FB100 Parameter List

IMR01W14-E3

■ SV setting & Monitor mode

Symbol	Name	The display or data ranges	Factory set value
—	Measured value (PV)/ Set value (SV) monitor	PV display: PV is displayed. [2] Input scale low to Input scale high SV display: The target value for control is displayed. • Set Value (SV) [2] • Remote setting (RS) input value [2] • Manual manipulated output value	—
SV	Set value (SV) [1, 2]	Setting limiter low to Setting limiter high The target value for control can be set.	0
CT1	Current transformer 1 (CT1) input value monitor	0.0 to 30.0 A or 0.0 to 100.0 A Displayed only when the CT1 input is provided.	—
CT2	Current transformer 2 (CT2) input value monitor	0.0 to 30.0 A or 0.0 to 100.0 A Displayed only when the CT2 input is provided.	—
SVr	Remote setting (RS) input value monitor [2]	Setting limiter low to Setting limiter high Displayed only when the Remote setting (RS) input is provided.	—
EVn1	Event monitor 1	0 0 0 0 ← SV display Event 1 (EV1) Event 2 (EV2) Event 3 (EV3) Event 4 (EV4) It is possible to check the type of created event depending on which digit was lit. Displayed when the event action is selected for any one of the Event types from 1 to 4.	—
EVn2	Event monitor 2	0 0 ← SV display Heater break alarm 1 (HBA1) Heater break alarm 2 (HBA2) It is possible to check the type of HBA which occurred depending on which digit was lit. Display when the CT1 or CT2 input is provided. This screen is not displayed when set the CT assignment to "0: None."	—
nW	Manipulated output value (MV1) monitor [heat-side] [3]	PID control or Heat/Cool PID control: MV1 is displayed. (–5.0 to +105.0 %) Position proportioning PID control: When the control motor with Feedback resistance (FBR) is used: FBR input value is displayed. (0.0 to 100.0 %)	—
nW2	Manipulated output value (MV2) monitor [cool-side]	–5.0 to +105.0 % MV2 of cool-side is displayed when the control action is Heat/Cool PID control.	—
APr	Memory area soak time monitor [4]	0 minutes 00 seconds to 199 minutes 59 seconds or 0 hours 00 minutes to 99 hours 59 minutes Memory area soak time is displayed when the Ramp/Soak control is being executed.	—
ArE	Memory area transfer	1 to 8 When "EXT: External mode" is selected at Control area Local/External transfer, "*d I*" is shown on the SV display and memory area is not changeable from the front panel in the meantime.	1
PSn'	Manipulated output value at MV transfer	PID control: Output limiter low (MV1) to Output limiter high (MV1) Heat/Cool PID control: –Output limiter high (MV2) to +Output limiter high (MV1) For overlap: –105.0 to +105.0 % * * Actual output value is limited by the output limiter function. When in Auto mode, Manipulated output values (MV1 and MV2) can be manually changed. This screen is not displayed when the MV transfer function is set to "0."	0.0
ILr	Interlock release	on: Interlock oFF: Interlock release Not displayed when Event 1, 2, 3 or 4 interlock function is not used.	oFF

[1] Parameters related to Multi-memory area function
[2] Varies with the setting of the Decimal point position
[3] MV1 of heat-side is not displayed when the control action is Position proportioning control and the input of feedback resistance (FBR) is not used.
[4] Not displayed when "Digital input (DI) assignment" (Engineering mode) is somewhere between 6 and 12.

■ Operation mode

Symbol	Name	Data range	Factory set value
ArU	PID/AT transfer	on: Autotuning (AT) oFF: PID control	oFF
SrU	Startup tuning (ST)	on1: Execute one * on2: Execute always oFF: ST unused * When the Startup tuning is finished, the setting will automatically returns to "oFF: ST unused." The Startup tuning function (ST) is executed when the power is turned on; when transferred from STOP to RUN; or when the Set value (SV) is changed. This screen is not displayed when the control action is Position proportioning PID control.	oFF
CHr	Automatic temperature rise learning	on: Learning * oFF: Unused * When the Automatic temperature rise learning is finished, the setting will automatically returns to "oFF: Unused." This screen is not displayed when the Automatic temperature rise group is set to "0."	on
A-n	Auto/Manual transfer	AUTo: Auto mode MAn: Manual mode	AUTo
r-L	Remote/Local transfer	LoC: Local mode rEM: Remote mode Displayed only when the Remote setting (RS) input or Communication is provided.	LoC
L-E	Control area Local/External transfer [1]	LoC: Local mode EXT: External mode	LoC
r-S	RUN/STOP transfer	rUn: RUN mode (Control start) SToP: STOP mode (Control stop)	rUn

[1] Displayed only when "Digital input (DI) assignment" (Engineering mode) is somewhere between 6 and 12.

