

nm

nascom microcomputers limited

8A PSU

**power supply
unit for
microcomputers**

PART NO.

DATE

ISSUE

005 - 300

10-04-80

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1. description

The NASCOM 8A power supply unit is designed to occupy 3½ inches of rack space at the left-hand side of the NASCOM/VERO 19" card frame. The unit is enclosed in a ventilated aluminium, which is made in sections to fit into the frame, protecting the unit from accidental contact.

The front panel of the unit carries six light-emitting diodes, monitoring the four output power rails and indicating HALT and DRIVE conditions in the system computer, the onboard indicators of which will not be visible if it is mounted on the rear of the frame. Connection to these indicators is made through a separate socket unconnected with the power supply.

The rear panel carries a standard IEC mains chassis plug, accepting the line socket on the mains cable provided. This socket passes the mains supply through a filter before it is allowed to reach the transformer. A 12 way connector is used for output, several pins being common to one rail where this is necessary to ensure safe operation at high currents. An unregulated supply is provided on this connector to operate the individual regulators on NASCOM MaxiMotherboards. A 6 way socket allows connection to the HALT and DRIVE indicators.

The output rails are current limited and protected against crossover, the +5V rail being further protected by a fuse and a crowbar device, preventing overvoltage. Conventional IC regulation techniques are used throughout to ensure maximum reliability. A toroidal transformer reduces the overall size of the unit.

A version of this supply is available with its +5V rail limited to 3A for operation of the system computer only in MaxiMotherboard-based systems.

2. specification

a: mechanical

dimensions in inches	8.5 x 3.5 x 10
mass in pounds	11
dimensions in millimetres	203.2 x 88.9 x 254
mass in kilograms	5

b: electrical, electronic

transformer input	2 windings; each 0V, 100V, 120V
transformer power	225VA
output current at +12V	2A
output current at +5V	8A
output current at negative voltages	1A
all output currents to be limited above these levels	
noise and ripple on +5V rail	less than 5mV
noise and ripple on other rails	less than 2mV
line regulation on +5V rail	0.3%
line regulation on other rails	0.01%
load regulation on +5V rail	-0.6%
load regulation on other rails	-0.3%
+5V rail output voltage trim range	+5%
+12V, -12V, -5V output voltage tolerance	+4%
unregulated output voltage	+9V to +10V
unregulated output current	8A fused at 10A
overvoltage protection of +5V	crowbar

3. fitting 8A power supply to 19" card frame

It will be necessary partially to dismantle the frame before the supply can be fitted.

Disconnect the system from the mains and from external peripherals such as cassette recorders. Remove all NASBUS boards from the motherboard and the system computer board from the rear rails of the frame. Retain all boards safely, taking suitable precautions to prevent mechanical or static electrical damage.

