OPERATING INSTRUCTIONS
USER INFORMATION

TC2-ES POWER SUPPLY V1

Designed and manufactured by:
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Introduction

The TC2-ES is a direct replacement for the earlier HS series power supplies used with Open Date Thermocode 2 series printers. The unit has been designed to make installation, on-site servicing and replacement as easy as possible with these key advantages:

* Automatic selection of mains input voltage. Range 100 to 240Vac.

* Lighter and more compact than earlier HS type PSU.

* The same case design and many of the same parts as the Open Date iQ printer.

* Easy replacement of PSU modules and stepper drives on site.

* Easy connection of NPN and PNP sensors for print triggering.

* User selectable leading/trailing edge print triggering.

* Three features that make connection and disconnection easy:

    1. IEC C14 Mains connector (uses IEC C13 power cable)
    2. Un-pluggable I/O terminals for encoder, print trigger and relays.
    3. I/O cable glands on a detachable plate. Unplug terminals, unscrew plate and the unit is disconnected.

SAFETY INSTRUCTIONS

1. Read these instructions carefully. Follow all warnings and instructions marked on the product.

2. Only use the PSU to operate Open Date Thermocode 2 series printers.

3. Always disconnect the PSU from the mains electrical supply before removing the cover, connecting/disconnecting the printer cable or attempting to clean or service it. Operating the PSU with the cover removed exposes dangerous voltages.

4. The PSU should only be installed and operated by persons who have been trained correctly to do so.

5. Do not operate the PSU near water. Never spill liquid of any kind on it and do not operate it if liquid has been spilt on to it. The PSU must be checked by qualified personnel before resuming use.

6. Do not place the PSU on an unstable stand or table. It may fall causing serious injury to the operator or damage.

7. Never insert objects of any kind into the PSU through openings or gaps as they may touch dangerous voltage points or short circuit parts that could result in fire or electric shock.
8. The PSU should only be connected to the type of electrical supply as indicated on the label located on the rear.

9. Use a three core mains cable of at least 5A capacity terminated with an IEC C13 or C15 connector The earth conductor must be connected to a suitable earth point at the electrical supply. It is dangerous to operate the PSU if it is not properly earthed.
10. Route the power cable so it cannot be damaged.

11. If an extension cable is used with this product, make sure that the total ampere ratings of the equipment plugged into the extension cable does not exceed the extension cable ampere rating. Also make sure that the total rating does not exceed the fuse rating.

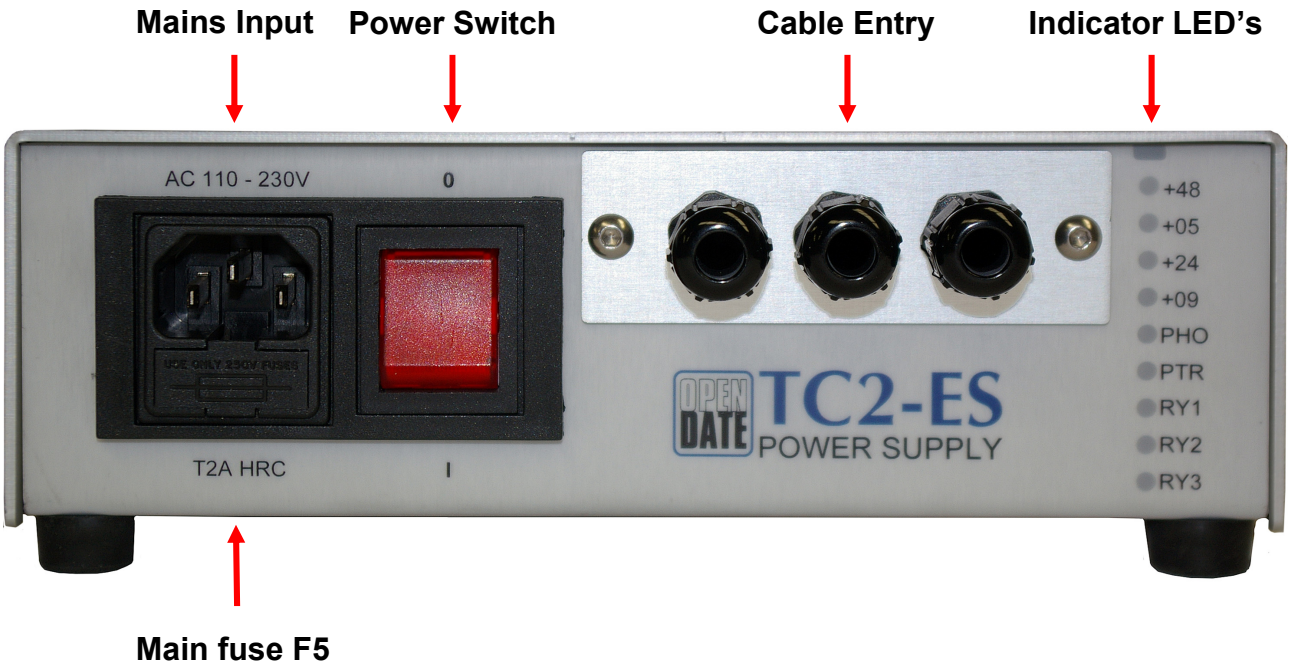
12. Replace blown fuses with the same type and rating only.

