■ ATmega48P/88P/168P/328P

Address	Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Page
(0xC1) (0xC0)	UCSR0B UCSR0A	RXCIE0 RXC0	TXCIE0 TXC0	UDRIE0 UDRE0	RXEN0 FE0	TXEN0 DOR0	UCSZ02 UPE0	RXB80 U2X0	TXB80 MPCM0	196 195
(0xC0) (0xBF)	Reserved	-	-	-	-		— —	-	-	193
(0xBE)	Reserved	_	_	_	_	_	_	_	_	
(0xBD)	TWAMR	TWAM6	TWAM5	TWAM4	TWAM3	TWAM2	TWAM1	TWAM0	_	244
(0xBC)	TWCR	TWINT	TWEA	TWSTA	TWSTO	TWWC	TWEN	=	TWIE	241
(0xBB)	TWDR			!	2-wire Serial Inter					243
(0xBA)	TWAR	TWA6	TWA5	TWA4	TWA3	TWA2	TWA1	TWA0	TWGCE	244
(0xB9)	TWSR	TWS7	TWS6	TWS5	TWS4	TWS3	_	TWPS1	TWPS0	243
(0xB8)	TWBR				2-wire Serial Interfa	ce Bit Rate Regis	ster			241
(0xB7)	Reserved	-		-	-	-	-	-	-	
(0xB6)	ASSR	-	EXCLK	AS2	TCN2UB	OCR2AUB	OCR2BUB	TCR2AUB	TCR2BUB	164
(0xB5)	Reserved	_	_	_	_	_	_	_	_	
(0xB4)	OCR2B				ner/Counter2 Outpo					162
(0xB3)	OCR2A			Tiı	mer/Counter2 Outp		ster A			162
(0xB2)	TCNT2			1		nter2 (8-bit)				162
(0xB1)	TCCR2B	FOC2A	FOC2B	-	-	WGM22	CS22	CS21	CS20	161
(0xB0)	TCCR2A	COM2A1	COM2A0	COM2B1	COM2B0	_	_	WGM21	WGM20	158
(0xAF) (0xAE)	Reserved Reserved	_	_	_	_	_	_	_	_	
(0xAE)	Reserved	_	_			_	_		_	
(0xAC)	Reserved	_	_	_	_	_	_	_	_	
(0xAB)	Reserved	_	_	_	_	_	_	_	_	
(0xAA)	Reserved	-	-	_	-	_	-	_	_	
(0xA9)	Reserved	-	-	-	-	-	-	-	-	
(0xA8)	Reserved	_	-	_	-	-	_	_	_	
(0xA7)	Reserved	-	-	_	_	-	-	_	-	
(0xA6)	Reserved	-	-	-	-	-	-	-	-	
(0xA5)	Reserved	_	-	-	_	-	-	_	_	
(0xA4)	Reserved	-	-	-	-	_	-	-	-	
(0xA3)	Reserved	-	-	-	-	-	-	-	-	
(0xA2)	Reserved	-	-	-	-	-	-	-	-	
(0xA1)	Reserved	-	_	_	_	_	_	_	_	
(0xA0)	Reserved	-	-	_	_	_	-	_	-	
(0x9F)	Reserved	-	_	_	_	_	_	_	_	
(0x9E) (0x9D)	Reserved Reserved	_	_						_	
(0x9C)	Reserved	_	_	_	_	_	_	_	_	
(0x9B)	Reserved	_	_	_	_	_	_	_	_	
(0x9A)	Reserved	-	-	_	_	-	-	_	-	
(0x99)	Reserved	_	_	_	-	-	_	_	_	
(0x98)	Reserved	-	-	_	_	-	-	_	-	
(0x97)	Reserved	_	-	_	_	_	-	-	_	
(0x96)	Reserved	-	-	_	-	-	-	_	-	
(0x95)	Reserved	-	-	-	-	-	-	-	-	
(0x94)	Reserved	-	-	_	-	_	-	_	-	
(0x93)	Reserved	-	-	_	_	-	-	_	_	
(0x92)	Reserved	_	_	_	_	_	-	_	-	
(0x91)	Reserved	-	-	-	-	-	_	-	-	
(0x90)	Reserved	_	-	_		_	_	_	_	
(0x8F) (0x8E)	Reserved Reserved	-	_	_	_	_	_	_	_	
(0x8D)	Reserved	-	_	_	_	_	_	_	_	
(0x8C)	Reserved	_	_	_	_	_	_	_	_	
(0x8B)	OCR1BH				ounter1 - Output Co		B High Byte			138
(0x8A)	OCR1BL				ounter1 - Output Co					138
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(0x88)	OCR1AL				ounter1 - Output Co					138
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(0x82)	TCCR1C	FOC1A	FOC1B	-	-	-	-	-	-	137
(0x81)	TCCR1B	ICNC1	ICES1	-	WGM13	WGM12	CS12	CS11	CS10	136
(0x80)	TCCR1A	COM1A1	COM1A0	COM1B1	COM1B0	-	_	WGM11	WGM10	134



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Compress Comp	Address	Nama	Di4 7	Di4 6	Dit E	Dit 4	Dia 2	Di4 2	Di4 1	Dit 0	Dogo
DOCK DORNO		Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Page
Out	, ,		_	-	ADCED.	- ADC4D	ADC2D				
GATC ADMAN REFS REFS ADAR - AMAS MAZ M			_	_		ADC4D -					200
			REFS1	REFS0	ADLAR	-	MUX3			MUX0	262
ADC	(0x7B)	ADCSRB	_	ACME	-	-	-	ADTS2	ADTS1	ADTS0	265
(0077) Reserved	' '		ADEN	ADSC	ADATE			ADPS2	ADPS1	ADPS0	
(0.077) Reserved (0.078) Reserved (0.079) Reserved (0.079											
