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ISPort User manual
Direct Control

- Settings
- I/O konfiguration

ISDOK: DC_EN_V10

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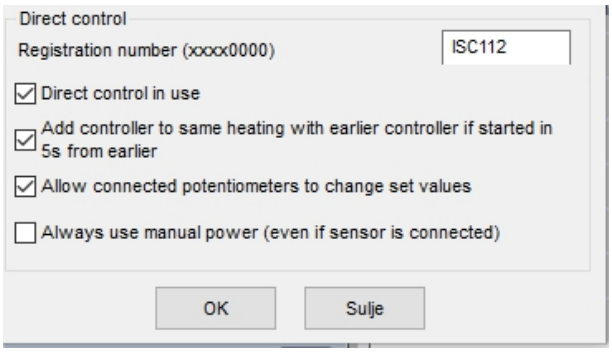
All Ice Star controllers can also be used without computers. To the device is connected atleast clutches, which with the heating is started and also if necessery stopped. When started with clutches it creates a new process (heating) and controller is connected to the process. The process takes a changing registrating number (file name) and the heatingplan is taken from memoryplace one where it has been saved. Also other controllers can be connected to the same process. But controllers from different devices can not be chosen.

Basic settings for direct control

Functions for direct control are defined in "Module settings (C/Q/G)" dialoge. What functions and what controllers that are in use are defined from IO-configuration. Only connected to IO points and in configuration defined functions will be in use.

"Registration number"

Set a constant registration number that always comes in use when project is started with direct control. The number most be 8 marks long and the last marks must be number. If it is shorter than 8 marks, the program automatically fills in the end zeros. When project is started with clutches, the last number of the registration number increases. When it reaches max value (99) is the next number 00.



”Direct control in use”

Take direct control in use. Must always be marked, when direct control is in use. When in use, the heating plan is not automatically saved to place 1, but to memoryplace 2-24. This setting allows cluthces and potentiometers connected to device to be used. This setting does not effect possible connected info-outputs (leds).

”Add controller to same heating with earlier controller if started in 5s from earlier ”

The controllers that clutches are pressed from direct control bord in 5s from earlier adds to same project, if this setting is chosen.

”Allow connected potentiometer to change set values”

Set values can be changed from the direct control board if this setting is chosen. The setting can be removed after the project is started, so the potentiometers are "locked". The potentiometer changes the controllers (1-6) values, or the process (heating) that the controllers are connected to. If more then one controller is connected to the process, then by changing the process values it also changes the controllers. With the pontentiometer you can change following values:
Process (the heating where controllers are connected, or all processes that are running): Heating rate, hold temperature, hold/tolerance time, cooling rate.
Controller (only controller 1-6). Heating rate, hold temperature, hold/tolerance time, cooling rate

"Always use manual power (even if sensor is connected)"

The controllers power can be changed with the pontentiometer if this setting is chosen, otherwise power changing is used only when the sensor is lose.

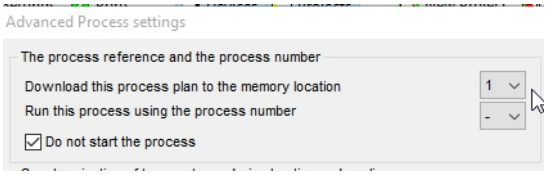
Before a project can be started with direc control, must the project have a template in the controllers memory.

Choose "New project", add values (heating rate, hold temerature, hold time, cooling rate) and make setting (ex. alarm limits).
Then save the project to controllers (ISQ,ISC) memory place 1.

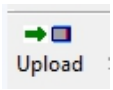
Save the project to controllers memory

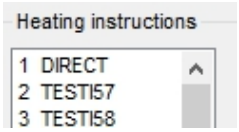
By pressing on "Settings" the "Advanced process settings" dialogue opens, here the project is saved to memory place 1.

"Do no start the process" is good to have chosen.



After this the project is saved to the memory by pressing "Upload".





After this it's possible to confirm the saved is completed by doubleklicking on the controllers row in device list

Exampels of configuration

In the ISD device (LLIHO) IO-configuration are the configurations to the buttons defined.

