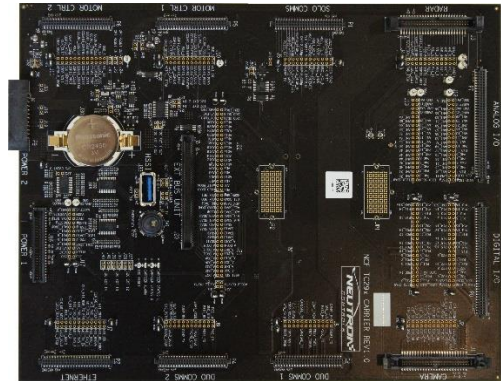# REDLINE™
RAPID ENGINEERING DEVELOPMENT SYSTEMS

Modular Platforms Designed by Engineers for Engineers

RDL-DEVCDP-001

BASE CARRIER DEVELOPMENT PLATFORM FOR USE WITH AURIX™ MCU PLATFORM MODULE 1ST AND 2ND GENERATIONS

Overview

The REDline™ Carrier board works as a base, or motherboard, interconnecting our AURIX™ MCU Platform Modules to any number of peripheral modules servicing dedicated and generic MCU functions.

The Carrier board provides connectivity between all MCU Platform Modules and peripheral connectors via two 200-position pad arrays.

This board allows 100% of the MCU functional connectivity down to a particular peripheral module, even for largest 516-pin BGA package.

Easily accessible and clearly marked test points provide hassle-free access to 100% of the routed signals. All test points are arranged on a grid allowing the use of press-fit headers when group signal probing is required.
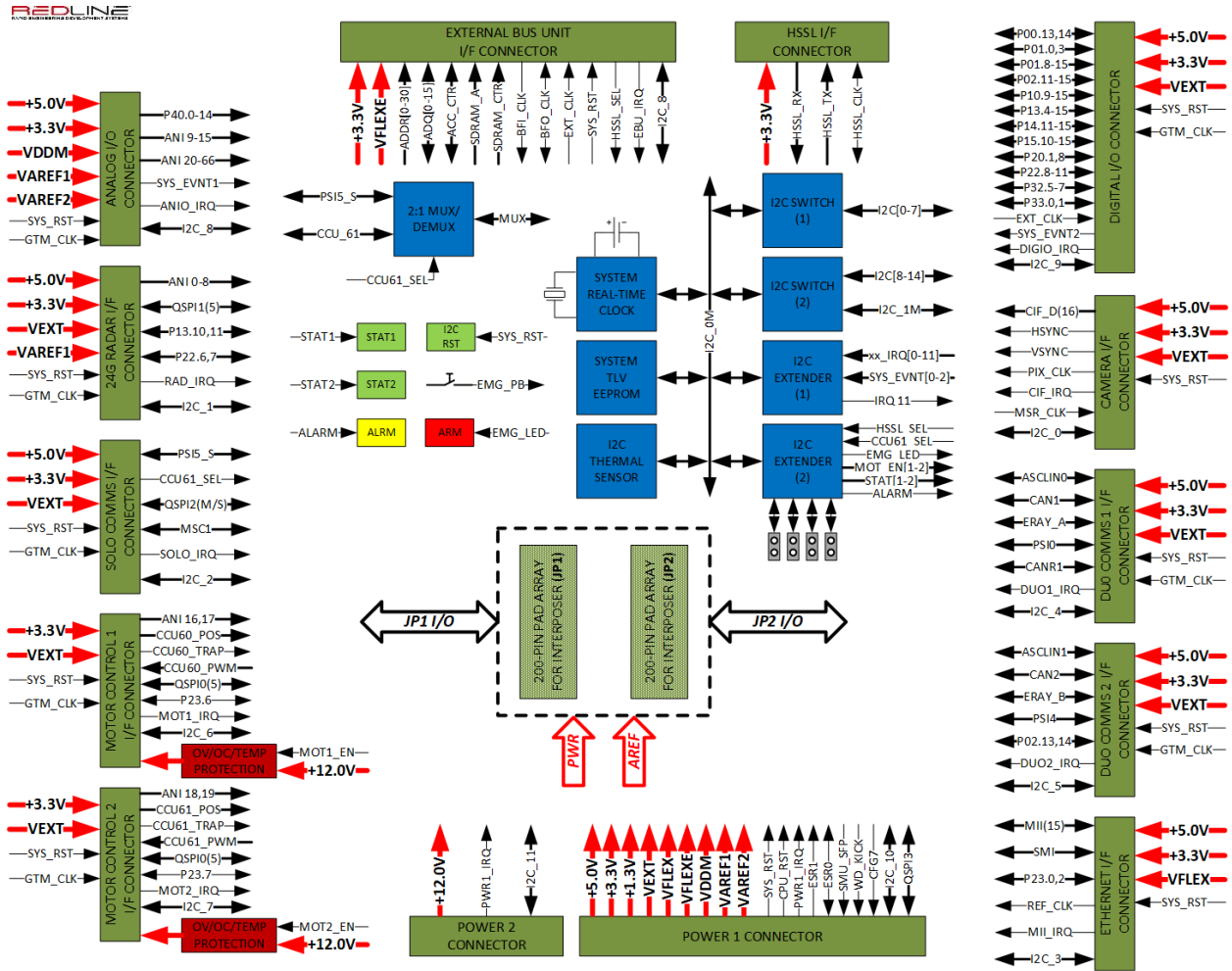
Separated digital and analog signal domains.

