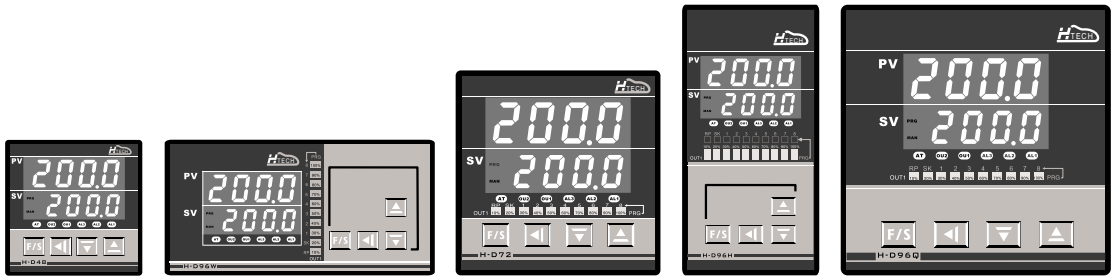
Microprocessor PID controller

CE

H-D72 H-D96Q
H-D48 H-D96W H-D96H

WARNING
1. To prevent electric shock or instrument failure, always turn off the system power before replacing mounting or moving the instrument and sensor. Contact tor or SSR/SCR
2. To prevent electric shock or instrument failure, do not turn on the power until all the wiring is completed.
3. To prevent interruption , input signal wire must be isolated with main power wire.
4. To check if the connecting sensor matches with selected input before use.



Display unit & Indication lamps

PV	=Measured value display
SV	=Set value dispaly
AL1	=Alarm 1 output lamp
AL2	=Alarm 2 output lamp
AL3	=Alarm 3 output lamp
OUT1	=Control output 1 lamp
OUT2	=Control output 2 lamp
AT	=Autotuning lamp
MAN	=Manual mode lamp
10% ~ 100%	=Manipulated output value display
PRG	=Programmable mode lamp
1~8	=Segment-in-process display lamp
RP	=Ramping mode lamp (programmable mode only)
SK	=Soaking mode lamp (programmable mode only)

Operation keys

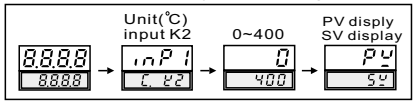
F/S	=Function & Set key
◀	=Shift key
▼	=Down key
▲	=Up key
▲	Press 3 sec while the SV is not flashing = Used for returning to initial window
▼	Press 3 sec while in level selection window = Used for calling up lock function
▼	Press 3 sec while in pv/sv initial window= Used for stopping output and SV window will display "HOLD" ▼ press 3 sec again to regain output (This function is available only while OUTM is selected 1 or 2)
F/S	Press 3 sec while in pv/sv initial window = Used for calling up level selection
F/S	Press 3 sec while in level selection window = Used for entering each level

Operation keys (programmable mode only)

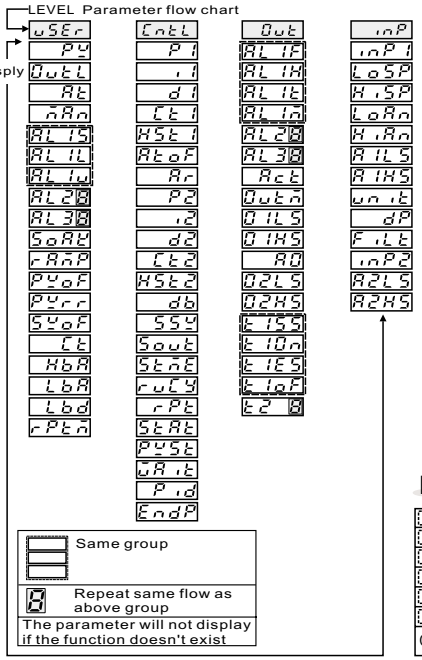
These keys are only operated in PV/SV initial window	
▲ 3 SEC =Run	PRG lights,RP or SK flashes The executing segment lamp lights
▼ 3 SEC =Pause	PRG, RP and SK light The executing segment lamp lights
▲ + F/S =Jump	Jump to the next segment, press ▲ first
▼ + F/S =Stop	Turn off all lamps which used for programmable mode, press ▼ first
Refer to arrow ↵ When PRG Lights (No PRG light in H-D48)	

