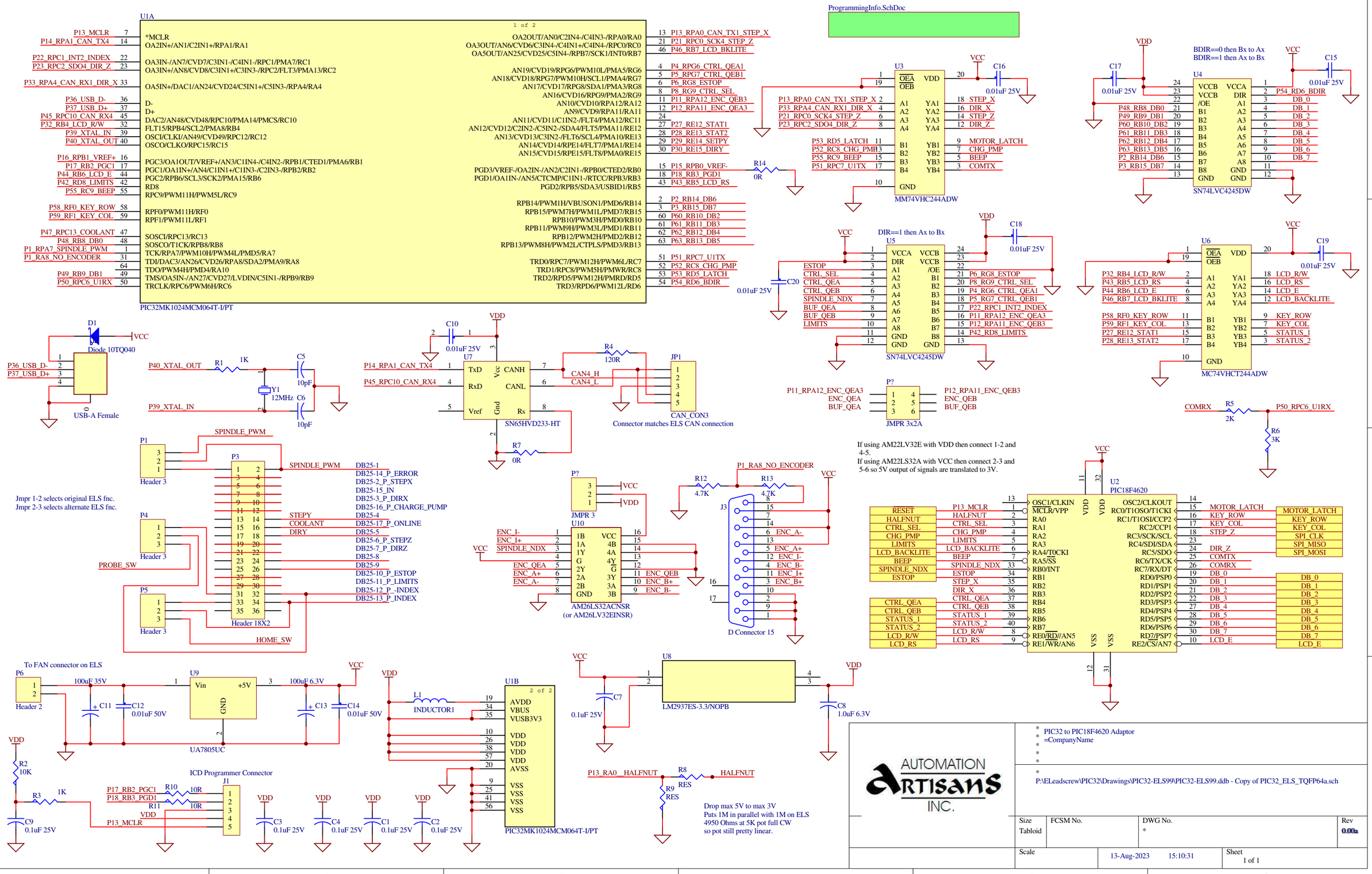
U1A
1 of 2
*MCLR
OA2IN+/AN1/C2IN1+/RPA1/RA1
OA3IN-/AN7/CVD7/C3IN1-/C4IN1-/RPC1/PMA7/RC1
OA3IN+/AN8/CVD8/C3IN1+/C3IN3-/RPC2/FLT3/PMA13/RC2
OA5IN+/DAC1/AN24/CVD24/C5IN1+/C5IN3-/RPA4/RA4
D-
D+
DAC2/AN48/CVD48/RPC10/PMA14/PMCS/RC10
FLT15/RPB4/SCL2/PMA8/RB4
OSCI/CLKI/AN49/CVD49/RPC12/RC12
OSCO/CLKO/RPC15/RC15
PGC3/OA1OUT/VREF+/AN3/C1IN4-/C4IN2-/RPB1/CTED1/PMA6/RB1
PGC1/OA1IN+/AN4/C1IN1+/C1IN3-/C2IN3-/RPB2/RB2
PGC2/RPB6/SCL3/SCK2/PMA15/RB6
RD8
RPC9/PWM11H/PWM5L/RC9
RPF0/PWM11H/RPF0
RPF1/PWM11L/RF1
SOSCI/RPC13/RC13
SOSCO/T1CK/RPB8/RB8
TCK/RPA7/PWM10H/PWM4L/PMD5/RA7
TDI/DAC3/AN26/CVD26/RPA8/SDA2/PMA9/RA8
TDO/PWM4H/PMD4/RA10
TMS/OA5IN-/AN27/CVD27/LVDIN/C5IN1-/RPB9/RB9
TRCLK/RPC6/PWM6H/RC6
OA2OUT/AN0/C2IN4-/C4IN3-/RPA0/RA0
OA3OUT/AN6/CVD6/C3IN4-/C4IN1+/C4IN4-/RPC0/RC0
OA5OUT/AN25/CVD25/C5IN4-/RPB7/SCK1/INT0/RB7
AN19/CVD19/RPG6/PWM10L/PMA5/RG6
AN18/CVD18/RPG7/PWM10H/SCL1/PMA4/RG7
AN17/CVD17/RPG8/SDA1/PMA3/RG8
AN16/CVD16/RPG9/PMA2/RG9
AN10/CVD10/RPA12/RA12
AN9/CVD9/RPA11/RA11
AN11/CVD11/C1IN2-/FLT4/PMA12/RC11
AN12/CVD12/C2IN2-/C5IN2-/SDA4/FLT5/PMA11/RE12
