ELECTRONIC REGULATOR

KOXKA REKA

USER MANUAL

(VERSION 3)

KOXKA ELECTRONIC REGULATOR (REKA, version 3)

INTRODUCTION:

The Koxka electronic regulators (**REKA**) can work with 1 or 2 PTC probes. Depending on the model act by 1, 2 or 3 relay.
They have 3 keys: **SET, UP** and **DOWN**. The alarms and errors are visualised in the display.
Several regulators can be connected to each other so that this way the defrosts will take part synchronised (it won't begin to cool until all the defrost periods conclude).
It can incorporate real time clock (**R.T.R**.).

KEYBOARD:

With the keyboard can be carried out the following operations:

Activate/deactivate defrost: Maintain **UP** during 8 sec. If it can be carried out it will appear in the display **DON**, if not it will appear **DOF**.

Activate/deactivate continuous cycle: Press **DOWN** during 8 sec. If it can be carried out it will appear in the display **CON**, and if not, **COF**.

To visualise secondary probe: Press **SET+UP**.

To cancel alarm: Press **UP+DOWN**.

To program the **HOUR** and **MINUTES**, maintain the key **SET** pressed until it appears **PRO** or **EPR**.
To program the parameter **H0** maintain pressed the key **SET** 8 seconds. If it has been recorded it will appear **PRO**, if not, **EPR** .

LED AND DISPLAY INDICATORS:

The display has 3 digits and in normal operating is visualised the value of the probe selected in the parameter **vSd**.
When the value of a parameter is varying, the display blinking indicates that it is expecting confirmation. If once confirmed the new fact-pressing key **SET**, if the display continues blinking, it indicates error when writing in memory.
When we visualise the probe not chosen by **vSd** (pressing **SET+UP**), it alternates its value with **Sd1** and **Sd2** probes.
The **LED** indicators that are incorporated are:

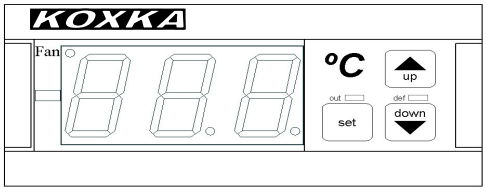
Out: Indicates connected compressor. If it blinks means that it's waiting for the ending of the compressor protection time, to begin a continuous cycle.

Def: Indicates that it's carrying out a defrost period. If it blinks it means that it's waiting for the others regulators to finish the defrost periods.

Fan: A point in the upper part of the display indicates connected fan.

ERROR AND ALARM MESSAGES:

Err: Memory reading error
Erp: Error of the probe that is not visualised in the display.
ALH: High temperature alarm.
ALL: Low temperature alarm.
ALE: External alarm.
AEH: External and high temperature alarm.
AEL: Internal and low temperature alarm.
OOO: Open probe.
– – –: Short-circuit probe.
DON: Defrost activated.
DOF: Defrost deactivated or not possible to carry out.
CON: Cooling continuous cycle activated.
COF: Cooling continuous cycle deactivated or not possible to carry out.
– d– : Thermostat carrying out a defrost.



OPERATING IN CASE OF BREAKDOWN:

1. - **Breakage of the defrost probe:** The defrost will conclude in a few minutes (**Pof**).
2. - **Breakage of the ambient probe:** Will connect the compressor during a period of times (**Ton**), and it will maintain it disconnected for another period of time (**Tof**). **Fdf** and **Cdf** parameters.
3. - **Memory fail:** In this case the compressor will be 5 minutes running and 5 minutes stopped. No defrost cycle.

ACCESS TO STANDARD PREDETERMINED CONFIGURATIONS:

The regulator has different standard configurations, they can be selected through the parameter **H0**. Have a look to the enclosed charts.

These parameters are divided in 4 levels.

Level 0: Pulsing **SET** during 8 seconds.
Level 1: Pulsing **SET** during 8 seconds from the Level 0.
Level 2: Pulsing **SET** during 8 seconds from the Level 1.
Level 3: Pulsing **SET** during 16 seconds from the Level 2.