* For program function ,please contact the distributor

Window checks display after turning on power



LEVEL Parameter flow chart

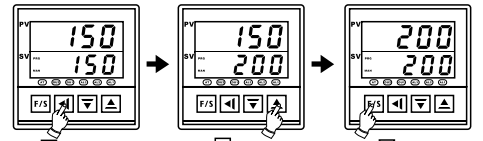


Same group

8 Repeat same flow as above group

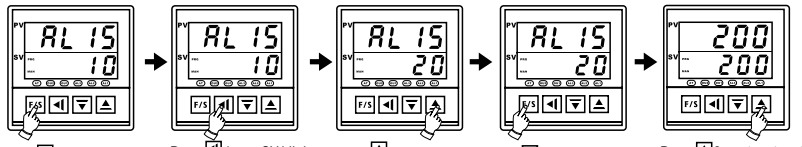
The parameter will not display if the function doesn't exist

A How to set "SV" example: SV set at 200°C



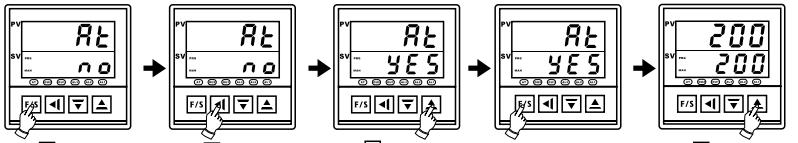
Press ◀ SV blinks
Press ◀ again to move digit
Press ▲ to increase or Press ▼ to decrease the value
Press F/S to enter SV setting

B How to set " AL1S,AL2S,AL3S" example: alarm 1set at 20 C



Press F/S 1 sec, PV shows "AL1S"
Press ◀ 1 sec, SV blinks press ◀ again to move digit
Press ▲ to increase or Press ▼ to decrease the value
Press F/S to enter AL1 setting
Press ▲ 3 sec to return to PV/SV window

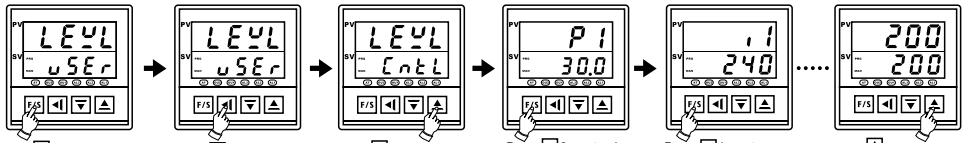
C How to set "AT" (auto tuning)



Press F/S to shows "AT" on PV window
Press ◀ to show "no" flickering on SV window
Press ▲ to show "yes" on SV window
Press F/S to enter AT setting
Press ▲ 3 sec to return to PV/SV window

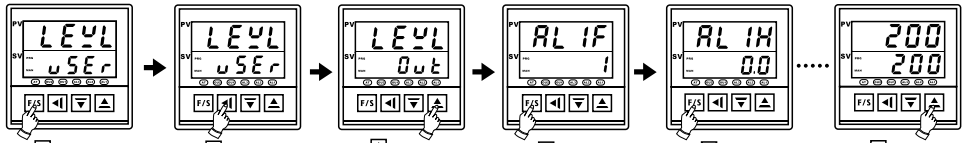
D How to enter different "level" for setting parameter

(1) Enter "CntL" level



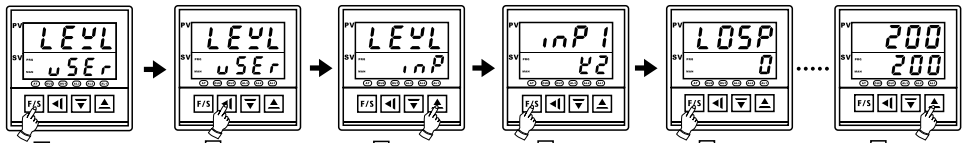
Press F/S 3 sec to show "LEVL" on PV window (under PV/SV initial window)
Press ◀ to show "user" flickering on SV window (under PV show "LEVL")
Press ▲ to show "cnt1" on SV window then press F/S to enter this level
Press F/S 3 sec to show "P1" on PV window
Press F/S 1 sec to continue other parameters in this level
Press ▲ 3 sec to return to PV/SV initial window