■ Parameter setting mode

Symbol	Name	Data range	Factory set value
EV1	Event 1 set value (EV1) [1]	Deviation: –Input span to +Input span [2] Process and set value: Input scale low to Input scale high [2] Manipulated output value (MV1 or MV2): –5.0 to +105.0 % Not displayed when Event function is not used. EV4 is not displayed when the Event 4 is used as an LBA.	50
EV2	Event 2 set value (EV2) [1]		50
EV3	Event 3 set value (EV3) [1]		50
EV4	Event 4 set value (EV4) [1]		50
LbA	Control loop break alarm (LBA) time [1]	1 to 7200 seconds, oFF: Unused This screen is displayed when the Event 4 is used as an LBA.	480
Lbd	LBA deadband [1, 2]	0 to Input span This screen is displayed when the Event 4 is used as an LBA.	0
P	Proportional band [1] [heat-side]	TC/RTD inputs: 0 (0.0, 0.00) to Input span [2] (Unit: °C [°F]) Voltage (V)/Current (I) inputs: 0.0 to 1000.0 % of Input span 0 (0.0, 0.00): ON/OFF action	30 [a]
I	Integral time [1, 3] [heat-side]	PID control or Heat/Cool PID control: 1 to 3600 seconds or 0.1 to 1999.9 seconds oFF: PD action (both heat-side and cool-side) Position proportioning PID control: 1 to 3600 seconds or 0.1 to 1999.9 seconds	240
d	Derivative time [1, 3] [heat-side]	1 to 3600 seconds or 0.1 to 1999.9 seconds oFF: PI action	60
rPr	Control response parameter [1]	0: Slow 1: Medium 2: Fast [When the P or PD action is selected, this setting becomes invalid.]	Note 1
Pc	Proportional band [1, 4] [cool-side]	TC/RTD inputs: 1 (0.1, 0.01) to Input span [2] (Unit: °C [°F]) Voltage (V)/Current (I) inputs: 0.1 to 1000.0 % of Input span	30 [a]
Ic	Integral time [1, 3, 4] [cool-side]	1 to 3600 seconds or 0.1 to 1999.9 seconds oFF: PD action (both heat-side and cool-side)	240
dc	Derivative time [1, 3, 4] [cool-side]	1 to 3600 seconds or 0.1 to 1999.9 seconds oFF: PI action	60
db	Overlap/Deadband [1, 4]	TC/RTD inputs: –Input span to +Input span [2] (Unit: °C [°F]) Voltage (V)/Current (I) inputs: –100.0 to +100.0 % of Input span Minus (–) setting results in Overlap. However, the overlapping range is within the proportional range.	0 [a]
Mnr	Manual reset [1]	–100.0 to +100.0 % The offset can be manually eliminated. The screen is displayed when the Integral time [heat-side] or Integral time [cool-side] is set to "oFF."	0.0
SHrU	Setting change rate limiter (up) [1, 2]	1 to Input span/unit time * oFF: Unused * Unit time (factory set value): 60 seconds	oFF
SHrd	Setting change rate limiter (down) [1, 2]		oFF
ASr	Area soak time [1, 5]	0 minutes 00 seconds to 199 minutes 59 seconds or 0 hours 00 minutes to 99 hours 59 minutes Any Area soak time is set when Ramp/Soak control is performed. Data range of Area soak time can be selected on the Soak time unit.	0:00
LnKA	Link area number [1, 5]	1 to 8 oFF: No link It is possible to perform Ramp/Soak control by linking each memory area. The memory area at the linked destination at that time is set.	oFF

[1] Parameters related to Multi-memory area function
[2] Data range varies depending on the Decimal point position
[3] Data range varies depending on the Integral/ Derivative decimal point position
[4] This screen is displayed when the control action is Heat/Cool PID control.
[5] Not displayed when "Digital input (DI) assignment" (Engineering mode) is somewhere between 6 and 12.
[a] Factory set value varies depending on the instrument specification.
Note 1: PID control, Position proportioning PID control (0) Heat/Cool PID control (2)

