

BitCraft: Visual Programming System for PIC18 microcontrollers.

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Note:

The execution times listed for VPS_P18 function blocks are based on an 8MHz external crystal and the use of the Phase Lock Loop (PLL) for an effective clock of 32MHz.

2.0 Logic Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB1	AND Gate 2-Input	22	1.25	FBlock14_Description.docx
FB2	AND Gate 3-Input	26	1.5	FBlock14_Description.docx
FB3	AND Gate 4-Input	28	1.75	FBlock14_Description.docx
FB7	AND Gate 8-Input	44	2.75	FBlock14_Description.docx
FB8	OR Gate 2-Input	20	1.25	FBlock14_Description.docx
FB9	OR Gate 3-Input	24	1.5	FBlock14_Description.docx
FB10	OR Gate 4-Input	26	1.75	FBlock14_Description.docx
FB14	OR Gate 8-Input	42	2.75	FBlock14_Description.docx
FB15	SR Latch	14	0.875	FBlock15_Description.docx
FB16	XOR Gate 2-Input	26	1.25	FBlock16_Description.docx
FB17	D-LATCH with Reset	38	0.75	FBlock17_Description.docx
FB18	TRAILING EDGE Detect	18	1.125	FBlock18_Description.docx
FB19	LEADING EDGE Detect	18	1.125	FBlock19_Description.docx
FB138	Byte AND	14	0.875	FBlock138_Description.docx
FB139	Byte OR	14	0.875	FBlock139_Description.docx
FB140	Byte XOR	14	0.875	FBlock140_Description.docx
FB141	Byte INVERT	10	0.625	FBlock141_Description.docx

3.0 Timing Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB30	ON-Delay Timer	34	2	FBlock30_Description.docx
FB31	OFF-Delay Timer	42	2.125	FBlock31_Description.docx
FB32	MONO-Stable Timer	48	2.375	FBlock32_Description.docx
FB33	MONO-Stable Timer retriggeable	44	2.125	FBlock33_Description.docx

4.0 Mathematical Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB120	ADD INT Values	44	4.375	-----
FB102	ADD FLOATING POINT Values	62	16.75	-----
FB122	SUBTRACT INT Values	44	5	-----
FB103	SUBTRACT FLOATING POINT Values	62	19.5	-----
FB124	MULTIPLY INT Values	44	10.375	-----
FB101	MULTIPLY FLOATING POINT Values	62	17	-----
FB126	DIVIDE INT Values	52	33.875	-----
FB100	DIVIDE FLOATING POINT Values	62	52	-----
FB105	ABSOLUTE of FLOATING POINT Value	24	1.5	FBlock105_129_Description.docx
FB129	ABSOLUTE of INT Value	18	1.875	FBlock105_129_Description.docx

FB170	INTEGRATOR for INT Values	100	35.125	FBlock170_Description.docx
FB171	DIFFERENTIATOR for INT Values	68	11.625	FBlock171_Description.docx

5.0 Comparator Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB12	SCHMITT Trigger	78	7.125	FBlock12_Description.docx
FB59	COMPARE for BYTE Values >, =, <	38	1.875	-----
FB92	COMPARE for INT Values >, =, <	74	3.5	-----
FB60	TEST if A>=B for INT Values	24	3	-----
FB61	TEST if A=B for INT Values	26	1.75	-----
FB64	TEST if A<B for FLOATING POINT Values	52	8	-----
FB65	TEST if A>B for FLOATING POINT Values	52	8.25	-----

6.0 Variable Test Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB93	TEST INT Value for +ve, =0, -ve	32	1.5	-----
FB98	TEST FLOATING POINT Value for +ve, =0, -ve	30	1.375	-----

7.0 Counter Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB38	16BIT UP-DOWN COUNTER with soft limits	140	7.5	FBlock38_Description.docx
FB39	8BIT UP-DOWN COUNTER with Limits	94	3.125	FBlock39_Description.docx
FB40	16BIT UP-DOWN COUNTER with Limits	170	4.5	FBlock40_Description.docx

8.0 Selector/Multiplexor Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB20	CHANGE-OVER-SWITCH for BOOLEAN values	26	1.25	FBlock20_56_72_78_Description.docx
FB56	CHANGE-OVER-SWITCH for BYTE values	14	1	FBlock20_56_72_78_Description.docx
FB72	CHANGE-OVER-SWITCH for INT values	18	1.25	FBlock20_56_72_78_Description.docx
FB78	CHANGE-OVER-SWITCH for FLOATING POINT values	52	1.75	FBlock20_56_72_78_Description.docx
FB41	MUX for 1-of-8 BYTE Literals	48	2.625	FBlock41_44_Description.docx
FB42	MUX for 1-of-8 INT Literals	64	3.25	FBlock41_44_Description.docx