(2) Enter "Out" level



Press F/S 3 sec to show "LEVL" on PV window (under PV/SV initial window)
Press ◀ to show "user" flickering on SV window (under PV show "LEVL")
Press ▲ to show "out" on SV window then press F/S to enter this level
Press F/S 3 sec to show "AL1F" on PV window
Press F/S 1 sec to continue other parameters in this level
Press ▲ 3 sec to return to PV/SV initial window

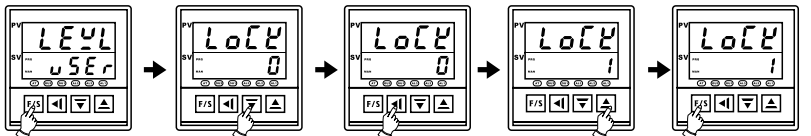
(3) Enter "inP" level



Press F/S 3 sec to show "LEVL" on PV window (under PV/SV initial window)
Press ◀ to show "user" flickering on SV window (under PV show "LEVL")
Press ▲ to show "inP" on SV window then press F/S to enter this level
Press F/S 3 sec to show "inP1" on PV window
Press F/S 1 sec to continue other parameters in this level
Press ▲ 3 sec to return to PV/SV initial window

E How to set "LoCK" function

1118	all parameters are locked except PV
1000	all parameters are locked except SV
1110	open"user" level
1120	open"cntL"level
1111	open"out" level
1222	open"inp" level
Opening other levels need to contact distributor	



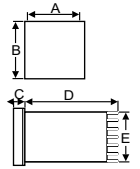
Press F/S 3 sec to show "LEVL" on PV window (under PV/SV initial window)
Press ▼ 3 sec to show "LOCK" on PV window
Press ◀ SV blinks
Press ▲ to increase or Press ▼ to decrease code number
Press F/S to enter "LOCK" setting

Parameter		DESCRIPTION	RANGE	Initial value
PV	Pv	Process value	LoSP~HiSP	
SV	Sv	Set value	LoSP~HiSP	0.0
uSEr				
OutL	OutL	Output percentage	0.0~100.0%	0.0
At	At	Auto tuning	No / yes (No =non)	no
Man	Man	Manual mode	Man1 =power failure memory Man2 =no memory	no
AL1S	AL1S	Alarm 1 set value	If ALIF set at 1 or 2 range=-200~200 If ALIF set at 3 or 4 range=Losp~Hisp	10.0
AL1L	AL1L	Alarm 1 lower set value	If ALIF set at 10 range =1-8 segment ending	10.0
AL1u	AL1u	Alarm 1 upper set value	=0~200 =0~200	10.0
AL2S AL3S		AL2S / AL3S For operating functions refer to the above descriptions		
SoAK	SoAK	Perform only when ALM1 set at 8 or9	0.00~99.59 (h.m)	0.00
rAmP	rAmP	Ramp	0.0~200.0/m PV*Pvrr	0.0
PvoF	PvoF	Pv offset	-200~200	0.0
Pvrr	Pvrr	Pv ratio	0.001~9.999	1.000
SvoF	SvoF	Sv offset	-200~200	0.0
Ct	Ct	Current transformer monitor	0.0~100.0A	
HbA	HbA	Heater break alarm time	0.1~100.0A	0.1
LbA	LbA	Control loop break alarm time	0.1~200.0 min	8.0
Lbd	Lbd	LBA dead band	0.0~200.0	0.0
* rPtn	rPtm	Repeat times monitor	1~1000	
CntL				
P1	P1	Output 1 proportional band	0.0~3000	30.0
i1	i1	Output 1 integral time	0~3600	240
d1	d1	Output 1 derivative time	0~900	60
Ct1	Ct1	Output 1 cyclic time	0~150	15
HSt1	HSt1	Output 1 hysteresis	0.0~200.0	1.0
AtoF	AtoF	At offset	-200~200	0.0
Ar	Ar	Anti-reset windup	0~100.0% SV-P1 x Ar	100.0
P2	P2	Output 2 proportional band	0.0~3000	30.0
i2	i2	Output 2 integral time	0~3600	240
d2	d2	Output 2 derivative time	0~900	60
Ct2	Ct2	Output 2 cyclic time	0~150	15
HSt2	HSt2	Output 2 hysteresis	0.0~200.0	0.0
db	db	Dead band/overlap	-200.0~200.0	0.0
SSv	SSv	Soft start set value	0.0~200.0	120.0
Sout	Sout	Soft start output percentage	0.0~100.0%	30.0
StmE	StmE	Soft start failed time	0~10 min	10
ruCy	ruCy	Motor valve cyclic time	1~150 sec	5
rPt	rPt	Program executing times	1~1000 (CoLd = manual)	1
* StAt	StAt	Start mode selection	rSET=start after power ON Hot =start from memory of power failure	CoLd
* PvSt	PvSt	Start point selection	RSEt = start from 0 Pv = start from PV	rSEt
* wAit	wAit	Wait value in program	0.0~200.0	0.0
* Pid	Pid	PID/Level PID selection	Pid =Pid Lpid =Level Pid	Pid
* EndP	EndP	Selects control when program ended	Cont = Continue StoP = One program only	StoP