■ Setup setting mode

Symbol	Name	Data range	Factory set value
HbA1	Heater break alarm 1 (HBA1) set value [a, b]	When CT is CTL-6-P-N: 0.1 to 30.0 A oFF: Not used When CT is CTL-12-S56-10L-N: 0.1 to 100.0 A oFF: Not used	oFF
HbL1	Heater break determination point 1 [a, b, c]	0.1 to 100.0 % of HBA1 set value oFF: Heater break determination is invalid	30.0
HbH1	Heater melting determination point 1 [a, b, c]	0.1 to 100.0 % of HBA1 set value oFF: Heater melting determination is invalid	30.0
HbA2	Heater break alarm 2 (HBA2) set value [d, e]	When CT is CTL-6-P-N: 0.1 to 30.0 A oFF: Not used When CT is CTL-12-S56-10L-N: 0.1 to 100.0 A oFF: Not used	oFF
HbL2	Heater break determination point 2 [d, e, f]	0.1 to 100.0 % of HBA2 set value oFF: Heater break determination is invalid	30.0
HbH2	Heater melting determination point 2 [d, e, f]	0.1 to 100.0 % of HBA2 set value oFF: Heater melting determination is invalid	30.0

[a] Displayed when the CT1 is provided.
[b] This screen is not displayed when set the CT1 assignment to "0: None."
[c] Displayed when the HBA1 type is type B.
[d] Displayed when the CT2 is provided.
[e] This screen is not displayed when set the CT2 assignment to "0: None."
[f] Displayed when the HBA2 type is type B.

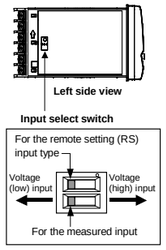
Symbol	Name	Data range	Factory set value
Pb	PV bias [1]	–Input span to +Input span	0
dF	PV digital filter	0.1 to 100.0 seconds oFF: Unused	oFF
Pr	PV ratio	0.500 to 1.500	1.000
PLC	PV low input cut-off	0.00 to 25.00 % of input span This screen is displayed when the Square root extraction is set to "1: Used."	0.00
rb	RS bias [1, a]	–Input span to +Input span	0
dF2	RS digital filter [a]	0.1 to 100.0 seconds oFF: Unused	oFF
rr	RS ratio [a]	0.001 to 9.999	1.000
r	Proportional cycle time [heat-side]	0.1 to 100.0 seconds This screen is not displayed when the output type is Voltage/Current output.	20.0 [b]
t	Proportional cycle time [cool-side]	0.1 to 100.0 seconds Displayed only when the control action is Heat/Cool PID control. This screen is not displayed when the output type is Voltage/Current output.	20.0 [b]
Add1	Device address 1 [c]	0 to 99 Do not use the same device address for more than one controller in multi-drop connection. In Modbus communication, two-way communication is not possible when the address is 0.	0
bPS1	Communication speed 1 [c, d]	2.4: 2400 bps 4.8: 4800 bps 9.6: 9600 bps 19.2: 19200 bps 38.4: 38400 bps	19.2
bIT1	Data bit configuration 1 [c, d]	Bit configuration: Data / Stop / Parity 8n1: 8 / 1 / Without 8n2: 8 / 2 / Without 8E1: 8 / 1 / Even 8E2: 8 / 2 / Even 8o1: 8 / 1 / Odd 8o2: 8 / 2 / Odd 7n1 *: 7 / 1 / Without 7n2 *: 7 / 2 / Without 7E1 *: 7 / 1 / Even 7E2 *: 7 / 2 / Even 7o1 *: 7 / 1 / Odd 7o2 *: 7 / 2 / Odd * When the Modbus communication protocol selected, this setting becomes invalid.	8n1
Int1	Interval time 1 [c, d]	0 to 250 ms	10
Add2	Device address 2 [e]	Same as the Device address 1	
bPS2	Communication speed 2 [d, e]	Same as the Communication speed 1	
bIT2	Data bit configuration 2 [d, e]	Same as the Data bit configuration 1	
Int2	Interval time 2 [d, e]	Same as the Interval time 1	
LCK	Set lock level	0: Unlock 1: Lock Set to "0" or "1" for each digit. 0 0 0 0 ← SV display Parameters other than Set value (SV) and Event set value (EV1 to EV4). Event set value (EV1 to EV4) Set value (SV) "0" fixed (Cannot be changed)	0000

[1] Varies with the setting of the Decimal point position
[a] Displayed only when the Remote setting (RS) input or Communication is provided.
[b] Factory set value varies depending on the instrument specification.
[c] Displayed only when the Communication 1 is provided.
[d] This screen is not displayed when the Intercontroller communication function is selected.
[e] Displayed only when the Communication 2 is provided.

■ Engineering mode

Parameters in Engineering mode are settable only when the controller is in STOP mode. However, it is possible to check only the data even in RUN mode.
In addition, there are invalid parameters when no optional function is specified.

