NexTek Service

May 2004

FROM-II FPGA ROM MODULE

General Description

FROM-II is a miniature thru-hole mounted module which addresses the basic concerns of every FPGA based solution developer, namely: the making of surface mounted boards, programmming and reprogamming the FPGA device and providing clock and power. With a Xilinx Spartan II™ FPGA on board and a choice of FPGAs from 50k to 150k gates, FROM-II is a roaring–to-go module which has enough resources and flexibility to take on any application of general use. The module is operated with a single 5 volts power supply and contains a very low dropout voltage (0.4V) to produce 3.3V and 2.5V outputs. The on-board crystal oscillator socket accepts modules that come in DIP 14 package. Output of the oscillator is tied to a clock input of the FPGA and the same is given on an I/O pin.

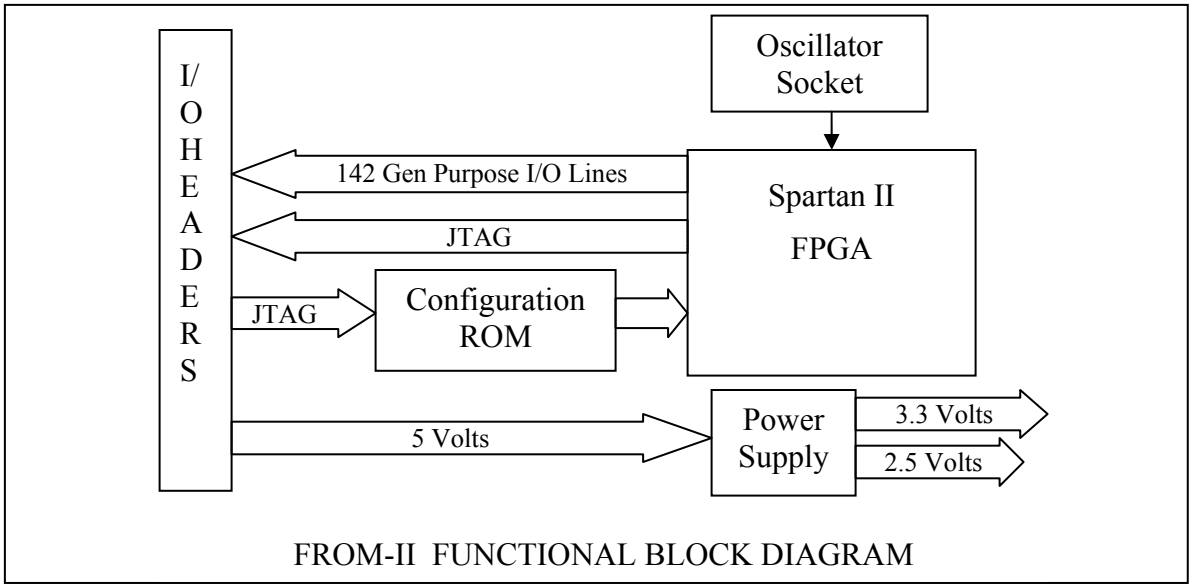
The module is fully JTAG compliant and the onboard flash memory can be programmed to permanently store the configuration data.

JTAG cable for configuring the module is also available from NexTek Service.

The FROM-II can be housed on FPGA Trainer Board, which has a built in JTAG circuitry. The Trainer Board connects directly to the parallel port of a Personal Computer.

Features

- IEEE Standard 1149.1 boundary-scan (JTAG) support
- On-Board Power Supply
- On Board Oscillator Socket
- Spartan II™ FPGA
- Spartan II™ required Flash Re-programmable ROM (xcf01s).
- Single 5 Volt Supply operation
- JTAG command initiation of standard FPGA configuration
- 0° to 85° Celsius and -35° to 85° Celsius options available



