Vejledning til KUBE KM1/KM3 regulator

Denne vejledning forsøger at gennemgå programmering/indstilling af AsconTechnologic KUBE KM1 og KM3 regulatorer. For info omkring fysiske dimensioner, tilslutning og specifikationer henvises til den komplette vejledning fra producenten. Denne vejledning fokuserer udelukkende på programmeringen. Programeringen er opdelt i 2 dele.

1. "Grovprogramering" Først skal code1 og code2 (også kaldet LMNO og PQRS) sættes. Dette gøres fra regulatorens taster. Før code1 o code2 er sat, er der ingen regulering, der virker. Bemærk, at reguleringsudgangen ikke behøver at være udgang-1. Der er flere muligheder. Se tabel for code1. Alarmerne sættes med code2.
2. "Finprogramering". Her fastsættes detaillierne i reguleringen. Dette kan gøres enten fra tregulatorens kanpper (det er besværligt, men absolutmuligt), eller fra en computer, hvilket giver et bedre overblik over reguleringen.

Der tages forbehold for fejl.

Generelt

Programmering af KM1/KM3 regulatorerne er delt op i forskelige grupper. Hver gruppe indeholder alle parametre der har med en bestemt funktion at gøre (f.eks. input, regulering, alarm osv).

Sådan får du adgang til programmering af parametrene

1. Hvis du vil konfigurere via computeren, skal konfigureringskode 1 og 2 sættes fra regulatorens tastatur, før programering fra computeren virker. Du skal bruge password 300.
2. Tryk og hold ⏎ knappen inde i mere end 5 sekunder. Det øverste display viser "PASS" mens det nederste display viser 0. Brug piltasterne cod1. Tast ⏎ og brug piltasterne igen til at sætte cod2. Tast ⏎ og igen ⏎ for at afslutte.
3. For at få adgang til den øvrige programerin skal du bruge pasword 30.
   a. Note: Standard password er fra fabrikkens side sat til: **30 og 300**. Se iøvrige vejledningen side 13.
   b. Note: Regulatoren fortsætter med regulering i baggrunden, imens man er i færd med programmering. Hvis man ønsker at regulatoren skal stoppe imens man programmerer den, skal man bruge password 2000+indstillede password – dvs. standard 2030. Regulering genoptages, når man går ud af programmeringsmenuen.
4. Tryk på ⏎ knappen.
   Hvis password er korrekt, viser displayet forkortelsen for den første parametergruppe: ⌐inP.

Sådan kommer du ud af programmering

Tryk og hold ⏎ knappen inde i mere end 5 sekunder.

Knappernes funktion under programmering

🔁 Et kort tryk fører dig ud af nuværende parametergruppe og du kan vælge en ny parametergruppe. Et langt tryk fører dig helt ud af programmeringsmenuen.

⏎ Hvis det øverste display viser en parametergruppe og det nederste display er blankt, giver et tryk adgang til den pågældende gruppe.
Når øverste display viser en parameter og nederste display viser en værdi, vil et tryk på knappen bekræfte den indstillede værdi.

🔼 Øger værdien.

🔽 Reducerer værdien.

🔁 + ⏎ Samtidigt tryk på begge knapper går tilbage til tidligere parametergruppe.

Nulstilling til fabriksindstillede værdier

Hvis der er gået rod i programmering af regulatoren, og nogle parameter er indstillet uhensigtsmæssigt, er det muligt at nulstille alle parametre.

1. Tryk og hold ⏎ knappen inde i mere end 5 sekunder. Det øverste display viser "PASS" mens det nederste display viser 0.
2. Brug piletasterne til at indtaste password: -481.
3. Tryk på ⏎ knappen.
4. Regulatoren slukker kortvarigt og tænder igen. Nu er alle parametre nulstillet, til de værdier de har, når regulatoren kommer fra fabrikken. Du skal nu begynde helt forfra med grovprogramering.

Programmering

Det anbefales at have Appendix A ved hånden, og gennemgå parametrene én efter én. Det er den sikreste måde at komme igennem programmeringen uden at overse noget. Man kan selvfølgelig udelade de grupper man ikke anvender, f.eks. alarmer, kommunikation eller kalibrering.

For en uddybende forklaring til parametrene henvises til den officielle vejledning fra producenten.

Punkter der bør bemærkes:

Antallet af set-points sættes under punkt 76

Cirkelknappen kan starte auto-tune under normal drift. Se punkt 121 i den fulde manual.

Autotune:

Ved standardopsætning: Tryk 🔁 i 1 sekund. Display viser tune. Så længe punktummet blinker, er auto i gang. Bemærk: Autotun tager lang tid, op til flere timer, og temperaturen kommer flere gange et godt stykke over setpunktet, inden autotune er færdig.

Ændring af setpunkt:

Tryk kort på ⏎ . Øverst vises SP, nederst setpunktet. Brug pilknapperne til at ændre setpunktet. Tryk på ⏎ igen for at godkende. Vent, eller hold 🔁 for at komme tilbage til normal viisning.

Kodning ved brug af computer:

Først skal driver og program indlæses i computeren. Forklaring kommer snart.