CONTROL PROCESS:

There can be carried out 3 defrost types: Ventilated, with electric heaters and by cycle inversion.

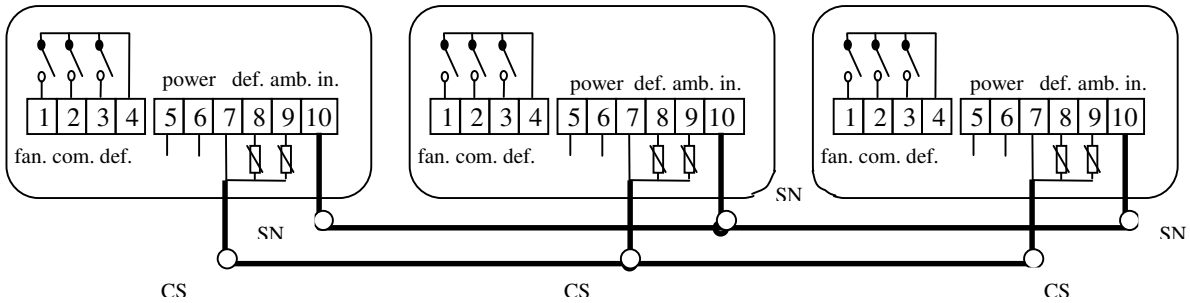
Regulation: Compressor connected when **TSd1 >= Sp1**, disconnected when **TSd1 <= Sp1- Hs1**

Differential regulation: Probe in the inlet and probe in the outlet. When TSd1 – TSd2 = r4, Sp1 becomes Sp1 + r5, with the same Hs1.

The regulators will be configured as **Master** or as **Slave** in the parameter **H1**, and in all of them the parameter **E0 = Def**.

The defrosts periods are cyclical. They will be carried out after doing the first defrost, which we should program with the parameter **DS1**. Example: **DS1 = 2** and **Cic = 6**. The first defrost will take part at 02:00h and since then, every 6 hours, that´s at 08:00h, 14:00h and 20:00h.

The connection of the communication among the regulators (until a maximum of 7), will be carried out in the following way:

