

	Page
Front Sheet - Customer Specific Configuration Information	
Table of Contents	1
1 MM8 Rack System	2
1.1 General Description	2
1.2 Power Supply FE-810-BPSDC	
1.3 Output Connections	3
1.4 Input Connections	3
Appendix	4
Micro Analog 2 - FE-MM8 System Drawing	
FE-810-BPSDC - Component Idents	

1 FE-MM8 System

1.1 General Description

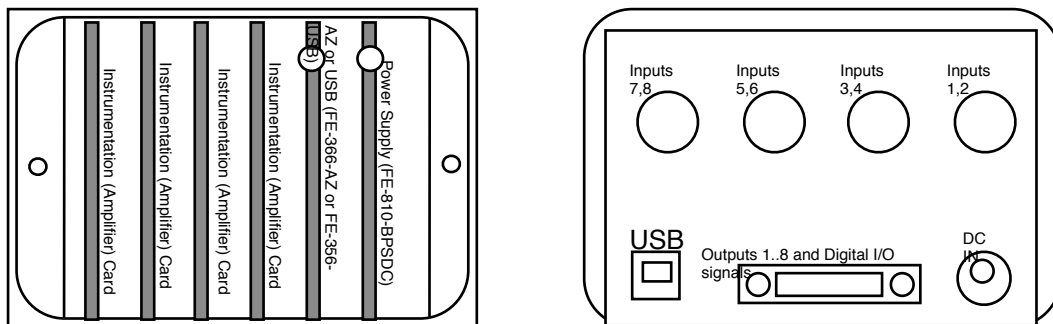
The MM8 is a nominally 8 channel system able to accept up to 4 Micro-Analog dual channel signal conditioning modules. The system is D.C. powered at any voltage between 10 and 36 V.

Before using the system for the first time it is necessary to follow the information provided in this manual regarding configuration and operation of the signal conditioning modules and the connection of transducers or other signal sources to the input connectors. If the system is to be used with the FE-356-USB module, refer to the software installation instructions which are supplied as part of the FE-356-USB software distribution.

For access to the modules, the front panel is released by unscrewing the two knurled fastenings.

Be sure to isolate the system from the power source before removing or replacing any module. Modules are withdrawn from the racking by means of the centre mounted handles. The signal conditioning modules may be interchanged in any of the left hand 4 card positions.

The power supply module always occupies the right hand slot, and the remaining slot (second from the right) may be used for an Auto Zero module (FE-366-AZ) or the USB interface module (FE-356-USB).



1.2 Power Supply FE-810-BPSDC

The FE-810-BPSDC power supply is fitted in “DC Micro-analogue 2” systems to energise a number of transducers from a stable low noise source, and to provide stable power to the amplifier modules.

The power supply has two transducer supply outputs, one being the +5.00 V/+2.50 V capable of up to 800 mA, and the other a +10.00 V supply capable of up to 600 mA.

Note that although the supply is designated +5 V/+2.5 V, 0 V and -5 V on the backplane, this is intended to show that the +10.00 V supply is balanced rather than to imply that an independent -5 V transducer supply is available. Using the -5 V supply independently of the +5 V supply is not recommended.

The selection of +5 V or +2.5 V is by use of a jumper (J2) which is situated at the rear of the power supply module. The jumper in its upper position selects +5 V, and in its lower position selects +2.5 V. (See user drawing appended to this section of the handbook).

A feature of this module is its overload protection. When the power supply module’s DC/DC converter detects that the current being drawn exceeds the specified maximum, the output power is switched off. The module continuously attempts to restart the output, but it will only restart if the current drawn is not excessive. When the output current is within specification the green indicator is illuminated continuously, and while the overload is present the indicator flashes. The module operates in this way with the jumpers in the factory set position.

In general the overload protection is useful, since most faults will be indicated and can be traced without difficulty. For example, a short circuit can easily be traced by withdrawing modules one at a time (with the power off of course), and then switching on to see if the fault persists.

It should be recognised that the overload protection will remove the power from every transducer in the event of an overload anywhere in the transducer amplifier system. This should be borne in mind if vital measurements in a multi-channel system are jeopardised by a single wiring failure.

To solve this potential problem modules have positions for fuses which can be fitted to allow uninterrupted operation in the presence of individual channel faults. (Standard modules have links in these positions; fuses are an option.)

Fine controls are provided to adjust the output voltages. This facility may be utilised to allow for volt drops which can occur in long input cables. Note that the power supply will have been set to exactly 5 V, 2.5 V and 10 V at the factory and in practice the user may wish to leave these controls undisturbed.

Note that the FE-810-BPSDC does not power the digital circuits of the USB interface. These are self powered from the USB bus. This means that accidental overloads of the transducer power supply will not interrupt the transfer of data to the host PC during data acquisition.

