MD-600 Series

MD-621・MD-631
General-purpose AC Servomotor
for Industrial Sewing Machines (Common model)

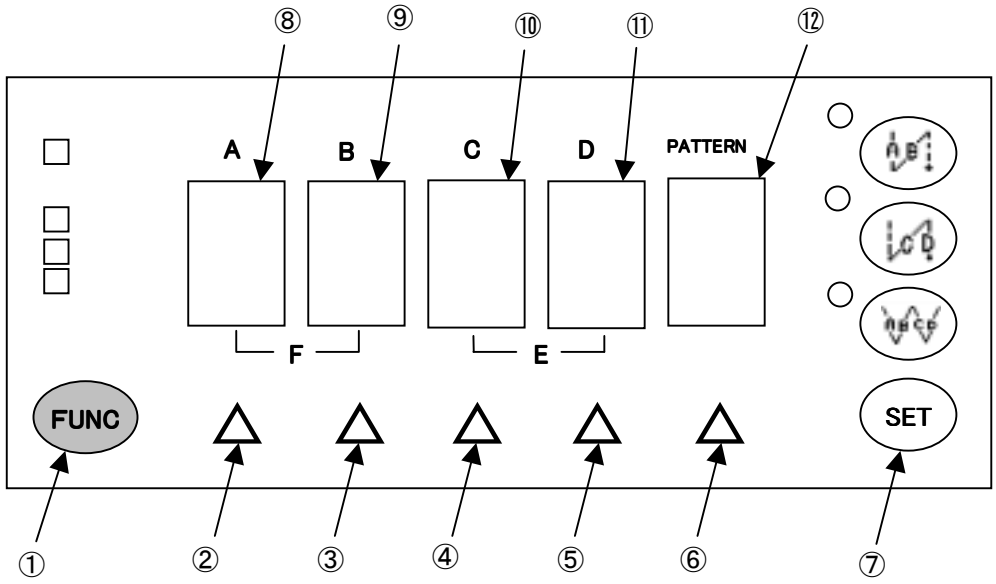
<<Product Manual>>
Technical Information Ⅱ

Input/output signal settings

Contents

1. INPUT/OUTPUT SETTING MODE

1.1 Outline of setting procedure



Entering the input/output setting mode

(1) While pressing the FUNC key①, press the C△ key④ two or more seconds.
The initial display is [ ].

Meaning of display

(1) The setting items are displayed on AB area⑧-⑨.
(2) The setting values are displayed on CD area⑩-⑪.
(3) The setting items and the values are divided with the dot display.
★ In some settings, the items are are displayed on ABC area⑧-⑩ and the values are displayed on D and pattern area⑪-⑫.

Selecting the setting groups

(1) The optional input and output settings are classified into four groups as follows:
A: Settings of sonenoid output signals (SOL1-SOL8)
B: Settings of optional output signals (OUT0-OUT7)
C: Settings of SW input signals (BTSW, PRSW, FORSW, BAKSW, INCHSW, SAFESW, EMGSW, BDSW)
D: Settings of optional input signals (IN1-INC)
(2) Press the FUNC key① to call the first item of each setteing group.

Selecting the setting items

1) Select the item with the A△ key② or the B△ key③.
Press the A△ key② to call the forward items.
Press the B△ key③ to call the backward items.

Setting the values

1) Set the values with the C△ key④ and the D△ key⑤.
★ In some settings (when the item display is three figures.), the values are set with the D△ key⑤ or the pattern△ key⑥.

Completion of the setting mode

1) Press the SET key⑦ two or more seconds.
The settings will be updated and the setting mode will end.
(NOTE) When you do not want to update the settings, turn off the power switch.

1.2 Table of solenoid output signal setting items

Display	Setting details
[L 1.**]	SOL1 output signal No. setting
[L 2.**]	SOL2 output signal No. setting
[L 3.**]	SOL3 output signal No. setting
[L 4.**]	SOL4 output signal No. setting
[L 5.**]	SOL5 output signal No. setting
[L 6.**]	SOL6 output signal No. setting
[L 7.**]	SOL7 output signal No. setting
[L 8.**]	SOL8 output signal No. setting
[L 1L.*]	SOL1 output logic setting ([L]:output level is Low, [H]:output level is High)
[L 2L.*]	SOL2 output logic setting ([L]:output level is Low, [H]:output level is High)
[L 3L.*]	SOL3 output logic setting ([L]:output level is Low, [H]:output level is High)
[L 4L.*]	SOL4 output logic setting ([L]:output level is Low, [H]:output level is High)
[L 5L.*]	SOL5 output logic setting ([L]:output level is Low, [H]:output level is High)
[L 6L.*]	SOL6 output logic setting ([L]:output level is Low, [H]:output level is High)
[L 7L.*]	SOL7 output logic setting ([L]:output level is Low, [H]:output level is High)
[L 8L.*]	SOL8 output logic setting ([L]:output level is Low, [H]:output level is High)
[L 1n.*]	SOL1 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[L 2n.*]	SOL2 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[L 3n.*]	SOL3 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[L 4n.*]	SOL4 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[L 5n.*]	SOL5 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[L 6n.*]	SOL6 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[L 7n.*]	SOL7 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[L 8n.*]	SOL8 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[L 1d.**]	Delay time until SOL1 signal is turned ON (0-990ms, × 10ms)
[L 2d.**]	Delay time until SOL2 signal is turned ON (0-990ms, × 10ms)
[L 3d.**]	Delay time until SOL3 signal is turned ON (0-990ms, × 10ms)
[L 4d.**]	Delay time until SOL4 signal is turned ON (0-990ms, × 10ms)
[L 5d.**]	Delay time until SOL5 signal is turned ON (0-990ms, × 10ms)
[L 6d.**]	Delay time until SOL6 signal is turned ON (0-990ms, × 10ms)
[L 7d.**]	Delay time until SOL7 signal is turned ON (0-990ms, × 10ms)
[L 8d.**]	Delay time until SOL8 signal is turned ON (0-990ms, × 10ms)
[L 1o.**]	SOL1 signal ON time (0-990ms, × 10ms)
[L 2o.**]	SOL2 signal ON time (0-990ms, × 10ms)
[L 3o.**]	SOL3 signal ON time (0-990ms, × 10ms)
[L 4o.**]	SOL4 signal ON time (0-990ms, × 10ms)
[L 5o.**]	SOL5 signal ON time (0-990ms, × 10ms)
[L 6o.**]	SOL6 signal ON time (0-990ms, × 10ms)
[L 7o.**]	SOL7 signal ON time (0-990ms, × 10ms)
[L 8o.**]	SOL8 signal ON time (0-990ms, × 10ms)

(NOTE)

1.The settings of output logic, movement, signal ON delay time, and signal ON time are available when output signal IN1-INC are set to ON.

