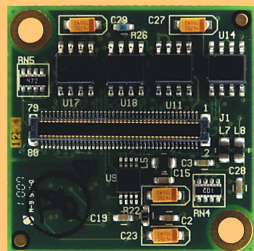
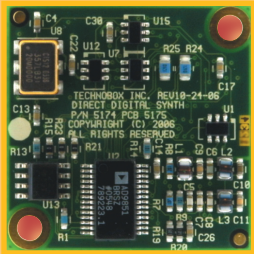
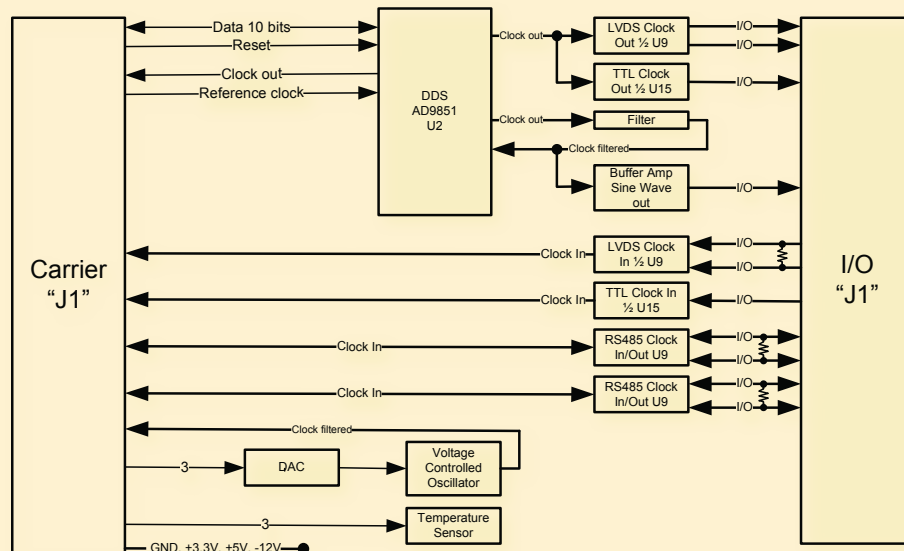


Conversion Module

Programmable, Precision Adjustable Clock



5174



- Programmable, precision clock ECM
- Multiple input and output types
- Analog Devices D9851 DDS
- 0-to-45 MHz with 0.028 Hz steps (20 MHz clock source)
- TTL, RS485, LVDS Input/Output
- Sine Wave Output, 0 to 1V
- Programmable phase adjustment
- On-board 20 MHz VCO +/- 50 ppm absolute pull range
- 12-bit DAC VCO adjustment
- Temperature sensor
- On-board serial identification circuit
- Industrial temperature
- RoHS compliant
- Patented

Specifications

Temperature (Operating):
-40 to +85 degrees C

Temperature (Storage):
-55 to +100 degrees C

Altitude: Not Specified or Characterized. Typical similar equipment is at 15,000 ft.

Humidity (Operating/Storage):
5% to 90% non-condensing

Vibration: Not specified or Characterized

Shock: Not specified or Characterized

MTBF: Available on request

Weight: 3 grams

Power: TBD

Ordering Information

5174: Precision, adjustable clock source, CMOS, LVDS, sine wave

Technobox, inc.

140 Mount Holly Bypass
Unit 1
Lumberton, NJ 08048

Tel: 609-267-8988
Fax: 609-261-1011

www.technobox.com

The Technobox P/N 5174 Clock ECM module provides frequency synthesis functions. Built around the Analog Devices D9851 DDS, the module supplies 0-to-45 MHz output, programmable in steps of 0.028 Hz, with a 20 MHz clock source. Phase adjustment is programmable, with sine wave output 0-to-45 MHz, 0 to 1V. There is one LVDS clock output and one 3V TTL output from DDS.

The module features on-board 20 MHz VCO +/- 50 ppm absolute pull range on the ECMDDS and a 12-bit DAC for VCO adjustment.

Additional features include a temperature sensor for frequency compensation and one 5V or 3V TTL input to the ECM carrier. Two RS485 I/O are individually programmable from the carrier. There is also one LVDS input terminated in 120 ohms to the carrier.

The 5174 provides two major functions it is a precision Voltage Controlled oscillator board and a variable frequency source board. These features can be use together or independently.