											265
(0075) Reserved	` '				_					_	
(0073) Reserved			_		_				_	_	
(6071) Reserved	` '		_	-	_	-	-	_	-	-	
(0x71) Reserved	(0x73)	Reserved	=	=	-	-	-	-	-	-	
(0x7) TMSK2 - - C - - C E18 OCIE2A TOPE 139 (0x6F) TMSK1 - - C E1 - - C CE18 OCIE3A TOPE 119 (0x6F) TMSK1 - - C C C C C C C C C C C C C	` '		_	-	-	-	-	-	-	-	
OHEP			_	-		-					
Outsign											
Debt PCMSK2 PCMT22 PCMT24 PCMT24 PCMT31 PCMT16 PCMT16 PCMT16 PCMT16 PCMT16 PCMSK1 PCMSK1 PCMSK10 PCMSK10 PCMSK10 PCMT4 PCMT13 PCMT13 PCMT12 PCMT17 PCMT16 PCMT16 PCMT18 PCMT18 PCMT18 PCMT18 PCMT18 PCMT18 PCMT19 P	` '			_		_					
	' '		PCINT23	PCINT22		PCINT20	1				
	` '					1	1				
Decision	· · ·		PCINT7								
Octob PCICR PCIEZ PCIET PCIED	(0x6A)		_	-	-	-	-	-	-	_	
Check OSCCAL	` '		_	-	-	-	ISC11				71
Oscillator Calibration Register	` '		_			-	_				
Close Reserved			_	_	-	-		_	_	-	07
(0x63)	, ,						ı				3/
(0x83)											42
(0x61)	` '								-	-	
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Dougle (Dougle Dougle Do	(0x61)	CLKPR	CLKPCE	-	-	-	CLKPS3	CLKPS2	CLKPS1	CLKPS0	37
Discrete		WDTCSR	WDIF	WDIE	WDP3	WDCE	WDE	WDP2	WDP1		
DASD (DASD) SPL SPT SP6 SP5 SP4 SP3 SP2 SP1 SP0 12	0x3F (0x5F)	SREG									
0x3C (0x5C) Reserved -											
DX3B (0X5B) Reserved	0x3E (0x5E)	SPH	-	-	_	-	-	(SP10) ^{5.}	SP9	SP8	12
0x39 (0x59) Reserved	0x3E (0x5E) 0x3D (0x5D)	SPH SPL	- SP7	SP6	- SP5	- SP4	- SP3	(SP10) ^{5.} SP2	SP9 SP1	SP8 SP0	12
Dx38 (0x58) Reserved - - - - - - - - -	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C)	SPH SPL Reserved	– SP7 –	_ SP6 _	- SP5	- SP4	- SP3	(SP10) ^{5.} SP2	SP9 SP1	SP8 SP0	12
0x37 (0x57) SPMCSR SPMIE (RWWSB) ^S - (RWWSRE) ^S BLBSET PGWRT PGERS SELFPRGEN 292 0x36 (0x56) Reserved - - - - - - - 0x35 (0x55) MCUCR - BODS BODSE PUD - - IVSEL IVCE 44/68/92 0x34 (0x54) MCUSR - - - WDRF BORF EXTRF PORF 54 0x33 (0x53) SMCR - - - - SM2 SM1 SM0 SE 40 0x32 (0x52) Reserved - - - - - - - - 0x30 (0x51) Reserved - - - - - - - 0x30 (0x50) ACSR ACD ACBG ACO ACI ACIE ACIC ACIS1 ACIS0 247 0x2F (0x4F) Reserved - - - - - - - - 0x2F (0x4F) SPDR SPIF WCOL - - - - - SPI2X 174 0x2C (0x4C) SPCR SPIE SPE DORD MSTR CPOL CPHA SPR1 SPR0 173 0x2B (0x48) GPIOR2 General Purpose I/O Register 2 25 0x29 (0x49) Reserved - - - - - - 0x2B (0x48) TCKRO CCRO TImer/CounterO Output Compare Register A 0x2B (0x48) TCKRO TCKRO TCKRO TEMPO TEMPO TEMPO TEMPO 0x2B (0x44) TCCRO COMOA1 COMOA0 COMOB1 COMOB0 - PSRASY PSRSYNC 143/165 0x22 (0x42) EERR EERE EERE EERE 21 0x1F (0x5F) EECR - EEPM1 EEPM0 EERE EEMFE EEPE EERE 21	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B)	SPH SPL Reserved Reserved	- SP7 - -	- SP6 - -			- SP3 - -	(SP10) ^{5.} SP2	SP9 SP1 - -	SP8 SP0 - -	12
0.036 (0x56) Reserved -	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A)	SPH SPL Reserved Reserved Reserved	- SP7 - - -	- SP6 - -	- SP5 - - -	- SP4 - -	- SP3 - -	(SP10) ^{5.} SP2	SP9 SP1 - -	SP8 SP0 - -	12
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0x34 (0x54) MCUSR	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved SPMCSR	- SP7 SPMIE	- SP6	- SP5	- SP4	- SP3 BLBSET	(SP10) ^{5.} SP2 PGWRT	SP9 SP1 PGERS	SP8 SP0	12 12