2.The signal ON time settings are available when the movement is set to the timer.

3.The default values of output logic settings are all low (L) level.

4.The default values of signal ON delay time and signal ON time settings are all 0 ms.

1.3 Table of solenoid output signal number setting items

Display	Setting details
[L*.--]	No output
[L*.t]	Thread trimming
[L*.W]	Thread wiper
[L*.b]	Quick reverse
[L*.P]	Presser foot lifter
[L*.PU]	Puller
[L*.C1]	Needle cooler
[L*.r3]	Release (for B781)
[L*.AS]	Air saving
[L*.Cd]	Condense (When start backtack B=0 or end backtack C=0 is set.)
[L*.t2]	Thread trimming (for chain stitch)
[L*.W3]	Air wiper
[L*.dF]	Darts feeder (for PFA2000)
[L*.r]	Tension release (for B891group)
[L*.nF]	Alternating presser foot movement change (for B891group)
[L*.P1]	Stitch length change (for B891group)
[L*.rA]	Binder open/close (for B776)
[L*.t2]	Lower thread trimming (for covering machine)
[L*.W1]	Spreader thread trimming/wiper (for covering machine)
[L*.Co]	Condense (for covering machine)
[L*.Fo]	Folder opener (for covering machine)
[L*.r2]	Tension release (for SBL)
[L*.tU]	Claw drive (for SBL)
[L*.C2]	Air output (for SBL)
[L*.PL]	Presser foot lifter with latch function (for SBL)
[L*.. 1]	Turned ON by input signal IN1
[L*.. 2]	Turned ON by input signal IN2
[L*.. 3]	Turned ON by input signal IN3
[L*.. 4]	Turned ON by input signal IN4
[L*.. 5]	Turned ON by input signal IN5
[L*.. 6]	Turned ON by input signal IN6
[L*.. 7]	Turned ON by input signal IN7
[L*.. 8]	Turned ON by input signal IN8
[L*.. 9]	Turned ON by input signal IN9
[L*.. A]	Turned ON by input signal INA
[L*.. b]	Turned ON by input signal INB
[L*.. C]	Turned ON by input signal INC

1.4 Examples of optional solenoid output settings

1.To change the presser foot lifter solenoid from latch type to lockstitch machine type. (SBL)

(1) While pressing the FUNC key, press the C△ key two or more seconds. [L1. r2] will appear on the panel.
(2) Select the item [L4. PL] with the A△ key or the B△ key.
(3) Set the signal to [L4. P] with the C△ key or D△ key.
(4) Press the SET key two or more seconds.

2.To use the limit timer of puller (When SOL5 is set to [L5.PU].)

(1) While pressing the FUNC key, press the C△ key two or more seconds. [L1. **] will appear on the panel.
(2) Select the item [L5o. **] with the A△ key or the B△ key.
(3) Set the limit timer of SOL5 signal with the D△ key or the pattern△ key.
The setting unit is 1s and the time can be set to 1-99s. (The limit timer is not abailable when it is set to “00”.)
(4) Press the SET key two or more seconds.

[Puller movement]
(1) When the parameter [C0] is set to “00” (without stitch control)
When the presser foot lift or quick reverse signal is turned ON, the output signal is turned ON.
When the presser foot lift and quick reverse signals are turned OFF, the output signal is turned OFF.
(2) When the parameter [C0] is set to “01-99” (with stitch control)
When the presser foot lift signal is turned ON after the stop with thread trimming, the output signal is turned ON. After the treadle is depressed forward and counting the number of stitches is completed (parameter [C0] set), the output signal is turned OFF.
(After counting the number of stitches is completed, the output signal is turned OFF when the presser foot lift and quick reverse signals are turned OFF.)

3.To use the output signal after a stop by depressing the treadle backward (When output signal number is set to air saving [L5.AS])

(1) While pressing the FUNC key, press the C△ key two or more seconds. [L1. **] will appear on the panel.
(2) Select the item [L5o. **] with the A△ key or the B△ key.
(3) Set the SOL5 signal ON time after the stop with the D△ key or the pattern△ key.
The setting unit is 0.1s and the time can be set to 0.1-9.9s.
(4) Press the SET key two or more seconds.

[Air saving operation]
(1) Setting the start of sewing
When the number of stitches is set to parameter [C1], the output signal is turned ON during the feeding of the set number of stitches.
(2) Setting the end of sewing with edge sensor
When the sensor signal is turned ON, the output signal is turned ON. After the stop in the end of the material, the output signal is turned OFF.

4.To set SOL5 signal to thread trimming for chain stitcher [L5.t2]

(1) While pressing the FUNC key, press the C△ key two or more seconds. [L1. **] will appear on the panel.
(2) Select the item [L5. **] with the A△ key or the B△ key.
(3) Set the signal to [L5. t2] with the C△ key or the D△ key.
(4) Select the item [L5d. **] with the A△ key or the B△ key.
Set the delay time until the SOL5 signal is turned ON with the D△ key or pattern△ key.
The setting unit is 10ms and the time can be set to 10-990ms.
(5) Select the item [L5o. **] with the A△ key or the B△ key.
Set the SOL5 signal ON time with the D△ or the pattern△ key.
The setting unit is 10ms and the time can be set to 10-990ms.
(6) Press the SET key two or more seconds.

[Thread trimming operation for chain stitcher]
After the treadle is depressed backward, the needle up stop signal ON starts the timer.