Symbol	Name	Data range	Factory set value
F10.	Function block 10	This is first parameter symbol of Function block 10.	
SPCH	STOP display	0: "SToP" is displayed on the PV display. 1: "SToP" is displayed on the SV display.	1
dE	Bar graph display	0: No display 4: Deviation value 1: MV 5: CT1 input value 2: PV 6: CT2 input value 3: SV monitor	1
dEUr	Bar graph display resolution	1 to 100 digit/dot The resolution can be changed when the Bar graph display (dE) was set to deviation value or CT input value.	100
dSoP	PV flashing display at input error	0: Flashing display 1: Non-flashing display	0
F11.	Function block 11	This is first parameter symbol of Function block 11.	
Fn1	Direct key selection	0: Unused 1: Used	1
Fn	Direct key type	1: Auto/Manual transfer 2: Monitor 3: Memory area transfer 4: Remote/Local transfer 5: RUN/STOP transfer	1

Symbol	Name	Data range	Factory set value
F21.	Function block 21	This is first parameter symbol of Function block 21.	
InP	Input type When the input type is changed to the Voltage (low) or Voltage (high) input, it is necessary to transfer the input select switch.  	0: TC input K 1: TC input J 2: TC input R 3: TC input S 4: TC input B 5: TC input E 6: TC input N 7: TC input T 8: TC input W5Re/W26Re 9: TC input PLII 10: TC input U 11: TC input L 12: RTD input Pt100 13: RTD input JPt100 14: Current input 0 to 20 mA DC 15: Current input 4 to 20 mA DC 16: Voltage (high) input 0 to 10 V DC 17: Voltage (high) input 0 to 5 V DC 18: Voltage (high) input 1 to 5 V DC 19: Voltage (low) input 0 to 1 V DC 20: Voltage (low) input 0 to 100 mV DC 21: Voltage (low) input 0 to 10 mV DC 24: Voltage (high) input ±1 V DC 25: Voltage (low) input ±100 mV DC 26: Voltage (low) input ±10 mV DC	0 [a]
Unit	Display unit	0: °C 1: °F Use to select the temperature unit for Thermocouple (TC) and RTD inputs.	0
PGdP	Decimal point position	0: No decimal place 1: One decimal places 2: Two decimal places 3: Three decimal places 4: Four decimal places TC input: K, J, E: Only 0 or 1 can be set. T, U, L: Only 1 can be set. Other than the above: Only 0 can be set. RTD input: From 0 to 2 can be set. V/I inputs: From 0 to 4 can be set.	0 [a]
PGSH	Input scale high	TC/RTD inputs: Input scale low to Maximum value of the selected input range Voltage (V)/Current (I) inputs: –19999 to +19999 (Varies with the setting of the Decimal point position)	Maximum value of the selected input range [a]
PGSL	Input scale low	TC/RTD inputs: Minimum value of the selected input range to Input scale high Voltage (V)/Current (I) inputs: –19999 to +19999 (Varies with the setting of the Decimal point position)	Minimum value of the selected input range [a]
PoH	Input error determination point (high)	Input scale low – (5 % of input span) to Input scale high + (5 % of input span) (Varies with the setting of the Decimal point position)	Input scale high + (5 % of input span) [a]
PUn	Input error determination point (low)		Input scale low – (5 % of input span) [a]
boS	Burnout direction	0: Upscale 1: Downscale Valid only when the TC input and Voltage (low) input are selected.	0
Sqr	Square root extraction	0: Unused 1: Used	0
PFrq	Power supply frequency	0: 50 Hz 1: 60 Hz If the display on the screen flickers, set the value to the same value as the power frequency used. No power frequency can be changed while if can be normally measured with the CT input provided.	0
SnP	Sampling cycle	0: 50 ms 1: 100 ms 2: 250 ms	1
F22.	Function block 22	This is first parameter symbol of Function block 22.	
rInP	Remote setting input type Refer to the input type (InP) for the transfer method of the voltage (low) or voltage (high) input.	14: 0 to 20 mA DC 18: 1 to 5 V DC 15: 4 to 20 mA DC 19: 0 to 1 V DC 16: 0 to 10 V DC 20: 0 to 100 mV DC 17: 0 to 5 V DC 21: 0 to 10 mV DC	15 [a]
F23.	Function block 23	This is first parameter symbol of Function block 23.	
dISL	Digital input (DI) assignment	1 to 26 (Refer to next page table 1.)	1
F30.	Function block 30	This is first parameter symbol of Function block 30.	
LoGC	Output assignment	1 to 15 (Refer to next page table 2.)	1
oTT1	Timer 1	0.0 to 600.0 seconds Customization tool is necessary when the timer function is availed.	0.0
oTT2	Timer 2		0.0
oTT3	Timer 3		0.0
oTT4	Timer 4		0.0
EvC	Energized/De-energized	0: Energized 1: De-energized 0 0 0 0 ← SV display DO1 DO2 "0" fixed (Cannot be changed) "0" fixed (Cannot be changed)	0000

[a] Factory set value varies depending on the instrument specification.