0x33 (0x53) SMCR	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved Reserved SPMCSR Reserved	- SP7 SPMIE	- SP6 - - - - - - (RWWSB) ^{5.}	- SP5	- SP4	- SP3	(SP10) ⁵ . SP2 PGWRT	SP9 SP1 PGERS	SP8 SP0 SELFPRGEN	12 12 292
0x32 (0x52) Reserved -	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved SPMCSR Reserved MCUCR	- SP7	- SP6 - - - - - - (RWWSB) ^{5.}	- SP5 BODSE	- SP4	- SP3	(SP10) ⁵ . SP2 PGWRT -	SP9 SP1 PGERS - IVSEL	SP8 SP0 SELFPRGEN - IVCE	12 12 292 44/68/92
Ox31 (0x51)	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved SPMCSR Reserved MCUCR MCUSR	- SP7	- SP6 - - - - - - (RWWSB) ^{5.}	- SP5 BODSE	- SP4	- SP3	(SP10) ⁵ . SP2 PGWRT - BORF	SP9 SP1 PGERS - IVSEL EXTRF	SP8 SP0 SELFPRGEN - IVCE PORF	12 12 292 44/68/92 54
0x2F (0x4F) Reserved -	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x33 (0x53)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved MCUSR MCUSR SMCR	- SP7 SPMIE	- SP6	- SP5 BODSE	- SP4	- SP3	(SP10) ⁵ . SP2 PGWRT - BORF SM1	SP9 SP1 PGERS - IVSEL EXTRF SM0	SP8 SP0 SELFPRGEN - IVCE PORF	12 12 292 44/68/92 54
Nx2E (0x4E) SPDR	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x33 (0x53) 0x32 (0x52)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved MCUCR MCUSR SMCR Reserved	- SP7 SPMIE	- SP6	- SP5 BODSE	- SP4	- SP3	(SP10) ⁵ . SP2 PGWRT - BORF SM1 -	SP9 SP1 PGERS - IVSEL EXTRF SM0 -	SP8 SP0 SELFPRGEN - IVCE PORF SE -	12 12 292 44/68/92 54
0x2D (0x4D) SPSR SPIF WCOL - - - - SPIZX 174 0x2C (0x4C) SPCR SPIE SPE DORD MSTR CPOL CPHA SPR1 SPR0 173 0x2B (0x4B) GPIOR2 General Purpose I/O Register 2 25 0x2A (0x4A) GPIOR1 General Purpose I/O Register 1 25 0x29 (0x49) Reserved -	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x33 (0x53) 0x32 (0x52) 0x31 (0x51)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved SPMCSR Reserved MCUCR MCUSR SMCR Reserved Reserved Reserved Reserved	- SP7	- SP6 - - - - (RWWSB) ^{5.} - BODS - -	- SP5	- SP4	- SP3	(SP10) ⁵ . SP2 PGWRT - BORF SM1	SP9 SP1 PGERS - IVSEL EXTRF SM0	SP8 SP0 SELFPRGEN - IVCE PORF SE	12 12 292 44/68/92 54 40
0x2C (0x4C) SPCR SPIE SPE DORD MSTR CPOL CPHA SPR1 SPR0 173 0x2B (0x4B) GPIOR2 General Purpose I/O Register 2 25 0x2A (0x4A) GPIOR1 General Purpose I/O Register 1 25 0x29 (0x49) Reserved - <	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x33 (0x53) 0x32 (0x52) 0x31 (0x51) 0x30 (0x50) 0x2F (0x4F)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved SPMCSR Reserved MCUCR MCUCR MCUSR SMCR Reserved Reserved Reserved Reserved Reserved Reserved Reserved	- SP7	- SP6 (RWWSB) ^{5.} - BODS	- SP5	- SP4 (RWWSRE) ^{5.} - PUD ACI	- SP3	(SP10) ⁵ . SP2 PGWRT - BORF SM1 - ACIC	SP9 SP1 PGERS IVSEL EXTRF SM0 ACIS1	SP8 SP0 SELFPRGEN - IVCE PORF SE - ACISO	12 12 12 292 44/68/92 54 40
0x2B (0x4B) GPIOR2 General Purpose I/O Register 2 25 0x2A (0x4A) GPIOR1 General Purpose I/O Register 1 25 0x29 (0x49) Reserved - <	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x33 (0x53) 0x32 (0x52) 0x31 (0x51) 0x30 (0x50) 0x2F (0x4F) 0x2E (0x4E)	SPH SPL Reserved Reserved Reserved Reserved SPMCSR Reserved MCUCR MCUSR SMCR Reserved Reserved Reserved SPMCSR	- SP7 SPMIE ACD	- SP6 (RWWSB) ⁵ BODS ACBG	- SP5	- SP4	- SP3	(SP10) ⁵ . SP2 PGWRT - BORF SM1 - ACIC	SP9 SP1 PGERS IVSEL EXTRF STM0 ACIS1	SP8 SP0 SELFPRGEN - IVCE PORF SE - ACISO -	12 12 12 292 44/68/92 54 40 247