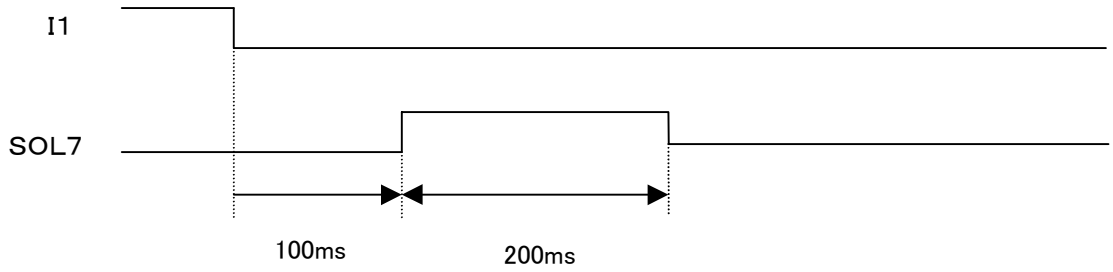
5.To set SOL6 signal to air wiper [L6.W3]

(1) While pressing the FUNC key, press the C△ key two or more seconds. [**L1. ****] will appear on the panel.
(2) Select the item [**L6. ****] with the A△ key or the B△ key.
(3) Set the signal to [**L6. W3**] with the C△ key or the D△ key.
(4) Select the item [**L6d. ****] with the A△ key or the B△ key.
Set the delay time until the SOL6 signal is turned ON with the D△ key or the pattern△ key.
The setting unit is 10ms and the time can be set to 10-990ms.
(5) Select the item [**L6o. ****] with the A△ key or the B△ key.
Set the SOL6 signal ON time with the D△ key or the pattern△ key.
The setting unit is 0.1s and the time can be set to 0.1-9.9s.
(6) Press the SET key two or more seconds.

[Air wiper operation]
After thread trimming stop, the presser foot lifter signal ON starts the timer.

6.Programing output signal by using the optional input signal

(Example) When programming the following timing signals in SOL7 using input signal I1.



(1) While pressing the FUNC key, press the C△ key two or more seconds. [**L1. ****] will appear on the panel.
(2) Select the item [**L7. ****] with the A△ key or the B△ key.
(3) Set the signal to [**L7. I1**] with the C△ key or the D△ key.
(4) Select the item [**L7M. ***] with the A△ key or the B△ key.
Select the timer mode [**L7M. t**] with the D△ key.
(5) Select the item [**L7d. ****] with the A△ key or the B△ key.
Set the delay time until the SOL7 signal is turned ON to [**L7d. 10**] (100ms) with the D△ key or the pattern△ key.
(6) Select the item [**L7o. ****] with the A△ key or the B△ key.
Set the SOL7 signal ON time to [**L7o. 20**] (200ms) with the D△ key or the pattern△ key.
(7) Press the SET key two or more seconds.

[Programming output signal by using the optional input signal (IN1-INC)]
The output operation can be selected from the following three modes.
(1) Momentary mode [M]
When the signal (IN1-INC) is turned ON, then the output signal is turned ON.
When the signal (IN1-INC) is turned OFF, then the output signal is turned OFF.
In [**L*d. ****], set the delay time after the input signal (IN1-INC) is turned ON until the output signal is turned ON.
(2) Alternating mode [A]
When the input signal (IN1-INC) is turned ON, the output signal is turned ON. When the input signal (IN1-INC) is turned ON again, the output signal is turned OFF.
In [**L*d. ****], set the delay time after the input signal (IN1-INC) is turned ON until the output signal is turned ON.
(3) Timer mode [t]
In [**L*d. ****], set the delay time after the input signal (IN1-INC) is turned ON until the output signal is turned ON. Set the output signal ON time in [**L*o. ****] .

1.5 Table of optional output signal setting items

Display	Setting details
[o0.**]	OUT0 output signal No. setting
[o 1.**]	OUT1 output signal No. setting
[o2.**]	OUT2 output signal No. setting
[o3.**]	OUT3 output signal No. setting
[o4.**]	OUT4 output signal No. setting
[o5.**]	OUT5 output signal No. setting
[o6.**]	OUT6 output signal No. setting
[o7.**]	OUT7 output signal No. setting
[o0L.*]	OUT0 output logic setting ([L]:output level is Low, [H]:output level is High)
[o 1L.*]	OUT1 output logic setting ([L]:output level is Low, [H]:output level is High)
[o2L.*]	OUT2 output logic setting ([L]:output level is Low, [H]:output level is High)
[o3L.*]	OUT3 output logic setting ([L]:output level is Low, [H]:output level is High)
[o4L.*]	OUT4 output logic setting ([L]:output level is Low, [H]:output level is High)
[o5L.*]	OUT5 output logic setting ([L]:output level is Low, [H]:output level is High)
[o6L.*]	OUT6 output logic setting ([L]:output level is Low, [H]:output level is High)
[o7L.*]	OUT7 output logic setting ([L]:output level is Low, [H]:output level is High)
[o0n.*]	OUT0 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[o 1n.*]	OUT1 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[o2n.*]	OUT2 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[o3n.*]	OUT3 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[o4n.*]	OUT4 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[o5n.*]	OUT5 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[o6n.*]	OUT6 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[o7n.*]	OUT7 movement setting ([n]:momentary, [A]:alternating, [t]:timer)
[o0d.**]	Delay time until OUT0 signal is turned ON (0-990ms, × 10ms)
[o 1d.**]	Delay time until OUT1 signal is turned ON (0-990ms, × 10ms)
[o2d.**]	Delay time until OUT2 signal is turned ON (0-990ms, × 10ms)
[o3d.**]	Delay time until OUT3 signal is turned ON (0-990ms, × 10ms)
[o4d.**]	Delay time until OUT4 signal is turned ON (0-990ms, × 10ms)
[o5d.**]	Delay time until OUT5 signal is turned ON (0-990ms, × 10ms)
[o6d.**]	Delay time until OUT6 signal is turned ON (0-990ms, × 10ms)
[o7d.**]	Delay time until OUT7 signal is turned ON (0-990ms, × 10ms)
[o0o.**]	OUT0 signal ON time (0-990ms, × 10ms)
[o 1o.**]	OUT1 signal ON time (0-990ms, × 10ms)
[o2o.**]	OUT2 signal ON time (0-990ms, × 10ms)
[o3o.**]	OUT3 signal ON time (0-990ms, × 10ms)
[o4o.**]	OUT4 signal ON time (0-990ms, × 10ms)
[o5o.**]	OUT5 signal ON time (0-990ms, × 10ms)
[o6o.**]	OUT6 signal ON time (0-990ms, × 10ms)
[o7o.**]	OUT7 signal ON time (0-990ms, × 10ms)

(NOTE)

1.The settings of output logic, movement, signal ON delay time, and signal ON time are available when output signal IN1-INC are set to ON.

