KITO

INV No.ER2-0804-MC-02

For maintenance personnel

ER2 Series Electric Chain Hoist (125kg to 5t)

Approved by CSA

VFD Manual

Safety precaution

⚠ DANGER

Mandatory

- **When performing parameter change or maintenance for the VFD, read this VFD Manual and observe the information contained herein.**
- **Parameter change and maintenance must be performed by a competent person with experience and expertise of handling the electric chain hoist and VFD. Or contact your nearest KITO dealer.**

Failure to comply with the instructions may lead to an electric shock, burns, malfunction, breakdown or VFD damage, and even may cause serious or even fatal injury.

Prohibited

- **The product is energized during a parameter change or maintenance of the VFD. Do not remove the cover of the VFD. Do not touch the circuit board or electrical components around the VFD.**

Failure to comply with the instructions may lead to an electric shock, burns, malfunction, breakdown or VFD damage, and even may cause serious or even fatal injury.

For customers

This VFD Manual describes information on how to handle the VFD. For details on how to handle the ER2 electric chain hoist, refer to the Owner's Manual (separate document).

Safety precaution

■ General information of handling the dual speed VFD hoist

The ER2 VFD controls an important part of safety function such as braking and emergency stop including operation. Please observe the following safety precautions..

⚠ DANGER

Prohibited

- **The VFD is designed in KITO exclusive specifications. Do not use other than KITO-authorized VFD.**
- **Do not modify the VFD.**
- **Do not change the wiring.**
- **Do not perform a withstand voltage test or measurement of insulating resistance (megger measurement) with the VFD connected.**
- **Do not shut down the power supply during operation.**
- **Do not connect the power supply to the output side of the VFD.**

Failure to comply with the instructions may lead to an electric shock, burns, malfunction, breakdown or VFD damage, and even may cause serious or even fatal injury.

Mandatory

- **Before performing parameter change or maintenance of the VFD, read this VFD Manual and observe the information contained herein.**
- **Parameter change and maintenance must be performed by a competent person with experience and expertise of handling the electric chain hoist and VFD. Or contact your nearest KITO dealer.**
- **The product is energized during a parameter change or maintenance of the VFD. Do not remove the cover of the VFD. Do not touch the circuit board or electrical components around the VFD.**
- **The controller cover heats up during operation. Do not maintain and inspect the electrical components inside for 30 minutes after a stop of operation .**
- **When handling the VFD, provide the protection of Electrostatic Discharge (ESD).**
- **Do not perform maintenance and inspection of peripheral parts (excluding the VFD) within 5 minutes after de-energizing.**

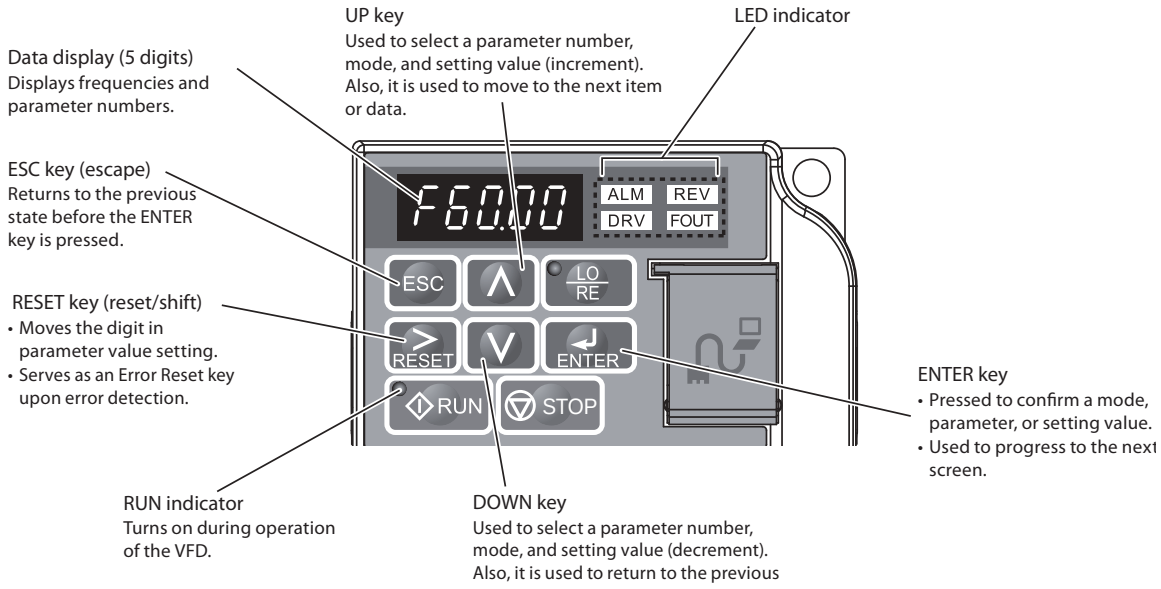
Failure to comply with the instructions may lead to an electric shock, burns, malfunction, breakdown or VFD damage, and even may cause serious or even fatal injury.

Table of Contents

■ LED panel

The indicator and operation of the LED panel are described below to set parameters and monitor the VFD.

■ Names and functions



■ VFD status

When the VFD is energized, the LED panel turns on as follows:.

Status	Name	Description
Normal		The frequency command monitor is displayed in the data display part. DRV turns on.
Error	 Example: Main circuit in low voltage	The display varies depending on the error. Refer to "Error diagnosis and measures" on page 16 to take appropriate measures. ALM and DRV turn on.

■ Digital characters on the LED

The digital characters are displayed on the LED as corresponding notions in the table next page. In this document, the turned-on/blinked digital characters are illustrated as follows.

Turn-on	Blinking
	

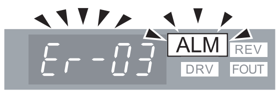
(To be continued)

LED digital characters

Character	LED display	Character	LED display	Character	LED display	Character	LED display
0	0	9	9	I	i	R	r
1	1	A	A	J	J	S	S
2	2	B	b	K	k	T	T
3	3	C	C	L	L	U	U
4	4	D	d	M	m*	V	u
5	5	E	E	N	n	W	W*
6	6	F	F	O	o	X	No display
7	7	G	G	P	P	Y	y
8	8	H	H	Q	q	Z	No display

* Displayed using 2 digits.

■ LED indicator

Mode	Turn-on	Blinking	Off
ALM	Upon error detection	• Upon detection of minor failure • Upon detection of an OPE (operation error)	Normal
REV	Inputting a reverse rotation command	–	Inputting a forward rotation command
DRV	In the drive mode	–	In the program mode
FOUT	Displaying output frequency (Hz)	–	–
Description in this document			

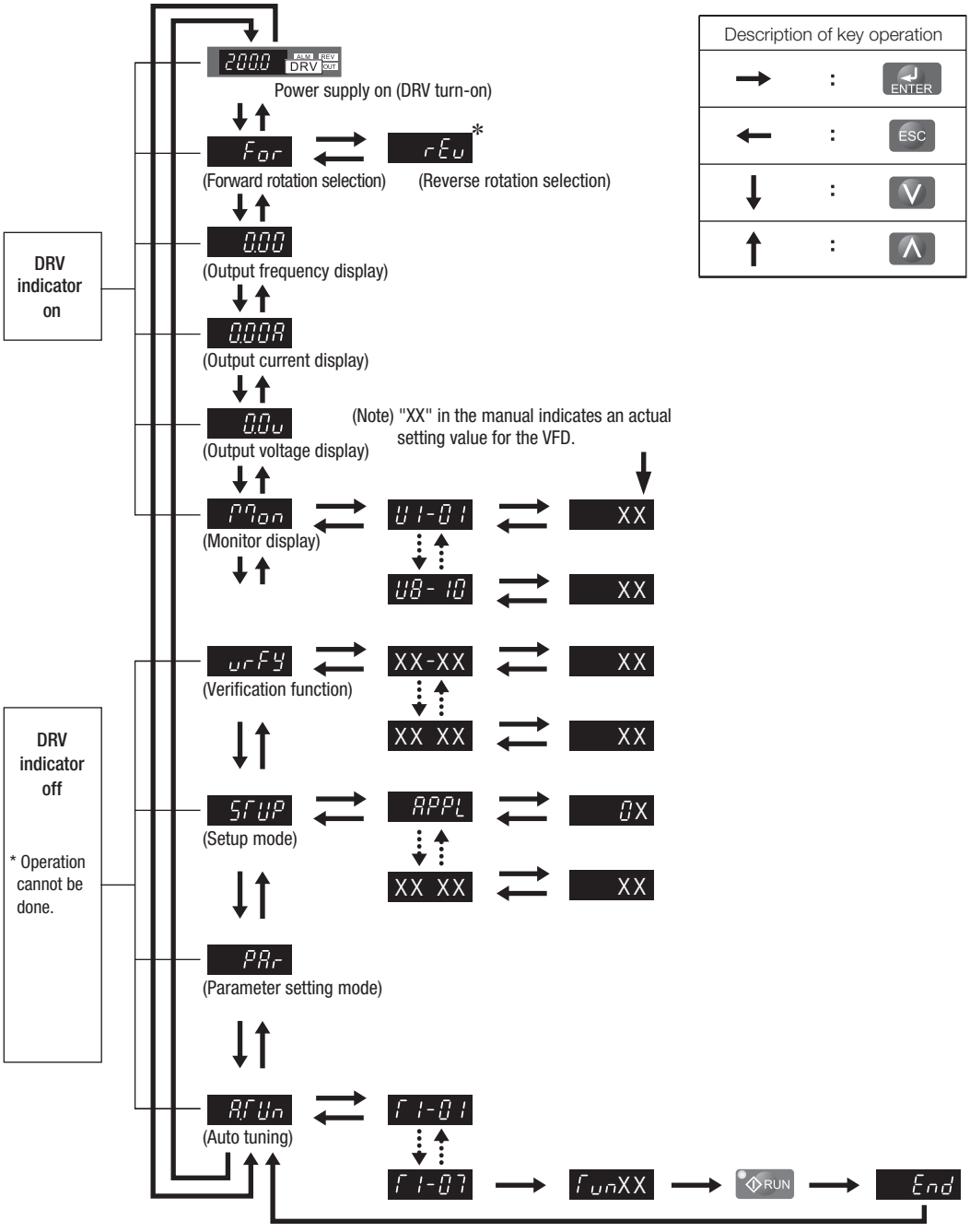
■ RUN indicator

Display

Mode	Turn-on	Blinking	Short blinking	Off
	During operation	• During deceleration/ stop • Inputting a driving command with the frequency command 0	• During deceleration due to an emergency stop • During deceleration • During a stop due to driving interlock operation	During a stop
Description in this document				

(To be continued)

■ Transitional diagram of LED panel mode



■ Speed change

The hoisting/lowering speed and traversing speed of the electric chain hoist can be set to a desired value by inputting the frequency of the VFD as follows.

■ Selecting a conversion table of speed and frequency

A conversion table is provided for each capacity. First select an applicable conversion table code from the following table-list, and next find the table from the section of "Conversion table" in accordance with the hoist or trolley voltage, and then select a frequency corresponding to the desired speed. Please note all the speeds in the conversion tables are indicated for reference.

ER2 electric chain hoist conversion table list

Product Code	Motor capacity	VFD capacity	Conversion table code	
			Friction clutch specification	Friction clutch with mechanical brake specification
ER2-001IH	0.56kW	0.75kW	E001IH-FC	E001IH-MFC
ER2-003IS			E003IS-FC	E003IS-MFC
ER2-003IH	0.9kW	1.5kW	E003IH-FC	E003IH-MFC
ER2-005IL	0.56kW	0.75kW	E005IL-FC	E005IL-MFC
ER2-005IS	0.9kW	1.5kW	E005IS-FC	E005IS-MFC
ER2-010IL			E010IL-FC	E010IL-MFC
ER2-010IS	1.8kW	2.2kW	E010IS-FC	E010IS-MFC
ER2-015IS			E015IS-FC	E015IS-MFC
ER2-020IC	0.9kW	1.5kW	E020IC-FC	E020IC-MFC
ER2-020IL	1.8kW	2.2kW	E020IL-FC	E020IL-MFC
ER2-020IS	3.5kW	3.7kW	E020IS-FC	E020IS-MFC
ER2-025IS			E025IS-FC	E025IS-MFC
ER2-030IS			E030IS-FC	E030IS-MFC
ER2-050IS			E050IS-FC	E050IS-MFC

MR2 motorized trolley conversion table list

Product Code	Motor capacity	VFD capacity	Conversion table code
MR2-010IS/MR2-020IS/MR2-030IS	0.4kW	0.4kW	M010IS
MR2-050IS	0.75kW	0.75kW	M050IS

(To be continued)

■ Setting procedure

Set a frequency (speed) parameter as follows.

⚠ CAUTION

Prohibited

- **Each capacity has an available range of frequencies (upper and lower limits). Any value outside the range cannot be written.**

Failure to comply with the instructions may cause injury or property damage.

Mandatory

- **Set the speeds in relation to Low speed [d1-01] < High speed [d1-02].**
- **Check the product operation under no load after changing the parameters..**

Failure to comply with the instructions may cause injury or property damage.

● Changing a parameter value

The following procedure shows how to change the speed values as an example.

・Example: Changing the d1-01(Low speed) from 9 Hz to 8 Hz

Procedure	LED panel
1. Turn on the power supply.	 Initial screen
2. Press ∧ until the setup mode screen is displayed.	
3. Press ENTER to display the parameter setting screen.	 Parameter setting screen
4. Press ∧ or ∨ until the desired parameter is displayed. Low speed: d1-01, High speed: d1-02	
5. When you press ENTER , the current setting value is displayed.	 (The most significant digit blinks.) 9 Hz
6. Press RESET to move the blinking digit to the desired digit.	 ("9" blinks.)
7. Press ∨, and enter "08.00".	 8 Hz
8. ENTER Press ENTER to confirm.	
9. The display automatically returns to the parameter setting screen (step 4).	
10. Press ESC until the display returns to the initial screen.	

■ Changing acceleration/deceleration time (for only MR2 motorized trolley)

The following shows how to change the acceleration/deceleration time of MR2. However please note these of ER2 cannot be changed.

■ Setting parameter

DANGER

Prohibited

- **Do not set the acceleration/deceleration time to any value outside the range, otherwise the trolley braking distance will shorten or lengthen, even resulting in dangerous situations.**

Failure to comply with the instructions may cause serious or even fatal injury.

The parameters are preset and adjustable in accordance with the following information.

Item	Parameter No.	Preset	Unit	Adjustable	Remark
Acceleration time	C1-01	4.0	Second	1.2 – 6.0	Set the same value to three parameters
	C1-03				
	C1-07				
Deceleration time	C1-02	4.0	Second	1.2 – 6.0	Set the same value to three parameters
	C1-04				
	C1-08				

Note: These values are set as acceleration/deceleration time for the range up to 120 Hz.

Example: The value of 4.0 seconds makes 2.0 seconds of acceleration/deceleration time in the case of the high speed 60Hz.

■ Setting procedure

Set an acceleration/deceleration time parameter as follows.

CAUTION

Mandatory

- **Check the product operation under no load after changing the parameters.**

Failure to comply with the instructions may cause property damage.

(To be continued)

● Changing a parameter value

The following procedure shows how to change the acceleration/deceleration time (C1) as an example.

・Example: Changing the C1-01(acceleration time) from 4.0 sec to 2.0 sec

Procedure	LED panel
1. Turn on the power supply.	 Initial screen
2. Press ∧ until the setup mode screen is displayed.	
3. Press ENTER to display the parameter setting screen.	 Parameter setting screen
4. Press ∧ or ∨ until C1-01 is displayed.	
5. When you press ENTER , the current setting value is displayed.	 (The most significant digit blinks.) 4 seconds
6. Press RESET to move the blinking digit to the desired digit.	 ("4" blinks.)
7. Press ∨, and enter "0002.0".	 2 seconds
8. ENTER Press ENTER to confirm.	
9. The display automatically returns to the parameter setting screen (step 4).	
10. Press ESC until the display returns to the initial screen.	

■ Displaying the number of starts and hoist's on-time

The number of starts is split into the higher order and lower order when displayed on the LED panel. Calculate the number of starts based on the displayed information.

■ Displayed information

The number of starts is split into the higher order and lower order when displayed, as shown in the following table.

No.	Name	Description
U7-01	Number of starts (higher order)	1000 times of starts of lowering are displayed as 1. Up to 10,000 are displayed. The maximum indicates 10,000 × 1,000 = 10 million times.
U7-02	Number of starts (lower order)	One time of start of lowering is displayed as 1. Up to 999 are displayed. When it reaches 1000 after 999, the value of U7-01(higher order) is incremented by 1. At the same time, the value of U7-02 (lower order) is reset to 0.
U7-03	Hoist's on-time	One hour of hoist's on-time is displayed as 1. Up to 65535 hours are displayed.

Note: The maximum value that can be displayed does not indicate the service life.

■ Displaying procedure

The following shows the procedure for the hoist's on-time. To display the number of starts, take the following procedure similarly.

• Example: Displaying U7-03(hoist's on-time).

Procedure	LED panel
1. Turn on the power supply.	 Initial screen
2. Press ∧ until the monitor display screen is displayed.	
3. Press ENTER to display the parameter setting screen, and then press ESC.	 Parameter setting screen
4. Press ∧ or ∨ to display U7-01.	
5. Press RESET and ∧ or ∨ to set it to U7-03 (driving time).	
6. When you press ENTER, the current value is displayed. (For monitor parameters, refer to page 25.)	 75 hours
7. Monitoring finishes. To restart operation, press ESC until the display returns to the initial screen.	 2 seconds

(To be continued)

■ Calculating the number of starts

Calculate the number of starts based on the displayed information in the higher order and lower order.

Example: When "81" is displayed in U7-01, and "567" is displayed in U7-02

Number of starts of lowering = 81 × 1,000 + 567 = 81,567 times

■ Hoist's on-time

When "122" is displayed in U7-03, the hoist's on-time is 122 hours.

Warning display

■ VFD error codes

■ Types of alarms and errors

If the VFD or motor runs irregularly, check the alarm/error on the LED display.
The types of alarms and errors are as follows:

- Error
- Minor failure/warning
- Operation error

The following table "Types of alarms and errors" shows the details.

Types of alarms and errors

Type	Status of the VFD in case of an alarm or error
Error	When an error is detected, the following states occur. • Characters indicating the details of the error are displayed on the LED, and the ALM mode turns on. • The VFD output is shut down, and the motor stops after a free run. (However, a manner to stop can be preset depending on the sorts of errors.)
Minor failure/ warning	When minor failure/warning is detected, the following states occur. • Characters indicating the details of the minor failure blink on the LED, and the ALM mode blinks. • The motor does not stop. Measures: After detection of minor failure/warning, remove the cause. The VFD automatically returns to the original state.
Operation error	An operation error is displayed for a parameter input error, wrong combination of parameters, or failure of the option card. When an operation error is detected, the following state occurs. • Characters indicating the details of the error are displayed on the LED. Measures: After detection of an error, remove the cause of the error by setting the parameter, etc. The VFD cannot start until the parameter is set correctly.

■ Major causes of an VFD trip

The VFD may trip due to overload, voltage drop, high-frequency use, use in high temperature, or mis-phase. Use the product where the operating conditions/environment meet the product specifications.

(To be continued)

■ Error display list

● Error display list

When an error occurs, the characters on the LED display "turn on," not "blink." (The ALM mode also turns on.)
If they blink, it is a "minor failure/warning." Refer to "Minor failure/warning" on page 15.

LED display		Name	Page
CF	CF	Control error	16
CPF06	CPF06	EEPROM data error	16
CPF07	CPF07	Terminal board communication error	16
CPF08	CPF08	EEPROM serial communication error	16
CPF11	CPF11	RAM error	16
CPF12	CPF12	Flash memory error	16
CPF13	CPF13	Watchdog error	16
CPF14	CPF14	Control circuit error	16
CPF16	CPF16	Clock error	16
CPF17	CPF17	Interrupt error	16
CPF18	CPF18	Control circuit error	16
CPF19	CPF19	Control circuit error	16
CPF20 or CPF21	CPF20 or CPF21	RAM error	16
		Flash memory error	16
		Watchdog error	16
		Clock error	16

LED display		Name	Page
EF1 to EF7	EF1 to EF7	External error (Input terminal S1 to S7)	17
GF	GF	Ground fault	17
LF	LF	Output phase interruption	17
oC	oC	Overcurrent	17
oH	oH	Heat sink overheat	18
oH1	oH1	Heat sink overheat	18
oL1	oL1	Motor overload	18
oL2	oL2	VFD overload	18
oL3	oL3	Over-torque detection 1	18
oL4	oL4	Over-torque detection 2	18
ou	ov	Main circuit overvoltage	18
PF	PF	Main circuit voltage error	19
rr	rr	Internal damping transistor error	19
Uv1	Uv1	Main circuit low voltage	19
Uv2	Uv2	Control power supply error	20
Uv3	Uv3	Inrush prevention circuit error	20

■ Minor failure/warning

● Minor failure/warning

When a minor failure/warning occurs, characters on the LED display blink. If they do not blink, it is an "error." Refer to "■ Error display list" on page 14.

LED display		Name	Page
EF	EF	Forward/reverse command simultaneous input	20
EF1 to EF7	EF1 to EF7	external error (Input terminal S1 to S7)	20
Hbb	Hbb	Inputting a safety signal	20
HCA	HCA	Current warning	20
oH	oH	Heat sink overheat	20
oL3	oL3	Over-torque 1	21
oL4	oL4	Over-torque 2	21
ou	ov	Main circuit overvoltage	21
rUnC	rUnC	Reset during driving command input	21
Uu	Uv	Main circuit low voltage	22

■ Operation error and measures

● Operation error

LED display		Name	Page
oPE02	oPE02	Invalid parameter setting range	22

(To be continued)

■ Error diagnosis and measures

- Error and measures

Error and measures

LED display		Error name
CF	CF	Control error
		Torque limit took 3 seconds or more in succession during deceleration/stop
Cause		**Measure**
Load inertia is high.		⇒ Adjust the parameters used among C1-02, -04, -06, -08 (deceleration time). ⇒ Lower the frequency command to the minimum output frequency for deceleration, and then turn off the driving command.
LED display		**Error name**
CPF06	CPF06	EEPROM data error
		Data stored in the EEPROM is erroneous.
Cause		**Measure**
Control circuit is damaged.		Turn on/off the power supply to check operation. ⇒ If the error occurs again, replace the VFD.
LED display		**Error name**
CPF07	CPF07	Terminal board communication error
		Failure with the terminal board
Cause		**Measure**
Failure between the terminal board and control board		⇒ Turn off the power supply of the VFD, and re-connect the control circuit terminal.
LED display		**Error name**
CPF08	CPF08	EEPROM serial communication error
		Failure with the EEPROM
Cause		**Measure**
Failure between the terminal board and control board		⇒ Turn off the power supply of the VFD, and re-connect the control circuit terminal.
LED display		**Error name**
CPF11	CPF11	RAM error
		RAM error
CPF12	CPF12	Flash memory error
		ROM (flash memory) error
CPF13	CPF13	Watchdog error
		Self diagnosis error
CPF14	CPF14	Control circuit error
		CPU failure (malfunction of CPU due to noise)
CPF16	CPF16	Clock error
		Reference clock error
CPF17	CPF17	Interrupt error
		Timing of internal processing was erroneous
CPF18	CPF18	Control circuit error
		CPU failure (malfunction of CPU due to noise)
CPF19	CPF19	Control circuit error
		CPU failure (malfunction of CPU due to noise)
CPF20 or CPF21	CPF20 or CPF21	Any of the following errors occurred. RAM error/FLASH error/watchdog circuit exception
		• RAM error • Flash memory error (ROM error) • Watchdog error • Clock error
Cause		**Measure**
Hardware error		⇒ Replace the VFD.