13. Refer all servicing and maintenance to Open Date or suitably qualified personnel.

14. Do not attempt to use to use this product in areas where explosive gases or substances are present.

15. Under the following conditions always disconnect the electrical supply and refer to a qualified service engineer.
    a. If cables are damaged or frayed.
    b. If liquid has been spilled onto the product.
    c. If the product does not operate normally when these instructions are followed.

Front panel



AC mains input:

Accepts IEC C13 power cable.
Switch PSU off before disconnecting
SHOCK HAZARD! Disconnect the power cable BEFORE opening the case.
DO NOT work on the PSU with the power lead connected.

Main fuse F5:

Fuse located in rear compartment of drawer.
For continued protection always replace fuse with the same type and rating.

Cable entry:

Release by undoing the two screws. The terminals inside can be unplugged. This makes the PSU easy to replace.

Indicator LEDs:

+48	48Vdc present. (motor drives).
+05	5Vdc present.*
+24	24Vdc present.
+09	9Vdc present.* (keypad display).
PHO	Print Head Output. 24V supply to print head is active when lit.
PTR	Print Trigger. Lights briefly when a print trigger is received.
RY1	Relay 1 energised.
RY2	Relay 2 energised.
RY3	Relay 3 energised.

*The 5 & 9V supplies are derived from the 24V supply.
If fuse F1 blows the 5 and 9V supplies will not be present.

I/O connection diagram

DISCONNECT THE MAINS CABLE BEFORE OPENING THE CASE
DO NOT WORK ON THE PSU WITH THE MAINS CABLE CONNECTED

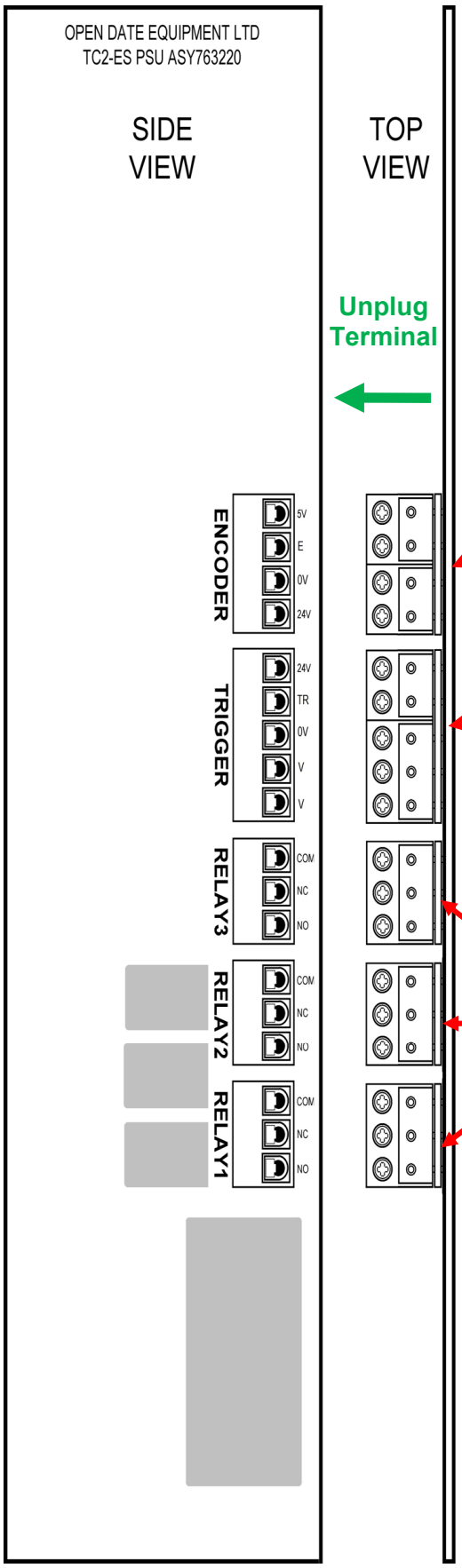


Illustration shows side and top views of the I/O terminals for interface to external equipment.

