

Z80/R800 MNEMONICS

RESUMED GUIDE

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RESUMED GUIDE OF Z80/R800 MNEMONICS

8-BIT LOAD GROUP

Mnemonic	Operation	C Z P V S N H	Binary	Hex	TZ	MZ	MR
LD r, r'	r ← r'	• • • • • •	01 r r'	--	04	01	01
LD r, n	r ← n	• • • • • •	00 r 110	--	07	02	02
LD u, u'	u ← u'	• • • • • •	11 011 101 01 u u'	DD --	--	--	02
LD v, v'	v ← v'	• • • • • •	11 111 101 01 v v'	FD --	--	--	02
LD u, n	u ← n	• • • • • •	11 011 101 00 u 110 □ n □	DD -- --	--	--	03
LD v, n	v ← n	• • • • • •	11 111 101 00 v 110 □ n □	FD -- --	--	--	03
LD r, (HL)	r ← (HL)	• • • • • •	01 r 110	DD	07	02	02
LD r, (IX+d)	r ← (IX+d)	• • • • • •	11 011 101 01 r 110 □ d □	-- -- --	19	05	05
LD r, (IY+d)	r ← (IY+d)	• • • • • •	11 111 101 01 r 110 □ d □	FD -- --	19	05	05
LD (HL), r	(HL) ← r	• • • • • •	01 110 r	--	07	02	02
LD (IX+d), r	(IX+d) ← r	• • • • • •	11 011 101 01 110 r □ d □	DD -- --	19	05	05
LD (IY+d), r	(IY+d) ← r	• • • • • •	11 111 101 01 110 r □ d □	FD -- --	19	05	05
LD A, (BC)	A ← (BC)	• • • • • •	00 001 010	0A	07	02	02
LD A, (DE)	A ← (DE)	• • • • • •	00 011 010	1A	07	02	02
LD A, (nn)	A ← (nn)	• • • • • •	00 111 010 □ n □ □ n □	3A -- --	13	04	04
LD (BC), A	(BC) ← A	• • • • • •	00 000 010	02	07	02	02
LD (HL), A	(HL) ← A	• • • • • •	00 000 010	12	07	02	02
LD (nn), A	(nn) ← A	• • • • • •	00 000 010 □ n □ □ n □	32 -- --	13	04	04
LD A, I	I ← A	• ↕ I ↕ • •	11 101 101 01 010 111	ED 57	09	02	02
LD A, R	I ← R	• ↕ I ↕ • •	11 101 101 01 011 111	ED 5F	09	02	02
LD I, A	I ← A	• • • • • •	11 101 101 01 000 111	ED 47	09	02	02
LD R, A	R ← A	• • • • • •	11 101 101 01 001 111	ED 4F	09	02	02

	000	001	010	011	100	101	110	111
r	B	C	D	E	H	L	•	A
u	B	C	D	E	IXH	IXL	•	A
v	B	C	D	E	IYH	IYL	•	A

16-BIT LOAD GROUP

Mnemonic	Operation	C Z P _v S N H	Binary	Hex	TZ	MZ	MR
LD dd, nn	dd□ nn	• • • • •	00 dd0 001 □ n □ □ n □	-- -- --	10	03	03
LD IX, nn	IX□ nn	• • • • •	11 011 101 00 100 001 □ n □ □ n □	DD 21 -- --	14	04	04
LD IY, nn	IY□ nn	• • • • •	11 111 101 00 100 001 □ n □ □ n □	FD 21 -- --	14	04	04
LD HL, (nn)	H□ (nn+1) L□ (nn)	• • • • •	00 101 010 □ n □ □ n □	2A -- --	16	05	05
LD dd, (nn)	ddh□ (nn+1) ddl□ (nn)	• • • • •	11 101 101 01 dd1 011 □ n □ □ n □	ED -- -- --	20	06	06
LD IX, (nn)	IXh□ (nn+1) IXl□ (nn)	• • • • •	11 011 101 00 101 010 □ n □ □ n □	DD 2A -- --	20	06	06
LD IY, (nn)	IYh□ (nn+1) IYl□ (nn)	• • • • •	11 111 101 00 101 010 □ n □ □ n □	FD 2A -- --	20	06	06
LD (nn), HL	(nn+1)□ H (nn)□ L	• • • • •	00 100 010 □ n □ □ n □	22 -- --	16	05	05
LD (nn), dd	(nn+1)□ ddh (nn)□ ddl	• • • • •	11 101 101 01 dd0 011 □ n □ □ n □	ED -- -- --	20	06	06
LD (nn), IX	(nn+1)□ IXh (nn)□ IXl	• • • • •	11 011 101 00 100 010 □ n □ □ n □	DD 22 -- --	20	06	06
LD (nn), IY	(nn+1)□ IYh (nn)□ IYl	• • • • •	11 111 101 00 100 010 □ n □ □ n □	FD 22 -- --	20	06	06

