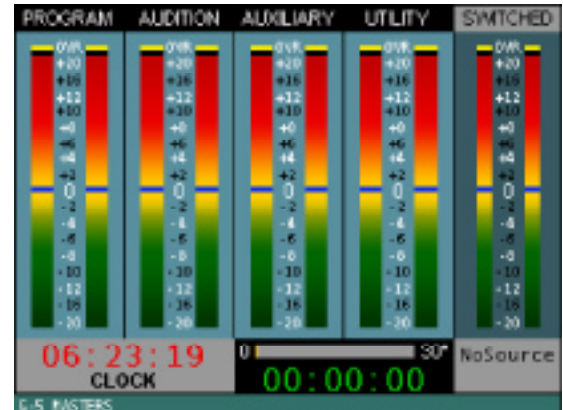
Control Surface Clock

The display of a time of day clock located on the bottom of the MASTER LCD screen.

Setting the Time

Setting the time of the control surface's clock is made via the Wheatstone Surface Time Manager software:

1. Select *Edit / Add Surface...* from the Main Menu, which will display the following form.
2. Enter an IP address of the control surface.
3. Select *Edit / Update Surface Clocks* or press *F5* key to update all surface clocks.



Update Options

Select *Edit / Options...* from the Main Menu. The Options form gives you different auto update options. Select the appropriate option for your application.



Synchronize

For the best accuracy synchronize the PC's clock to a master clock system. Refer to your master clock documentation for more information.

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Appendix 2

Contents

Options Text File	A-6
Introduction	A-6
Modifying The Options Text File	A-6
A Sample Example From The File	A-7
A Second Example	A-8
An Example File - Complete	A-9

Options Text File

Introduction

There are a number of operational features on the G-5 surface that are controlled by the contents of the Options Text File (G5_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 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, let's 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.

```
// -----
// 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
MM5:0
MM6:0
MM7:0
MM8:0
// -----
// 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
SPARE5:2
SPARE6:2
SPARE7:2
SPARE8:2
SPARE9:2
SPARE10:2
SPARE11:2
SPARE12:2
```

```

// -----
// STUDIO OPTIONS
// -----
// Syntax: CUE_DEFEAT_STU1:?
// 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_HDPN:1
CUE_DEFEAT_CR:1
// -----
// MISC OPTIONS
// -----
// Syntax: SET_TIMEOUT:?
// ? 1 (default) = 20 sec set button timeout enabled, 0 = no timeout.
SET_TIMEOUT:1
// Syntax: ALPHA_SORT:?
// ? 1 (default) = XY controller alpha sorting enabled, 0 = no sort.
ALPHA_SORT:1
// Syntax: USE_HELP:?
// ? 1 (default) help system enabled, 0 = no help.
USE_HELP:1
// Syntax: ONE_VIS:?
// ? 1 = one visibility for all presets, 0 (default) visibility stored for each preset.
ONE_VIS:1
// Syntax: XCHAN_VIS_DISABLE:?
// ? 0 = do not allow X visibility disable, 1 (default) allow X visibility disable.
XCHAN_VIS_DISABLE:1
// Syntax: ONE_VDIP:?
// ? 1 = one vdip config for all presets, 0 (default) vdip config stored for each preset.
ONE_VDIP:1
// Syntax: XYC_CHECKSUM:?
// ? 1 (default) = use checksum in XYC messages, 0 no checksum.
XYC_CHECKSUM:1
// Syntax: VU_RANGE:?
// ? 0 (default) = -20 to 20db, 1 = -40 to 20db.
VU_RANGE:0
// Syntax: MUTE_METHOD:?
// ? 0 (default) = ON button, 1 = ON AIR.
MUTE_METHOD:0
// Syntax: PRESET_PLAY:?
// ? 1 = new preset playback method, 0 old preset core dump method.
PRESET_PLAY:1
// Syntax: HDW_LOGGER:?
// ? 1 = use hardware logger, 0 (default) no hardware logger.
HDW_LOGGER:0
// Syntax: CLOCK_24HR:?
// ? 0 (default) = 12 hour clock, 1 = 24 hour clock.
CLOCK_24HR:0