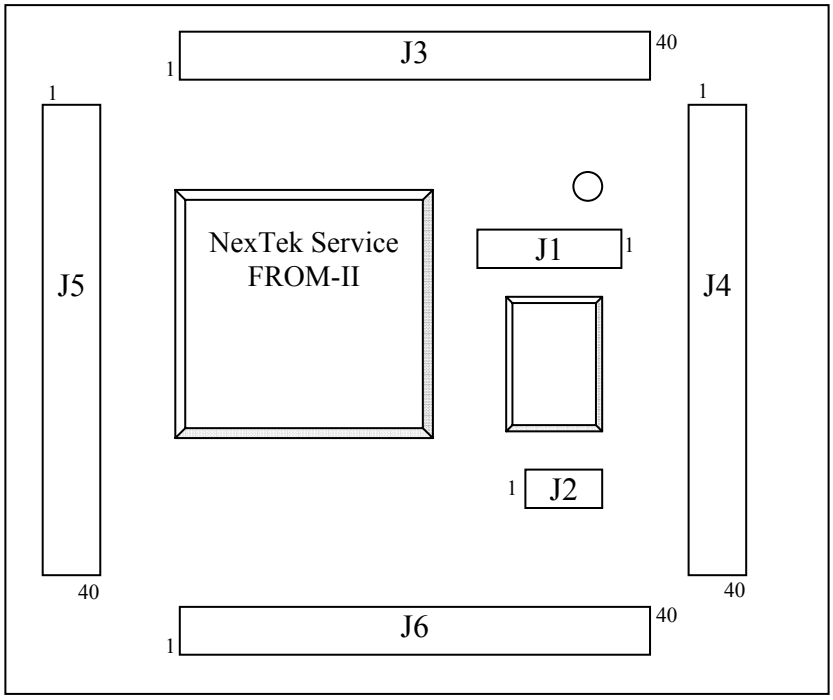
FROM-II FUNCTIONAL BLOCK DIAGRAM

Electrical Characteristics

Symbol	Name	Condition	Min	Nom	Max	Unit
V_{IN}	Input Voltage	Without Oscillator Module	3.7	5	20	Volts
V_{IN}	Input Voltage	With Oscillator Module	4.5	5	5.5	Volts
I	Input Current		33		85	mA
I_L	Leakage Current		-20		+20	µA

Pin Function Description

Pin Name	Direction	Description
GND	Input	Power return connection
VIN	Input	Positive pin for Input voltage (5V nominal)
I/O	Input / Output	General Purpose Input / Output Pin
NC		Not Connected
INHIBIT	Input	When high, turns the on board power supply in OFF mode
GCK	Input	Clock input pins that connect to Global Clock Buffers. These pins become user inputs when not needed for clocks.
CLK_EXT	Input / Output	Clock Output of the Oscillator Module. Can also be used as clock input for the module in the absence of Oscillator module. Connected to GCK1 of FPGA.
VCCO	Output	3.3 Volts Output fro Boundary Scan
TCK	Input	JTAG Test Clock
TMS		Mode Select Pin for JTAG.
TDI	Input	Serial Input to JTAG Instructions and Data Registers
TDO	Output	Serial output for all JTAG instruction and Data Registers



FROM-II CONNECTOR/HEADER LAYOUT (TOP VIEW)

FROM-II PINOUT TABLE

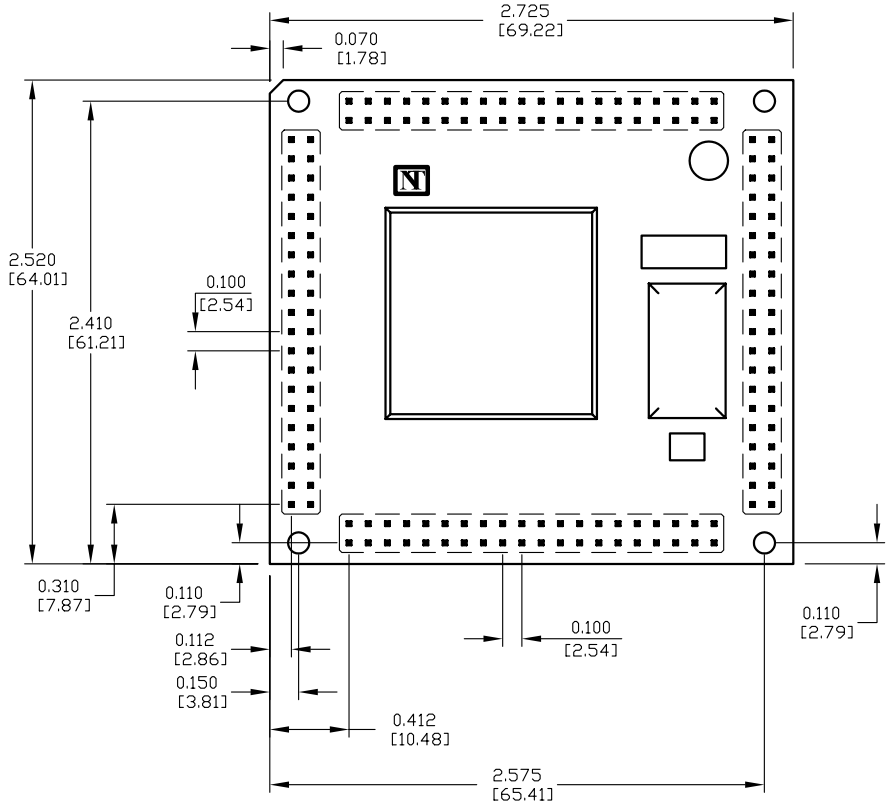
Connector	Pin	Signal		Connector	Pin	Signal
J1	1	GND		J2	1	VIN
J1	2	VCCO		J2	2	GND
J1	3	TCK		Pins on Connector J2 are also short circuited with pins on Connector J6 pins 39 and 40		
J1	4	TMS				
J1	5	TDI				
J1	6	TDO				