Mnemonic	Operation	C Z \overline{P} V S N H	Binary	Hex	TZ	MZ	MR
LD SP, HL	SP \leftarrow HL	• • • • •	11 111 001	F9	06	01	01
LD SP, IX	SP \leftarrow IX	• • • • •	11 011 101 11 111 001	DD F9	10	02	02
LD SP, IY	SP \leftarrow IY	• • • • •	11 111 101 11 111 001	FD F9	10	02	02
PUSH qq	(SP-2) \leftarrow qq1 (SP-1) \leftarrow qqh	• • • • •	11 qq0 101	--	11	03	03
PUSH IX	(SP-2) \leftarrow IX1 (SP-1) \leftarrow IXh	• • • • •	11 011 101 11 100 101	DD E5	15	04	04
PUSH IY	(SP-2) \leftarrow IY1 (SP-1) \leftarrow IYh	• • • • •	11 111 101 11 100 101	FD E5	11	04	04
POP qq	qq1 \leftarrow (SP+1) qqh \leftarrow (SP)	• • • • •	11 qq0 001	--	10	03	03
POP IX	IX1 \leftarrow (SP-2) IXh \leftarrow (SP-1)	• • • • •	11 011 101 11 100 001	DD E1	14	04	04
POP IY	IY1 \leftarrow (SP-2) IYh \leftarrow (SP-1)	• • • • •	11 111 101 11 100 001	FD E1	14	04	04

	00	01	10	11
dd	BC	DE	HL	SP
qq	BC	DE	HL	AF

EXCHANGE GROUP

Mnemonic	Operation	C Z \overline{P} V S N H	Binary	Hex	TZ	MZ	MR
EX DE, HL	DE \leftrightarrow HL	• • • • •	11 101 011	EB	04	01	01
EX AF, AF'	AF \leftrightarrow AF'	• • • • •	00 001 000	08	04	01	01
EXX	BC \leftrightarrow BC' DE \leftrightarrow DE' HL \leftrightarrow HL'	• • • • •	11 011 001	D9	04	01	01
EX (SP), HL	H \leftrightarrow (SP+1) L \leftrightarrow (SP)	• • • • •	11 100 011	E3	19	05	05
EX (SP), IX	IXh \leftrightarrow (SP+1) IXl \leftrightarrow (SP)	• • • • •	11 011 101 11 100 011	DD E3	23	06	06
EX (SP), IY	IYh \leftrightarrow (SP+1) IYl \leftrightarrow (SP)	• • • • •	11 011 101 11 100 011	FD E3	23	06	06

BLOCK TRANSFER GROUP

Mnemonic	Operation	C Z \overline{P} V S N H	Binary	Hex	TZ	MZ	MR
LDI	(DE) \leftarrow (HL) DE \leftarrow DE+1 HL \leftarrow HL+1 BC \leftarrow BC-1	• • \uparrow • 0 0	11 101 101 10 100 000	ED A0	16	04	04

Mnemonic	Operation	C Z ^P / _V S N H	Binary	Hex	TZ	MZ	MR
LDIR	(DE) ← (HL) DE ← DE+1 HL ← HL+1 BC ← BC-1 {Until BC=0}	• • 0 • 0 0	11 101 101 10 110 000	ED A8	21	05	05
					16	04	04
LDD	(DE) ← (HL) DE ← DE-1 HL ← HL-1 BC ← BC-1	• • ↕ • 0 0	11 101 101 10 101 000	ED B0	16	04	04
LDDR	(DE) ← (HL) DE ← DE-1 HL ← HL-1 BC ← BC-1 {Until BC=0}	• • 0 • 0 0	11 101 101 10 111 000	ED B8	21	05	05
					16	04	04

SEARCH GROUP

Mnemonic	Operation	C Z ^P / _V S N H	Binary	Hex	TZ	MZ	MR
CPI	A ← (HL) HL ← HL+1 BC ← BC-1	• ↕ ↕ ↕ 1 ↕	11 101 101 10 100 001	ED A1	16	04	04
CPIR	A ← (HL) HL ← HL+1 BC ← BC-1 {Until BC=0 or A=(HL) }	• ↕ ↕ ↕ 1 ↕	11 101 101 10 110 001	ED B1	21	05	05
					16	04	04
CPD	A ← (HL) HL ← HL-1 BC ← BC-1	• ↕ ↕ ↕ 1 ↕	11 101 101 10 101 001	ED A9	16	04	04
CPDR	A ← (HL) HL ← HL-1 BC ← BC-1 {Until BC=0 or A=(HL) }	• ↕ ↕ ↕ 1 ↕	11 101 101 10 111 001	ED B9	21	05	05
					16	04	04