AN13/CVD13/C3IN2-/FLT6/SCL4/PMA10/RE13
AN14/CVD14/RPE14/FLT7/PMA1/RE14
AN15/CVD15/RPE15/FLT8/PMA0/RE15
PGD3/VREF-/OA2IN-/AN2/C2IN1-/RPB0/CTED2/RB0
PGD1/OA1IN-/AN5/CTCMP/C1IN1-/RTCC/RPB3/RB3
PGD2/RPB5/SDA3/USBID1/RB5
RPB14/PWM1H/VBUSON1/PMD6/RB14
RPB15/PWM7H/PWM1L/PMD7/RB15
RPB10/PWM3H/PMD0/RB10
RPB11/PWM9H/PWM3L/PMD1/RB11
RPB12/PWM2H/PMD2/RB12
RPB13/PWM8H/PWM2L/CTPLS/PMD3/RB13
TRD0/RPC7/PWM12H/PWM6L/RC7
TRD1/RPC8/PWM5H/PMWR/RC8
TRD2/RPD5/PWM12H/PMRD/RD5
TRD3/RPD6/PWM12L/RD6
PIC32MK1024MCM064T-I/PT
P13_MCLR
P14_RPA1_CAN_TX4
P22_RPC1_INT2_INDEX
P23_RPC2_SDO4_DIR_Z
P33_RPA4_CAN_RX1_DIR_X
P36_USB_D-
P37_USB_D+
P45_RPC10_CAN_RX4
P32_RB4_LCD_R/W
P39_XTAL_IN
P40_XTAL_OUT
P16_RPB1_VREF+
P17_RB2_PGC1
P44_RB6_LCD_E
P42_RD8_LIMITS
P55_RC9_BEEP
P58_RF0_KEY_ROW
P59_RF1_KEY_COL
P47_RPC13_COOLANT
P48_RB8_DB0
P1_RPA7_SPINDLE_PWM
P1_RA8_NO_ENCODER
P49_RB9_DB1
P50_RPC6_U1RX
P13_RPA0_CAN_TX1_STEP_X
P21_RPC0_SCK4_STEP_Z
P46_RB7_LCD_BKLITE
P4_RPG6_CTRL_QEA1
P5_RPG7_CTRL_QEB1
P6_RG8_ESTOP
P8_RG9_CTRL_SEL
P11_RPA12_ENC_QEB3
P12_RPA11_ENC_QEA3
P27_RE12_STAT1
P28_RE13_STAT2
P29_RE14_SETPY
P30_RE15_DIRY
P15_RPB0_VREF-
