BUTTON OPERATION

0-7 Input Register Entry

EXAMINE Display memory contents at current address. Successive presses increment current address

DEPOSIT Deposit Input Register to current address and increment current address

STEP Execute single instruction at current PC

RUN/HALT Begin or end freerun mode

RESET Halt CPU, set PC=0, clear all registers. 2nd press gives option to clear all memory.

PROG LOAD Arm system for memory load from external system via "upload" program.

DISPLAY MODE Switch among four different display modes.

INTERRUPT Push PSW and PC to stack disable interrupts and call location 0376

SPECIAL REGISTERS

LOCATION	MEANING
400	R0
401	R1
402	R2
403	R3
404	R4
405	R5
406	R6
407	R7
410	PC
411	PSW
412	SP
413-452	Stack Entries (most recent at 413, then 414, 415, etc.)
771-774	Saved Prog 1-4
775-777	Shout outs and thank yous :)

Octal Conversion Table

AB \ C	0	1	2	3	4	5	6	7
00	0	1	2	3	4	5	6	7
01	8	9	10	11	12	13	14	15
02	16	17	18	19	20	21	22	23
03	24	25	26	27	28	29	30	31
04	32	33	34	35	36	37	38	39
05	40	41	42	43	44	45	46	47
06	48	49	50	51	52	53	54	55
07	56	57	58	59	60	61	62	63
10	64	65	66	67	68	69	70	71
11	72	73	74	75	76	77	78	79
12	80	81	82	83	84	85	86	87
13	88	89	90	91	92	93	94	95
14	96	97	98	99	100	101	102	103
15	104	105	106	107	108	109	110	111
16	112	113	114	115	116	117	118	119
17	120	121	122	123	124	125	126	127

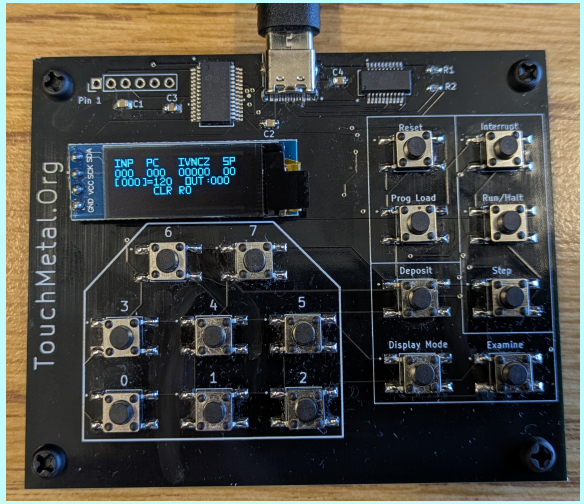
000-177

AB \ C	0	1	2	3	4	5	6	7
20	128	129	130	131	132	133	134	135
21	136	137	138	139	140	141	142	143
22	144	145	146	147	148	149	150	151
23	152	153	154	155	156	157	158	159
24	160	161	162	163	164	165	166	167
25	168	169	170	171	172	173	174	175
26	176	177	178	179	180	181	182	183
27	184	185	186	187	188	189	190	191
30	192	193	194	195	196	197	198	199
31	200	201	202	203	204	205	206	207
32	208	209	210	211	212	213	214	215
33	216	217	218	219	220	221	222	223
34	224	225	226	227	228	229	230	231
35	232	233	234	235	236	237	238	239
36	240	241	242	243	244	245	246	247
37	248	249	250	251	252	253	254	255

200-377

octal=ABC
decimal shown in table

TOUCH METAL PROGRAMMER'S CARD



8-bit CPU, 256 bytes memory
8 general purpose registers
32-byte stack
single interrupt vector
5 status bits
3 addressing modes
(direct, indirect and immediate)

touchmetal.org
by Zarasawa, LLC

INSTRUCTION FORMATS

CLASS	EXAMPLES
No operands	Halt, RTI
Opcode Address	Jmp, Call
Opcode src,dst	Add R2,R3
	Add (R4),(R7)
Opcode reg,immed	LDI R2,213
Opcode (reg),immed	LDI (R2),213
Opcode reg	INC R2
Opcode (reg)	INC (R2)

s,d,r are each 3-bit numbers:

0=R0
1=R1
2=R2
3=R3
4=R4
5=R5
6=R6
7=R7

m is a 2-bit number, describing the access mode of the source and destination registers:

0=src,dst
1=src,(dst)
2=(src),dst
3=(src),(dst)

INSTRUCTION SUMMARY

INSTRUCTION	CODING	FLAGS
NOP	000	
RET	001	
HALT	002	
CALL address	003 aaa	
JMP address	004 aaa	
JZ address	005 aaa	
JNZ address	006 aaa	
JN address	007 aaa	
JNN address	010 aaa	
JC address	011 aaa	
JNC address	012 aaa	
JV address	013 aaa	
JNV address	014 aaa	
ADD src,dst	020 msd	VCNZ
SUB src,dst	021 msd	VCNZ
MUL src,dst	022 msd	VCNZ
DIV src,dst	023 msd	VCNZ
AND src,dst	024 msd	NZ
OR src,dst	025 msd	NZ
XOR src,dst	026 msd	NZ
MOV src,dst	027 msd	NZ

aaa is an 8-bit address
msd specifies mode/src/dst

INSTRUCTION SUMMARY

INSTRUCTION	CODING	FLAGS
IntE	030	
IntD	031	
RTI	032	
LDI reg,value	07r iii	
INC reg	10r	CNZ
DEC reg	11r	CNZ
CLR reg	12r	
NOT reg	13r	NZ
ROL reg	14r	CNZ
	(C is the old bit 7)	
ROR reg	15r	CNZ
	(C is the old bit 0)	
IN reg	16r	NZ
OUT reg	17r	
LDI (reg),value	27r iii	
INC (reg)	30r	CNZ
DEC (reg)	31r	CNZ
CLR (reg)	32r	
NOT (reg)	33r	NZ
ROL (reg)	34r	CNZ
	(C is the old bit 7)	
ROR (reg)	35r	CNZ
	(C is the old bit 0)	
IN (reg)	36r	NZ
OUT (reg)	37r	

iii is an 8-bit immediate value