

# TrxAVR B INTERFACE BOARD

Combined TrxAVR-b and front panel board for graphics LCD's

01-08-09  
18-08-09  
26-08-09

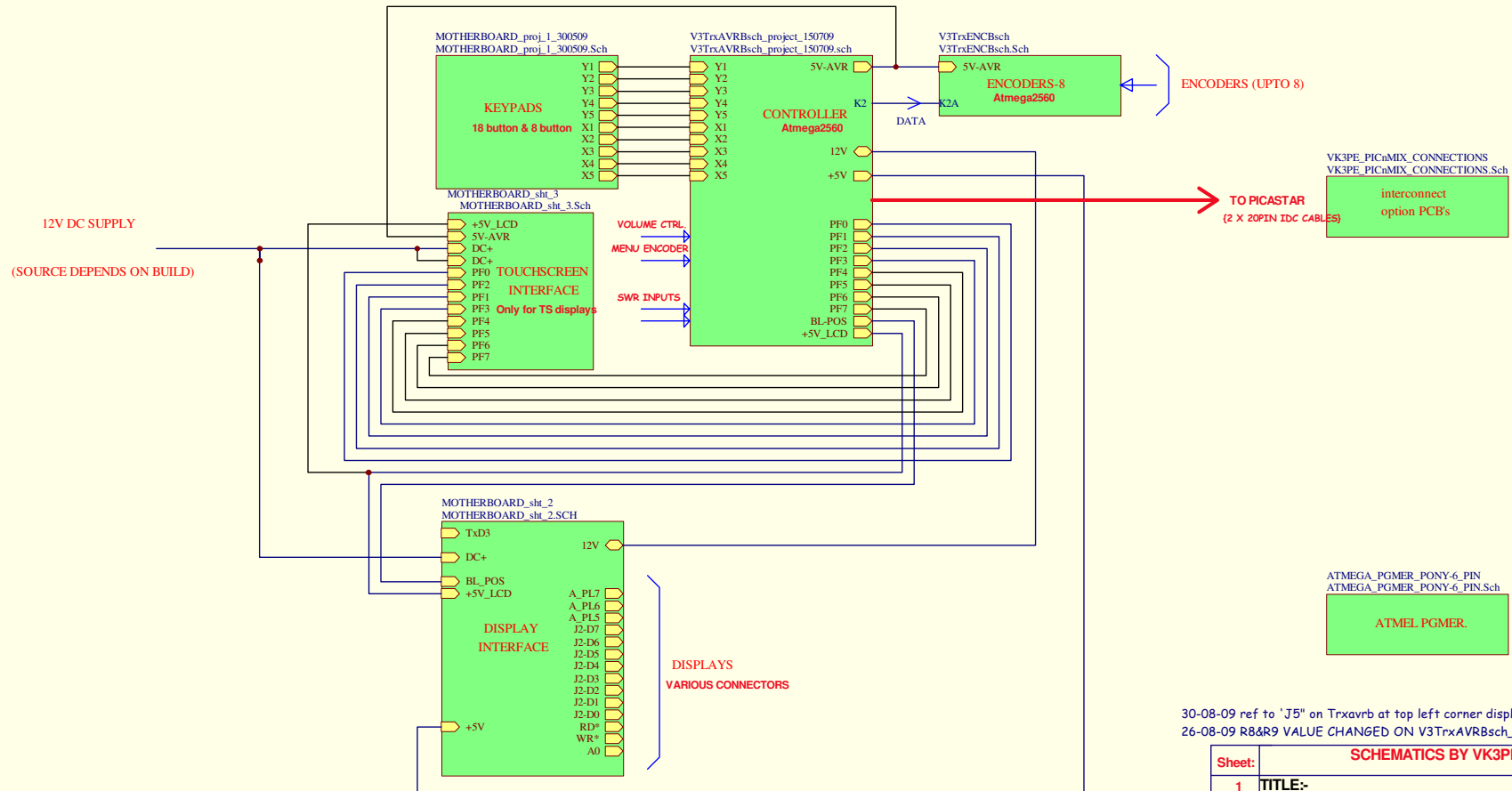
TrxAVRB and interface board for PICASTAR

TrxAVR is an exciting new development to allow the use of graphics or text based LCD modules to be used on PICaSTAR. The Picmix used in PICaSTAR is replaced by TrxAVR.

The design and software is by Ian, G3VPX. Ian has a web page detailing his TrxAVR design and software.  
[http://www.homebrew-radios.net/trxavr\\_picastar/trxavr\\_picastar.htm](http://www.homebrew-radios.net/trxavr_picastar/trxavr_picastar.htm)