P18_RB3_PGD1
P43_RB5_LCD_RS
P2_RB14_DB6
P3_RB15_DB7
P60_RB10_DB2
P61_RB11_DB3
P62_RB12_DB4
P63_RB13_DB5
P51_RPC7_U1TX
P52_RC8_CHG_PMP
P53_RD5_LATCH
P54_RD6_BDIR
ProgrammingInfo.SchDoc
U3
MM74VHC244ADW
P13_RPA0_CAN_TX1_STEP_X
P33_RPA4_CAN_RX1_DIR_X
P21_RPC0_SCK4_STEP_Z
P23_RPC2_SDO4_DIR_Z
P53_RD5_LATCH
P52_RC8_CHG_PMP
P55_RC9_BEEP
P51_RPC7_U1TX
STEP_X
DIR_X
STEP_Z
DIR_Z
MOTOR_LATCH
CHG_PMP
BEEP
COMTX
R14
0R
C16
0.01uF 25V
VCC
VDD
U4
SN74LVC4245DW
BDIR==0 then Bx to Ax
BDIR==1 then Ax to Bx
C17
C15
P48_RB8_DB0
P49_RB9_DB1
P60_RB10_DB2
P61_RB11_DB3
P62_RB12_DB4
P63_RB13_DB5
P2_RB14_DB6
P3_RB15_DB7
DB_0
DB_1
DB_2
DB_3
DB_4
DB_5
DB_6
DB_7
U5
SN74LVC4245DW
DIR==1 then Ax to Bx
C18
C20
ESTOP
CTRL_SEL
CTRL_QEA
CTRL_QEB
SPINDLE_NDX
BUF_QEA
BUF_QEB
LIMITS
P6_RG8_ESTOP
P8_RG9_CTRL_SEL
P4_RG6_CTRL_QEA1
P5_RG7_CTRL_QEB1
P22_RPC1_INT2_INDEX
P11_RPA12_ENC_QEA3
P12_RPA11_ENC_QEB3
P42_RD8_LIMITS
U6
MC74VHCT244ADW
C19
P32_RB4_LCD_R/W
P43_RB5_LCD_RS
P44_RB6_LCD_E
P46_RB7_LCD_BKLITE
P58_RF0_KEY_ROW
P59_RF1_KEY_COL
P27_RE12_STAT1
P28_RE13_STAT2
LCD_R/W
LCD_RS
LCD_E
LCD_BACKLITE
KEY_ROW
KEY_COL
STATUS_1
STATUS_2
P?
