PCA1　Key Operation Flowchart

Power ON

RUN mode
- 0.0.25 Program control Stop (Standby)
- RUN(*) / STOP MODE (1 sec)
- 0.0.25 Program control Run

(*): Select the pattern number to be performed by the PTN △ key, and press the RUN key.

SET/RST

●Setting Items

PTN 0 Setting pattern number

Upper left: PV Display: Indicates setting characters.
Lower left: SV/MV/TIME Display: Indicates the factory default.
Right side: Indicates the setting item.

: This setting item is optional, and appears only when the option is ordered.

●Key Operation

- SET/RST : Returns to RUN mode from any mode.
- DISP B.MODE : Progresses back through setting items (opposite to when the STOP MODE key or HOLD ENT key is pressed).
- STOP MODE + DISP B.MODE : When the STOP MODE and DISP B.MODE key are pressed simultaneously, the mode returns to the previous setting group as follows.

  b_ALM Alarm block setting group ← (STOP MODE + DISP B.MODE) G_bLK Block setting group ← (STOP MODE + DISP B.MODE) A0_4 0 Block 0 EV4 alarm value

- RUN (3 sec) : Program clearing
  When program control is stopped (in standby), and if the RUN key is pressed for 3 seconds at any items in Pattern setting group, data (for current step on the STEP Display and all the following steps) will return to the default value.
- PTN △ + ADV ▽ + DISP B.MODE (3 sec) : Data clearing
  When program control is stopped (in standby), and if the PTN △, ADV ▽ and DISP B.MODE keys are pressed simultaneously for 3 seconds, the PV Display indicates CLR 1, and all program and setting data – except Input type, OUT1 proportional cycle, OUT2 proportional cycle – will return to the default value. It takes approximately 30 seconds for data clear.

Group selection mode

G_PTN Pattern setting group — HOLD ENT → PTN 0 Setting pattern number → HOLD ENT → TEMP 0 Step 0 Step SV → HOLD ENT → TIME 0.0.0.0 Step 0 Step time → HOLD ENT → _PId 0 Step 0 PID block number → HOLD ENT → _Cn1 0 Step 0 Time signal 1 block number → HOLD ENT → _Cn8 0 Step 0 Time signal 8 block number → HOLD ENT → _WAI 0 Step 0 Wait block number → HOLD ENT → _ALM 0 Step 0 Alarm block number → HOLD ENT → _oUT 0 Step 0 Output block number → HOLD ENT → Proceeds to Step 1 Step SV, and continues up to Step 15.

STOP MODE: Step number progresses.

TEMP 0 Step 15 Step SV → HOLD ENT → TIME 0.0.0.0 Step 15 Step time → HOLD ENT → _PId 0 Step 15 PID block number → HOLD ENT → _Cn1 0 Step 15 Time signal 1 block number → HOLD ENT → _Cn8 0 Step 15 Time signal 8 block number → HOLD ENT → _WAI 0 Step 15 Wait block number → HOLD ENT → _ALM 0 Step 15 Alarm block number → HOLD ENT → _oUT 0 Step 15 Output block number → HOLD ENT → Returns to Step 0 Step SV.

G_bLK Block setting group — HOLD ENT → b_PId PID block setting group → HOLD ENT → P0_P 10 Block 0 OUT1 proportional band → HOLD ENT → P0_I 200 Block 0 Integral time → HOLD ENT → P0_d 50 Block 0 Derivative time → HOLD ENT → P0_n 50 Block 0 ARW → HOLD ENT → P0Pb 1.0 Block 0 OUT2 proportional band → HOLD ENT → Proceeds to Block 1 OUT1 proportional band, and continues up to Block 9.

STOP MODE: Block number progresses.

P9_P 10 Block 9 OUT1 proportional band → HOLD ENT → P9_I 200 Block 9 Integral time → HOLD ENT → P9_d 50 Block 9 Derivative time → HOLD ENT → P9_n 50 Block 9 ARW → HOLD ENT → P9Pb 1.0 Block 9 OUT2 proportional band → HOLD ENT → Returns to Block 0 OUT1 proportional band.

b_Cn Time signal block setting group — HOLD ENT → 0_oF 0.0.0.0 Block 0 Time signal output OFF time → HOLD ENT → 0_on 0.0.0.0 Block 0 Time signal output ON time → HOLD ENT → Proceeds to Block 1 Time signal output OFF time, and continues up to Block 15.

STOP MODE: Block number progresses.