LOGIC AND COMPARISON GROUP

Mnemonic	Operation	C Z ^P / _V S N H	Binary	Hex	TZ	MZ	MR
AND A, r	A ← A ∧ r	0 ↕ P ↕ 0 1	10 100 r	--	04	01	01
AND A, p	A ← A ∧ p	0 ↕ P ↕ 0 1	11 011 101 10 100 p	DD	--	--	01
AND A, q	A ← A ∧ q	0 ↕ P ↕ 0 1	11 111 101 10 100 q	FD	--	--	01
AND A, (HL)	A ← A ∧ (HL)	0 ↕ P ↕ 0 1	10 100 110	A6	07	02	02
AND A, (IX+d)	A ← A ∧ (IX+d)	0 ↕ P ↕ 0 1	11 011 101 10 100 110 □ d □	DD A6 --	19	05	05

Mnemonic	Operation	C Z P V S N H	Binary	Hex	TZ	MZ	MR
AND A, (IY+d)	$A \leftarrow A \wedge (IY+d)$	0 \Downarrow P \Downarrow 0 1	11 111 101 10 100 110 \square d \square	FD A6 --	19	05	05
AND A, n	$A \leftarrow A \wedge n$	0 \Downarrow P \Downarrow 0 1	11 100 110 \square n \square	E6 --	07	02	02
OR A, r	$A \leftarrow A \vee r$	0 \Downarrow P \Downarrow 0 1	10 110 r	--	04	01	01
OR A, p	$A \leftarrow A \vee p$	0 \Downarrow P \Downarrow 0 1	11 011 101 10 110 p	DD	--	--	01
OR A, q	$A \leftarrow A \vee q$	0 \Downarrow P \Downarrow 0 1	11 111 101 10 110 q	FD	--	--	01
OR A, (HL)	$A \leftarrow A \vee (HL)$	0 \Downarrow P \Downarrow 0 1	10 110 110	B6	07	02	02
OR A, (IX+d)	$A \leftarrow A \vee (IX+d)$	0 \Downarrow P \Downarrow 0 1	11 011 101 10 110 110 \square d \square	DD B6 --	19	05	05
OR A, (IY+d)	$A \leftarrow A \vee (IY+d)$	0 \Downarrow P \Downarrow 0 1	11 111 101 10 110 110 \square d \square	FD B6 --	19	05	05
OR A, n	$A \leftarrow A \vee n$	0 \Downarrow P \Downarrow 0 1	11 110 110 \square n \square	F6 --	07	02	02
XOR A, r	$A \leftarrow A \vee r$	0 \Downarrow P \Downarrow 0 1	10 101 r	--	04	01	01
XOR A, p	$A \leftarrow A \vee p$	0 \Downarrow P \Downarrow 0 1	11 011 101 10 101 p	DD	--	--	01
XOR A, q	$A \leftarrow A \vee q$	0 \Downarrow P \Downarrow 0 1	11 111 101 10 101 q	FD	--	--	01
XOR A, (HL)	$A \leftarrow A \vee (HL)$	0 \Downarrow P \Downarrow 0 1	10 101 110	AE	07	02	02
XOR A, (IX+d)	$A \leftarrow A \vee (IX+d)$	0 \Downarrow P \Downarrow 0 1	11 011 101 10 101 110 \square d \square	DD AE --	19	05	05
XOR A, (IY+d)	$A \leftarrow A \vee (IY+d)$	0 \Downarrow P \Downarrow 0 1	11 111 101 10 101 110 \square d \square	FD AE --	19	05	05
XOR A, n	$A \leftarrow A \vee n$	0 \Downarrow P \Downarrow 0 1	11 101 110 \square n \square	EE --	07	02	02
CP A, r	$A - r$	$\Downarrow \Downarrow V \Downarrow 1 \Downarrow$	10 111 r	--	04	01	01
CP A, p	$A - p$	$\Downarrow \Downarrow V \Downarrow 1 \Downarrow$	11 011 101 10 111 p	DD	--	--	01
CP A, q	$A - q$	$\Downarrow \Downarrow V \Downarrow 1 \Downarrow$	11 111 101 10 111 q	FD	--	--	01
CP A, (HL)	$A - (HL)$	$\Downarrow \Downarrow V \Downarrow 1 \Downarrow$	10 111 110	BE	07	02	02
CP A, (IX+d)	$A - (IX+d)$	$\Downarrow \Downarrow V \Downarrow 1 \Downarrow$	11 011 101 10 111 110 \square d \square	DD BE --	19	05	05
CP A, (IY+d)	$A - (IY+d)$	$\Downarrow \Downarrow V \Downarrow 1 \Downarrow$	11 111 101 10 111 110 \square d \square	FD BE --	19	05	05
CP A, n	$A - n$	$\Downarrow \Downarrow V \Downarrow 1 \Downarrow$	11 111 110 \square n \square	FE --	07	02	02