Symbol	Name	Data range	Factory set value
ALC1	Alarm (ALM) lamp lighting condition 1 [a]	0: ALM lamp is not lit 1: ALM lamp is lit 1111 ← SV display EV1 EV2 EV3 EV4	1111
ALC2	Alarm (ALM) lamp lighting condition 2 [a]	0: ALM lamp is not lit 1: ALM lamp is lit 11 ← SV display HBA1 HBA2	0011
SS	Output status at STOP mode	0: OFF 1: Action continued 0000 ← SV display Event output, HBA output Transmission output "0" fixed (Cannot be changed) "0" fixed (Cannot be changed)	0000
F33.	Function block 33	This is first parameter symbol of Function block 33.	
Ao	Transmission output type	0: None 5: MV2 [cool-side] 1: PV 6: SV 2: SV monitor 7: Remote setting (RS) input value 3: Deviation value 4: MV1 [heat-side]	1
AHS	Transmission output scale high	When the PV, SV, SV monitor and RS: Input scale low to Input scale high (Varies with the setting of the Decimal point position) When the MV1 and MV2: −5.0 to +105.0 % When the deviation value: −Input span to +Input span	Input scale high
ALS	Transmission output scale low		Input scale low
F41.	Function block 41	This is first parameter symbol of Function block 41.	
ES1	Event 1 type	0: None 1: Deviation high [1] 2: Deviation low [1] 3: Deviation high/low [1] 4: Band [1] 5: Process high [1] 6: Process low [1] 7: SV high 8: SV low 9: Unused 10: MV1 high [heat-side] [1, 2] 11: MV1 low [heat-side] [1, 2] 12: MV2 high [cool-side] [1] 13: MV2 low [cool-side] [1] [1] Event hold action is available. [2] Feedback resistance (FBR) input value is displayed when the control motor with Feedback resistance (FBR) is used.	0 [b]
EHo1	Event 1 hold action	0: OFF 2: Re-hold action ON 1: Hold action ON	0 [b]
EIL1	Event 1 interlock	0: Unused 1: Used	0
EH1	Event 1 differential gap	Deviation, process or set value: 0 to Input span (Varies with the setting of the Decimal point position) MV: 0.0 to 110.0 %	2 [b]
EDR1	Event 1 delay timer	0.0 to 600.0 seconds	0.0
EEo1	Force ON of Event 1 action	0: Invalid 1: Valid 0000 ← SV display Event output turned on at input error occurrence Event output turned on in Manual mode Event output turned on during the Autotuning function (AT) is being executed Event output turned on during the Setting change rate limiter is being operated	0000
F42.	Function block 42	This is first parameter symbol of Function block 42.	
ES2	Event 2 type	Same as Event 1 type	
EHo2	Event 2 hold action	Same as Event 1 hold action	
EIL2	Event 2 interlock	Same as Event 1 interlock	
EH2	Event 2 differential gap	Same as Event 1 differential gap	
EDR2	Event 2 delay timer	Same as Event 1 delay timer	
EEo2	Force ON of Event 2 action	Same as Force ON of Event 1 action	
F43.	Function block 43	This is first parameter symbol of Function block 43.	
ES3	Event 3 type	Same as Event 1 type	
EHo3	Event 3 hold action	Same as Event 1 hold action	
EIL3	Event 3 interlock	Same as Event 1 interlock	
EH3	Event 3 differential gap	Same as Event 1 differential gap	
EDR3	Event 3 delay timer	Same as Event 1 delay timer	
EEo3	Force ON of Event 3 action	Same as Force ON of Event 1 action	
F44.	Function block 44	This is first parameter symbol of Function block 44.	
ES4	Event 4 type	9: Control loop break alarm (LBA) The other data is the same as an Event 1 type.	
EHo4	Event 4 hold action	Same as Event 1 hold action The invalidity in case of the LBA.	
EIL4	Event 4 interlock	Same as Event 1 interlock	
EH4	Event 4 differential gap	Same as Event 1 differential gap The invalidity in case of the LBA.	
EDR4	Event 4 delay timer	Same as Event 1 delay timer	
EEo4	Force ON of Event 4 action	Same as Force ON of Event 1 action The invalidity in case of the LBA.	

[a] The ALM lamp is lit through the *OR* operation of EV1, EV2, EV3, EV4, HBA1 and HBA2 each of which is set to "1: ALM lamp is lit."
[b] Factory set value varies depending on the instrument specification.