Do not apply excessive downward pressure on the terminals when tightening screws.

The terminals can be unplugged in the direction shown.

Refer to page 6 for connection information.

ENCODER (J5)

5V	+5V encoder power.
E	Encoder pulse input.
0V	0V encoder power.
24V	+24V encoder power.

TRIGGER (J4) (see triggering, page 6)

24V	
TR	Volt free trigger.
0V	GND
V	Voltage trigger.
V	Voltage trigger.

RELAY 1/2/3 (J1,2,3)

COM Common terminal.

NC Normally closed. Connected to COM when relay is not energised.

NO Normally open. Connected to COM when relay is energised.

I/O connection details

TO AVOID DAMAGE AND RISK OF ELECTRIC SHOCK CONNECTIONS MUST ONLY BE MADE WITH THE POWER CABLE DISCONNECTED.

(Refer to the diagram on page 5.)

The protective earth (mains conductor), the 0V terminals of the internal power supply modules, the 0V of the print head and the 0V from the printer electronics are all common.

ENCODER (J5)
Used with continuous printers only.

Connect encoder +ive wire to **5V** or **24V** (depending on encoder voltage)
Connect encoder 0V wire to **0V** terminal
Connect encoder pulse output (Q) to **E** terminal

Maximum current from **5V** terminal; 100mA

PRINT TRIGGERING:

See page 7 for selection of Leading or Trailing print trigger.