	000	001	010	011	100	101	110	111
r	B	C	D	E	H	L	•	A
p	•	•	•	•	IXH	IXL	•	•
q	•	•	•	•	IYH	IYL	•	•

8-BIT ARITHMETIC GROUP

Mnemonic	Operation	C Z ^{OV} S N H	Binary	Hex	TZ	MZ	MR
ADD A, r	A \square A+r	$\uparrow \uparrow V \uparrow 0 \uparrow$	10 000 r	--	04	01	01
ADD A, p	A \square A+p	$\uparrow \uparrow V \uparrow 0 \uparrow$	11 011 101 10 000 p	DD	--	--	01
ADD A, q	A \square A+q	$\uparrow \uparrow V \uparrow 0 \uparrow$	11 111 101 10 000 q	FD	--	--	01
ADD A, (HL)	A \square A+ (HL)	$\uparrow \uparrow V \uparrow 0 \uparrow$	10 000 110	86	07	02	02
ADD A, (IX+d)	A \square A+ (IX+d)	$0 \uparrow P \uparrow 0 1$	11 011 101 10 000 110 \square d \square	DD 86 --	19	05	05
ADD A, (IY+d)	A \square A+ (IY+d)	$0 \uparrow P \uparrow 0 1$	11 111 101 10 000 110 \square d \square	FD 86 --	19	05	05
ADD A, n	A \square A+n	$0 \uparrow P \uparrow 0 1$	11 000 110 \square n \square	C6 --	07	02	02
ADC A, r	A \square A+r+CY	$0 \uparrow P \uparrow 0 1$	10 001 r	--	04	01	01
ADC A, p	A \square A+p+CY	$0 \uparrow P \uparrow 0 1$	11 011 101 10 101 p	DD --	--	--	02
ADC A, q	A \square A+q+CY	$0 \uparrow P \uparrow 0 1$	11 111 101 10 101 q	FD --	--	--	02
ADC A, (HL)	A \square A+ (HL)+CY	$0 \uparrow P \uparrow 0 1$	10 001 110	8E	07	02	02
ADC A, (IX+d)	A \square A+ (IX+d)+CY	$0 \uparrow P \uparrow 0 1$	11 011 101 10 001 110 \square d \square	DD 8E --	19	05	05
ADC A, (IY+d)	A \square A+ (IY+d)+CY	$0 \uparrow P \uparrow 0 1$	11 111 101 10 001 110 \square d \square	FD 8E --	19	05	05
ADC A, n	A \square A+n+CY	$0 \uparrow P \uparrow 0 1$	11 001 110 \square n \square	CE --	07	02	02
SUB A, r	A \square A-r	$\uparrow \uparrow V \uparrow 1 \uparrow$	10 010 r	--	04	01	01
SUB A, p	A \square A-p	$\uparrow \uparrow V \uparrow 1 \uparrow$	11 011 101 10 010 p	DD --	--	--	02
SUB A, q	A \square A-q	$\uparrow \uparrow V \uparrow 1 \uparrow$	11 111 101 10 010 q	FD --	--	--	02
SUB A, (HL)	A \square A- (HL)	$\uparrow \uparrow V \uparrow 1 \uparrow$	10 010 110	96	07	02	02
SUB A, (IX+d)	A \square A- (IX+d)	$\uparrow \uparrow V \uparrow 1 \uparrow$	11 011 101 10 010 110 \square d \square	DD 96 --	19	05	05
SUB A, (IY+d)	A \square A- (IY+d)	$\uparrow \uparrow V \uparrow 1 \uparrow$	11 111 101 10 010 110 \square d \square	FD 96 --	19	05	05

Mnemonic	Operation	C Z % S N H	Binary	Hex	TZ	MZ	MR
SUB A, n	A ← A - n	↓ ↓ V ↓ 1 ↓	11 010 110 □ n □	D6 --	07	02	02
SBC A, r	A ← A - r - CY	↓ ↓ V ↓ 1 ↓	10 011 r	--	04	01	01
SBC A, p	A ← A - p - CY	↓ ↓ V ↓ 1 ↓	11 011 101 10 011 p	DD --	--	--	02
SBC A, q	A ← A - q - CY	↓ ↓ V ↓ 1 ↓	11 111 101 10 011 q	FD --	--	--	02
SBC A, (HL)	A ← A - (HL) - CY	↓ ↓ V ↓ 1 ↓	10 011 110	9E	07	02	02
SBC A, (IX+d)	A ← A - (IX+d) - CY	↓ ↓ V ↓ 1 ↓	11 011 101 10 011 110 □ d □	DD 9E --	19	05	05
SBC A, (IY+d)	A ← A - (IY+d) - CY	↓ ↓ V ↓ 1 ↓	11 111 101 10 011 110 □ d □	FD 9E --	19	05	05
SBC n	A ← A - n - CY	↓ ↓ V ↓ 1 ↓	11 011 110 □ n □	DE --	07	02	02
INC r	r ← r + 1	• ↓ V ↓ 0 ↓	00 r 100	--	04	01	01
INC p	p ← p + 1	• ↓ V ↓ 0 ↓	11 011 101 00 p 100	DD --	--	--	02
INC q	q ← q + 1	• ↓ V ↓ 0 ↓	11 111 101 00 q 100	FD --	--	--	02
INC (HL)	(HL) ← (HL) + 1	• ↓ V ↓ 0 ↓	00 110 100	34	11	03	04
INC (IX+d)	(IX+d) ← (IX+d) + 1	• ↓ V ↓ 0 ↓	11 011 101 00 110 100 □ d □	DD 34 --	23	06	07
INC (IY+d)	(IY+d) ← (IY+d) + 1	• ↓ V ↓ 0 ↓	11 111 101 00 110 100 □ d □	FD 34 --	23	06	07
DEC r	r ← r - 1	• ↓ V ↓ 1 ↓	00 r 101	--	04	01	01
DEC p	p ← p - 1	• ↓ V ↓ 1 ↓	11 011 101 00 p 101	DD --	--	--	02
DEC q	q ← q - 1	• ↓ V ↓ 1 ↓	11 111 101 00 q 101	FD --	--	--	02
DEC (HL)	(HL) ← (HL) - 1	• ↓ V ↓ 1 ↓	00 110 101	35	11	03	04
DEC (IX+d)	(IX+d) ← (IX+d) - 1	• ↓ V ↓ 1 ↓	11 011 101 00 110 101 □ d □	DD 35 --	23	06	07
DEC (IY+d)	(IY+d) ← (IY+d) - 1	• ↓ V ↓ 1 ↓	11 111 101 00 110 101 □ d □	FD 35 --	23	06	07
MULUB A, r	HL ← A * r	↓ ↓ 0 0 • •	11 101 101 11 r 001	ED --	--	--	14