2.The signal ON time settings are available when the movement is set to the timer.

3.The default values of output logic settings are all low (L) level.

4.The default values of signal ON delay time and signal ON time settings are all 0 ms.

5.Output signals are open collector output.

1.6 Table of optional output signal number setting items

Display	Setting details
[o*.--]	No output
[o*.nu]	Running condition signal
[o*.UP]	Needle up signal
[o*.dn]	Needle down signal
[o*.t]	Thread trimming ON signal
[o*.U]	Wiper ON signal
[o*.b]	Quick reverse ON signal
[o*.P]	Presser foot lifter ON signal
[o*.b 1]	During backtack sewing or quick reverse ON signal
[o*.Un]	No bobbin thread signal (When memory switch [**91**] is set to ON.)
[o*.FU]	Forward depression signal
[o*.bU]	Backward depression signal
[o*.Er]	Error signal
[o*.nF]	Alternating presser foot movement change LED (B891 group)
[o*.P.]	Stitch length change LED (B891 group)
[o*.bt]	Turned ON by input signal BTSW
[o*.Pr]	Turned ON by input signal PRSW
[o*.H.]	Turned ON by input signal FORSW
[o*.tr]	Turned ON by input signal BAKSW
[o*.Lo]	Turned ON by input signal INCHSW
[o*.SF]	Turned ON by input signal SAFESW
[o*.EG]	Turned ON by input signal EMGSW
[o*.bd]	Turned ON by input signal BDSW
[o*.1 1]	Turned ON by input signal IN1
[o*.1 2]	Turned ON by input signal IN2
[o*.1 3]	Turned ON by input signal IN3
[o*.1 4]	Turned ON by input signal IN4
[o*.1 5]	Turned ON by input signal IN5
[o*.1 6]	Turned ON by input signal IN6
[o*.1 7]	Turned ON by input signal IN7
[o*.1 8]	Turned ON by input signal IN8
[o*.1 9]	Turned ON by input signal IN9
[o*.1 A]	Turned ON by input signal INA
[o*.1 b]	Turned ON by input signal INB
[o*.1 C]	Turned ON by input signal INC
[o*.L 1]	Turned ON by output signal SOL1
[o*.L2]	Turned ON by output signal SOL2
[o*.L3]	Turned ON by output signal SOL3
[o*.L4]	Turned ON by output signal SOL4
[o*.L5]	Turned ON by output signal SOL5
[o*.L6]	Turned ON by output signal SOL6
[o*.L7]	Turned ON by output signal SOL7
[o*.L8]	Turned ON by output signal SOL8

1.7 Examples of optional output signal settings

1.To use the signal while the machine is running

The default setting of the OUT0 signal is [**o0.Mv**].
The OUT0 signal is ON while the machine is running.

(NOTE) Running condition (move/stop) signal can only be set in OUT0.

2.To use the signal for counting the number of stitches of sewing machine

The default setting of the OUT1 signal is [**o1.UP**] (needle up signal). The default setting of OUT2 signal is [**o2.dn**] (needle down signal).
The needle up signal is outputted in OUT1,and the needle down signal is outputted in OUT2.

(NOTE) The needle up and the needle down signals can only be set in OUT1 or OUT2.

3.To use the signal indicating bobbin thread has run out (When the bobbin counter is used.)

★ The following is the setting procedure to set the signal in OUT3.

(1) While pressing the FUNC key, press the C△ key two or more seconds. [L1. **] will appear on the panel.
(2) Select the item [o0. **] with the FUNC key.
(3) Select the item [o3. **] with the A△ key or the B△ key.
(4) Set the signal to [o3. Un] with the C△ key or the D△ key.
(5) Press the SET key two or more seconds.

(**NOTE) The ON signal is outputted in OUT3 during 500ms when the bobbin counter becomes "0000".**

4.To use the thread trimming ON signal

The default setting of the OUT4 signal is the thread trimming ON [o4. t].
When the thread trimming solenoid or the lower thread trimming solenoid is ON, the ON signal is outputted in OUT4.

5.To use the wiper ON signal

Set the signal to [o*. W].
When the wiper solenoid or the spreader thread trimming/wiper solenoid is ON, the ON signal is outputted in OUT*.

6.To use the quick reverse ON signal

Set the signal to [o*. b].
When the quick reverse solenoid is ON, the ON signal is outputted in OUT*.

7.To use the presser foot lifter signal

Set the signal to [o*. P].
When the presser foot lifter is raised, the ON signal is outputted in OUT*.

8.To use the signal that the treadle is depressed forward

Set the signal to [o*. FW].
When the treadle is depressed forward or FORSW signal is turned ON, the depression forward signal is outputted in OUT*.

9.To use the signal that the treadle is depressed backward

Set the signal to [o*. bW].
When the treadle is depressed backward or BAKSW signal is turned ON, the depression backward signal is outputted in OUT*.

10.To use the error signal

The default setting of the OUT7 signal is [**o7.Er**].
When an error occurred, the error signal is outputted in OUT7.

(NOTE) The error signal can be set in OUT7 only.

11.To use the signal indicating the backtack sewing is being carried out and the quick reverse ON signal

The default setting of the OUT3 signal is [**o3.b1**]. (During backtack sewing or quick reverse ON signal)
The signal is outputted in OUT3 during the automatic backtack sewing or the quick reverse solenoid ON.

