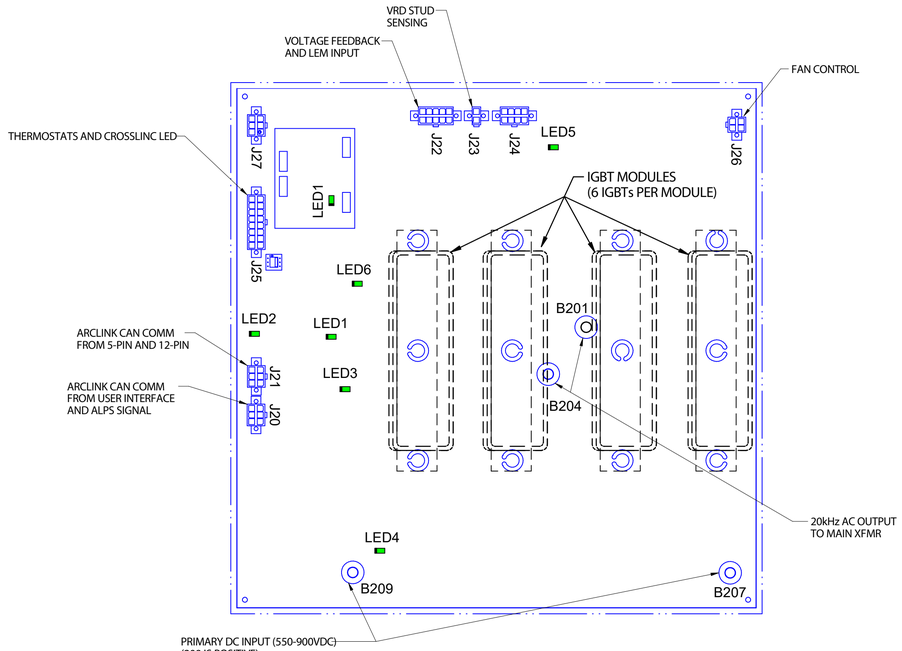
FX650XL MACHINE SCHEMATIC G10073 REV: A

SWITCHBOARD P.C. BOARD

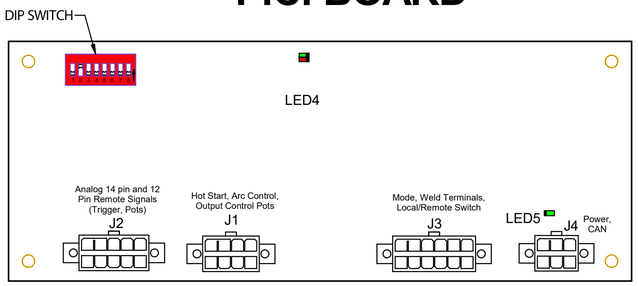


S32072 SWITCHBOARD		
LED #	COLOR	FUNCTION
1	GREEN	+15V POWER SUPPLY "OK"
2	GREEN	+5V CAN POWER SUPPLY "OK"
3	GREEN	+5V ISOLATED POWER SUPPLY "OK"
4	GREEN	DC BUS VOLTAGE EXCEEDS 50V
5	GREEN	FAN "ON"
6	GREEN	STATUS "OK"
G8093-1 INVERTER CONTROL MODULE		
LED #	COLOR	FUNCTION
1	RED/GREEN	STATUS

USING THE FLEXTEC 650X SWITCHBOARD STATUS LED

LIGHT CONDITION	MEANING
Steady Green	System OK.
Blinking Green	Occurs during startup or reset, and indicates that the switchboard is waiting for communication from the control board. Normal for the first 1-10 seconds after power is turned on.
Alternating Green and Red	A system fault has occurred. If the switchboard status LED is flashing any combination of red and green, errors are present. Individual code digits are flashed in red with a long pause between digits. If more than one code is present, the codes will be separated by a green light. See Page 3 for an Error Code Troubleshooting Guide.

