Comments:

Board can be powered by 8-28 VDC or 24VAC
SiLab uC is powered up first, then
  it controls the MX286 start up
SiLab uC does these functions:
  - Controls MX286 power up sequence
  - USB Device to Console conversion
  - Controls MX286 Sleep mode
  - Can read Push Switch for Wake-up
  - Measures Analog Power Rails
  - Controls SuperCap charging
  - Can turn on Blue LED

All Parts are Industrial Temp

Rev. A --> B Changes

1) Changed to Vertical battery holder
2) Changed NAND to eMMC
3) Changed to SiLab micro
4) Changed RTC chip to ST Micro
5) Current Loop can be controlled
6) Added SPI Flash for booting
7) Added accelerometer option
8) Added SuperCap Option
9) Bluetooth now has UART HS
10) Changed FPGA to MACH X02
11) Added CAN J1939 RC to both ports

Serial Port Usage

UART0 --> BlueTooth or other
UART1
UART2
UART3
UART4
MAX3100
MUX
Daughter Card (TTL)

UART1
UART2
UART3
UART4
MAX3100
MUX
Daughter Card (TTL)

- Can run on Blue LED

Rev. A --> B Changes

2) Changed NAND to eMMC
3) Changed to SiLab micro
4) Changed RTC chip to ST Micro
5) Current Loop can be controlled
6) Added SPI Flash for booting
7) Added accelerometer option
8) Added SuperCap Option
9) Bluetooth now has UART HS
10) Changed FPGA to MACH X02
11) Added CAN J1939 RC to both ports
USB Device Port and SiLab uC

SiLab 4.7V

24 mA max load

USB Device Port

Program

A/D

Scale = 5.57%

Scale = 44.6%

Scale = 50%

Scale = 50%

A/D full scale = 2.50V

Push Switch

Blue LED
MX286 ARM9 CPU

UARTs, ADC

SD Card
SPI Boot

NAND, PWM

JTAG, I2C

These signals are on the same MX28 pins on both Rev.A and Rev.B

- WIFI_IRQ
- FPGA_IRQ
- DC_DIO4 thru DIO6
- PUSH_SW#
- FPGA_29
- LCD_00 thru D06

MX286 adds 4 CAN signals and ball D7

SD Card

 SPI Boot

 LCD

Hard strapped for SPI

EN_SPI_BOOT_FLASH is set low by CPU after done booting from SPI
Then SPI signals are changed to UART2 and UART3 functions

All JTAG have 47K internal pull up except RTCK
PSWITCH can be driven to 3.3V if a series 10K res is used.
Length of this trace is equal to (CLK + Data) lengths
Data = Average length of all data traces

DDR2 SDRAM (128 or 256 MByte)
8-28 VDC or AC

Power Input

USB and Daughter Switched Power

Switched 5V Power

Rise time of both outputs measured at ~1V/ms
10/100 Ethernet 4-Port Switch

"0111" = RMII MAC mode

MX283

NC on MX283

1.2V Regulator

Strapped for RMII MAC mode with 3.3V Levels

Auto MDIX is supported
Polarity Correction also supported
Port #0

10/100 MagJack

Port #1

10/100 MagJack
Flash Memory

Micro SD Card Socket

Edge Conn.

SPI Boot Flash

eMMC 4GB

Technologic Systems  Date  Sept. 1, 2015
Title: TS-7680  NAND and SD Card
Rev: B  Designer  Sheet  10 of 20
RTC and Host USB

ST Micro RTC

External Host USB Port

SMT RA LEDs

Boot Jumpers
Mod Bus RS-485 and CAN Ports

Modbus Power Switch

RS-485 Driver

Modbus RJ45

CAN_0 Transceiver

TJA1040 allows low power 15 uA mode
WiFi Radio
(Optional Feature)

VBAT must power up first

1.8V Levels

DAC
14V Supply

DIO_0

Sinks 500 mA

Sinks 500 mA

Sinks 500 mA
FPGA required for:
- Auto-485 for two UARTs
- PWMs for DACs
- MUX for all UARTs
- BlueTooth Level Shifting
- HD4 Daughter Card (Future)

UART2 and UART3 changed to SPI when Booting from SPI

R126 pop when WiFi is
10-bit DACs

Gain = 3.3

150 Hz low pass filter

0-10V Out

Relays

Gain = 3.3

150 Hz low pass filter

0-10V Out
Analog In Channels

By adjusting resistor values
All A/D Inputs can be converted
to Bipolar, but must remove FETs

Bipolar Analog Inputs
-5V to +5V Input Range
SuperCap 20 Second Power Hold
(Optional Feature)

20 seconds assumes 3 watt load
Accelerometer
(Optional Feature)
24 Screw Term. Positions

Top Row

Right

Left

Bottom Row

Right

Left

DC Header

17 STC positions go to HD4

FPGA_21, 23, 25, 27, 29 go to MX286 (5)
FPGA_22 thru FPGA_35 go to FPGA (14)
FPGA_29 to SiLab uC

J1939 Shield
Option