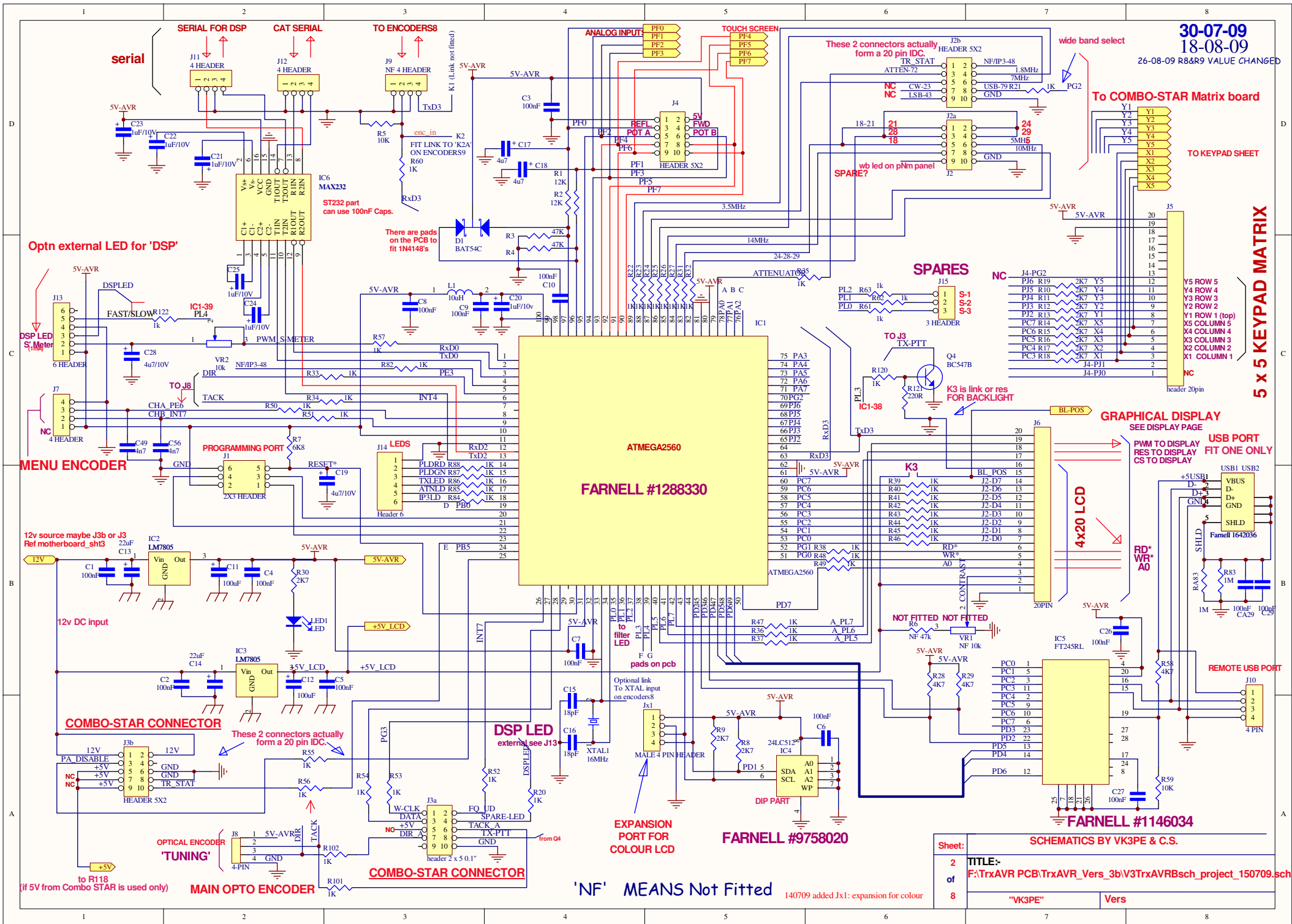
THE SCHEMATICS GIVEN HERE ARE A COMPILATION SPECIFIC TO THE INTERFACE BOARD DESIGNED BY VK3PE IN JUNE 2009, BUT ARE BASED ON Ian's SCHEMATICS.

PLEASE NOTE: Any part numbers given in this document are believed to be correct but you should verify them before purchasing any items.



30-08-09 ref to 'J5' on Trxavrb at top left corner display connector sheet, is now J6  
26-08-09 R8&R9 VALUE CHANGED ON V3TrxAVRBsch\_PROJECT SHEET

Sheet:	SCHEMATICS BY VK3PE & C.S.	
1 of 6	TITLE:- F:\TrxAVR PCB\TrxAVR_Vers_3b\TRXAVR-C_Project_080709_1.sch	
	"VK3PE"	Vers



30-07-09  
18-08-09

26-08-09 R8&R9 VALUE CHANGED

5 x 5 KEYPAD MATRIX

J4-PC2	2K7	Y5	20
PL6 R19	2K7	Y4	19
PL5 R10	2K7	Y4	11
PL4 R11	2K7	Y3	10
PL3 R12	2K7	Y2	9
PL2 R13	2K7	Y1	8
PC7 R14	2K7	X5	7
PC6 R15	2K7	X4	6
PC5 R16	2K7	X3	5
PC4 R17	2K7	X2	4
PC3 R18	2K7	X1	3
J4-PJ0			2
			1

J2-D7	14
J2-D6	13
J2-D5	12
J2-D4	11
J2-D3	10
J2-D2	9
J2-D1	8
J2-D0	7
WR*	6
RD*	5
A0	4
CONTRAST	3
	2
	1

Sheet:	SCHEMATICS BY VK3PE & C.S.	
2	TITLE:- F:\TrxAVR PCB\TrxAVR_Vers_3b\V3TrxAVRBSch_project_150709.sch	
of		
8	"VK3PE"	Vers