A complete hardware development support package is available including: schematics, BOM, layout, Gerbers, PCB stack-up, and high-speed signal design rules.

Features

- 400-position pad array with spring-leaf mounted interposers allows for easy MCU Platform Module exchange.
- 14 dedicated peripheral connectors covering: Ethernet, DuoComms1/2, Camera, Digital/Analog I/O, 24G Radar, SoloComms, Motor Control1/2, Power1/2, EBU and HSSL.
- Reliable 1.27mm pitch dual row connectors serving high current and high-speed signal applications.
- Versatile External Bus Unit (EBU) slot allows for: SDRAM, SRAM, PSRAM, NOR flash and FPGA parallel bus prototyping.
- Real-Time Counter with battery back-up for uninterrupted time stamping and logging.
- Overcurrent protection on +12V supply to Motor Control1/2 modules.
- Emergency Shutdown simulation pushbutton with red LED arming indication.
- Twisted pair ribbon cable connection allowing flexible Sensor and Radar modules' positioning and helping reduce EMI profile.
- "Status1/2" and "Alarm" s/w controlled LED.

NEUTRON
CONTROLS

Block Diagram

REDLINE

ANALOG I/O CONNECTOR
+5.0V, +3.3V, VDDM, VAREF1, VAREF2, SYS_RST, GTM_CLK
P40.0-14, ANI 9-15, ANI 20-66, SYS_EVNT1, ANIO_IRQ, I2C_8

EXTERNAL BUS UNIT I/F CONNECTOR
+3.3V, VFLEXE, ADDR[0-30], ADQ[0-15], ACC_CTR, SDRAM_A, SDRAM_CTR, BFI_CLK, BFO_CLK, EXT_CLK, SYS_RST, HSSL_SEL, EBU_IRQ, I2C_8

HSSL I/F CONNECTOR
+3.3V, HSSL_RX, HSSL_TX, HSSL_CLK

DIGITAL I/O CONNECTOR
P00.13,14, P01.0,3, P01.8-15, P02.11-15, P10.9-15, P13.4-15, P14.11-15, P15.10-15, P20.1,8, P22.8-11, P32.5-7, P33.0,1, EXT_CLK, SYS_EVNT2, DIGIO_IRQ, I2C_9
+5.0V, +3.3V, VEXT, SYS_RST, GTM_CLK

PSI5_S, CCU_61, 2:1 MUX/DEMUX, MUX, CCU61_SEL

24G RADAR I/F CONNECTOR
+5.0V, +3.3V, VEXT, VAREF1, SYS_RST, GTM_CLK
ANI 0-8, QSPI1(5), P13.10,11, P22.6,7, RAD_IRQ, I2C_1