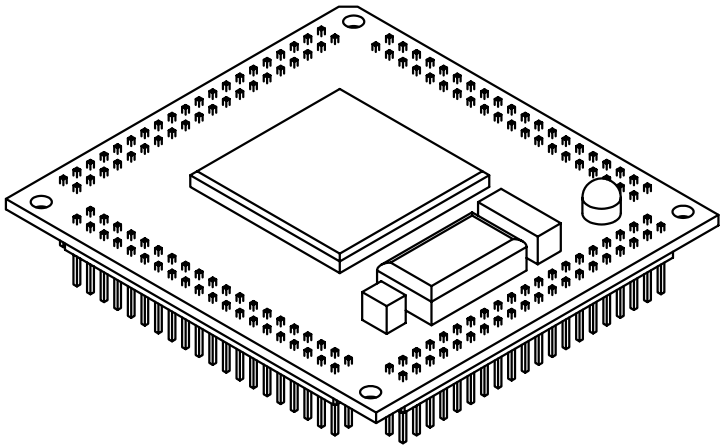
FROM-II PINOUT TABLE

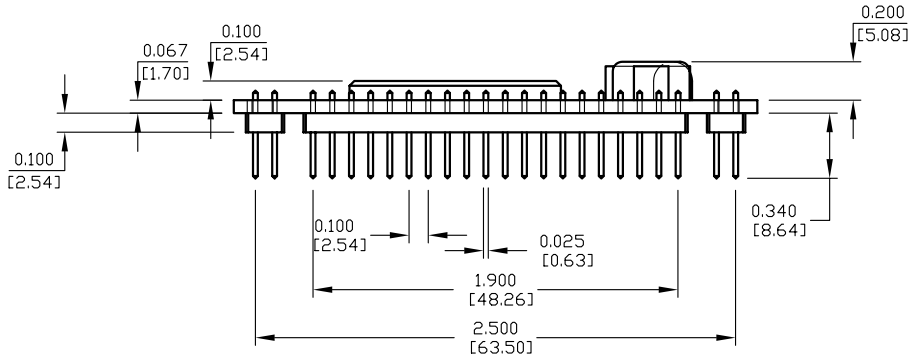
Connector	Pin	Signal	FPGA		Connector	Pin	Signal	FPGA
J3	1	GND			J4	1	GND	
J3	2	NC			J4	2	TDO	p157
J3	3	NC			J4	3	CLK_EXT	p77
J3	4	NC			J4	4	RESET	p110
J3	5	I/O154	p154		J4	5	TMS	p2
J3	6	I/O153	p153		J4	6	TDI	p159
J3	7	I/O152	p152		J4	7	TCK	p207
J3	8	I/O151	p151		J4	8	I/O102	p102
J3	9	I/O150	p150		J4	9	I/O101	p101
J3	10	I/O149	p149		J4	10	I/O100	p100
J3	11	I/O148	p148		J4	11	I/O99	p99
J3	12	I/O147	p147		J4	12	I/O98	p98
J3	13	I/O142	p142		J4	13	I/O97	p97
J3	14	I/O146	p146		J4	14	I/O96	p96
J3	15	I/O141	p141		J4	15	I/O95	p95
J3	16	I/O140	p140		J4	16	I/O94	p94
J3	17	I/O138	p138		J4	17	I/O90	p90
J3	18	I/O139	p139		J4	18	I/O89	p89
J3	19	I/O135	p135		J4	19	I/O87	p87
J3	20	I/O136	p136		J4	20	I/O88	p88
J3	21	I/O133	p133		J4	21	I/O84	p84
J3	22	I/O134	p134		J4	22	I/O86	p86
J3	23	I/O129	p129		J4	23	I/O82	p82
J3	24	I/O132	p132		J4	24	I/O83	p83
J3	25	I/O126	p126		J4	25	I/O81	p81
J3	26	I/O127	p127		J4	26	I/O75	p75
J3	27	I/O123	p123		J4	27	I/O73	p73
J3	28	I/O125	p125		J4	28	I/O74	p74
J3	29	I/O121	p121		J4	29	I/O70	p70
J3	30	I/O122	p122		J4	30	I/O71	p71
J3	31	I/O119	p119		J4	31	I/O68	p68
J3	32	I/O120	p120		J4	32	I/O69	p69
J3	33	I/O114	p114		J4	33	I/O63	p63
J3	34	I/O115	p115		J4	34	I/O67	p67
J3	35	I/O112	p112		J4	35	I/O61	p61
J3	36	I/O113	p113		J4	36	I/O62	p62
J3	37	I/O110	p110		J4	37	I/O59	p59
J3	38	I/O111	p111		J4	38	I/O60	p60
J3	39	I/O108	p108		J4	39	I/O57	p57
J3	40	I/O109	p109		J4	40	I/O58	p58