Volt free triggering
Use external relay or switch with volt free contacts.
Connect the Trig (TR) terminal to 24V terminal or.
Connect the Trig (TR) terminal to 0V terminal.

~~~~~~~~~~~~~~Do not connect the 24V and 0V terminals together.~~~~~~~~~~~~~~~

Voltage triggering
Connect voltage trigger source to terminals **V** and **V**. Any voltage from 10 to 30V may be used, polarity is un-important.

PNP/NPN sensor triggering
Connect sensor +ive wire (usually brown) to **24V** terminal
Connect sensor 0V wire (usually blue) to **0V** terminal
Connect sensor output wire (Q, usually black or white) to **TR** terminal (See * below)

***Diode type 1N4007 may needed in the Q wire from the sensor for correct operation. (anode to Q, cathode to TR)**

The PSU configures automatically for PNP or NPN sensors.

RELAY 1,2,3
SPCO relays with voltage free contacts.
(Maximum contact ratings; 0.6A @ 125Vac, 0.6A @ 110Vdc, 2A @ 30Vdc)

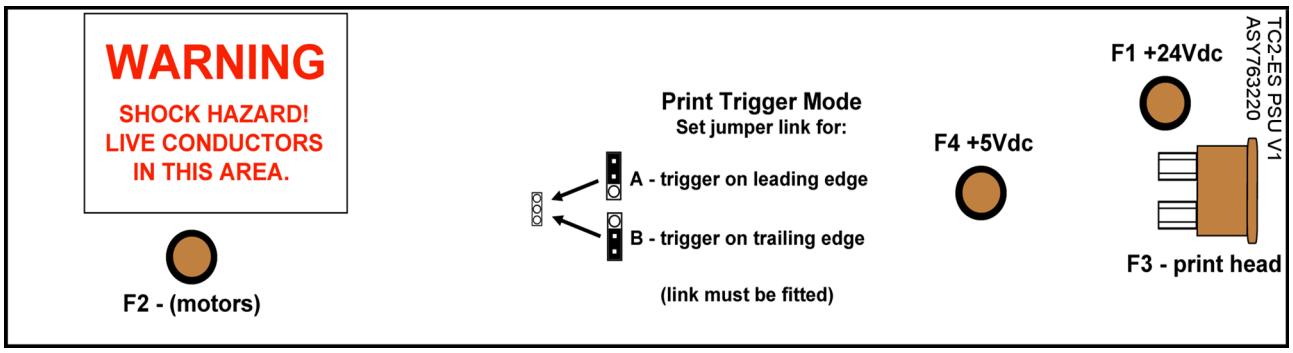
Relay is energised when blue LED on front panel is lit
COM is connected to **NC** when the relay is not energised.
COM is connected to **NO** when the relay is energised.

*If Issues with Voltage triggering are noted an additional Voltage Isolation relay may be installed.

Location of fuses and print trigger mode setting

DISCONNECT THE MAINS CABLE BEFORE OPENING THE CASE
DO NOT WORK ON THE PSU WITH THE MAINS CABLE CONNECTED