Error and measures

LED display		Error name
EF1 to EF7	EF1 to EFF	External error (Input terminal S1 to S7)
		An external error was inputted from the multifunction contact input terminal (S1 to S7).
Cause		**Measure**
The alarm function of the external equipment is operating.		⇒ Remove the cause of the external error, and remove the external error input of the multifunction input.
Wiring is not correct.		Check if the signal line is connected correctly. ⇒ Connect the signal line correctly.
LED display		**Error name**
GF	GF	Ground fault
		The ground-fault current exceeded about 50% of the VFD rated output current in the VFD output side.
Cause		**Measure**
Motor burnout or insulation degradation occurred.		Check the insulating resistance of the motor. ⇒ Replace the motor if conduction occurs.
Contact or ground fault occurred due to cable damage.		Check the resistance value between the cable and (ground) terminal. ⇒ Replace the cable if conduction occurs.
		Check ⏚ the motor power cable. ⇒ Remove the part with a ground fault, and turn on the power supply again.
⏚The floating capacitance between the cable and (ground) terminal is high.		⇒ If the cable length is over 100 meters, lower the carrier frequency. ⇒ Take measures to reduce floating capacitance.
LED display		**Error name**
LF	LF	Output phase interruption
		Phase interruption occurred in the VFD output side.
Cause		**Measure**
The output cable was broken.		Check the output cable wiring for a break or wrong wiring. ⇒ Perform wiring correctly.
The coil (winding) inside the motor was broken.		Measure the motor line resistance. ⇒ If the coil is broken, replace the motor.
The output terminal is loose.		Check the terminal for looseness, and re-tighten the terminal.
LED display		**Error name**
oC	oC	Overcurrent
		An VFD output current exceeding the overcurrent detection level was detected.
Cause		**Measure**
Motor burnout or insulation degradation occurred.		Check the insulating resistance of the motor. ⇒ Replace the motor if conduction occurs.
Contact or ground fault occurred due to cable damage.		Check the motor power cable. ⇒ Remove the part with a ground fault, and turn on the power supply again.
		Check ⏚ the resistance value between the cable and (ground) terminal. ⇒ Replace the cable if conduction occurs.
The load is too high.		Measure the current flowing through the motor. ⇒ If the current value exceeds the rated current of the VFD, reduce the load. Check if the current value changes suddenly. ⇒ If the current changes suddenly, reduce the load fluctuation.
Malfunction occurred due to noise.		Check the state of the noise measures. ⇒ Check the wiring of the control circuit as well as wiring and ground wiring of the main circuit, and take sufficient noise measures. ⇒ If the noise generation source is the electromagnetic contactor, connect a surge absorber to the coil of the electromagnetic contactor.

(To be continued)

Error and measures

LED display		Error name
oH	oH	Heat sink overheat
		The heat sink temperature of the VFD exceeded the setting value (90 to 100°C).
oH1	oH1	Heat sink overheat
		The heat sink temperature of the VFD exceeded 100 to 110°C.
Cause		**Measure**
The ambient temperature is too high.		Check the ambient temperature. ⇒ Remove heating elements nearby, if any. ⇒ Use it within the rated ambient temperature range.
The frequency is too high.		⇒ Use it within the rated range.
The load is too high.		Measure the output current. ⇒ Reduce the load.
LED display		**Error name**
oL1	oL1	Motor overload
		The motor overload protection tripped due to electronic thermal.
Cause		**Measure**
The load is too high.		Check the amount of load. ⇒ Reduce the load.
LED display		**Error name**
oL2	oL2	VFD overload
		The VFD overload protection tripped due to electronic thermal.
Cause		**Measure**
The load is too high.		Check the amount of load. ⇒ Reduce the load.
LED display		**Error name**
oL3	oL3	Over-torque detection 1
		A current exceeding the setting value flowed continuously.
oL4	oL4	Over-torque detection 2
		A current exceeding the setting value flowed continuously.
Cause		**Measure**
The load is too high.		Check the amount of load. ⇒ Reduce the load.
LED display		**Error name**
ou	ov	Main circuit overvoltage
		The main circuit DC voltage exceeded the overvoltage detection level. 200V class: Approx. 410V 400V class: Approx.820V
A ground fault of the motor occurred. (A ground-fault current is charging the main circuit capacitor in the VFD via the power supply.)		Check the power cable, relay terminal, and motor terminal box of the motor. ⇒ Remove the part with a ground fault, and turn on the power supply again.
The power supply voltage is too high.		Check the voltage. ⇒ Lower the voltage to the power supply specification of the VFD.
The damping transistor is broken.		⇒ Replace the VFD.
The wiring of the damping resistor or damping resistor unit is not correct.		Check the connection to the damping resistor or damping resistor unit for wrong wiring. ⇒ Perform wiring correctly.

Error and measures

Malfunction occurred due to noise.	Check the state of the noise measures. ⇒ Check the wiring of the control circuit as well as wiring and ground wiring of the main circuit, and take sufficient noise measures. ⇒ If the noise generation source is the electromagnetic contactor, connect a surge absorber to the coil of the electromagnetic contactor.
LED display	**Error name**
PF / PF	Main circuit voltage error
	The main circuit DC voltage fluctuates abnormally other than during regeneration.
Cause	**Measure**
Phase interruption of the input power supply occurred.	Check the main circuit power supply wiring for a break or wrong wiring. ⇒ Perform wiring correctly.
The wiring terminal of the input power supply is loose.	Check the terminal for looseness. ⇒ Re-tighten the terminal.
The voltage fluctuation of the input power supply is too high.	Check the power supply voltage. ⇒ Take measures for power supply stabilization.
The interphase voltage balance is poor.	⇒ Check the power supply voltage, and take measures for power supply stabilization.
The main circuit capacitor inside the VFD is deteriorated.	Check the input power supply for an error. If there is no error in the power supply side and alarms still occur frequently, take the following measure. ⇒ Replace the VFD.
LED display	**Error name**
rr / rr	Internal damping transistor error
	Operation of the damping transistor is erroneous.
Cause	**Measure**
The damping transistor is broken.	Turn on/off the power supply to check if an error occurs. ⇒ If the error occurs in succession, replace the VFD.
Defective VFD control circuit	
LED display	**Error name**
Uv1 / Uv1	Main circuit low voltage
	The following states occurred when no driving command is inputted (when the VFD is not operating). • The main circuit DC voltage is below the setting value. • 200V class: Approx. 190V • 400V class: Approx. 380V.
Cause	**Measure**
Phase interruption of the input power supply occurred.	Check the main circuit power supply wiring for a break or wrong wiring. ⇒ Perform wiring correctly.
The wiring terminal of the input power supply is loose.	Check the terminal for looseness. ⇒ Re-tighten the terminal.
An error occurred in the power supply voltage.	Check the voltage. ⇒ Adjust the voltage to the range of the power supply specification of the VFD.
Power failure occurred.	⇒ Check the power supply.
The internal circuit of the VFD is deteriorated.	⇒ Replace the VFD.
The power supply voltage drops at an inrush current of the VFD due to insufficient capacity of the power supply transformer.	Check if an alarm occurs when the wiring breaker, earth leakage breaker (with overcurrent protection function), or electromagnetic contactor is ON. ⇒ Review the power supply transformer capacity.
VFD internal atmosphere error	⇒ Check the ambient temperature of the VFD.
CHARGE lamp failure (lamp break)	⇒ Replace the VFD.

(To be continued)

Error and measures

LED display		Error name
Uu2	Uv2	Control power supply error
		The control power supply voltage dropped.
Cause		**Measure**
VFD internal circuit error		Turn on/off the power supply to check if an error occurs. ⇒ If the error occurs in succession, replace the VFD.
LED display		**Error name**
Uu3	Uv3	Inrush prevention circuit error
		Failure of the inrush prevention circuit occurred.
Cause		**Measure**
Failure of the contactor of the inrush prevention circuit inside the VFD		Turn on/off the power supply to check if an error occurs. ⇒ If the error occurs in succession, replace the VFD.
VFD internal atmosphere error		⇒ Check the ambient temperature of the VFD.

- Minor failure/warning

Minor failure/warning and measures

LED display		Minor failure name
EF	EF	Forward/reverse command simultaneous input
		The forward rotation command and reverse rotation command were inputted simultaneously for 0.5 seconds or more.
Cause		**Measure**
Sequence error		⇒ Review and modify the wiring of the forward/reverse command.
LED display		**Minor failure name**
EF1 ～ EF7	EF1 ～ EF7	External error (Input terminal S1 to S7)
		An external error was inputted from the multifunction contact input terminal (S1 to S7).
Cause		**Measure**
The alarm function of the external equipment is operating.		⇒ Remove the cause of the external error, and turn off the external error input of the multifunction input.
The wiring is not correct.		Check that the signal line is correctly connected to the external input terminal. ⇒ Connect the signal line correctly.
LED display		**Minor failure name**
Hbb	Hbb	Safety signal is being inputted.
		A safety signal was inputted from the input terminal.
Cause		**Measure**
The emergency stop switch was pressed.		⇒ Reset the emergency stop.
LED display		**Minor failure name**
HCA	HCA	Current warning
		The VFD output current exceeded the overcurrent warning level (150% of the rated current).
Cause		**Measure**
The load is too high.		Measure the current flowing through the motor. ⇒ If overload occurs, reduce the load, or increase the VFD capacity.
LED display		**Minor failure name**
oH	oH	Heat sink overheat
		The VFD heat sink temperature exceeded the setting value (90 to 100°C) (that varies depending on the VFD capacity)

Minor failure/warning and measures

Cause		Measure
The ambient temperature is too high.		Check the ambient temperature. ⇒ Use it at an ambient temperature of 40°C or lower. ⇒ Remove heating elements nearby, if any.
LED display		**Minor failure name**
oL3	oL3	Over-torque detection 1
		A current exceeding the setting value flowed continuously.
oL4	oL4	Over-torque detection 2
		A current exceeding the setting value flowed continuously.
Cause		**Measure**
The load is too high.		Check the amount of load. ⇒ Reduce the load.
LED display		**Minor failure name**
ou	ov	Main circuit overvoltage
		The main circuit DC voltage exceeded the overvoltage detection level when no driving command is inputted (when the VFD is not operating). 200V class: Approx. 410V 400V class: Approx. 820V
Cause		**Measure**
Surge voltage was mixed into the input power supply.		⇒ Install a DC reactor. • If the phase advance capacitor is turned on/off or the thyristor conversion device operates within the same power supply system, an abnormal rapid rise (surge) of the input voltage may occur temporarily.
A ground fault of the motor occurred. (A ground-fault current is charging the main circuit capacitor in the VFD via the power supply.)		Check the power cable, relay terminal, and motor terminal box of the motor. ⇒ Remove the part with a ground fault, and turn on the power supply again.
Malfunction occurred due to noise.		Check the state of the noise measures. ⇒ Check the wiring of the control circuit as well as wiring and ground wiring of the main circuit, and take sufficient noise measures. ⇒ If the noise generation source is the electromagnetic contactor, connect a surge absorber to the coil of the electromagnetic contactor.
LED display		**Minor failure name**
rUnC	rUnC	Reset during driving command input
		An error reset signal was inputted while the driving command was being inputted.
Cause		**Measure**
An error reset was inputted while the driving command was being inputted.		Check if the driving command is inputted from the external terminal or communication card upon an error reset. ⇒ Turn off the driving command.

(To be continued)

Minor failure/warning and measures

LED display		Minor failure name
Uu	Uv	Main circuit low voltage
		The following states occurred when no driving command is inputted (when the VFD is not operating). • The inrush current suppression contactor inside the VFD was released. • The control power supply became low.
Cause		**Measure**
Phase interruption of the input power supply occurred.		Check the main circuit power supply wiring for a break or wrong wiring. ⇒ Perform wiring correctly.
The wiring terminal of the input power supply is loose.		Check the terminal for looseness. ⇒ Re-tighten the terminal.
An error occurred in the power supply voltage.		Check the voltage. ⇒ Adjust the voltage to the range of the power supply specification of the VFD.
Power failure occurred.		⇒ Adjust the power supply
The power supply voltage drops at an inrush current of the VFD due to insufficient capacity of the power supply transformer.		Check if an alarm occurs when the wiring breaker, earth leakage breaker (with overcurrent protection function), or electromagnetic contactor is ON. ⇒ Review the power supply transformer capacity.
VFD internal atmosphere error		⇒ Check the ambient temperature of the VFD.
CHARGE lamp failure (lamp break)		⇒ Replace the VFD.

- Operation error and setting error details

Operation error and setting error details

LED display		Error name
oPE02	oPE02	Invalid parameter setting range
		A value outside the range was set to the parameter.
Cause		**Measure**
A value outside the range was set to the parameter.		Check which of the parameters are set erroneously with U1-18 (OPE error parameter). ⇒ Set the parameter correctly.
Note: If two or more operation errors occurred simultaneously, OPE mm is displayed in priority to OPE02.		

■ Error reset

When an error occurred, restart the VFD after removing the cause of the error. To restart the VFD, turn on/off the emergency stop button.

- If the VFD is not reset,
  (1) Turn it on/off several times.
  (2) If the VFD is too hot, cool it down before resetting.

■ Restarting the VFD after an error

If the VFD stopped due to an error, check the cause in the following steps, and take measures so that the VFD can operate again.

■ If the VFD power supply was shut down upon an erro

⚠ DANGER

Mandatory

- **Before turning on the power supply of the VFD, check the following.**
  - **There is no short circuit between the main circuit terminals R/L1, S/L2, and T/L3.**
  - **There is no short circuit from the main circuit terminals R/L1, S/L2, and T/L3 to ground.**

Failure to comply with the instructions may cause serious or even fatal injury, or VFD damage.

1. Turn on the power supply of the VFD.
2. Check the details and cause of the error that has just occurred using the error trace parameter U2-mm.
   U2-02 (past error) indicates which error caused the shutdown of the power supply. U2-03 to U2-13 indicate the states of the VFD when the error occurred (frequency, current, voltage, etc.).
   U3-01 to U3-10 indicate error history (for 10 errors).
   For information on how to check the error trace, refer to page 24.
3. Remove the cause of the error.
   For measures against errors, refer to page 16.

Information

If the error is still displayed when the power supply is turned on, remove the cause of the error and perform an error reset operation.

■ If the VFD power supply was not shut down upon an error

1. Check the type of the error with the LED operator.
2. Remove the cause of the error.
   For measures against errors, refer to page 16.
3. Perform an error reset.
   For an error reset, refer to page 22.

(To be continued)

■ Checking the error trace

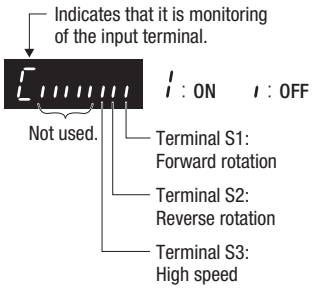
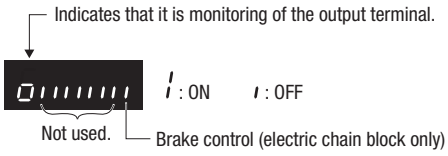
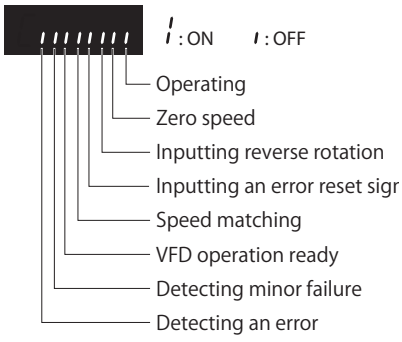
The following describes how to check the error trace in the case that the VFD detects an error of oC (overcurrent).

Procedure	LED display
1. Turn on the power supply.	 Initial screen
2. Press ∧ until the monitor display screen is displayed.	
3. Press ENTER to display the parameter setting screen.	 Parameter setting screen
4. Press ∧ or RESET to display U2-02 (past error).	
5. Press ENTER to confirm. The current error details are displayed.	 Overcurrent
6. Press ESC to return to the U2-02 screen.	
7. To monitor the information about U2-03 to 13, press ∧. Data that is helpful for finding the cause of the error can be obtained.	

■ U: Monitor

The monitor parameter (U parameter) shows parameters that can be monitored in the drive mode.

- **State monitor: U1**

No.	Name	Description
U1-03	Output current	Displays the output current.
U1-10	Input terminal state	Checks on/off of the input terminal. 
U1-11	Output terminal state	Checks on/off of the output terminal. 
U1-12	Driving state	Checks the state of the VFD 

(To be continued)

- Error trace: U2

No.	Name	Description
U2-01	Current error	Checks the details of the current error.
U2-02	Past error	Checks the details of the error that occurred immediately before the past error.
U2-03	Frequency command upon an error	Displays the frequency command value when the "past error" occurred.
U2-04	Output frequency upon an error	Displays the output frequency when the "past error" occurred.
U2-05	Output current upon an error	Displays the output current when the "past error" occurred.
U2-07	Output voltage command upon an error	Displays the output voltage command when the "past error" occurred.
U2-11	Input terminal state upon an error	Displays the input terminal state when the "past error" occurred (similar state display as U1-10).
U2-12	Output terminal state upon an error	Displays the output terminal state when the "past error" occurred (similar state display as U1-11).
U2-13	Driving state upon an error	Displays the driving state when the "past error" occurred (similar state display as U1-12).

- Error history: U3

No.	Name	Description
U3-01	Details of the previous error	Displays the details of the previous error
U3-02	Details of the error 2 errors before	Displays the details of the error 2 errors before
U3-03	Details of the error 3 errors before	Displays the details of the error 3 errors before
U3-04	Details of the error 4 errors before	Displays the details of the error 4 errors before
U3-05	Details of the error 5 errors before	Displays the details of the error 5 errors before
U3-06	Details of the error 6 errors before	Displays the details of the error 6 errors before
U3-07	Details of the error 7 errors before	Displays the details of the error 7 errors before
U3-08	Details of the error 8 errors before	Displays the details of the error 8 errors before
U3-09	Details of the error 9 errors before	Displays the details of the error 9 errors before
U3-10	Details of the error 10 errors before	Displays the details of the error 10 errors before

Maintenance

■ VFD service life

Aging components

Part name	Life guideline *	Error display upon failure	Upon failure
Electrolytic capacitor (main circuit)	Approx. 88,000 hours	"PF": Main circuit voltage error "Uv1": Main circuit constant voltage	VFD replacement
Inrush prevention relay	100,000 times of ON/OFF of the power supply	"Uv3": Inrush prevention circuit error	VFD replacement

* The life guideline varies depending on the operating conditions.

■ Cautions on wiring

This section describes the functions, specifications, and wiring of the VFD main circuit for safe and correct connection.

⚠ CAUTION

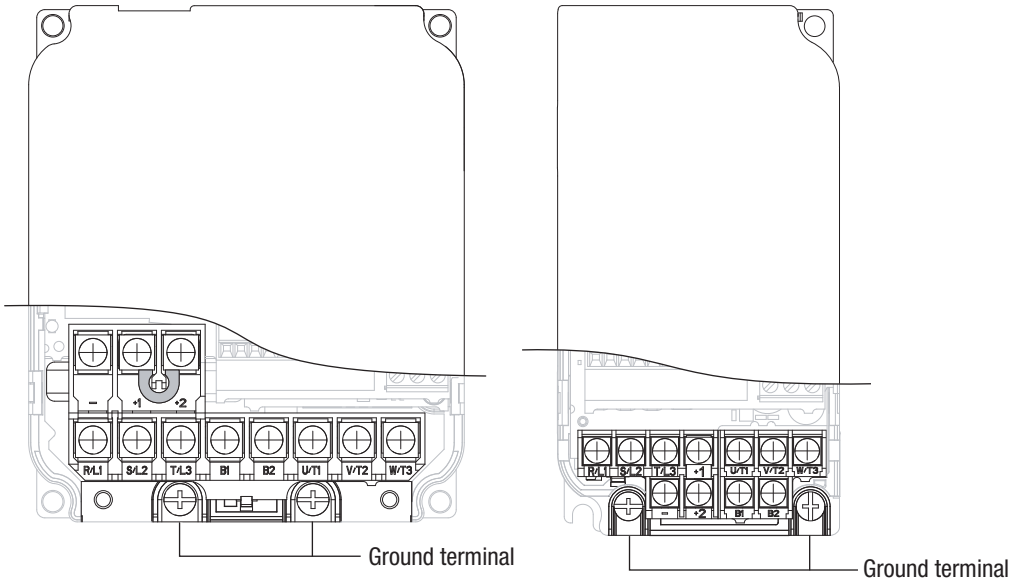
Prohibited

- **The B1 and B2 terminals are used for connection of damping resistors. Do not connect anything other than damping resistors.**
- **Do not connect anything to the +1, +2, and - terminals.**

If other device is connected, damage or malfunction of the VFD may occur.

■ Main circuit terminal block arrangement

The terminal block of the main circuit is located at the following positions.



(To be continued)

- Functions of the main circuit terminal

Functions of the main circuit terminal

Terminal symbol	Terminal name	Function	Reference page
R/L1	Main circuit power supply input	Terminal to connect to the commercial power supply.	27
S/L2			
T/L3			
U/T1	VFD output	Terminal to connect to the VFD output motor.	27
V/T2			
W/T3			
B1	Connection for damping resistor	Terminal to connect the damping resistor connection damping resistor.	27
B2			
+1	–	• No wiring	–
+2			
+1	–	• No wiring	–
–			
⏚ (2)	Ground	Terminal for grounding. 200 V class: Class D grounding (ground resistance 100 Ω or less) 400 V class: Class C grounding (ground resistance 10 Ω or less)	27

"+ 1," "+ 2," and - terminal are not used.
(Do not wire them.)

■ Wiring of the motor to the power supply terminal of the main circuit

This section describes the procedure, cautions, and check points for wiring the main circuit terminal.

⚠ CAUTION

Prohibited

- **Do not connect any phase advance capacitor or LC/RC noise filter to the output circuit of the VFD.**

If a noise filter is connected in a wrong way, the VFD may be damaged.

- **Do not connect the power supply to the output terminal of the VFD.**

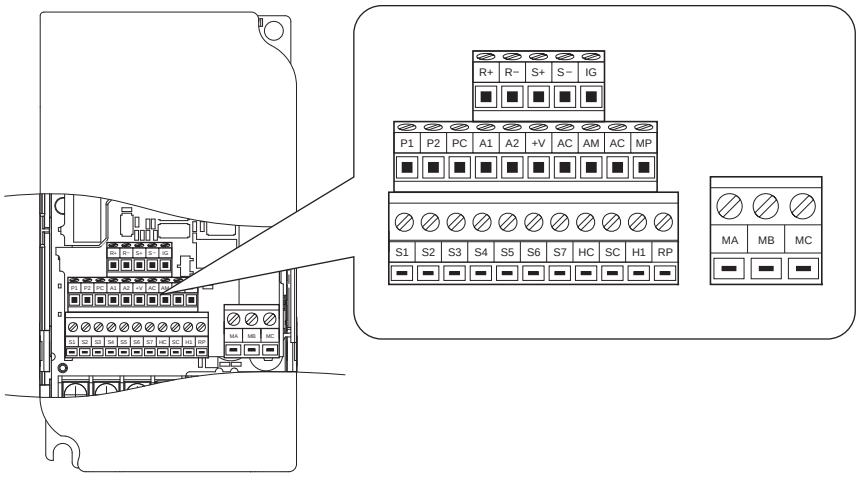
If you do, the VFD will be damaged, resulting in fire.

- **Do not connect damping resistors to any terminal other than B1 and B2.**

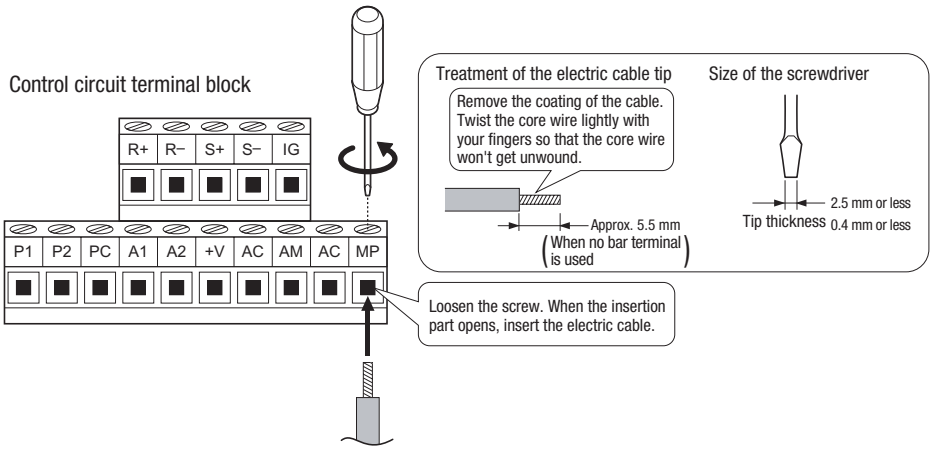
If you do, the damping circuit or VFD may be damaged, or the damping resistor may overheat, resulting in fire.

● Arrangement of the control circuit terminal block

The control circuit terminal block is located at the following position.



● Wiring procedure for the control circuit



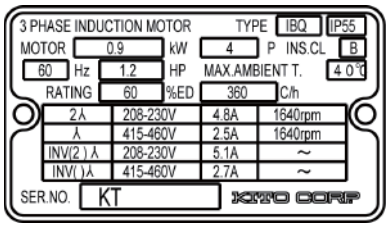
Conversion table

■ Selection of conversion table

This chapter provides conversion tables in accordance with the voltage category of the motor and the conversion table code (referred to “Speed change” in Chapter, “Usage”). The conversation tables are given on the following pages by the voltage category.