'NF' MEANS Not Fitted

140709 added Jx1: expansion for colour

# G3VPX's TrxAVRB, OPTIONAL, FOR TOUCH SCREEN ONLY

31-08-09

IF TOUCH SCREEN IS NOT USED, THEN DO NOT LOAD THESE PARTS:

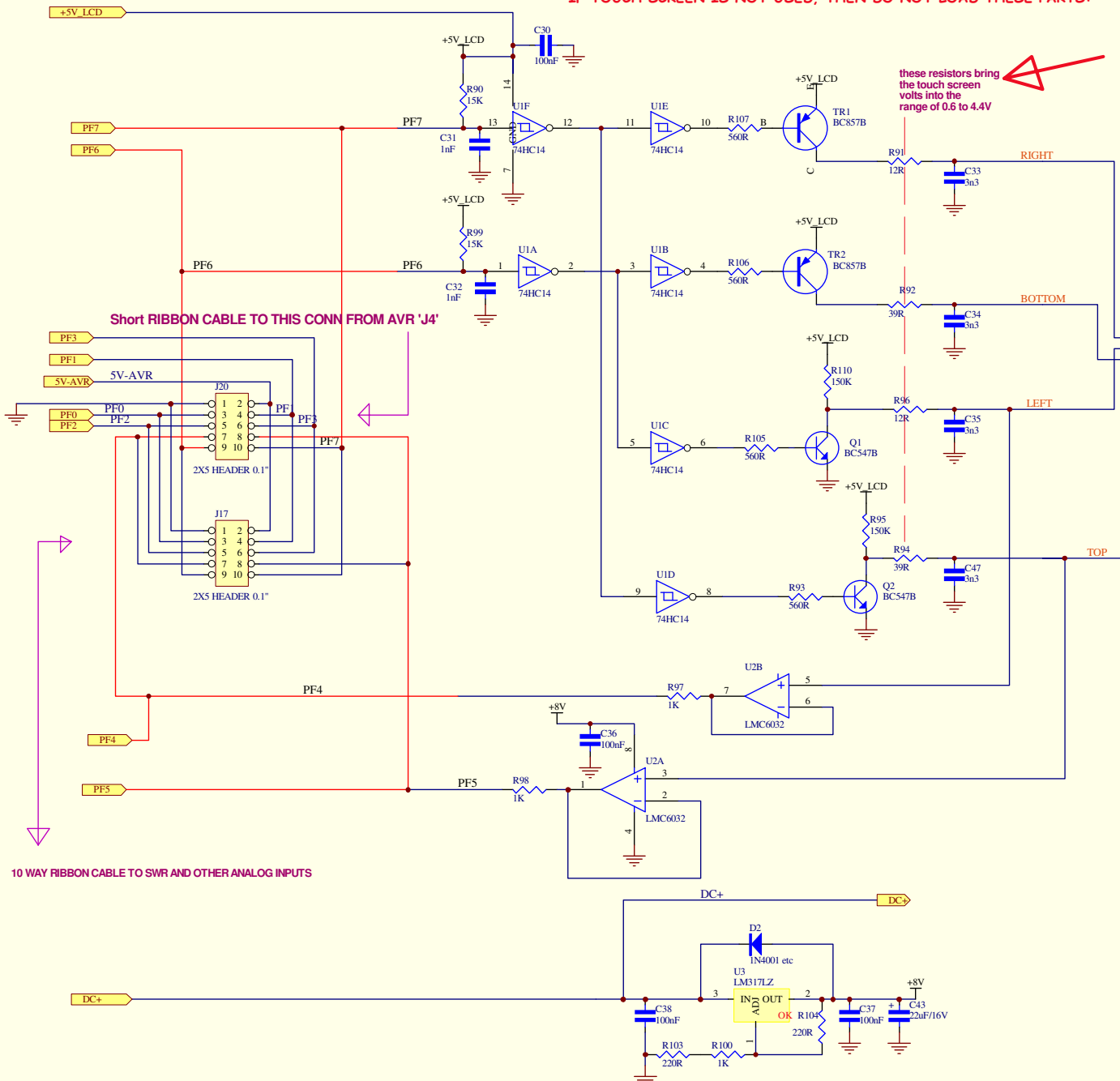
THE VALUES USED HERE MAY NEED CHANGING FOR THE DISPLAY YOU USE !

The calculation I use to get the approximate value of the resistors is the resistance of the touch screen divided by 10 (ie.  $(X2 - X1)/10$  and  $(Y2 - Y1)/10$ ).

For the CrystalFontz touchscreen display, the X resistance is about 666 ohms and the Y resistance about 374 ohms. I used R91 & R96 (R25 & R27 on Ian's PCB) = 68ohms and R92 & R94 (R24 & R26 on Ian's PCB) = 36 ohms. (I am still mystified why the X resistance is smaller than the Y resistance on the touch screen Ian used.)