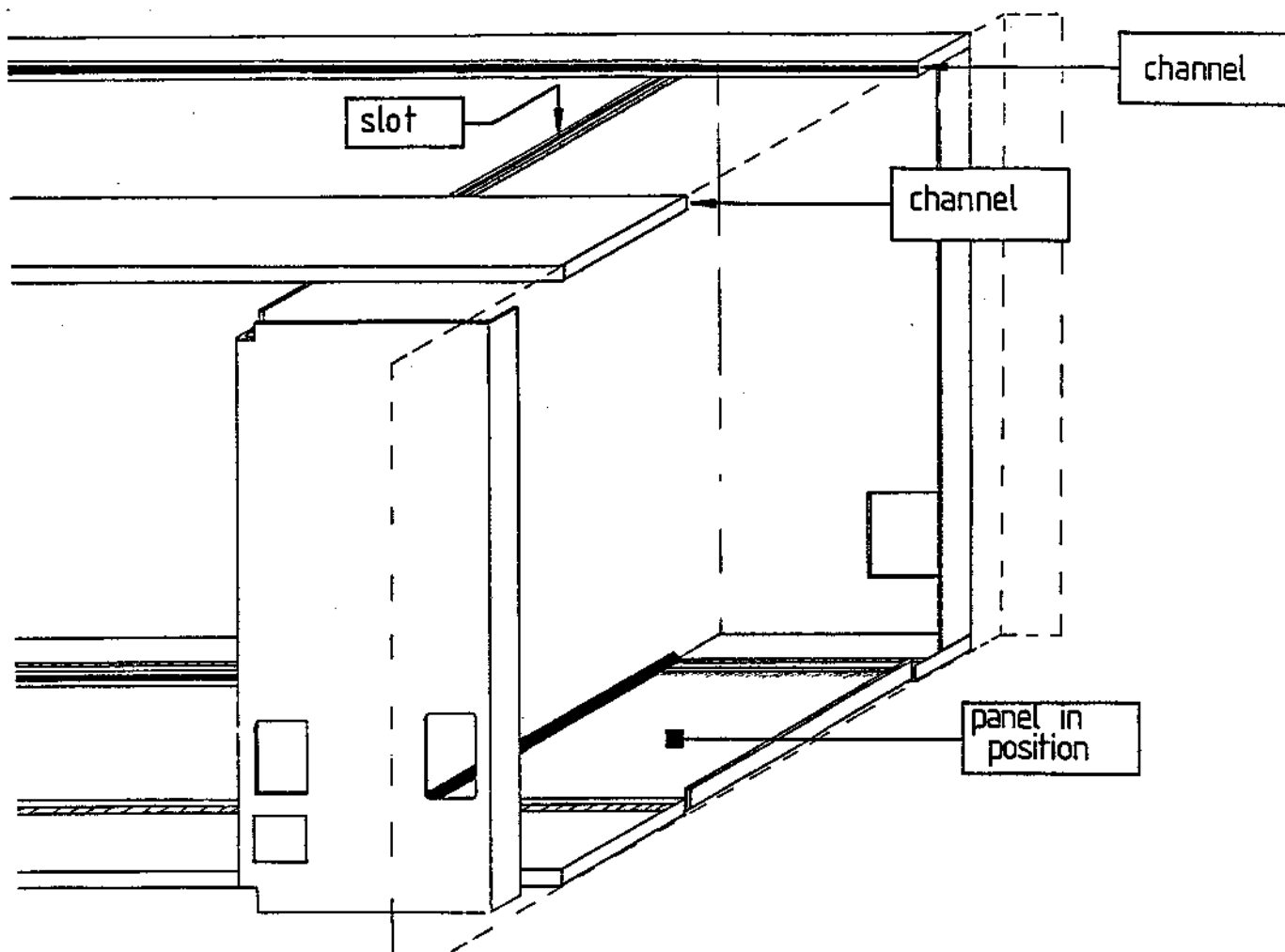
It is possible to fit the supply with a motherboard in place, but it is considered that the large mass of the power supply can make such an operation risky. It is therefore advisable to strip the frame of all electrical and electronic assemblies before attempting to mount the 8A power supply unit.

Remove all card guides and the front rails. Examine the ventilated panels; the longer edge (about 7mm deep) faces the frame end panel when the ventilated panel is mounted. Try the fit of the panels in the channel on the edge of the central rail of the frame. It should be possible to fit both perforated panels without difficulty. Carefully reposition the front rails, ensuring that front-panel mounting bolts, if required, have not been lost. It should now be possible to slide the perforated panels from one end of the frame to the other without difficulty, though it will be impossible to remove them. This is an intentional condition; the panels are there to keep fingers off the mains. Do not screw down the rails.

Slide the panels to the left-hand end of the frame and mount a card guide at the 3.5" position on each pair of front and central rails. It should be found that the short (4mm) edge of the perforated panel engages in the slot on the outside of the card guide. If this refuses to occur, check that the panel is correctly aligned; card guides will not engage with the longer edge. If the panels are mounted incorrectly it will be necessary to repeat assembly.

The 8A power supply unit may now be slid into the card guides. This should be done from the front of the frame. Resistance may be met; the aluminium surfaces present considerable friction. Do not apply force; the front and rear panels of the power supply unit may be observed to bend if persuaded excessively. Make quite sure that nothing obstructs the passage of the chassis; the front rails may have to be moved slightly so that the long edge of the perforated panel is clear of the edges of the chassis. When the power supply unit is in position screw down the front rails and secure the unit with four 3.5mm bolts through the frame end panel. Check that the supply is secured and that panels are correctly mounted. If any doubt exists as to the frame's integrity assembly should be repeated; the perforated panels must be secure to ensure electrical safety and the entire assembly must not be loose; a power supply falling from a frame could inflict injury.

When the user is satisfied that the power supply unit is mechanically sound connection and reassembly of the system may proceed.