1.3 Output Connections

The output connector is a 15 way 'D' connector (socket).

FYLDE offer a BNC expander box to fit this connector (FE-MAC-8C). This brings all 8 outputs to BNC sockets whilst providing a 9 way "D" connector for control lines. Connectors may also be obtained to suit various data acquisition systems - please contact the factory for advice.

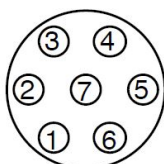
The FE-MAC-8C is also useful when ±10V input signals are to be applied directly to the FE-356-USB on channels without signal conditioning ; in this case the BNC connectors become input connectors.

A full connection list is given below.

Pin Number	Function	Detail
1	Output 1	A nominally ±10 V output from channel 'a' of card one
2	Output 2	A nominally ±10 V output from channel 'b' of card one
3	Output 3	A nominally ±10 V output from channel 'a' of card two
4	Output 4	A nominally ±10 V output from channel 'b' of card two
5	Output 5	A nominally ±10 V output from channel 'a' of card three
6	Output 6	A nominally ±10 V output from channel 'b' of card three
7	Output 7	A nominally ±10 V output from channel 'a' of card four
8	Output 8	A nominally ±10 V output from channel 'b' of card four
9	Cal Command	This is a +5V output from the FE-356-USB module. See Note 1.
10	Spare Output	This is a +5V output from the FE-356-USB module.
11	Analogue 0V	All signals on pins 1 to 8 are relative to the common on this pin
12	AZ Status	At 0V relative to pin 14 except at +5V while AZ in progress.
13	AZ Command	Apply a +5 V level relative to pin 14 to initiate Auto Zero
14	Digital 0V	0V for all digital signals.
15	Spare Input	TTL (5V) compatible input to FE-356-USB.

Note 1. This FE-356-USB output is connected directly to the Shunt Calibration control signal of each channel. If no FE-356-USB or FE-366-AZ module is fitted, you can apply +5V (relative to pin 14) to cause shunt calibration to be applied to each channel.

1.4 Input Connections



1	Transducer excitation (-ve)
2	Channel b Input N
3	Channel a Input N
4	Channel a Input P
5	Channel b Input P
6	Transducer excitation (+ve)
7	Input 0V (Screen)

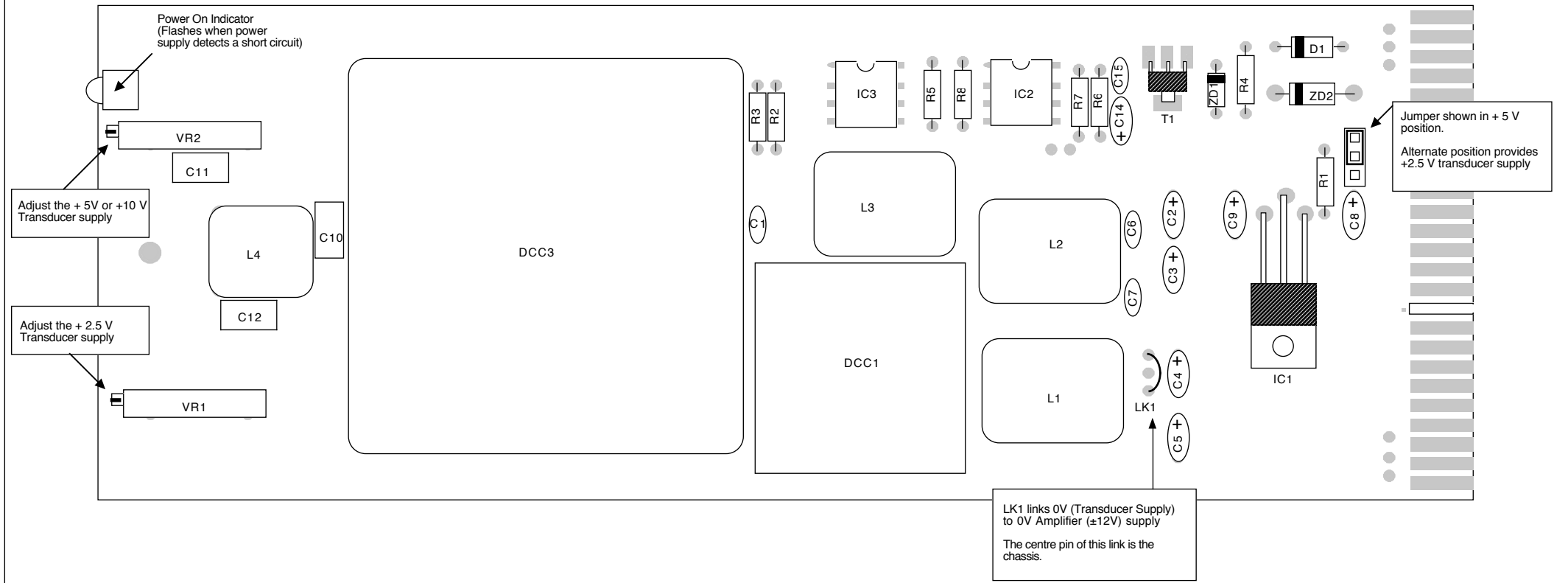
This is the connector view looking at the rear panel. Note that channels have individual P and N inputs but share transducer power.