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FB43	MUX for 1-of-8 UINT Literals	64	3.25	FBlock41_44_Description.docx
FB44	MUX for 1-of-8 FLOATING POINT Literals	96	4.375	FBlock41_44_Description.docx
FB70	SELECT MAXIMUM of 2 INT Values	36	4.5	-----
FB71	SELECT MINIMUM of 2 INT Values	36	3.75	-----
FB76	SELECT MAXIMUM of 2 FLOATING POINT Values	72	6.5	-----
FB77	SELECT MINIMUM of 2 FLOATING POINT Values	72	6.5	-----
FB107	SELECT 1-of-12 PATTERNS (7-segment pattern look-up)	108	6.25	FBlock107_Description.docx
FB108	SELECT 1-of-8 BYTE Literal values	38	2.375	FBlock108_111_Description.docx
FB109	SELECT 1-of-8 INT Literal values	84	4.5	FBlock108_111_Description.docx
FB110	SELECT 1-of-8 UINT Literal values	84	4.5	FBlock108_111_Description.docx
FB111	SELECT 1-of-8 FLOATING POINT Literal values	116	5.625	FBlock108_111_Description.docx

9.0 Limiter Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB83	HIGH LIMITER for INT Values	40	4.125	-----
FB84	LOW LIMITER for INT Values	40	3.5	-----
FB90	HIGH LIMIT DETECT for INT Values	28	3.375	-----
FB91	LOW LIMIT DETECT for INT Values	28	3.375	-----
FB94	HIGH LIMIT DETECT for FLOATING POINT Values	60	5.875	-----
FB95	LOW LIMIT DETECT for FLOATING POINT Values	60	5	-----

10.0 Table Look-up (Function Generator) Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB168	FUNCTION GENERATOR INT Values (Input 0...1024, Output -32768...32767)	226	17.75	FBlock168_Description.docx
FB169	FUNCTION GENERATOR INT Values (Input 0...32767, Output -32768...32767)	208	16.5	FBlock169_Description.docx

11.0 Communication Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB163	I2C WRITE (to Slave, 7Bit address)	See doc	See doc	FBlock163_Description.docx
FB164	I2C READ (from Slave, 7Bit address)	See doc	See doc	FBlock164_Description.docx

12.0 Input and Output Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB13	HOBBY SERVO DRIVER (4 Channel)	146	2001.125	FBlock13_Description.docx
FB23	8BIT SERIAL INPUT DRIVER (for 74LS166 or similar)	92	13.625	FBlock23_Description.docx
FB24	8BIT SERIAL OUTPUT DRIVER (for 74LS595 or similar)	86	11	FBlock24_Description.docx
FB25	ANALOG INPUT	24	12.5	FBlock25_Description.docx
FB26	FREQUENCY COUNTER INPUT (max 32000Hz)	28	1.75	FBlock26_Description.docx
FB27	PWM OUTPUT	26	1.625	FBlock27_Description.docx
FB28	DIGITAL OUTPUT	14	0.75	FBlock28_Description.docx
FB29	DIGITAL INPUT	14	0.875	FBlock29_Description.docx
FB142	DISPLAY BYTE Variable on LCD	30	180.625	FBlock142_Description.docx
FB143	DISPLAY INT Variable on LCD	30	356.625	FBlock143_Description.docx
FB145	DISPLAY FLOATING POINT Variable on LCD	30	792	FBlock145_Description.docx
FB146	DISPLAY STRING on LCD	54	710.625	FBlock146_Description.docx
FB147	DISPLAY TIME (HH:MM:SS) on LCD	40	1098.75	FBlock147_Description.docx
FB148	DISPLAY TIME (HH:MM) on LCD	40	730.5	FBlock148_Description.docx

13.0 Pulse Generator Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB21	LOW FREQUENCY PULSE GENERATOR	30	1.875	FBlock21_Description.docx
FB34	PULSE PERIOD CONTROLLER	96	5.5	FBlock_Description.docx
FB36	PULSE WIDTH MODULATOR	96	5.5	FBlock36_Description.docx
FB211	FLASHER BITS (System Resource)	0	0	FBlock211_Description.docx

14.0 Data Pack/Unpack Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
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FB112	PACK 8 Bits into BYTE	38	2.375	FBlock112_115_Description.docx
FB113	PACK 2 BYTES into INT	8	0.5	FBlock112_115_Description.docx
FB114	PACK 2 BYTES into UINT	8	0.5	FBlock112_115_Description.docx
FB115	PACK 4 BYTES into FLOATING POINT	16	1	FBlock112_115_Description.docx
FB116	UNPACK BYTE into 8 Bits	68	4.25	FBlock116_119_Description.docx
FB117	UNPACK INT into 2 BYTES	8	0.5	FBlock116_119_Description.docx
FB118	UNPACK UINT into 2 BYTES	8	0.5	FBlock116_119_Description.docx
FB119	UNPACK FLOATING POINT into 4 BYTES	16	1	FBlock116_119_Description.docx