0x2A (0x4A) GPIOR1 General Purpose I/O Register 1 25 0x29 (0x49) Reserved - <td>0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x32 (0x52) 0x31 (0x51) 0x30 (0x50) 0x2F (0x4F) 0x2E (0x4E) 0x2D (0x5D)</td> <td>SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved SPMCSR Reserved MCUCR MCUSR SMCR Reserved ACSR Reserved ACSR Reserved SPDR SPSR</td> <td>- SPIF</td> <td>- SP6 (RWWSB)⁵ BODS ACBG - WCOL</td> <td>- SP5 BODSE ACO</td> <td>- SPI Date</td> <td>- SP3</td> <td>(SP10) ⁵. SP2 PGWRT - SM1 - ACIC</td> <td>SP9 SP1</td> <td>SP8 SP0 SELFPRGEN - IVCE PORF SE - ACISO - SPI2X</td> <td>12 12 12 292 44/68/92 44 40 247 175</td>	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x32 (0x52) 0x31 (0x51) 0x30 (0x50) 0x2F (0x4F) 0x2E (0x4E) 0x2D (0x5D)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved SPMCSR Reserved MCUCR MCUSR SMCR Reserved ACSR Reserved ACSR Reserved SPDR SPSR	- SPIF	- SP6 (RWWSB) ⁵ BODS ACBG - WCOL	- SP5 BODSE ACO	- SPI Date	- SP3	(SP10) ⁵ . SP2 PGWRT - SM1 - ACIC	SP9 SP1	SP8 SP0 SELFPRGEN - IVCE PORF SE - ACISO - SPI2X	12 12 12 292 44/68/92 44 40 247 175
0x29 (0x49) Reserved -	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x33 (0x53) 0x32 (0x52) 0x31 (0x51) 0x30 (0x50) 0x2F (0x4F) 0x2E (0x4E) 0x2D (0x4C)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved MCUSR MCUSR SMCR Reserved ACSR Reserved ACSR Reserved SPDR SPSR SPCR	- SPIF	- SP6 (RWWSB) ⁵ BODS ACBG - WCOL	- SP5 BODSE ACO	- SPI Data	- SP3	(SP10) ⁵ . SP2 PGWRT - SM1 - ACIC	SP9 SP1	SP8 SP0 SELFPRGEN - IVCE PORF SE - ACISO - SPI2X	12 12 12 292 44/68/92 54 40 247 175 174 173
0x28 (0x48) OCR0B Timer/Counter0 Output Compare Register B 0x27 (0x47) OCR0A Timer/Counter0 Output Compare Register A 0x26 (0x46) TCNT0 Timer/Counter0 (8-bit) 0x25 (0x45) TCCR0B FOC0A FOC0B - - WGM02 CS02 CS01 CS00 0x24 (0x44) TCCR0A COM0A1 COM0A0 COM0B1 COM0B0 - - WGM01 WGM00 0x23 (0x43) GTCCR TSM - - - - PSRASY PSRSYNC 143/165 0x22 (0x42) EEARH (EEPROM Address Register High Byte) 5. 21 0x21 (0x41) EEARL EEPROM Address Register Low Byte 21 0x20 (0x40) EEDR EEPROM Data Register 21 0x1F (0x3F) EECR - - EEPM1 EEPM0 EERE EEPE EEPE EERE 21	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x33 (0x52) 0x32 (0x52) 0x31 (0x51) 0x30 (0x50) 0x2F (0x4F) 0x2E (0x4E) 0x2D (0x4D) 0x2C (0x4C) 0x2B (0x4B)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved MCUCR MCUCR MCUSR SMCR Reserved ACSR Reserved ACSR Reserved SPDR SPDR SPCR GPIOR2	- SPIF	- SP6 (RWWSB) ⁵ BODS ACBG - WCOL	- SP5 BODSE ACO	- SP4	- SP3	(SP10) ⁵ . SP2 PGWRT - SM1 - ACIC	SP9 SP1	SP8 SP0 SELFPRGEN - IVCE PORF SE - ACISO - SPI2X	12 12 12 292 44/68/92 54 40 247 175 174 173 25