Channels are numbered 1,2 and 3,4 etc. on the rear panel. Channels 1,3,5 etc. are 'a' channels and 2,4,6, etc. are 'b' channels.

Appendix

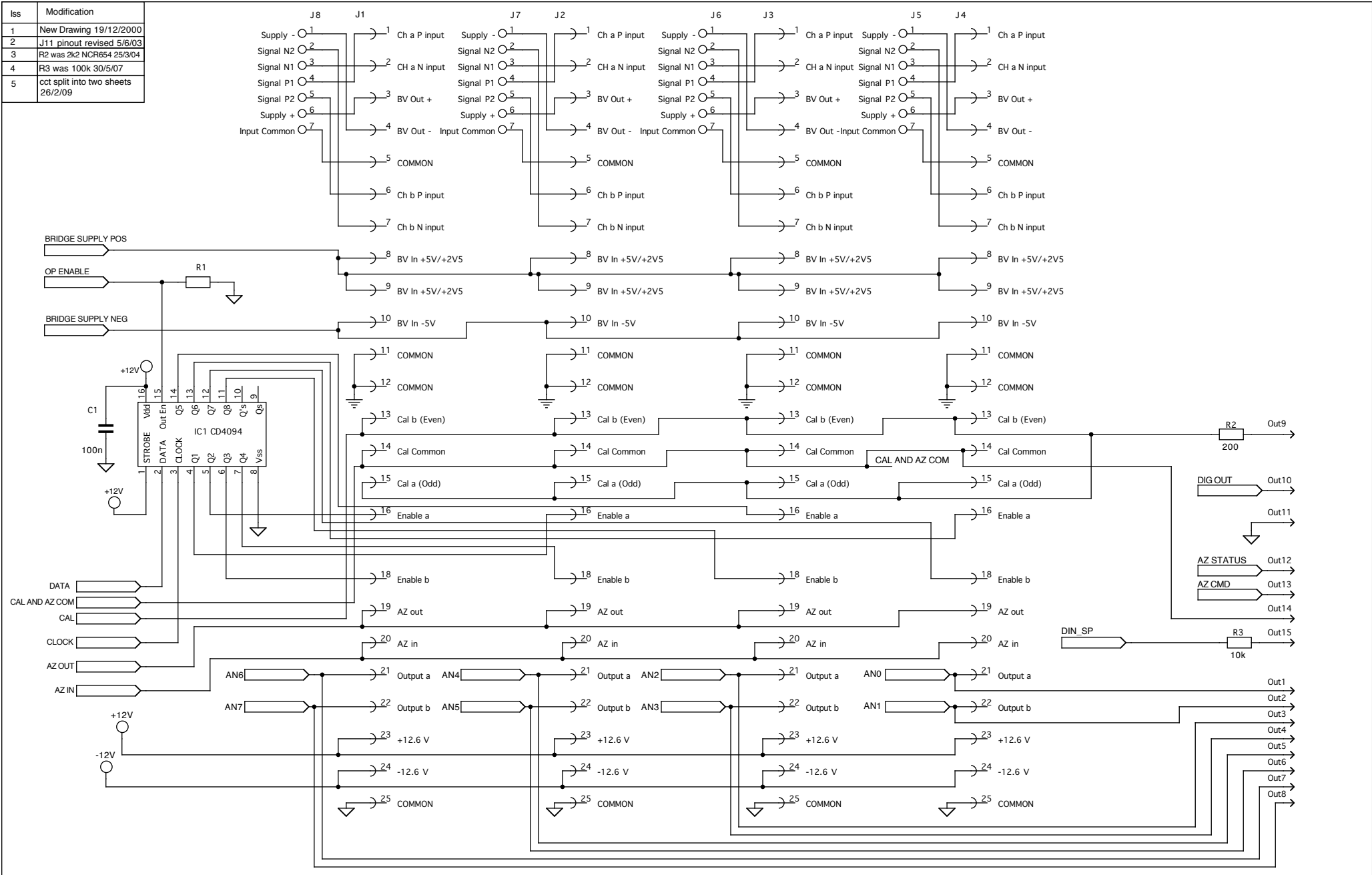
Appendix

Iss	Modification
1	New Drawing (10/7/00)
2	See NCR 776 (20/1/10)