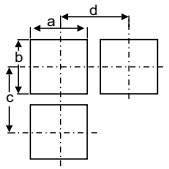
*They are used in programmable mode only

Parameter		DESCRIPTION	RANGE	Initial value
Out				
AL1F	AL1F	Alarm 1 action function	0~12 (see Fig 1)	1
AL1H	AL1H	Alarm 1 hysteresis	0.0~200.0	0.0
AL1t	AL1t	Alarm 1 in program mode on time	0.00~99.59 (h、m)	0.00
AL1m	AL1m	Alarm 1 special mode selection	(see Fig 2)	0
For operating functions refer to the above descriptions Different function see(1),(2),(3) AL2F AL2F (1)AL2M Alarm 2 special mode selection (See Fig 2) 0~7 AL3F AL3F (2)AL3F Alarm 3 action function (See Fig 1) 0~11 (3)AL3M Alarm 3 special mode selection (see Fig 2) 0~7				
Act	Act	Control action selection	CooL / HEAt	HEAt
O1LS	O1LS	Output 1 scale low	0.0~100.0%	17.6
O1HS	O1HS	Output 1 scale high	0.0~100.0% (Pv=transmit PV, Sv=transmit SV)	96.0
AO	AO	Analog output selection	dEv=transmit (PV-SV) Mv=transmit output percentage	Pv
O2LS	O2LS	Output 2 scale low	0.0~100.0%	17.6
O2HS	O2HS	Output 2 scale high	0.0~100.0%	96 .0
t1SS	t1SS	Time signal 1 start segment setting	1~8	1
t1On	t1On	Time signal 1 on time setting	0.00~99.59 (h、m)	0.01
t1ES	t1ES	Time signal 1 end segment setting	1~8	1
T1oF	T1oF	Time signal 1 off time setting	0.00~99.59 (h、m)	0.01
t2SS	t2SS	For operating functions refer to the above descriptions		
inP				
inP1	inP1	Input 1 selection	(see Fig 3)	K2
LoSP	LoSP	Low setting limit	LOSP~HISP	0.0
HiSP	HiSP	High setting limit	LOSP~HISP	400.0
LoAn	LoAn	Analog input range low	-1999~9999	0.0
HiAn	HiAn	Analog input range high	-1999~9999	100.0
A1LS	A1LS	Analog input 1 scale low	0~FFFF	
A1HS	A1HS	Analog input 1 scale high	0~FFFF	
unit	unit	Unit selection	℃/℉/non	℃
dP	dP	Decimal point	0/0.0/0.00/0.000	0.0
FiLt	FiLt	Digital fitter	0.001~1.000 (Non = no function, Ct = use for heater break alarm)	0.200
inP2	inP2	Input 2 selection	rmSV= use for remote SV	non
A2LS	A2LS	Analog input 2 scale low	0~FFFF	
A2HS	A2HS	Analog input 2 scale high	0~FFFF	

Dimension



Panel cutout



Unit:mm

MODEL	A	B	C	D	E	a	b	c	d
H-D96Q	96	96	10.5	83	90	91 $^{+0.5}_{-0}$	91 $^{+0.5}_{-0}$	120	120
H-D72	72	72	10.5	83	67	68 $^{+0.5}_{-0}$	68 $^{+0.5}_{-0}$	100	100
H-D96W	96	48	10.5	83	43	91 $^{+0.5}_{-0}$	46 $^{+0.5}_{-0}$	70	120
H-D96H	48	96	10.5	83	90	46 $^{+0.5}_{-0}$	91 $^{+0.5}_{-0}$	120	70
H-D48	48	48	10.5	83	45	46 $^{+0.5}_{-0}$	46 $^{+0.5}_{-0}$	70	70

