PARK ITPDS–1020/2020

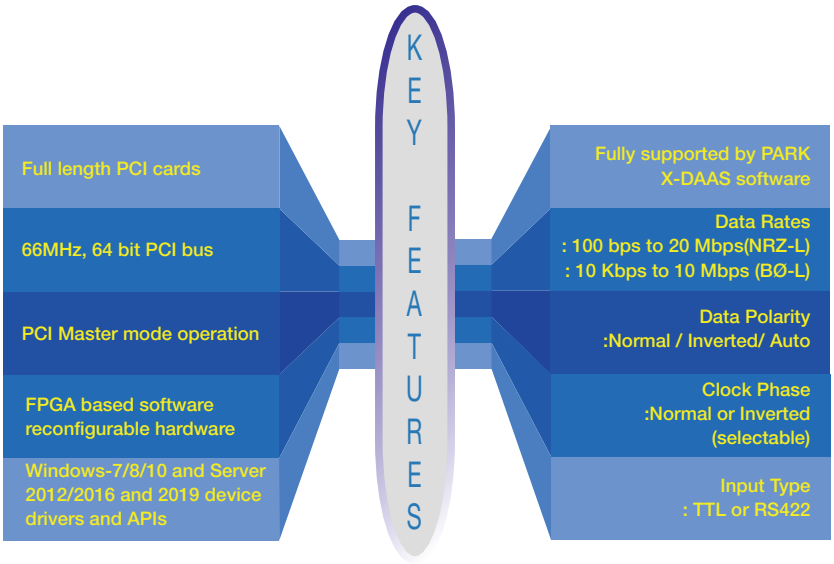
PCM Integrated Telemetry Decommutator/Simulator Processor

Overview

PARK ITPDS-X020 is single board solutions to cater for telemetry applications. PARK ITPDS-X020 products are PCI bus plug in boards.

The product supports PCM Frame Synchronization and PCM simulator. The product also supports randomization & De-randomizers with user defined polynomial. The PARK ITPDS are also equipped with internal IRIG-B time code readers. These time code readers can receive external time input in the form of 1 KHz modulated code or TTL level DC code or RS-232 (EIA) level DC code. PARK ITPDS-X020 operating at maximum bit rates of up to 20 Mbps.

PCC's PC based telemetry data processing software X-DAAS available as an Independent product, can configure, acquire and process telemetry data from each channel simultaneously.



Applications

- Telemetry Range Application for Aircrafts, Missiles, UAVs, Launch Vehicles etc
- Mobile Application, such as Mobile Telemetry Station or Ship based Telemetry