Diagram below shows location of DC fuses and print trigger setting link on the rear of the main PCB, accessible from the right hand side of the PSU.
Attention is drawn to the warning label indicating the presence of dangerous voltages on the PCB.



FUSES and ratings

FUSES MUST BE REPLACED WITH THE SAME TYPE AND RATING

Located on the main PCB:

No;	Type ;	Circuits:
F1	T2A 'Wickmann'	24V (not print head), 5V dc/dc converter & 9V regulator
F2	T2A 'Wickmann'	48V stepper motor drives.
F3	7.5A automotive	24V switched output to print head.
F4	T2A 'Wickmann'	5V output from dc/dc converter.

Located under the mains inlet on the front panel:

F5	T2A HRC 20 x 5mm	Mains.

Note: The 5V and 9Vdc supplies are derived from the 24Vdc supply. If fuse F1 blows the 5 and 9V supplies will not be present.

PRINT TRIGGER SETTING

Printing can be triggered on the leading (trigger switch closes) or trailing (trigger switch opens) edges by setting the jumper link shown above to the A or B position.

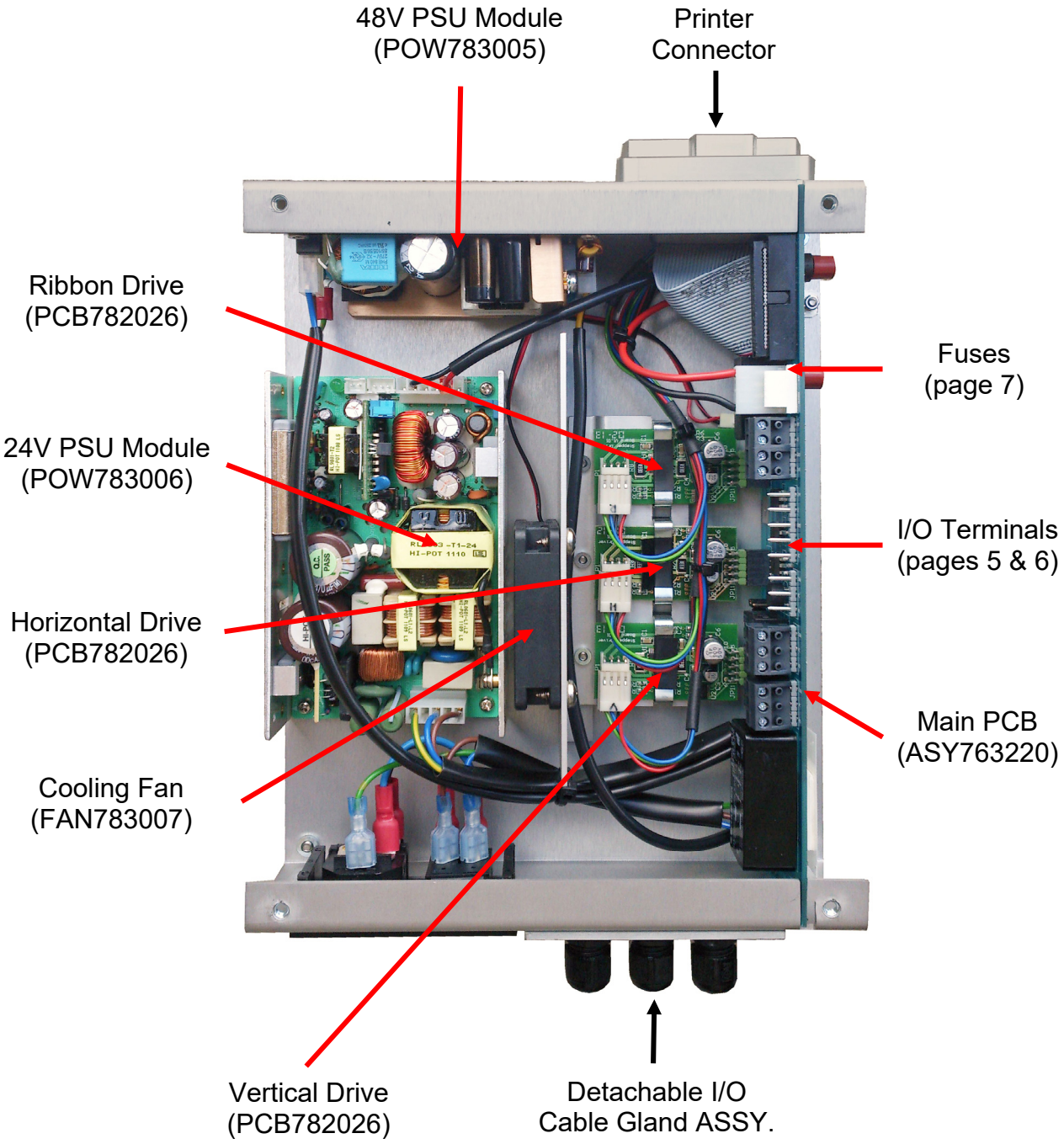
Position A Printing is triggered at the start of a trigger pulse (leading edge).

Position B Printing is triggered at the end of a trigger pulse (trailing edge).

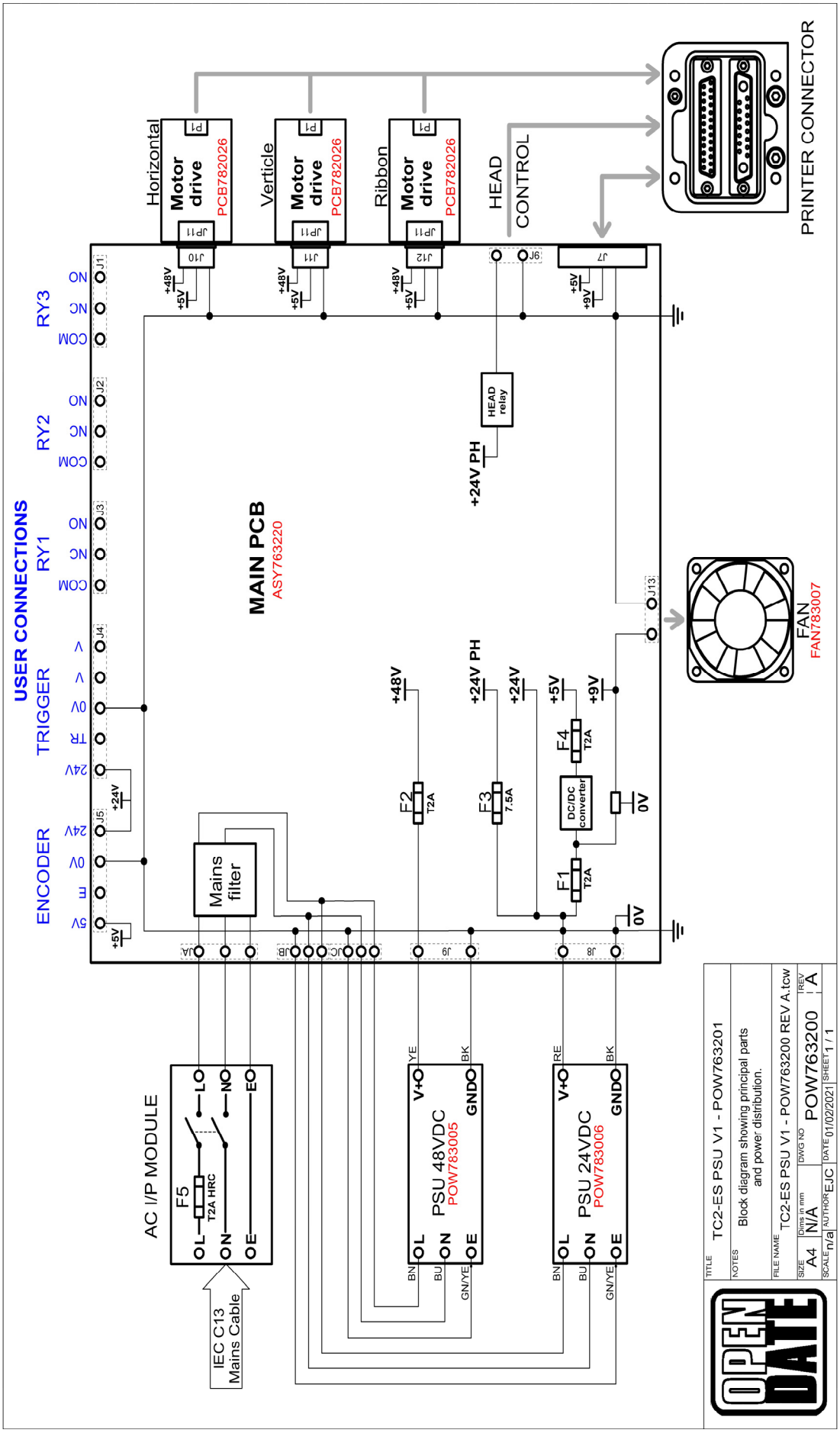
NB. The jumper link must be fitted to position A or B. A trigger pulse will not be generated if the link is not fitted.

Internal layout

View inside PSU showing layout and main components (with part numbers).
Disconnect supply before removing cover.



Block diagram



Dimensions