0x26 (0x46) TCNT0 Timer/Counter0 (8-bit) 0x25 (0x45) TCCR0B FOC0A FOC0B - - WGM02 CS02 CS01 CS00 0x24 (0x44) TCCR0A COM0A1 COM0A0 COM0B1 COM0B0 - - WGM01 WGM00 0x23 (0x43) GTCCR TSM - - - - PSRASY PSRSYNC 143/165 0x22 (0x42) EEARH (EEPROM Address Register High Byte) 5. 21 0x21 (0x41) EEARL EEPROM Address Register Low Byte 21 0x20 (0x40) EEDR EEDR EEPROM Data Register 21 0x1F (0x3F) EECR - - EEPM1 EEPM0 EERIE EEMPE EEPE EERE 21	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x33 (0x53) 0x32 (0x52) 0x31 (0x51) 0x30 (0x50) 0x2F (0x4F) 0x2E (0x4E) 0x2D (0x4C) 0x2B (0x4A)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved MCUCR MCUCR MCUSR SMCR Reserved ACSR Reserved ACSR Reserved SPDR SPDR SPCR GPIOR2 GPIOR1	- SPIF SPIE	- SP6	- SP5 BODSE ACO - DORD	- SP4	- SP3	(SP10) ⁵ . SP2 PGWRT - BORF SM1 ACIC - CPHA	SP9 SP1 PGERS - IVSEL EXTRF SM0 ACIS1 - SPR1	SP8 SP0 SELFPRGEN - IVCE PORF SE ACISO - SPI2X SPR0	12 12 12 292 44/68/92 54 40 247 175 174 173 25
0x25 (0x45) TCCR0B FOC0A FOC0B - - WGM02 CS02 CS01 CS00 0x24 (0x44) TCCR0A COM0A1 COM0A0 COM0B1 COM0B0 - - WGM01 WGM00 0x23 (0x43) GTCCR TSM - - - - PSRASY PSRSYNC 143/165 0x22 (0x42) EEARH (EEPROM Address Register High Byte) 5. 21 0x21 (0x41) EEARL EEPROM Address Register Low Byte 21 0x20 (0x40) EEDR EEDR EEPROM Data Register 21 0x1F (0x3F) EECR - - EEPM1 EEPM0 EERIE EEMPE EEPE EERE 21	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x33 (0x53) 0x32 (0x52) 0x31 (0x51) 0x30 (0x50) 0x2F (0x4F) 0x2E (0x4E) 0x2D (0x4D) 0x2C (0x4C) 0x2B (0x4A) 0x29 (0x49)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved MCUCR MCUCR MCUSR SMCR Reserved ACSR Reserved SPDR SPDR SPCR GPIOR2 GPIOR1 Reserved	- SPIF SPIE	- SP6	- SP5 BODSE ACO - DORD	- SP4	- SP3	(SP10) ⁵ . SP2	SP9 SP1 PGERS - IVSEL EXTRF SM0 ACIS1 - SPR1	SP8 SP0 SELFPRGEN - IVCE PORF SE ACISO - SPI2X SPR0	12 12 12 292 44/68/92 54 40 247 175 174 173 25
0x24 (0x44) TCCR0A COM0A1 COM0B0 COM0B0 - - WGM01 WGM00 0x23 (0x43) GTCCR TSM - - - - PSRASY PSRSYNC 143/165 0x22 (0x42) EEARH (EEPROM Address Register High Byte) 5. 21 0x21 (0x41) EEARL EEPROM Address Register Low Byte 21 0x20 (0x40) EEDR EEPROM Data Register 21 0x1F (0x3F) EECR - - EEPM1 EEPROM EERIE EEMPE EEPE EERE 21	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x33 (0x53) 0x32 (0x52) 0x31 (0x51) 0x2E (0x4E) 0x2D (0x4D) 0x2C (0x4C) 0x2B (0x4A) 0x29 (0x49) 0x2B (0x48)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved MCUCR MCUSR SMCR Reserved ACSR Reserved SPDR SPDR SPDR SPCR GPIOR2 GPIOR1 Reserved OCR0B	- SPIF SPIE	- SP6	- SP5 BODSE ACO - DORD	- SP4	- SP3	(SP10) ⁵ . SP2	SP9 SP1 PGERS - IVSEL EXTRF SM0 ACIS1 - SPR1	SP8 SP0 SELFPRGEN - IVCE PORF SE ACISO - SPI2X SPR0	12 12 12 292 44/68/92 54 40 247 175 174 173 25
0x23 (0x43) GTCCR TSM - - - - - - PSRASY PSRSYNC 143/165 0x22 (0x42) EEARH (EEPROM Address Register High Byte) 5. 21 0x21 (0x41) EEARL EEPROM Address Register Low Byte 21 0x20 (0x40) EEDR EEPROM Data Register 21 0x1F (0x3F) EECR - EEPM1 EEPM0 EERIE EEMPE EEPE EERE 21	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x33 (0x53) 0x32 (0x52) 0x31 (0x51) 0x30 (0x50) 0x2F (0x4F) 0x2E (0x4E) 0x2D (0x4C) 0x2B (0x4A) 0x29 (0x4A) 0x29 (0x49) 0x28 (0x48) 0x27 (0x47)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved MCUCR MCUCR MCUSR SMCR Reserved ACSR Reserved SPDR SPCR GPIOR2 GPIOR1 Reserved OCR0B	- SPIF SPIE	- SP6	- SP5 BODSE ACO - DORD	SP4	- SP3	(SP10) ⁵ . SP2	SP9 SP1 PGERS - IVSEL EXTRF SM0 ACIS1 - SPR1	SP8 SP0 SELFPRGEN - IVCE PORF SE ACISO - SPI2X SPR0	12 12 12 292 44/68/92 54 40 247 175 174 173 25