STAT1, STAT2, ALARM, ARM
I2C RST, SYS_RST-, EMG_PB, EMG_LED-

SYSTEM REAL-TIME CLOCK
SYSTEM TLV EEPROM
I2C THERMAL SENSOR

I2C SWITCH (1) — I2C[0-7]
I2C SWITCH (2) — I2C[8-14], I2C_1M
I2C EXTENDER (1) — xx_IRQ[0-11], SYS_EVNT[0-2], IRQ 11
I2C EXTENDER (2) — HSSL_SEL, CCU61_SEL, EMG_LED, MOT_EN[1-2], STAT[1-2], ALARM
I2C_0M

CAMERA I/F CONNECTOR
CIF_D(16), HSYNC, VSYNC, PIX_CLK, CIF_IRQ, MSR_CLK, I2C_0
+5.0V, +3.3V, VEXT, SYS_RST

SOLO COMMS I/F CONNECTOR
+5.0V, +3.3V, VEXT, SYS_RST, GTM_CLK
PSI5_S, CCU61_SEL, QSPI2(M/S), MSC1, SOLO_IRQ, I2C_2

MOTOR CONTROL 1 I/F CONNECTOR
+3.3V, VEXT, SYS_RST, GTM_CLK
ANI 16,17, CCU60_POS, CCU60_TRAP, CCU60_PWM, QSPI0(5), P23.6, MOT1_IRQ, I2C_6
OV/OC/TEMP PROTECTION — MOT1_EN, +12.0V

MOTOR CONTROL 2 I/F CONNECTOR
+3.3V, VEXT, SYS_RST, GTM_CLK
ANI 18,19, CCU61_POS, CCU61_TRAP, CCU61_PWM, QSPI0(5), P23.7, MOT2_IRQ, I2C_7
OV/OC/TEMP PROTECTION — MOT2_EN, +12.0V

DUO COMMS 1 I/F CONNECTOR
ASCLIN0, CAN1, ERAY_A, PSI0, CANR1, DUO1_IRQ, I2C_4
+5.0V, +3.3V, VEXT, SYS_RST, GTM_CLK

DUO COMMS 2 I/F CONNECTOR
ASCLIN1, CAN2, ERAY_B, PSI4, P02.13,14, DUO2_IRQ, I2C_5
+5.0V, +3.3V, VEXT, SYS_RST, GTM_CLK

ETHERNET I/F CONNECTOR
MII(15), SMI, P23.0,2, REF_CLK, MII_IRQ, I2C_3
+5.0V, +3.3V, VFLEX, SYS_RST

200-PIN PAD ARRAY FOR INTERPOSER (JP1) — JP1 I/O
200-PIN PAD ARRAY FOR INTERPOSER (JP2) — JP2 I/O
PWR, AREF

POWER 2 CONNECTOR
+12.0V, PWR1_IRQ, I2C_11

POWER 1 CONNECTOR
+5.0V, +3.3V, +1.3V, VEXT, VFLEXE, VDDM, VAREF1, VAREF2, SYS_RST, CPU_RST, PWR1_IRQ, ESR1, ESR0, SMVU_SFP, WD_KICK, CFG7, I2C_10, QSPI3

Compatibility

The Module is designed to work with AURIX™ MCU Platform Modules' product line.

Part Number: **RDL-CPU29w-SSxx-EVR13yy-zzz** (see datasheet for exact ordering options)

Check with Neutron Controls sales team for peripheral module P/N compatibility.

Example P/N: **RDL-ITFETH-001** (Ethernet 10BASE-T/100BASE-TX Module with RJ-45 Line Connector and MII Interface)

Ordering Information

Module Part Number: **RDL-DEVCDP-00x** (see datasheet for exact ordering options)

Supplier: Neutron Controls, 350 Palladium Drive, Suite 102 Ottawa, Ontario, Canada K2V 1A8

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