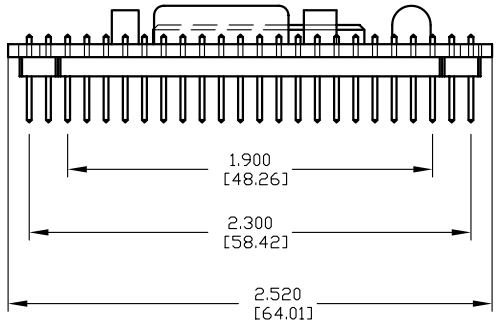
FROM-II PINOUT TABLE

Connector	Pin	Signal	FPGA		Connector	Pin	Signal	FPGA
J5	1	GND			J6	1	GND	
J5	2	NC			J6	2	I/O3	p3
J5	3	I/O161	p161		J6	3	I/O5	p5
J5	4	I/O160	p160		J6	4	I/O4	p4
J5	5	I/O163	p163		J6	5	I/O7	p7
J5	6	I/O162	p162		J6	6	I/O6	p6
J5	7	I/O165	p165		J6	7	I/O9	p9
J5	8	I/O164	p164		J6	8	I/O8	p8
J5	9	I/O167	p167		J6	9	I/O14	p14
J5	10	I/O166	p166		J6	10	I/O10	p10
J5	11	I/O172	p172		J6	11	I/O16	p16
J5	12	I/O168	p168		J6	12	I/O15	p15
J5	13	I/O174	p174		J6	13	I/O18	p18
J5	14	I/O173	p173		J6	14	I/O17	p17
J5	15	I/O176	p176		J6	15	I/O20	p20
J5	16	I/O175	p175		J6	16	I/O21	p21
J5	17	I/O179	p179		J6	17	I/O22	p22
J5	18	I/O178	p178		J6	18	I/O23	p23
J5	19	I/O181	p181		J6	19	I/O24	p24
J5	20	I/O180	p180		J6	20	I/O27	p27
J5	21	GCK3	p185		J6	21	I/O29	p29
J5	22	GCK2	p182		J6	22	INHIBIT	
J5	23	I/O188	p188		J6	23	I/O30	p30
J5	24	I/O187	p187		J6	24	I/O31	p31
J5	25	I/O189	p189		J6	25	I/O33	p33
J5	26	I/O191	p191		J6	26	I/O34	p34
J5	27	I/O192	p192		J6	27	I/O35	p35
J5	28	I/O193	p193		J6	28	I/O36	p36
J5	29	I/O194	p194		J6	29	I/O37	p37
J5	30	I/O195	p195		J6	30	I/O41	p41
J5	31	I/O199	p199		J6	31	I/O42	p42
J5	32	I/O200	p200		J6	32	I/O43	p43
J5	33	I/O201	p201		J6	33	I/O44	p44
J5	34	I/O202	p202		J6	34	I/O45	p45
J5	35	I/O203	p203		J6	35	I/O46	p46
J5	36	I/O204	p204		J6	36	I/O47	p47
J5	37	I/O205	p205		J6	37	I/O48	p48
J5	38	I/O206	p206		J6	38	I/O49	p49
J5	39	NC			J6	39	GND	
J5	40	NC			J6	40	VIN	









FROM-II MECHANICAL LAYOUT

All dimensions are in inches and [mm]

Ordering Information

NT-FROM-II-XXX -T

Where,

XXX is the number of logic gates FPGA to have. The values are:

'050' for 50,000 gates

'100' for 100,000 gates

and, '150' for 150,000 gates

T is the Temperature type of the module. The values are:

'C' for commercial range (0° Celsius to 75° Celsius)

and, 'I' for industrial version (-35° Celsius to 80° Celsius)

For pricing and further information:

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