Variable Frequency Source The 5174 provides a high resolution variable clock source. The variable clock source is based upon a reference clock supplied by the carrier. The FPGA on the carrier can use the Local Oscillator/ PLL, the VCO, or the various inputs as the reference clock source.

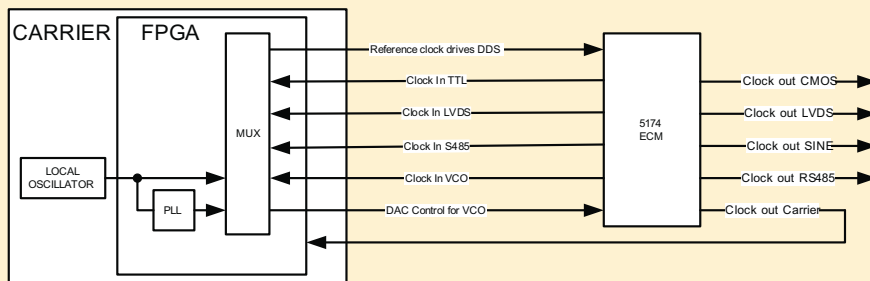


Figure 1 Clock architecture

Voltage Controlled Oscillator A 20 MHz VCO controlled by an on-board DAC provides a pullable frequency output to the ECM carrier. A temperature sensor is provides readings to compensate for frequency change vs temperature effects.

User IO	J1 Pin number	Direction J1	Description
IO0	16	OUTPUT	Sine Wave output at programmed frequency
IO1	18	POWER	GND
IO2	28	OUTPUT	LVDS+ output at programmed frequency
IO3	30	OUTPUT	LVDS- output at programmed frequency
IO4	52	INPUT	LVDS+ input DA18
IO5	54	INPUT	LVDS- input DA18
IO6	64	OUTPUT	CMOS output at programmed frequency
IO7	66	POWER	GND
IO8	65	INPUT	CMOS input DA19
IO9	63	POWER	GND
IO10	53	BIDIR	RS485- transceiver DA20/DA22
IO11	51	BIDIR	RS485+ transceiver DA20/DA22
IO12	29	BIDIR	RS485- transceiver DA23/DA25
IO13	27	BIDIR	RS485+ transceiver DA23/DA25
IO14	17	POWER	GND
IO15	15	POWER	GND

Table 1 User IO signal connections

Carrier Data	J1 Pin number	J1 Direction	Description
DA0	10	BIDIR	DDS parallel data input/output D0
DA1	12	BIDIR	DDS parallel data input/output D1
DA2	22	BIDIR	DDS parallel data input/output D2
DA3	24	BIDIR	DDS parallel data input/output D3
DA4	34	BIDIR	DDS parallel data input/output D4
DA5	36	BIDIR	DDS parallel data input/output D5
DA6	46	BIDIR	DDS parallel data input/output D6
DA7	48	BIDIR	DDS parallel data input/output D7
DA8	58	BIDIR	DDS parallel data input/output D8
DA9	60	BIDIR	DDS parallel data input/output D9
DA10	70	INPUT	DDS reset
DA11	72	INPUT	DDS clock reference
DA12	71	INPUT	VCO DAC, sync signal
DA13	69	INPUT	VCO DAC, clock signal
DA14	59	INPUT	VCO DAC, data signal
DA15	57	INPUT	Temp sensor clock
DA16	47	OUTPUT	Temp sensor data
DA17	45	INPUT	Temp sensor chip select
DA18	35	OUTPUT	LVDS input from IO4 and IO5
DA19	33	OUTPUT	CMOS input from IO8
DA20	23	OUTPUT	Received data from RS485 transceiver IO10 / IO11
DA21	21	INPUT	Transmit enable when high for transceiver IO10 / IO11
DA22	11	INPUT	Transmit data for RS485 transceiver IO10 / IO11
DA23	9	OUTPUT	Received data from RS485 inputs IO12 / IO13
DA24	40	INPUT	Transmit enable when high for transceiver IO12 / IO13
DA25	41	INPUT	Transmit data for RS485 transceiver IO12 / IO13
DA26	42	OUTPUT	Variable Clock Source from DDS
DA27	39	OUTPUT	Pullable Clock Source from VCO

Table 2 Carrier DA signal connections