0x22 (0x42) EEARH (EEPROM Address Register High Byte) 5. 21 0x21 (0x41) EEARL EEPROM Address Register Low Byte 21 0x20 (0x40) EEDR EEPROM Data Register 21 0x1F (0x3F) EECR - EEPM1 EEPM0 EERIE EEMPE EEPE EERE 21	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x55) 0x35 (0x55) 0x34 (0x55) 0x34 (0x54) 0x33 (0x53) 0x32 (0x52) 0x31 (0x51) 0x30 (0x50) 0x2F (0x4F) 0x2E (0x4E) 0x2D (0x4D) 0x2C (0x4C) 0x2B (0x4B) 0x2A (0x4A) 0x29 (0x4B) 0x2B (0x4B)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved Reserved Reserved MCUCR MCUSR SMCR Reserved ACSR Reserved ACSR Reserved GPIOR2 GPIOR2 GPIOR1 Reserved OCR0B OCR0A TCNT0 TCCR0B	- SP7	- SP6	- SP5	SP4 SP4 (RWWSRE) ^{5.} PUD ACI SPI Data MSTR General Purpos	SP3	(SP10) 5. SP2	SP9 SP1	SP8 SP0 SELFPGEN - IVCE PORF SE - ACISO - SPI2X SPR0 - CS00	12 12 12 292 44/68/92 54 40 247 175 174 173 25
0x21 (0x41) EEARL EEPROM Address Register Low Byte 21 0x20 (0x40) EEDR EEPROM Data Register 21 0x1F (0x3F) EECR - - EEPM1 EEPM0 EERIE EEMPE EEPE EERE 21	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x55) 0x35 (0x55) 0x34 (0x54) 0x33 (0x53) 0x32 (0x52) 0x31 (0x51) 0x30 (0x50) 0x2F (0x4F) 0x2E (0x4E) 0x2D (0x4D) 0x2C (0x4C) 0x2B (0x4B) 0x2A (0x4A) 0x29 (0x4B) 0x2B (0x4B) 0x2C (0x4C)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved Reserved MCUCR MCUCR MCUSR SMCR Reserved ACSR Reserved ACSR Reserved SPDR SPCR GPIOR2 GPIOR1 Reserved OCR0B OCR0A TCNT0 TCCR0B	- SP7	- SP6	- SP5	- SP4	SP3 - SP3 BLBSET - BLBSET - WDRF SM2 - ACIE - ACIE - AREgister - UCPOL SE I/O Register 2 SE I/O Register 3 SE I/O Register 3 SE I/O Register 4 SE I/O Register 2 SE I/O Register 5 SE I/O Register 6 SE I/O Register 1 SE I/O Register 1 SE I/O Register 1 SE I/O Register 2 SE I/O Register 1 SE I/O Register 2 SE I/O Register 3 SE I/O Register 1 SE I/O Register 2 SE I/O Register 1 SE I/O Register 1 SE I/O Register 2 SE I/O Register 1 SE I/O Register 3 SE I/O Register 1 SE I/O Register 1 SE I/O Register 1 SE I/O Register 2 SE I/O Register 1 SE I/O Register 1 SE I/O Register 2 SE I/O Register 1 SE I/O Register 3 SE I/O Register 1 SE I/O Register 2 SE I/O Register 1 SE I/O Register 2 SE I/O Register 2 SE I/O Register 3 SE I/O Register 4 SE I/O Register 3 SE I/O Register 4 SE I/O Register 4 SE I/O Register 4 SE I/O Register 5 SE I/O Register 5 SE I/O Register 5 SE I/O Register 6 SE I/O Register 7 SE I/O Register 7 SE I/O Register 8 SE I/O Register 9 SE I/O Re	(SP10) 5. SP2	SP9 SP1	SP8 SP0 SELFPRGEN - IVCE PORF SE - ACISO - SPI2X SPR0 - CS00 WGM00	12 12 12 292 44/68/92 54 40 247 175 174 173 25 25