Symbol	Name	Data range	Factory set value
F45.	Function block 45	This is first parameter symbol of Function block 45.	
CTr1	CT1 ratio	0 to 9999 CT type: CTL-6-P-N CTL-12-S56-10L-N	800 [a]
CTA1	CT1 assignment	0: None 3: DO1 1: OUT1 4: DO2 2: OUT2	1
Hbs1	Heater break alarm 1 (HBA1) type	0: Heater break alarm 1 (HBA1) type A 1: Heater break alarm 1 (HBA1) type B	0 [a]
HbC1	Number of heater break alarm 1 (HBA1) delay times	0 to 255	5
F46.	Function block 46	This is first parameter symbol of Function block 46.	
CTr2	CT2 ratio	Same as CT1 ratio	
CTA2	CT2 assignment	0: None 3: DO1 1: OUT1 4: DO2 2: OUT2	0
Hbs2	Heater break alarm 2 (HBA2) type	0: Heater break alarm 2 (HBA2) type A 1: Heater break alarm 2 (HBA2) type B	0
HbC2	Number of heater break alarm 2 (HBA2) delay times	Same as Number of heater break alarm 1 (HBA1) delay times	
F50.	Function block 50	This is first parameter symbol of Function block 50.	
Pd	Hot/Cold start	0: Hot start 1 2: Cold start 1: Hot start 2 3: Stop start	0
PdR	Start determination point	0 to Input span (The unit is the same as input value.) (0: Action depending on the Hot/Cold start selection) (Varies with the setting of the Decimal point position)	3 % of input span
CAn	External input type	0: Remote setting input 1: Intercontroller communication cascade control 2: Intercontroller communication ratio setting	0
nCH	Master channel selection	0 to 31 This value is valid when Intercontroller communication cascade control or ratio setting is selected.	0
TrE	SV tracking	0: Unused 1: Used	1
nMTS	MV transfer function [Action taken when changed to Manual mode from Auto mode]	0: MV1 or MV2 in Auto mode is used. 1: When selected by Digital input (DI): MV1 or MV2 in previous Manual mode is used. When selected by front key: MV1 or MV2 in Auto mode is used. 2: MV1 or MV2 in previous Manual mode is used.	0
PVTS	PV transfer function	0: Unused 1: Used	0
F51.	Function block 51	This is first parameter symbol of Function block 51.	
oS	Control action	0: Brilliant II PID control (direct action) 1: Brilliant II PID control (reverse action) 2: Brilliant II Heat/Cool PID control [water cooling] 3: Brilliant II Heat/Cool PID control [air cooling] 4: Brilliant II Heat/Cool PID control [Cooling gain linear type] 5: Brilliant II Position proportioning PID control (reverse action) 6: Brilliant II Position proportioning PID control (direct action)	1 [a]
IddP	Integral/Derivative time decimal point position	0: 1 second setting (No decimal place) 1: 0.1 seconds setting (One decimal place)	0
dGA	Derivative gain	0.1 to 10.0	6.0
oHH	ON/OFF action differential gap (upper)	TC/RTD inputs: 0.0 to Input span (Unit: °C [°F]) (Varies with the setting of the Decimal point position) Voltage (V)/Current (I) inputs: 0.0 to 100.0 % of input span	1 [a]
oHL	ON/OFF action differential gap (lower)		1 [a]
AoUE	Action (high) at input error	0: Normal control 1: Manipulated output value at input error	0
AUnE	Action (low) at input error		0
PSn	Manipulated output value at input error	−105.0 to +105.0 %	0.0
rnU1	Manipulated output value (MV1) at STOP mode	−5.0 to +105.0 %	−5.0
rnU2	Manipulated output value (MV2) at STOP mode		−5.0
orU	Output change rate limiter (up) [MV1]	0.0 to 100.0 %/seconds (0.0: OFF)	0.0
ord	Output change rate limiter (down) [MV1]		0.0
oLH	Output limiter high (MV1)	Output limiter low (MV1) to 105.0 %	105.0
oLL	Output limiter low (MV1)	−5.0 % to Output limiter high (MV1)	−5.0
orU2	Output change rate limiter (up) [MV2]	Same as Output change rate limiter (up) [MV1]	
ord2	Output change rate limiter (down) [MV2]	Same as Output change rate limiter (down) [MV1]	
oLH2	Output limiter high (MV2)	Output limiter low (MV2) to 105.0 %	105.0
oLL2	Output limiter low (MV2)	−5.0 % to Output limiter high (MV2)	−5.0
drP	Derivative action	0: Measured value derivative 1: Deviation derivative	0
US	Undershoot suppression factor	0.000 to 1.000	1.000 [a]
dbPA	Deadband position adjust	0.0 to 1.0	0.0

[a] Factory set value varies depending on the instrument specification.