12.To use the BTSW ON signal

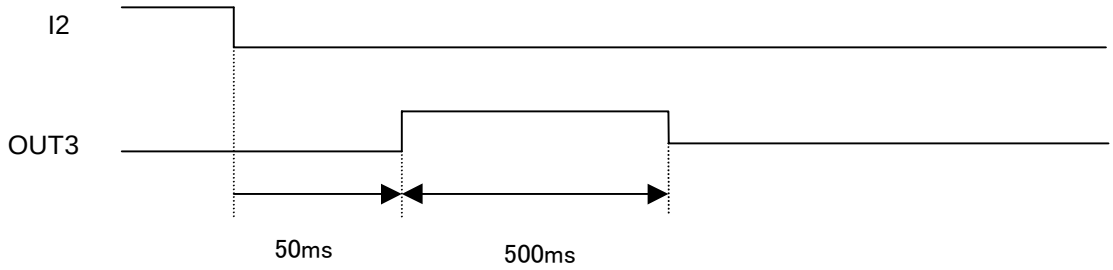
Set the signal to [o*. bt] . (Turned on by BTSW signal)
When the BTSW signal is turned ON, the OUT* signal is turned ON.

13.To use the PRSW ON signal

Set the signal to [o*. Pr] . (Turned on by PRSW signal)
When the PRSW signal is turned ON, then the OUT* signal is turned ON.

14.Programing output signal by using the optional input signal

(Example) When programming the following timing signal output in OUT3 using input signal I2.



(1) While pressing the FUNC key, press the C△ key two or more seconds. [L1. **] will appear on the panel.
(2) Select the item [o0. **] with the FUNC key.
(3) Select the item [o3. **] with the A△ key or the B△ key.
(4) Set the signal to [o3. I2] with the C△ key or the D△ key.
(5) Select the item [o3M. *] with the A△ key or the B△ key.
Select the timer mode [o3M. t] with the D△ key.
(6) Select the item [o3d. **] with the A△ key or the B△ key.
Set the delay time until the OUT3 signal is turned ON to [o3d. 05] (50ms) with the D△ key or the pattern△ key.
(7) Select the item [o3o. **] with the A△ key or the B△ key.
Set the OUT3 signal ON time to [o3o. 50] (500ms) with the D△ key or the pattern△ key.
(8) Press the SET key two or more seconds.

[Programming output signal by using the optional input signal (IN1-INC)]
The output operation can be selected from the following three modes.
(1) Momentary mode [M]
When the signal (IN1-INC) is turned ON, then the output signal is turned ON.
When the signal (IN1-INC) is turned OFF, then the output signal is turned OFF.
In [o*d. **], set the delay time after the input signal (IN1-INC) is turned ON until the output signal is turned ON.
(2) Alternating mode [A]
When the input signal (IN1-INC) is turned ON, the output signal is turned ON. When the input signal (IN1-INC) is turned ON again, the output signal is turned OFF.
In [o*d. **], set the delay time after the input signal (IN1-INC) is turned ON until the output signal is turned ON.
(3) Timer mode [t]
In [o*d. **], set the delay time after the input signal (IN1-INC) is turned ON until the output signal is turned ON.

1.8 Table of SW input signal setting items

Display	Setting details
[bt.**]	BTSW input signal No. setting
[Pr.**]	PRSW input signal No. setting
[H. .**]	FORSW input signal No. setting
[br.**]	BAKSW input signal No. setting
[Lo.**]	INCHSW input signal No. setting
[SF.**]	SAFESW input signal No. setting
[EG.**]	EMGSW input signal No. setting
[bd.**]	BDSW input signal No. setting
[btL.*]	BTSW input logic setting ([L]:Low level is ON , [H]:High level is ON)
[PrL.*]	PRSW input logic setting ([L]: Low level is ON, [H]:High level is ON)
[H. L.*]	FORSW input logic setting ([L]: Low level is ON, [H]:High level is ON)
[brL.*]	BAKSW input logic setting ([L]: Low level is ON, [H]:High level is ON)
[LoL.*]	INCHSW input logic setting ([L]: Low level is ON, [H]:High level is ON)
[SFL.*]	SAFESW input logic setting ([L]: Low level is ON, [H]:High level is ON)
[EGL.*]	EMGSW input logic setting ([L]: Low level is ON, [H]:High level is ON)
[bdL.*]	BDSW input logic setting ([L]: Low level is ON, [H]:High level is ON)

1.9 Table of optional input signal setting items

Display	Setting details
[. 1.**]	IN1 input signal No. setting
[. 2.**]	IN2 input signal No. setting
[. 3.**]	IN3 input signal No. setting
[. 4.**]	IN4 input signal No. setting
[. 5.**]	IN5 input signal No. setting
[. 6.**]	IN6 input signal No. setting
[. 7.**]	IN7 input signal No. setting
[. 8.**]	IN8 input signal No. setting
[. 9.**]	IN9 input signal No. setting
[. A.**]	INA input signal No. setting
[. b.**]	INB input signal No. setting
[. C.**]	INC input signal No. setting
[. 1L.*]	IN1 input logic setting ([L]: Low level is ON, [H]: High level is ON)
[. 2L.*]	IN2 input logic setting ([L]: Low level is ON, [H]: High level is ON)
[. 3L.*]	IN3 input logic setting ([L]: Low level is ON, [H]: High level is ON)
[. 4L.*]	IN4 input logic setting ([L]: Low level is ON, [H]: High level is ON)
[. 5L.*]	IN5 input logic setting ([L]: Low level is ON, [H]: High level is ON)
[. 6L.*]	IN6 input logic setting ([L]: Low level is ON, [H]: High level is ON)
[. 7L.*]	IN7 input logic setting ([L]: Low level is ON, [H]: High level is ON)
[. 8L.*]	IN8 input logic setting ([L]: Low level is ON, [H]: High level is ON)
[. 9L.*]	IN9 input logic setting ([L]: Low level is ON, [H]: High level is ON)
[. AL.*]	INA input logic setting ([L]: Low level is ON, [H]: High level is ON)
[. bL.*]	INB input logic setting ([L]: Low level is ON, [H]: High level is ON)
[. CL.*]	INC input logic setting ([L]: Low level is ON, [H]: High level is ON)