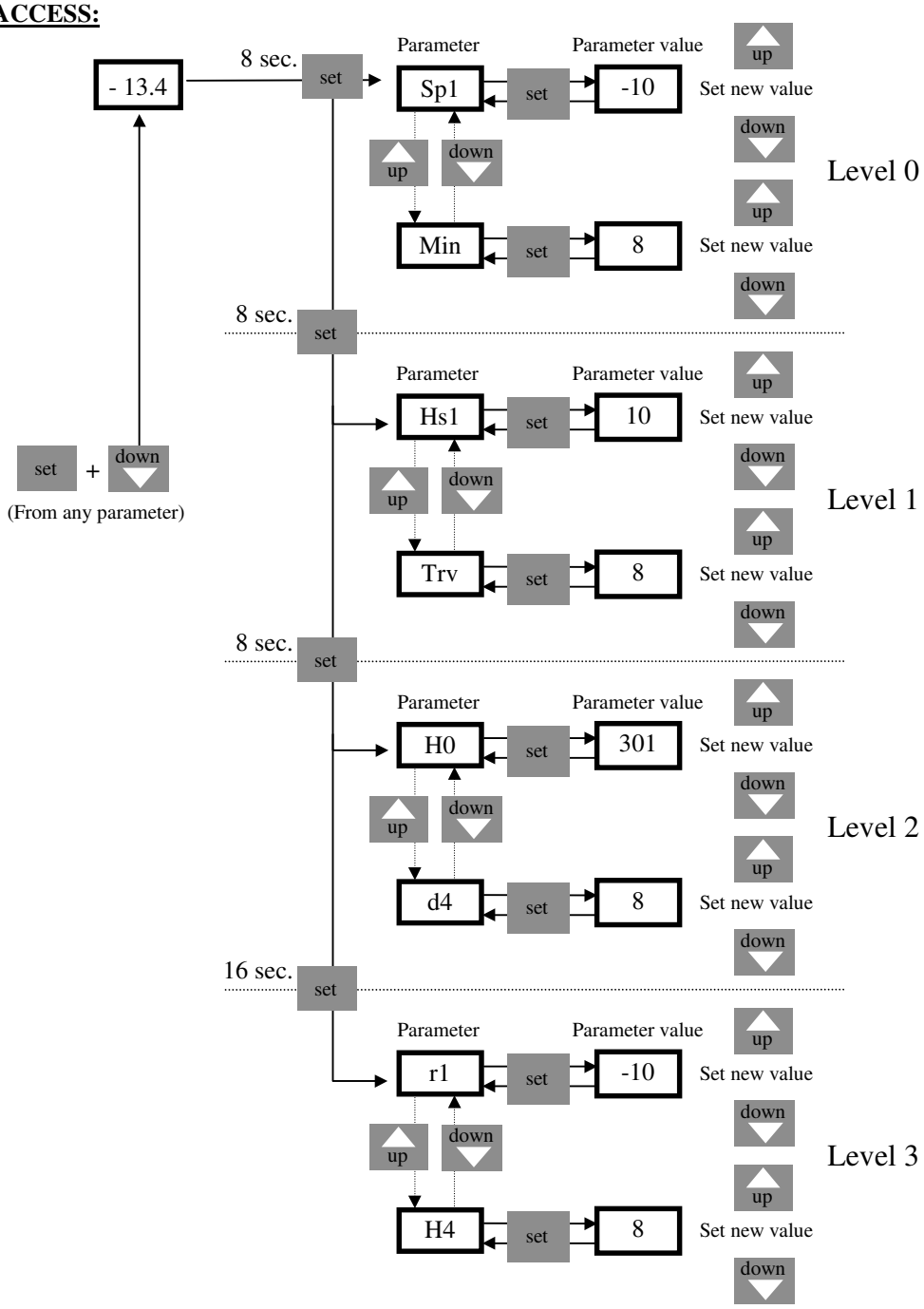


IMPORTANT

CS and SN are terminals on electric board

ON SITE YOU MUST CONNECT THE WIRE N°10 ON THE RESPECTIVE TERMINAL Nº 10 OF THE CONTROLLERS IN CASE OF A SEVERAL CONTROLLERS COMMUNICATION.

PARAMETERS ACCESS:



PARAMETER LIST:

Level	Parameter		Unit	Range	REK1	REK2	REK3
0	**SP1**	Temperature set point	degrees	r1 to r2	•	•	•
	Hor	Current hour (the thermostat inner one)	hours	0 to 23	•	•	•
	MIn	Current minutes (the thermostat inner ones)	minutes	0 to 59	•	•	•
1	**HS1**	Temperature differential or hysteresis	degrees	r1 to r2	•	•	•
	SP2	End defrost temperature	degrees	-99.9 to 80.0	•	•	•
	DS1	First defrost hour	h-m	0.0 to 23.5	•	•	•
	Pof	Defrost maximum time	minutes	0 to 240	•	•	•
	Cic	Period of time between defrosts	h-m	0.0 to 18.0	•	•	•
	Trv	Fans delay	minutes	0 to 24			•
2	**H0**	Configuration recording selection	number		101 to 109	201 to 207	301
	H1	Master or slave	range	Mst / Slv	•	•	•
	FdF	% operating by defect	number	0 to 100	•	•	•
	CdF	Cycle (ton + tof) in case of breakdown	minutes	0 to 60	•	•	•
	Pro	keyboard password	range	no/yes	•	•	•
	nSd	Number of probes	range	1/2	•	•	•
	vSd	Probe display	range	sd1 /sd2	•	•	•
	d0	Defrost control probe/fan	range	sd1/sd2	•	•	•
	d1	Manual defrost synchronization	range	no/yes	•	•	•
	d2	Compressor dripping time	minutes	0 to 24	•	•	•
	FiJ	Defrost display	range	off/on/d	•	•	•
	SP5	Return limit display	degrees	-99.9 to 80.0	•	•	•
3	**r1**	Minimum set point	degrees	-99.9 to r2	•	•	•
	r2	Maximum set point	degrees	r1 to 302	•	•	•
	r3	Differential or normal regulation	range	dif / nor	•	•	•
	r4	Differential for the differential way	degrees	0.1 to 20.0	•	•	•
	r5	Differential set point (1)	degrees	0.0 to 20.0	•	•	•
	r6	Fan operating in regulation	range	off / on / with			•
	d5	Defrost type	range	re/in		•	•
	d6	Defrost when connecting	range	no/yes	•	•	•
	d7	First defrost delay	h_m	0 to 18.0	•	•	•
	d8	Fan working during the defrost	range	no/yes			•
	A0	Differential of alarms and fans	degrees	0.1 to 20.0	•	•	•
	A1	Highest temperature alarm (1)	degrees	0.1 to 99.9	•	•	•
	A2	Lowest temperature alarm (1)	degrees	0.1 to 99.9	•	•	•
	A3	Time without alarm after continuous cycle	h-m	0.0 to 18.0	•	•	•
	A4	Time without alarm after defrost	h-m	0.0 to 18.0	•	•	•
	A5	Time without alarm after opening the door	h-m	0.0 to 18.0	•	•	•
	A6	Time without alarm since connection	h-m	0.0 to 18.0	•	•	•
	A7	Time for alarm verification	h-m	0.0 to 18.0	•	•	•
	A8	Time for external alarm verification	h-m	0.0 to 18.0	•	•	•
	A9	Select probe for alarm	range	Sd1 / Sd2	•	•	•
	F0	Temperature of fan stopping	degrees	-99.9 to 302	•	•	•
	F1	Fan works with the open door	range	no/yes			•
	c0	Minimum time of compressor stopping	minutes	0 to 24	•	•	•
	c1	Time of continuous cycle	h-m	0 to 18.0	•	•	•
	P0	Temperature scale election	range	ºC / ºF	•	•	•
	P1	Atmosphere probe calibration	degrees	-20.0 at 20.0	•	•	•
	P2	Decimal point	range	no/yes	•	•	•
	P3	Defrost probe calibration	degrees	-20.0 at 20.0	•	•	•
	E0	Configure digital input	range	off//Al/In/def	•	•	•
	H2	Cut service by digital input	range	no/yes	•	•	•
	H3	Delay when connecting	minutes	0 to 24	•	•	•
	H4	Address for communication series	number	0 to 999	•	•	•

(*) h_m are items in XX.Y format. Where XX are hours and Y groups of ten minutes.

(1) Referring to Sp1.

Parameters in degrees are in degree Centigrade

FACTORY CONFIGURATION SET OF THE PARAMETER " H0" ACCORDING TO EACH MODEL

REFRIGERATED WITHOUT ELECTRIC DEFROST	1 SONDA	**101**	---	M__M1 - M__B1 - M_3MY2 M__M2 - M__B2 M__M3 - M__B3	---	R____
		102	---	M__MF	---	
		103	---	M__0 - S311	S_31	---
		107	G__1	---	V1V_1 - V1A... V7WR1	---
		108	---	---	V1E...	---
	2 SONDAS	**104**	---	M__M1 - M__B1 - M_3MY2 M__M2 - M__B2 M__M3 - M__B3	---	R____
		105	---	M__MF	---	
		106	---	M__0 - S311	S_31	---
		109	G__1	---	V1V_1 - V1A... V7WR1	---

REFRIGERATED WITH E. D. AND FROZEN	2 SONDAS	**201**	---	M__M1 - M__B1 - M_3MY2 M__M2 - M__B2 M__M3 - M__B3	---	R____
		202	---	M__MF	---	
		203	---	M__0 - S311	S_31	---
		205	G__1	---	V1V_1 - V1A... V7WR1 V2V.. - V2A..	---
		206	G3_6 G5_6	---	V1__6	X(low.)
		207	G_W6	---	---	---
		301	---	---	---	Z__ X(upp.)