Symbol	Name	Data range	Factory set value
F52.	Function block 52	This is first parameter symbol of Function block 52.	
ArB	AT bias [b]	−Input span to +Input span	0
ArC	AT cycles	0: 1.5 cycles 2: 2.5 cycles 1: 2.0 cycles 3: 3.0 cycles	1
ArH	AT differential gap time	0.0 to 50.0 seconds	10.0
Aron	Output value with AT turned on	Output value with AT turned off to 105.0 %	105.0
AroF	Output value with AT turned off	−105.0 % to Output value with AT turned on	−105.0
PLH	Proportional band limiter (high) [heat-side]	TC/RTD inputs: 0 (0.0, 0.00) to Input span [b] (Unit: °C [°F]) Voltage (V)/Current (I) inputs: 0.0 to 1000.0 % of input span	Input span [a]
PLL	Proportional band limiter (low) [heat-side]		0 [a]
ILH	Integral time limiter (high) [heat-side]	0 to 3600 seconds or 0.0 to 1999.9 seconds (Varies with the setting of the Integral/ Derivative time decimal point position)	3600
ILL	Integral time limiter (low) [heat-side]		0
dLH	Derivative time limiter (high) [heat-side]		3600
dLL	Derivative time limiter (low) [heat-side]		0
PcLH	Proportional band limiter (high) [cool-side]	TC/RTD inputs: 1 (0.1, 0.01) to input span [b] (Unit: °C [°F]) Voltage (V)/Current (I) inputs: 0.1 to 1000.0 % of input span	Input span [a]
PcLL	Proportional band limiter (low) [cool-side]		1 [a]
IcLH	Integral time limiter (high) [cool-side]	Same as Integral time limiter (high) [heat-side]	
IcLL	Integral time limiter (low) [cool-side]	Same as Integral time limiter (low) [heat-side]	
dcLH	Derivative time limiter (high) [cool-side]	Same as Derivative time limiter (high) [heat-side]	
dcLL	Derivative time limiter (low) [cool-side]	Same as Derivative time limiter (low) [heat-side]	
PAJ	Proportional band adjusting factor [heat-side]	0.01 to 10.00 times	1.00
IAJ	Integral time adjusting factor [heat-side]		1.00
dAJ	Derivative time adjusting factor [heat-side]		1.00
PcAJ	Proportional band adjusting factor [cool-side]		1.00
IcAJ	Integral time adjusting factor [cool-side]		1.00
dcAJ	Derivative time adjusting factor [cool-side]		1.00
F53.	Function block 53	This is first parameter symbol of Function block 53.	
ydb	Open/Close output neutral zone	0.1 to 10.0 % of output	2.0
yHS	Open/Close output differential gap	0.1 to 5.0 % of output	1.0
ybr	Action at feedback resistance (FBR) input error	0: Action depending on the valve action at STOP 1: Control action continued	0
PoS	Feedback adjustment	At the Feedback adjustment screen, press the shift key for 5 seconds to start the adjustment.	—
tmoT	Control motor time	5 to 1000 seconds	10
oLA	Integrated output limiter	0.0 to 200.0 % of control motor time 0.0: Integrated output limiter function OFF This value becomes invalid when Feedback resistance (FBR) input is used.	150.0
yAL	Valve action at STOP	0: Close-side output OFF, Open-side output OFF 1: Close-side output ON, Open-side output OFF 2: Close-side output OFF, Open-side output ON	0
yASo	Action at saturated output	0: Invalid 1: Valid	0
F54.	Function block 54	This is first parameter symbol of Function block 54.	
STS	ST start condition	0: Activate the Startup tuning (ST) function when the power is turned on; when transferred from STOP to RUN; or when the Set value (SV) is changed. 1: Activate the Startup tuning (ST) function when the power is turned on; or when transferred from STOP to RUN. 2: Activate the Startup tuning (ST) function when the Set value (SV) is changed.	0
STPW	ST proportional band adjusting factor	0.01 to 10.00 times	1.00
STIW	ST integral time adjusting factor		1.00
STdW	ST derivative time adjusting factor		1.00
F55.	Function block 55	This is first parameter symbol of Function block 55.	
CHrG	Automatic temperature rise group	0 to 16 (0: Automatic temperature rise function OFF)	0
rSG	RUN/STOP group	0 to 16 (0: RUN/STOP group function OFF)	0
CHrd	Automatic temperature rise dead time	0.1 to 1999.9 seconds	10.0
CHrT	Automatic temperature rise gradient data	0.1 to Input span/minutes	1.0

[a] Factory set value varies depending on the instrument specification.
[b] Data range varies depending on the Decimal point position