1.10 Table of input signal number setting items

Display	Setting details
[**.--]	No function
[**.Ud]	Half stitch (Needle UP/Needle DOWN)
[**.U]	Needle UP
[**.d]	Needle DOWN
[**.bC]	Start and end backtack cancel
[**.bS]	Start backtack cancel
[**.bE]	End backtack cancel
[**.bC]	Start and end backtack cancel
[**.bA]	Start and end backtack cancel/addition (for B891 group)
[**.tC]	Thread trimming cancel
[**.Et]	Emergency stop with thread trimming
[**.UC]	Bobbin thread counter cancel (When memory switch[**91**] is set to ON)
[**.SE]	Disable running, emergency stop when machine is running
[**.Ct]	Change to the counter display
[**.CU]	Count up signal
[**.Cd]	Count down signal
[**.CC]	Count clear signal
[**.H.]	High speed running (for standing operation)
[**.tr]	Thread trimming operation (for standing operation)
[**.Lo]	Low speed running (for standing operation)
[**.SF]	Disable running (for safe switch)
[**.EC]	Emergency stop (for emergency stop switch)
[**.bd]	Disable backtack sewing and quick reverse ON
[**.nt]	Trimming signal (for B781)
[**.dF]	Darts feeder operation (for PFA2000)
[**.PU]	Puller operation (When solenoid output signal is set to puller)
[**.rA]	Folder open/close (for B776)
[**.Fo]	Binder opener (for covering machine)
[**.nF]	Alternating presser foot movement change (for B891group)
[**.P.]	Stitch length change (for B891group)

1.11 Examples of optional input signal settings

1.To use the half stitch, needle UP or needle DOWN operation

★ The following is the setting procedure to set the signal in IN2.

(1) While pressing the FUNC key, press the C△ key two or more seconds. [L1. **] will appear on the panel.
(2) Select the item [i1. **] with the FUNC key.
(3) Select the item [i2. **] with the A △ key or the B△ key.
(4) Select the IN2 signal with the C△ key or the D△ key.

・When it is set to [i2. Ud]
IN2 signal is turned ON; the movement becomes the half stitch (needle DOWN-UP/needle UP-DOWN).
・When it is set to [i2. UP]
IN2 signal is turned ON; the needle goes up to the needle up position.
(The needle does not move in the needle up position.)
・When it is set to [i2. dn]
IN2 signal is turned ON; the needle goes down to needle down position.
(The needle does not move in the needle down position.)

(5) Press the SET key two or more seconds.

2.To cancel the backtack sewing only once

★ The following is the setting procedure to set the signal in IN1.

(1) While pressing the FUNC key, press the C△ key two or more seconds. [L1. **] will appear on the panel.
(2) Select the item [i1. **] with the FUNC key.
(3) Select the IN1 signal with the C△ key or the D△ key.

・When it is set to [i1. bS]
Next start backtack sewing can be canceled only once.
IN1 signal is turned ON after a stop in the needle up position for the thread trimming; next start backtack sewing is canceled.
・When it is set to [i1. bE]
Next end backtack sewing can be canceled only once.
IN1 signal is turned ON after a stop in the needle down position by depressing the treadle to the neutral position; next end backtack sewing is canceled.
・When it is set to [i1. bC]
Next backtack sewing can be canceled only once.
IN1 signal is turned ON after a stop in the needle up position for thread trimming; next start backtack sewing is canceled.
IN1 signal is turned ON after a stop in the needle down position by depressing the treadle to the neutral position; next end backtack sewing is canceled.

(4) Press the SET key two or more seconds.

3.To cancel thread trimming only once

Set the signal to [i*. tC] (Thread trimming cancel).
After IN* signal is turned ON, next thread trimming is not carried out when the treadle is depressed backward.

4.To permit the treadle operation automatically after the bobbin thread is used up

Set the signal to [i*. UC] (Bobbin counter cancel).
When the bobbin counter becomes “0000” and then IN* signal is turned ON, the counter automatically returns to the set value. At that time the treadle operation is permitted.

1.12 Examples of SW input signal settings

1.Setting procedure

(1) While pressing the FUNC key, press the C△ key two or more seconds. [L1. **] will appear on the panel.
(2) Select the item [bt. **] with the FUNC key.
(3) Select the SW input signal with the A△ key or the B△ key.
(4) Select the signal with the C△ key or the D△ key.
(5) Press the SET key two or more seconds.

2.PRSW input setting

(1) When it is set to [Pr. dF], PRSW becomes a SW for curtain darts (for PFA2000).
★ It can also be set in the special setting mode (PRSW function setting mode).
★ The number of stitches and the details of operation can only be set in PRSW function setting mode.
(2) When it is set to [Pr. PU], PRSW becomes a SW for puller operation.
★ When the PRSW signal is turned ON, the puller signal (SOL*) will be outputted.
★ It can also be set in the special setting mode (PRSW function setting mode).
(3) When it is set to [Pr. rA], the PRSW becomes a SW for folder open/close (for B776).
★ The folder can be opened or closed using the output signal (SOL5) when the PRSW signal is turned ON.
★ It can also be set in the special setting mode (PRSW function setting mode).
(4) Set to [Pr. MF], the PRSW signal is a SW for alternating presser foot movement (for B891).
★ The alternating presser foot movement can be changed using the output (SOL6) when the PRSW signal is turned ON.
★ It can also be set in the special setting mode (PRSW function setting mode).

3.To use the safe SW

(NOTE) The safe switch function can be set in SAFESW only.
(1) When it is set to [SF. SF]: the treadle operation is disabled by turning ON the SW while the machine stops. The SAFESW is disabled while the machine is running.
(2) When it is set to [SF. SE]: an emergency stop is made in any needle position by turning ON the SW while the machine is running.
The treadle operation is disabled by turning ON the SW while the machine stops.
(3) When the input logic of SAFESW is set to [SFH. H]: the treadle operation is inhibited by turning OFF the SW (Input level is HIGH).

4.To use the emergency stop SW

(NOTE) The emergency stop switch function can be set in EMGSW only.
(1) When it is set to [EG. EG], an emergency stop is made in the preset needle position by turning ON the SW.
(2) When it is set to [EG. Et], thread trimming operation with emergency stop is carried out by turning ON the SW.

5.To inhibit the backtack sewing and the quick reverse solenoid operation

(NOTE) This function can be set in BDSW only.
(1) When BDSW is ON at the start of the start/continuous backtack sewing, this sewing is canceled.
(2) When BDSW is ON at the start of end backtack sewing, this sewing is canceled.
(3) When the quick back SW is ON, the quick reverse solenoid does not work while BDSW is ON.