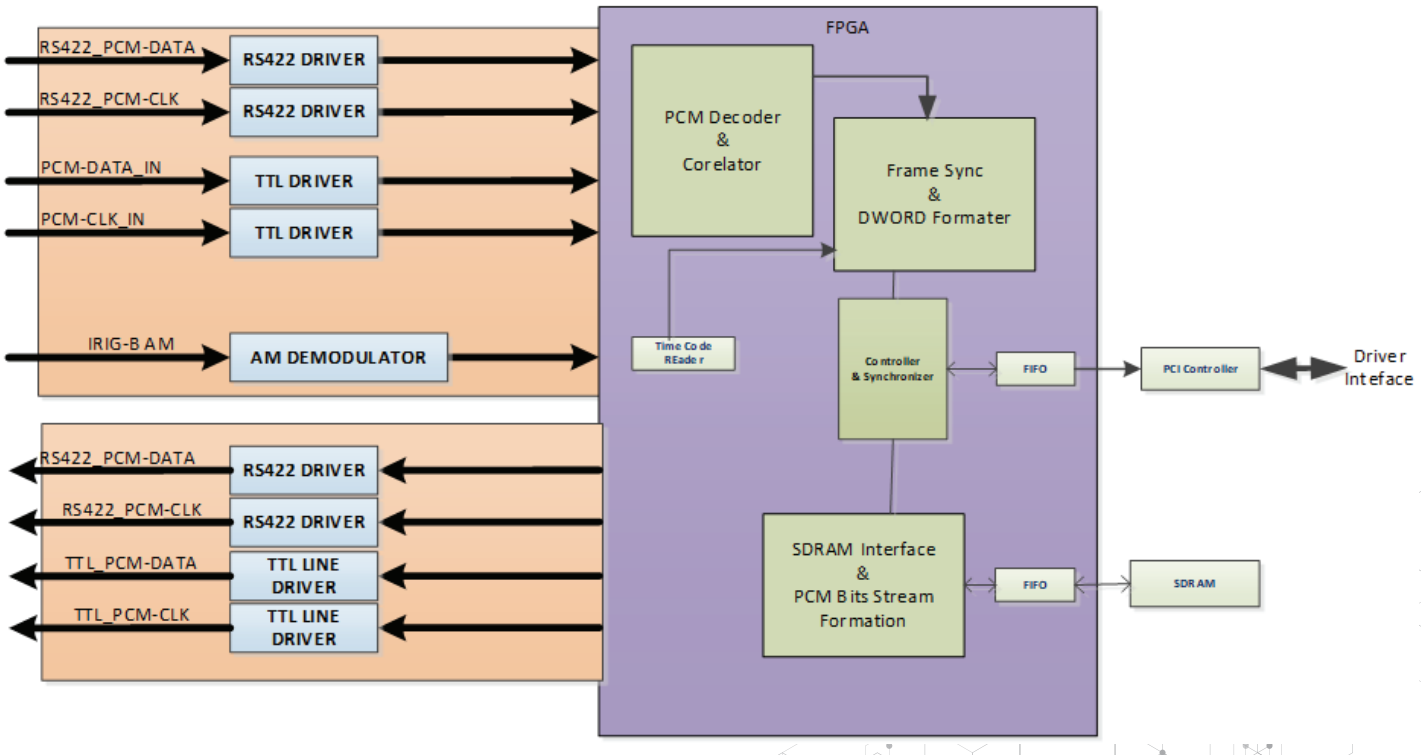


Figure 1 : Functional Block Diagram for PCM ITPDS-X020

PARK ITPDS–1020/2020

PCM Integrated Telemetry Decommutator/Simulator Processor

General Specifications

Decommutator specifications

PARAMETER	REMARKS
PCM INPUT CHARACTERISTICS	
External inputs	NRZ-L data and Clock TTL level inputs; NRZ-L data and clock, RS-422 compatible inputs. Independent input pins for each decommutator
Input sources	External TTL inputs, external RS-422 inputs, or output of one of the internal simulators
Data polarity	Normal, auto or inverted
Clock edge	Raising edge or falling edge software selectable
PCM FRAME CHARACTERISTICS	
Word length	8 to 32 bits (including parity if any)
Parity bit position	LSB or MSB
Sync length	8 to 64 bits
Bit ordering	LSB first or MSB first
Byte ordering	Big Endian or Little Endian
Words/frame	12 to 4096, including the words containing sync pattern Up to 512000 (Optional)
Data Rates	100 bps to 20 Mbps (NRZ-L) 10 Kbps to 10 Mbps (BØ-L)
PCM SUB FRAME CHARACTERISTICS	
Sub frame Sync	SFID, URC or FRC
Sub frame size	1 to 1024 frames
SFID method	Up / Down (SFID)
SFID position	Anywhere in the minor frame Words / sub frame: 4 Million (Max)
SEARCH and LOCK STRATEGY	
No. of frames from search to frame lock	1 to 256
No. of frames from frame lock to search	1 to 256
No. of sub frames from search to sub frame lock	1 to 256
No. of sub frames from sub frame lock to search	1 to 256
No. of bit errors in sync pattern	Programmable
No. of allowed bit slips	-3 to +3

Time Code Reader Specifications

INPUT CHARACTERISTICS	
Connector	Micro SMA
Time format	1 KHz modulated IRIG-B, TTL level DC code, RS-232 level DC code
Input signal level	0 to 0.5 V Low Level, 2.4 to 5 V High Level for TTL DC code -5 to -10 V High Level, +5 to 10 V Low Level for RS-232 DC code 0.5 to 6 V peak to peak for modulated IRIG-B
Modulated code Input impedance	10 K
Modulated code Input coupling	AC
Modulation depth	1:2.5 to 1:3.5

PARK ITPDS–1020/2020

PCM Integrated Telemetry Decommutator/Simulator Processor

PCM Simulator Specifications

PARAMETER	REMARKS
Output codes	NRZ-L, NRZ-M, NRZ-S, BiΦ-L, BiΦ-M, BiΦ-S, DM-M, DM-S and RNRZ-L
Minimum bit rate	10 bits/sec
Bit rate accuracy	± 0.01% of nominal data rate
Connectors	Independent sets of SAMTEC MMCX connectors (two per simulator), for TTL compatible clock and NRZ-L data outputs of simulator channels TTL level outputs as well as RS-422 compatible outputs are also available on a SAMTEC 36-pin VRDPC connector.
PCM FRAME CHARACTERISTICS	
Word length	8 to 32 bits (including parity if any)
Parity bit position	LSB or MSB
Sync length	8 to 64 bits
Bit ordering	LSB first or MSB first
Byte ordering	Big Endian or Little Endian
Words/frame	12 to 4096, including the words containing sync pattern Up to 512000 (Optional)
Data Rates	100 bps to 20 Mbps (NRZ-L) 10 Kbps to 10 Mbps (BØ-L)
PCM SUB FRAME CHARACTERISTICS	
Sub frame Sync	SFID, URC or FRC
Sub frame size	1 to 1024 frames
SFID method	Up / Down (SFID)
SFID position	Anywhere in the minor frame Words / sub frame: 4 Million (Max)

Signal Generation Capabilities

The simulator can simulate predefined subframes repeatedly. The following types of waveforms and data can be commutated into the subframe. Super commutation, normal commutation and sub commutation are possible.
The frequency of the simulated waveforms depends on the sub frame rate and the number of cycles per subframe.
The phase and amplitude of the waveforms are programmable.

