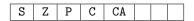
## Microcontroller Documentation

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- 1 Architecture
- 2 Instruction Set Summary

FLAGS



Instruction	Description	Cycles (T/F)	Opcode Flags	
	Arithmatic			
ADD [r1]	Adds the contents of register r1 to the	1	1,2,3,4	
	value in the accumulator, storing the re-			
	sult in the accumulator.			
ADI [data]	Adds the immediate value data to the	2	1,2,3,4	
	accumulator value, storing the result in			
	the accumulator			
SUB [r1]	Subtrets the contents of register r1	1	1,2,3,4	
	from the value in the accumulator, stor-			
	ing the result in the accumulator.			
SBI [data]	Subtracts the immediate value data fro	2	1,2,3,4	
	the the accumulator value, storing the		, , ,	
	result in the accumulator			
Data Transfer				
MOV [r1] [r2]	Copies the contents from the r1 register	1	none	
	to the r2 register			
LDA [addr]	Loads the content of addr to the accu-	4	none	
	mulator			
STA [addr]	Stores the content of the accumulator	4	none	
	to address addr			
	Logic			
	Branch Control			
JMP [addr]/[label]	Unconditionally sets the program	3	none	
	pointer to the address specified, either			
	as a literal value or a label of another			
	location in the program			
J[] [addr]/[label]	Conditional jump depending on flag	3/2	none	
	status:	,		
	SP sign positive $(S = 1)$ ,			
	SN sign negative $(S = 0)$ ,			
	Z zero value ( $Z = 1$ ),			
	NZ non-zero value $(Z = 0)$ ,			
	PO parity odd $(P = 1)$ ,			
	PE parity even $(P = 0)$ ,			
	C  carry/borrow  (C = 1),			
	NC no carry/borrow ( $C = 0$ )			
CALL [addr]/[label]	Unconditionally calls a subroutine,	5	none	
	pushing the current program pointer	•		
	the stack and setting the new program			
	pointer to the specified address/label			
C[] [addr]/[label]	Conditional call depending on flag sta-	5/2	none	
[ [addi]/[idbot]	tus (see J[] )	J/ 2	110110	
RET	Unconditionally return from a subrou-	3	none	
	tine, pops the address called from from	ū	110110	
	the stack and sets the program pointer			
	to it.			
R[] [addr]/[label]	Conditional return depending on flag	3/1	none	
[aaa1], [1abo1]	status (see J[] )	9/1	110110	
	Status (See OLJI)			

## 3 Instruction Set Details

Register inputs can be provided as either a numerical index of the register or using a keyword specific to the register. opcode goes to the instruction register

8 bit instruction register

BX	В	$^{\circ}$	
DX	D	E	
FX	G	Н	
Z	X	Y	Designated for most 16 bit use, such as storing addresses to memory locations
	_	_	Possible future use
	Stack Pointer		
	Program Counter		
	Flag	_	

All values given are the hexadecimal values, but can be provided in any of the accepted formats A is the accumulator

## 3.1 Data Transfer

## **3.1.1** MOV