15_F 0.0.0.0 Block 15 Time signal output OFF time → HOLD ENT → 15_n 0.0.0.0 Block 15 Time signal output ON time → HOLD ENT → Returns to Block 0 Time signal output OFF time.

b_WAI Wait block setting group — HOLD ENT → W0_ 0 Block 0 Wait value → HOLD ENT → Proceeds to Block 1 Wait value, and continues up to Block 9.

STOP MODE: Block number progresses.

W9_ 0 Block 9 Wait value → HOLD ENT → Returns to Block 0 Wait value.

b_ALM Alarm block setting group — HOLD ENT → A0_1 0 Block 0 EV1 alarm value → HOLD ENT → A0_2 0 Block 0 EV2 alarm value → HOLD ENT → A0_3 0 Block 0 EV3 alarm value → HOLD ENT → A0_4 0 Block 0 EV4 alarm value → HOLD ENT → Proceeds to Block 1 EV1 alarm value, and continues up to Block 9.

STOP MODE: Block number progresses.

A9_1 0 Block 9 EV1 alarm value → HOLD ENT → A9_2 0 Block 9 EV2 alarm value → HOLD ENT → A9_3 0 Block 9 EV3 alarm value → HOLD ENT → A9_4 0 Block 9 EV4 alarm value → HOLD ENT → Returns to Block 0 EV1 alarm value.

b_oUT Output block setting group — HOLD ENT → o0_H 100 Block 0 OUT1 high limit → HOLD ENT → o0_L 0.0.0.0 Block 0 OUT1 low limit → HOLD ENT → o0Hb 100 Block 0 OUT2 high limit → HOLD ENT → o0Lb 0.0.0.0 Block 0 OUT2 low limit → HOLD ENT → o0cL 0.0.0.0 Block 0 OUT1 rate-of-change → HOLD ENT → Proceeds to Block 1 OUT1 high limit, and continues up to Block 9.

STOP MODE: Block number progresses.

o9_H 100 Block 9 OUT1 high limit → HOLD ENT → o9_L 0.0.0.0 Block 9 OUT1 low limit → HOLD ENT → o9Hb 100 Block 9 OUT2 high limit → HOLD ENT → o9Lb 0.0.0.0 Block 9 OUT2 high limit → HOLD ENT → o9cL 0.0.0.0 Block 9 OUT1 rate-of-change → HOLD ENT → Returns to Block 0 OUT1 high limit .

STOP MODE: Returns to the PID block setting group.

G_cHN Repetitions and pattern link setting group — HOLD ENT → REPt 0 Repetitions for pattern 0 → HOLD ENT → cHIN ----- Pattern link between Pattern 0 and Pattern 1 → HOLD ENT → Proceeds to Repetitions for pattern 1, and continues up to pattern 15.

- Repetitions for pattern 0
  PTN display: Indicates the pattern number desired to be repeated.
- Pattern link between Pattern 0 and Pattern 1
  PTN display: Indicates the pattern number desired to be linked.

STOP MODE: Pattern number progresses.

REPt 0 Repetitions for pattern 15 → HOLD ENT → cHIN ----- Pattern link between Pattern 15 and Pattern 0 → HOLD ENT → Returns to Repetitions for pattern 0.

G_AT AT Perform group — HOLD ENT → ATSL NoML AT mode → HOLD ENT → AT ----- AT Perform/Cancel → HOLD ENT → AT_b 20 AT bias → HOLD ENT → Returns to AT mode.

G_ENG Engineering setting group — HOLD ENT → E_INP Input parameter setting group → HOLD ENT → SENS K Input type → HOLD ENT → SRLH 1370 Scaling high limit → HOLD ENT → SRLL -200 Scaling low limit → HOLD ENT → dP 0 Decimal point place → HOLD ENT → So 0.0 Sensor correction → HOLD ENT → FILT 0.0 PV filter time constant → HOLD ENT → Returns to Input type.

E_oUT Output parameter setting group — HOLD ENT → c 30 OUT1 proportional cycle → HOLD ENT → HY1 1.0 OUT1 ON/OFF hysteresis → HOLD ENT → c_b 30 OUT2 proportional cycle → HOLD ENT → cAcT AIR OUT2 cooling method → HOLD ENT → HY2b 1.0 OUT2 ON/OFF hysteresis → HOLD ENT → db 0.0 Overlap/ Dead band → HOLD ENT → conT HEAT Direct/Reverse action → HOLD ENT → Returns to OUT1 proportional cycle.

