Wireless Programmable Pace Clock Instruction Set By Paul Swirhun

Instruction Format

	Μ	Т	IF1	IF0	M4	M3	M2	M1	M0		
	L	7	6	5	4	3	2	1	0		
Τ	1 :	Type bit is always 1 for bytes containing instructions. Instructions are always 1 byte long, but may use data contained in the nex one or two bytes.							n the next		
IF1,I	IF0										
	11 :	Rout	ine numbe		olayed as	[[4:0]. 1-indexed, hinks in a			the		
	10 :	: Set outer loop register ROUT to value specified and activate it. Program performs [4:0] + 1 loops since zero loops is illogical. If the loop register is already activated, this instruction does nothing. This way, this command may serve as a target for loop-back instructions.									
	01 :	Set inner loop register RIN to value specified and activate it. Program performs [4:0] + 1 loops since zero loops is illogical. If the loop register is already activated, this instruction does nothing. This way, this command may serve as a target for loop-back instructions.									
	00 :	None of the above. Instruction is specified by the rest of the bits									
M4: I	M0			if IF1	<i>IF0 != 00</i>						
	xxxxx :	Mean	ning deper	nds on IF1		above.					
				if IF1,1	<i>F0 == 00</i>	,					
	00000 :	Marks the beginning of a routine (workouts are stored sequentially)									
	00001 :		Display clock in hours : minutes (acquired from off-chip)								
	00010 :	Runr	U			tion prom l according		1			
	00011 ·	Pron	nt for rou	tine numh	er						

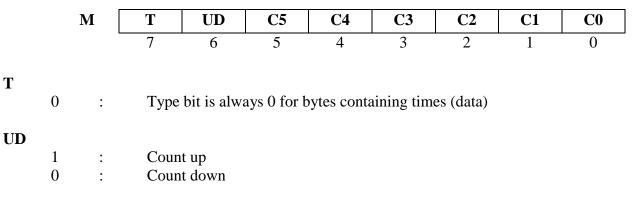
00011 : Prompt for routine number.

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00100 :	Start workout at scheduled time of day. Prompt the user for the time of day to start workout (hours/minutes). Displays clock until that time of day occurs, and then continues execution.
00101 :	Programmed pause. Wait for user to advance. Display freezes and blinks the colon until user advances.
00110 :	Outer conditional loop-back. The outer loop-register is first decremented then compared to zero. If it is zero, the loop-register is deactivated and execution continues to the next instruction or timer value.
	If the decremented outer loop-register is greater than zero, execution goes to the nearest preceding outer loop-register set command then proceeds. This accomplishes a loop-back of the outer loop since the set command will not modify the loop-register if the register is activated.
00111 :	Inner conditional loop-back. The inner loop register is first decremented then compared to zero. If it is zero, the loop-register is deactivated and execution continues to the next instruction or timer value.
	If the decremented inner loop register is greater than zero, execution goes to the nearest preceding inner loop-register set command then proceeds. This accomplishes a loop-back of the inner loop since the set command will not modify the loop-register if the register is activated.
01000 :	Screen test / display demonstration.
01001 :	Display number of cycles remaining in the innermost activated loop. Displays for approximately 1 second. Trailing timing interval in loop should be specified 1 second shorter for second-accurate timing if this display option is used at the loop footer.
10000 :	Activate seconds : 10 milliseconds timer (count-up only).

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Timing Format



C5:C0

Hold an encoding of a number to display (0..63). Format is context dependent, but all times are stored as two consecutive bytes. Bit format is BCD (Binary Coded Decimal).

For timer/counter times, the format is that the first byte (at a lower EEPROM memory address) contains minutes, and the next byte (at the next highest EEPROM memory address) contains seconds. Both must be parsed to prepare the next timing interval.