Voltage category	Page
230/460V Class	P.31

If the voltage category of your product is not identified, please find your voltage range (next to the notation of “INV” on the motor nameplate as shown in the following pictures e.g. ER2 0.9KW motor).



230/460V Class

Choose the voltage category corresponding to the identified range in the following table.

Voltage range on motor nameplate	Voltage category
208-230	230/460V Class
415-460	230/460V Class

● 230/460 V Class (208-230 V)

■ E001IH-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0461	2.8	8.3	d1-01
High speed	0.277	16.6	57.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0231	1.4	3.2	d1-01
High speed	0.277	16.6	57.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0231m/s or 1.4m/min.

* 2) The upper limit for High speed is 0.277m/s or 16.6m/min.

(To be continued)

Speed		Frequency
m/s	m/min	Hz
0.0231	1.4	3.2
0.0250	1.5	3.6
0.0267	1.6	4.0
0.0283	1.7	4.4
0.0300	1.8	4.7
0.0317	1.9	5.1
0.0333	2.0	5.5
0.0350	2.1	5.8
0.0367	2.2	6.2
0.0383	2.3	6.6
0.0400	2.4	6.9
0.0417	2.5	7.3
0.0433	2.6	7.7
0.0450	2.7	8.1
0.0461	2.8	8.3
0.0483	2.9	8.7
0.0500	3.0	9.1
0.0517	3.1	9.4
0.0533	3.2	9.8
0.0550	3.3	10.1
0.0567	3.4	10.4
0.0583	3.5	10.8
0.0600	3.6	11.1
0.0617	3.7	11.4
0.0633	3.8	11.8
0.0650	3.9	12.1
0.0667	4.0	12.4
0.0683	4.1	12.8
0.0700	4.2	13.1
0.0717	4.3	13.5
0.0733	4.4	13.8
0.0750	4.5	14.1
0.0767	4.6	14.5
0.0783	4.7	14.8
0.0800	4.8	15.1
0.0817	4.9	15.5
0.0833	5.0	15.8
0.0850	5.1	16.1
0.0867	5.2	16.5
0.0883	5.3	16.8
0.0900	5.4	17.1
0.0917	5.5	17.5
0.0933	5.6	17.8
0.0950	5.7	18.2
0.0967	5.8	18.5
0.0983	5.9	18.8
0.100	6.0	19.2
0.102	6.1	19.5
0.103	6.2	19.8
0.105	6.3	20.2
0.107	6.4	20.5
0.108	6.5	20.8

Speed		Frequency
m/s	m/min	Hz
0.110	6.6	21.2
0.112	6.7	21.5
0.113	6.8	21.8
0.115	6.9	22.2
0.117	7.0	22.5
0.118	7.1	22.9
0.120	7.2	23.2
0.122	7.3	23.5
0.123	7.4	23.9
0.125	7.5	24.2
0.127	7.6	24.5
0.128	7.7	24.9
0.130	7.8	25.2
0.132	7.9	25.5
0.133	8.0	25.9
0.135	8.1	26.2
0.137	8.2	26.5
0.138	8.3	26.9
0.140	8.4	27.2
0.142	8.5	27.6
0.143	8.6	28.0
0.145	8.7	28.3
0.147	8.8	28.7
0.148	8.9	29.0
0.150	9.0	29.4
0.152	9.1	29.8
0.153	9.2	30.1
0.155	9.3	30.5
0.157	9.4	30.9
0.158	9.5	31.2
0.160	9.6	31.6
0.162	9.7	31.9
0.163	9.8	32.3
0.165	9.9	32.7
0.167	10.0	33.0
0.168	10.1	33.4
0.170	10.2	33.8
0.172	10.3	34.1
0.173	10.4	34.5
0.175	10.5	34.8
0.177	10.6	35.2
0.178	10.7	35.6
0.180	10.8	35.9
0.182	10.9	36.3
0.183	11.0	36.6
0.185	11.1	37.0
0.187	11.2	37.4
0.188	11.3	37.7
0.190	11.4	38.1
0.192	11.5	38.5
0.193	11.6	38.8
0.195	11.7	39.2

Speed		Frequency
m/s	m/min	Hz
0.197	11.8	39.5
0.198	11.9	39.9
0.200	12.0	40.3
0.202	12.1	40.6
0.203	12.2	41.0
0.205	12.3	41.4
0.207	12.4	41.7
0.208	12.5	42.1
0.210	12.6	42.4
0.212	12.7	42.8
0.213	12.8	43.2
0.215	12.9	43.5
0.217	13.0	43.9
0.218	13.1	44.3
0.220	13.2	44.6
0.222	13.3	45.0
0.223	13.4	45.3
0.225	13.5	45.7
0.227	13.6	46.1
0.228	13.7	46.4
0.230	13.8	46.8
0.232	13.9	47.2
0.233	14.0	47.5
0.235	14.1	47.9
0.237	14.2	48.2
0.238	14.3	48.6
0.240	14.4	49.0
0.242	14.5	49.3
0.243	14.6	49.7
0.245	14.7	50.0
0.247	14.8	50.4
0.248	14.9	50.8
0.250	15.0	51.1
0.252	15.1	51.5
0.253	15.2	51.9
0.255	15.3	52.2
0.257	15.4	52.6
0.258	15.5	52.9
0.260	15.6	53.3
0.262	15.7	53.7
0.263	15.8	54.0
0.265	15.9	54.4
0.267	16.0	54.8
0.268	16.1	55.1
0.270	16.2	55.5
0.272	16.3	55.8
0.273	16.4	56.2
0.275	16.5	56.6
0.277	16.6	57.0

■ E003IS-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0299	1.8	8.3	d1-01
High speed	0.1790	10.8	57.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0150	0.9	3.2	d1-01
High speed	0.1790	10.8	57.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0150m/s or 0.9m/min.

* 2) The upper limit for High speed is 0.1790m/s or 10.8m/min.

(To be continued)

Conversion table 230/460 V Class (208-230 V) (continued)

Speed		Frequency
m/s	m/min	Hz
0.0150	0.9	3.2
0.0167	1.0	3.8
0.0183	1.1	4.3
0.0200	1.2	4.9
0.0217	1.3	5.5
0.0233	1.4	6.1
0.0250	1.5	6.6
0.0267	1.6	7.2
0.0283	1.7	7.8
0.0299	1.8	8.3
0.0317	1.9	8.9
0.0333	2.0	9.4
0.0350	2.1	9.9
0.0367	2.2	10.4
0.0383	2.3	10.9
0.0400	2.4	11.5
0.0417	2.5	12.0
0.0435	2.6	12.5
0.0450	2.7	13.0
0.0467	2.8	13.5
0.0483	2.9	14.1
0.0500	3.0	14.6
0.0517	3.1	15.1
0.0533	3.2	15.6
0.0550	3.3	16.1
0.0567	3.4	16.7
0.0583	3.5	17.2
0.0600	3.6	17.7
0.0617	3.7	18.2
0.0633	3.8	18.7
0.0650	3.9	19.3
0.0667	4.0	19.8
0.0683	4.1	20.3
0.0700	4.2	20.8
0.0717	4.3	21.3
0.0733	4.4	21.9
0.0750	4.5	22.4
0.0767	4.6	22.9
0.0783	4.7	23.4
0.0800	4.8	23.9
0.0817	4.9	24.5
0.0833	5.0	25.0
0.0850	5.1	25.5
0.0867	5.2	26.0
0.0883	5.3	26.6
0.0900	5.4	27.1
0.0917	5.5	27.6
0.0933	5.6	28.2
0.0950	5.7	28.8
0.0967	5.8	29.3
0.0983	5.9	29.9

Speed		Frequency
m/s	m/min	Hz
0.100	6.0	30.4
0.102	6.1	31.0
0.103	6.2	31.6
0.105	6.3	32.1
0.107	6.4	32.7
0.108	6.5	33.2
0.110	6.6	33.8
0.112	6.7	34.4
0.113	6.8	34.9
0.115	6.9	35.5
0.117	7.0	36.0
0.118	7.1	36.6
0.120	7.2	37.2
0.122	7.3	37.7
0.123	7.4	38.3
0.125	7.5	38.8
0.127	7.6	39.4
0.128	7.7	40.0
0.130	7.8	40.5
0.132	7.9	41.1
0.133	8.0	41.6
0.135	8.1	42.2
0.137	8.2	42.8
0.138	8.3	43.3
0.140	8.4	43.9
0.142	8.5	44.4
0.143	8.6	45.0
0.145	8.7	45.6
0.147	8.8	46.1
0.148	8.9	46.7
0.150	9.0	47.2
0.152	9.1	47.8
0.153	9.2	48.4
0.155	9.3	48.9
0.157	9.4	49.5
0.158	9.5	50.1
0.160	9.6	50.6
0.162	9.7	51.2
0.163	9.8	51.7
0.165	9.9	52.3
0.167	10.0	52.9
0.168	10.1	53.4
0.170	10.2	54.0
0.172	10.3	54.5
0.173	10.4	55.1
0.175	10.5	55.7
0.177	10.6	56.2
0.178	10.7	56.8
0.179	10.8	57.0

■ E003IH-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0435	2.6	7.3	d1-01
High speed	0.261	15.7	53.5	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0218	1.3	2.6	d1-01
High speed	0.261	15.7	53.5	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0218m/s or 1.3m/min.

* 2) The upper limit for High speed is 0.261m/s or 15.7m/min.

(To be continued)

Conversion table 230/460 V Class (208-230 V) (continued)

Speed		Frequency
m/s	m/min	Hz
0.0218	1.3	2.6
0.0233	1.4	2.9
0.0250	1.5	3.3
0.0267	1.6	3.7
0.0283	1.7	4.0
0.0300	1.8	4.4
0.0317	1.9	4.7
0.0333	2.0	5.1
0.0350	2.1	5.5
0.0367	2.2	5.8
0.0383	2.3	6.2
0.0400	2.4	6.5
0.0417	2.5	6.9
0.0433	2.6	7.3
0.0461	2.7	7.9
0.0467	2.8	8.0
0.0483	2.9	8.4
0.0500	3.0	8.7
0.0517	3.1	9.1
0.0533	3.2	9.5
0.0550	3.3	9.8
0.0567	3.4	10.2
0.0583	3.5	10.6
0.0600	3.6	10.9
0.0617	3.7	11.3
0.0633	3.8	11.7
0.0650	3.9	12.1
0.0667	4.0	12.4
0.0683	4.1	12.8
0.0700	4.2	13.2
0.0717	4.3	13.5
0.0733	4.4	13.9
0.0750	4.5	14.3
0.0767	4.6	14.6
0.0783	4.7	15.0
0.0800	4.8	15.4
0.0817	4.9	15.7
0.0833	5.0	16.1
0.0850	5.1	16.5
0.0867	5.2	16.8
0.0883	5.3	17.2
0.0900	5.4	17.6
0.0917	5.5	17.9
0.0933	5.6	18.3
0.0950	5.7	18.7
0.0967	5.8	19.1
0.0983	5.9	19.4
0.100	6.0	19.8
0.102	6.1	20.2
0.103	6.2	20.5
0.105	6.3	20.9
0.107	6.4	21.3

Speed		Frequency
m/s	m/min	Hz
0.108	6.5	21.6
0.110	6.6	22.0
0.112	6.7	22.4
0.113	6.8	22.7
0.115	6.9	23.1
0.117	7.0	23.5
0.118	7.1	23.8
0.120	7.2	24.2
0.122	7.3	24.6
0.123	7.4	24.9
0.125	7.5	25.3
0.127	7.6	25.7
0.128	7.7	26.1
0.130	7.8	26.4
0.132	7.9	26.8
0.133	8.0	27.1
0.135	8.1	27.5
0.137	8.2	27.8
0.138	8.3	28.2
0.140	8.4	28.5
0.142	8.5	28.9
0.143	8.6	29.2
0.145	8.7	29.6
0.147	8.8	29.9
0.148	8.9	30.2
0.150	9.0	30.6
0.152	9.1	30.9
0.153	9.2	31.3
0.155	9.3	31.6
0.157	9.4	32.0
0.158	9.5	32.3
0.160	9.6	32.7
0.162	9.7	33.0
0.163	9.8	33.3
0.165	9.9	33.7
0.167	10.0	34.0
0.168	10.1	34.4
0.170	10.2	34.7
0.172	10.3	35.1
0.173	10.4	35.4
0.175	10.5	35.7
0.177	10.6	36.1
0.178	10.7	36.4
0.180	10.8	36.8
0.182	10.9	37.1
0.183	11.0	37.5
0.185	11.1	37.8
0.187	11.2	38.2
0.188	11.3	38.5
0.190	11.4	38.8
0.192	11.5	39.2
0.193	11.6	39.5

Speed		Frequency
m/s	m/min	Hz
0.195	11.7	39.9
0.197	11.8	40.2
0.198	11.9	40.6
0.200	12.0	40.9
0.202	12.1	41.3
0.203	12.2	41.6
0.205	12.3	41.9
0.207	12.4	42.3
0.208	12.5	42.6
0.210	12.6	43.0
0.212	12.7	43.3
0.213	12.8	43.7
0.215	12.9	44.0
0.217	13.0	44.3
0.218	13.1	44.7
0.220	13.2	45.0
0.222	13.3	45.4
0.223	13.4	45.7
0.225	13.5	46.1
0.227	13.6	46.4
0.228	13.7	46.8
0.230	13.8	47.1
0.232	13.9	47.4
0.233	14.0	47.8
0.235	14.1	48.1
0.237	14.2	48.5
0.238	14.3	48.8
0.240	14.4	49.2
0.242	14.5	49.5
0.243	14.6	49.9
0.245	14.7	50.2
0.247	14.8	50.5
0.248	14.9	50.9
0.250	15.0	51.2
0.252	15.1	51.6
0.253	15.2	51.9
0.255	15.3	52.3
0.257	15.4	52.6
0.258	15.5	52.9
0.260	15.6	53.3
0.261	15.7	53.5

■ E005IL-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0125	0.8	8.3	d1-01
High speed	0.0750	4.5	57.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0063	0.4	3.2	d1-01
High speed	0.0750	4.5	57.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0063m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0750m/s or 4.5m/min.

Speed		Frequency
m/s	m/min	Hz
0.0063	0.4	3.2
0.0083	0.5	4.9
0.0100	0.6	6.2
0.0117	0.7	7.6
0.0125	0.8	8.3
0.0150	0.9	10.2
0.0167	1.0	11.5
0.0226	1.1	16.1
0.0200	1.2	14.1
0.0217	1.3	15.4
0.0233	1.4	16.7
0.0250	1.5	18.0
0.0267	1.6	19.3
0.0283	1.7	20.6
0.0300	1.8	21.9
0.0317	1.9	23.2
0.0333	2.0	24.4
0.0350	2.1	25.7
0.0367	2.2	27.0
0.0383	2.3	28.3
0.0400	2.4	29.6

Speed		Frequency
m/s	m/min	Hz
0.0417	2.5	30.9
0.0433	2.6	32.2
0.0450	2.7	33.5
0.0467	2.8	34.8
0.0483	2.9	36.2
0.0500	3.0	37.5
0.0517	3.1	38.8
0.0533	3.2	40.1
0.0550	3.3	41.4
0.0567	3.4	42.7
0.0583	3.5	44.0
0.0600	3.6	45.3
0.0617	3.7	46.6
0.0633	3.8	47.9
0.0650	3.9	49.2
0.0667	4.0	50.5
0.0683	4.1	51.8
0.0700	4.2	53.1
0.0717	4.3	54.4
0.0733	4.4	55.7
0.0750	4.5	57.0

(To be continued)

■ E005IS-FC(friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0237	1.4	7.3	d1-01
High speed	0.142	8.5	53.5	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0118	0.7	2.6	d1-01
High speed	0.142	8.5	53.5	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed *1)	Low speed *1)	Select from the table	d1-01
High speed	High speed *2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit speed for Low speed is 0.0118m/s or 0.7m/min.

* 2) The upper limit speed for High speed is 0.142m/s or 8.5m/min.

Speed		Frequency
m/s	m/min	Hz
0.0118	0.7	2.6
0.0133	0.8	3.2
0.0150	0.9	3.9
0.0167	1.0	4.5
0.0183	1.1	5.2
0.0200	1.2	5.8
0.0217	1.3	6.5
0.0237	1.4	7.3
0.0250	1.5	7.8
0.0267	1.6	8.4
0.0283	1.7	9.1
0.0300	1.8	9.7
0.0317	1.9	10.4
0.0333	2.0	11.0
0.0350	2.1	11.7
0.0367	2.2	12.3
0.0383	2.3	12.9
0.0400	2.4	13.6
0.0417	2.5	14.2
0.0433	2.6	14.9
0.0450	2.7	15.5

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	16.2
0.0483	2.9	16.8
0.0500	3.0	17.5
0.0517	3.1	18.1
0.0533	3.2	18.7
0.0550	3.3	19.4
0.0567	3.4	21.1
0.0583	3.5	21.9
0.0600	3.6	22.6
0.0617	3.7	23.3
0.0633	3.8	24.0
0.0650	3.9	24.7
0.0667	4.0	25.4
0.0683	4.1	26.1
0.0700	4.2	26.7
0.0717	4.3	27.3
0.0733	4.4	27.9
0.0750	4.5	28.6
0.0767	4.6	29.2
0.0783	4.7	29.8
0.0800	4.8	30.4

Speed		Frequency
m/s	m/min	Hz
0.0817	4.9	31.1
0.0833	5.0	31.7
0.0850	5.1	32.3
0.0867	5.2	32.9
0.0883	5.3	33.5
0.0900	5.4	34.2
0.0917	5.5	34.8
0.0933	5.6	35.4
0.0950	5.7	36.0
0.0967	5.8	36.7
0.0983	5.9	37.3
0.100	6.0	37.9
0.102	6.1	37.6
0.103	6.2	38.3
0.105	6.3	38.9
0.107	6.4	39.6
0.108	6.5	40.2
0.110	6.6	40.9
0.112	6.7	41.6
0.113	6.8	42.2
0.115	6.9	42.9

Speed		Frequency
m/s	m/min	Hz
0.117	7.0	43.5
0.118	7.1	44.2
0.120	7.2	44.8
0.122	7.3	45.5
0.123	7.4	46.2
0.125	7.5	46.8
0.127	7.6	47.5
0.128	7.7	48.1
0.130	7.8	48.8
0.132	7.9	49.4
0.133	8.0	50.1
0.135	8.1	50.7
0.137	8.2	51.4
0.138	8.3	52.1
0.140	8.4	52.7
0.142	8.5	53.5

■ E010IL-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0115	0.7	7.3	d1-01
High speed	0.0693	4.2	53.5	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0058	0.3	2.6	d1-01
High speed	0.0693	4.2	53.5	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0058m/s or 0.3m/min.

* 2) The upper limit for High speed is 0.0693m/s or 4.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0058	0.3	2.6
0.0067	0.4	3.3
0.0083	0.5	4.7
0.0100	0.6	6.0
0.0115	0.7	7.3
0.0133	0.8	8.8
0.0150	0.9	10.3
0.0167	1.0	11.8
0.0183	1.1	13.3
0.0200	1.2	14.7
0.0217	1.3	16.2
0.0233	1.4	17.7
0.0250	1.5	19.2
0.0267	1.6	20.6
0.0283	1.7	22.1
0.0300	1.8	23.6
0.0317	1.9	25.1
0.0333	2.0	26.5
0.0350	2.1	27.7
0.0367	2.2	29.0

Speed		Frequency
m/s	m/min	Hz
0.0383	2.3	30.3
0.0400	2.4	31.5
0.0417	2.5	32.8
0.0433	2.6	34.0
0.0450	2.7	35.3
0.0467	2.8	36.5
0.0483	2.9	37.8
0.0500	3.0	39.0
0.0517	3.1	40.3
0.0533	3.2	41.5
0.0550	3.3	42.8
0.0567	3.4	44.0
0.0583	3.5	45.3
0.0600	3.6	46.5
0.0617	3.7	47.8
0.0633	3.8	49.0
0.0650	3.9	50.3
0.0667	4.0	51.6
0.0683	4.1	52.8
0.0693	4.2	53.5

(To be continued)

■ E010IS-FC(friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0228	1.4	7.3	d1-01
High speed	0.137	8.2	53.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0114	0.7	2.3	d1-01
High speed	0.137	8.2	53.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed *1)	Low speed *1)	Select from the table	d1-01
High speed	High speed *2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit speed for Low speed is 0.0114m/s or 0.7m/min.

* 2) The upper limit speed for High speed is 0.137m/s or 8.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0114	0.7	2.3
0.0133	0.8	3.1
0.0150	0.9	3.9
0.0167	1.0	4.6
0.0183	1.1	5.3
0.0200	1.2	6.1
0.0217	1.3	6.8
0.0228	1.4	7.3
0.0250	1.5	8.2
0.0267	1.6	8.8
0.0283	1.7	9.5
0.0300	1.8	10.2
0.0317	1.9	10.9
0.0333	2.0	11.5
0.0350	2.1	12.2
0.0367	2.2	12.9
0.0383	2.3	13.5
0.0400	2.4	14.2
0.0417	2.5	14.9
0.0433	2.6	15.5
0.0450	2.7	16.2

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	16.9
0.0483	2.9	17.5
0.0500	3.0	18.2
0.0517	3.1	18.9
0.0533	3.2	19.6
0.0550	3.3	20.2
0.0567	3.4	20.9
0.0583	3.5	21.6
0.0600	3.6	22.2
0.0617	3.7	22.9
0.0633	3.8	23.6
0.0650	3.9	24.2
0.0667	4.0	24.9
0.0683	4.1	25.6
0.0700	4.2	26.3
0.0717	4.3	26.9
0.0733	4.4	27.6
0.0750	4.5	28.2
0.0767	4.6	28.9
0.0783	4.7	29.6
0.0800	4.8	30.2

Speed		Frequency
m/s	m/min	Hz
0.0817	4.9	30.9
0.0833	5.0	31.6
0.0850	5.1	32.2
0.0867	5.2	32.9
0.0883	5.3	33.6
0.0900	5.4	34.2
0.0917	5.5	34.9
0.0933	5.6	35.5
0.0950	5.7	36.2
0.0967	5.8	36.9
0.0983	5.9	37.5
0.100	6.0	38.2
0.102	6.1	38.8
0.103	6.2	39.5
0.105	6.3	40.2
0.107	6.4	40.8
0.108	6.5	41.5
0.110	6.6	42.2
0.112	6.7	42.8
0.113	6.8	43.5
0.115	6.9	44.2

Speed		Frequency
m/s	m/min	Hz
0.117	7.0	44.8
0.118	7.1	45.5
0.120	7.2	46.2
0.122	7.3	46.9
0.123	7.4	47.5
0.125	7.5	48.2
0.127	7.6	48.9
0.128	7.7	49.5
0.130	7.8	50.2
0.132	7.9	50.9
0.133	8.0	51.5
0.135	8.1	52.2
0.137	8.2	53.0

■ E015IS-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0146	0.9	7.3	d1-01
High speed	0.0877	5.3	53.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0073	0.4	2.3	d1-01
High speed	0.0877	5.3	53.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0073m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0877m/s or 5.3m/min.

Speed		Frequency
m/s	m/min	Hz
0.0073	0.4	2.3
0.0083	0.5	3.0
0.0100	0.6	4.1
0.0117	0.7	5.3
0.0133	0.8	6.4
0.0146	0.9	7.3
0.0167	1.0	8.6
0.0183	1.1	9.6
0.0200	1.2	10.7
0.0217	1.3	11.7
0.0233	1.4	12.7
0.0250	1.5	13.8
0.0267	1.6	14.8
0.0283	1.7	15.9
0.0300	1.8	16.9
0.0317	1.9	17.9
0.0333	2.0	19.0
0.0350	2.1	20.0
0.0367	2.2	21.1
0.0383	2.3	22.1
0.0400	2.4	23.1
0.0417	2.5	24.2

Speed		Frequency
m/s	m/min	Hz
0.0433	2.6	25.2
0.0450	2.7	26.3
0.0467	2.8	27.3
0.0483	2.9	28.3
0.0500	3.0	29.4
0.0517	3.1	30.4
0.0533	3.2	31.5
0.0550	3.3	32.5
0.0567	3.4	33.6
0.0583	3.5	34.6
0.0600	3.6	35.7
0.0617	3.7	36.7
0.0633	3.8	37.7
0.0650	3.9	38.8
0.0667	4.0	39.8
0.0683	4.1	40.9
0.0700	4.2	41.9
0.0717	4.3	43.0
0.0733	4.4	44.0
0.0750	4.5	45.0
0.0767	4.6	46.1
0.0783	4.7	47.1

Speed		Frequency
m/s	m/min	Hz
0.0800	4.8	48.2
0.0817	4.9	49.2
0.0833	5.0	50.3
0.0850	5.1	51.3
0.0867	5.2	52.4
0.0877	5.3	53.0

(To be continued)

■ E020IC-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0058	0.3	7.3	d1-01
High speed	0.0346	2.1	53.5	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0029	0.2	2.6	d1-01
High speed	0.0346	2.1	53.5	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0029m/s or 0.2m/min.