TECHNICAL DATA:

Voltage: 8-12 VAC/DC	**Assembly:** Engaged in a hole of 71x29mm.
Operating temperature: 0ºC to 70ºC up to 90% H.R.	**Storage**: -20ºC a 80ºC.
Probes range: -50ºC a 150ºC.	**Precision**: Better than 0,5% at bottom of scale.
Resolution: ±0,1ºC.	**Display**: 3 digits plus sign.
Probes: PTC.	**Inlets**: Ambient probe and defrost probe.
Outlets: 1, 2, ó 3 relay . max.I: 8 resistive Amperes (3 inductive Amperes). VAC=250V.	**Connections**: Screw terminals for cables of 1,5 mm² of maximum section
Front protection: IP65.	

STANDARD PARAMETERS

REK1A

Parameter	H0=101	H0=102	H0=103	H0=104	H0=105	H0=106	H0=107	H0=108	H0=109
SP1	2.0	4.0	0.0	2.0	4.0	0.0	2.0	2.0	2.0
Hor	----	----	----	----	----	----	----	----	----
Min	----	----	----	----	----	----	----	----	----
HS1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
SP2	80.0	80.0	80.0	6.0	6.0	6..0	80.0	80.0	6.0
DS1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Pof	15	15	15	15	15	15	30	60	40
Cic	3. 0	3.0	3.0	3.0	3.0	3.0	6.0	12.0	6.0
Trv	0	0	0	0	0	0	0	0	0
H0	101	102	103	104	105	106	107	108	109
H1	Mst	Mst	Mst	Mst	Mst	Mst	Mst	Mst	Mst
FdF	70	70	70	70	70	70	70	70	70
CdF	20	20	20	20	20	20	20	20	20
Pro	no	no	no	no	no	no	no	no	no
nSd	1	1	1	2	2	2	1	1	2
vSd	sd1	sd1	sd1	sd1	sd1	sd1	sd1	sd1	sd1
d0	sd1	sd1	sd1	sd2	sd2	sd2	sd1	sd1	sd2
d1	no	no	no	no	no	no	no	no	no
d2	0	0	0	0	0	0	0	0	0
Fi,J	-d-	-d-	-d-	-d-	-d-	-d-	-d-	-d-	-d-
SP5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
r1	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0
r2	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
r3	nor	nor	nor	nor	nor	nor	nor	nor	nor
r4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
r5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
r6	on	on	on	on	on	on	on	on	on
d5	re	re	re	re	re	re	re	re	re
d6	no	no	no	no	no	no	no	no	no
d7	0	0	0	0	0	0	0	0	0
d8	yes	yes	yes	yes	yes	yes	yes	yes	yes
A0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
A1	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
A2	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
A3	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
A4	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
A5	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
A6	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
A7	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
A8	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
A9	Sd1	Sd1	Sd1	Sd1	Sd1	Sd1	Sd1	Sd1	Sd1
F0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
F1	yes	yes	yes	yes	yes	yes	yes	yes	yes
c0	1	1	1	1	1	1	1	1	1
c1	0	0	0	0	0	0	0	0	0
P0	ºC	ºC	ºC	ºC	ºC	ºC	ºC	ºC	ºC
P1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P2	yes	yes	yes	yes	yes	yes	yes	yes	yes
P3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E0	def	def	def	def	def	def	def	def	def
H2	no	no	no	no	no	no	no	no	no
H3	0	0	0	0	0	0	0	0	0
H4	----	----	----	----	----	----	----	----	----

(-----) no programmed.