Fig 1. Alarm Mode Selection
(usedin parameterAL1F,AL2F,AL3F)

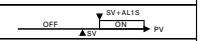
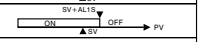
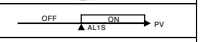
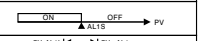
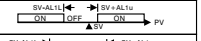
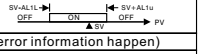
AL1F	AL2F	AL3F	Alarm function selection	
0	0	0	No alarm	
1	1	1	Deviation high alarm	
2	2	2	Deviation low alarm	
3	3	3	Absolute high alarm	
4	4	4	Absolute low alarm	
5	5	5	Deviation high/low alarm	
6	6	6	Band alarm	
7	7	7	System failure alarm (when error information happen)	
8	8	8	Loop break alarm	
9	9	9	Heater break alarm	
10	10	10	Segment ending alarm in program control	
11	11	11	Program ending alarm in program control	
12	12		Time signal alarm	
13	13		Program running alarm in program control	

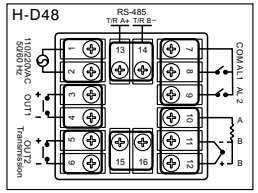
Fig 2. special alarm function selection
(used in parameter AL1M, AL2M, AL3M)

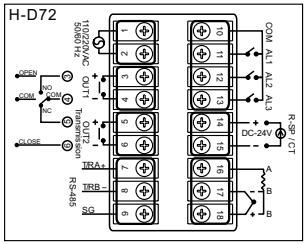
AL1M	AL2M	AL3M	Special alarm mode selection
0	0	0	Normal
1	1	1	Alarm with normal-close contact
2	2	2	Latch
3	3	3	Alarm with normal-close contact and latch
4	4	4	Alarm with inhibit
5	5	5	Alarm with inhibit and normal-close contact
6	6	6	Alarm with inhibit and latch
7	7	7	Alarm with inhibit , normal-close contact and latch
8			Alarm with on-delay timer
9			Alarm with on-delay timer but normal-close contact
10			Alarm with soaking timer
11			Alarm with soaking timer but normal-close contact

Error information

Display	description
in1E	Input 1 error
AdCF	A/D converter failed
CJCE	Cold junction compensation failed
in2E	Input 2 error
PV Blinks	PV exceeds Set Ranges
rAmF	Ram failed
intF	Interface failed
AutF	Auto tuning failed

External terminal





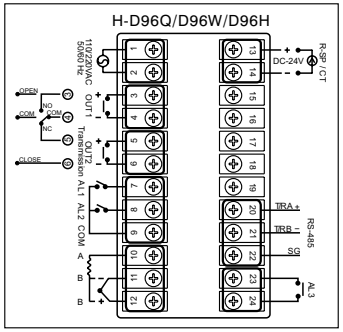
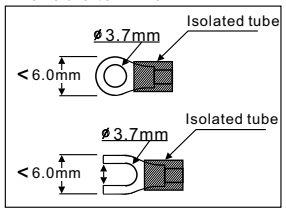


Fig 4. (used in parameter InP1)
input & temperature ranges selection

TYPE	℃	℉
K1	0~200	32~392
K2	0~400	32~752
K3	0~800	32~1472
K4	0~1000	32~1832
K5	0~1200	32~2192
j1	0~200	32~392
j2	0~400	32~752
j3	0~800	32~1472
j4	0~1000	32~1832
j5	0~1200	32~2192
t1	-50~50	-58~122
t2	-100~100	-148~212
t3	-200~400	-328~752
r	0~1700	32~3092
E	0~1000	32~1832
S	0~1700	32~3092
b	0~1800	32~3272
n	-200~1300	-328~2372
Pt1	-50~50	-58~122
Pt2	0~100	32~212
Pt3	0~200	32~392
Pt4	0~400	32~752
Pt5	-200~600	-328~1112
jPt	-200~500	-328~932
Lin	-1999~9999	

Available terminal