* 2) The upper limit for High speed is 0.0346m/s or 2.1m/min.

Speed		Frequency
m/s	m/min	Hz
0.0029	0.2	2.6
0.0058	0.3	7.3
0.0067	0.4	8.7
0.0083	0.5	11.5
0.0100	0.6	14.3
0.0117	0.7	17.1
0.0133	0.8	19.9
0.0150	0.9	22.7
0.0167	1.0	25.5
0.0183	1.1	28.2

Speed		Frequency
m/s	m/min	Hz
0.0200	1.2	30.8
0.0217	1.3	33.4
0.0233	1.4	36.0
0.0250	1.5	38.6
0.0267	1.6	41.1
0.0283	1.7	43.7
0.0300	1.8	46.3
0.0317	1.9	48.9
0.0333	2.0	51.5
0.0346	2.1	53.5

■ E020IL-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0119	0.7	7.3	d1-01
High speed	0.0714	4.3	53.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0060	0.4	2.3	d1-01
High speed	0.0714	4.3	53.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0060m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0714m/s or 4.3m/min.

Speed		Frequency
m/s	m/min	Hz
0.0060	0.4	2.3
0.0083	0.5	4.3
0.0100	0.6	5.7
0.0119	0.7	7.3
0.0133	0.8	8.4
0.0150	0.9	9.7
0.0167	1.0	11.0
0.0183	1.1	12.2
0.0200	1.2	13.5
0.0217	1.3	14.8
0.0233	1.4	16.1
0.0250	1.5	17.3
0.0267	1.6	18.6
0.0283	1.7	19.9
0.0300	1.8	21.2
0.0317	1.9	22.5
0.0333	2.0	23.7
0.0350	2.1	25.0
0.0367	2.2	26.3
0.0383	2.3	27.6

Speed		Frequency
m/s	m/min	Hz
0.0400	2.4	28.8
0.0417	2.5	30.1
0.0433	2.6	31.4
0.0450	2.7	32.7
0.0467	2.8	33.9
0.0483	2.9	35.2
0.0500	3.0	36.5
0.0517	3.1	37.8
0.0533	3.2	39.1
0.0550	3.3	40.4
0.0567	3.4	41.7
0.0583	3.5	42.9
0.0600	3.6	44.2
0.0617	3.7	45.5
0.0633	3.8	46.8
0.0650	3.9	48.1
0.0667	4.0	49.4
0.0683	4.1	50.6
0.0700	4.2	51.9
0.0714	4.3	53.0

(To be continued)

■ E020IS-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0226	1.4	7.9	d1-01
High speed	0.136	8.2	54.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0113	0.7	2.6	d1-01
High speed	0.136	8.2	54.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0113m/s or 0.7m/min.

* 2) The upper limit for High speed is 0.136m/s or 8.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0113	0.7	2.6
0.0133	0.8	3.6
0.0150	0.9	4.3
0.0167	1.0	5.1
0.0183	1.1	5.9
0.0200	1.2	6.7
0.0217	1.3	7.5
0.0226	1.4	7.9
0.0250	1.5	9.0
0.0267	1.6	9.7
0.0283	1.7	10.4
0.0300	1.8	11.2
0.0317	1.9	11.9
0.0333	2.0	12.6
0.0350	2.1	13.4
0.0367	2.2	14.1
0.0383	2.3	14.8
0.0400	2.4	15.6
0.0417	2.5	16.3
0.0433	2.6	17.0
0.0450	2.7	17.8

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	18.5
0.0483	2.9	19.2
0.0500	3.0	20.0
0.0517	3.1	20.7
0.0533	3.2	21.4
0.0550	3.3	22.2
0.0567	3.4	22.9
0.0583	3.5	23.6
0.0600	3.6	24.4
0.0617	3.7	25.1
0.0633	3.8	25.8
0.0650	3.9	26.6
0.0667	4.0	27.3
0.0683	4.1	27.9
0.0700	4.2	28.5
0.0717	4.3	29.2
0.0733	4.4	29.8
0.0750	4.5	30.5
0.0767	4.6	31.1
0.0783	4.7	31.8
0.0800	4.8	32.4

Speed		Frequency
m/s	m/min	Hz
0.0817	4.9	33.0
0.0833	5.0	33.7
0.0850	5.1	34.3
0.0867	5.2	35.0
0.0883	5.3	35.6
0.0900	5.4	36.3
0.0917	5.5	36.9
0.0933	5.6	37.5
0.0950	5.7	38.2
0.0967	5.8	38.8
0.0983	5.9	39.5
0.100	6.0	40.1
0.102	6.1	40.8
0.103	6.2	41.4
0.105	6.3	42.0
0.107	6.4	42.7
0.108	6.5	43.3
0.110	6.6	44.0
0.112	6.7	44.6
0.113	6.8	45.3
0.115	6.9	45.9

Speed		Frequency
m/s	m/min	Hz
0.117	7.0	46.5
0.118	7.1	47.2
0.120	7.2	47.8
0.122	7.3	48.5
0.123	7.4	49.1
0.125	7.5	49.8
0.127	7.6	50.4
0.128	7.7	51.0
0.130	7.8	51.7
0.132	7.9	52.3
0.133	8.0	53.0
0.135	8.1	53.6
0.136	8.2	54.0

■ E025IS-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0184	1.1	7.9	d1-01
High speed	0.111	6.6	54.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0092	0.6	2.6	d1-01
High speed	0.111	6.6	54.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0092m/s or 0.6m/min.

* 2) The upper limit for High speed is 0.111m/s or 6.6m/min.

Speed		Frequency
m/s	m/min	Hz
0.0092	0.6	2.6
0.0117	0.7	4.0
0.0133	0.8	5.0
0.0150	0.9	5.9
0.0167	1.0	6.9
0.0184	1.1	7.9
0.0200	1.2	8.8
0.0217	1.3	9.7
0.0233	1.4	10.6
0.0250	1.5	11.5
0.0267	1.6	12.4
0.0283	1.7	13.2
0.0300	1.8	14.1
0.0317	1.9	15.0
0.0333	2.0	15.9
0.0350	2.1	16.8
0.0367	2.2	17.7
0.0383	2.3	18.6
0.0400	2.4	19.5
0.0417	2.5	20.4
0.0433	2.6	21.3
0.0450	2.7	22.2

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	23.1
0.0483	2.9	24.0
0.0500	3.0	24.9
0.0517	3.1	25.8
0.0533	3.2	26.7
0.0550	3.3	27.5
0.0567	3.4	28.3
0.0583	3.5	29.1
0.0600	3.6	29.9
0.0617	3.7	30.7
0.0633	3.8	31.5
0.0650	3.9	32.3
0.0667	4.0	33.0
0.0683	4.1	33.8
0.0700	4.2	34.6
0.0717	4.3	35.4
0.0733	4.4	36.2
0.0750	4.5	37.0
0.0767	4.6	37.8
0.0783	4.7	38.6
0.0800	4.8	39.3
0.0817	4.9	40.1

Speed		Frequency
m/s	m/min	Hz
0.0833	5.0	40.9
0.0850	5.1	41.7
0.0867	5.2	42.5
0.0883	5.3	43.3
0.0900	5.4	44.1
0.0917	5.5	44.9
0.0933	5.6	45.7
0.0950	5.7	46.4
0.0967	5.8	47.2
0.0983	5.9	48.0
0.100	6.0	48.8
0.102	6.1	49.6
0.103	6.2	50.4
0.105	6.3	51.2
0.107	6.4	52.0
0.108	6.5	52.7
0.111	6.6	54.0

(To be continued)

■ E030IS-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0143	0.9	7.9	d1-01
High speed	0.0861	5.2	54.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0072	0.4	2.6	d1-01
High speed	0.0861	5.2	54.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0072m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0861m/s or 5.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0072	0.4	2.6
0.0083	0.5	3.4
0.0100	0.6	4.7
0.0117	0.7	5.9
0.0133	0.8	7.2
0.0143	0.9	7.9
0.0167	1.0	9.7
0.0183	1.1	10.7
0.0200	1.2	11.9
0.0217	1.3	13.0
0.0233	1.4	14.2
0.0250	1.5	15.3
0.0267	1.6	16.5
0.0283	1.7	17.7
0.0300	1.8	18.8
0.0317	1.9	20.0
0.0333	2.0	21.1
0.0350	2.1	22.3
0.0367	2.2	23.4
0.0383	2.3	24.6
0.0400	2.4	25.8
0.0417	2.5	26.9

Speed		Frequency
m/s	m/min	Hz
0.0433	2.6	27.9
0.0450	2.7	29.0
0.0467	2.8	30.0
0.0483	2.9	31.0
0.0500	3.0	32.0
0.0517	3.1	33.0
0.0533	3.2	34.0
0.0550	3.3	35.1
0.0567	3.4	36.1
0.0583	3.5	37.1
0.0600	3.6	38.1
0.0617	3.7	39.1
0.0633	3.8	40.1
0.0650	3.9	41.1
0.0667	4.0	42.2
0.0683	4.1	43.2
0.0700	4.2	44.2
0.0717	4.3	45.2
0.0733	4.4	46.2
0.0750	4.5	47.2
0.0767	4.6	48.3
0.0783	4.7	49.3

Speed		Frequency
m/s	m/min	Hz
0.0800	4.8	50.3
0.0817	4.9	51.3
0.0833	5.0	52.3
0.0850	5.1	53.3
0.0861	5.2	54.0

■ E050IS-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0092	0.6	7.9	d1-01
High speed	0.0553	3.3	54.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0046	0.3	2.6	d1-01
High speed	0.0553	3.3	54.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0046m/s or 0.3m/min.

* 2) The upper limit for High speed is 0.0553m/s or 3.3m/min.

Speed		Frequency
m/s	m/min	Hz
0.0046	0.3	2.6
0.0067	0.4	5.0
0.0083	0.5	6.9
0.0092	0.6	7.9
0.0117	0.7	10.6
0.0133	0.8	12.4
0.0150	0.9	14.2
0.0167	1.0	16.0
0.0183	1.1	17.8
0.0200	1.2	19.6
0.0217	1.3	21.4
0.0233	1.4	23.2
0.0250	1.5	25.0
0.0267	1.6	26.8
0.0283	1.7	28.4
0.0300	1.8	30.0

Speed		Frequency
m/s	m/min	Hz
0.0317	1.9	31.6
0.0333	2.0	33.2
0.0350	2.1	34.7
0.0367	2.2	36.3
0.0383	2.3	37.9
0.0400	2.4	39.5
0.0417	2.5	41.1
0.0433	2.6	42.6
0.0450	2.7	44.2
0.0467	2.8	45.8
0.0483	2.9	47.4
0.0500	3.0	49.0
0.0517	3.1	50.6
0.0533	3.2	52.1
0.0553	3.3	54.0

(To be continued)

■ E001IH-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0461	2.8	9.7	d1-01
High speed	0.277	16.6	57.5	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0231	1.4	4.9	d1-01
High speed	0.277	16.6	57.5	d1-02

- Desired ratio

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0231m/s or 1.4m/min.

* 2) The upper limit for High speed is 0.277m/s or 16.6m/min.

Speed		Frequency
m/s	m/min	Hz
0.0231	1.4	4.9
0.0250	1.5	5.2
0.0267	1.6	5.6
0.0283	1.7	5.9
0.0300	1.8	6.3
0.0317	1.9	6.6
0.0333	2.0	7.0
0.0350	2.1	7.3
0.0367	2.2	7.6
0.0383	2.3	8.0
0.0400	2.4	8.3
0.0417	2.5	8.7
0.0433	2.6	9.0
0.0450	2.7	9.4
0.0461	2.8	9.7
0.0483	2.9	10.0
0.0500	3.0	10.4
0.0517	3.1	10.7
0.0533	3.2	11.1
0.0550	3.3	11.4
0.0567	3.4	11.8
0.0583	3.5	12.1
0.0600	3.6	12.5
0.0617	3.7	12.8
0.0633	3.8	13.2
0.0650	3.9	13.5
0.0667	4.0	13.9
0.0683	4.1	14.2
0.0700	4.2	14.5
0.0717	4.3	14.9
0.0733	4.4	15.2
0.0750	4.5	15.6
0.0767	4.6	15.9
0.0783	4.7	16.3
0.0800	4.8	16.6
0.0817	4.9	17.0
0.0833	5.0	17.3
0.0850	5.1	17.7
0.0867	5.2	18.0
0.0883	5.3	18.4
0.0900	5.4	18.7
0.0917	5.5	19.1
0.0933	5.6	19.4
0.0950	5.7	19.7
0.0967	5.8	20.1
0.0983	5.9	20.4
0.100	6.0	20.8
0.102	6.1	21.1
0.103	6.2	21.5
0.105	6.3	21.8
0.107	6.4	22.2
0.108	6.5	22.5

Speed		Frequency
m/s	m/min	Hz
0.110	6.6	22.9
0.112	6.7	23.2
0.113	6.8	23.6
0.115	6.9	23.9
0.117	7.0	24.2
0.118	7.1	24.6
0.120	7.2	24.9
0.122	7.3	25.3
0.123	7.4	25.6
0.125	7.5	26.0
0.127	7.6	26.3
0.128	7.7	26.7
0.130	7.8	27.0
0.132	7.9	27.4
0.133	8.0	27.7
0.135	8.1	28.1
0.137	8.2	28.4
0.138	8.3	28.8
0.140	8.4	29.1
0.142	8.5	29.4
0.143	8.6	29.8
0.145	8.7	30.1
0.147	8.8	30.5
0.148	8.9	30.8
0.150	9.0	31.2
0.152	9.1	31.5
0.153	9.2	31.9
0.155	9.3	32.2
0.157	9.4	32.6
0.158	9.5	32.9
0.160	9.6	33.3
0.162	9.7	33.6
0.163	9.8	33.9
0.165	9.9	34.3
0.167	10.0	34.6
0.168	10.1	35.0
0.170	10.2	35.3
0.172	10.3	35.7
0.173	10.4	36.0
0.175	10.5	36.4
0.177	10.6	36.7
0.178	10.7	37.1
0.180	10.8	37.4
0.182	10.9	37.8
0.183	11.0	38.1
0.185	11.1	38.4
0.187	11.2	38.8
0.188	11.3	39.1
0.190	11.4	39.5
0.192	11.5	39.8
0.193	11.6	40.2
0.195	11.7	40.5

Speed		Frequency
m/s	m/min	Hz
0.197	11.8	40.9
0.198	11.9	41.2
0.200	12.0	41.6
0.202	12.1	41.9
0.203	12.2	42.3
0.205	12.3	42.6
0.207	12.4	43.0
0.208	12.5	43.3
0.210	12.6	43.6
0.212	12.7	44.0
0.213	12.8	44.3
0.215	12.9	44.7
0.217	13.0	45.0
0.218	13.1	45.4
0.220	13.2	45.7
0.222	13.3	46.1
0.223	13.4	46.4
0.225	13.5	46.8
0.227	13.6	47.1
0.228	13.7	47.5
0.230	13.8	47.8
0.232	13.9	48.1
0.233	14.0	48.5
0.235	14.1	48.8
0.237	14.2	49.2
0.238	14.3	49.5
0.240	14.4	49.9
0.242	14.5	50.2
0.243	14.6	50.6
0.245	14.7	50.9
0.247	14.8	51.3
0.248	14.9	51.6
0.250	15.0	52.0
0.252	15.1	52.3
0.253	15.2	52.7
0.255	15.3	53.0
0.257	15.4	53.3
0.258	15.5	53.7
0.260	15.6	54.0
0.262	15.7	54.4
0.263	15.8	54.7
0.265	15.9	55.1
0.267	16.0	55.4
0.268	16.1	55.8
0.270	16.2	56.1
0.272	16.3	56.5
0.273	16.4	56.8
0.275	16.5	57.2
0.277	16.6	57.5

(To be continued)

■ E003IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0299	1.8	9.7	d1-01
High speed	0.179	10.8	57.5	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0150	0.9	4.9	d1-01
High speed	0.179	10.8	57.5	d1-02

- Desired ratio

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0150m/s or 0.9m/min.

* 2) The upper limit for High speed is 0.179m/s or 10.8m/min.

Speed		Frequency
m/s	m/min	Hz
0.0150	0.9	4.9
0.0167	1.0	5.4
0.0183	1.1	6.0
0.0200	1.2	6.5
0.0217	1.3	7.0
0.0233	1.4	7.6
0.0250	1.5	8.1
0.0267	1.6	8.6
0.0283	1.7	9.2
0.0299	1.8	9.7
0.0317	1.9	10.2
0.0333	2.0	10.8
0.0350	2.1	11.3
0.0367	2.2	11.8
0.0383	2.3	12.4
0.0400	2.4	12.9
0.0417	2.5	13.4
0.0433	2.6	13.9
0.0450	2.7	14.5
0.0467	2.8	15.0
0.0483	2.9	15.5
0.0500	3.0	16.1
0.0517	3.1	16.6
0.0533	3.2	17.1
0.0550	3.3	17.7
0.0567	3.4	18.2
0.0583	3.5	18.7
0.0600	3.6	19.3
0.0617	3.7	19.8
0.0633	3.8	20.3
0.0650	3.9	20.9
0.0667	4.0	21.4
0.0683	4.1	21.9
0.0700	4.2	22.4
0.0717	4.3	23.0
0.0733	4.4	23.5
0.0750	4.5	24.0
0.0767	4.6	24.6
0.0783	4.7	25.1
0.0800	4.8	25.6
0.0817	4.9	26.2
0.0833	5.0	26.7
0.0850	5.1	27.2
0.0867	5.2	27.8
0.0883	5.3	28.3
0.0900	5.4	28.8
0.0917	5.5	29.4
0.0933	5.6	29.9
0.0950	5.7	30.4
0.0967	5.8	30.9

Speed		Frequency
m/s	m/min	Hz
0.0983	5.9	31.5
0.100	6.0	32.0
0.102	6.1	32.5
0.103	6.2	33.1
0.105	6.3	33.6
0.107	6.4	34.1
0.108	6.5	34.7
0.110	6.6	35.2
0.112	6.7	35.7
0.113	6.8	36.3
0.115	6.9	36.8
0.117	7.0	37.3
0.118	7.1	37.8
0.120	7.2	38.4
0.122	7.3	38.9
0.123	7.4	39.4
0.125	7.5	40.0
0.127	7.6	40.5
0.128	7.7	41.0
0.130	7.8	41.6
0.132	7.9	42.1
0.133	8.0	42.6
0.135	8.1	43.2
0.137	8.2	43.7
0.138	8.3	44.2
0.140	8.4	44.8
0.142	8.5	45.3
0.143	8.6	45.8
0.145	8.7	46.3
0.147	8.8	46.9
0.148	8.9	47.4
0.150	9.0	47.9
0.152	9.1	48.5
0.153	9.2	49.0
0.155	9.3	49.5
0.157	9.4	50.1
0.158	9.5	50.6
0.160	9.6	51.1
0.162	9.7	51.7
0.163	9.8	52.2
0.165	9.9	52.7
0.167	10.0	53.3
0.168	10.1	53.8
0.170	10.2	54.3
0.172	10.3	54.8
0.173	10.4	55.4
0.175	10.5	55.9
0.177	10.6	56.4
0.178	10.7	57.0
0.179	10.8	57.5

(To be continued)

■ E003IH-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0435	2.6	8.0	d1-01
High speed	0.261	15.7	55.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0218	1.3	2.8	d1-01
High speed	0.261	15.7	55.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0218m/s or 1.3m/min.

* 2) The upper limit for High speed is 0.261m/s or 15.7m/min.

Speed		Frequency
m/s	m/min	Hz
0.0218	1.3	2.8
0.0233	1.4	3.2
0.0250	1.5	3.6
0.0267	1.6	4.0
0.0283	1.7	4.4
0.0300	1.8	4.8
0.0317	1.9	5.2
0.0333	2.0	5.6
0.0350	2.1	6.0
0.0367	2.2	6.4
0.0383	2.3	6.8
0.0400	2.4	7.2
0.0417	2.5	7.6
0.0435	2.6	8.0
0.0450	2.7	8.4
0.0467	2.8	8.7
0.0483	2.9	9.1
0.0500	3.0	9.4
0.0517	3.1	9.8
0.0533	3.2	10.2
0.0550	3.3	10.5
0.0567	3.4	10.9
0.0583	3.5	11.2
0.0600	3.6	11.6
0.0617	3.7	11.9
0.0633	3.8	12.3
0.0650	3.9	12.7
0.0667	4.0	13.0
0.0683	4.1	13.4
0.0700	4.2	13.7
0.0717	4.3	14.1
0.0733	4.4	14.5
0.0750	4.5	14.8
0.0767	4.6	15.2
0.0783	4.7	15.5
0.0800	4.8	15.9
0.0817	4.9	16.3
0.0833	5.0	16.6
0.0850	5.1	17.0
0.0867	5.2	17.3
0.0883	5.3	17.7
0.0900	5.4	18.0
0.0917	5.5	18.4
0.0933	5.6	18.8
0.0950	5.7	19.1
0.0967	5.8	19.5
0.0983	5.9	19.8
0.100	6.0	20.2
0.102	6.1	20.6
0.103	6.2	20.9
0.105	6.3	21.3
0.107	6.4	21.6

Speed		Frequency
m/s	m/min	Hz
0.108	6.5	22.0
0.110	6.6	22.4
0.112	6.7	22.7
0.113	6.8	23.1
0.115	6.9	23.4
0.117	7.0	23.8
0.118	7.1	24.1
0.120	7.2	24.5
0.122	7.3	24.9
0.123	7.4	25.2
0.125	7.5	25.6
0.127	7.6	25.9
0.128	7.7	26.3
0.130	7.8	26.7
0.132	7.9	27.0
0.133	8.0	27.4
0.135	8.1	27.7
0.137	8.2	28.1
0.138	8.3	28.5
0.140	8.4	28.8
0.142	8.5	29.2
0.143	8.6	29.5
0.145	8.7	29.9
0.147	8.8	30.2
0.148	8.9	30.6
0.150	9.0	31.0
0.152	9.1	31.3
0.153	9.2	31.7
0.155	9.3	32.0
0.157	9.4	32.4
0.158	9.5	32.8
0.160	9.6	33.1
0.162	9.7	33.5
0.163	9.8	33.8
0.165	9.9	34.2
0.167	10.0	34.5
0.168	10.1	34.9
0.170	10.2	35.3
0.172	10.3	35.6
0.173	10.4	36.0
0.175	10.5	36.3
0.177	10.6	36.7
0.178	10.7	37.1
0.180	10.8	37.4
0.182	10.9	37.8
0.183	11.0	38.1
0.185	11.1	38.5
0.187	11.2	38.9
0.188	11.3	39.2
0.190	11.4	39.6
0.192	11.5	39.9
0.193	11.6	40.3

Speed		Frequency
m/s	m/min	Hz
0.195	11.7	40.6
0.197	11.8	41.0
0.198	11.9	41.4
0.200	12.0	41.7
0.202	12.1	42.1
0.203	12.2	42.4
0.205	12.3	42.8
0.207	12.4	43.2
0.208	12.5	43.5
0.210	12.6	43.9
0.212	12.7	44.2
0.213	12.8	44.6
0.215	12.9	45.0
0.217	13.0	45.3
0.218	13.1	45.7
0.220	13.2	46.0
0.222	13.3	46.4
0.223	13.4	46.7
0.225	13.5	47.1
0.227	13.6	47.5
0.228	13.7	47.8
0.230	13.8	48.2
0.232	13.9	48.5
0.233	14.0	48.9
0.235	14.1	49.3
0.237	14.2	49.6
0.238	14.3	50.0
0.240	14.4	50.3
0.242	14.5	50.7
0.243	14.6	51.1
0.245	14.7	51.4
0.247	14.8	51.8
0.248	14.9	52.1
0.250	15.0	52.5
0.252	15.1	52.8
0.253	15.2	53.2
0.255	15.3	53.6
0.257	15.4	53.9
0.258	15.5	54.3
0.260	15.6	54.6
0.261	15.7	55.0

(To be continued)

■ E005IL-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0125	0.8	9.7	d1-01
High speed	0.0750	4.5	57.5	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0063	0.4	4.9	d1-01
High speed	0.0750	4.5	57.5	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0063m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0750m/s or 4.5m/min.