1. Start programmet.
2. Tilslut AO1 til computerens USB-port.
3. Tilslut AO1 til regulatoren. Husk at vende den rigtigt.
4. Start programmet Tecnologic Setup og tillad at programmet kører.
5. Vælg com-porten.
6. Klik på search.
7. Hvis det ikke virker, er mulighederne, forkert USB-port eller AO1 er vendt forkert.
8. Klik på Start Application og godkend ved at klikke på ja.
9. Klik på U-knappen på billedet af regulatoren.
10. Nu har du adgang til alle 142 punkter i opsætningen. Husk at trykke på vognretur, nå du har indtastet en talværdi.

Regulatoren fungerer under programeringen, så man hele tiden kan følge med.

1. I punkt 121 kan du sætte autotune skal starte. Bemærk at det først virker når AO1 er fjernet. Hvis du vil bruge autotune under programeringen, så skal du vælge fanen control, og klik på den mørke streg under Start Auto tune.
2.

Indsætning af kode for overordnet styring (grovprogramering):

5.3.1 "Code" configuration procedure The controller configuration (Input type, Control mode, etc.) can be made entering two 4-digit codes. Before to enter into code configuration we suggest you to prepare the two codes according to the tables that follow. Notes: 1. During the Code configuration procedure there is no timeout. 2. To leave, at any time, the Configuration session without saving the settings made, press the button. To enter into code configuration proceed as follows: 1. Push the button for more than 3 seconds. The upper display will show PASS while the lower display will show 0; 2. Using and buttons set the password programmed in parameter [120] PAS4. The factory default password for Code configuration is 300; 3. Push the button; If the password is correct the instrument will show one of the following conditions: • If no code is present, the display shows codE on the upper display and oFF on the lower display. Push the button to continue. The upper display will flash cod1 while the lower display shows 0000. • If a previous code was stored, the upper display will flash cod1 while the lower display shows the value of cod1 stored in memory.

4. Using and buttons set the code 1 value according to the following tables.

5. Push the button. The upper display shows cod2 flashing while the lower display shows 0000 or the cod2 value stored in memory. 6. Using and buttons set the code 2 value according to the following tables.

Prepare your code 1   **L M N O** [| | | |]

Input Type and Range		L	M
TC J	-50... +1000°C	0	0
TC K	-50... +1370°C	0	1
TC S	-50... 1760°C	0	2
TC R	-50... +1760°C	0	3
TC T	-70... +400°C	0	4
Infrared J	-46... +785°C	0	5
Infrared K	-46... +785°C	0	6
PT 100/PTC KTY81-121	-200... +850°C/-55... +150°C	0	7
PT 1000/NTC 103-AT2	-200... +850°C/-55... +150°C	0	8
Linear 0... 60 mV		0	9
Linear 12... 60 mV		1	0
Linear 0... 20 mA		1	1
Linear 4... 20 mA		1	2
Linear 0... 5 V		1	3
Linear 1... 5 V		1	4
Linear 0... 10 V		1	5
Linear 2... 10 V		1	6
TC J	-58... +1832°F	1	7
TC K	-58... +2498°F	1	8
TC S	-58... 3200°F	1	9
TC R	-58... +3200°F	2	0
TC T	-94... +752°F	2	1
Infrared J	-50... +1445°F	2	2
Infrared K	-50... +1445°F	2	3
PT 100/PTC KTY81-121	-328... +1562°F/-67... +302°F	2	4
PT 1000/NTC 103-AT2	-328... +1562°F/-67... +302°F	2	5

Cod 1: [**L** | **M** | **N** | **O**]
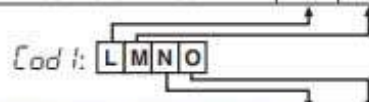
Control mode	OP1	OP2	OP3	OP4	N	O
ON/OFF heating = H	H	AL1	AL2	AL3	0	0
	NU	AL1	AL2	H	0	1
ON/OFF cooling = C	C	AL1	AL2	AL3	0	2
	NU	AL1	AL2	C	0	3
ON/OFF with neutral zone (H/C)	H	C	AL2	AL3	0	4
	H	AL1	AL2	C	0	5
	C	H	AL2	AL3	0	6
	NU	H	AL2	C	0	7
	C	AL1	AL2	H	0	8
	NU	C	AL2	H	0	9
PID heating = H	H	AL1	AL2	AL3	1	0
	NU	AL1	AL2	H	1	1
PID cooling = C	C	AL1	AL2	AL3	1	2
	NU	AL1	AL2	C	1	3
PID double action (H/C)	H	C	AL2	AL3	1	4
	H	AL1	AL2	C	1	5
	C	H	AL2	AL3	1	6
	NU	H	AL2	C	1	7
	C	AL1	AL2	H	1	8
	NU	C	AL2	H	1	9
Servomotor PID heating	NU	UP	down	AL3	2	0
Servomotor PID cooling	NU	UP	down	AL3	2	1

Prepare your code 2   P Q R S

Alarm 3					R
Alarm 2				Q	
Alarm 1			P		
Not used		0	0	0
Sensor break		1	1	1
Absolute	High	2	2	2
	Low	3	3	3
Absolute High/Low	External High/Low	4	4	4
	Internal High/Low	5	5	5
Deviation	Deviation high	6	6	6
	Deviation low	7	7	7
Band	External band	8	8	8
	Internal band	9	9	9

