

## H8S 2134/8 PORT ASSIGNMENTS

		Onboard		Handset	
PORT 1	Pin	I/O	8bit I/O, PWM Output	I/O	
P10	64	O	PWM drive front left	I	Brandish
P11	63	O	PWM drive front right	I	Spear multi-throw
P12	62	O	PWM drive rear left	I	Spear forwards
P13	61	O	PWM drive rear right	I	Spear backwards
P14	60	O	PWM drive front hammer	I	Hammer forwards
P15	59	O	PWM drive rear hammer	I	Hammer backwards
P16	58	O	Flipper solenoid valve 0	I	Lights – auto-repeat
P17	57	O	Flipper solenoid valve 1	I	Lights – reset sequence
<b>PORT 2</b>			<b>8bit I/O, PWM Output</b>		
P20	55	O	LED drive phase 1 colour	I/O	LCD D0
P21	54	O	LED drive phase 2 colour	I/O	LCD D1
P22	53	O	LED drive phase 3 colour	I/O	LCD D2
P23	52	O	LED drive phase 1 brightness	I/O	LCD D3
P24	51	O	LED drive phase 2 brightness	I/O	LCD D4
P25	50	O	LED drive phase 3 brightness	I/O	LCD D5
P26	49	O	Hammer 1 home solenoid	I/O	LCD D6
P27	48	O	Hammer 2 home solenoid	I/O	LCD D7 (check)
<b>PORT 3</b>			<b>8bit I/O, Built in Pull-up, LED drive</b>		
P30	65	O	Motor front left direction	I	Emergency button
P31	66	O	Motor front right direction	I	spare input
P32	67	O	Motor rear left direction	I	Speed control method
P33	68	O	Motor rear right direction	I	Leg assist
P34	69	O	Motor front hammer direction	I	Flipper auto-operate
P35	70	O	Motor rear hammer direction	I	Flipper retract
P36	71	O	Flipper solenoid valve 2	I	spare input
P37	72	O	Flipper solenoid valve 3	I	Power down button
<b>PORT 4</b>			<b>8 bit I/O</b>		
P40/TxD2	39	O	Flipper retract motor +	O	Inter-handset comms Tx
P41/RxD2	40	O	Flipper retract motor -	I	Inter-handset comms Rx
P42/SDA1	41	I	Motor speed in (common with P62)	O	LCD RS
P43/TMCI1	42			O	LCD R/W
P44/TMO1	43	O	Motor mux 0	O	LCD EN
P45	44	O	Motor mux 1		
P46/PWX0	45	O	Motor mux 2		
P47/PWX1	46	O	Radio channel - units switch feed	O	Radio – channel units switch feed
<b>PORT 5</b>			<b>3 bit I/O</b>		
P50/SCK0	11				
P51/RxD0	10	I	Radio comms Rx	I	Radio comms Rx
P52/TxD0	9	O	Radio comms Tx	O	Radio comms Tx

<b>PORT 6</b>			<b>8 bit I/O</b>		
P60	21	I	Radio – Carrier Detect	O	Low battery LED
P61	22	O	Power on solenoid	I	Radio – Low battery
P62/FTIA	23	I	Motor speed in (common with P43)	I	spare input
P63	24	I	Radio – Data	I	Radio – Data
P64	25	O	Radio – Clock	O	Radio – Clock
P65	26	O	Radio – Enable	O	Radio – Enable
P66/IRQ6	27	I	Spear fully forward index	O	Radio – Carrier Detect
P67/IRQ7	28	I	Spear fully back index	I	spare input
<b>PORT 7</b>			<b>8 bit Input</b>		
P70	30	AI	Motor current in (from analog MUX)	AI	spare analogue input
P71	31	AI	Radio RSSI	AI	Radio RSSI
P72	32	AI	Compressor current	AI	Flipper extend/operate & fore/back
P73	33	AI	Battery current	AI	Light sequence 0 – 7
P74	34	I	Flipper index position	AI	Movement – speed
P75	35	I	Hammer 0 index position	AI	Movement – steering
P76	36	I	Hammer 1 index position	AI	spare analogue input
P77	37	I	Mercury switch	AI	spare analogue input
<b>PORT 8</b>			<b>7 bit I/O</b>		
P80	74	I/O	Shift Register Data	I	spare input
P81	75	O	Shift Register Clock	I	spare input
P82	76	O	Shift Register Strobe	I	spare input
P83	77	O	Fail safe power enable	I	spare input
P84/TxD1	78		Flash programming port Tx		Flash programming port Tx
P85/RxD1	79		Flash programming port Rx		Flash programming port Rx
P86/SCK1	80	I	Fail safe activated IRQ	I	spare input
<b>PORT 9</b>			<b>8 bit I/O</b>		
P90/IRQ2	20		Flash programming control		Flash programming control
P91/IRQ1	19		Flash programming control		Flash programming control
P92/1RQ0	18		Flash programming control		Flash programming control
P93	17	O	Radio channel - decade switch feed	O	Radio – chan decade switch feed
P94	16	O	Spear forwards drive	I	Radio – channel select 0
P95	15	O	Spear backwards drive	I	Radio – channel select 1
P96/Phi	14	I		I	Radio – channel select 2
P97	13	I		I	Radio – channel select 3

Extension shift register			8 bit Output bank 0	
ESRO0	15	O	LCD D0	
ESRO1	1	O	LCD D1	
ESRO2	2	O	LCD D2	
ESRO3	3	O	LCD D3	
ESRO4	4	O	LCD D4	
ESRO5	5	O	LCD D5	
ESRO6	6	O	LCD D6	
ESRO7	7	O	LCD D7	
Extension shift register			Extension shift register	
ESRO8	15	O	LCD RS	
ESRO9	1	O	LCD E	
ESRO10	2	O	LCD RW	
ESRO11	3	O		
ESRO12	4	O		
ESRO13	5	O		
ESRO14	6	O		
ESRO15	7	O		
Extension shift register			Extension shift register	
ESRI0	11	I	Radio channel bit 0	
ESRI1	12	I	Radio channel bit 1	
ESRI2	13	I	Radio channel bit 2	
ESRI3	14	I	Radio channel bit 3	
ESRI4	3	I		
ESRI5	4	I		
ESRI6	5	I		
ESRI7	6	I		
MODE CONTROL INPUTS				
MD0	5		PULLED DOWN	PULLED DOWN
MD1	4		Pulled high/Low to program flash	Pulled high/Low to program flash
CRYSTAL				
XTAL	2,3		20MHz	20MHz
RESET				
	1			
VCC				
	8,47			
VSS				
	12,56,73			
AVCC				
	29			
AVSS				
	38			
NMI				
	6		Pulled down	Pulled down
STBY				
	7		Pulled up	Pulled up