Speed		Frequency
m/s	m/min	Hz
0.0063	0.4	4.9
0.0083	0.5	6.1
0.0100	0.6	7.3
0.0117	0.7	8.5
0.0125	0.8	9.7
0.0150	0.9	11.0
0.0167	1.0	12.3
0.0183	1.1	13.6
0.0200	1.2	14.9
0.0217	1.3	16.2
0.0233	1.4	17.5
0.0250	1.5	18.7
0.0267	1.6	20.0
0.0283	1.7	21.3
0.0300	1.8	22.6
0.0317	1.9	23.9
0.0333	2.0	25.2
0.0350	2.1	26.5
0.0367	2.2	27.8
0.0383	2.3	29.1
0.0400	2.4	30.4
0.0417	2.5	31.7

Speed		Frequency
m/s	m/min	Hz
0.0433	2.6	33.0
0.0450	2.7	34.2
0.0467	2.8	35.5
0.0483	2.9	36.8
0.0500	3.0	38.1
0.0517	3.1	39.4
0.0533	3.2	40.7
0.0550	3.3	42.0
0.0567	3.4	43.3
0.0583	3.5	44.6
0.0600	3.6	45.9
0.0617	3.7	47.2
0.0633	3.8	48.5
0.0650	3.9	49.7
0.0667	4.0	51.0
0.0683	4.1	52.3
0.0700	4.2	53.6
0.0717	4.3	54.9
0.0733	4.4	56.2
0.0750	4.5	57.5

■ E005IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0237	1.4	8.0	d1-01
High speed	0.142	8.5	55.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0118	0.7	2.8	d1-01
High speed	0.142	8.5	55.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0118m/s or 0.7m/min.

* 2) The upper limit for High speed is 0.142m/s or 8.5m/min.

Speed		Frequency
m/s	m/min	Hz
0.0118	0.7	2.8
0.0133	0.8	3.5
0.0150	0.9	4.2
0.0167	1.0	4.8
0.0183	1.1	5.5
0.0200	1.2	6.2
0.0217	1.3	6.9
0.0237	1.4	8.0
0.0250	1.5	8.2
0.0267	1.6	8.8
0.0283	1.7	9.5
0.0300	1.8	10.1
0.0317	1.9	10.7
0.0333	2.0	11.4
0.0350	2.1	12.0
0.0367	2.2	12.6
0.0383	2.3	13.3
0.0400	2.4	13.9
0.0417	2.5	14.5
0.0433	2.6	15.2
0.0450	2.7	15.8

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	16.4
0.0483	2.9	17.1
0.0500	3.0	17.7
0.0517	3.1	18.3
0.0533	3.2	19.0
0.0550	3.3	19.6
0.0567	3.4	20.2
0.0583	3.5	20.9
0.0600	3.6	21.5
0.0617	3.7	22.1
0.0633	3.8	22.8
0.0650	3.9	23.4
0.0667	4.0	24.0
0.0683	4.1	24.7
0.0700	4.2	25.3
0.0717	4.3	25.9
0.0733	4.4	26.6
0.0750	4.5	27.2
0.0767	4.6	27.9
0.0783	4.7	28.6
0.0800	4.8	29.3

Speed		Frequency
m/s	m/min	Hz
0.0817	4.9	30.0
0.0833	5.0	30.7
0.0850	5.1	31.4
0.0867	5.2	32.1
0.0883	5.3	32.8
0.0900	5.4	33.5
0.0917	5.5	34.2
0.0933	5.6	34.9
0.0950	5.7	35.6
0.0967	5.8	36.4
0.0983	5.9	37.1
0.100	6.0	37.8
0.102	6.1	38.5
0.103	6.2	39.2
0.105	6.3	39.9
0.107	6.4	40.6
0.108	6.5	41.3
0.110	6.6	42.0
0.112	6.7	42.7
0.113	6.8	43.4
0.115	6.9	44.1

Speed		Frequency
m/s	m/min	Hz
0.117	7.0	44.8
0.118	7.1	45.5
0.120	7.2	46.2
0.122	7.3	46.9
0.123	7.4	47.6
0.125	7.5	48.3
0.127	7.6	49.0
0.128	7.7	49.7
0.130	7.8	50.4
0.132	7.9	51.1
0.133	8.0	51.8
0.135	8.1	52.5
0.137	8.2	53.0
0.138	8.3	53.3
0.140	8.4	53.8
0.142	8.5	55.0

(To be continued)

■ E010IL-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0115	0.7	8.0	d1-01
High speed	0.0693	4.2	55.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0058	0.3	2.8	d1-01
High speed	0.0693	4.2	55.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0058m/s or 0.3m/min.

* 2) The upper limit for High speed is 0.0693m/s or 4.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0058	0.3	2.8
0.0067	0.4	3.6
0.0083	0.5	5.0
0.0100	0.6	6.4
0.0115	0.7	8.0
0.0133	0.8	9.1
0.0150	0.9	10.4
0.0167	1.0	11.7
0.0183	1.1	13.0
0.0200	1.2	14.3
0.0217	1.3	15.6
0.0233	1.4	16.9
0.0250	1.5	18.2
0.0267	1.6	19.5
0.0283	1.7	20.8
0.0300	1.8	22.1
0.0317	1.9	23.4
0.0333	2.0	24.7
0.0350	2.1	26.0
0.0367	2.2	27.3
0.0383	2.3	28.7
0.0400	2.4	30.2

Speed		Frequency
m/s	m/min	Hz
0.0417	2.5	31.6
0.0433	2.6	33.0
0.0450	2.7	34.5
0.0467	2.8	35.9
0.0483	2.9	37.3
0.0500	3.0	38.8
0.0517	3.1	40.2
0.0534	3.2	41.7
0.0550	3.3	43.1
0.0567	3.4	44.5
0.0583	3.5	46.0
0.0600	3.6	47.4
0.0617	3.7	48.8
0.0633	3.8	50.3
0.0650	3.9	51.7
0.0667	4.0	52.8
0.0683	4.1	53.5
0.0693	4.2	55.0

■ E010IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0228	1.4	8.2	d1-01
High speed	0.137	8.2	53.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0114	0.7	2.7	d1-01
High speed	0.137	8.2	53.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0114m/s or 0.7m/min.

* 2) The upper limit for High speed is 0.137m/s or 8.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0114	0.7	2.7
0.0133	0.8	3.4
0.0150	0.9	4.2
0.0167	1.0	5.0
0.0183	1.1	5.8
0.0200	1.2	6.6
0.0217	1.3	7.4
0.0228	1.4	8.2
0.0250	1.5	8.8
0.0267	1.6	9.4
0.0283	1.7	10.1
0.0300	1.8	10.7
0.0317	1.9	11.4
0.0333	2.0	12.0
0.0350	2.1	12.7
0.0367	2.2	13.3
0.0383	2.3	14.0
0.0400	2.4	14.6
0.0417	2.5	15.3
0.0433	2.6	15.9
0.0450	2.7	16.5

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	17.2
0.0483	2.9	17.8
0.0500	3.0	18.5
0.0517	3.1	19.1
0.0533	3.2	19.8
0.0550	3.3	20.4
0.0567	3.4	21.1
0.0583	3.5	21.7
0.0600	3.6	22.4
0.0617	3.7	23.0
0.0633	3.8	23.6
0.0650	3.9	24.3
0.0667	4.0	24.9
0.0683	4.1	25.6
0.0700	4.2	26.2
0.0717	4.3	26.9
0.0733	4.4	27.6
0.0750	4.5	28.2
0.0767	4.6	28.9
0.0783	4.7	29.6
0.0800	4.8	30.3

Speed		Frequency
m/s	m/min	Hz
0.0817	4.9	31.0
0.0833	5.0	31.7
0.0850	5.1	32.4
0.0867	5.2	33.1
0.0883	5.3	33.8
0.0900	5.4	34.5
0.0917	5.5	35.1
0.0933	5.6	35.8
0.0950	5.7	36.5
0.0967	5.8	37.2
0.0983	5.9	37.9
0.100	6.0	38.6
0.102	6.1	39.3
0.103	6.2	40.0
0.105	6.3	40.7
0.107	6.4	41.4
0.110	6.6	42.7
0.112	6.7	43.4
0.113	6.8	44.1
0.115	6.9	44.8
0.117	7.0	45.5

Speed		Frequency
m/s	m/min	Hz
0.118	7.1	46.2
0.120	7.2	46.9
0.122	7.3	47.6
0.123	7.4	48.3
0.125	7.5	49.0
0.127	7.6	49.6
0.128	7.7	50.3
0.130	7.8	51.0
0.132	7.9	51.7
0.133	8.0	52.2
0.135	8.1	52.7
0.137	8.2	53.0

(To be continued)

■ E015IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0146	0.9	8.2	d1-01
High speed	0.0877	5.3	53.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0073	0.4	2.7	d1-01
High speed	0.0877	5.3	53.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0073m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0877m/s or 5.3m/min.

Speed		Frequency
m/s	m/min	Hz
0.0073	0.4	2.7
0.0083	0.5	3.8
0.0100	0.6	4.9
0.0117	0.7	6.0
0.0133	0.8	7.1
0.0146	0.9	8.2
0.0167	1.0	9.2
0.0183	1.1	10.2
0.0200	1.2	11.3
0.0217	1.3	12.3
0.0233	1.4	13.3
0.0250	1.5	14.3
0.0267	1.6	15.3
0.0283	1.7	16.3
0.0300	1.8	17.4
0.0317	1.9	18.4
0.0333	2.0	19.4
0.0350	2.1	20.4
0.0367	2.2	21.4
0.0383	2.3	22.5
0.0400	2.4	23.5
0.0417	2.5	24.5

Speed		Frequency
m/s	m/min	Hz
0.0433	2.6	25.5
0.0450	2.7	26.5
0.0467	2.8	27.5
0.0483	2.9	28.6
0.0517	3.1	30.6
0.0533	3.2	31.6
0.0550	3.3	32.6
0.0567	3.4	33.7
0.0583	3.5	34.7
0.0600	3.6	35.7
0.0617	3.7	36.7
0.0633	3.8	37.7
0.0650	3.9	38.7
0.0667	4.0	39.8
0.0683	4.1	40.8
0.0700	4.2	41.8
0.0717	4.3	42.8
0.0733	4.4	43.8
0.0750	4.5	44.9
0.0767	4.6	45.9
0.0783	4.7	46.9
0.0800	4.8	47.9

Speed		Frequency
m/s	m/min	Hz
0.0817	4.9	48.9
0.0833	5.0	49.9
0.0850	5.1	51.0
0.0867	5.2	52.0
0.0877	5.3	53.0
0.0517	3.1	30.6
0.0533	3.2	31.6

■ E020IC-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0058	0.3	8.0	d1-01
High speed	0.0346	2.1	55.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0029	0.2	2.8	d1-01
High speed	0.0346	2.1	55.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0029m/s or 0.2m/min.

* 2) The upper limit for High speed is 0.0346m/s or 0.3m/min.

Speed		Frequency
m/s	m/min	Hz
0.0029	0.2	2.8
0.0058	0.3	8.0
0.0067	0.4	10.6
0.0083	0.5	13.2
0.0100	0.6	15.8
0.0117	0.7	18.4
0.0133	0.8	21.1
0.0150	0.9	23.7
0.0167	1.0	26.3
0.0183	1.1	28.9

Speed		Frequency
m/s	m/min	Hz
0.0200	1.2	31.5
0.0217	1.3	34.1
0.0233	1.4	36.7
0.0250	1.5	39.3
0.0267	1.6	41.9
0.0283	1.7	44.6
0.0300	1.8	47.2
0.0317	1.9	49.8
0.0333	2.0	52.4
0.0346	2.1	55.0

(To be continued)

■ E020IL-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0119	0.7	8.2	d1-01
High speed	0.0714	4.3	53.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0060	0.4	2.7	d1-01
High speed	0.0714	4.3	53.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0060m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0714m/s or 4.3m/min.

Speed		Frequency
m/s	m/min	Hz
0.0060	0.4	2.7
0.0083	0.5	4.7
0.0100	0.6	6.2
0.0119	0.7	8.2
0.0133	0.8	9.0
0.0150	0.9	10.3
0.0167	1.0	11.5
0.0183	1.1	12.7
0.0119	1.2	14.0
0.0217	1.3	15.2
0.0233	1.4	16.5
0.0250	1.5	17.7
0.0267	1.6	18.9
0.0283	1.7	20.2
0.0300	1.8	21.4
0.0317	1.9	22.6
0.0333	2.0	23.9
0.0350	2.1	25.1
0.0367	2.2	26.4
0.0383	2.3	27.6
0.0400	2.4	29.0
0.0417	2.5	30.3

Speed		Frequency
m/s	m/min	Hz
0.0433	2.6	31.6
0.0450	2.7	32.9
0.0467	2.8	34.3
0.0483	2.9	35.6
0.0500	3.0	36.9
0.0517	3.1	38.2
0.0533	3.2	39.5
0.0550	3.3	40.9
0.0567	3.4	42.2
0.0583	3.5	43.5
0.0600	3.6	44.8
0.0617	3.7	46.2
0.0633	3.8	47.5
0.0650	3.9	48.8
0.0667	4.0	50.1
0.0683	4.1	51.2
0.0700	4.2	52.1
0.0714	4.3	53.0

■ E020IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0226	1.4	8.0	d1-01
High speed	0.136	8.2	52.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0113	0.7	2.8	d1-01
High speed	0.136	8.2	52.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0113m/s or 0.7m/min.

* 2) The upper limit for High speed is 0.136m/s or 8.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0113	0.7	2.8
0.0133	0.8	3.5
0.0150	0.9	4.3
0.0167	1.0	5.0
0.0183	1.1	5.8
0.0200	1.2	6.5
0.0217	1.3	7.3
0.0226	1.4	8.0
0.0250	1.5	8.6
0.0267	1.6	9.3
0.0283	1.7	9.9
0.0300	1.8	10.6
0.0317	1.9	11.2
0.0333	2.0	11.9
0.0350	2.1	12.5
0.0367	2.2	13.2
0.0383	2.3	13.8
0.0400	2.4	14.5
0.0417	2.5	15.1
0.0433	2.6	15.8
0.0450	2.7	16.4

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	17.1
0.0483	2.9	17.7
0.0500	3.0	18.4
0.0517	3.1	19.0
0.0533	3.2	19.6
0.0550	3.3	20.3
0.0567	3.4	20.9
0.0583	3.5	21.6
0.0600	3.6	22.2
0.0617	3.7	22.9
0.0633	3.8	23.5
0.0650	3.9	24.2
0.0667	4.0	24.8
0.0683	4.1	25.5
0.0700	4.2	26.1
0.0717	4.3	26.8
0.0733	4.4	27.4
0.0750	4.5	28.1
0.0767	4.6	28.7
0.0783	4.7	29.4
0.0800	4.8	30.0

Speed		Frequency
m/s	m/min	Hz
0.0817	4.9	30.6
0.0833	5.0	31.3
0.0850	5.1	31.9
0.0867	5.2	32.6
0.0883	5.3	33.2
0.0900	5.4	33.9
0.0917	5.5	34.5
0.0933	5.6	35.2
0.0950	5.7	35.8
0.0967	5.8	36.5
0.0983	5.9	37.1
0.100	6.0	37.8
0.102	6.1	38.4
0.103	6.2	39.1
0.105	6.3	39.7
0.107	6.4	40.4
0.108	6.5	41.0
0.110	6.6	41.6
0.112	6.7	42.3
0.113	6.8	42.9
0.115	6.9	43.6

Speed		Frequency
m/s	m/min	Hz
0.117	7.0	44.2
0.118	7.1	44.9
0.120	7.2	45.5
0.122	7.3	46.2
0.123	7.4	46.8
0.125	7.5	47.5
0.127	7.6	48.1
0.128	7.7	48.8
0.130	7.8	49.4
0.132	7.9	50.1
0.133	8.0	50.7
0.135	8.1	51.4
0.136	8.2	52.0

(To be continued)

■ E025IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0184	1.1	8.0	d1-01
High speed	0.111	6.6	52.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0092	0.6	2.8	d1-01
High speed	0.111	6.6	52.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0092m/s or 0.6m/min.

* 2) The upper limit for High speed is 0.111m/s or 6.6m/min.

Speed		Frequency
m/s	m/min	Hz
0.0092	0.6	2.8
0.0117	0.7	3.8
0.0133	0.8	4.9
0.0150	0.9	5.9
0.0167	1.0	7.0
0.0184	1.1	8.0
0.0200	1.2	8.8
0.0217	1.3	9.6
0.0233	1.4	10.4
0.0250	1.5	11.2
0.0267	1.6	12.0
0.0283	1.7	12.8
0.0300	1.8	13.6
0.0317	1.9	14.4
0.0333	2.0	15.2
0.0350	2.1	16.0
0.0367	2.2	16.8
0.0383	2.3	17.6
0.0400	2.4	18.4
0.0417	2.5	19.2
0.0433	2.6	20.0
0.0450	2.7	20.8

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	21.6
0.0483	2.9	22.4
0.0500	3.0	23.2
0.0517	3.1	24.0
0.0533	3.2	24.8
0.0550	3.3	25.6
0.0567	3.4	26.4
0.0583	3.5	27.2
0.0600	3.6	28.0
0.0617	3.7	28.8
0.0633	3.8	29.6
0.0650	3.9	30.4
0.0667	4.0	31.2
0.0683	4.1	32.0
0.0700	4.2	32.8
0.0717	4.3	33.6
0.0733	4.4	34.4
0.0750	4.5	35.2
0.0767	4.6	36.0
0.0783	4.7	36.8
0.0800	4.8	37.6
0.0817	4.9	38.4

Speed		Frequency
m/s	m/min	Hz
0.0833	5.0	39.2
0.0850	5.1	40.0
0.0867	5.2	40.8
0.0883	5.3	41.6
0.0900	5.4	42.4
0.0917	5.5	43.2
0.0933	5.6	44.0
0.0950	5.7	44.8
0.0967	5.8	45.6
0.0983	5.9	46.4
0.100	6.0	47.2
0.102	6.1	48.0
0.103	6.2	48.8
0.105	6.3	49.6
0.107	6.4	50.4
0.108	6.5	51.2
0.111	6.6	52.0

■ E030IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0143	0.9	8.0	d1-01
High speed	0.0861	5.2	52.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0072	0.4	2.8	d1-01
High speed	0.0861	5.2	52.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0072m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0861m/s or 5.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0072	0.4	2.8
0.0083	0.5	3.8
0.0100	0.6	4.9
0.0117	0.7	5.9
0.0133	0.8	7.0
0.0143	0.9	8.0
0.0167	1.0	9.0
0.0183	1.1	10.0
0.0200	1.2	11.1
0.0217	1.3	12.1
0.0233	1.4	13.1
0.0250	1.5	14.1
0.0267	1.6	15.2
0.0283	1.7	16.2
0.0300	1.8	17.2
0.0317	1.9	18.2
0.0333	2.0	19.3
0.0350	2.1	20.3
0.0367	2.2	21.3
0.0383	2.3	22.3
0.0400	2.4	23.3
0.0417	2.5	24.4

Speed		Frequency
m/s	m/min	Hz
0.0433	2.6	25.4
0.0450	2.7	26.4
0.0467	2.8	27.4
0.0483	2.9	28.5
0.0500	3.0	29.5
0.0517	3.1	30.5
0.0533	3.2	31.5
0.0550	3.3	32.6
0.0567	3.4	33.6
0.0583	3.5	34.6
0.0600	3.6	35.6
0.0617	3.7	36.7
0.0633	3.8	37.7
0.0650	3.9	38.7
0.0667	4.0	39.7
0.0683	4.1	40.7
0.0700	4.2	41.8
0.0717	4.3	42.8
0.0733	4.4	43.8
0.0750	4.5	44.8
0.0767	4.6	45.9
0.0783	4.7	46.9

Speed		Frequency
m/s	m/min	Hz
0.0800	4.8	47.9
0.0817	4.9	48.9
0.0833	5.0	50.0
0.0850	5.1	51.0
0.0861	5.2	52.0

(To be continued)

■ E050IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0092	0.6	8.0	d1-01
High speed	0.0553	3.3	52.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0046	0.3	2.8	d1-01
High speed	0.0553	3.3	52.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0046m/s or 0.3m/min.

* 2) The upper limit for High speed is 0.0553m/s or 3.3m/min.

Speed		Frequency
m/s	m/min	Hz
0.0046	0.3	2.8
0.0067	0.4	4.5
0.0083	0.5	6.3
0.0092	0.6	8.0
0.0117	0.7	9.6
0.0133	0.8	11.3
0.0150	0.9	12.9
0.0167	1.0	14.5
0.0183	1.1	16.1
0.0200	1.2	17.8
0.0217	1.3	19.4
0.0233	1.4	21.0
0.0250	1.5	22.7
0.0267	1.6	24.3
0.0283	1.7	25.9
0.0300	1.8	27.6
0.0317	1.9	29.2
0.0333	2.0	30.8
0.0350	2.1	32.4
0.0367	2.2	34.1
0.0383	2.3	35.7
0.0400	2.4	37.3

Speed		Frequency
m/s	m/min	Hz
0.0417	2.5	39.0
0.0433	2.6	40.6
0.0450	2.7	42.2
0.0467	2.8	43.9
0.0483	2.9	45.5
0.0500	3.0	47.1
0.0517	3.1	48.7
0.0533	3.2	50.4
0.0553	3.3	52.0

■ M010IS

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0667	4.0	11.0	d1-01
High speed	0.400	24.0	63.0	d1-02

- **Maximum ratio of high speed to low speed - 10 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0400	2.4	6.7	d1-01
High speed	0.400	24.0	63.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0400m/s or 2.4m/min.

* 2) The upper limit for High speed is 0.400m/s or 24.0m/min.

Speed		Frequency
m/s	m/min	Hz
0.0400	2.4	6.7
0.0417	2.5	6.9
0.0433	2.6	7.2
0.0450	2.7	7.4
0.0467	2.8	7.7
0.0483	2.9	8.0
0.0500	3.0	8.2
0.0517	3.1	8.5
0.0533	3.2	8.7
0.0550	3.3	9.0
0.0567	3.4	9.3
0.0583	3.5	9.5
0.0600	3.6	9.8
0.0617	3.7	10.0
0.0633	3.8	10.3
0.0650	3.9	10.6
0.0667	4.0	11.0
0.0833	5.0	13.4
0.100	6.0	16.0
0.117	7.0	18.6
0.133	8.0	21.2
0.150	9.0	23.8
0.167	10.0	26.4

Speed		Frequency
m/s	m/min	Hz
0.183	11.0	29.0
0.200	12.0	31.6
0.217	13.0	34.3
0.233	14.0	36.9
0.250	15.0	39.5
0.267	16.0	42.1
0.283	17.0	44.7
0.300	18.0	47.3
0.317	19.0	49.9
0.333	20.0	52.5
0.350	21.0	55.1
0.367	22.0	57.7
0.383	23.0	60.3
0.400	24.0	63.0

(To be continued)

■ M050IS

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0667	4.0	11.0	d1-01
High speed	0.400	24.0	63.0	d1-02

- **Maximum ratio of high speed to low speed - 10 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0400	2.4	6.7	d1-01
High speed	0.400	24.0	63.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0400m/s or 2.4m/min.

* 2) The upper limit for High speed is 0.400m/s or 24.0m/min.

Speed		Frequency
m/s	m/min	Hz
0.0400	2.4	6.7
0.0417	2.5	6.9
0.0433	2.6	7.2
0.0450	2.7	7.4
0.0467	2.8	7.7
0.0483	2.9	8.0
0.0500	3.0	8.2
0.0517	3.1	8.5
0.0533	3.2	8.7
0.0550	3.3	9.0
0.0567	3.4	9.3
0.0583	3.5	9.5
0.0600	3.6	9.8
0.0617	3.7	10.0
0.0633	3.8	10.3
0.0650	3.9	10.6
0.0667	4.0	11.0
0.0833	5.0	13.4
0.100	6.0	16.0
0.117	7.0	18.6
0.133	8.0	21.2
0.150	9.0	23.8
0.167	10.0	26.4

Speed		Frequency
m/s	m/min	Hz
0.183	11.0	29.0
0.200	12.0	31.6
0.217	13.0	34.3
0.233	14.0	36.9
0.250	15.0	39.5
0.267	16.0	42.1
0.283	17.0	44.7
0.300	18.0	47.3
0.317	19.0	49.9
0.333	20.0	52.5
0.350	21.0	55.1
0.367	22.0	57.7
0.383	23.0	60.3
0.400	24.0	63.0

● 230/460 V Class (415-460 V)

■ E001IH-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0461	2.8	8.2	d1-01
High speed	0.277	16.6	57.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0231	1.4	3.3	d1-01
High speed	0.277	16.6	57.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0231m/s or 1.4m/min.

* 2) The upper limit for High speed is 0.277m/s or 16.6m/min.