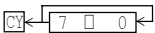
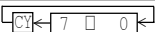
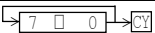
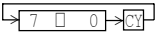
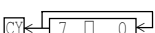
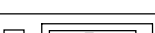
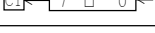
	000	001	010	011	100	101	110	111
r	B	C	D	E	H	L	•	A
p	•	•	•	•	IXH	IXL	•	•
q	•	•	•	•	IYH	IYL	•	•

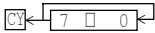
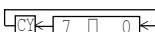

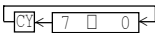
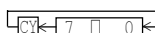
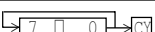
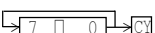
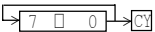
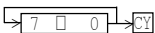
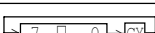
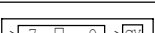



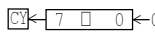
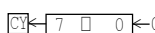
16-BIT ARITHMETIC GROUP



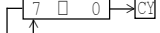
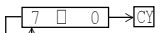
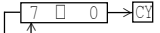
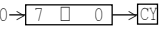
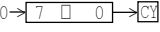

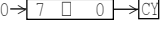
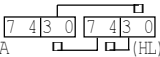
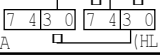
Mnemonic	Operation	C Z P V S N H	Binary	Hex	TZ	MZ	MR
ADD HL, ss	HL ← HL+ss	↓ . . . 0 ?	00 ss1 001	--	11	03	01
ADD IX, pp	IX ← IX+pp	↓ . . . 0 ?	11 011 101 00 ss1 001	DD	15	04	02
ADD IY, rr	IY ← IY+rr	↓ . . . 0 ?	11 111 101 00 ss1 001	FD --	15	04	02
ADC HL, ss	HL ← HL+ss+CY	↓ ↓ V ↓ 0 ?	11 101 101 01 ss1 010	ED --	15	04	02
SBC HL, ss	HL ← HL-ss-CY	↓ ↓ V ↓ 0 ?	11 101 101 01 ss0 010	ED --	15	04	02
INC ss	ss ← ss+1	. . . . .	00 ss0 011	--	06	01	01
INC IX	IX ← IX+1	. . . . .	11 011 101 00 100 011	DD 23	10	02	02
INC IY	IY ← IY+1	. . . . .	11 111 101 00 100 011	FD 23	10	02	02
DEC ss	ss ← ss-1	. . . . .	00 ss1 011	--	06	01	01
DEC IX	IX ← IX-1	. . . . .	11 011 101 00 101 011	DD 2B	10	02	02
DEC IY	IY ← IY-1	. . . . .	11 111 101 00 101 011	FD 2B	10	02	02
MULUW HL, ss	DE:HL ← HL*tt	↓ ↓ 0 0 . .	11 101 101 11 tt0 011	ED --	--	--	36

	00	01	10	11
ss	BC	DE	HL	SP
pp	BC	DE	IX	SP
rr	BC	DE	IY	SP
tt	BC	--	--	SP

ROTATION AND DISPLACEMENT GROUP

Mnemonic	Operation	C Z P V S N H	Binary	Hex	TZ	MZ	MR
RLCA		↓ . . . 0 0	00 000 111	07	04	01	01
RLA		↓ . . . 0 0	00 010 111	0F	04	01	01
RRCA		↓ . . . 0 0	00 001 111	17	04	01	01
RRA		↓ . . . 0 0	00 011 111	1F	04	01	01
RLC r		↓ ↓ P ↓ 0 0	11 001 011 00 000 r	CB --	08	02	02
RLC (HL)		↓ ↓ P ↓ 0 0	11 001 011 00 000 110	CB 06	15	04	05
RLC (IX+d)		↓ ↓ P ↓ 0 0	11 011 011 11 001 011 d 00 000 110	DD CB -- 06	23	06	07