0x20 (0x40) EEDR EEPROM Data Register 21 0x1F (0x3F) EECR - - EEPM1 EEPM0 EERIE EEMPE EEPE EERE 21	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x55) 0x34 (0x56) 0x35 (0x55) 0x34 (0x54) 0x33 (0x53) 0x32 (0x52) 0x31 (0x51) 0x30 (0x50) 0x2F (0x4F) 0x2E (0x4E) 0x2D (0x4D) 0x2C (0x4C) 0x2B (0x4B) 0x2A (0x4A) 0x29 (0x49) 0x28 (0x4B) 0x27 (0x47) 0x26 (0x46) 0x27 (0x47) 0x26 (0x446) 0x27 (0x47) 0x26 (0x446) 0x27 (0x47) 0x26 (0x446) 0x25 (0x445) 0x24 (0x444) 0x23 (0x43)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved Reserved Reserved MCUCR MCUCR MCUSR Reserved ACSR Reserved ACSR Reserved SPDR SPDR SPCR GPIOR1 Reserved OCR0B OCR0A TCNT0 TCCR0B TCCR0A	- SP7	- SP6	- SP5	SP4	SP3 - SP3 BLBSET - BLBSET - WDRF SM2 - ACIE - ACIE - ACIE - ICPOL Set I/O Register 2 Set I/O Register 1 - ut Compare Regiut Compare Regiut Compare Regiut Compare Regiut Compare Regiunter (8-bit) WGM02	(SP10) 5. SP2	SP9 SP1	SP8 SP0 SELFPRGEN - IVCE PORF SE - ACISO - SPI2X SPR0 - CS00 WGM00	12 12 12 292 44/68/92 54 40 247 175 174 173 25 25
0x1F (0x3F) EECR EEPM1 EEPM0 EERIE EEMPE EEPE EERE 21	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x33 (0x53) 0x32 (0x52) 0x31 (0x51) 0x30 (0x50) 0x2F (0x4F) 0x2E (0x4E) 0x2D (0x4D) 0x2C (0x4C) 0x2B (0x4B) 0x2A (0x4A) 0x29 (0x49) 0x28 (0x48) 0x27 (0x47) 0x26 (0x46) 0x25 (0x45) 0x26 (0x46) 0x27 (0x47) 0x26 (0x48) 0x27 (0x47) 0x26 (0x48) 0x27 (0x47) 0x26 (0x44) 0x23 (0x43) 0x22 (0x42)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved Reserved SPMCSR Reserved MCUCR MCUSR SMCR Reserved ACSR Reserved ACSR Reserved SPDR SPSR SPCR GPIOR2 GPIOR1 Reserved OCR0B OCR0B TCCR0B TCCR0A GTCCR	- SP7	- SP6	- SP5	SP4	SP3 - SP3 BLBSET - BLBSET - WDRF SM2 - ACIE - ACIE - ACIE - ICPOL Set I/O Register 2 Set I/O Register 1 - ut Compare Regiut Compare Regiu	(SP10) 5. SP2	SP9 SP1	SP8 SP0 SELFPRGEN - IVCE PORF SE - ACISO - SPI2X SPR0 - CS00 WGM00	12 12 12 292 44/68/92 54 40 247 175 174 173 25 25
	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x33 (0x53) 0x32 (0x52) 0x31 (0x51) 0x30 (0x50) 0x2F (0x4F) 0x2E (0x4E) 0x2D (0x4D) 0x2C (0x4C) 0x2B (0x4B) 0x2A (0x4A) 0x29 (0x49) 0x28 (0x48) 0x27 (0x47) 0x26 (0x46) 0x27 (0x47) 0x26 (0x46) 0x27 (0x47) 0x26 (0x48) 0x27 (0x47) 0x26 (0x44) 0x23 (0x43) 0x22 (0x42) 0x21 (0x41)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved Reserved MCUSR Reserved ACSR Reserved ACSR Reserved ACSR Reserved SPDR SPSR SPCR GPIOR2 GPIOR1 Reserved OCR0B OCR0B TCCR0B TCCR0A GTCCR EEARH EEARL	- SP7	- SP6	- SP5	SP4	SP3	(SP10) 5. SP2	SP9 SP1	SP8 SP0 SELFPRGEN - IVCE PORF SE - ACISO - SPI2X SPR0 - CS00 WGM00	12 12 12 12 292 44/68/92 54 40 247 175 174 173 25 25 25
	0x3E (0x5E) 0x3D (0x5D) 0x3C (0x5C) 0x3B (0x5B) 0x3A (0x5A) 0x39 (0x59) 0x38 (0x58) 0x37 (0x57) 0x36 (0x56) 0x35 (0x55) 0x34 (0x54) 0x33 (0x53) 0x32 (0x52) 0x31 (0x51) 0x30 (0x50) 0x2F (0x4F) 0x2E (0x4E) 0x2D (0x4D) 0x2C (0x4C) 0x2B (0x4B) 0x2A (0x4A) 0x29 (0x49) 0x28 (0x48) 0x27 (0x47) 0x26 (0x46) 0x25 (0x46) 0x27 (0x47) 0x26 (0x46) 0x27 (0x47) 0x26 (0x46) 0x27 (0x47) 0x26 (0x48) 0x27 (0x47) 0x26 (0x48) 0x27 (0x47) 0x26 (0x44) 0x23 (0x43) 0x22 (0x42) 0x21 (0x41) 0x20 (0x40)	SPH SPL Reserved Reserved Reserved Reserved Reserved Reserved Reserved Reserved MCUSR Reserved ACSR Reserved ACSR Reserved ACSR Reserved SPDR SPSR SPCR GPIOR2 GPIOR1 Reserved OCR0B OCR0A TCNT0 TCCR0B TCCR0A GTCCR EEARH EEARL	- SP7	- SP6	- SP5	SP4 - SP4 (RWWSRE) ⁵ - PUD ACI - SPI Data - MSTR General Purpos General Purpos General Purpos - COMOBO - COMOBO - EEPROM Address EEPROM Address	SP3	(SP10) ⁵ . SP2	SP9 SP1	SP8 SP0 SELFPRGEN - IVCE PORF SE - ACISO - SPI2X SPR0 - CS00 WGM00 PSRSYNC	12 12 12 12 292 44/68/92 54 40 247 175 174 173 25 25 25