E_Evo Event output parameter setting group — HOLD ENT → EVT1 013 Event output EV1 allocation → HOLD ENT → EVT2 000 Event output EV2 allocation → HOLD ENT → EVT3 001 Event output EV3 allocation → HOLD ENT → EVT4 003 Event output EV4 allocation → HOLD ENT → Returns to Event output EV1 allocation.

- If 001 to 012 is selected in [Event output EV1–EV4 allocation], the following appears.

  A□HY 1.0 EV□ Alarm hysteresis → HOLD ENT → A□dLY 0.0.0.0 EV□ Alarm delay time → HOLD ENT → A□REV NoML EV□ Alarm Energized/ De-energized

- If 014 is selected in [Event output EV1–EV4 allocation], the following appears.

  LP_T 0.0.0.0 Loop break alarm time → HOLD ENT → LP_H 0.0.0.0 Loop break alarm band

E_LIM SV limit setting group — HOLD ENT → SH 1370 SV high limit → HOLD ENT → SL -200 SV low limit → HOLD ENT → Returns to SV high limit.

E_TRA Transmission output parameter setting group — HOLD ENT → TRo PV Transmission output type → HOLD ENT → TRLH 1370 Transmission output high limit → HOLD ENT → TRLL -200 Transmission output low limit → HOLD ENT → Returns to Transmission output type.

E_coM Cmmunication parameter setting group — HOLD ENT → cMSL NoML Communication protocol → HOLD ENT → cMNo 0.0.0.0 Instrument number → HOLD ENT → cMSP 96 Communication speed → HOLD ENT → cMFT 7EVN Data bit/Parity → HOLD ENT → cMST 1 Stop bit → HOLD ENT → cMdY 10 Response delay time → HOLD ENT → Returns to Communication protocol.

E_oTH Other parameters setting group — HOLD ENT → LocK ----- Set value lock → HOLD ENT → S_MAN MANU Program start Auto/Manual → HOLD ENT → S_SV 0.0.0.0 Step SV when program control starts → HOLD ENT → S_SL PV Program control start type → HOLD ENT → PRES conT Power restore action → HOLD ENT → M_S MIN Step time unit → HOLD ENT → S_TM RT Step time indication → HOLD ENT → S_TE SV Step SV indication → HOLD ENT →

STOP MODE: Returns to the Input parameter setting group.

PTM 0 Pattern end output time → HOLD ENT → PSH SToP Step SV Hold function when program ends → HOLD ENT → TS1 TS1 Time signal output TS1/ Status (RUN) → HOLD ENT → TS2 TS2 Time signal output TS2/ Status (HOLD) → HOLD ENT → TS3 TS3 Time signal output TS3/ Status (WAIT) → HOLD ENT → TS4 TS4 Time signal output TS4/ Status (FAST) → HOLD ENT → TS5 TS5 Time signal output TS5/ Status (STOP) → HOLD ENT → oSFN oFF Overshoot suppression Enabled/Disabled → HOLD ENT →

oSF 1.0 Overshoot suppression factor → HOLD ENT → EoUT oFF Output status when input errors occur → HOLD ENT → bKLT ALL Backlight selection → HOLD ENT → coLR RED PV color → HOLD ENT → cLRG 5.0 PV color range → HOLD ENT → dPTM 0.0.0.0 Backlight time → HOLD ENT → Returns to Set value lock.

G_MAN Auto/Manual contorol switch group — HOLD ENT → MANU AUTo Auto/Manual control switch

STOP MODE: Returns to the Pattern setting group.

●Selection Items

Pattern link	
-----	Pattern link Disabled
cHIN	Pattern link Enabled
AT mode	
NoML	Normal mode
MULT	Multi mode
AT Perform/Cancel	
-----	AT Cancel
AT	AT Perform
Input type	
K C	K -200 to 1370 °C
K C	K -200.0 to 400.0 °C
J C	J -200 to 1000 °C
R C	R 0 to 1760 °C
S C	S 0 to 1760 °C
b C	B 0 to 1820 °C
E C	E -200 to 800 °C
T C	T -200.0 to 400.0 °C
N C	N -200 to 1300 °C
PL2 C	PL-Ⅱ 0 to 1390 °C
C C	C(W/Re5-26) 0 to 2315 °C
Pt C	Pt100 -200.0 to 850.0 °C
JPt C	JPt100 -200.0 to 500.0 °C