15.0 Read/Write Data EEPROM Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB45	READ BYTE Value from EEPROM	12	1.625	FBlock45_52_Description.docx
FB46	WRITE BYTE Value to EEPROM	26	4009.75	FBlock45_52_Description.docx
FB47	READ INT Value from EEPROM	12	4.875	FBlock45_52_Description.docx
FB48	WRITE INT Value to EEPROM	28	8019.25	FBlock45_52_Description.docx
FB49	READ UINT Value from EEPROM	12	5.125	FBlock45_52_Description.docx
FB50	WRITE UINT Value to EEPROM	28	8023.125	FBlock45_52_Description.docx
FB51	READ FLOATING POINT Value from EEPROM	24	9.75	FBlock45_52_Description.docx
FB52	WRITE FLOATING POINT Value to EEPROM	28	16036.25	FBlock45_52_Description.docx

16.0 Data Type Conversion Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB149	CONVERT INT to BCD	140	103	FBlock149_Description.docx
FB150	CONVERT INT to FLOATING POINT	38	7.875	
FB151	CONVERT FLOATING POINT to INT	38	7.75	
FB152	RANGE TRANSFORM INT/ FLOATING POINT	88	24.5	FBlock152_Description.docx
FB153	Binary to BCD	32	2	FBlock153_Description.docx
FB154	2 Bytes to BCD Byte	16	1	FBlock154_Description.docx
FB155	BCD TO Binary Byte	22	1.25	FBlock155_Description.docx
FB156	BCD to 2 Bytes	20	1.375	FBlock156_Description.docx

17.0 Sequence Control Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB157	SEQUENCE CONTROLLER	58	2.625	FBlock157_Description.docx
FB158	SEQUENCE STEP HEAD	20	1.125	FBlock158_Description.docx
FB159	SEQUENCE STEP TAIL	36	2	FBlock159_Description.docx
FB22	ROTATE_X	114	8	FBlock22_Description.docx

18.0 Control Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB66	INCREMENT/DECREMENT RATE LIMITER for INT Values	106	2.25	FBlock66_Description.docx
FB67	INC/DEC RAMP CONTROLLER	148	5.75	FBlock67_Description.docx
FB173	FILTER, (very) LOW PASS for INT Values	98	5.375	-----
FB174	FILTER, LOW PASS for INT Values	104	10	-----
FB176	LAG FUNCTION for INT Values	82	35.125	FBlock176_Description.docx
FB177	DEAD-TIME FUNCTION for INT Values	100	10.5	FBlock177_Description.docx
FB181	PID CONTROLLER (standard – velocity algorithm)	278	151.875	FBlock181_Description.docx

19.0 Constants.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB195	DEFINE FLOATING POINT Constant	24	3.875	-----
FB196	DEFINE UINT Constant	12	0.75	-----
FB197	DEFINE INT Constant	12	0.75	-----
FB198	DEFINE BYTE Constant	6	0.375	-----
FB210	DEFINE BOOLEAN Constant (System Resource)	0	0	-----

20.0 PIC[®] Device Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB188	LOAD INDICATOR	12	0.75	FBlock188_Description.docx
FB189	SHOW MICROCONTROLLER DEVICE ID	8	0.5	FBlock189_Description.docx
FB190	SFR BYTE Read	4	0.25	-----
FB191	SFR BIT Read	6	0.375	-----
FB192	SFR BYTE Write	20	1.125	-----
FB193	SFR BIT Write	26	1.125	-----

21.0 Code-Page Functions.

Ref.	Description	Mem Bytes	Exe μ Sec	Description Document
FB200	SIGNAL READ Connector (read signal from another, or same, Code Page)	0	0	FBlock200_X_Description.docx
FB201	SIGNAL WRITE Connector (write signal for use on another, or same, Code Page)	0	0	FBlock200_X_Description.docx
FB202	TEXT COMMENT BOX	0	0	FBlock202_Description.docx
FB203	SIGNAL WRITE Connector (for Sequence Output	0	0	FBlock200_X_Description.docx

	Signals)			
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22.0 User Defined Functions.

Ref.	Description	Mem Bytes	Exe μSec	Description Document
FB160	USER DEFINED Function Block for Task	---	---	FBlock160_166_Description.docx
FB161	USER DEFINED Function Block for ISR (Low priority chain)	---	---	FBlock160_166_Description.docx
FB162	USER DEFINED Function Block for Initialization	---	---	FBlock160_166_Description.docx
FB166	USER DEFINED Function Block for 2mSec Execution (Only 1 instance)	---	---	FBlock160_166_Description.docx