Mnemonic	Operation	C Z P V S N H	Binary	Hex	TZ	MZ	MR
RLC (IY+d)		$\uparrow \downarrow P \uparrow 0 0$	11 011 011 11 001 011 \square d \square 00 000 110	FD CB -- 06	23	06	07
RL r		$\uparrow \downarrow P \uparrow 0 0$	11 001 011 00 010 r	CB --	08	02	02
RL (HL)		$\uparrow \downarrow P \uparrow 0 0$	11 001 011 00 010 110	CB 16	15	04	05
RL (IX+d)		$\uparrow \downarrow P \uparrow 0 0$	11 011 011 11 001 011 \square d \square 00 010 110	DD CB -- 16	23	06	07
RL (IY+d)		$\uparrow \downarrow P \uparrow 0 0$	11 011 011 11 001 011 \square d \square 00 010 110	FD CB -- 16	23	06	07
RRC r		$\uparrow \downarrow P \uparrow 0 0$	11 001 011 00 001 r	CB --	08	02	02
RRC (HL)		$\uparrow \downarrow P \uparrow 0 0$	11 001 011 00 001 110	CB 0E	15	04	05
RRC (IX+d)		$\uparrow \downarrow P \uparrow 0 0$	11 011 011 11 001 011 \square d \square 00 001 110	DD CB -- 0E	23	06	07
RRC (IY+d)		$\uparrow \downarrow P \uparrow 0 0$	11 011 011 11 001 011 \square d \square 00 001 110	FD CB -- 0E	23	06	07
RR r		$\uparrow \downarrow P \uparrow 0 0$	11 011 011 00 001 r	CB --	08	02	02
RR (HL)		$\uparrow \downarrow P \uparrow 0 0$	11 001 011 00 011 110	CB 1E	15	04	05
RR (IX+d)		$\uparrow \downarrow P \uparrow 0 0$	11 011 011 11 001 011 \square d \square 00 011 110	DD CB -- 1E	23	06	07
RR (IY+d)		$\uparrow \downarrow P \uparrow 0 0$	11 011 011 11 001 011 \square d \square 00 011 110	FD CB -- 1E	23	06	07
SLA r		$\uparrow \downarrow P \uparrow 0 0$	11 011 011 00 100 r	CB --	08	02	02
SLA (HL)		$\uparrow \downarrow P \uparrow 0 0$	11 001 011 00 100 110	CB 26	15	04	05
SLA (IX+d)		$\uparrow \downarrow P \uparrow 0 0$	11 011 011 11 001 011 \square d \square 00 100 110	DD CB -- 26	23	06	07

Mnemonic	Operation	C Z ^P / _V S N H	Binary	Hex	TZ	MZ	MR
SLA (IX+d)		$\Downarrow \Downarrow P \Downarrow 0 0$	11 100 011 11 001 011 d 00 100 110	FD CB -- 1E	23	06	07
SRA r		$\Downarrow \Downarrow P \Downarrow 0 0$	11 011 011 00 101 r	CB --	08	02	02
SRA (HL)		$\Downarrow \Downarrow P \Downarrow 0 0$	11 001 011 00 101 110	CB 2E	15	04	05
SRA (IX+d)		$\Downarrow \Downarrow P \Downarrow 0 0$	11 011 011 11 001 011 d 00 101 110	DD CB -- 2E	23	06	07
SRA (IX+d)		$\Downarrow \Downarrow P \Downarrow 0 0$	11 100 011 11 001 011 d 00 101 110	FD CB -- 2E	23	06	07
SRL r		$\Downarrow \Downarrow P \Downarrow 0 0$	11 011 011 00 111 r	CB --	08	02	02
SRL (HL)		$\Downarrow \Downarrow P \Downarrow 0 0$	11 001 011 00 111 110	CB 3E	15	04	05
SRL (IX+d)		$\Downarrow \Downarrow P \Downarrow 0 0$	11 011 011 11 001 011 d 00 111 110	DD CB -- 3E	23	06	07
SRL (IY+d)		$\Downarrow \Downarrow P \Downarrow 0 0$	11 100 011 11 001 011 d 00 111 110	FD CB -- 3E	23	06	07
RLD		$\bullet \Downarrow P \Downarrow 0 0$	11 101 101 01 101 111	ED 6F	18	05	07
RRD		$\bullet \Downarrow P \Downarrow 0 0$	11 101 101 01 100 111	ED 67	18	05	07

	000	001	010	011	100	101	110	111
r	B	C	D	E	H	L	•	A

TEST AND BIT MANIPULATION GROUP

Mnemonic	Operation	C Z ^P / _V S N H	Binary	Hex	TZ	MZ	MR
BIT b, r	$Z \square \overline{r_b}$	$\bullet \Downarrow ? ? 0 1$	11 001 011 01 b r	CB --	08	02	02
BIT b, (HL)	$Z \square \overline{(HL)_b}$	$\bullet \Downarrow ? ? 0 1$	11 001 011 01 b 110	CB --	12	03	03
BIT b, (IX+d)	$Z \square \overline{(IX+d)_b}$	$\bullet \Downarrow ? ? 0 1$	11 011 101 11 001 011 d 01 b 110	DD CB -- --	20	05	05