- Sine and cosine waveforms
- Square waves
- Triangular and ramp signals
- Constant values

Error injection: Facility to inject errors in the sync and SFID patterns in defined bit positions in the selected range of frames in a sub frame, in programmed number of consecutive subframes

File playback: Raw data files created in PARK's proprietary log file format can be played back on the simulator output ports. Details of this format are provided along with the card

Setting up the PAR`K ITPDS-X020

This unit is configured using PARK X-DAAS GUI software

Unit Information

SETUP DATA	CHOICE	DEFAULT	NOTES
Manufacture	PCC	PCC	Name of manufacturer
Part Reference	PARK ITPDS-1020 PARK ITPDS-2020	PARK ITPDS-1020	Module variant part number
Serial Number	PCM/ITPDSX020-xxx/yy	--	Unique serial number for individual module xxx-Serial Number yy-Manufacturing Year

PARK ITPDS–1020/2020

PCM Integrated Telemetry Decommutator/Simulator Processor

Interface Details

The following tables gives the details of the Input and output of the PARK ITPDS ,

PCM Decommutator Signals

Sl No	Signal Name	J1 – 36 PIN SCSI connector Pin No
1.	TTL CLK1	1
2.	TTL DATA1	2
3.	GND	19
4.	RS422 DATA1+	3
5.	RS422 DATA1-	21
6.	RS422 CLK1+	4
7.	RS422 CLK1-	22
8.	TTL CLK2	5
9.	TTL DATA2	6
10.	GND	23
11.	RS422 DATA2+	7
12.	RS422 DATA2-	25
13.	RS422 CLK2+	8
14.	RS422 CLK2-	26
15.	Ext Time	18

PCM Simulator Signals

Sl No	Signal Name	J1 – 36 PIN SCSI connector Pin No
1.	TTL CLK OUT 1	10
2.	TTL DATA OUT 1	9
3.	GND	27
4.	RS422 DATA OUT 1+	11
5.	RS422 DATA OUT 1-	29
6.	RS422 CLK OUT 1+	12
7.	RS422 CLK OUT 1-	30
8.	TTL CLK OUT 2	14
9.	TTL DATA OUT 2	15
10.	GND	31
11.	RS422 DATA OUT 2+	15
12.	RS422 DATA OUT 2-	33
13.	RS422 CLK OUT 2+	16
14.	RS422 CLK OUT 2-	34

PARK ITPDS–1020/2020

PCM Integrated Telemetry Decommutator/Simulator Processor

Ordering Information

Part Number	Description
PARK ITPDS 1020	The ITP come as a single channel PCM Decommutator and PCM Simulator supporting up to 20 Mbps NRZ code & 10 Mbps BiPh-L. Its supports all standard features.
PARK ITPDS 2020	The ITP come as a dual channel PCM Decommutator and PCM Simulator supporting up to 20 Mbps NRZ code & 10 Mbps BiPh-L. Its supports all standard features.
PARK ITPDS 1020E	The ITP come as a single channel PCM Decommutator and PCM Simulator supporting up to 20 Mbps NRZ code & 10 Mbps BiPh-L. Its supports all standard features with the enhanced Frame Length support up to 512000
PARK ITPDS 2020E	The ITP come as a single channel PCM Decommutator and PCM Simulator supporting up to 20 Mbps NRZ code & 10 Mbps BiPh-L. Its supports all standard features with the enhanced Frame Length support up to 512000
PARK ITPDS xxxxy+C	+C the PCI card will be delivered with a mating cable assembly, TTL Data & Clock – Terminated on a BNC Female Connectors IRIG Time – Terminated on a BNC Female Connector RS422 Data & Clock – Terminated on a D-Dub 15 Pin

Supporting software

SOFTWARE	DETAILS
PCI ITP Driver	Driver support for Windows 7/8/10 and Server Edition 2012/2016/2019 Driver support for Linux on Request
PCC ITP GUI	GUI based software for Configuring of Simulator Card
PCC X-CAMP/X-DASS	GUI based software for Configuring, Acquisition, Monitoring and Processing

PARK ITPDS–1020/2020

PCM Integrated Telemetry Decommutator/Simulator Processor

This Page is Blank