For the touch screen's from IIIC, the X resistance is about 754 ohms and the Y resistance about 304 ohms. As I am swapping between various displays, I kept using the above values as it was "close" enough and saved me making changes. However, if I was only using this touch screen I would use R91 & R96 = 75ohms and R92 & R94 = 30 ohms (or close to these values).

Regards  
Gerard (vk3cg/vk3grs)  
31-08-09



**TOUCH SCREEN PINOUT ONLY FOR CF TS DISPLAY**

NOTE:- CONNECTIONS MAY NOT BE IN CORRECT ORDER FOR YOUR Display ! YOU MAY NEED TO MAKE A SHORT ADAPTER CABLE FOR YOUR DISPLAY TYPE. (REFER TO DISPLAY DATA SHEET)

JP2  
1 TS-X2 (right)  
2 TS-X1 (left)  
3 TS-Y2 (bottom)  
4 TS-Y1 (top)

0.1" X 4 PIN SIP RIGHT ANGLE MALE

REFERENCE:-  
TrxAVR 18-button board and motherboard diagram by G3VPX

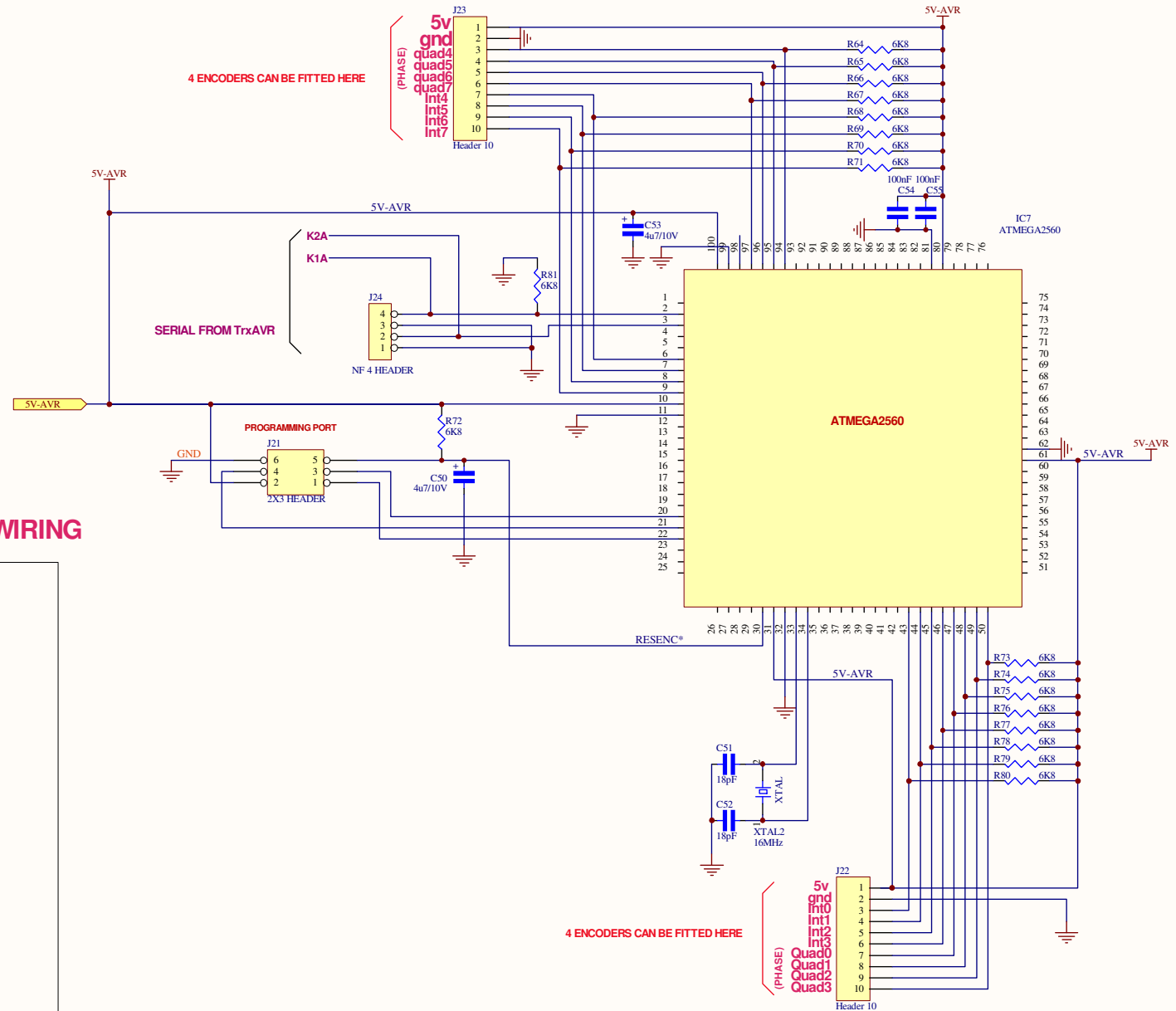
31-08-09 NOTE added re the Touchscreen 'X' and 'Y' values