Symbol	Name	Data range	Factory set value
F60.	Function block 60	This is first parameter symbol of Function block 60.	
CnP1	Communication 1 protocol	0: RKC communication 1: Modbus 2: Intercontroller communication [b]	0 [a]
CnP2	Communication 2 protocol	0: RKC communication 1: Modbus 2: Intercontroller communication	2
F70.	Function block 70	This is first parameter symbol of Function block 70.	
SUrT	Setting change rate limiter unit time	1 to 3600 seconds	60
STdP	Soak time unit	0: 0 hours 00 minutes to 99 hours 59 minutes 1: 0 minutes 00 seconds to 199 minutes 59 seconds	1
F71.	Function block 71	This is first parameter symbol of Function block 71.	
SLH	Setting limiter high	Setting limiter low to Input scale high (Varies with the setting of the Decimal point position)	Input scale high
SLL	Setting limiter low	Input scale low to Setting limiter high (Varies with the setting of the Decimal point position)	Input scale low
F91.	Function block 91	This is first parameter symbol of Function block 91.	
C492	ROM version monitor	Display the version of loaded software.	—
UT	Integrated operating time monitor	0 to 19999 hours	—
TCJ	Holding peak value ambient temperature monitor	−10.0 to +100.0 °C	—

[a] Factory set value varies depending on the instrument specification.
[b] Intercontroller communication is available only when one communication function is selected.

Table 1: Digital input (DI) assignment

Set value	DI 1	DI 2	DI 3	DI 4	DI 5
1	Unused	Unused	Unused	Unused	Unused
2	Memory area number transfer (1 to 8)			Memory area set	RUN/STOP
3	Memory area number transfer (1 to 8)			Memory area set	Unused
4	Memory area number transfer (1 to 8)			Memory area set	AUTO/MAN
5	Memory area number transfer (1 to 8)			Memory area set	Interlock release
6	Memory area number transfer (1 to 8)			RUN/STOP	Unused
7	Memory area number transfer (1 to 8)			RUN/STOP	AUTO/MAN
8	Memory area number transfer (1 to 8)			RUN/STOP	Interlock release
9	Memory area number transfer (1 to 8)			Unused	AUTO/MAN
10	Memory area number transfer (1 to 8)			Unused	Interlock release
11	Memory area number transfer (1 to 8)			AUTO/MAN	Interlock release
12	Memory area number transfer (1 to 8)				
13	RUN/STOP	REM/LOC *	AUTO/MAN		
14	RUN/STOP	REM/LOC *	Interlock release		
15	RUN/STOP	AUTO/MAN	Interlock release		
16	REM/LOC*	AUTO/MAN	Interlock release		
17	RUN/STOP	REM/LOC *			
18	RUN/STOP	AUTO/MAN			
19	RUN/STOP	Interlock release			
20	REM/LOC *	AUTO/MAN			
21	REM/LOC *	Interlock release			
22	AUTO/MAN	Interlock release			
23	RUN/STOP				
24	REM/LOC *				
25	AUTO/MAN				
26	Interlock release				

RUN/STOP: RUN/STOP transfer AUTO/MAN: Auto/Manual transfer REM/LOC: Remote/Local transfer
* In the case of the optional function A, C and D without Remote setting input and Communication, the Remote/Local transfer becomes invalid.

Table 2: Output assignment
"Energized" or "De-energized" can be selected for the Digital outputs (DO1 and DO2).
[However, with the exception of "FAIL ("De-energized" fixed)']

Set value	OUT1	OUT2	DO1	DO2
1	MV1	MV2	EV1	EV2
2	MV1	MV2	EV1	EV4
3	MV1	MV2	EV1	HBA
4	MV1	MV2	EV1	FAIL
5	MV1	MV2	EV4	HBA
6	MV1	MV2	EV4	FAIL
7	MV1	MV2	HBA	FAIL
8	MV1	HBA	EV1	EV2

Set value	OUT1	OUT2	DO1	DO2
9	MV1	HBA	EV1	EV4
10	MV1	HBA	EV1	FAIL
11	MV1	HBA	EV4	FAIL
12	MV1	FAIL	EV1	EV2
13	MV1	FAIL	EV1	EV4
14	MV1	EV1	EV2	EV3
15	MV1	EV4	EV1	EV2

MV1: Control output 1, MV2: Control output 2, HBA: Heater break alarm, FAIL: Fail output (De-energized only), EV1 to EV4: Event output 1 to Event output 4
– For Position proportioning PID control, regardless of the above selection, OUT1 becomes the open-side output, and OUT2 becomes the close-side output.
– HBA output becomes *OR* when two CT inputs are available.

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