ATmega48P/88P/168P/328P

Address	Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Page
0x1D (0x3D)	EIMSK	_	_	_	_	_	_	INT1	INT0	72
0x1C (0x3C)	EIFR	_	_	_	_	_	_	INTF1	INTF0	72
0x1B (0x3B)	PCIFR	-	-	-	-	-	PCIF2	PCIF1	PCIF0	
0x1A (0x3A)	Reserved	-	-	-	-	-	_	-	-	
0x19 (0x39)	Reserved	-	-	-	-	-	_	_	-	
0x18 (0x38)	Reserved	-	-	-	-	-	-	-	-	
0x17 (0x37)	TIFR2	-	-	-	-	-	OCF2B	OCF2A	TOV2	163
0x16 (0x36)	TIFR1	-	-	ICF1	-	-	OCF1B	OCF1A	TOV1	140
0x15 (0x35)	TIFR0	-	-	-	-	-	OCF0B	OCF0A	TOV0	
0x14 (0x34)	Reserved	-	-	-	-	-	_	-	-	
0x13 (0x33)	Reserved	-	-	-	-	-	-	-	-	
0x12 (0x32)	Reserved	-	-		-	-		-	-	
0x11 (0x31)	Reserved	-	-	_	-	_	_	-	-	
0x10 (0x30)	Reserved	-	-		-	-		-	-	
0x0F (0x2F)	Reserved	-	-	-	-	-	-	П	-	
0x0E (0x2E)	Reserved	=	=	=	=	=	=	-	-	
0x0D (0x2D)	Reserved	-	-	-	-	-	_	П	-	
0x0C (0x2C)	Reserved	_	-	_	=	-	_	-	_	
0x0B (0x2B)	PORTD	PORTD7	PORTD6	PORTD5	PORTD4	PORTD3	PORTD2	PORTD1	PORTD0	93
0x0A (0x2A)	DDRD	DDD7	DDD6	DDD5	DDD4	DDD3	DDD2	DDD1	DDD0	93
0x09 (0x29)	PIND	PIND7	PIND6	PIND5	PIND4	PIND3	PIND2	PIND1	PIND0	93
0x08 (0x28)	PORTC	_	PORTC6	PORTC5	PORTC4	PORTC3	PORTC2	PORTC1	PORTC0	92
0x07 (0x27)	DDRC	_	DDC6	DDC5	DDC4	DDC3	DDC2	DDC1	DDC0	92
0x06 (0x26)	PINC	-	PINC6	PINC5	PINC4	PINC3	PINC2	PINC1	PINC0	92
0x05 (0x25)	PORTB	PORTB7	PORTB6	PORTB5	PORTB4	PORTB3	PORTB2	PORTB1	PORTB0	92
0x04 (0x24)	DDRB	DDB7	DDB6	DDB5	DDB4	DDB3	DDB2	DDB1	DDB0	92
0x03 (0x23)	PINB	PINB7	PINB6	PINB5	PINB4	PINB3	PINB2	PINB1	PINB0	92
0x02 (0x22)	Reserved	_	-	-	-	-	-	-	-	
0x01 (0x21)	Reserved	-	-	-	-	-	-	=	-	
0x0 (0x20)	Reserved	_	-	_	-	_	_	-	-	

Note:

- 1. For compatibility with future devices, reserved bits should be written to zero if accessed. Reserved I/O memory addresses should never be written.
- 2. I/O Registers within the address range 0x00 0x1F are directly bit-accessible using the SBI and CBI instructions. In these registers, the value of single bits can be checked by using the SBIS and SBIC instructions.
- Some of the Status Flags are cleared by writing a logical one to them. Note that, unlike most other AVRs, the CBI and SBI instructions will only operate on the specified bit, and can therefore be used on registers containing such Status Flags. The CBI and SBI instructions work with registers 0x00 to 0x1F only.
- 4. When using the I/O specific commands IN and OUT, the I/O addresses 0x00 0x3F must be used. When addressing I/O Registers as data space using LD and ST instructions, 0x20 must be added to these addresses. The ATmega48P/88P/168P/328P is a complex microcontroller with more peripheral units than can be supported within the 64 location reserved in Opcode for the IN and OUT instructions. For the Extended I/O space from 0x60 0xFF in SRAM, only the ST/STS/STD and LD/LDS/LDD instructions can be used.
- 5. Only valid for ATmega88P/168P.

