Optional Components/Features Summary

OBD-II Option:
Requires parts on Page 30 of schematic
ADD: CN9, U57, U60
REMOVE: CN17
6UL Serial Ports

All 4 RS-232 levels
Mikro Bus UART

FPGA Serial Ports

Nimbelink with Flow Ctrl
Two 485 ports with TX_EN
DMX port - bastard format
GPS UART
OBD-II UART
6UL Ethernet
Daughter Card Interface

10/100 MagJack

10/100 MagJack

Technologic Systems  Date Aug. 22, 2018
Title: TS-7120
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6UL LCD

Daughter Card Conn.

2.8 inch LCD Back Light Driver

LCD 2.8V Reg.

Title: Rev. Designer Sheet of TS-7120

Technologic Systems Date Aug. 22, 2018

Title: TS-7120

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6UL EIM

6UL SDIO

6UL EIM
6UL Power

when mains off
from battery

30 uA typ

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Title: TS-7120
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SuperCap 20 Second Power Hold

5V_A
EN_CHRG
SILAB_PWM

Supper Cap Charging Circuit

Super Cap (20 sec.)

Super Cap Monitoring

MAIN_4.7V
AN_MAIN_4.7V
SUP_CAP_PLUS
POWER_FAIL
AN_SUP_CAP_1
AN_SUP_CAP_2
AN_CHRG
USB Device Port and SiLab uC

USB Device

SiLab 4.7V

Program

A/D full scale = 2.50V

SiLab LED

Push Switch

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Estimated to be < 400 ms
to configure GX22 from SPI

MSEL and JTAG must use 2.5V power
FPGA Stuff

Factory Programing Interface

Bottom

Top

Edge Conn.

Title: FPGA Stuff

Date: Aug. 22, 2018

Technologic Systems

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Sheet 19 of 34
USB2 Hub

Dual USB Conn.
Internal USB
Daughter Card

Rise time of both outputs measured at ~1V/ms
RS-232 Transceiver

3.3V --> 5V
Level shifter

UART4 also goes to OBD Controller
To CN32
To COM Header
To DMX RJ45
To CN17

RS-485 Drivers

COM Header

CAN2 Transceiver

No Chrg Jumper
Analog Inputs 0-3 --> 0-25 mA or 0-5V
Analog Inputs 4-5 --> 0-10V

HART compatible 4-20 mA

- 147 mV DC at 0 mA
- 4.07V DC @ 20 mA
- 4.66V DC @ 23 mA
- 500 mV p-p for tones

12 KHz corner
5.2 KHz corner

17 KHz corner

3 Vp-p needed at DAC_A
to get 500 mV p-p at TVS

1 uF forms high pass
- corner at 140 Hz

10.7K par 200 par 950 = 163 ohms

HART Protocol = Bell 202

Half Duplex 1200 baud
FSK, 1200 Hz = Mark
2200 Hz = Space

Used for Caller ID in NA
HART compatible 4-20 mA

147 mV DC at 0 mA
4.07V DC @ 20 mA
4.66V DC @ 23 mA
500 mV p-p for tones

17 KHz corner 5.2 KHz corner
12.2 KHz corner

HART compatible 4-20 mA

147 mV DC at 0 mA
4.07V DC @ 20 mA
4.66V DC @ 23 mA
500 mV p-p for tones

17 KHz corner 5.2 KHz corner
12.2 KHz corner

Only one true

TX_CL HART

Gain = 2
5.2 KHz low pass

Analog 5V

5.2 KHz low pass
4 Channels of 8-bit DAC

6 Channels of 12-bit A/D

CH0 thru CH3 = 0-25 mA or 0-5V

10-bit A/D

Dual 4:1 MUX

Can get effective 12-bit resolution

1 Mega-Sample/sec.

8-bit DAC
Title: TS-7120

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Dig Inputs

Dig IN TVS

Comparator

Sinks 500 mA

Max. Input = 30V

Sinks 500 mA

Max. Input = 30V

Trips at 1.0A

DIO_0

DIO_1
PWM --> 4-20 mA Current Loop Transmitters

0-25 mA TX full range

400 kHz non-overlapping phases

4-20 mA

ISO 12V

3.5 mA

A/D full scale = 2.50V

10-bit

62 KHz PWM

1200 and 2200 Hz

Tones are 500 mV p-p

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Title: TS-7120
Rev: P1 Designer Sheet 32 of 34
2 x 8 Screw Term.

Top Row

Bottom Row

DMX
RJ45