6 SEQUENCE INSTRUCTIONS

6.1 Contact Instructions

Operation start, series connection, parallel connection

LD, LDI, AND, ANI, OR, ORI

`FX5S` `FX5UJ` `FX5U` `FX5UC`

- LD: NO contact operation start instruction/LDI: NC contact operation start instruction
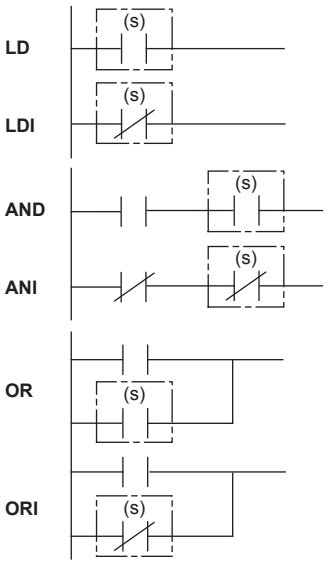
These instructions capture the ON/OFF information of the device specified by (s), and use that as the operation result.

- AND: NO contact series connection instruction/ANI: NC contact series connection instruction

These instructions capture the ON/OFF information of the device specified by (s), AND with the operation result so far, and use the result as the operation result.

- OR: NO contact parallel connection instruction/ORI: NC contact parallel instruction

These instructions capture the ON/OFF information of the device specified by (s), OR with the operation result so far, and use the result as the operation result.

Ladder diagram	Structured text
	This becomes a assignment statement, operator, control syntax, etc. In the ST language, there are sometimes no instructions (symbols) that directly correspond to contacts such as LD, AND, and OR. When programming using assignment statements, express as shown in the following example. Example Y1:=(X0 OR X1) AND X2 AND NOT X3; Y2:=NOT X4 OR NOT X5;

FBD/LD
In the FBD/LD language, contact is used as well as the Ladder diagram.

Setting data

■Descriptions, ranges, and data types

Operand	Remarks	Range	Data type	Data type (label)
(s)	Device used as a contact	—	Bit	ANY_BOOL

■Applicable devices

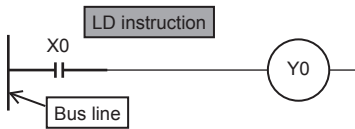| Operand	Bit	Word			Double word		Indirect specification	Constant			Others
	X, Y, M, L, SM, F, B, SB, S	T, ST, C, D, W, SD, SW, R	U□\G□	Z	LC	LZ		K, H	E	$	(DX)
(s)	○	○	○	—	○	—	—	—	—	—	○

Processing details

■LD, LDI

- The LD instruction is the NO contact operation start instruction, and the LDI instruction is the NC contact operation start instruction. These instructions capture the ON/OFF information[*1] of the specified device, and use the result as the operation result.
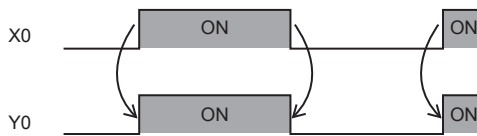
*1   When bits of word devices are specified, devices turn ON/OFF by the 1/0 status of the specified bit.
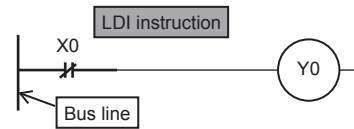
Ex.
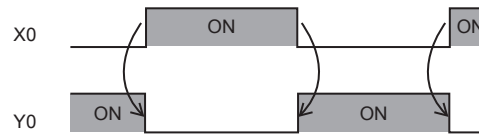
- LD instruction (NO contact operation start)

LD instruction

X0 ──┤├──────────(Y0)──
←Bus line

Timing chart

X0 ──┐ON┌────────────┐ON
Y0 ──┐ON┌────────────┐ON

- LDI instruction (NC contact operation start)

LDI instruction

X0 ──┤/├──────────(Y0)──
←Bus line

Timing chart

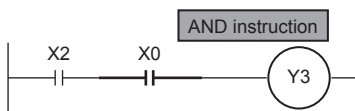X0 ──┐ON┌────────────┐ON
Y0 ─ON┐────────────┌ON──

■AND, ANI

- The AND instruction is NO contact series connection instruction and the ANI instruction is NC contact series connection instruction. These instructions capture the ON/OFF information[*1] of the specified bit device, AND with the operation result so far, and use the result as the operation result.