Cod2: P Q R S
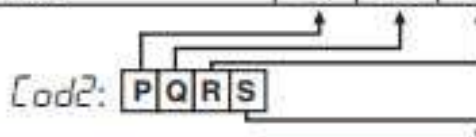
Auxiliary functions activation	S
None	0
Wattmeter (instantaneous power expressed in W)	1
Wattmeter (energy expressed in Wh)	2
Absolute worked time (expressed in days)	3
Absolute worked time (expressed in hours)	4

Appendix A

inP Group – Parametre der har med input at gøre

no.	Param.	Description	Dec. Point	Values	Default
1	SEnS	Sensor selection (according to the HW)	0		J
		Model C		J = TC J (0... 1000°C/32... 1832°F); crAL = TC K (0... 1370°C/32... 2498°F); S = TC S (0... 1760°C/32... 3200°F); r = TC R (0... 1760°C/32... 3200°F); t = TC T (0... 400°C/32... 752°F); ir.J = Exergen IRS J (0... 1000°C/32... 1832°F); ir.cA = Exergen IRS K (0... 1370°C/32... 2498°F); Pt1 = RTD Pt 100 (-200... 850°C/-328... 1562°F); Pt10 = RTD Pt 1000 (-200... 500°C/-328... 932°F); 0.60 = 0... 60 mV; 12.60 = 12... 60 mV; 0.20 = 0... 20 mA; 4.20 = 4... 20 mA; 0.5 = 0... 5 V; 1.5 = 1... 5 V, ; 0.10 = 0... 10 V; 2.10 = 2... 10 V.	
		Model E		J = TC J (0... 1000°C/32... 1832°F); crAL = TC K (0... 1370°C/32... 2498°F); S = TC S (0... 1760°C/32... 3200°F); r = TC R (0... 1760°C/32... 3200°F); t = TC T (0... 400°C/32... 752°F); ir.J = Exergen IRS J (0... 1000°C/32... 1832°F); ir.cA = Exergen IRS K (0... 1370°C/32... 2498°F); Ptc = PTC (-55... 150°C/-67... 302°F); ntc = NTC (-50... 110°C/-58... 230°F); 0.60 = 0... 60 mV; 12.60 = 12... 60 mV; 0.20 = 0... 20 mA; 4.20 = 4... 20 mA; 0.5 = 0... 5 V; 1.5 = 1... 5 V, ; 0.10 = 0... 10 V; 2.10 = 2... 10 V.	
2	dp	Decimal Point Position (linear inputs)	0	0... 3	0
		Decimal Point Position (different than linear inputs)		0/1	
3	SSC	Initial scale read-out for linear inputs	dp	-1999... 9999	0
4	FSc	Full Scale Readout for linear inputs	dp	-1999... 9999	1000
5	unit	Engineer unit		°C/°F	°C
6	Fil	Digital filter on the measured value	1	0 (= OFF)... 20.0 s	1.0

7	inE	Sensor error used to enable the safety output value		or = Over range;
				ou = Under range;
				our = Over and under range.
					our

8	oPE	Safety output value (% of the output)		-100... 100	0

9	IO4.F	I/O 4 function		on = Output used as PWS for TX;
				out4 = Output 4 (digital output 4);
				dG2c = Digital input 2 driven by contact;
				dG2U = Digital input 2 driven by voltage.
					out4

no.	Param.	Description	Dec. Point	Values	Default
10	diF1	Digital Input 1 function		oFF = Not used; 1 = Alarm reset; 2 = Alarm acknowledge (ACK); 3 = Hold of the measured value; 4 = Stand by mode; 5 = Manual mode; 6 = HEAt with SP1 and CooL with SP2; 7 = Timer RUN/Hold/Reset; 8 = Timer Run; 9 = Timer Reset; 10 = Timer Run/Hold;	oFF
11	diF2	Digital Input 2 function		11 = Timer Run/Reset; 12 = Timer Run/Reset with lock; 13 = Program Start; 14 = Program Reset; 15 = Program Hold; 16 = Program Run/Hold; 17 = Program Run/Reset; 18 = Sequential SP selection; 19 = SP1 - SP2 selection; 20 = SP1... SP4 binary selection; 21 = Digital inputs in parallel to ▲ and ▼ keys.	oFF
12	di.A	Digital Inputs Action (DI2 only if configured)		0 = DI1 direct action, DI2 direct action; 1 = DI1 reverse action, DI2 direct action; 2 = DI1 direct action, DI2 reverse action; 3 = DI1 reverse action, DI2 reverse action.	0

Out Group – Parametre der har at gøre med output

no.	Param.	Description	Dec. Point	Values	Default
13	o1t	Output 1 type (when Out 1 is an analogue output KM3 only)		0-20 = 0... 20 mA; 4-20 = 4... 20 mA; 0-10 = 0... 10 V; 2-10 = 2... 10 V.	0-20

14	o1F	Out 1 function (when Out 1 is a linear output)	0	NonE = Output not used;
				H.rEG = Heating output;
				c.rEG = Cooling output;
				r.inP = Measure retransmission;
				r.Err = Error (SP - PV) retransmission;
				r.SP = Set point retransmission ;
				r.SEr = Serial value retransmission.
					H.reG