Pt C	Pt100 -200 to 850 °C
JPt C	JPt100 -200 to 500 °C
Pt C	Pt100 -100.0 to 100.0 °C
Pt5 C	Pt100 -100.0 to 500.0°C
K F	K -328 to 2498 °F
K F	K -328.0 to 752.0 °F
J F	J -328 to 1832 °F
R F	R 32 to 3200 °F
S F	S 32 to 3200 °F
b F	B 32 to 3308 °F
E F	E -328 to 1472 °F
T F	T -328.0 to 752.0 °F
N F	N -328 to 2372 °F
PL2 F	PL-Ⅱ 32 to 2534 °F
C F	C(W/Re5-26) 32 to 4199 °F
Pt F	Pt100 -328.0 to 1562.0 °F
JPt F	JPt100 -328.0 to 932.0 °F
Pt F	Pt100 -328 to 1562 °F
JPt F	JPt100 -328 to 932 °F
Pt2 F	Pt100 -148.0 to 212.0 °F
Pt9 F	Pt100 -148.0 to 932.0 °F
420MA	4 to 20mA -2000 to 10000
020MA	0 to 20mA -2000 to 10000

10MV	0 to 10mV -2000 to 10000
-10MV	-10 to 10mV -2000 to 10000
50MV	0 to 50mV -2000 to 10000
100MV	0 to 100mV -2000 to 10000
01V	0 to 1V -2000 to 10000
05V	0 to 5V -2000 to 10000
15V	1 to 5V -2000 to 10000
010V	0 to 10V -2000 to 10000
Decimal point place	
0	No decimal point
0.0	1 digit after decimal point
0.00	2 digits after decimal point
0.000	3 digits after decimal point
0.0000	4 digits after decimal point
OUT2 cooling method	
AIR	Air cooling
oIL	Oil cooling
WAT	Water cooling
Direct/Reverse action	
HEAT	Reverse action
cooL	Direct action
Event output EV□ allocation	
000	No event

001	High limit alarm
002	High limit with standby
003	Low limit alarm
004	Low limit with standby
005	H/L limits alarm
006	H/L limits with standby
007	H/L limit range alarm
008	H/L limit range with standby
009	Process high alarm
010	Process high with standby
011	Process low alarm
012	Process low with standby
013	Pattern end output
014	Loop break alarm output
015	Output during AT
EV□ Alarm Energized/De-energized	
NoML	Energized
REVS	De-energized
Transmission output type	
PV	PV transmission
SV	SV transmission
MV	MV transmission
Communication protocol	

NoML	Shinko protocol
ModA	Modbus ASCII mode
ModR	Modbus RTU mode
SVT	SV digital transmission
Communication speed	
96	9600bps
192	19200bps
384	38400bps
Data bit/Parity	
8NoN	8 bits/ No parity
7NoN	7 bits/ No parity
8EVN	8 bits/ Even
7EVN	7 bits/ Even
8odd	8 bits/ Odd
7odd	7 bits/ Odd
Stop bit	
1	1 bit
2	2 bits
Set value lock	
-----	Unlock
LocK	Lock
Program start Auto/Manual	
MANU	Manual start

AUTo	Automatic start
Program control start type	
PV	PV start
PVR	PVR start
SV	SV start
Power restore action	
SToP	Stops after power is restored
conT	Continues after power is restored
HoLd	Suspends after power is restored
Step time unit	
MIN	Hour:Minute
SEC	Minute:Second
Step time indication	
RT	Remaining time
TM	Step time
Step SV indication	
SV	SV corresponding to the step time progress
TSV	Step SV
Step SV Hold function when program ends	

SToP	Not holding
HoLd	Holding
Time signal output TS1/Status (RUN)	
TS1	Time signal output TS1
RUN	Status output (RUN)
Time signal output TS2/Status (HOLD)	
TS2	Time signal output TS2
HoLd	Status output (HOLD)
Time signal output TS3/Status (WAIT)	
TS3	Time signal output TS3
WAIT	Status output (WAIT)
Time signal output TS4/Status (FAST)	
TS4	Time signal output TS4
FAST	Status output (FAST)
Time signal output TS5/Status (STOP)	
TS5	Time signal output TS5
STOP	Status output (STOP)
Overshoot suppression Enabled/Disabled	
oFF	Disabled
oN	Enabled
Output status when input errors occur	
oFF	Output OFF
oN	Output ON

Backlight selection	
ALL	All are backlit
PV	PV Display is backlit
PV color	
GRN	Green
RED	Red
ORG	Orange
ALGR	Alarm (EV1-EV4) ON: Green→Red
ALoR	Alarm (EV1-EV4) ON: Orange→Red
PVGR	PV color changes continuously
APGR	PV color changes continuously + Alarm (EV1-EV4) ON: Red
Auto/Manual control switch	
AUTo	Automatic control
MANU	Manual control