4. refitting card frame components

It is expected that most users will fit an 8A power supply unit as part of a general reorganisation of the computer system, possibly including the fitting of advanced motherboards such as the NASCOM MaxiMotherboard. Reference must be made in such cases to the instructions provided with any new equipment intended for use in the frame. If only the power supply components are being fitted the frame should be reassembled around it.

5. connection

Care should be taken while connecting the power supply unit; mains power is involved. Particular care is necessary to ensure correct connection of the power outputs.

Mains should be brought to the supply by means of the IEC line socket and cable provided. Do not use any other type of mains connector; the chassis plug is designed to fit only the line socket. Do not plug in the line socket at this stage.

The unit may be cursorily tested before use, if desired, by connecting to the mains and switching on by pressing the upper half of the illuminated rocker switch. The switch and the lowest four LEDs should be illuminated. The supply rails may be checked with a multimeter.

Connection is made to the unit's outputs with the 12 way plug supplied. 12 pins are provided with the plug; it should be noted that these pins, once fitted to the plug shell, cannot be removed without a special tool (RS 466-876).

It is recommended that a wiring loom be made up to suit the desired layout of the system, taking into account the wire specifications and colours given in appendix 1. The use of a loom allows efficient and tidy wiring and prevents accidental damage to wires by mechanical components. The loom should terminate in the 12 way plug at the power supply end, and in either prepared ends or connectors, as appropriate, at the other ends. It should be noted that several pins of the plug are used for the same rail; this is to allow sufficient current capacity for the rated load. Use a separate wire for each pin; do not common the pins together into a single cable as this will not carry enough current.

Be particularly careful when assembling the plug to ensure that the pins are correctly fitted; the use of the recommended wiring colours will assist in this. Check the plug once it is assembled, or, preferably, have it checked by another person. Misconnection of the power supply could damage the computer system.

Wire up the indicator plug to the LED positions on the system computer, removing the LEDs already fitted. Do not attempt to operate two LEDs at once; sufficient current is not available.

It is wise for users to satisfy themselves of the accuracy of the wiring in the power output connector before the system is powered up.

In use it is normal for the monitor LEDs to remain illuminated for a few seconds after power down; this is caused by the charge remaining in the smoothing capacitors.

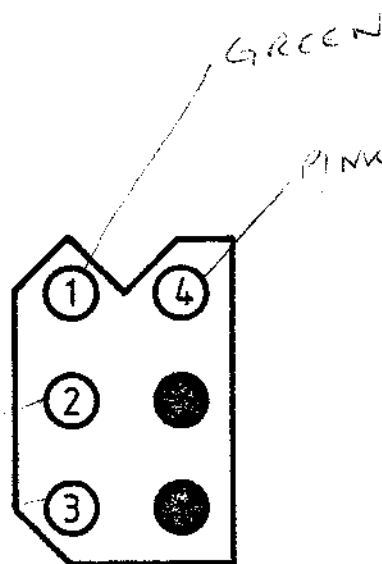
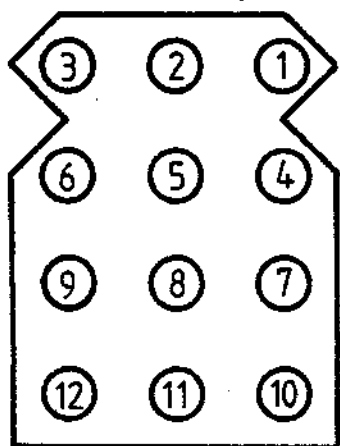
The plugs are wired as follows:

12 WAY POWER OUTPUT CONNECTOR

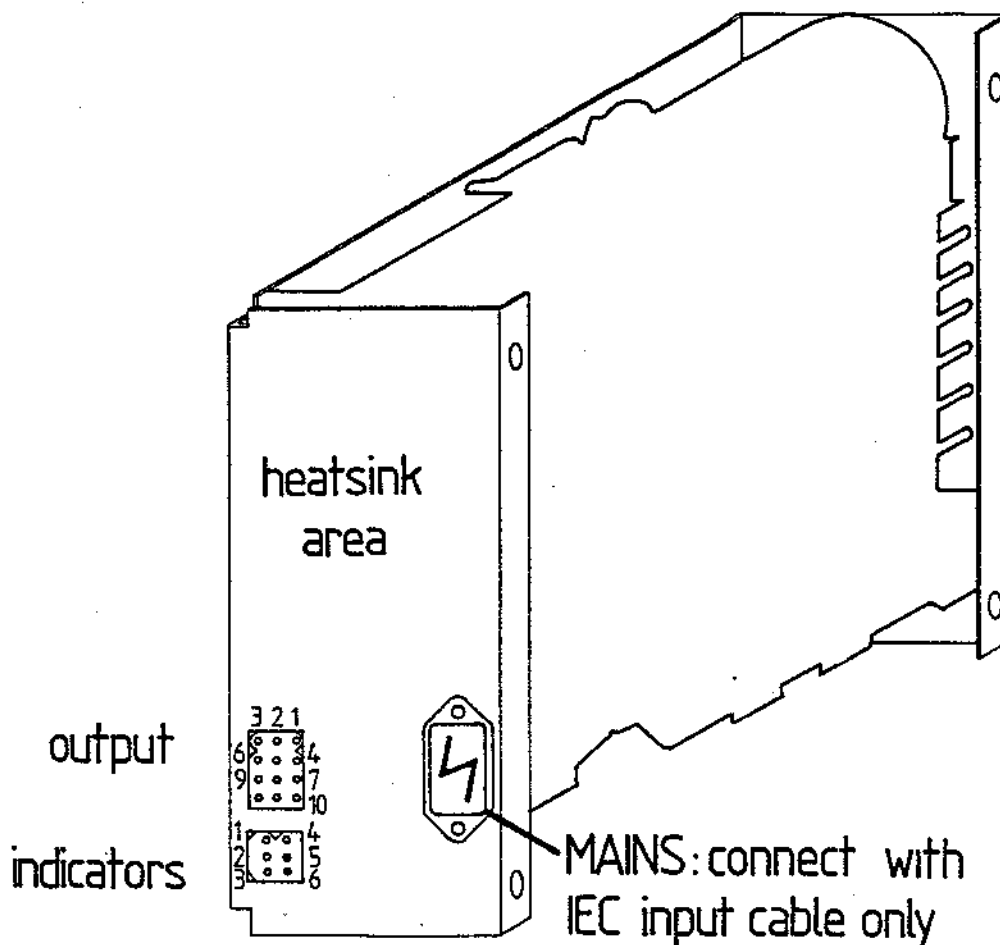
1	GROUND for +5V
2	GROUND for +5V
3	GROUND for +5V
4	+5V @ 8A POWER SUPPLY RAIL
5	+5V @ 8A POWER SUPPLY RAIL
6	GROUND
7	UNREGULATED OUTPUT
8	UNREGULATED OUTPUT
9	GROUND
10	-12V @ 1A POWER SUPPLY RAIL
11	+12V @ 2A POWER SUPPLY RAIL
12	-5V @ 1A POWER SUPPLY RAIL