		Out 1 function (when Out1 is a digital output)	0	NonE = Output not used;
				H.rEG = Heating output;
				c.rEG = Cooling output;
				AL = Alarm output;
				t.out = Timer output;
				t.HoF = Timer out -OFF in hold;
				P.End = Program end indicator;
				P.HLd = Program hold indicator;
				P.uit = Program wait indicator;
				P.run = Program run indicator;
				P.Et1 = Program Event 1;
				P.Et2 = Program Event 2;
				or.bo = Out-of-range or burn out indicator;
				P.FAL = Power failure indicator;
				bo.PF = Out-of-range, burn out and Power failure indicator;
				St.bY = Stand by status indicator;
				diF.1 = The output repeats the digital input 1 status;
				diF.2 = The output repeats the digital input 2 status;
				on = Out 1 always ON;
				riSP = Inspection request	

15	Ao1L	Initial scale value of the analog retransmission (KM3 only)	dP	-1999 ... Ao1H	-1999
16	Ao1H	Full scale value of the analog retransmission (KM3 only)	dP	Ao1L ... 9999.	9999
17	o1AL	Alarms linked up with the out 1	0	0... 63: +1 = Alarm 1; +2 = Alarm 2; +4 = Alarm 3; +8 = Loop break alarm; +16 = Sensor Break; +32 = Overload on output 4.	AL1

Fortsættes på næste side

no.	Param.	Description	Dec. Point	Values	Default

18	o1Ac	Out 1 action	0	dir = Direct action;
				rEU = Reverse action;
				dir.r = Direct with reversed LED;
				ReU.r = Reverse with reversed LED
					dir

19	o2F	Out 2 function	0	NonE = Output not used;
				H.rEG = Heating output;
				c.rEG = Cooling output;
				AL = Alarm output;
				t.out = Timer output;
				t.HoF = Timer out -OFF in hold;
				P.End = Program end indicator;
				P.HLd = Program hold indicator;
				P.uit = Program wait indicator;
				P.run = Program run indicator;
				P.Et1 = Program Event 1;
				P.Et2 = Program Event 2;
				or.bo = Out-of-range or burn out indicator;
				P.FAL = Power failure indicator;
				bo.PF = Out-of-range, burn out and Power failure indicator;
				St.bY = Stand by status indicator;
				diF.1 = The output repeats the digital input 1 status;
				diF.2 = The output repeats the digital input 2 status;
				on = Out 2 always ON;
				riSP = Inspection request.
					AL

20	o2AL	Alarms linked up with the out 2	0	0... 63: +1 = Alarm 1; +2 = Alarm 2; +4 = Alarm 3; +8 = Loop break alarm; +16 = Sensor Break; +32 = Overload on output 4.	AL1

21	o2Ac	Out 2 action	0	dir = Direct action;
				rEU = Reverse action;
				dir.r = Direct with reversed LED;
				ReU.r = Reverse with reversed LED.
					dir

22	o3F	Out 3 function	0	NonE = Output not used;
				H.rEG = Heating output;
				c.rEG = Cooling output;
				AL = Alarm output;
				t.out = Timer output;
				t.HoF = Timer out -OFF in hold;
				P.End = Program end indicator;
				P.HLd = Program hold indicator;
				P.uit = Program wait indicator;
				P.run = Program run indicator;
				P.Et1 = Program Event 1;
				P.Et2 = Program Event 2;
				or.bo = Out-of-range or burn out indicator;
				P.FAL = Power failure indicator;
				bo.PF = Out-of-range, burn out and Power failure indicator;
				St.bY = Stand by status indicator;
				diF.1 = The output repeats the digital input 1 status;
				diF.2 = The output repeats the digital input 2 status;
				on = Out 3 always ON;
				riSP = Inspection request.
					AL

23	o3AL	Alarms linked up with the out 3	0	0... 63: +1 = Alarm 1; +2 = Alarm 2; +4 = Alarm 3; +8 = Loop break alarm; +16 = Sensor Break; +32 = Overload on output 4.	AL2

24	o3Ac	Out 3 action	0	dir = Direct action;
				rEU = Reverse action;
				dir.r = Direct with reversed LED;
				ReU.r = Reverse with reversed LED.
					dir

no.	Param.	Description	Dec. Point	Values	Default

25	o4F	Out 4 function	0	NonE = Output not used;
				H.rEG = Heating output;
				c.rEG = Cooling output;
				AL = Alarm output;
				t.out = Timer output;
				t.HoF = Timer out -OFF in hold;
				P.End = Program end indicator;
				P.HLd = Program hold indicator;
				P.uit = Program wait indicator;
				P.run = Program run indicator;
				P.Et1 = Program Event 1;
				P.Et2 = Program Event 2;
				or.bo = Out-of-range or burn out indicator;
				P.FAL = Power failure indicator;
				bo.PF = Out-of-range, burn out and Power failure indicator;
				St.bY = Stand by status indicator
					AL

26	o4AL	Alarms linked up with the out 4	0	0... 63: +1 = Alarm 1; +2 = Alarm 2; +4 = Alarm 3; +8 = Loop break alarm; +16 = Sensor Break; +32 = Overload on output 4.	AL1 + AL2

27	o4Ac	Out 4 action	0	dir = Direct action;
				rEU = Reverse action;
				dir.r = Direct with reversed LED;
				ReU.r = Reverse with reversed LED.
					dir