JMPR 3x2A
P11_RPA12_ENC_QEA3
ENC_QEA
BUF_QEA
P12_RPA11_ENC_QEB3
ENC_QEB
BUF_QEB
D1
Diode 10TQ040
P36_USB_D-
P37_USB_D+
USB-A Female
P40_XTAL_OUT
R1
1K
C5
10pF
Y1
12MHz
C6
P39_XTAL_IN
U7
SN65HVD233-HT
C10
0.01uF 25V
P14_RPA1_CAN_TX4
P45_RPC10_CAN_RX4
TxD
RxD
Vref
Gnd
Vcc
CANH
CANL
Rs
R4
120R
CAN4_H
CAN4_L
JP1
CAN_CON3
Connector matches ELS CAN connection
R7
0R
COMRX
R5
2K
P50_RPC6_U1RX
R6
3K
SPINDLE_PWM
P1
Header 3
P3
Header 18X2
P4
P5
PROBE_SW
HOME_SW
Jmpr 1-2 selects original ELS fnc.
Jmpr 2-3 selects alternate ELS fnc.
SPINDLE_PWM
STEPY
COOLANT
DIRY
DB25-1
DB25-14_P_ERROR
DB25-2_P_STEPX
DB25-15_IN
DB25-3_P_DIRX
DB25-16_P_CHARGE_PUMP
DB25-4
DB25-17_P_ONLINE
DB25-5
DB25-6_P_STEPZ
DB25-7_P_DIRZ
DB25-8
DB25-9
DB25-10_P_ESTOP
DB25-11_P_LIMITS
DB25-12_P_-INDEX
DB25-13_P_INDEX
P?
JMPR 3
U10
AM26LS32ACNSR
(or AM26LV32EINSR)
ENC_I-
ENC_I+
SPINDLE_NDX
ENC_QEA
ENC_A+
ENC_A-
ENC_QEB
ENC_B+
ENC_B-
R12
4.7K
R13
4.7K
J3
D Connector 15
ENC_A-
ENC_A+
ENC_B-
ENC_I+
ENC_I-
ENC_B+
If using AM22LV32E with VDD then connect 1-2 and 4-5.
If using AM22LS32A with VCC then connect 2-3 and 5-6 so 5V output of signals are translated to 3V.
U2
PIC18F4620
RESET
HALFNUT
CTRL_SEL
CHG_PMP
LIMITS
LCD_BACKLITE
BEEP
SPINDLE_NDX
ESTOP
CTRL_QEA
CTRL_QEB
STATUS_1
STATUS_2
LCD_R/W
LCD_RS
MOTOR_LATCH
KEY_ROW
KEY_COL
SPI_CLK
SPI_MISO
SPI_MOSI
DB_0
DB_1
DB_2
DB_3
DB_4
DB_5
DB_6
DB_7
LCD_E
To FAN connector on ELS
P6
Header 2
100uF 35V
C11
C12
0.01uF 50V
U9
UA7805UC
100uF 6.3V
C13
C14
0.01uF 50V
R2
10K
R3
1K
C9
0.1uF 25V
ICD Programmer Connector
J1
P17_RB2_PGC1
P18_RB3_PGD1
P13_MCLR
R10
10R
R11
10R
C3
0.1uF 25V
C4
0.1uF 25V
C1
0.1uF 25V
C2
0.1uF 25V
L1
INDUCTOR1
U1B
2 of 2
PIC32MK1024MCM064T-I/PT
AVDD
VBUS
VUSB3V3
VDD
VSS
AVSS
C7
0.1uF 25V
U8
LM2937ES-3.3/NOPB
C8
1.0uF 6.3V
P13_RA0__HALFNUT
R8
RES
HALFNUT
R9
RES
Drop max 5V to max 3V
Puts 1M in parallel with 1M on ELS
4950 Ohms at 5K pot full CW
so pot still pretty linear.
AUTOMATION ARTISANS INC.
* PIC32 to PIC18F4620 Adaptor
* =CompanyName
P:\ELeadscrew\PIC32\Drawings\PIC32-ELS99\PIC32-ELS99.ddb - Copy of PIC32_ELS_TQFP64a.sch
Size
Tabloid
FCSM No.
DWG No.
*
Rev
0.00a
Scale
13-Aug-2023
15:10:31
Sheet
1 of 1