STANDARD PARAMETERS

REK2A

Parameter	H0=201	H0=202	H0=203	H0=204	H0=205	H0=206	H0=207
SP1	2.0	4.0	0.0	-1.0	2.0	-28.0	-28.0
Hor	----	----	----	----	----	----	----
Min	----	----	----	----	----	----	----
HS1	1.0	1.0	1.0	1.0	1.0	1.0	1.0
SP2	6.0	6.0	6.0	6.0	6.0	8..0	12.0
DS1	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Pof	15	15	15	15	30	30	30
Cic	3. 0	3.0	3.0	3.0	6.0	6.0	6.0
Trv	0	0	0	0	0	0	0
H0	201	202	203	204	205	206	207
H1	Mst	Mst	Mst	Mst	Mst	Mst	Mst
FdF	70	70	70	70	70	70	70
CdF	20	20	20	20	20	20	20
Pro	no	no	no	no	no	no	no
nSd	2	2	2	2	2	2	2
vSd	sd1	sd1	sd1	sd1	sd1	sd1	sd1
d0	sd2	sd2	sd2	sd2	sd2	sd2	sd2
d1	no	no	no	no	no	no	no
d2	0	0	0	0	0	0	0
FiJ	-d-	-d-	-d-	-d-	-d-	-d-	-d-
SP5	5.0	5.0	5.0	5.0	5.0	-15.0	-15.0
r1	-10.0	-10.0	-10.0	-10.0	-10.0	-40.0	-40.0
r2	15.0	15.0	15.0	15.0	15.0	-10.0	-10.0
r3	nor	nor	nor	nor	nor	nor	nor
r4	3.0	3.0	3.0	3.0	3.0	3.0	3.0
r5	2.0	2.0	2.0	2.0	2.0	2.0	2.0
r6	on	on	on	on	on	on	on
d5	re	re	re	re	re	re	re
d6	no	no	no	no	no	no	no
d7	0	0	0	0	0	0	0
d8	yes	yes	yes	yes	yes	yes	yes
A0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
A1	8.0	8.0	8.0	8.0	8.0	8.0	8.0
A2	8.0	8.0	8.0	8.0	8.0	8.0	8.0
A3	1.1	1.1	1.1	1.1	1.1	1.1	1.1
A4	1.1	1.1	1.1	1.1	1.1	1.1	1.1
A5	1.1	1.1	1.1	1.1	1.1	1.1	1.1
A6	1.1	1.1	1.1	1.1	1.1	1.1	1.1
A7	1.1	1.1	1.1	1.1	1.1	1.1	1.1
A8	1.1	1.1	1.1	1.1	1.1	1.1	1.1
A9	Sd1	Sd1	Sd1	Sd1	Sd1	Sd1	Sd1
F0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
F1	yes	yes	yes	yes	yes	yes	yes
c0	1	1	1	1	1	1	1
c1	0	0	0	0	0	0	0
P0	ºC	ºC	ºC	ºC	ºC	ºC	ºC
P1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P2	yes	yes	yes	yes	yes	yes	yes
P3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E0	def	Def	def	def	def	def	def
H2	no	no	no	no	no	no	no
H3	0	0	0	0	0	0	0
H4	----	----	----	----	----	----	----

(-----) no programmed.

REK3A

Parameter	H0=301
SP1	-24.0
Hor	----
Min	----
HS1	1.0
SP2	8.0
DS1	1.0
Pof	30
Cic	6. 0
Trv	3
H0	301
H1	Mst
FdF	70
CdF	20
Pro	no
nSd	2
vSd	sd1
d0	sd2
d1	no
d2	0
FiJ	-d-
SP5	-15.0
r1	-40.0
r2	-10.0
r3	nor
r4	3.0
r5	2.0
r6	on
d5	re
d6	no
d7	0
d8	no
A0	4.0
A1	8.0
A2	8.0
A3	1.1
A4	1.1
A5	1.1
A6	1.1
A7	1.1
A8	1.1
A9	Sd1
F0	28.0
F1	yes
c0	1
c1	0
P0	ºC
P1	0.0
P2	yes
P3	0.0
E0	def
H2	no
H3	0
H4	-----