OMRON

Standstill Monitoring Unit
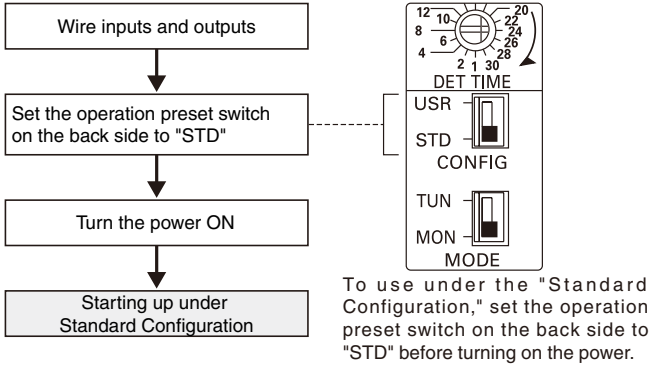
G9SX-SM

User's Guide

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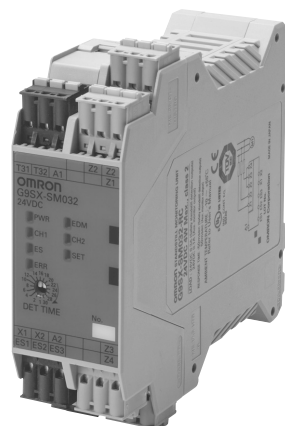
Before operating the product, be sure to read the instruction manual provided with the product thoroughly.
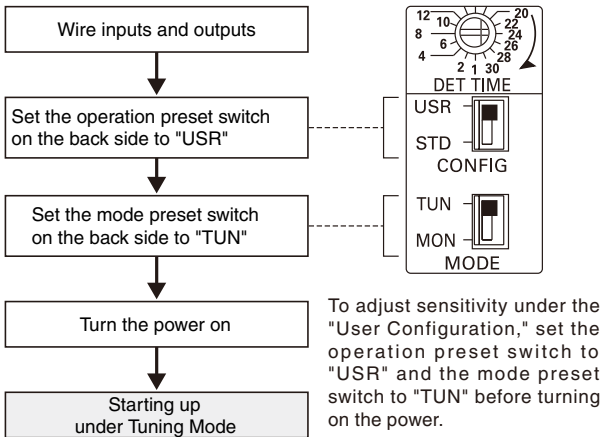
1. Operation

Functions

Standard Configuration

"Standard Configuration" allows standstill detection without tuning sensitivity.

```
Wire inputs and outputs
        │
        ▼
Set the operation preset switch
on the back side to "STD"
        │
        ▼
Turn the power ON
        │
        ▼
Starting up under
Standard Configuration
```

DET TIME

USR — ▮
STD — CONFIG

TUN —
MON — ▮ MODE

To use under the "Standard Configuration," set the operation preset switch on the back side to "STD" before turning on the power.
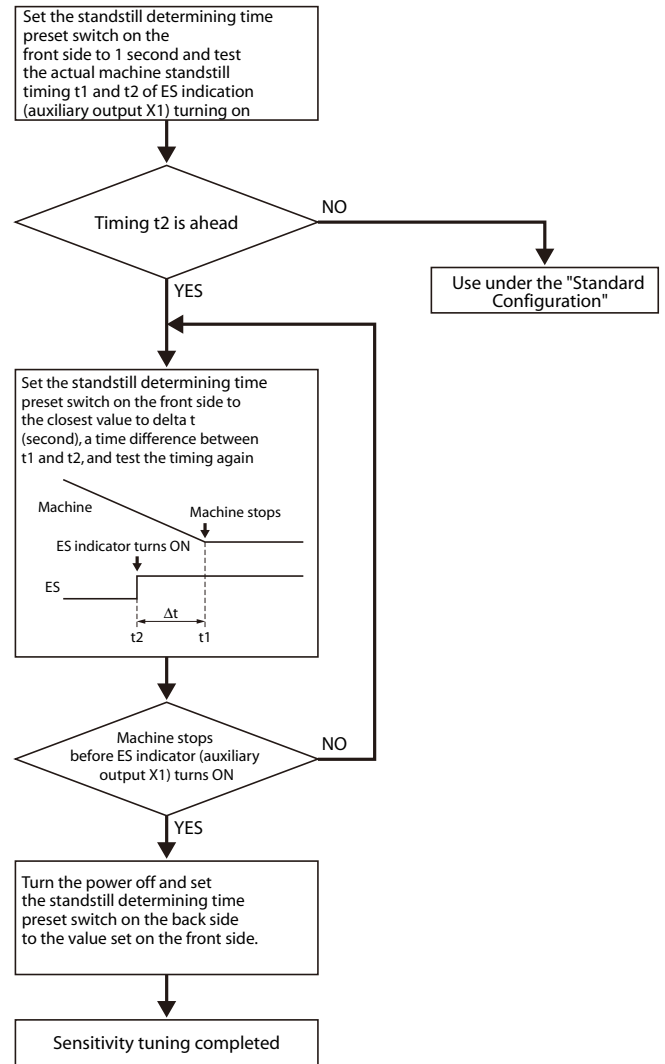
User Configuration