AL1 Group – Parametre der har at gøre med alarm 1

no.	Param.	Description	Dec. Point	Values	Default
28	AL1t	Alarm 1 type	0	nonE = Alarm not used; LoAb = Absolute low alarm; HiAb = Absolute high alarm; LHAo = Windows alarm in alarm outside the windows; LHAI = Windows alarm in alarm inside the windows; SE.br = Sensor Break; LodE = Deviation low alarm (relative); HidE = Deviation high alarm (relative); LHdo = Relative band alarm in alarm out of the band; LHdi = Relative band alarm in alarm inside the band.	HiAb
29	Ab1	Alarm 1 function	0	0... 15: +1 = Not active at power up; +2 = Latched alarm (manual reset); +4 = Acknowledgeable alarm; +8 = Relative alarm not active at set point change.	0
30	AL1L	- For High and low alarms, it is the low limit of the AL1 threshold; - For band alarm, it is low alarm threshold	dp	From -1999 to AL1H (E.U.)	-1999
31	AL1H	- For High and low alarms, it is the high limit of the AL1 threshold; - For band alarm, it is high alarm threshold	dp	From AL1L to 9999 (E.U.)	9999
32	AL1	AL1 threshold	dp	From AL1L to AL1H (E.U.)	0
33	HAL1	AL1 hysteresis	dp	1... 9999 (E.U.)	1
34	AL1d	AL1 delay	0	From 0 (oFF) to 9999 (s)	oFF
35	AL1o	Alarm 1 enabling during Stand-by mode and out of range conditions	0	0 = Alarm 1 disabled during Stand by and out of range; 1 = Alarm 1 enabled in stand by mode; 2 = Alarm 1 enabled in out of range condition; 3 = Alarm 1 enabled in stand by mode and in overrange condition.	0

AL2 Group – Parametre der har at gøre med alarm 2

no.	Param.	Description	Dec. Point	Values	Default
36	AL2t	Alarm 2 type	0	nonE = Alarm not used; LoAb = Absolute low alarm; HiAb = Absolute high alarm; LHAo = Windows alarm in alarm outside the windows; LHAI = Windows alarm in alarm inside the windows; SE.br = Sensor Break; LodE = Deviation low alarm (relative); HidE = Deviation high alarm (relative); LHdo = Relative band alarm in alarm out of the band; LHdi = Relative band alarm in alarm inside the band.	Loab
37	Ab2	Alarm 2 function	0	0... 15: +1 = Not active at power up; +2 = Latched alarm (manual reset); +4 = Acknowledgeable alarm; +8 = Relative alarm not active at set point change	0
38	AL2L	- For High and low alarms, it is the low limit of the AL2 threshold; - For band alarm, it is low alarm threshold	dp	From -1999 to AL2H (E.U.)	-1999
39	AL2H	- For High and low alarms, it is the high limit of the AL2 threshold; - For band alarm, it is high alarm threshold	dp	From AL2L to 9999 (E.U.)	9999
40	AL2	AL2 threshold	dp	From AL2L to AL2H (E.U.)	0
41	HAL2	AL2 hysteresis	dp	1... 9999 (E.U.)	1
42	AL2d	AL2 delay	0	From 0 (oFF) to 9999 (s)	oFF
43	AL2o	Alarm 2 enabling during Stand-by mode and out of range conditions	0	0 = Alarm 2 disabled during Stand by and out of range; 1 = Alarm 2 enabled in stand by mode; 2 = Alarm 2 enabled in out of range condition; 3 = Alarm 2 enabled in stand by mode and in overrange condition.	0

AL3 Group – Parametre der har at gøre med alarm 3

no.	Param.	Description	Dec. Point	Values	Default
44	AL3t	Alarm 3 type	0	nonE = Alarm not used; LoAb = Absolute low alarm; HiAb = Absolute high alarm; LHAo = Windows alarm in alarm outside the windows; LHAI = Windows alarm in alarm inside the windows; SE.br = Sensor Break; LodE = Deviation low alarm (relative); HidE = Deviation high alarm (relative); LHdo = Relative band alarm in alarm out of the band; LHdi = Relative band alarm in alarm inside the band.	nonE
45	Ab3	Alarm 3 function	0	0... 15: +1 = Not active at power up; +2 = Latched alarm (manual reset); +4 = Acknowledgeable alarm; +8 = Relative alarm not active at set point change.	0
46	AL3L	- For High and low alarms, it is the low limit of the AL3 threshold; - For band alarm, it is low alarm threshold	dp	From -1999 to AL3H (E.U.)	-1999
47	AL3H	- For High and low alarms, it is the high limit of the AL3 threshold; - For band alarm, it is high alarm threshold	dp	From AL3L to 9999 (E.U.)	9999
48	AL3	AL3 threshold	dp	From AL3L to AL3H (E.U.)	0
49	HAL3	AL3 hysteresis	dp	1... 9999 (E.U.)	1
50	AL3d	AL3 delay	0	From 0 (oFF) to 9999 (s)	oFF
51	AL3o	Alarm 3 enabling during Stand-by mode and out of range conditions	0	0 = Alarm 3 disabled during Stand by and out of range; 1 = Alarm 3 enabled in stand by mode; 2 = Alarm 3 enabled in out of range condition; 3 = Alarm 3 enabled in stand by mode and in overrange condition.	0