Sheet:	SCHEMATICS BY VK3PE & C.S.	
5 of 8	TITLE:- F:\TrxAVR PCB\TrxAVR_Vers_3b\MOTHERBOARD_sht_3.Sch	
	"VK3PE"	Vers

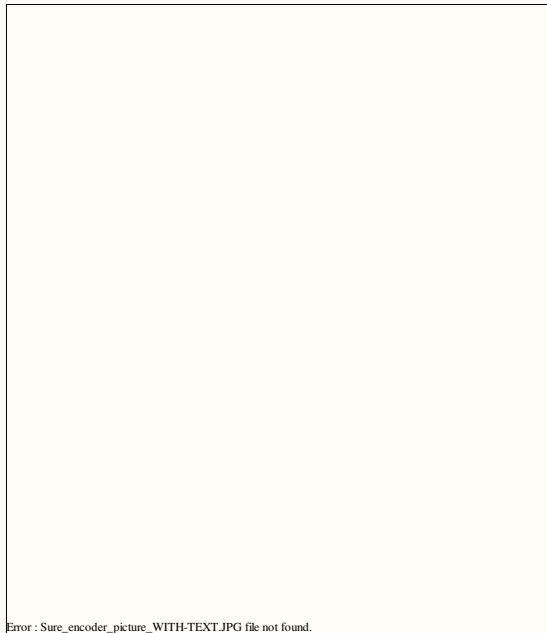
'NF' MEANS Not Fitted

# G3VPX's TRXAVR:- OPTIONAL: FOR ENCODER-8 INTERFACE

18-08-09



SURE ELECTRONICS ENCODER WIRING



'NF' MEANS Not Fitted

0712080603 parts

Sheet:	SCHEMATICS BY VK3PE & C.S.	
3	TITLE:-	
of	F:\TrxAVR PCB\TrxAVR_Vers_3b\V3TrxENCBSch.Sch	
8	"VK3PE"	Vers

# TrxAVRB DISPLAY CONNECTORS

Colour TFT displays connect to 'Jx1' connector on the TrxAVR sheet.