No.	I/O Tyyppi	Moduli ID (käyte...	I/O-Pisteen kuvaus	I/O-Pisteen sijainti	Muuttujan ID	Muuttujan Nimi	Arvo
1	Analog LoRes	0		0: 1	9301	Laitteen käyttöjännite	23197 mV
2	Analog LoRes	0		0: 2	9302	Powerin lämpötila	40.3°C
3	Analog LoRes	0		0: 3	9303	Liittimien lämpötila (Kylmäpää)	33.3°C
4	Analog LoRes	*		1: 1	4362	Säädin 1 Ulostuloteho	91 %
5	Analog LoRes	*		1: 2	4394	Säädin 2 Ulostuloteho	0 %
6	Analog LoRes	*		1: 3	4426	Säädin 3 Ulostuloteho	0 %
7	Analog LoRes	*		1: 4	4458	Säädin 4 Ulostuloteho	0 %
8	Analog LoRes	*		1: 5	4490	Säädin 5 Ulostuloteho	0 %
9	Analog LoRes			1: 6	4522	Säädin 6 Ulostuloteho	0 %
10	Analog LoRes	*		2: 1	4291	Prosessi 7 Suurin nousunopeus	180.0°C/h
11	Analog LoRes	*		2: 2	4290	Prosessi 7 Lämpötilan ohjearvo	440.0°C
12	Analog LoRes	*		2: 3	4293	Prosessi 7 Aika	10h 10m
13	Analog LoRes	*		2: 4	4292	Prosessi 7 Suurin laskunopeus	100.0°C/h
14	Analog LoRes	0		2: 5	0		
15	Analog LoRes	0		2: 6	0		

The functions for direct control (potentiometers) are alwys configurated to Analog LoRes-type.

In this example manual power is based on controller 1-6, and the heating values (heating rate, hold temperature etc..) controlls all device processes, because the process number is defined as 7. Notice if the heating plan has no separately marked process number to excecute, the process is started from the first free place. If no places are free or separately defined place is free, the process is not started.

16	Digital In	*	3: 1	4357	Säädin 1 Suoraohjaus ON/EI	Ei
17	Digital In	*	Säädin 2 Suoraohjaus ON/EI... 3: 2	4389	Säädin 2 Suoraohjaus ON/EI	Ei
18	Digital In	*	3: 3	4421	Säädin 3 Suoraohjaus ON/EI	Ei
19	Digital In	*	3: 4	4453	Säädin 4 Suoraohjaus ON/EI	Ei
20	Digital In	*	3: 5	4485	Säädin 5 Suoraohjaus ON/EI	Ei
21	Digital In	*	3: 6	4517	Säädin 6 Suoraohjaus ON/EI	Ei

Direct controls functions (clutches) are always configurated to Digital In-type

In this example controllers 1-6 are started with clutches.
If the controller is started in 5s from earlier, it is added to same project as the earlier. If longer then 5s, it makes own process with new registration number.
Pressing the clutch when heating is running, the controller is released from the project.

The next free process is started immediatley when the clutch is pressed.

The project stops when all controllers are realesed or when the project is ready.