USER INTERFACE P.C. BOARD



S31126 USER INTERFACE P.C. BOARD		
LED #	COLOR	FUNCTION
4	GREEN	STATUS "OK"
4	RED	STATUS "ERROR" (CHECK CODE FOR SPECIFIC ERROR)
5	GREEN	+15 V DC POWER SUPPLY "OK"

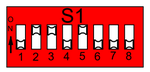
USING THE FX650XL USER INTERFACE BOARD STATUS LED

LIGHT CONDITION	MEANING
Steady Green	System OK.
Alternating Green and Red	A system fault has occurred. If the User Interface Board status LED is flashing any combination of red and green, errors are present. Individual code digits are flashed in red with a long pause between digits. If more than one code is present, the codes will be separated by a green light. See Page 3 for an Error Code Troubleshooting Guide.

VRD Setup

CC Modes

UserInterface Board DIP Switch Configuration



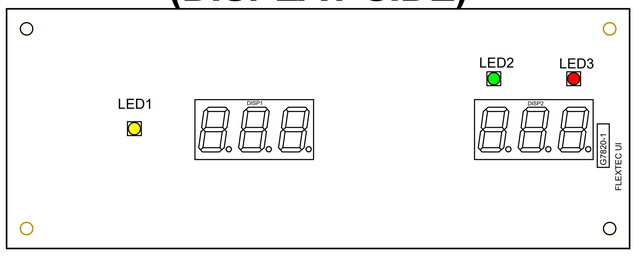
CV Modes

UserInterface Board DIP Switch Configuration

TURN ON PIN FIVE TO ENABLE VRD IN CC MODES
TURN ON PIN SIX TO ENABLE VRD IN CV MODES
PINS TWO AND THREE ARE ENABLED BY FACTORY DEFAULT
ALL OTHER DIP SWITCHES ARE OFF

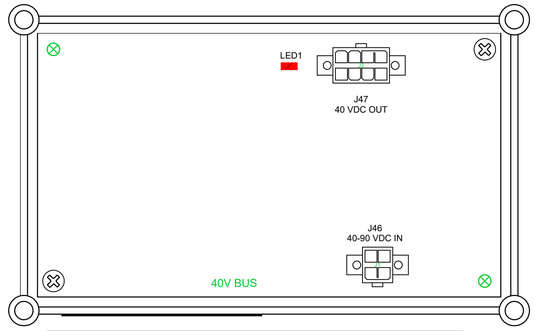
DIP Switch Legend	
SW #	FUNCTION
1	N/A
2	MASTER SLAVE (DISABLED WHEN SET)
3	MULTI-WELD SUPPORT (ENABLED WHEN SET)
4	TEST MODES (INTERNAL USE ONLY)
5	VRD IN CC MODES
6	VRD IN CV MODES
7	N/A
8	FUNTIONAL TEST AND DIAGNOSTICS (USED TO TROUBLESHOOT)

(DISPLAY SIDE)



S29937 USER INTERFACE P.C. BOARD		
LED #	COLOR	FUNCTION
1	AMBER	THERMAL LED
2	GREEN	VRD LED VOLTAGE REDUCED
3	RED	VRD LED VOLTAGE NOT REDUCED

40V BUS BOARD



L16423 40VDC BUS P.C. BOARD		
LED #	COLOR	FUNCTION
1	RED	40VDC PRESENT ON OUTPUT

ACCESS ERROR LOG

To access the Error Log:

- Dip Switch #8 in the ON position; All other Dip Switch positions OFF.
- Switches and potentiometers should be set to the following positions:
  - Weld Terminals On/Remote Switch – On Position
  - Process Selection Switch – GTAW Position
  - Local / Remote Switch – Local Position
  - Output Control Potentiometer – Fully Counter-Clockwise
  - Arc Control Potentiometer – Fully Counter-Clockwise
  - Hot Start knob – "0" position.
- Turn on Power. The displays will show "---" "---".
- The weld terminal switch will be used to step through the test steps and the error log.
- The left display will show the test step number
- Cycle the weld terminals switch until the left display shows "17". The right display will show "---" .
- Rotate the output control potentiometer clockwise
- The left display will show numbers between 1 and 25
- The right display will show the 25 most recent **Weld Sequencer** errors
- Return the output control potentiometer to zero
- Cycle the weld terminals switch again . The left display will show "18". The right display will show "---"
- Rotate the output control potentiometer clockwise
- The left display will show numbers between 1 and 25
- The right display will show the 25 most recent **Weld Controller** errors
- Return the output control potentiometer to zero
- Cycle the weld terminals switch again . The left display will show "19". The right display will show "---"
- Rotate the output control potentiometer clockwise
- The left display will show numbers between 1 and 25
- The right display will show the 25 most recent **User Interface** errors
- Return the output control potentiometer to zero