LBA Group – Parametre der har at gøre med "Loop Break Alarm"

no.	Param.	Description	Dec. Point	Values	Default
52	LbAt	LBA time	0	From 0 (oFF) to 9999 (s)	oFF
53	LbSt	Delta measure used by LBA during Soft start	dP	From 0 (oFF) to 9999 (E.U.)	10
54	LbAS	Delta measure used by LBA	dP	1...9999 (E.U.)	20
55	LbcA	Condition for LBA enabling	0	uP = Active when Pout = 100%; dn = Active when Pout = -100%; both = Active in both cases.	both

rEG Group – Parametre der har at gøre med regulering

no.	Param.	Description	Dec. Point	Values	Default
56	cont	Control type	0	Pid = PID (heat and/or); On.FA = ON/OFF asymmetric hysteresis; On.FS = ON/OFF symmetric hysteresis; nr = Heat/Cool ON/OFF control with neutral zone; 3Pt = Servomotor control.	Pid
57	Auto	Autotuning selection	0	-4 = Oscillating auto-tune with automatic restart at power up and after all point change; -3 = Oscillating auto-tune with manual start; -2 = Oscillating -tune with automatic start at the first power up only; -1 = Oscillating auto-tune with automatic restart at every power up; 0 = Not used; 1 = Fast auto tuning with automatic restart at every power up; 2 = Fast auto-tune with automatic start the first power up only; 3 = FAST auto-tune with manual start; 4 = FAST auto-tune with automatic restart at power up and after a set point change; 5 = Evo-tune with automatic restart at every power up; 6 = Evo-tune with automatic start the first power up only; 7 = Evo-tune with manual start; 8 = Evo-tune with automatic restart at power up and after a set point change.	7
58	Aut.r	Manual start of the Autotuning	0	oFF = Not active; on = Active	oFF
59	SELF	Self tuning enabling	0	no = The instrument does not perform the self-tuning; YES = The instrument is performing the self-tuning.	no
60	HSEt	Hysteresis of the ON/OFF control	dP	0... 9999 (E.U.)	1
61	cPdt	Time for compressor protection	0	From 0 (oFF) to 9999 (s)	oFF
62	Pb	Proportional band	dP	1... 9999 (E.U.)	50
63	ti	Integral time	0	From 0 (oFF) to 9999 (s)	200
64	td	Derivative time	0	From 0 (oFF) to 9999 (s)	50
65	Fuoc	Fuzzy overshoot control	2	0.00... 2.00	0.50
66	tcH	Heating output cycle time	1	0.1... 130.0 (s)	20.0
67	rcG	Power ratio between heating and cooling action	2	0.01... 99.99	1.00
68	tcc	Cooling output cycle time	1	0.1... 130.0 (s)	20.0
69	rS	Manual reset (Integral pre-load)	1	-100.0... +100.0 (%)	0.0
70	Str.t	Servomotor stroke time	0	5...1000 seconds	60
71	db.S	Servomotor dead band	0	0...100%	50
72	od	Delay at power up	2	From 0.00 (oFF) to 99.59 (hh.mm)	oFF
73	St.P	Maximum power output used during soft start	0	-100... 100 (%)	0
74	SSt	Soft start time	2	• 0.00 (oFF); • 0.01... 7.59 (hh.mm); • inF (always ON).	oFF
75	SS.tH	Threshold for soft start disabling	dP	-1999... +9999 (E.U.)	9999

SP Group – Parametre der har at gøre med setpunkt

no.	Param.	Description	Dec. Point	Values	Default
76	nSP	Number of used set points	0	1... 4	1
77	SPLL	Minimum set point value	dP	From -1999 to SPHL	-1999
78	SPHL	Maximum set point value	dP	From SPLL to 9999	9999
79	SP	Set point 1	dP	From SPLL to SPLH	0
80	SP 2	Set point 2	dP	From SPLL to SPLH	0
81	SP 3	Set point 3	dP	From SPLL to SPLH	0
82	SP 4	Set point 4	dP	From SPLL to SPLH	0
83	A.SP	Selection of the active set point	0	From 1 (SP 1) to nSP	1
84	SP.rt	Remote set point type	0	RSP = The value coming from serial link is used as remote set point; trin = The value will be added to the local set point selected by A.SP and the sum becomes the operative set point; PErc = The value will be scaled on the input range and this value will be used as remote SP.	trin
85	SPLr	Local/remote set point selection	0	Loc = Local; rEn = Remote.	Loc
86	SP.u	Rate of rise for **POSITIVE** set point change (ramp UP)	2	0.01... 99.99 (inF) engineering units per minute	inF
87	SP.d	Rate of rise for **NEGATIVE** set point change (ramp DOWN)	2	0.01... 99.99 (inF) engineering units per minute	inF

TIN Group – Parametre der har at gøre med Timer

no.	Param.	Description	Dec. Point	Values	Default

88	tr.F	Independent timer function	0	NonE = Timer not used;
				i.d.A = Delayed start timer;
				i.uP.d = Delayed start at power up;
				i.d.d = Feed-through timer;
				i.P.L = Asymmetrical oscillator with start OFF;
				i.L.P = Asymmetrical oscillator with start ON.
					nonE