"User Configuration" allows manual tuning to adjust sensitivity. User Configuration has Tuning Mode to tune sensitivity and Monitoring Mode to detect the standstill condition.
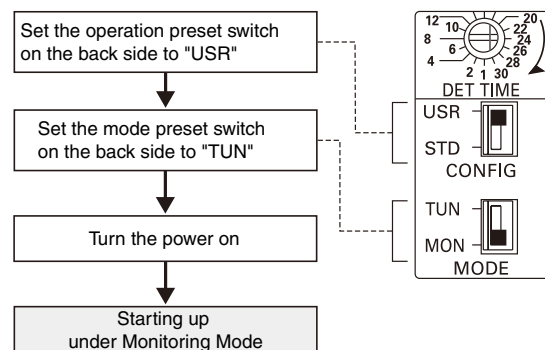
(1) Start up under the Tuning Mode

```
Wire inputs and outputs
        │
        ▼
Set the operation preset switch
on the back side to "USR"
        │
        ▼
Set the mode preset switch
on the back side to "TUN"
        │
        ▼
Turn the power on
        │
        ▼
Starting up
under Tuning Mode
```

DET TIME

USR — ▮
STD — CONFIG

TUN — ▮
MON — MODE

To adjust sensitivity under the "User Configuration," set the operation preset switch to "USR" and the mode preset switch to "TUN" before turning on the power.

(2) Adjust sensitivity

```
Set the standstill determining time
preset switch on the
front side to 1 second and test
the actual machine standstill
timing t1 and t2 of ES indication
(auxiliary output X1) turning on
        │
        ▼
    ◇ Timing t2 is ahead ◇ ──NO──► Use under the "Standard
        │                           Configuration"
       YES
        │
        ▼
Set the standstill determining time
preset switch on the front side to
the closest value to delta t
(second), a time difference between
t1 and t2, and test the timing again
```

Machine ‾‾‾‾\   Machine stops
                _____↓_____
ES indicator turns ON

ES _____┌──────────
           └─┐ Δt ┌─┘
           t2   t1

```
        │
        ▼
    ◇ Machine stops
      before ES indicator (auxiliary ◇ ──NO──┐
      output X1) turns ON                     │
        │                                     │
       YES                            (loops back up)
        │
        ▼
Turn the power off and set
the standstill determining time
preset switch on the back side
to the value set on the front side.
        │
        ▼
Sensitivity tuning completed
```

(3) Monitor under the User Configuration

```
Set the operation preset switch
on the back side to "USR"
        │
        ▼
Set the mode preset switch
on the back side to "TUN"
        │
        ▼
Turn the power on
        │
        ▼
Starting up
under Monitoring Mode
```

DET TIME

USR — ▮
STD — CONFIG

TUN — ▮
MON — MODE

2. Operating Procedure

Standard Configuration

Operation			LED indicator		Machine operation	ES output	X1 output
Wire inputs and outputs	Set the operation preset switch on the back side to "STD"	USR — STD — CONFIG	--		Standstill	--	--
Turn the power ON			Initial configuration display	☐PWR ☐EDM ☐CH1 ☐CH2 ☐ES ☐SET ☐ERR		OFF	OFF
			Monitoring starts	☐PWR ☐EDM ☐CH1 ☐CH2 ☐ES ☐SET ☐ERR		ON	ON
Machine operation			Rotation is detected and ES turns OFF	☐PWR ☐EDM ☐CH1 ☐CH2 ☐ES ☐SET ☐ERR	Rotating	OFF	OFF
Stop command				☐PWR ☐EDM ☐CH1 ☐CH2 ☐ES ☐SET ☐ERR	Decelerating		
			Standstill is detected and ES turns ON	☐PWR ☐EDM ☐CH1 ☐CH2 ☐ES ☐SET ☐ERR	Standstill	ON	ON

Note: LED indication is based on wiring equivalent to safety category 4. For wiring equivalent to category 3, EDM lights up even during the machine operation.