```

Appendix 3

Contents

Replacement Parts List	A-12
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For the most part there are no user-replaceable parts in the G-5 control surface. Exceptions are those controls and components that in the course of normal use may need maintenance (i.e., faders, pots, ON/OFF 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 — G-5 CONTROL SURFACE		
COMPONENT	DESCRIPTION	WS P/N
IS-G5 PANEL	COMPLETE INPUT PANEL	"005600"
EFS-G5 PANEL	COMPLETE CONTROL PANEL	"005601"
DCM-G5 PANEL	COMPLETE DYNAMICS CONTROL PANEL	"005607"
BK-G5N BLANK PANEL	FACEPLATE ASSEMBLY NARROW	"005618"
BK-G5W BLANK PANEL	FACEPLATE ASSEMBLY WIDE	"005619"
IS-G5 LOADED CARD	INPUT PANEL LOADED CARD ASSEMBLY	"005640"
EFS-G5 LOADED CARD	CONTROL PANEL LOADED CARD ASSEMBLY	"005641"
DCM-G5 LOADED CARD	DYNAMICS CONTROL PANEL LOADED CARD ASSEMBLY	"005647"
ONS-G5 LOADED CARD	ON/OFF SWITCH LOADED CARD ASSEMBLY	"005648"
IQ-9 LOADED CARD	IQ LOADED CARD ASSEMBLY	"005275"
EI-5.1 LOADED CARD	ENCODER LOADED CARD	"005030"
HC-9 LOADED CARD	LOADED CARD ASSEMBLY WITH COMPUTER	"005270"
HC-9NC LOADED CARD	LOADED CARD ASSEMBLY W/O COMPUTER	"005294"
BP-9 LOADED CARD	LOADED CARD ASSEMBLY	"005272"
BPR-9 LOADED CARD	LOADED CARD ASSEMBLY	"005278"
VU-9 LOADED CARD	LOADED CARD ASSEMBLY	"005271"
VC5-5 LOADED CARD	LOADED CARD ASSEMBLY	"005274"
PWI-5.1 LOADED CARD	LOADED CARD ASSEMBLY	"005059"
PSU-1 RACKMOUNT UNIT	POWER SUPPLY RACKMOUNT UNIT	"007330"
SPS/PWI POWER CABLE	SPS DB TO CONTROL SURFACE PWI POWER CABLE	"007261"
FLAT RIBBON CABLE	26 CONDUCTOR FLAT RIBBON CABLE	"150083"
REPLACEMENT FADER ASSEMBLY	WIRED FADER	"055200"
REPLACEMENT FADER	INPUT FADER	"540052"
REPLACEMENT FADER KNOB	WHITE FADER KNOB	"520007"

REPLACEMENT PARTS — G-5 CONTROL SURFACE		
COMPONENT	DESCRIPTION	WS P/N
REPLACEMENT SWITCH	ON/OFF SWITCH	"510109"
SWITCH RED BUTTON	ON BUTTON	"530097"
SWITCH ORANGE BUTTON	OFF BUTTON	"530098"
RED LED LAMP REPLACEMENT	ON LED LAMP	"600027"
YELLOW LED LAMP REPLACEMENT	OFF LED LAMP	"600031"
SWITCH	SINGLE POLE MOMENTARY SWITCH W/RED LED	"510106"
SWITCH	SINGLE POLE MOMENTARY SWITCH W/GREEN LED	"510297"
NKK SWITCH	JB15 SWITCH W/BRIGHTER GREEN LED AND SILICON GASKET	"510289"
NKK SWITCH	JB15 SWITCH W/BRIGHTER RED LED AND SILICON GASKET	"510290"
NKK SWITCH	JB15 SWITCH W/BRIGHTER YELLOW LED AND SILICON GASKET	"510291"
SWITCH CAP	RED SWITCH CAP	"530003"
SWITCH CAP	WHITE SWITCH CAP	"530004"
ENCODER	11MM ROTARY ENCODER, 20 MM SHAFT LENGTH, ORDER W# 005030	
ENCODER	11MM ROTARY ENCODER, 13,5 MM SHAFT LENGTH	"560003"
ENCODER	11MM ROTARY ENCODER, 17 MM SHAFT LENGTH	"560004"
ENCODER KNOB	21MM GRAY COLLET KNOB FOR 6MM SHAFT	"520023"
ENCODER KNOB	15MM GREY COLLET KNOB FOR 6MM SHAFT	"520110"
ENCODER KNOB	11MM BLACK PUSH-ON KNOB	"520105"
ENCODER LIGHT PIPE	24 SEGMENT LIGHT PIPE FOR DTVM ENCODER	"520104"
ENCODER CAP	PLAIN 11MM BLUE CAP FOR 15MM KNOB	"530278"
ENCODER CAP	PLAIN 11MM GRAY CAP FOR 15MM KNOB	"530280"
ENCODER CAP	PLAIN 11MM GREEN CAP FOR 15MM KNOB	"530281"
ENCODER CAP	PLAIN 11MM PALE BLUE CAP FOR 15MM KNOB	"530282"
ENCODER CAP	PLAIN 11MM CREAM CAP FOR 15MM KNOB	"530283"
ENCODER CAP	PLAIN 11MM PASTEL GREEN CAP FOR 15MM KNOB	"530284"
ENCODER CAP	PLAIN PALE BLUE CAP FOR 11MM COLLET KNOB	"530296"
ENCODER CAP	PLAIN BURGUNDY CAP FOR 21MM COLLET KNOB	"530325"
ENCODER CAP	PLAIN PALE BLUE CAP FOR 21MM COLLET KNOB	"530326"
ENCODER CAP	PLAIN GREEN CAP FOR 21MM COLLET KNOB	"530327"
LUMA BUTTON	WHITE LUMA BUTTON	"530274"
LUMA BUTTON	RED LUMA BUTTON	"530275"
LUMA BUTTON	GREEN LUMA BUTTON	"530277"