89	tr.u	Timer unit	0	hh.nn = Hours and minutes;
				nn.SS = Minutes and seconds;
				SSS.d = Second and tenth of seconds.
					nn.SS

90	tr.t1	Time 1	2 1	When tr.u < 20: 0.01... 99.59 When tr.u = 200: 0.1... 995.9	1.00
91	tr.t2	Time 2	2 1	When tr.u < 2: From 00.00 (oFF) to 99.59 (inF) When tr.u = 2: From 000.0 (oFF) to 995.9 (inF)	1.00

92	tr.St	Timer status	0	rES = Timer reset;
				run = Timer run;
				HoLd = Timer hold.
					rES

PRG Group – Parametre der har at gøre med Programmer

no.	Param.	Description	Dec. Point	Values	Default
93	Pr.F	Program action at power up	0	nonE = Programmer not used; S.uP.d = Start at power up with a first step in stand-by; S.uP.S = Start at power up; u.diG = Start at Run command detection only; u.dG.d = Start at Run command with a first step in stand-by.	nonE
94	Pr.u	Engineering unit of the soaks	2	hh.nn = Hours and minutes; nn.SS = Minutes and seconds	hh.nn
95	Pr.E	Instrument behaviour at the end of the program execution	0	cnt = Continue; A.SP = Go to the set point selected by A.SP; St.by = Go to stand-by mode	A.SP
96	Pr.Et	Time of the end program indication	2	From 0.00 (oFF) to 99.59 (inF) minutes and seconds	oFF
97	Pr.S1	Set point of the first soak	dP	From SPLL to SPHL	0
98	Pr.G1	Gradient of the first ramp	1	0.1... 999.9 (inF= Step transfer) Engineering Unit/minute	inF
99	Pr.t1	Time of the 1st soak	2	0.00... 99.59	0.10
100	Pr.b1	Wait band of the 1st soak	dP	From 0 (oFF) to 9999 (E.U.)	oFF
101	Pr.E1	Events of the 1st group	2	00.00... 11.11	00.00
102	Pr.S2	Set point of the 2nd soak	dP	OFF or from SPLL to SPHL	0

no.	Param.	Description	Dec. Point	Values	Default
103	Pr.G2	Gradient of the 2nd ramp	1	0.1... 999.9 (inF= Step transfer) Engineering Unit/minute	inF
104	Pr.t2	Time of the 2nd soak	2	0.00... 99.59	0.10
105	Pr.b2	Wait band of the 2nd soak	dP	From 0 (oFF) to 9999 (E.U.)	oFF
106	Pr.E2	Events of the 2nd group	2	00.00... 11.11	00.00
107	Pr.S3	Set point of the 3rd soak	dP	OFF or from SPLL to SPHL	0
108	Pr.G3	Gradient of the 3rd ramp	1	0.1... 999.9 (inF= Step transfer) Engineering Unit/minute	inF
109	Pr.t3	Time of the 3rd soak	2	0.00... 99.59	0.10
110	Pr.b3	Wait band of the 3rd soak	dP	From 0 (oFF) to 9999 (E.U.)	oFF
111	Pr.E3	Events of the 3rd group	0	00.00... 11.11	00.00
112	Pr.S4	Set point of the 4th soak	dP	OFF or from SPLL to SPHL	0
113	Pr.G4	Gradient of the 4th ramp	1	0.1... 999.9 (inF= Step transfer) Engineering Unit/minute	inF
114	Pr.t4	Time of the 4th soak	2	0.00... 99.59	0.10
115	Pr.b4	Wait band of the 4th soak	dP	From 0 (oFF) to 9999 (E.U.)	oFF
116	Pr.E4	Events of the 4th group	0	00.00... 11.11	00.00

117	Pr.St	Program status	0	rES = Program reset;
				run = Program start;
				HoLd = Program hold.
					rES

PAN Group – Parametre der har at gøre med operator visning

no.	Param.	Description	Dec. Point	Values	Default
118	PAS2	Level 2 password (limited access level)	0	- oFF (Level 2 not protected by password); - 1... 200.	20
119	PAS3	Level 3 password (complete configuration level)	0	3... 200	30
120	PAS4	Level 4 password (CODE configuration level)	0	201... 400	300

121	uSrb	⬛ button function during RUN TIME		nonE = No function;
				 tunE = Auto-tune/self-tune enabling. A single press (longer than 1 second) starts the auto-tune;
				 oPLo = Manual mode. The first pressure puts the instrument in manual mode (oPLo) while a second one puts the instrument in Auto mode;
				 AAc = Alarm reset;
				 ASi = Alarm acknowledge;
				 chSP = Sequential set point selection;
				 St.by = Stand by mode. The first press puts the instrument in stand by mode while a second one puts the instrument in Auto mode;
				 Str.t = Timer run/hold/reset;
				 P.run = Program run;
				 P.rES = Program reset;
				 P.r.H.r = Program run/hold/reset.
					tunE