(To be continued)

Conversion table 230/460 V Class (415-460 V) (continued)

Speed		Frequency
m/s	m/min	Hz
0.0231	1.4	3.3
0.0250	1.5	3.7
0.0267	1.6	4.1
0.0283	1.7	4.4
0.0300	1.8	4.8
0.0317	1.9	5.1
0.0333	2.0	5.5
0.0350	2.1	5.8
0.0367	2.2	6.2
0.0383	2.3	6.5
0.0400	2.4	6.9
0.0417	2.5	7.3
0.0433	2.6	7.6
0.0450	2.7	8.0
0.0461	2.8	8.2
0.0483	2.9	8.7
0.0500	3.0	9.0
0.0517	3.1	9.3
0.0533	3.2	9.7
0.0550	3.3	10.0
0.0567	3.4	10.3
0.0583	3.5	10.7
0.0600	3.6	11.0
0.0617	3.7	11.4
0.0633	3.8	11.7
0.0650	3.9	12.0
0.0667	4.0	12.4
0.0683	4.1	12.7
0.0700	4.2	13.0
0.0717	4.3	13.4
0.0733	4.4	13.7
0.0750	4.5	14.1
0.0767	4.6	14.4
0.0783	4.7	14.7
0.0800	4.8	15.1
0.0817	4.9	15.4
0.0833	5.0	15.7
0.0850	5.1	16.1
0.0867	5.2	16.4
0.0883	5.3	16.8
0.0900	5.4	17.1
0.0917	5.5	17.4
0.0933	5.6	17.8
0.0950	5.7	18.1
0.0967	5.8	18.4
0.0983	5.9	18.8
0.100	6.0	19.1
0.102	6.1	19.5
0.103	6.2	19.8
0.105	6.3	20.1
0.107	6.4	20.5
0.108	6.5	20.8

Speed		Frequency
m/s	m/min	Hz
0.110	6.6	21.1
0.112	6.7	21.5
0.113	6.8	21.8
0.115	6.9	22.2
0.117	7.0	22.5
0.118	7.1	22.8
0.120	7.2	23.2
0.122	7.3	23.5
0.123	7.4	23.8
0.125	7.5	24.2
0.127	7.6	24.5
0.128	7.7	24.9
0.130	7.8	25.2
0.132	7.9	25.5
0.133	8.0	25.9
0.135	8.1	26.2
0.137	8.2	26.5
0.138	8.3	26.9
0.140	8.4	27.2
0.142	8.5	27.6
0.143	8.6	28.0
0.145	8.7	28.3
0.147	8.8	28.7
0.148	8.9	29.0
0.150	9.0	29.4
0.152	9.1	29.8
0.153	9.2	30.1
0.155	9.3	30.5
0.157	9.4	30.9
0.158	9.5	31.2
0.160	9.6	31.6
0.162	9.7	31.9
0.163	9.8	32.3
0.165	9.9	32.7
0.167	10.0	33.0
0.168	10.1	33.4
0.170	10.2	33.8
0.172	10.3	34.1
0.173	10.4	34.5
0.175	10.5	34.8
0.177	10.6	35.2
0.178	10.7	35.6
0.180	10.8	35.9
0.182	10.9	36.3
0.183	11.0	36.6
0.185	11.1	37.0
0.187	11.2	37.4
0.188	11.3	37.7
0.190	11.4	38.1
0.192	11.5	38.5
0.193	11.6	38.8
0.195	11.7	39.2

Speed		Frequency
m/s	m/min	Hz
0.197	11.8	39.5
0.198	11.9	39.9
0.200	12.0	40.3
0.202	12.1	40.6
0.203	12.2	41.0
0.205	12.3	41.4
0.207	12.4	41.7
0.208	12.5	42.1
0.210	12.6	42.4
0.212	12.7	42.8
0.213	12.8	43.2
0.215	12.9	43.5
0.217	13.0	43.9
0.218	13.1	44.3
0.220	13.2	44.6
0.222	13.3	45.0
0.223	13.4	45.3
0.225	13.5	45.7
0.227	13.6	46.1
0.228	13.7	46.4
0.230	13.8	46.8
0.232	13.9	47.2
0.233	14.0	47.5
0.235	14.1	47.9
0.237	14.2	48.2
0.238	14.3	48.6
0.240	14.4	49.0
0.242	14.5	49.3
0.243	14.6	49.7
0.245	14.7	50.0
0.247	14.8	50.4
0.248	14.9	50.8
0.250	15.0	51.1
0.252	15.1	51.5
0.253	15.2	51.9
0.255	15.3	52.2
0.257	15.4	52.6
0.258	15.5	52.9
0.260	15.6	53.3
0.262	15.7	53.7
0.263	15.8	54.0
0.265	15.9	54.4
0.267	16.0	54.8
0.268	16.1	55.1
0.270	16.2	55.5
0.272	16.3	55.8
0.273	16.4	56.2
0.275	16.5	56.6
0.277	16.6	57.0

■ E003IS-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0299	1.8	8.2	d1-01
High speed	0.179	10.8	57.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0150	0.9	3.3	d1-01
High speed	0.179	10.8	57.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0150m/s or 0.9m/min.

* 2) The upper limit for High speed is 0.1790m/s or 10.8m/min.

(To be continued)

Speed		Frequency
m/s	m/min	Hz
0.0150	0.9	3.3
0.0167	1.0	3.8
0.0183	1.1	4.4
0.0200	1.2	4.9
0.0217	1.3	5.5
0.0233	1.4	6.0
0.0250	1.5	6.6
0.0267	1.6	7.1
0.0283	1.7	7.7
0.0299	1.8	8.2
0.0317	1.9	8.7
0.0333	2.0	9.2
0.0350	2.1	9.7
0.0367	2.2	10.2
0.0383	2.3	10.7
0.0400	2.4	11.2
0.0417	2.5	11.8
0.0433	2.6	12.3
0.0450	2.7	12.8
0.0467	2.8	13.3
0.0483	2.9	13.8
0.0500	3.0	14.3
0.0517	3.1	14.8
0.0533	3.2	15.3
0.0550	3.3	15.8
0.0567	3.4	16.3
0.0583	3.5	16.8
0.0600	3.6	17.3
0.0617	3.7	17.8
0.0633	3.8	18.3
0.0650	3.9	18.8
0.0667	4.0	19.3
0.0683	4.1	19.8
0.0700	4.2	20.3
0.0717	4.3	20.8
0.0733	4.4	21.3
0.0750	4.5	21.8
0.0767	4.6	22.3
0.0783	4.7	22.8
0.0800	4.8	23.3
0.0817	4.9	23.8
0.0833	5.0	24.3
0.0850	5.1	24.8
0.0867	5.2	25.3
0.0883	5.3	25.8
0.0900	5.4	26.3
0.0917	5.5	26.8
0.0933	5.6	27.4
0.0950	5.7	28.0
0.0967	5.8	28.6
0.0983	5.9	29.1

Speed		Frequency
m/s	m/min	Hz
0.100	6.0	29.7
0.102	6.1	30.3
0.103	6.2	30.9
0.105	6.3	31.4
0.107	6.4	32.0
0.108	6.5	32.6
0.110	6.6	33.2
0.112	6.7	33.7
0.113	6.8	34.3
0.115	6.9	34.9
0.117	7.0	35.5
0.118	7.1	36.0
0.120	7.2	36.6
0.122	7.3	37.2
0.123	7.4	37.8
0.125	7.5	38.3
0.127	7.6	38.9
0.128	7.7	39.5
0.130	7.8	40.1
0.132	7.9	40.6
0.133	8.0	41.2
0.135	8.1	41.8
0.137	8.2	42.4
0.138	8.3	42.9
0.140	8.4	43.5
0.142	8.5	44.1
0.143	8.6	44.7
0.145	8.7	45.3
0.147	8.8	45.8
0.148	8.9	46.4
0.150	9.0	47.0
0.152	9.1	47.6
0.153	9.2	48.1
0.155	9.3	48.7
0.157	9.4	49.3
0.158	9.5	49.9
0.160	9.6	50.4
0.162	9.7	51.0
0.163	9.8	51.6
0.165	9.9	52.2
0.167	10.0	52.7
0.168	10.1	53.3
0.170	10.2	53.9
0.172	10.3	54.5
0.173	10.4	55.0
0.175	10.5	55.6
0.177	10.6	56.2
0.178	10.7	56.8
0.179	10.8	57.0

■ E003IH-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0435	2.6	7.3	d1-01
High speed	0.261	15.7	54.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0218	1.3	2.5	d1-01
High speed	0.261	15.7	54.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0218m/s or 1.3m/min.

* 2) The upper limit for High speed is 0.261m/s or 15.7m/min.

(To be continued)

Conversion table 230/460 V Class (415-460 V) (continued)

Speed		Frequency
m/s	m/min	Hz
0.0218	1.3	2.5
0.0233	1.4	2.8
0.0250	1.5	3.2
0.0267	1.6	3.6
0.0283	1.7	3.9
0.0300	1.8	4.3
0.0317	1.9	4.7
0.0333	2.0	5.1
0.0350	2.1	5.4
0.0367	2.2	5.8
0.0383	2.3	6.2
0.0400	2.4	6.5
0.0417	2.5	6.9
0.0435	2.6	7.3
0.0461	2.7	7.9
0.0467	2.8	8.0
0.0483	2.9	8.4
0.0500	3.0	8.7
0.0517	3.1	9.1
0.0533	3.2	9.5
0.0550	3.3	9.8
0.0567	3.4	10.2
0.0583	3.5	10.6
0.0600	3.6	10.9
0.0617	3.7	11.3
0.0633	3.8	11.7
0.0650	3.9	12.1
0.0667	4.0	12.4
0.0683	4.1	12.8
0.0700	4.2	13.2
0.0717	4.3	13.5
0.0733	4.4	13.9
0.0750	4.5	14.3
0.0767	4.6	14.6
0.0783	4.7	15.0
0.0800	4.8	15.4
0.0817	4.9	15.7
0.0833	5.0	16.1
0.0850	5.1	16.5
0.0867	5.2	16.8
0.0883	5.3	17.2
0.0900	5.4	17.6
0.0917	5.5	17.9
0.0933	5.6	18.3
0.0950	5.7	18.7
0.0967	5.8	19.1
0.0983	5.9	19.4
0.100	6.0	19.8
0.102	6.1	20.2
0.103	6.2	20.5
0.105	6.3	20.9
0.107	6.4	21.3

Speed		Frequency
m/s	m/min	Hz
0.108	6.5	21.6
0.110	6.6	22.0
0.112	6.7	22.4
0.113	6.8	22.7
0.115	6.9	23.1
0.117	7.0	23.5
0.118	7.1	23.8
0.120	7.2	24.2
0.122	7.3	24.6
0.123	7.4	24.9
0.125	7.5	25.3
0.127	7.6	25.7
0.128	7.7	26.1
0.130	7.8	26.4
0.132	7.9	26.8
0.133	8.0	27.2
0.135	8.1	27.5
0.137	8.2	27.9
0.138	8.3	28.2
0.140	8.4	28.6
0.142	8.5	28.9
0.143	8.6	29.3
0.145	8.7	29.6
0.147	8.8	30.0
0.148	8.9	30.3
0.150	9.0	30.7
0.152	9.1	31.0
0.153	9.2	31.4
0.155	9.3	31.7
0.157	9.4	32.1
0.158	9.5	32.4
0.160	9.6	32.8
0.162	9.7	33.1
0.163	9.8	33.5
0.165	9.9	33.8
0.167	10.0	34.2
0.168	10.1	34.5
0.170	10.2	34.9
0.172	10.3	35.2
0.173	10.4	35.6
0.175	10.5	35.9
0.177	10.6	36.3
0.178	10.7	36.6
0.180	10.8	37.0
0.182	10.9	37.3
0.183	11.0	37.7
0.185	11.1	38.0
0.187	11.2	38.4
0.188	11.3	38.7
0.190	11.4	39.1
0.192	11.5	39.4
0.193	11.6	39.8

Speed		Frequency
m/s	m/min	Hz
0.195	11.7	40.1
0.197	11.8	40.5
0.198	11.9	40.8
0.200	12.0	41.2
0.202	12.1	41.5
0.203	12.2	41.9
0.205	12.3	42.2
0.207	12.4	42.6
0.208	12.5	42.9
0.210	12.6	43.3
0.212	12.7	43.6
0.213	12.8	44.0
0.215	12.9	44.3
0.217	13.0	44.7
0.218	13.1	45.0
0.220	13.2	45.4
0.222	13.3	45.7
0.223	13.4	46.1
0.225	13.5	46.4
0.227	13.6	46.8
0.228	13.7	47.1
0.230	13.8	47.5
0.232	13.9	47.8
0.233	14.0	48.2
0.235	14.1	48.5
0.237	14.2	48.9
0.238	14.3	49.2
0.240	14.4	49.6
0.242	14.5	49.9
0.243	14.6	50.3
0.245	14.7	50.6
0.247	14.8	51.0
0.248	14.9	51.3
0.250	15.0	51.7
0.252	15.1	52.0
0.253	15.2	52.4
0.255	15.3	52.7
0.257	15.4	53.1
0.258	15.5	53.4
0.260	15.6	53.8
0.261	15.7	54.0

■ E005IL-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0125	0.8	8.2	d1-01
High speed	0.0750	4.5	57.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0063	0.4	3.3	d1-01
High speed	0.0750	4.5	57.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0063m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0750m/s or 4.5m/min.

Speed		Frequency
m/s	m/min	Hz
0.0063	0.4	3.3
0.0083	0.5	4.9
0.0100	0.6	6.2
0.0117	0.7	7.5
0.0125	0.8	8.2
0.0150	0.9	10.0
0.0167	1.0	11.1
0.0226	1.1	15.3
0.0200	1.2	13.5
0.0217	1.3	14.6
0.0233	1.4	15.8
0.0250	1.5	17.0
0.0267	1.6	18.2
0.0283	1.7	19.3
0.0300	1.8	20.5
0.0317	1.9	21.7
0.0333	2.0	22.8
0.0350	2.1	24.0
0.0367	2.2	25.2
0.0383	2.3	26.4
0.0400	2.4	27.6

Speed		Frequency
m/s	m/min	Hz
0.0417	2.5	29.0
0.0433	2.6	30.4
0.0450	2.7	31.8
0.0467	2.8	33.2
0.0483	2.9	34.6
0.0500	3.0	36.0
0.0517	3.1	37.4
0.0533	3.2	38.8
0.0550	3.3	40.2
0.0567	3.4	41.6
0.0583	3.5	43.0
0.0600	3.6	44.4
0.0617	3.7	45.8
0.0633	3.8	47.2
0.0650	3.9	48.6
0.0667	4.0	50.0
0.0683	4.1	51.4
0.0700	4.2	52.8
0.0717	4.3	54.2
0.0733	4.4	55.6
0.0750	4.5	57.0

(To be continued)

■ E005IS-FC(friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0237	1.4	7.3	d1-01
High speed	0.142	8.5	54.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0118	0.7	2.5	d1-01
High speed	0.142	8.5	54.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed *1)	Low speed *1)	Select from the table	d1-01
High speed	High speed *2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit speed for Low speed is 0.0118m/s or 0.7m/min.

* 2) The upper limit speed for High speed is 0.142m/s or 8.5m/min.

Speed		Frequency
m/s	m/min	Hz
0.0118	0.7	2.5
0.0133	0.8	3.1
0.0150	0.9	3.8
0.0167	1.0	4.5
0.0183	1.1	5.1
0.0200	1.2	5.8
0.0217	1.3	6.5
0.0237	1.4	7.3
0.0250	1.5	7.8
0.0267	1.6	8.4
0.0283	1.7	9.0
0.0300	1.8	9.7
0.0317	1.9	10.3
0.0333	2.0	10.9
0.0350	2.1	11.6
0.0367	2.2	12.2
0.0383	2.3	12.8
0.0400	2.4	13.4
0.0417	2.5	14.1
0.0433	2.6	14.7
0.0450	2.7	15.3

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	16.0
0.0483	2.9	16.6
0.0500	3.0	17.2
0.0517	3.1	17.8
0.0533	3.2	18.5
0.0550	3.3	19.1
0.0567	3.4	19.7
0.0583	3.5	20.4
0.0600	3.6	21.0
0.0617	3.7	21.6
0.0633	3.8	22.2
0.0650	3.9	22.9
0.0667	4.0	23.5
0.0683	4.1	24.1
0.0700	4.2	24.8
0.0717	4.3	25.4
0.0733	4.4	26.0
0.0750	4.5	26.7
0.0767	4.6	27.4
0.0783	4.7	28.0
0.0800	4.8	28.7

Speed		Frequency
m/s	m/min	Hz
0.0817	4.9	29.4
0.0833	5.0	30.1
0.0850	5.1	30.8
0.0867	5.2	31.4
0.0883	5.3	32.1
0.0900	5.4	32.8
0.0917	5.5	33.5
0.0933	5.6	34.2
0.0950	5.7	34.8
0.0967	5.8	35.5
0.0983	5.9	36.2
0.100	6.0	36.9
0.102	6.1	37.6
0.103	6.2	38.2
0.105	6.3	38.9
0.107	6.4	39.6
0.108	6.5	40.3
0.110	6.6	41.0
0.112	6.7	41.6
0.113	6.8	42.3
0.115	6.9	43.0

Speed		Frequency
m/s	m/min	Hz
0.117	7.0	43.7
0.118	7.1	44.4
0.120	7.2	45.0
0.122	7.3	45.7
0.123	7.4	46.4
0.125	7.5	47.1
0.127	7.6	47.7
0.128	7.7	48.4
0.130	7.8	49.1
0.132	7.9	49.8
0.133	8.0	50.5
0.135	8.1	51.1
0.137	8.2	51.8
0.138	8.3	52.5
0.140	8.4	53.2
0.142	8.5	54.0

■ E010IL-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0115	0.7	7.3	d1-01
High speed	0.0693	4.2	54.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0058	0.3	2.5	d1-01
High speed	0.0693	4.2	54.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0058m/s or 0.3m/min.

* 2) The upper limit for High speed is 0.0693m/s or 4.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0058	0.3	2.5
0.0067	0.4	3.2
0.0083	0.5	4.6
0.0100	0.6	6.0
0.0115	0.7	7.3
0.0133	0.8	8.7
0.0150	0.9	9.9
0.0226	1.0	15.5
0.0183	1.1	12.4
0.0200	1.2	13.6
0.0217	1.3	14.8
0.0233	1.4	16.0
0.0250	1.5	17.3
0.0267	1.6	18.5
0.0283	1.7	19.7
0.0300	1.8	21.0
0.0317	1.9	22.2
0.0333	2.0	23.4
0.0350	2.1	24.7
0.0367	2.2	25.9

Speed		Frequency
m/s	m/min	Hz
0.0383	2.3	27.3
0.0400	2.4	28.8
0.0417	2.5	30.2
0.0433	2.6	31.6
0.0450	2.7	33.1
0.0467	2.8	34.5
0.0483	2.9	35.9
0.0500	3.0	37.4
0.0517	3.1	38.8
0.0533	3.2	40.2
0.0550	3.3	41.7
0.0567	3.4	43.1
0.0583	3.5	44.6
0.0600	3.6	46.0
0.0617	3.7	47.4
0.0633	3.8	48.9
0.0650	3.9	50.3
0.0667	4.0	51.7
0.0683	4.1	53.2
0.0693	4.2	54.0

(To be continued)

■ E010IS-FC(friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0228	1.4	7.0	d1-01
High speed	0.137	8.2	53.5	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0114	0.7	2.1	d1-01
High speed	0.137	8.2	53.5	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed *1)	Low speed *1)	Select from the table	d1-01
High speed	High speed *2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit speed for Low speed is 0.0114m/s or 0.7m/min.

* 2) The upper limit speed for High speed is 0.137m/s or 8.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0114	0.7	2.1
0.0133	0.8	2.9
0.0150	0.9	3.6
0.0167	1.0	4.4
0.0183	1.1	5.1
0.0200	1.2	5.8
0.0217	1.3	6.5
0.0228	1.4	7.0
0.0250	1.5	7.8
0.0267	1.6	8.5
0.0283	1.7	9.1
0.0300	1.8	9.7
0.0317	1.9	10.4
0.0333	2.0	11.0
0.0350	2.1	11.6
0.0367	2.2	12.3
0.0383	2.3	12.9
0.0400	2.4	13.5
0.0417	2.5	14.2
0.0433	2.6	14.8
0.0450	2.7	15.4

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	16.1
0.0483	2.9	16.7
0.0500	3.0	17.3
0.0517	3.1	18.0
0.0533	3.2	18.6
0.0550	3.3	19.2
0.0567	3.4	19.9
0.0583	3.5	20.5
0.0600	3.6	21.1
0.0617	3.7	21.8
0.0633	3.8	22.4
0.0650	3.9	23.0
0.0667	4.0	23.7
0.0683	4.1	24.3
0.0700	4.2	24.9
0.0717	4.3	25.6
0.0733	4.4	26.2
0.0750	4.5	26.8
0.0767	4.6	27.5
0.0783	4.7	28.3
0.0800	4.8	29.0

Speed		Frequency
m/s	m/min	Hz
0.0817	4.9	29.7
0.0833	5.0	30.4
0.0850	5.1	31.1
0.0867	5.2	31.8
0.0883	5.3	32.6
0.0900	5.4	33.3
0.0917	5.5	34.0
0.0933	5.6	34.7
0.0950	5.7	35.4
0.0967	5.8	36.1
0.0983	5.9	36.9
0.100	6.0	37.6
0.102	6.1	38.3
0.103	6.2	39.0
0.105	6.3	39.7
0.107	6.4	40.4
0.108	6.5	41.2
0.110	6.6	41.9
0.112	6.7	42.6
0.113	6.8	43.3
0.115	6.9	44.0

Speed		Frequency
m/s	m/min	Hz
0.117	7.0	44.8
0.118	7.1	45.5
0.120	7.2	46.2
0.122	7.3	46.9
0.123	7.4	47.6
0.125	7.5	48.3
0.127	7.6	49.1
0.128	7.7	49.8
0.130	7.8	50.5
0.132	7.9	51.2
0.133	8.0	51.9
0.135	8.1	52.6
0.137	8.2	53.5

■ E015IS-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0146	0.9	7.0	d1-01
High speed	0.0877	5.3	53.5	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0073	0.4	2.1	d1-01
High speed	0.0877	5.3	53.5	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0073m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0877m/s or 5.3m/min.

Speed		Frequency
m/s	m/min	Hz
0.0073	0.4	2.1
0.0083	0.5	2.8
0.0100	0.6	3.9
0.0117	0.7	5.0
0.0133	0.8	6.1
0.0146	0.9	7.0
0.0167	1.0	8.2
0.0183	1.1	9.2
0.0200	1.2	10.2
0.0217	1.3	11.2
0.0233	1.4	12.2
0.0250	1.5	13.2
0.0267	1.6	14.2
0.0283	1.7	15.2
0.0300	1.8	16.1
0.0317	1.9	17.1
0.0333	2.0	18.1
0.0350	2.1	19.1
0.0367	2.2	20.1
0.0383	2.3	21.1
0.0400	2.4	22.1
0.0417	2.5	23.1

Speed		Frequency
m/s	m/min	Hz
0.0433	2.6	24.1
0.0450	2.7	25.1
0.0467	2.8	26.0
0.0483	2.9	27.0
0.0500	3.0	28.2
0.0517	3.1	29.3
0.0533	3.2	30.4
0.0550	3.3	31.5
0.0567	3.4	32.6
0.0583	3.5	33.8
0.0600	3.6	34.9
0.0617	3.7	36.0
0.0633	3.8	37.1
0.0650	3.9	38.2
0.0667	4.0	39.4
0.0683	4.1	40.5
0.0700	4.2	41.6
0.0717	4.3	42.7
0.0733	4.4	43.8
0.0750	4.5	45.0
0.0767	4.6	46.1
0.0783	4.7	47.2

Speed		Frequency
m/s	m/min	Hz
0.0800	4.8	48.3
0.0817	4.9	49.4
0.0833	5.0	50.6
0.0850	5.1	51.7
0.0867	5.2	52.8
0.0877	5.3	53.5

(To be continued)

■ E020IC-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0058	0.3	7.3	d1-01
High speed	0.0346	2.1	54.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0029	0.2	2.5	d1-01
High speed	0.0346	2.1	54.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0029m/s or 0.2m/min.

* 2) The upper limit for High speed is 0.0346m/s or 2.1m/min.