*1   When bits of word devices are specified, devices turn ON/OFF by the 1/0 status of the specified bit.
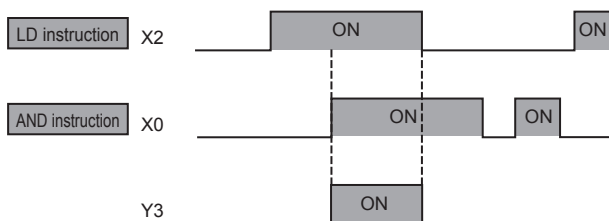
- There is no limitation to the number of series contacts. Any number of contacts can use this instructions consecutively.
- Output to other coils through contacts after the OUT instruction is called cascade output, and these outputs can be repeated any number of times as long as their order is correct.
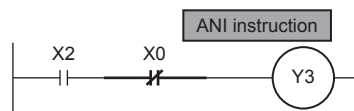
Ex.

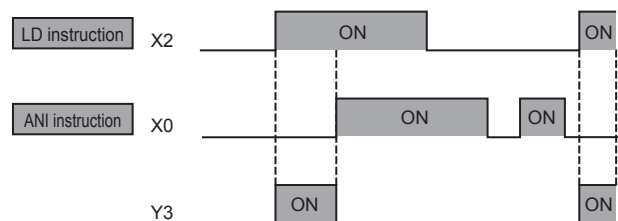- AND instruction
  (series connection of NO contacts)

AND instruction

X2   X0 ──┤├──┤├────(Y3)──

Timing chart

LD instruction X2 ──┐ON┌──────┐ON
AND instruction X0 ────┐ON┌─┐ON┌
Y3 ────┐ON┌──

- ANI instruction
  (series connection of NC contacts)

ANI instruction

X2   X0 ──┤├──┤/├────(Y3)──

Timing chart

LD instruction X2 ──┐ON┌──────┐ON
ANI instruction X0 ────┐ON┌─┐ON┌
Y3 ─┐ON┌──────┐ON

6

■OR, ORI

- The OR instruction is NO contact parallel connection and the ORI instruction is NC contact parallel connection. These instructions capture the ON/OFF information[1] of the specified device, OR with the operation result so far, and use the result as the operation result.

*1 When bits of word devices are specified, devices turn ON/OFF by the 1/0 status of the specified bit.
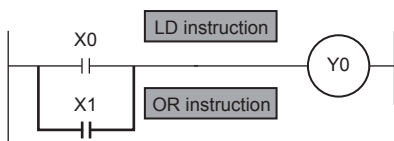
- These instructions are connected in parallel from the step with this instruction to the previous step with the LD and LDI instruction.
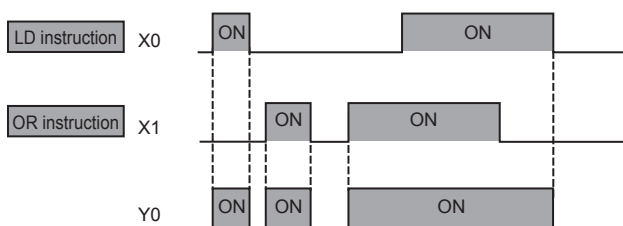- There is no limitation in the number of parallel connections.

> **Point**
>
> - When bits of word devices are specified, bits are specified in hexadecimal. (For example, b11 of D0 is specified by "D0.B".)
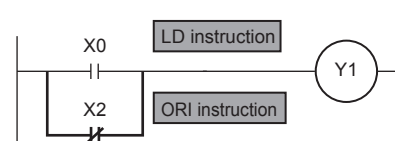
Ex.

- OR instruction
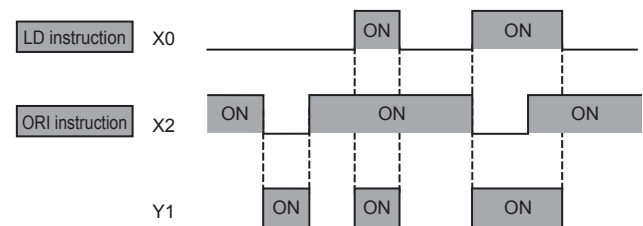 (parallel connection of NO contacts)

Timing chart

- ORI instruction
  (parallel connection of NC contacts)

Timing chart

Operation error

There is no operation error.