Mnemonic	Operation	C Z ^P / _V S N H	Binary	Hex	TZ	MZ	MR
BIT b, (IY+d)	$Z \square (\overline{IY+d})_b$	• \updownarrow ? ? 0 1	11 111 101 11 001 011 \square d \square 01 b 110	FD CB -- --	20	05	05
SET b, r	$r_b \square 1$	• • • • •	11 001 011 11 b r	FD --	08	02	02
SET b, (HL)	$(HL)_b \square 1$	• • • • •	11 001 011 11 b 110	FD --	15	04	05
SET b, (IX+d)	$(IX+d)_b \square 1$	• • • • •	11 011 101 11 001 011 \square d \square 11 b 110	FD CB -- --	23	06	07
SET b, (IY+d)	$(IY+d)_b \square 1$	• • • • •	11 111 101 11 001 011 \square d \square 11 b 110	FD CB -- --	23	06	07
RES b, r	$r_b \square 0$	• • • • •	11 001 011 10 b r	FD --	08	02	02
RES b, (HL)	$(HL)_b \square 0$	• • • • •	11 001 011 10 b 110	FD --	15	04	05
RES b, (IX+d)	$(IX+d)_b \square 0$	• • • • •	11 011 101 11 001 011 \square d \square 10 b 110	FD CB -- --	23	06	07
RES b, (IY+d)	$(IY+d)_b \square 0$	• • • • •	11 111 101 11 001 011 \square d \square 10 b 110	FD CB -- --	23	06	07

	000	001	010	011	100	101	110	111
r	B	C	D	E	H	L	•	A
b	b0	b1	b2	b3	b4	b5	b6	b7

JUMP GROUP

Mnemonic	Operation	C Z ^P / _V S N H	Binary	Hex	TZ	MZ	MR
JP nn	PC \square nn	• • • • •	11 000 011 \square n \square \square n \square	C3 -- --	10	03	03
JP cc, nn	If cc=True, PC \square nn	• • • • •	11 cc 010 \square n \square \square n \square	-- -- --	10	03	03
JR e	PC \square PC+e	• • • • •	00 011 000 \square e-2 \square	18 --	12	03	03
JR C, e	If C=1, PC \square PC+e	• • • • •	00 111 000 \square e-2 \square	38 --	07	02	02
JR NC, e	If C=0, PC \square PC+e	• • • • •	00 110 000 \square e-2 \square	30 --	07	02	02

Mnemonic	Operation	C Z ^P / _V S N H	Binary	Hex	TZ	MZ	MR
JR Z,e	If Z=1, PC ← PC+e	. . . . .	00 101 000 □ e-2 □	28 --	07 12	02 03	02 03
JR NZ,e	If Z=0, PC ← PC+e	. . . . .	00 100 000 □ e-2 □	20 --	07 12	02 03	02 03
JP (HL)	PC ← HL	. . . . .	11 101 001	E9	04	01	01
JP (IX)	PC ← IX	. . . . .	11 011 101 11 101 001	DD E9	08	02	02
JP (IY)	PC ← IY	. . . . .	11 111 101 11 101 001	FD E9	08	02	02
DJNZ e	B ← B-1 If B ≠ 0, PC ← PC+e	. . . . .	00 010 000 □ e-2 □	10 --	08 13	02 03	02 02

	000	001	010	011	100	101	110	111
cc	NZ	Z	NC	C	PO	PE	P	M

CALL AND RETURN GROUP

Mnemonic	Operation	C Z ^P / _V S N H	Binary	Hex	TZ	MZ	MR
CALL nn	(SP-1) ← PC _h (SP-2) ← PC _l PC ← nn	. . . . .	11 001 101 □ n □ □ n □	CD --			
CALL cc,nn	Se cc=Verd, (SP-1) ← PC _h (SP-2) ← PC _l PC ← nn	. . . . .	11 cc 100 □ n □ □ n □	-- --	10 17	03 05	03 05
RET	PC _l ← (SP) PC _h ← (SP+1)	. . . . .	11 001 001	C9	10	03	03
RET cc	Se cc=Verd, PC _l ← (SP) PC _h ← (SP+1)	. . . . .	11 cc 000	--	05 11	01 03	01 03
RETI	Interrupt return	. . . . .	11 101 101 01 001 101	ED 4D	14	04	05
RETN	No Maskable. Interr. ret.	. . . . .	11 101 101 01 000 101	ED 45	14	04	05
RST p	(SP-1) ← PC _h (SP-2) ← PC _l PC _l ← p*8 PC _h ← 0	. . . . .	11 p 111	--	11	03	04