no.	Param.	Description	Dec. Point	Values	Default
122	diSP	Display management		nonE = Standard display; Pou = Power output; SPF = Final set point; Spo = Operative set point; AL1 = Alarm 1 threshold; AL2 = Alarm 2 threshold; AL3 = Alarm 3 threshold; Pr.tu = - During a soak, the instrument shows the soak elapsed time; - During a ramp the display shows the operative set point. At program end, the instrument alternately displays PEnd and the measured value; - When no program is running, the instrument shows the standard display; Pr.td = - During a soak, the instrument shows the soak remaining time (count down); - During a ramp the display shows the operative set point. At program end, the instrument alternately displays PEnd and the measured value; - When no program is running, the instrument shows the standard display; P.t.tu = When the programmer is running, the display shows the total elapsed time. At program end, the instrument alternately displays PEnd and the measured value; P.t.td = When the programmer is running, the display shows the total remaining time (count down). At program end, the instrument alternately displays PEnd and the measured value; ti.uP = When the timer is running, the display shows the timer counting up. At count end, the instrument alternately displays t.End and the measured value; ti.du = When the timer is running, the display shows the timer counting down. At count end, the instrument alternately displays t.End and the measured value; PErc = Percent of the power output used during soft start (when the soft start time is equal to infinite, the limit is always active and it can also be used when ON/OFF control is selected); PoS = Valve position (servomotor control).	0
123	di.cL	Display colour		0 = The display colour is used to show the actual deviation (PV - SP); 1 = Display red (fix); 2 = Display green (fix); 3 = Display orange (fix).	0
124	AdE	Deviation for display colour management		1... 999 (E.U.)	5
125	di.St	Display Timeout	2	- oFF (display always ON); - 0.1... 99.59 (mm.ss).	oFF
126	fiLd	Filter on the displayed value	1	- oFF (filter disabled); - From 0.0 (oFF) to 20.0 (E.U.).	oFF
128	dSPu	Instrument status at power ON		AS.Pr = Starts in the same way it was prior to the power down; Auto = Starts in Auto mode; oP.0 = Starts in manual mode with a power output equal to zero; St.bY = Starts in stand-by mode.	AS.Pr
129	oPr.E	Operative modes enabling		ALL = All modes will be selectable by the next parameter; Au.oP = Auto and manual (oPLo) mode only will be selectable by the next parameter; Au.Sb = Auto and Stand-by modes only will be selectable by the next parameter	ALL
130	oPEr	Operative mode selection		If oPr.E = ALL: - Auto = Auto mode; - oPLo = Manual mode; - St.bY = Stand by mode; If oPr.E = Au.oP: - Auto = Auto mode; - oPLo = Manual mode; If oPr.E = Au.Sb: - Auto = Auto mode; - St.bY = Stand by mode.	Auto

Ser Group – Parametre der har at gøre med seriel kommunikation

no.	Param.	Description	Dec. Point	Values	Default
131	Add	Instrument address		- oFF; - 1... 254.	1
132	bAud	baud rate		1200 = 1200 baud; 2400 = 2400 baud; 9600 = 9600 baud; 19.2 = 19200 baud; 38.4 = 38400 baud	9600
133	trSP	Selection of the value to be retransmitted (Master)		nonE = Retransmission not used (the instrument is a slave); rSP = The instrument becomes a Master and retransmits the operative set point; PErc = The instrument become a Master and it retransmits the power output	nonE

CON Group – Parametre der har at gøre med beregning af forbrug

no.	Param.	Description	Dec. Point	Values	Default
134	Co.tY	Count type		oFF = Not used; 1 = Instantaneous power (kW); 2 = Power consumption (kW/h); 3 = Energy used during program execution. This measure starts from zero when a program runs end stops at the end of the program. A new program execution will reset the value; 4 = Total worked days: number of hours the instrument is turned ON divided by 24; 5 = Total worked hours: number of hours that the instrument is turned ON; 6 = Total worked days with threshold: number of hours the instrument is turned ON divided by 24, the controller is forced in stand-by when Co.ty value reaches the threshold set in [137] h.Job; 7 = Total worked hours with threshold: number of hours that the instrument is turned ON, the controller is forced in stand-by when Co.ty value reaches the threshold set in [137] h.Job; 8 = Totalizer of control relay worked days: number of hours the control relay has been in ON condition, divided by 24; 9 = Totalizer of control relay worked hours: number of hours the control relay has been in ON condition; 10 = Totalizer of control relay worked days with threshold: number of hours the control relay has been in ON condition divided by 24, the controller is forced in stand-by when Co.ty value reaches the threshold set in [137] h.Job; 11 = Totalizer of control relay worked hours with threshold: number of hours the control relay has been in ON condition, the controller is forced in stand-by when Co.ty value reaches the threshold set in [137] h.Job.	oFF
135	UoLt	Nominal Voltage of the load		1... 9999 (V)	230
136	cur	Nominal current of the load		1... 999 (A)	10
137	h.Job	Threshold of the working period		oFF = Threshold not used; 0... 9999 days (when [134] cotY = 4); 0... 9999 hours (when [134] cotY = 5).	0
138	t.Job	Worked time (not resettable)		0... 9999 days	

CAl Group – Parametre der har at gøre med kalibrering

no.	Param.	Description	Dec. Point	Values	Default
139	AL.P	Adjust Low Point		From -1999 to (AH.P - 10) in engineering units	0
140	AL.o	Adjust Low Offset		-300... +300 (E.U.)	0
141	AH.P	Adjust High Point		From (AL.P + 10) to 9999 engineering units	9999
142	AH.o	Adjust High Offset		-300... +300	0