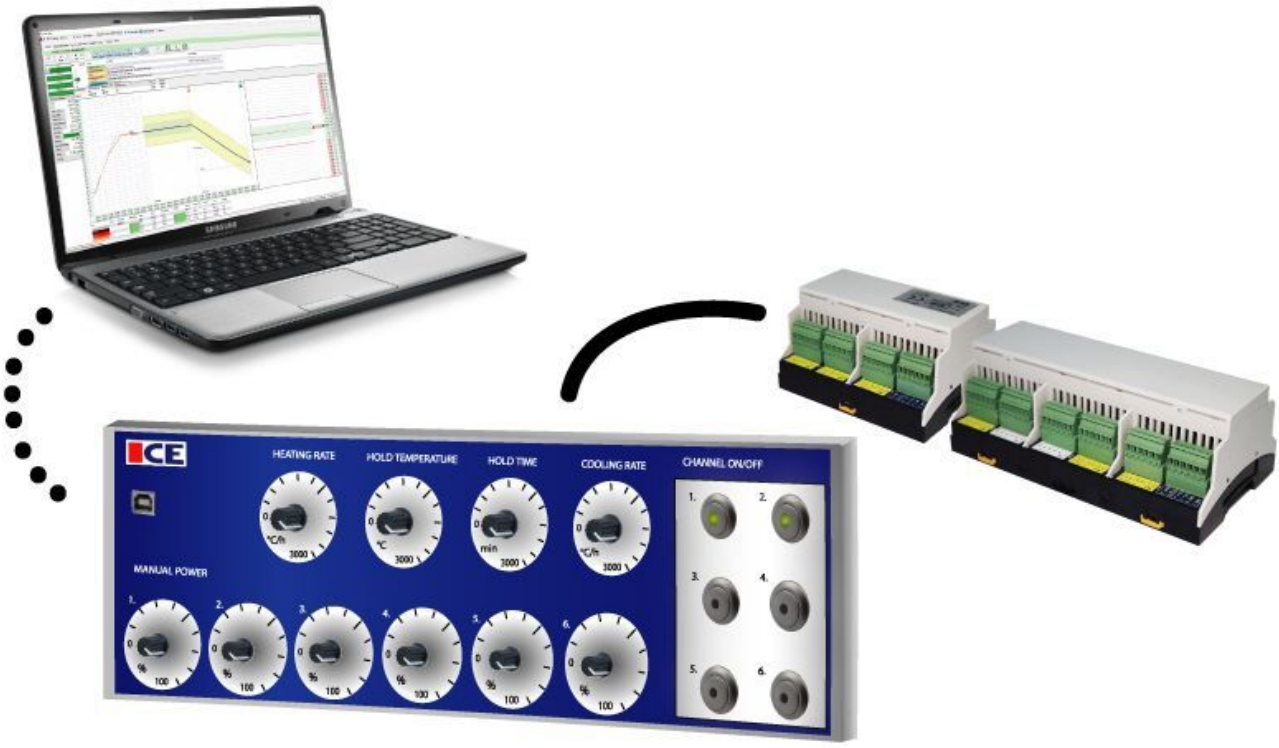
Note! When a project is started with direct control, it can not be stopped from PCs stop button.

28	Digital Out		5: 1	8449	Säädin 1 Säätimen tila (pulssi)	---
29	Digital Out		5: 2	8481	Säädin 2 Säätimen tila (pulssi)	---
30	Digital Out	0	5: 3	8513	Säädin 3 Säätimen tila (pulssi)	---
31	Digital Out	0	5: 4	8545	Säädin 4 Säätimen tila (pulssi)	---
32	Digital Out	0	5: 5	8577	Säädin 5 Säätimen tila (pulssi)	---
33	Digital Out	0	5: 6	8609	Säädin 6 Säätimen tila (pulssi)	---

Direct controls functions (Outputs) are always configurated to Digital Out-type

It is possible to connect to every controller a info output. The outputs can be connected to leds or lamps, regardless if the direct control is in use or not.

Leds status:
_____ led is not on : The controller is not in use and heatsensor (TC) is not connected
__-__ led blinks with slow pulse : Controller is not in use, but heatsensor is connected
_-_-_- led blinks with fast pulse: Controller in use, but the sensor is loose.
Power can be changed if potentiometers are connected, otherwise power 0%
_-_--_ led blinks (dot line) : Controller in use in heating phase
_--_-_ led blinks(line dot) : Cooling phase
-------- led on: Hold phase



Example of direct control board

Direct control boards clutches, leds and potentiometer are connected to ISD or ISC module.

Top row:
Potentiometer are connected based on process (heating rate, hold temperature, hold time, cooling rate)

Bottom row:
Potentiometer are connected based on controllers, that every controller 1-6 has own potentiometer to power setting. Power adjustment is only functional when sensor is loose. Setting can be changed in Direct controls basic settings

Clutches:
To all six controllers is connected own clutch. They start the process, and if needed stops controllers and the process (heating)
To clutches are lamps/leds connected to show status of controller, which phase heating is in and is the sensor okey.

Configuration is made in ISPort like showed in examples on earlier pages.