	000	001	010	011	100	101	110	111
cc	NZ	Z	NC	C	PO	PE	P	M

INPUT AND OUTPUT GROUP

Mnemonic	Operation	C Z ^P / _V S N H	Binary	Hex	TZ	MZ	MR
IN A, (n)	A ← (n)	. . . . .	11 011 011 □ n □	28 --	11	03	03

Mnemonic	Operation	C Z P V S N H	Binary	Hex	TZ	MZ	MR
IN r, (C)	r □ (C)	• ↓ P ↓ 0 ↓	11 101 101 01 r 000	ED --	11	03	03
INI	(HL) □ (C) B □ B-1 HL □ HL+1	• ↓ ? ? 1 ?	11 101 101 10 100 010	ED A2	16	04	04
INIR	(HL) □ (C) B □ B-1 HL □ HL+1 {Until B=0}	• 1 ? ? 1 ?	11 101 101 10 110 010	ED B2	21	05	04
IND	(HL) □ (C) B □ B-1 HL □ HL-1	• ↓ ? ? 1 ?	11 101 101 10 101 010	ED AA	16	04	04
INDR	(HL) □ (C) B □ B-1 HL □ HL-1 {Until B=0}	• 1 ? ? 1 ?	11 101 101 10 111 010	ED BA	21	05	04
OUT (n), A	(n) □ A	• • • • •	11 010 011 □ n □	D3 --	11	03	03
OUT (C), r	(C) □ r	• • • • •	11 101 101 01 r 001	ED --	12	03	03
OUTI	(C) □ (HL) B □ B-1 HL □ HL+1	• ↓ ? ? 1 ?	11 101 101 10 100 011	ED A3	16	04	04
OTIR	(C) □ (HL) B □ B-1 HL □ HL+1 {Until B=0}	• 1 ? ? 1 ?	11 101 101 10 110 011	ED B3	21	05	04
OUTD	(C) □ (HL) B □ B-1 HL □ HL-1	• ↓ ? ? 1 ?	11 101 101 10 110 011	ED AB	16	04	04
OTDR	(C) □ (HL) B □ B-1 HL □ HL-1 {Until B=0}	• 1 ? ? 1 ?	11 101 101 10 111 011	ED BB	21	05	04
					16	04	03

	000	001	010	011	100	101	110	111
r	B	C	D	E	H	L	F	A

CONTROL AND MISCELLANY GROUP

Mnemonic	Operation	C Z P V S N H	Binary	Hex	TZ	MZ	MR
DAA	BCD Conv.	↓ ↓ P ↓ • ↓	00 100 111	27	04	01	01
CPL	A □ NOT(A)	• • • • 1 1	00 101 111	2F	04	01	01
NEG	A □ 0-A	↓ ↓ V ↓ 1 ↓	00 101 101 01 000 100	ED 44	08	02	02
CCF	CY □ NOT(CY)	↓ • • • 0 ?	00 111 111	3F	04	01	01
SCF	CY □ 1	1 • • • 0 0	00 110 111	37	04	01	01
NOP	No operation	• • • • •	00 000 000	00	04	01	01

Mnemonic	Operation	C Z P _h S N H	Binary	Hex	TZ	MZ	MR
HALT	Halts CPU	• • • • • •	01 110 110	76	04	01	01
DI	IFF 0	• • • • • •	11 110 011	F3	04	01	01
EI	IFF 1	• • • • • •	11 111 011	FB	04	01	01
IM 0	Interrupt mode 0	• • • • • •	11 101 101 01 000 110	ED 46	08	02	02
IM 1	Interrupt mode 1	• • • • • •	11 101 101 01 010 110	ED 56	08	02	02
IM 2	Interrupt mode 2	• • • • • •	11 101 101 01 011 110	ED 5E	08	02	02

CONVENTIONS

The Z80 and R800 mnemonics are split in 14 groups by similarity of functions. All instructions, except MULUB and MULUW, that are for R800 only, are common to the both processors. The instructions that manipulate the IXH, IXL, IYH and IYL registers are “secret” instructions of the Z80; they were officially established for the R800. Below there are a short description of each field of the tables.

Mnemonic:	Mnemonic code in the Z80 notation.
Operarion:	Short description of the operation realized by the instruction. A description between parenthesis is a remark.
C Z $\frac{P}{V}$ S N H:	Flags affected. The notation is the following: <ul style="list-style-type: none"> • flag not modified 0 flag off 1 flag on ? flag unknown ↕ flag modified according to the result of the operation I the content of the circuitry of interrupt activation (IFF) is copied to flag
Binary:	Binary code of the instruction
Hex:	Hexadecimal code of the instruction
TZ:	Number of T cycles for the Z80
MZ:	Number of machine cycles for the Z80
MR:	Number of machine cycles for the R800

Nota:

When there had two cycles descriptions, they refers to both conditions that the instructions can to assume. The “--” indication is present in the instructions that manipulate the IXH, IXL, IYH and IHL registers (“secret” instructions of the Z80) and in the MULUB and MULUW R800 instructions.