Speed		Frequency
m/s	m/min	Hz
0.0029	0.2	2.5
0.0058	0.3	7.3
0.0067	0.4	8.7
0.0083	0.5	11.5
0.0100	0.6	14.3
0.0117	0.7	17.1
0.0133	0.8	19.9
0.0150	0.9	22.7
0.0167	1.0	25.5
0.0183	1.1	28.2

Speed		Frequency
m/s	m/min	Hz
0.0200	1.2	30.8
0.0217	1.3	33.5
0.0233	1.4	36.1
0.0250	1.5	38.8
0.0267	1.6	41.4
0.0283	1.7	44.1
0.0300	1.8	46.7
0.0317	1.9	49.3
0.0333	2.0	52.0
0.0346	2.1	54.0

■ E020IL-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0119	0.7	7.0	d1-01
High speed	0.0714	4.3	53.5	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0060	0.4	2.1	d1-01
High speed	0.0714	4.3	53.5	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0060m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0714m/s or 4.3m/min.

Speed		Frequency
m/s	m/min	Hz
0.0060	0.4	2.1
0.0083	0.5	4.0
0.0100	0.6	5.4
0.0119	0.7	7.0
0.0133	0.8	8.0
0.0150	0.9	9.3
0.0167	1.0	10.5
0.0183	1.1	11.7
0.0200	1.2	12.9
0.0217	1.3	14.1
0.0233	1.4	15.3
0.0250	1.5	16.6
0.0267	1.6	17.8
0.0283	1.7	19.0
0.0300	1.8	20.2
0.0317	1.9	21.4
0.0333	2.0	22.6
0.0350	2.1	23.9
0.0367	2.2	25.1
0.0383	2.3	26.3

Speed		Frequency
m/s	m/min	Hz
0.0400	2.4	27.6
0.0417	2.5	29.0
0.0433	2.6	30.3
0.0450	2.7	31.7
0.0467	2.8	33.1
0.0483	2.9	34.5
0.0500	3.0	35.8
0.0517	3.1	37.2
0.0533	3.2	38.6
0.0550	3.3	40.0
0.0567	3.4	41.3
0.0583	3.5	42.7
0.0600	3.6	44.1
0.0617	3.7	45.5
0.0633	3.8	46.8
0.0650	3.9	48.2
0.0667	4.0	49.6
0.0683	4.1	51.0
0.0700	4.2	52.3
0.0714	4.3	53.5

(To be continued)

■ E020IS-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0226	1.4	7.7	d1-01
High speed	0.136	8.2	55.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0113	0.7	3.0	d1-01
High speed	0.136	8.2	55.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0113m/s or 0.7m/min.

* 2) The upper limit for High speed is 0.136m/s or 8.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0113	0.7	3.0
0.0133	0.8	3.8
0.0150	0.9	4.5
0.0167	1.0	5.2
0.0183	1.1	5.9
0.0200	1.2	6.6
0.0217	1.3	7.3
0.0226	1.4	7.7
0.0250	1.5	8.7
0.0267	1.6	9.4
0.0283	1.7	10.1
0.0300	1.8	10.7
0.0317	1.9	11.4
0.0333	2.0	12.1
0.0350	2.1	12.8
0.0367	2.2	13.5
0.0383	2.3	14.2
0.0400	2.4	14.8
0.0417	2.5	15.5
0.0433	2.6	16.2
0.0450	2.7	16.9

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	17.6
0.0483	2.9	18.3
0.0500	3.0	18.9
0.0517	3.1	19.6
0.0533	3.2	20.3
0.0550	3.3	21.0
0.0567	3.4	21.7
0.0583	3.5	22.4
0.0600	3.6	23.0
0.0617	3.7	23.7
0.0633	3.8	24.4
0.0650	3.9	25.1
0.0667	4.0	25.8
0.0683	4.1	26.5
0.0700	4.2	27.1
0.0717	4.3	27.9
0.0733	4.4	28.6
0.0750	4.5	29.3
0.0767	4.6	30.0
0.0783	4.7	30.7
0.0800	4.8	31.4

Speed		Frequency
m/s	m/min	Hz
0.0817	4.9	32.1
0.0833	5.0	32.8
0.0850	5.1	33.5
0.0867	5.2	34.2
0.0883	5.3	34.9
0.0900	5.4	35.6
0.0917	5.5	36.3
0.0933	5.6	37.0
0.0950	5.7	37.7
0.0967	5.8	38.4
0.0983	5.9	39.1
0.100	6.0	39.8
0.102	6.1	40.5
0.103	6.2	41.2
0.105	6.3	41.9
0.107	6.4	42.6
0.108	6.5	43.3
0.110	6.6	44.0
0.112	6.7	44.7
0.113	6.8	45.4
0.115	6.9	46.1

Speed		Frequency
m/s	m/min	Hz
0.117	7.0	46.8
0.118	7.1	47.5
0.120	7.2	48.2
0.122	7.3	49.0
0.123	7.4	49.7
0.125	7.5	50.4
0.127	7.6	51.1
0.128	7.7	51.8
0.130	7.8	52.5
0.132	7.9	53.2
0.133	8.0	53.9
0.135	8.1	54.6
0.136	8.2	55.0

■ E025IS-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0184	1.1	7.7	d1-01
High speed	0.111	6.6	55.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0092	0.6	3.0	d1-01
High speed	0.111	6.6	55.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0092m/s or 0.6m/min.

* 2) The upper limit for High speed is 0.111m/s or 6.6m/min.

Speed		Frequency
m/s	m/min	Hz
0.0092	0.6	3.0
0.0117	0.7	4.3
0.0133	0.8	5.1
0.0150	0.9	6.0
0.0167	1.0	6.8
0.0184	1.1	7.7
0.0200	1.2	8.5
0.0217	1.3	9.3
0.0233	1.4	10.2
0.0250	1.5	11.0
0.0267	1.6	11.9
0.0283	1.7	12.7
0.0300	1.8	13.5
0.0317	1.9	14.4
0.0333	2.0	15.2
0.0350	2.1	16.0
0.0367	2.2	16.9
0.0383	2.3	17.7
0.0400	2.4	18.5
0.0417	2.5	19.4
0.0433	2.6	20.2
0.0450	2.7	21.1

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	21.9
0.0483	2.9	22.7
0.0500	3.0	23.6
0.0517	3.1	24.4
0.0533	3.2	25.2
0.0550	3.3	26.1
0.0567	3.4	26.9
0.0583	3.5	27.8
0.0600	3.6	28.6
0.0617	3.7	29.5
0.0633	3.8	30.4
0.0650	3.9	31.2
0.0667	4.0	32.1
0.0683	4.1	32.9
0.0700	4.2	33.8
0.0717	4.3	34.7
0.0733	4.4	35.5
0.0750	4.5	36.4
0.0767	4.6	37.3
0.0783	4.7	38.1
0.0800	4.8	39.0
0.0817	4.9	39.8

Speed		Frequency
m/s	m/min	Hz
0.0833	5.0	40.7
0.0850	5.1	41.6
0.0867	5.2	42.4
0.0883	5.3	43.3
0.0900	5.4	44.1
0.0917	5.5	45.0
0.0933	5.6	45.9
0.0950	5.7	46.7
0.0967	5.8	47.6
0.0983	5.9	48.5
0.100	6.0	49.3
0.102	6.1	50.2
0.103	6.2	51.0
0.105	6.3	51.9
0.107	6.4	52.8
0.108	6.5	53.6
0.111	6.6	55.0

(To be continued)

■ E030IS-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0143	0.9	7.7	d1-01
High speed	0.0861	5.2	55.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0072	0.4	3.0	d1-01
High speed	0.0861	5.2	55.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0072m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0861m/s or 5.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0072	0.4	3.0
0.0083	0.5	3.8
0.0100	0.6	4.9
0.0117	0.7	6.0
0.0133	0.8	7.1
0.0143	0.9	7.7
0.0167	1.0	9.3
0.0183	1.1	10.3
0.0200	1.2	11.4
0.0217	1.3	12.5
0.0233	1.4	13.6
0.0250	1.5	14.6
0.0267	1.6	15.7
0.0283	1.7	16.8
0.0300	1.8	17.9
0.0317	1.9	19.0
0.0333	2.0	20.0
0.0350	2.1	21.1
0.0367	2.2	22.2
0.0383	2.3	23.3
0.0400	2.4	24.4
0.0417	2.5	25.4

Speed		Frequency
m/s	m/min	Hz
0.0433	2.6	26.5
0.0450	2.7	27.6
0.0467	2.8	28.7
0.0483	2.9	29.8
0.0500	3.0	30.9
0.0517	3.1	32.1
0.0533	3.2	33.2
0.0550	3.3	34.3
0.0567	3.4	35.4
0.0583	3.5	36.5
0.0600	3.6	37.6
0.0617	3.7	38.7
0.0633	3.8	39.8
0.0650	3.9	40.9
0.0667	4.0	42.0
0.0683	4.1	43.2
0.0700	4.2	44.3
0.0717	4.3	45.4
0.0733	4.4	46.5
0.0750	4.5	47.6
0.0767	4.6	48.7
0.0783	4.7	49.8

Speed		Frequency
m/s	m/min	Hz
0.0800	4.8	50.9
0.0817	4.9	52.0
0.0833	5.0	53.2
0.0850	5.1	54.3
0.0861	5.2	55.0

■ E050IS-FC (friction clutch)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0092	0.6	7.7	d1-01
High speed	0.0553	3.3	55.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0046	0.3	3.0	d1-01
High speed	0.0553	3.3	55.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0046m/s or 0.3m/min.

* 2) The upper limit for High speed is 0.0553m/s or 3.3m/min.

Speed		Frequency
m/s	m/min	Hz
0.0046	0.3	3.0
0.0067	0.4	5.1
0.0083	0.5	6.8
0.0092	0.6	7.7
0.0117	0.7	10.2
0.0133	0.8	11.9
0.0150	0.9	13.6
0.0167	1.0	15.2
0.0183	1.1	16.9
0.0200	1.2	18.6
0.0217	1.3	20.3
0.0233	1.4	22.0
0.0250	1.5	23.7
0.0267	1.6	25.3
0.0283	1.7	27.0
0.0300	1.8	28.7

Speed		Frequency
m/s	m/min	Hz
0.0317	1.9	30.5
0.0333	2.0	32.2
0.0350	2.1	33.9
0.0367	2.2	35.7
0.0383	2.3	37.4
0.0400	2.4	39.1
0.0417	2.5	40.9
0.0433	2.6	42.6
0.0450	2.7	44.3
0.0467	2.8	46.0
0.0483	2.9	47.8
0.0500	3.0	49.5
0.0517	3.1	51.2
0.0533	3.2	53.0
0.0553	3.3	55.0

(To be continued)

■ E001IH-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0461	2.8	7.8	d1-01
High speed	0.277	16.6	57.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0231	1.4	3.3	d1-01
High speed	0.277	16.6	57.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0231m/s or 1.4m/min.

* 2) The upper limit for High speed is 0.277m/s or 16.6m/min.

Speed		Frequency
m/s	m/min	Hz
0.0231	1.4	3.3
0.0250	1.5	3.6
0.0267	1.6	3.9
0.0283	1.7	4.3
0.0300	1.8	4.6
0.0317	1.9	4.9
0.0333	2.0	5.2
0.0350	2.1	5.6
0.0367	2.2	5.9
0.0383	2.3	6.2
0.0400	2.4	6.5
0.0417	2.5	6.8
0.0433	2.6	7.2
0.0450	2.7	7.5
0.0461	2.8	7.8
0.0483	2.9	8.2
0.0500	3.0	8.5
0.0517	3.1	8.9
0.0533	3.2	9.2
0.0550	3.3	9.6
0.0567	3.4	9.9
0.0583	3.5	10.3
0.0600	3.6	10.7
0.0617	3.7	11.0
0.0633	3.8	11.4
0.0650	3.9	11.7
0.0667	4.0	12.1
0.0683	4.1	12.4
0.0700	4.2	12.8
0.0717	4.3	13.1
0.0733	4.4	13.5
0.0750	4.5	13.9
0.0767	4.6	14.2
0.0783	4.7	14.6
0.0800	4.8	14.9
0.0817	4.9	15.3
0.0833	5.0	15.6
0.0850	5.1	16.0
0.0867	5.2	16.4
0.0883	5.3	16.7
0.0900	5.4	17.1
0.0917	5.5	17.4
0.0933	5.6	17.8
0.0950	5.7	18.1
0.0967	5.8	18.5
0.0983	5.9	18.9
0.100	6.0	19.2
0.102	6.1	19.6
0.103	6.2	19.9
0.105	6.3	20.3
0.107	6.4	20.6
0.108	6.5	21.0

Speed		Frequency
m/s	m/min	Hz
0.110	6.6	21.3
0.112	6.7	21.7
0.113	6.8	22.1
0.115	6.9	22.4
0.117	7.0	22.8
0.118	7.1	23.1
0.120	7.2	23.5
0.122	7.3	23.8
0.123	7.4	24.2
0.125	7.5	24.6
0.127	7.6	24.9
0.128	7.7	25.3
0.130	7.8	25.6
0.132	7.9	26.0
0.133	8.0	26.3
0.135	8.1	26.7
0.137	8.2	27.1
0.138	8.3	27.4
0.140	8.4	27.8
0.142	8.5	28.1
0.143	8.6	28.5
0.145	8.7	28.8
0.147	8.8	29.2
0.148	8.9	29.5
0.150	9.0	29.9
0.152	9.1	30.3
0.153	9.2	30.6
0.155	9.3	31.0
0.157	9.4	31.3
0.158	9.5	31.7
0.160	9.6	32.0
0.162	9.7	32.4
0.163	9.8	32.8
0.165	9.9	33.1
0.167	10.0	33.5
0.168	10.1	33.8
0.170	10.2	34.2
0.172	10.3	34.5
0.173	10.4	34.9
0.175	10.5	35.3
0.177	10.6	35.6
0.178	10.7	36.0
0.180	10.8	36.3
0.182	10.9	36.7
0.183	11.0	37.0
0.185	11.1	37.4
0.187	11.2	37.7
0.188	11.3	38.1
0.190	11.4	38.5
0.192	11.5	38.8
0.193	11.6	39.2
0.195	11.7	39.5

Speed		Frequency
m/s	m/min	Hz
0.197	11.8	39.9
0.198	11.9	40.2
0.200	12.0	40.6
0.202	12.1	41.0
0.203	12.2	41.3
0.205	12.3	41.7
0.207	12.4	42.0
0.208	12.5	42.4
0.210	12.6	42.7
0.212	12.7	43.1
0.213	12.8	43.5
0.215	12.9	43.8
0.217	13.0	44.2
0.218	13.1	44.5
0.220	13.2	44.9
0.222	13.3	45.2
0.223	13.4	45.6
0.225	13.5	45.9
0.227	13.6	46.3
0.228	13.7	46.7
0.230	13.8	47.0
0.232	13.9	47.4
0.233	14.0	47.7
0.235	14.1	48.1
0.237	14.2	48.4
0.238	14.3	48.8
0.240	14.4	49.2
0.242	14.5	49.5
0.243	14.6	49.9
0.245	14.7	50.2
0.247	14.8	50.6
0.248	14.9	50.9
0.250	15.0	51.3
0.252	15.1	51.7
0.253	15.2	52.0
0.255	15.3	52.4
0.257	15.4	52.7
0.258	15.5	53.1
0.260	15.6	53.4
0.262	15.7	53.8
0.263	15.8	54.1
0.265	15.9	54.5
0.267	16.0	54.9
0.268	16.1	55.2
0.270	16.2	55.6
0.272	16.3	55.9
0.273	16.4	56.3
0.275	16.5	56.6
0.277	16.6	57.0

(To be continued)

■ E003IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0299	1.8	7.8	d1-01
High speed	0.179	10.8	57.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0150	0.9	3.3	d1-01
High speed	0.179	10.8	57.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0150m/s or 0.9m/min.

* 2) The upper limit for High speed is 0.179m/s or 10.8m/min.

Speed		Frequency
m/s	m/min	Hz
0.0150	0.9	3.3
0.0167	1.0	3.8
0.0183	1.1	4.3
0.0200	1.2	4.8
0.0217	1.3	5.3
0.0233	1.4	5.8
0.0250	1.5	6.3
0.0267	1.6	6.8
0.0283	1.7	7.3
0.0299	1.8	7.8
0.0317	1.9	8.4
0.0333	2.0	9.0
0.0350	2.1	9.5
0.0367	2.2	10.1
0.0383	2.3	10.7
0.0400	2.4	11.3
0.0417	2.5	11.9
0.0433	2.6	12.4
0.0450	2.7	13.0
0.0467	2.8	13.6
0.0483	2.9	14.2
0.0500	3.0	14.7
0.0517	3.1	15.3
0.0533	3.2	15.9
0.0550	3.3	16.5
0.0567	3.4	17.1
0.0583	3.5	17.6
0.0600	3.6	18.2
0.0617	3.7	18.8
0.0633	3.8	19.4
0.0650	3.9	20.0
0.0667	4.0	20.5
0.0683	4.1	21.1
0.0700	4.2	21.7
0.0717	4.3	22.3
0.0733	4.4	22.9
0.0750	4.5	23.4
0.0767	4.6	24.0
0.0783	4.7	24.6
0.0800	4.8	25.2
0.0817	4.9	25.8
0.0833	5.0	26.3
0.0850	5.1	26.9
0.0867	5.2	27.5
0.0883	5.3	28.1
0.0900	5.4	28.6
0.0917	5.5	29.0
0.0933	5.6	29.6
0.0950	5.7	30.1
0.0967	5.8	30.6

Speed		Frequency
m/s	m/min	Hz
0.0983	5.9	31.1
0.100	6.0	31.7
0.102	6.1	32.2
0.103	6.2	32.7
0.105	6.3	33.3
0.107	6.4	33.8
0.108	6.5	34.3
0.110	6.6	34.8
0.112	6.7	35.4
0.113	6.8	35.9
0.115	6.9	36.4
0.117	7.0	36.9
0.118	7.1	37.5
0.120	7.2	38.0
0.122	7.3	38.5
0.123	7.4	39.1
0.125	7.5	39.6
0.127	7.6	40.1
0.128	7.7	40.6
0.130	7.8	41.2
0.132	7.9	41.7
0.133	8.0	42.2
0.135	8.1	42.7
0.137	8.2	43.3
0.138	8.3	43.8
0.140	8.4	44.3
0.142	8.5	44.9
0.143	8.6	45.4
0.145	8.7	45.9
0.147	8.8	46.4
0.148	8.9	47.0
0.150	9.0	47.5
0.152	9.1	48.0
0.153	9.2	48.6
0.155	9.3	49.1
0.157	9.4	49.6
0.158	9.5	50.1
0.160	9.6	50.7
0.162	9.7	51.2
0.163	9.8	51.7
0.165	9.9	52.2
0.167	10.0	52.8
0.168	10.1	53.3
0.170	10.2	53.8
0.172	10.3	54.4
0.173	10.4	54.9
0.175	10.5	55.4
0.177	10.6	55.9
0.178	10.7	56.5
0.179	10.8	57.0

(To be continued)

■ E003IH-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0435	2.6	7.2	d1-01
High speed	0.261	15.7	54.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0218	1.3	2.5	d1-01
High speed	0.261	15.7	54.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0218m/s or 1.3m/min.

* 2) The upper limit for High speed is 0.261m/s or 15.7m/min.

Speed		Frequency
m/s	m/min	Hz
0.0218	1.3	2.5
0.0233	1.4	2.9
0.0250	1.5	3.2
0.0267	1.6	3.6
0.0283	1.7	3.9
0.0300	1.8	4.3
0.0317	1.9	4.7
0.0333	2.0	5.0
0.0350	2.1	5.4
0.0367	2.2	5.8
0.0383	2.3	6.1
0.0400	2.4	6.5
0.0417	2.5	6.8
0.0435	2.6	7.2
0.0450	2.7	7.6
0.0467	2.8	7.9
0.0483	2.9	8.3
0.0500	3.0	8.6
0.0517	3.1	9.0
0.0533	3.2	9.3
0.0550	3.3	9.7
0.0567	3.4	10.1
0.0583	3.5	10.4
0.0600	3.6	10.8
0.0617	3.7	11.1
0.0633	3.8	11.5
0.0650	3.9	11.8
0.0667	4.0	12.2
0.0683	4.1	12.6
0.0700	4.2	12.9
0.0717	4.3	13.3
0.0733	4.4	13.6
0.0750	4.5	14.0
0.0767	4.6	14.3
0.0783	4.7	14.7
0.0800	4.8	15.1
0.0817	4.9	15.4
0.0833	5.0	15.8
0.0850	5.1	16.1
0.0867	5.2	16.5
0.0883	5.3	16.8
0.0900	5.4	17.2
0.0917	5.5	17.6
0.0933	5.6	17.9
0.0950	5.7	18.3
0.0967	5.8	18.6
0.0983	5.9	19.0
0.100	6.0	19.3
0.102	6.1	19.7
0.103	6.2	20.1
0.105	6.3	20.4
0.107	6.4	20.8

Speed		Frequency
m/s	m/min	Hz
0.108	6.5	21.1
0.110	6.6	21.5
0.112	6.7	21.8
0.113	6.8	22.2
0.115	6.9	22.6
0.117	7.0	22.9
0.118	7.1	23.3
0.120	7.2	23.6
0.122	7.3	24.0
0.123	7.4	24.3
0.125	7.5	24.7
0.127	7.6	25.1
0.128	7.7	25.4
0.130	7.8	25.8
0.132	7.9	26.1
0.133	8.0	26.5
0.135	8.1	26.8
0.137	8.2	27.2
0.138	8.3	27.6
0.140	8.4	27.9
0.142	8.5	28.3
0.143	8.6	28.6
0.145	8.7	29.0
0.147	8.8	29.3
0.148	8.9	29.7
0.150	9.0	30.1
0.152	9.1	30.4
0.153	9.2	30.8
0.155	9.3	31.1
0.157	9.4	31.5
0.158	9.5	31.9
0.160	9.6	32.2
0.162	9.7	32.6
0.163	9.8	32.9
0.165	9.9	33.3
0.167	10.0	33.6
0.168	10.1	34.0
0.170	10.2	34.4
0.172	10.3	34.7
0.173	10.4	35.1
0.175	10.5	35.4
0.177	10.6	35.8
0.178	10.7	36.1
0.180	10.8	36.5
0.182	10.9	36.9
0.183	11.0	37.2
0.185	11.1	37.6
0.187	11.2	37.9
0.188	11.3	38.3
0.190	11.4	38.6
0.192	11.5	39.0
0.193	11.6	39.4

Speed		Frequency
m/s	m/min	Hz
0.195	11.7	39.7
0.197	11.8	40.1
0.198	11.9	40.4
0.200	12.0	40.8
0.202	12.1	41.1
0.203	12.2	41.5
0.205	12.3	41.9
0.207	12.4	42.2
0.208	12.5	42.6
0.210	12.6	42.9
0.212	12.7	43.3
0.213	12.8	43.6
0.215	12.9	44.0
0.217	13.0	44.4
0.218	13.1	44.7
0.220	13.2	45.1
0.222	13.3	45.4
0.223	13.4	45.8
0.225	13.5	46.1
0.227	13.6	46.5
0.228	13.7	46.9
0.230	13.8	47.2
0.232	13.9	47.6
0.233	14.0	47.9
0.235	14.1	48.3
0.237	14.2	48.6
0.238	14.3	49.0
0.240	14.4	49.4
0.242	14.5	49.7
0.243	14.6	50.1
0.245	14.7	50.4
0.247	14.8	50.8
0.248	14.9	51.1
0.250	15.0	51.5
0.252	15.1	51.9
0.253	15.2	52.2
0.255	15.3	52.6
0.257	15.4	52.9
0.258	15.5	53.3
0.260	15.6	53.6
0.261	15.7	54.0

(To be continued)

■ E005IL-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0125	0.8	7.8	d1-01
High speed	0.0750	4.5	57.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0063	0.4	3.3	d1-01
High speed	0.0750	4.5	57.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0063m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0750m/s or 4.5m/min.

Speed		Frequency
m/s	m/min	Hz
0.0063	0.4	3.3
0.0083	0.5	4.4
0.0100	0.6	5.6
0.0117	0.7	6.7
0.0125	0.8	7.8
0.0150	0.9	9.1
0.0167	1.0	10.5
0.0183	1.1	11.8
0.0200	1.2	13.1
0.0217	1.3	14.4
0.0233	1.4	15.8
0.0250	1.5	17.1
0.0267	1.6	18.4
0.0283	1.7	19.8
0.0300	1.8	21.1
0.0317	1.9	22.4
0.0333	2.0	23.8
0.0350	2.1	25.1
0.0367	2.2	26.4
0.0383	2.3	27.7
0.0400	2.4	29.1
0.0417	2.5	30.4

Speed		Frequency
m/s	m/min	Hz
0.0433	2.6	31.7
0.0450	2.7	33.1
0.0467	2.8	34.4
0.0483	2.9	35.7
0.0500	3.0	37.1
0.0517	3.1	38.4
0.0533	3.2	39.7
0.0550	3.3	41.0
0.0567	3.4	42.4
0.0583	3.5	43.7
0.0600	3.6	45.0
0.0617	3.7	46.4
0.0633	3.8	47.7
0.0650	3.9	49.0
0.0667	4.0	50.4
0.0683	4.1	51.7
0.0700	4.2	53.0
0.0717	4.3	54.3
0.0733	4.4	55.7
0.0750	4.5	57.0

■ E005IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0237	1.4	7.2	d1-01
High speed	0.142	8.5	54.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0118	0.7	2.5	d1-01
High speed	0.142	8.5	54.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0118m/s or 0.7m/min.