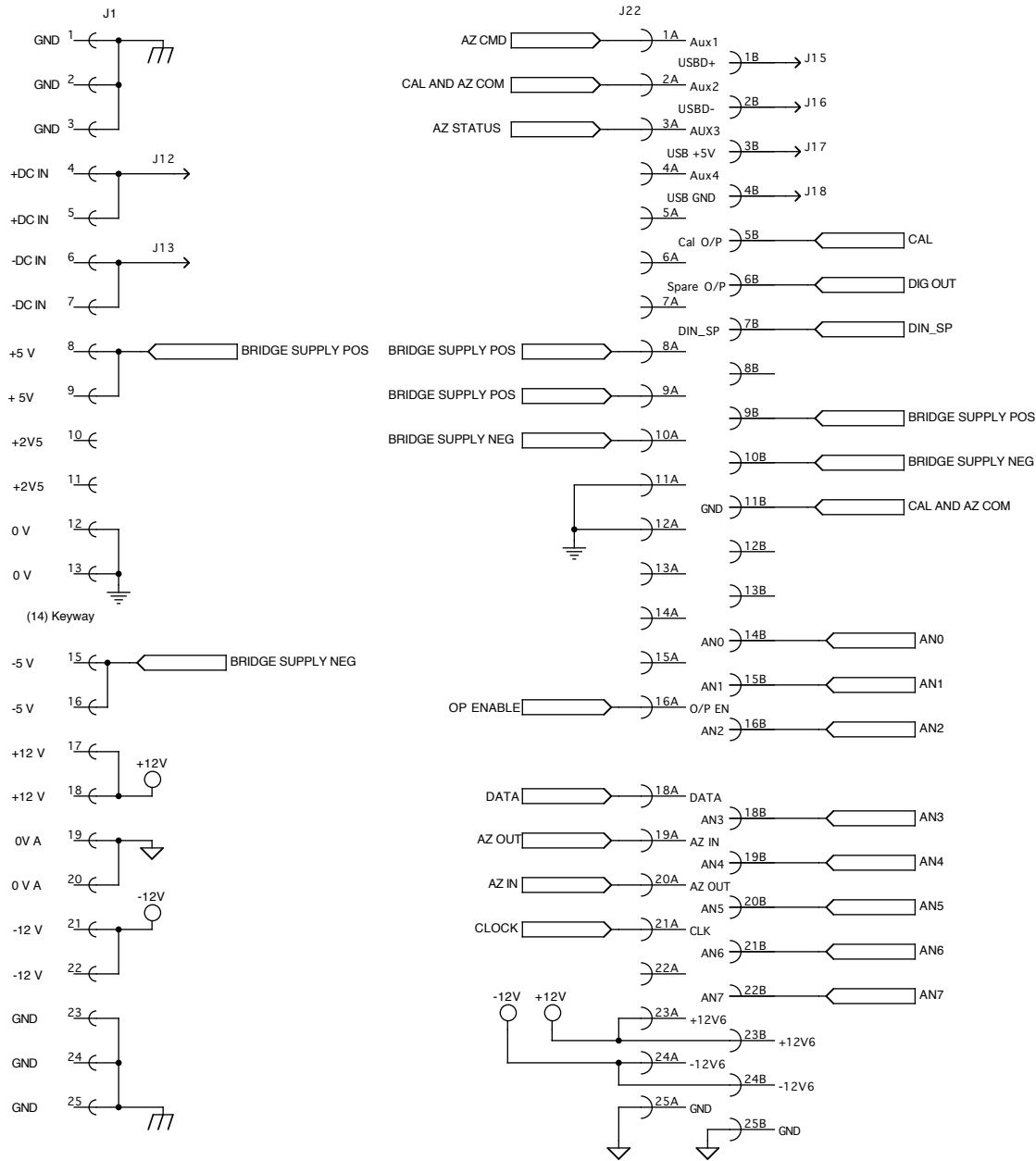


FE-810-BPSDC μ A2 DC PSU	Ref	Drg No. 898PC	Issue 2	Date 20/1/10	Checked
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Iss	Modification
1	New Drawing 19/12/2000
2	J11 pinout revised 5/6/03
3	R2 was 2k2 NCR654 25/3/04
4	R3 was 100k 30/5/07
5	cct split into two sheets 26/2/09



Iss	Modification
1	New Drawing 26/2/09



FE-MM8 USB Backplane (Sheet 2 of 2)	Ref	Dwg No. 1499C	Issue 1	Date 26/2/09	Checked
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