REPLACEMENT PARTS — G-5 CONTROL SURFACE		
COMPONENT	DESCRIPTION	WS P/N
LUMA BUTTON	STYRENE WITH UV INHIBITOR BUTTON PRINTED "1"	"530297"
LUMA BUTTON	STYRENE WITH UV INHIBITOR BUTTON PRINTED "2"	"530298"
LUMA BUTTON	STYRENE WITH UV INHIBITOR BUTTON PRINTED "3"	"530299"
LUMA BUTTON	STYRENE WITH UV INHIBITOR BUTTON PRINTED "4"	"530300"
LUMA BUTTON	STYRENE WITH UV INHIBITOR BUTTON PRINTED "5"	"530301"
LUMA BUTTON	STYRENE WITH UV INHIBITOR BUTTON PRINTED "6"	"530302"
LUMA BUTTON	STYRENE WITH UV INHIBITOR BUTTON PRINTED "7"	"530303"
LUMA BUTTON	STYRENE WITH UV INHIBITOR BUTTON PRINTED "8"	"530304"
PLUG	5 PIN PLUG FOR #26 AWG	"230030"
PLUG	9 PIN PLUG FOR #26 AWG	"230032"
PLUG RIBBON	14 PIN DIP RIBBON PLUG	"250034"
PLUG RIBBON	26 PIN RIBBON PLUG	"250043"
PLUG RIBBON	40 PIN RIBBON PLUG	"250053"
HEADER	40 PIN BOXED HEADER, STRAIGHT	"250056"
HEADER	14 PIN BOXED HEADER, STRAIGHT	"250073"
HEADER	5 PIN JST HEADER	"250064"
HEADER	6 PIN JST HEADER	"250065"
HEADER	9 PIN JST HEADER	"250066"
SOCKET	20 PIN DIL SOCKET	"250057"
PLUG HOUSING	5 POSITION PLUG HOUSING	"200112"
RECEPTACLE HOUSING	5 POSITION RECEPTACLE HOUSING	"200113"
POWER SOCKET	40 AMP SOLDER CUP POWER SOCKET	"200118"
PLUG POWER	40 AMP SOLDER CUP POWER PLUG (RECEPTACLE)	"200119"
DB25 COVER	COVER FOR DB25 CONNECTOR	"200126"
DISPLAY	4 SEGMENT GREEN ALPHA NUMERIC DISPLAY	"610016"
LCD DISPLAY	5.7" TFT 320 X 240 6 BIT DIGITAL INPUT DISPLAY	"940028"
REPLACEMENT CUE SPEAKER	REPLACEMENT CUE SPEAKER	"960000"
MANUAL	OWNER'S MANUAL	"005698"