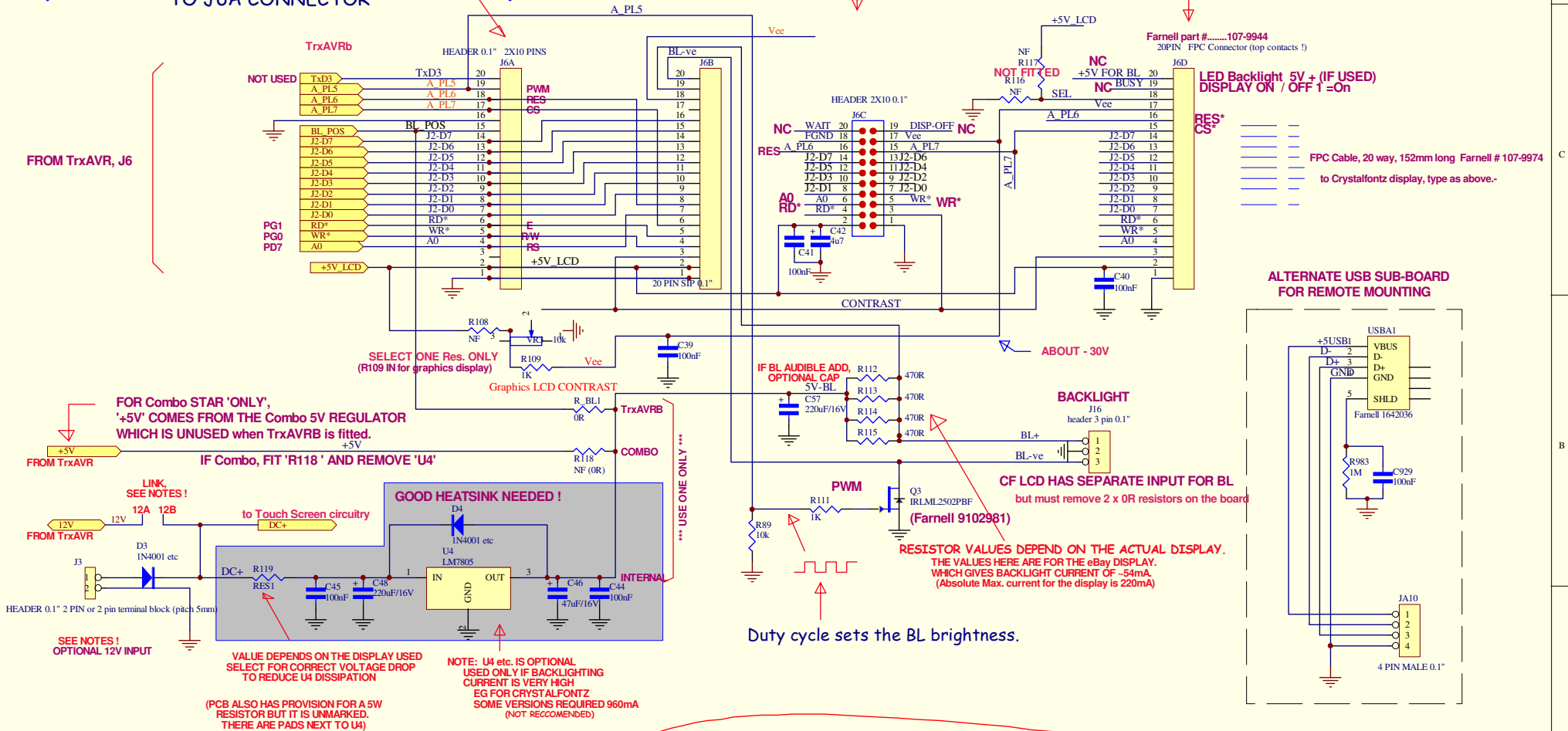
21-07-09  
19-08-09  
30-08-09

Connector for ebay Graphics display  
Also 2 X 40 LCD or 4 X 20  
and 128x64 types.

CRYSTALFONTZ 'LARGE' Touch Screen  
**DISPLAY HEADER**  
EQUIVALENT TO EA320  
eg. White on Blue & TouchScreen:- CFAG320240-CX-TFH-TS

SMALLER NON TOUCH  
CRYSTALFONTZ 'FP' CONNECTOR  
TOP CONTACT TYPE OF FPC CONNECTOR.  
YELLOW/GREEN Display:- CFAG320240K-YYH-TZ?  
(NOT RECOMMENDED)  
Refer to Bill of Material for other displays.

THIS 2x20 pin IDC Conn duplicates the TrxAVRb conn  
**THERE IS A SHORT 20 WAY  
IDC CABLE FROM J6 ON TrxAVR SECTION  
TO J6A CONNECTOR**



FROM TrxAVR, J6

FOR Combo STAR 'ONLY',  
'+5V' COMES FROM THE Combo 5V REGULATOR  
WHICH IS UNUSED when TrxAVRB is fitted.

IF Combo, FIT 'R118' AND REMOVE 'U4'

LINK SEE NOTES!

GOOD HEATSINK NEEDED!

VALUE DEPENDS ON THE DISPLAY USED  
SELECT FOR CORRECT VOLTAGE DROP  
TO REDUCE U4 DISSIPATION

NOTE: U4 etc. IS OPTIONAL  
USED ONLY IF BACKLIGHTING  
CURRENT IS VERY HIGH  
EG FOR CRYSTALFONTZ  
SOME VERSIONS REQUIRED 960mA  
(NOT RECOMMENDED)

(PCB ALSO HAS PROVISION FOR A 5W  
RESISTOR BUT IT IS UNMARKED.  
THERE ARE PADS NEXT TO U4)

COLOUR SCREEN IS UNDER DEVELOPMENT BY Ian, 63VPX

AT TIME OF COMPILING THIS DOCUMENT IT I NOT FINISHED.

HOWEVER, THE CONNECTION FOR THE COLOUR SCREEN IS BY 4 PIN CONNECTOR, Jx1

ON THE TrxAVRB SHEET

30-08-09 ref to 'J5' on Trxavr at top left corner is now J6  
21-07-09 CORRECTED J6B A0/WR LINES & ADDED C57

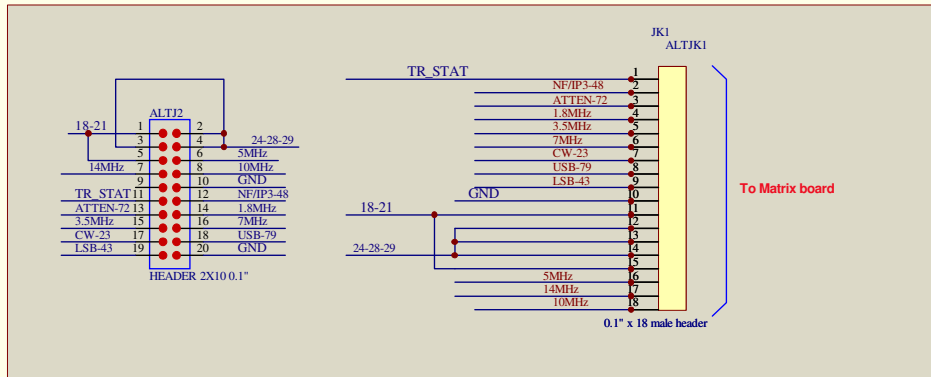
SCHEMATICS BY VK3PE & C.S.

Sheet:	TITLE:-	
6	F:\TrxAVR PCB\TrxAVR_Vers_3b\MOTHERBOARD_sht_2_SCH	
of		
8	"VK3PE"	Vers