1.13 Table of default values of output signal settings

When the head setting is done, the solenoid and optional signal settings will be automatically assigned as follows:

★ The output settings indicated by crosshatching are changeable.
(It is output inhibit only that can be set in the other output settings.)

No.	Signal Name	sign	Single/Twin needle group Lockstitch	B781	B776	B891 group	Covering	Overlock	SBL
1	SOL1	L1	[t]	[t]	[t]	[t]	[W 1]	[t]	[r 2]
2	SOL2	L2	[W]	[W]	[W]	[W]	[t 2]	[W]	[C 2]
3	SOL3	L3	[b]	[b]	[b]	[b]	[F o]	[b]	[– –]
4	SOL4	L4	[P]	[P]	[P]	[P]	[P]	[P]	[P L]
5	SOL5	L5	[P U]	[P U]	[r A]	[P U]	[C 2]	[P U]	[t U]
6	SOL6	L6	[– –]	[– –]	[– –]	[M F]	[– –]	[– –]	[– –]
7	SOL7	L7	[– –]	[– –]	[– –]	[P i]	[– –]	[– –]	[– –]
8	SOL8	L8	[C 1]	[C 1]	[C 1]	[C 1]	[C 1]	[C 1]	[– –]
9	OUT0	O0	[M v]	[M v]	[M v]	[M v]	[M v]	[M v]	[M v]
10	OUT1	O1	[U P]	[U P]	[U P]	[U P]	[U P]	[U P]	[U P]
11	OUT2	O2	[d n]	[d n]	[d n]	[d n]	[d n]	[d n]	[d n]
12	OUT3	O3	[b 1]	[b 1]	[b 1]	[b 1]	[b 1]	[b 1]	[b 1]
13	OUT4	O4	[t]	[t]	[t]	[t]	[t]	[t]	[t]
14	OUT5	O5	[– –]	[– –]	[– –]	[M F]	[– –]	[– –]	[– –]
15	OUT6	O6	[– –]	[– –]	[– –]	[P i]	[– –]	[– –]	[– –]
16	OUT7	O7	[E r]	[E r]	[E r]	[E r]	[E r]	[E r]	[E r]

NOTE 1) The running condition signal [Mv] can only be set in OUT0.
NOTE 2) The needle up signal [UP] and the needle down signal [dn] can only be set in OUT1 and OUT2 respectively.
NOTE 3) The error signal [Er] can only be set in OUT7.
NOTE 4) When the presser foot lifter is set to latch type [PL], it can be changed to lockstitch type [P] .

1.14 Table of default values of input signal settings

When the head setting is done, the input signals will be automatically assigned as follows:

★ The input settings indicated by crosshatching are changeable.

(It is output inhibit only that can be set in the other output settings.)

No.	signal name	sign	Single/Twin needle group Lockstitch	B781	B776	B891 group	Covering	Overlock	SBL
1	BTSW	BT	[b t]	[b t]	[b t]	[b t]	[F O]	[b t]	[b t]
2	PRSW	PR	[P r]	[P r]	[r A]	[P r]	[P r]	[P r]	[P r]
3	FORSW	HI	[H i]	[H i]	[H i]	[H i]	[H i]	[H i]	[H i]
4	BAKSW	TR	[t r]	[t r]	[t r]	[t r]	[t r]	[t r]	[t r]
5	INCHSW	LO	[L o]	[L o]	[L o]	[L o]	[L o]	[L o]	[L o]
6	SAFESW	SF	[S F]	[S F]	[S F]	[S F]	[S F]	[S F]	[S F]
7	EMGSW	EG	[E G]	[E G]	[E G]	[E G]	[E G]	[E G]	[E G]
8	BDSW	BD	[b d]	[b d]	[b d]	[b d]	[b d]	[b d]	[b d]
9	IN1	I1	[b C]	[b C]	[b C]	[b A]	[b C]	[b C]	[b C]
10	IN2	I2	[U d]	[U d]	[U d]	[U d]	[U d]	[U d]	[U d]
11	IN3	I3	[– –]	[– –]	[– –]	[M F]	[– –]	[– –]	[– –]
12	IN4	I4	[– –]	[– –]	[– –]	[P i]	[– –]	[– –]	[– –]
13	IN5	I5	[– –]	[n t]	[– –]	[– –]	[– –]	[– –]	[– –]
14	IN6	I6	[– –]	[– –]	[– –]	[– –]	[– –]	[– –]	[– –]
15	IN7	I7	[– –]	[– –]	[– –]	[– –]	[– –]	[– –]	[– –]
16	IN8	I8	[– –]	[– –]	[– –]	[– –]	[– –]	[– –]	[– –]
17	IN9	I9	[– –]	[– –]	[– –]	[– –]	[– –]	[– –]	[– –]
18	INA	IA	[– –]	[– –]	[– –]	[– –]	[– –]	[– –]	[– –]
19	INB	IB	[– –]	[– –]	[– –]	[– –]	[– –]	[– –]	[– –]
20	INC	IC	[– –]	[– –]	[– –]	[– –]	[– –]	[– –]	[– –]

NOTE 1) BTSW can be set to the thread trimming SW [tr] .

NOTE 2) PRSW can be set to the feeder operation SW [dF] for curtain darts, the puller operation SW [PU], the folder open/close SW [rA] for B776, the alternating presser foot movement change SW [MF] for B891 group.

NOTE 3) SAFESW can be set to the running inhibit and the emergency stop operation SW [SE].

NOTE 4) EMGSW can be set to the emergency trimming stop SW [Et].