2. Operating Procedure

User Configuration
Tuning Mode

Operation			LED indicator		Machine operation	ES output	X1 output
Wire inputs and outputs	Set the operation preset switch on the back side to "USR"	USR / STD CONFIG	--		Standstill	--	--
	Set the mode preset switch on the back side to "TUN"	TUN / MON MODE					
	Set the standstill determining time preset switch on the front side to 1 second	DET TIME					
Turn the power ON			Initial configuration display	PWR EDM CH1 CH2 ES SET ERR			OFF
			Tuning starts	PWR EDM CH1 CH2 ES SET ERR			ON
Machine trial run			Rotation is detected and CH1/CH2/ES turn OFF (Auxiliary output X1 turns OFF)	PWR EDM CH1 CH2 ES SET ERR	Rotating	OFF	OFF
Stop command				PWR EDM CH1 CH2 ES SET ERR	Decelerating		
			CH1/CH2/ES light up (Auxiliary output X1 turns ON)	PWR EDM CH1 CH2 ES SET ERR	Decelerating		ON
				PWR EDM CH1 CH2 ES SET ERR	Stops in 1 second after ES lighting up		

Note: LED indication is based on wiring equivalent to safety category 4. For wiring equivalent to category 3, EDM lights up even during the machine operation.

Tuning Mode (continued)

Operation	LED indicator		Machine operation	ES output	X1 output
Set the standstill determining time preset switch on the front side to T seconds	--		--	--	--
Machine trial run		☐PWR ☐EDM ☐CH1 ☐CH2 ☐ES ☐SET ☐ERR	Rotating	OFF	OFF
Stop command		☐PWR ☐EDM ☐CH1 ☐CH2 ☐ES ☐SET ☐ERR	Decelerating		
	CH1/CH2 light up	☐PWR ☐EDM ☐CH1 ☐CH2 ☐ES ☐SET ☐ERR	Decelerating		
	ES lights up (auxiliary output X1 is ON)	☐PWR ☐EDM ☐CH1 ☐CH2 ☐ES ☐SET ☐ERR	Standstill		ON

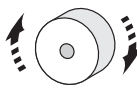| Tuning completed	If ES lights up before the machine comes to standstill, set a larger DET time and repeat the procedure from machine trial run to stop command.

Note: LED indication is based on wiring equivalent to safety category 4. For wiring equivalent to category 3, EDM lights up even during the machine operation.

2. Operating Procedure

Monitoring Mode

Operation			LED indicator		Machine operation	ES output	X1 output
Set the operation preset switch on the back side to "USR"	USR — STD — CONFIG	Set the standstill determining time preset switch on the back side to a setup value determined by the Tuning Mode	--		Standstill	--	--
Set the mode preset switch on the back side to "MON"	TUN — MON — MODE						
Turn the power ON			Initial configuration display	☐PWR ☐EDM ☐CH1 ☐CH2 ☐ES ☐SET ☐ERR	Standstill	OFF	OFF
			Monitoring starts	☐PWR ☐EDM ☐CH1 ☐CH2 ☐ES ☐SET ☐ERR		ON	ON
Machine operation			Rotation is detected and ES turns OFF	☐PWR ☐EDM ☐CH1 ☐CH2 ☐ES ☐SET ☐ERR	Rotating		
Stop command				☐PWR ☐EDM ☐CH1 ☐CH2 ☐ES ☐SET ☐ERR	Decelerating	OFF	OFF
			CH1/CH2 light up	☐PWR ☐EDM ☐CH1 ☐CH2 ☐ES ☐SET ☐ERR	Decelerating		
			ES lights up after a specified DET time passed	☐PWR ☐EDM ☐CH1 ☐CH2 ☐ES ☐SET ☐ERR	Standstill	ON	ON

Note: LED indication is based on wiring equivalent to safety category 4. For wiring equivalent to category 3, EDM lights up even during the machine operation.