'NF' MEANS Not Fitted

# PICNMIX (VK3PE VERSION) INTERFACE ADAPTER BOARDS FOR PICASTAR

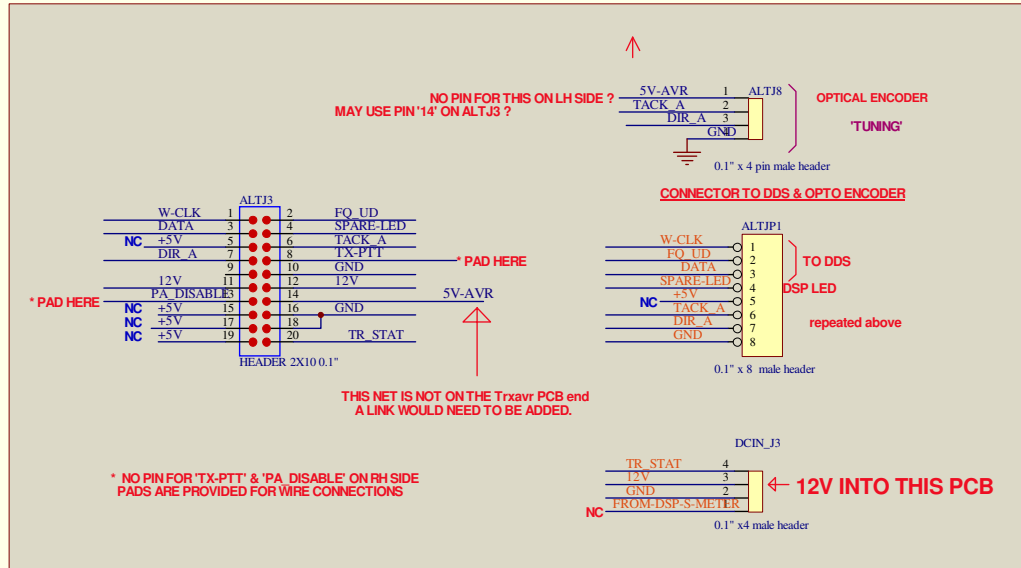
30-07-09



20 WAY IDC CABLE TO TrxAVRB

2 x 20 way IDC cables to TrxAVRB

TrxAVR  
VK3PE interface



20 WAY IDC CABLE TO TrxAVRB

PICASTAR SIDE

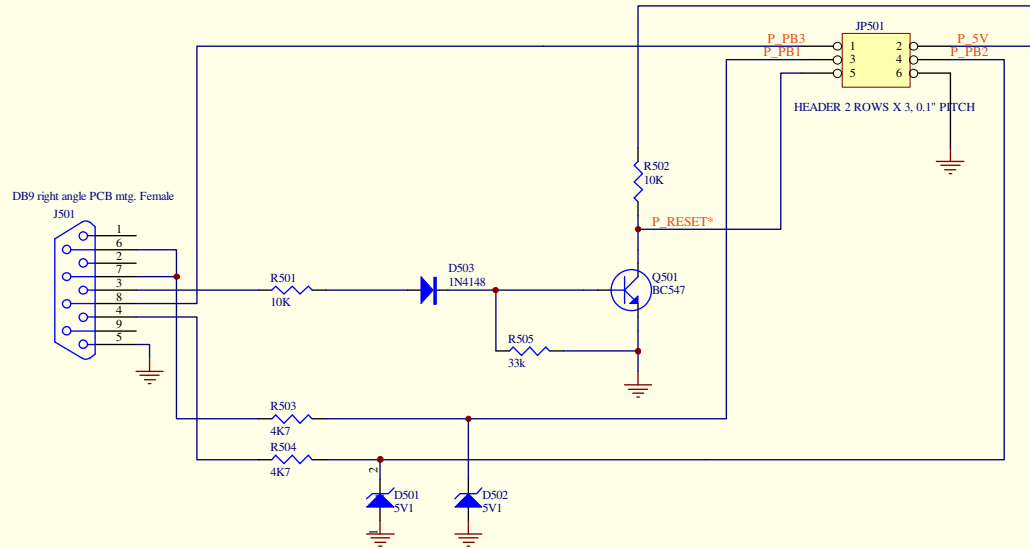
NOTE:- Connectors on right side suit VK3PE Picastar PCB's

for other PCB's,  
cables will need to be made  
or wires terminated into the 'connector' holes.

'NF' MEANS Not Fitted

Sheet:	SCHEMATICS BY VK3PE & C.S.	
7	TITLE:-	
of	F:\TrxAVR PCB\TrxAVR_Vers_3b\VK3PE_PICnMIX_CONNECTIONS.Sch	
8	"VK3PE"	Vers

# ATMEL PROGRAMMER - PONYPROG



220609 6 PIN VERSION ONLY

'NF' MEANS Not Fitted

Sheet:	SCHEMATICS BY VK3PE & C.S.	
8	TITLE:-	
of	F:\TrxAVR PCB\TrxAVR_Vers_3b\ATMEGA_PGMR_PONY-6_PIN.Sch	
8	"VK3PE"	Vers