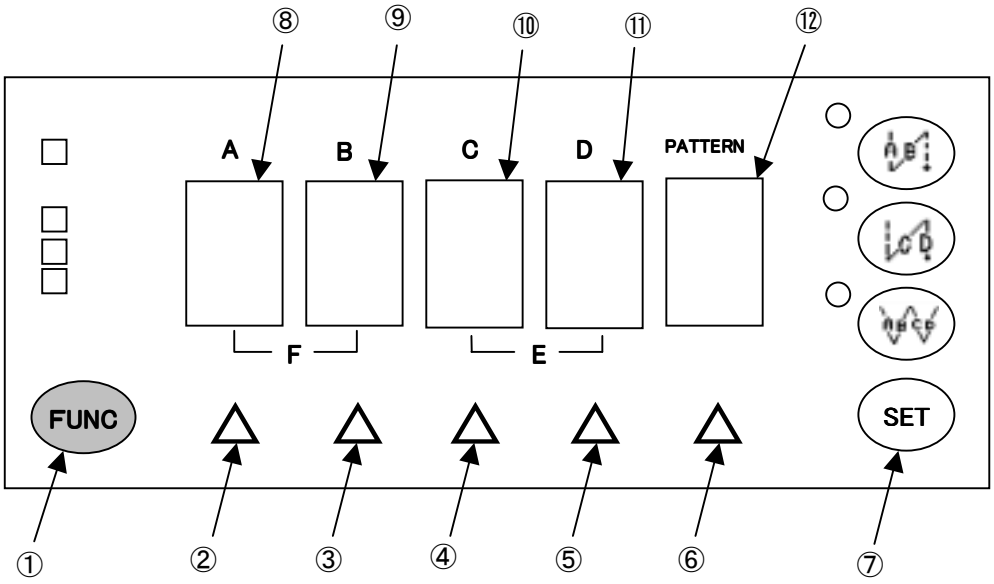
NOTE 5) IN1 can only be set to a function about backtack cancellation or addition when B891 group is set.

NOTE 6) IN2 can only be set to a function about half stitch, needle UP or needle DOWN operation when B891 group is set.

NOTE 7) The tension release control signal is set to IN5 when B781 is set.
The tension release works by the trimming signal in synchronizer (for 3P).
After it went into the thread trimming operation and the IN5 signal is turned ON, the tension release is turned ON.

2. COUNTER SETTING MODE

2.1 Outline of setting procedure



Entering the input/output setting mode

(1) While pressing the FUNC key①, press the D△ key⑤ two or more seconds.
The initial display is [dn. - -].

Meaning of display

(1) The setting items are displayed on AB area⑧-⑨.
(2) The setting values are displayed on CD area⑩-⑪.
(3) The setting items and the values are divided with the dot display.

Selecting the setting items

1) Select the item with the A△ key② or the B△ key③.
Press the A△ key② to call the forward items.
Pressing the B△ key③ to call the backward items.

Setting the values

1) Set the values with the C△ key④ and D△ key⑤.

Completion of the setting mode

1) Press the SET key⑦ two or more seconds.
The values will be updated and the setting mode will end.
(NOTE) When you do not want to update the settings, turn off the power switch.

2.2 Table of settings

Display	Setting details
[dn.**]	Counter display setting [- -]:No display [PC]:Production counter display [tC]:Number of trimming times display
[Cn.**]	Count mode ([d]:Count down,[U]:Count up)
[tn**]	Number of trimming times count unit (1-99 times)

2.3 Setting production counter

★ The production quantity can be displayed on the F-40 or F-100 panel.

2.3.1 How to set the production counter

(1) While pressing the FUNC key, press the D△ key. [dM. **] will appear on the panel.
(2) Set to [dM. PC] with the C△ key or D△ key.
(3) Press the SET key two or more seconds.

2.3.2 How to set the production quantity counter input

★ (Example) When setting IN1-IN4 in the production counter function.

(1) While pressing the FUNC key, press the C△ key. [L1. **] will appear on the panel.
(2) Select the item [i1. **] with the FUNC key.
(3) Set the signal to [i1. Ct] with the C△ key or the D△ key.
(4) Select the item [i2. **] with the A △ key or the B△ key.
(5) Set the signal to [i2. CU] with the C△ key or the D△ key.
(6) Select the item [i3. **] with the A △ key or the B△ key.
(7) Set the signal to [i3. Cd] with the C△ key or the D△ key.
(8) Select the display [i4. **] with the A △ key or the B△ key.
(9) Set the signal to [i4. CC] with the C△ key or the D△ key.
(10) Press the SET key two or more seconds.

The display changes to the production counter display when IN1 signal is turned ON.
The count display [ABCD] on the panel increases when the IN2 signal is turned ON.
The count display [ABCD] on the panel decreases when the IN3 signal is turned ON.
The count display [ABCD] on the panel is cleared to “0000” when the IN4 signal is turned ON.

2.4 Setting the number of trimming times displayed

★ The number of trimming times can be displayed on the F-40 or F-100 panel.

2.4.1 How to set the number of trimming times displayed

(1) While pressing the FUNC key, press the D△ key two or more seconds. [dM. **] will appear on the panel.
(2) Set to [dM. tC] with the C△ key or the D△ key.
(3) Select the item [tn. **] with the A △ key or the B△ key.
(4) Set the number of trimming times count unit (1-99 times) with the C△ key and the D△ key.
★When the number of trimming times is set to “10”, it is counted every 10 times.
(When it is set to “00”, the counter will not count.)
(5) Select [CM. **] with the A △ key or the B△ key.
(6) Set the count direction (count up/count down) with the C△ key or D△ key.
(7) Press the SET key two or more seconds.

2.4.2 How to set the number of trimming times counter input

★ (Example) When setting IN1-IN4 in the thread trimming counter function.

(1) While pressing the FUNC key, press the C△ key two or more seconds. [L1. **] will appear on the panel.
(2) Select the item [i1. **] with the FUNC key..
(3) Set the signal to [i1. Ct] with the C△ key or the D△ key.
(4) Select the item [i2. **] with the A △ key or the B△ key.
(5) Set the signal to [i2. CU] with the C△ key or the D△ key.
(6) Select the item [i3. **] with the A △ key or the B△ key.
(7) Set the signal to [i3. Cd] with the C△ key or the D△ key.
(8) Select the item [i4. **] with the A △ key or the B△ key.
(9) Set the signal to [i4. CC] with the C△ key or the D△ key.
(10) Press the SET key two or more seconds.

The display changes to the display for the number of trimming times when IN1 signal is turned ON.
The count display [ABCD] on the panel can be modified when the IN2 or IN3 signal is turned ON.
The count display [ABCD] on the panel is cleared to “0000” when the IN4 signal is turned ON.
★ The number of trimming times is counted by the thread trimming operation.