ACCESSING CONSTANT CURRENT TEST MODE (MODE 200)

TO ACCESS CONSTANT CURRENT TEST MODE, PLACE THE MODE SWITCH IN "ARCLINK" POSITION WITHOUT AN ARCLINK FEEDER CONNECTED TO THE 5-PIN CONNECTOR.

THE DISPLAY WILL THEN SHOW "Cur" AND "XXX" WHERE "XXX" IS THE WORKPOINT.

WORKPOINT CAN BE ADJUSTED BY USING THE OUTPUT CONTROL KNOB.

OUTPUT CAN BE TURNED "ON" OR "OFF" BY USING THE "WELD TERMINALS" SWITCH.

ERROR CODE TROUBLESHOOTING GUIDE

6	User Interface not Connected to Switchboard
Description	CAN communication between switchboard and User Interface PCB has timed out.
Possible Solution 1	Check the physical wiring and connections between User Interface PCB and switchboard.
Possible Solution 2	Verify power supply to switchboard.
Possible Solution 3	Replace defective switchboard assembly or User Interface PCB.

31	Primary Overcurrent
Description	Peak current through the transformer primary has exceeded threshold (140 amps).
Possible Solution 1	Verify connections to the switchboard, transformer and output rectifier assemblies are made correctly and there are no damaged components in the machine.
Possible Solution 2	Replace shorted Output Rectifier Diode
Possible Solution 3	Replace defective main transformer.
Possible Solution 4	Replace defective switchboard assembly.

36	Thermal Fault
Description	Thermostat on output rectifier heat sink or embedded in transformer has tripped.
Possible Solution 1	Do not exceed allowable ambient temperature or duty cycle limits.
Possible Solution 2	Verify that fan is operating and airflow is not being blocked.
Possible Solution 3	Measure thermostats at Switchboard and replace if defective.

45	Output Voltage High Limit Exceeded
Description	During OCV, the voltage at the studs exceeded the allowable levels. (35V if VRD enabled, 113V if VRD not enabled)
Possible Solution 1	Verify that voltage feedback leads are connected inside the machine.
Possible Solution 2	Verify that boost relay is open during OCV.
Possible Solution 3	Replace Defective Switchboard.

213	Switchboard is Offline
Description	Switchboard auxiliary supply voltage is too high at machine power-up.
Possible Solution 1	Mapping error. Cycle power to attempt to clear error.
Possible Solution 2	Switchboard has a fatal error. Read error code at on-board status LED and decode error.
Possible Solution 3	Replace defective Switchboard assembly.

713	Misconnection - Primary Supply Voltage too High
Description	Switchboard auxiliary supply voltage is too high at machine power-up.
Possible Solution 1	Improper input voltage configuration. Verify primary reconnect position, measure input voltage level and check three phase operation.
Possible Solution 2	Damaged auxiliary transformer or intermittent "A" lead connection. Verify 42 VAC output at 14 pin connector to determine the source of the problem.
Possible Solution 3	Replace defective User Interface PCB assembly.

714	Misconnection - Primary Supply Voltage too Low
Description	Switchboard auxiliary supply voltage is too low at machine power-up.
Possible Solution 1	Improper input voltage configuration. Verify primary reconnect position, measure input voltage level and check three phase operation.
Possible Solution 2	Damaged auxiliary transformer or intermittent "A" lead connection. Verify 42 VAC output at 14 pin connector to determine the source of the problem.