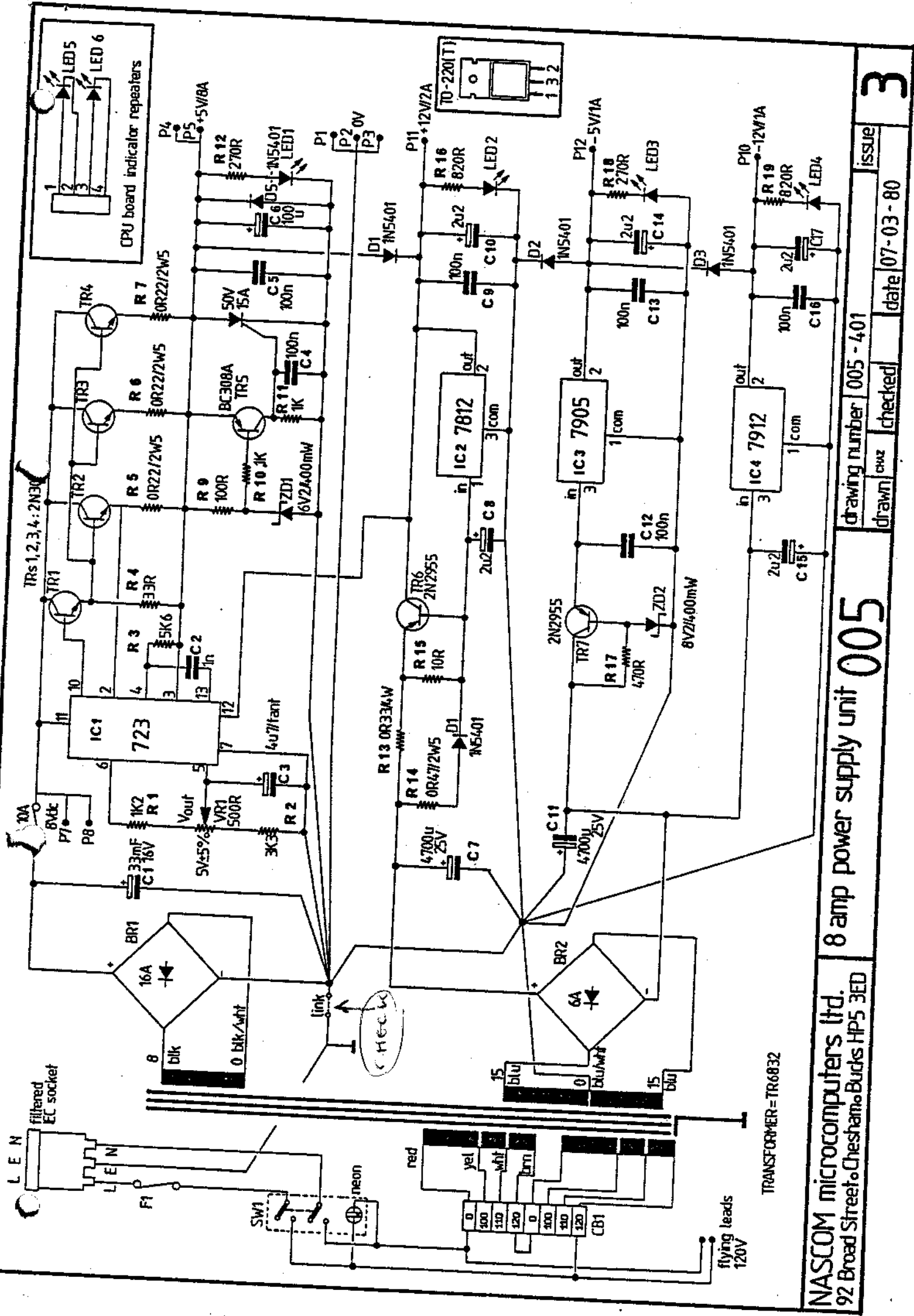
6 WAY INDICATOR CONNECTOR

1	HALT anode
2	HALT cathode
3	DRIVE anode
4	DRIVE cathode
5	not used
6	not used



8A power supply unit : low voltage connectors





NASCOM microcomputers ltd.
92 Broad Street Chesham Bucks HP5 3ED

8 amp power supply unit 005

drawing number 005 - 401

drawn checked date 07-03-80

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appendix 1

wire specifications and colours for connection of NASCOM power supply units
(8A power supply unit)

connection	wire	wire colour
+5V from 8A supply to system	2 conductors each 32/0.2	RED
ground for +5V rail	3 conductors each 32/0.2	BLACK
ground for +12V, -12V and -5V rails	2 conductors each 32/0.2	BLACK
+12V from 8A supply to system	1 conductor 24/0.2	PINK
-5V from 8A supply to system	1 conductor 16/0.2	BLUE
-12V from 8A supply to system	1 conductor 16/0.2	VIOLET

Generally: power supplies should be connected to systems by means of wires coloured thus, even if it is not possible to meet the wire specification in all cases.

Additionally, on chassis-based supplies, indicators should be connected as follows:

HALT anode from system CPU to front panel	1 conductor 7/0.2	GREY
HALT cathode ditto	1 conductor 7/0.2	WHITE
DRIVE anode ditto	1 conductor 7/0.2	YELLOW
DRIVE cathode ditto	1 conductor 7/0.2	BROWN

appendix 2

parts list for 8A power supply unit 005-150

item	quantity
12 way BICC-Burndy type A cable shell	1
6 way BICC-Burndy type A cable shell	1
perforated ventilation panel	2
M3.5 10mm machine screws	4
IEC line socket	1
Cable shell pin inserts	16
User manual 005-300	1
power supply unit chassis, assembled	1
3 core 5A mains flexible cable length 2m	1
32/0.2 wire black length 1400mm	1
32/0.2 wire red length 300mm	1
24/0.2 wire pink length 150mm	1
16/0.2 wire blue length 150mm	1
16/0.2 wire violet length 150mm	1
7/0.2 wire grey length 400mm	1
7/0.2 wire white length 400mm	1
7/0.2 wire yellow length 400mm	1
7/0.2 wire brown length 400mm	1