* 2) The upper limit for High speed is 0.142m/s or 8.5m/min.

Speed		Frequency
m/s	m/min	Hz
0.0118	0.7	2.5
0.0133	0.8	3.2
0.0150	0.9	3.8
0.0167	1.0	4.5
0.0183	1.1	5.2
0.0200	1.2	5.9
0.0217	1.3	6.5
0.0237	1.4	7.2
0.0250	1.5	7.9
0.0267	1.6	8.5
0.0283	1.7	9.2
0.0300	1.8	9.8
0.0317	1.9	10.5
0.0333	2.0	11.2
0.0350	2.1	11.8
0.0367	2.2	12.5
0.0383	2.3	13.1
0.0400	2.4	13.8
0.0417	2.5	14.5
0.0433	2.6	15.1
0.0450	2.7	15.8

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	16.4
0.0483	2.9	17.1
0.0500	3.0	17.7
0.0517	3.1	18.4
0.0533	3.2	19.1
0.0550	3.3	19.7
0.0567	3.4	20.4
0.0583	3.5	21.0
0.0600	3.6	21.7
0.0617	3.7	22.4
0.0633	3.8	23.0
0.0650	3.9	23.7
0.0667	4.0	24.3
0.0683	4.1	25.0
0.0700	4.2	25.7
0.0717	4.3	26.3
0.0733	4.4	27.0
0.0750	4.5	27.6
0.0767	4.6	28.3
0.0783	4.7	29.0
0.0800	4.8	29.6

Speed		Frequency
m/s	m/min	Hz
0.0817	4.9	30.3
0.0833	5.0	30.9
0.0850	5.1	31.6
0.0867	5.2	32.2
0.0883	5.3	32.9
0.0900	5.4	33.6
0.0917	5.5	34.2
0.0933	5.6	34.9
0.0950	5.7	35.5
0.0967	5.8	36.2
0.0983	5.9	36.9
0.100	6.0	37.5
0.102	6.1	38.2
0.103	6.2	38.8
0.105	6.3	39.5
0.107	6.4	40.2
0.108	6.5	40.8
0.110	6.6	41.5
0.112	6.7	42.1
0.113	6.8	42.8
0.115	6.9	43.5

Speed		Frequency
m/s	m/min	Hz
0.117	7.0	44.1
0.118	7.1	44.8
0.120	7.2	45.4
0.122	7.3	46.1
0.123	7.4	46.7
0.125	7.5	47.4
0.127	7.6	48.1
0.128	7.7	48.7
0.130	7.8	49.4
0.132	7.9	50.0
0.133	8.0	50.7
0.135	8.1	51.4
0.137	8.2	52.0
0.138	8.3	52.7
0.140	8.4	53.3
0.142	8.5	54.0

(To be continued)

■ E010IL-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0115	0.7	7.2	d1-01
High speed	0.0693	4.2	54.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0058	0.3	2.5	d1-01
High speed	0.0693	4.2	54.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0058m/s or 0.3m/min.

* 2) The upper limit for High speed is 0.0693m/s or 4.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0058	0.3	2.5
0.0067	0.4	3.7
0.0083	0.5	4.9
0.0100	0.6	6.0
0.0115	0.7	7.2
0.0133	0.8	8.5
0.0150	0.9	9.9
0.0167	1.0	11.2
0.0183	1.1	12.5
0.0200	1.2	13.9
0.0217	1.3	15.2
0.0233	1.4	16.6
0.0250	1.5	17.9
0.0267	1.6	19.2
0.0283	1.7	20.6
0.0300	1.8	21.9
0.0317	1.9	23.2
0.0333	2.0	24.6
0.0350	2.1	25.9
0.0367	2.2	27.3
0.0383	2.3	28.6
0.0400	2.4	29.9

Speed		Frequency
m/s	m/min	Hz
0.0417	2.5	31.3
0.0433	2.6	32.6
0.0450	2.7	33.9
0.0467	2.8	35.3
0.0483	2.9	36.6
0.0500	3.0	38.0
0.0517	3.1	39.3
0.0534	3.2	40.6
0.0550	3.3	42.0
0.0567	3.4	43.3
0.0583	3.5	44.6
0.0600	3.6	46.0
0.0617	3.7	47.3
0.0633	3.8	48.7
0.0650	3.9	50.0
0.0667	4.0	51.3
0.0683	4.1	52.7
0.0693	4.2	54.0

■ E010IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0228	1.4	7.5	d1-01
High speed	0.137	8.2	53.5	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0114	0.7	3.0	d1-01
High speed	0.137	8.2	53.5	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0114m/s or 0.7m/min.

* 2) The upper limit for High speed is 0.137m/s or 8.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0114	0.7	3.0
0.0133	0.8	3.6
0.0150	0.9	4.3
0.0167	1.0	4.9
0.0183	1.1	5.6
0.0200	1.2	6.2
0.0217	1.3	6.9
0.0228	1.4	7.5
0.0250	1.5	8.2
0.0267	1.6	8.9
0.0283	1.7	9.5
0.0300	1.8	10.2
0.0317	1.9	10.9
0.0333	2.0	11.6
0.0350	2.1	12.2
0.0367	2.2	12.9
0.0383	2.3	13.6
0.0400	2.4	14.3
0.0417	2.5	14.9
0.0433	2.6	15.6
0.0450	2.7	16.3

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	17.0
0.0483	2.9	17.6
0.0500	3.0	18.3
0.0517	3.1	19.0
0.0533	3.2	19.7
0.0550	3.3	20.4
0.0567	3.4	21.0
0.0583	3.5	21.7
0.0600	3.6	22.4
0.0617	3.7	23.1
0.0633	3.8	23.7
0.0650	3.9	24.4
0.0667	4.0	25.1
0.0683	4.1	25.8
0.0700	4.2	26.4
0.0717	4.3	27.1
0.0733	4.4	27.8
0.0750	4.5	28.5
0.0767	4.6	29.1
0.0783	4.7	29.8
0.0800	4.8	30.5

Speed		Frequency
m/s	m/min	Hz
0.0817	4.9	31.2
0.0833	5.0	31.9
0.0850	5.1	32.5
0.0867	5.2	33.2
0.0883	5.3	33.9
0.0900	5.4	34.6
0.0917	5.5	35.2
0.0933	5.6	35.9
0.0950	5.7	36.6
0.0967	5.8	37.3
0.0983	5.9	37.9
0.100	6.0	38.6
0.102	6.1	39.3
0.103	6.2	40.0
0.105	6.3	40.6
0.107	6.4	41.3
0.108	6.5	42.0
0.110	6.6	42.7
0.112	6.7	43.4
0.113	6.8	44.0
0.115	6.9	44.7

Speed		Frequency
m/s	m/min	Hz
0.117	7.0	45.4
0.118	7.1	46.1
0.120	7.2	46.7
0.122	7.3	47.4
0.123	7.4	48.1
0.125	7.5	48.8
0.127	7.6	49.4
0.128	7.7	50.1
0.130	7.8	50.8
0.132	7.9	51.5
0.133	8.0	52.1
0.135	8.1	52.8
0.137	8.2	53.5

(To be continued)

■ E015IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0146	0.9	7.5	d1-01
High speed	0.0877	5.3	53.5	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0073	0.4	3.0	d1-01
High speed	0.0877	5.3	53.5	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0073m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0877m/s or 5.3m/min.

Speed		Frequency
m/s	m/min	Hz
0.0073	0.4	3.0
0.0083	0.5	3.9
0.0100	0.6	4.8
0.0117	0.7	5.7
0.0133	0.8	6.6
0.0146	0.9	7.5
0.0167	1.0	8.5
0.0183	1.1	9.6
0.0200	1.2	10.6
0.0217	1.3	11.7
0.0233	1.4	12.7
0.0250	1.5	13.8
0.0267	1.6	14.8
0.0283	1.7	15.9
0.0300	1.8	16.9
0.0317	1.9	18.0
0.0333	2.0	19.0
0.0350	2.1	20.0
0.0367	2.2	21.1
0.0383	2.3	22.1
0.0400	2.4	23.2
0.0417	2.5	24.2

Speed		Frequency
m/s	m/min	Hz
0.0433	2.6	25.3
0.0450	2.7	26.3
0.0467	2.8	27.4
0.0483	2.9	28.4
0.0500	3.0	29.5
0.0517	3.1	30.5
0.0533	3.2	31.5
0.0550	3.3	32.6
0.0567	3.4	33.6
0.0583	3.5	34.7
0.0600	3.6	35.7
0.0617	3.7	36.8
0.0633	3.8	37.8
0.0650	3.9	38.9
0.0667	4.0	39.9
0.0683	4.1	41.0
0.0700	4.2	42.0
0.0717	4.3	43.0
0.0733	4.4	44.1
0.0750	4.5	45.1
0.0767	4.6	46.2
0.0783	4.7	47.2

Speed		Frequency
m/s	m/min	Hz
0.0800	4.8	48.3
0.0817	4.9	49.3
0.0833	5.0	50.4
0.0850	5.1	51.4
0.0867	5.2	52.5
0.0877	5.3	53.5

■ E020IC-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0058	0.3	7.2	d1-01
High speed	0.0346	2.1	54.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0029	0.2	2.5	d1-01
High speed	0.0346	2.1	54.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0029m/s or 0.2m/min.

* 2) The upper limit for High speed is 0.0346m/s or 0.3m/min.

Speed		Frequency
m/s	m/min	Hz
0.0029	0.2	2.5
0.0058	0.3	7.2
0.0067	0.4	9.8
0.0083	0.5	12.4
0.0100	0.6	15.0
0.0117	0.7	17.6
0.0133	0.8	20.2
0.0150	0.9	22.8
0.0167	1.0	25.4
0.0183	1.1	28.0

Speed		Frequency
m/s	m/min	Hz
0.0200	1.2	30.6
0.0217	1.3	33.2
0.0233	1.4	35.8
0.0250	1.5	38.4
0.0267	1.6	41.0
0.0283	1.7	43.6
0.0300	1.8	46.2
0.0317	1.9	48.8
0.0333	2.0	51.4
0.0346	2.1	54.0

(To be continued)

■ E020IL-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0119	0.7	7.5	d1-01
High speed	0.0714	4.3	53.5	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0060	0.4	3.0	d1-01
High speed	0.0714	4.3	53.5	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0060m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0714m/s or 4.3m/min.

Speed		Frequency
m/s	m/min	Hz
0.0060	0.4	3.0
0.0083	0.5	4.5
0.0100	0.6	6.0
0.0119	0.7	7.5
0.0133	0.8	8.8
0.0150	0.9	10.1
0.0167	1.0	11.3
0.0183	1.1	12.6
0.0200	1.2	13.9
0.0217	1.3	15.2
0.0233	1.4	16.4
0.0250	1.5	17.7
0.0267	1.6	19.0
0.0283	1.7	20.3
0.0300	1.8	21.6
0.0317	1.9	22.8
0.0333	2.0	24.1
0.0350	2.1	25.4
0.0367	2.2	26.7
0.0383	2.3	27.9
0.0400	2.4	29.2
0.0417	2.5	30.5

Speed		Frequency
m/s	m/min	Hz
0.0433	2.6	31.8
0.0450	2.7	33.1
0.0467	2.8	34.3
0.0483	2.9	35.6
0.0500	3.0	36.9
0.0517	3.1	38.2
0.0533	3.2	39.4
0.0550	3.3	40.7
0.0567	3.4	42.0
0.0583	3.5	43.3
0.0600	3.6	44.6
0.0617	3.7	45.8
0.0633	3.8	47.1
0.0650	3.9	48.4
0.0667	4.0	49.7
0.0683	4.1	50.9
0.0700	4.2	52.2
0.0714	4.3	53.5

■ E020IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0226	1.4	7.7	d1-01
High speed	0.136	8.2	55.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0113	0.7	3.0	d1-01
High speed	0.136	8.2	55.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0113m/s or 0.7m/min.

* 2) The upper limit for High speed is 0.136m/s or 8.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0113	0.7	3.0
0.0133	0.8	3.7
0.0150	0.9	4.3
0.0167	1.0	5.0
0.0183	1.1	5.7
0.0200	1.2	6.4
0.0217	1.3	7.0
0.0226	1.4	7.7
0.0250	1.5	8.4
0.0267	1.6	9.1
0.0283	1.7	9.8
0.0300	1.8	10.5
0.0317	1.9	11.2
0.0333	2.0	11.9
0.0350	2.1	12.6
0.0367	2.2	13.3
0.0383	2.3	14.0
0.0400	2.4	14.7
0.0417	2.5	15.4
0.0433	2.6	16.0
0.0450	2.7	16.7

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	17.4
0.0483	2.9	18.1
0.0500	3.0	18.8
0.0517	3.1	19.5
0.0533	3.2	20.2
0.0550	3.3	20.9
0.0567	3.4	21.6
0.0583	3.5	22.3
0.0600	3.6	23.0
0.0617	3.7	23.7
0.0633	3.8	24.4
0.0650	3.9	25.1
0.0667	4.0	25.8
0.0683	4.1	26.5
0.0700	4.2	27.2
0.0717	4.3	27.9
0.0733	4.4	28.6
0.0750	4.5	29.3
0.0767	4.6	30.0
0.0783	4.7	30.7
0.0800	4.8	31.4

Speed		Frequency
m/s	m/min	Hz
0.0817	4.9	32.0
0.0833	5.0	32.7
0.0850	5.1	33.4
0.0867	5.2	34.1
0.0883	5.3	34.8
0.0900	5.4	35.5
0.0917	5.5	36.2
0.0933	5.6	36.9
0.0950	5.7	37.6
0.0967	5.8	38.3
0.0983	5.9	39.0
0.100	6.0	39.7
0.102	6.1	40.4
0.103	6.2	41.1
0.105	6.3	41.8
0.107	6.4	42.5
0.108	6.5	43.2
0.110	6.6	43.9
0.112	6.7	44.6
0.113	6.8	45.3
0.115	6.9	46.0

Speed		Frequency
m/s	m/min	Hz
0.117	7.0	46.7
0.118	7.1	47.3
0.120	7.2	48.0
0.122	7.3	48.7
0.123	7.4	49.4
0.125	7.5	50.1
0.127	7.6	50.8
0.128	7.7	51.5
0.130	7.8	52.2
0.132	7.9	52.9
0.133	8.0	53.6
0.135	8.1	54.3
0.136	8.2	55.0

(To be continued)

■ E025IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0184	1.1	7.7	d1-01
High speed	0.111	6.6	55.0	d1-02

- **Maximum ratio of high speed to low speed - 12 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0092	0.6	3.0	d1-01
High speed	0.111	6.6	55.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0092m/s or 0.6m/min.

* 2) The upper limit for High speed is 0.111m/s or 6.6m/min.

Speed		Frequency
m/s	m/min	Hz
0.0092	0.6	3.0
0.0117	0.7	3.9
0.0133	0.8	4.9
0.0150	0.9	5.8
0.0167	1.0	6.8
0.0184	1.1	7.7
0.0200	1.2	8.6
0.0217	1.3	9.4
0.0233	1.4	10.3
0.0250	1.5	11.1
0.0267	1.6	12.0
0.0283	1.7	12.9
0.0300	1.8	13.7
0.0317	1.9	14.6
0.0333	2.0	15.4
0.0350	2.1	16.3
0.0367	2.2	17.2
0.0383	2.3	18.0
0.0400	2.4	18.9
0.0417	2.5	19.7
0.0433	2.6	20.6
0.0450	2.7	21.5

Speed		Frequency
m/s	m/min	Hz
0.0467	2.8	22.3
0.0483	2.9	23.2
0.0500	3.0	24.0
0.0517	3.1	24.9
0.0533	3.2	25.8
0.0550	3.3	26.6
0.0567	3.4	27.5
0.0583	3.5	28.3
0.0600	3.6	29.2
0.0617	3.7	30.1
0.0633	3.8	30.9
0.0650	3.9	31.8
0.0667	4.0	32.6
0.0683	4.1	33.5
0.0700	4.2	34.4
0.0717	4.3	35.2
0.0733	4.4	36.1
0.0750	4.5	36.9
0.0767	4.6	37.8
0.0783	4.7	38.7
0.0800	4.8	39.5
0.0817	4.9	40.4

Speed		Frequency
m/s	m/min	Hz
0.0833	5.0	41.2
0.0850	5.1	42.1
0.0867	5.2	43.0
0.0883	5.3	43.8
0.0900	5.4	44.7
0.0917	5.5	45.5
0.0933	5.6	46.4
0.0950	5.7	47.3
0.0967	5.8	48.1
0.0983	5.9	49.0
0.100	6.0	49.8
0.102	6.1	50.7
0.103	6.2	51.6
0.105	6.3	52.4
0.107	6.4	53.3
0.108	6.5	54.1
0.111	6.6	55.0

■ E030IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0143	0.9	7.7	d1-01
High speed	0.0861	5.2	55.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0072	0.4	3.0	d1-01
High speed	0.0861	5.2	55.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0072m/s or 0.4m/min.

* 2) The upper limit for High speed is 0.0861m/s or 5.2m/min.

Speed		Frequency
m/s	m/min	Hz
0.0072	0.4	3.0
0.0083	0.5	3.9
0.0100	0.6	4.9
0.0117	0.7	5.8
0.0133	0.8	6.8
0.0143	0.9	7.7
0.0167	1.0	8.8
0.0183	1.1	9.9
0.0200	1.2	11.0
0.0217	1.3	12.1
0.0233	1.4	13.2
0.0250	1.5	14.3
0.0267	1.6	15.4
0.0283	1.7	16.5
0.0300	1.8	17.6
0.0317	1.9	18.7
0.0333	2.0	19.8
0.0350	2.1	20.9
0.0367	2.2	22.0
0.0383	2.3	23.1
0.0400	2.4	24.2
0.0417	2.5	25.3

Speed		Frequency
m/s	m/min	Hz
0.0433	2.6	26.4
0.0450	2.7	27.5
0.0467	2.8	28.6
0.0483	2.9	29.7
0.0500	3.0	30.8
0.0517	3.1	31.9
0.0533	3.2	33.0
0.0550	3.3	34.1
0.0567	3.4	35.2
0.0583	3.5	36.3
0.0600	3.6	37.4
0.0617	3.7	38.5
0.0633	3.8	39.6
0.0650	3.9	40.7
0.0667	4.0	41.8
0.0683	4.1	42.9
0.0700	4.2	44.0
0.0717	4.3	45.1
0.0733	4.4	46.2
0.0750	4.5	47.3
0.0767	4.6	48.4
0.0783	4.7	49.5

Speed		Frequency
m/s	m/min	Hz
0.0800	4.8	50.6
0.0817	4.9	51.7
0.0833	5.0	52.8
0.0850	5.1	53.9
0.0861	5.2	55.0

(To be continued)

■ E050IS-MFC (friction clutch with mechanical brake)

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- Standard ratio of high speed to low speed - 6 : 1

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0092	0.6	7.7	d1-01
High speed	0.0553	3.3	55.0	d1-02

- Maximum ratio of high speed to low speed - 12 : 1

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0046	0.3	3.0	d1-01
High speed	0.0553	3.3	55.0	d1-02

- Desired ratio

Select a low speed or high speed from the table below. The setting frequency is the frequency corresponding to the speed in the table. Set the parameter d1-02 to a frequency higher than d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0046m/s or 0.3m/min.

* 2) The upper limit for High speed is 0.0553m/s or 3.3m/min.

Speed		Frequency
m/s	m/min	Hz
0.0046	0.3	3.0
0.0067	0.4	4.6
0.0083	0.5	6.1
0.0092	0.6	7.7
0.0117	0.7	9.5
0.0133	0.8	11.2
0.0150	0.9	13.0
0.0167	1.0	14.7
0.0183	1.1	16.5
0.0200	1.2	18.2
0.0217	1.3	20.0
0.0233	1.4	21.7
0.0250	1.5	23.5
0.0267	1.6	25.2
0.0283	1.7	27.0
0.0300	1.8	28.7
0.0317	1.9	30.5
0.0333	2.0	32.2
0.0350	2.1	34.0
0.0367	2.2	35.7
0.0383	2.3	37.5
0.0400	2.4	39.2

Speed		Frequency
m/s	m/min	Hz
0.0417	2.5	41.0
0.0433	2.6	42.7
0.0450	2.7	44.5
0.0467	2.8	46.2
0.0483	2.9	48.0
0.0500	3.0	49.7
0.0517	3.1	51.5
0.0533	3.2	53.2
0.0553	3.3	55.0

■ M010IS

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0667	4.0	11.0	d1-01
High speed	0.400	24.0	63.0	d1-02

- **Maximum ratio of high speed to low speed - 10 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0400	2.4	6.7	d1-01
High speed	0.400	24.0	63.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0400m/s or 2.4m/min.

* 2) The upper limit for High speed is 0.400m/s or 24.0m/min.

Speed		Frequency
m/s	m/min	Hz
0.0400	2.4	6.7
0.0417	2.5	6.9
0.0433	2.6	7.2
0.0450	2.7	7.4
0.0467	2.8	7.7
0.0483	2.9	8.0
0.0500	3.0	8.2
0.0517	3.1	8.5
0.0533	3.2	8.7
0.0550	3.3	9.0
0.0567	3.4	9.3
0.0583	3.5	9.5
0.0600	3.6	9.8
0.0617	3.7	10.0
0.0633	3.8	10.3
0.0650	3.9	10.6
0.0667	4.0	11.0
0.0833	5.0	13.4
0.100	6.0	16.0
0.117	7.0	18.6
0.133	8.0	21.2
0.150	9.0	23.8
0.167	10.0	26.4

Speed		Frequency
m/s	m/min	Hz
0.183	11.0	29.0
0.200	12.0	31.6
0.217	13.0	34.3
0.233	14.0	36.9
0.250	15.0	39.5
0.267	16.0	42.1
0.283	17.0	44.7
0.300	18.0	47.3
0.317	19.0	49.9
0.333	20.0	52.5
0.350	21.0	55.1
0.367	22.0	57.7
0.383	23.0	60.3
0.400	24.0	63.0

(To be continued)

■ M050IS

Set a frequency in the table below to the parameter number as shown in the column of Parameter No. The standard speed ratio of high speed to low speed is preset to 6:1 in the KITO factory, which is adjustable.

- **Standard ratio of high speed to low speed - 6 : 1**

Item	Preset speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0667	4.0	11.0	d1-01
High speed	0.400	24.0	63.0	d1-02

- **Maximum ratio of high speed to low speed - 10 : 1**

Item	Speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	0.0400	2.4	6.7	d1-01
High speed	0.400	24.0	63.0	d1-02

- **Desired ratio**

Select a low speed or high speed from the table below and find a frequency to be set corresponding to the speed in the table. The value of d1-02 needs to be higher than that of d1-01.

Item	Desired speed		Frequency	Parameter No.
	m/s	m/min	Hz	
Low speed	Low speed (*1)	Low speed (*1)	Select from the table	d1-01
High speed	High speed (*2)	High speed (*2)	Select from the table	d1-02

* 1) The lower limit for Low speed is 0.0400m/s or 2.4m/min.

* 2) The upper limit for High speed is 0.400m/s or 24.0m/min.

Speed		Frequency
m/s	m/min	Hz
0.0400	2.4	6.7
0.0417	2.5	6.9
0.0433	2.6	7.2
0.0450	2.7	7.4
0.0467	2.8	7.7
0.0483	2.9	8.0
0.0500	3.0	8.2
0.0517	3.1	8.5
0.0533	3.2	8.7
0.0550	3.3	9.0
0.0567	3.4	9.3
0.0583	3.5	9.5
0.0600	3.6	9.8
0.0617	3.7	10.0
0.0633	3.8	10.3
0.0650	3.9	10.6
0.0667	4.0	11.0
0.0833	5.0	13.4
0.100	6.0	16.0
0.117	7.0	18.6
0.133	8.0	21.2
0.150	9.0	23.8
0.167	10.0	26.4

Speed		Frequency
m/s	m/min	Hz
0.183	11.0	29.0
0.200	12.0	31.6
0.217	13.0	34.3
0.233	14.0	36.9
0.250	15.0	39.5
0.267	16.0	42.1
0.283	17.0	44.7
0.300	18.0	47.3
0.317	19.0	49.9
0.333	20.0	52.5
0.350	21.0	55.1
0.367	22.0	57.7
0.383	23.0	60.3
0.400	24.0	63.0

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