# KEYPADS FOR G3VPX's TrxAVR

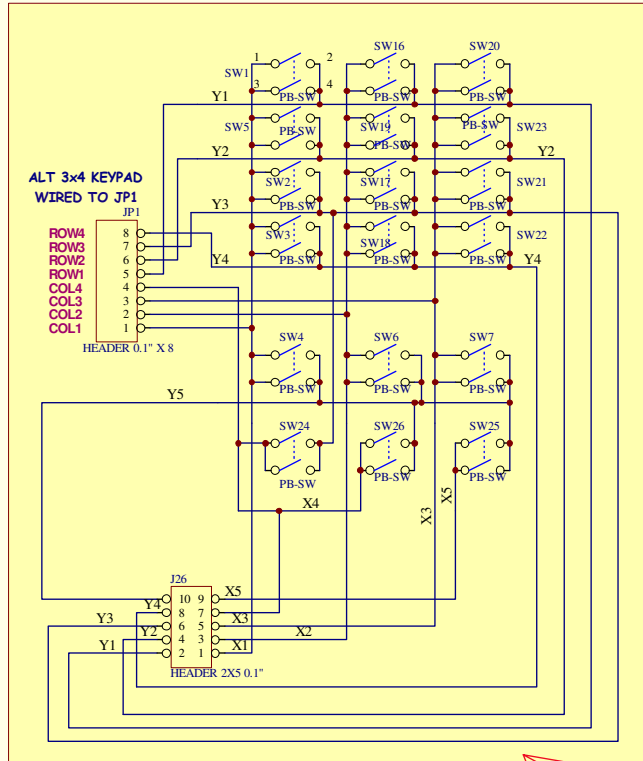
{ VK3PE }

21-07-09

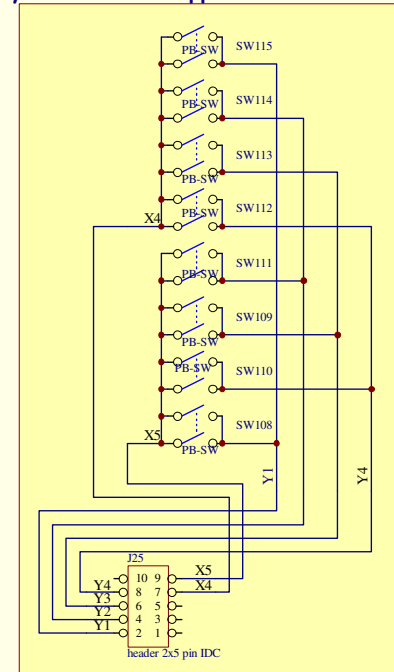
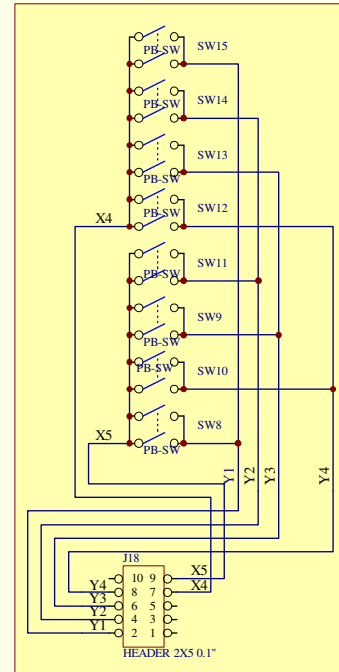
## 16 KEYPAD (SUB PCB)

## 8 BUTTON SUB PCB (small display)

## 8 BUTTON SUB PCB (large display)



NOTE ! This is the same PCB, simply loaded on the opposite side.



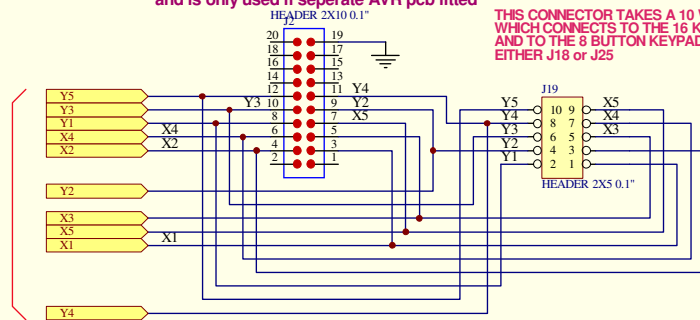
IF A COMMERCIAL 3x4 KEYPAD IS USED FOR THE UPPER 12 KEYS, THEN JP1 IS USED TO CONNECT TO THE 3x4 KEYPAD. (CHECK YOUR KEYPAD FOR DETAILS)

Wire links must be used, as keyboard pinout varies.

IF A COMMERCIAL 4x4 KEYPAD IS USED, THEN THIS PCB IS NOT REQUIRED. THE 4x4 KEYPAD WILL NEED TO BE WIRED TO J19.

this conn. duplicates J5 on the AVR-B pcb and is only used if separate AVR pcb fitted

THIS CONNECTOR TAKES A 10 WAY RIBBON CABLE WHICH CONNECTS TO THE 16 KEYPAD, J26 AND TO THE 8 BUTTON KEYPAD (ONE ONLY) EITHER J18 OR J25



FROM TrxAVRB, J5

I/F TO TrxAVR-B PCB

'NF' MEANS Not Fitted

F:\TrxAVR PCB\TrxAVR\_Vers\_3b\MOTHERBOARD\_proj\_1\_300509.Sch

Sheet:	SCHEMATICS BY VK3PE & C.S.	
4 of 8	TITLE:- F:\TrxAVR PCB\TrxAVR_Vers_3b\MOTHERBOARD_proj_1_300509.Sch	
	"VK3PE"	Vers