Clorius ISC2000
Scalable Building Management Controller

ISC 2000 belongs to a family of freely programable controllers designed to be scalable from the small to the very large installations. ISC 2000 is well suited to control HVAC and natural ventilation and can function as a PLC.

ISC 2000 contains all building blocks for control and supervision, ie. PIDs, trend curve data collection, time control, alarm handling aso.

ISC2000 is built with a modular design and can be extended to 140 I/O channels in all. Further more the ISC2000 has built protocols for a lot of different controllers, i.e. Multical/Maxical meters via RS232/ optical eye, InfoCal 5, Grundfos GENIbus, M-Bus, Modbus/IP, Modbus/RS485, LON etc.

ISC2000 is designed for DIN rail mounting

ISC2000 can via the ISC Manager tool be programmed to almost any conceivable task using the advanced builtin scripting language.

ISC2000 can communicate via RS232, RS485, Ethernet and LON, use USB device and USB host.

ISC2000 can function as a standalone unit or as part of a larger system. This can be accomplished via the ISC SCADA system.
ISC2000 can also connect to other SCADA systems via ISC OPC or BACnet and can also be connected to the ISC Handterminal where parameters can be monitored and changed under password control.

ISC2000 has a builtin webserver and can be programmed to show a Java-based fully graphical interface that will work through any Java enabled webbrowser, i.e. Internet Explorer, Chrome aso.

Technical data			
Power supply:	24 VAC or 20-40VDC with max 5% ripple 6W without modules 30W with modules	**Digital outputs**	4 Solid state 24V/1A must be protected against inductive loads
Temperature range	Storage -20 °C to +70 °C Active -10°C to +60°C	**Analog outputs**	4 0-10VDC
Humidity	Max. 90% RH, not condensating	**Analog inputs**	8 0-10 VDC 0-1450 ohm (PT1000) 0-20 mA DC
Mechanical	ABS/PC, IP20 157 x 86 x 58 mm 250 g	**Communications**	RS232 with RTS/DTR signals RS485 (optional) RS232 3 wire (optional) 10/100 Mbit ethernet USB-Host/USB-Device LON FT (optional)
Real time clock	± 10 minutes pr. year at 20°C RTC can operate for at least one year on the battery backup	**Digital inputs**	4 With internal supply 5VDC over open circuit, max 10 mA Minimum pulslength 20 ms. Or max. 16 VDC with external supply

Clorius Controls A/S

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Design

ISC2000 is designed to be a general purpose controller. The ISC can be mounted in close proximity of the equipment to be controlled so that the neccesary wiring can be minimized

ISC2000 is microprocessor based and consists of a motherboard with galvanic insulation of I/O. ISC2000 can be equiped with many types of sensors, transducers and controllable units. All I/O terminals are equiped with detachable connectors so the unit is easily serviceable

ISC2000 can read and write data from other ISC Series units either via RS232/RS485 or ethernet. Also data from NMEA units, M-Bus, ModBus/IP, Modbus/ RS485, LON FT, Multical/Maxical, InfoCal and Genibus can be read/written These data can be incorporated like the ISC Series own data, i.e. the data can be used in calculations, it can be logged and monitored for alarm conditions aso.

Powerloss
ISC2000 uses flash and EEPROM memory so that the unit can restart after powerloss without any user intervention. If a USB memory stick is used, trendcurve data and evetlogging can be preserved across reboots

RTC
ISC2000 uses a RTC (real time clock) so that the system time is always correct. The time can also be synchronized via the internet if so desired. The clock will function approx. a year on the battery backup

Daylight savings time
ISC2000 changes between DST and standard time if so desired.

Digital inputs:
The inputs can be used to read alarms, status indicators, pulse counting etc. The inputs can be powered from the ISC. Using a jumper this supply can be removed and external supply be used. All channels can count.

Digital outputs:
The outputs can be used to control pumps, blowers etc The outputs can be pulse modulated.

Analog inputs:
The inputs can be used to read procesdata, ie. temperature/PT1000, current or voltage. Inputs in PT1000 mode are powered from the ISC. The inputs are jumperless.

Analog outputs:
The outputs can be used to control valves, blowerspeed etc.

RS232/RS485/LON and ethernet
Can be used for datacollection/communication via ModBus, M-Bus, http, ISC SCADA, other SCADA systems via ISC OPC, LON, BACnet/IP and communication with other units from the ISC Series

Modules

ISC2000 can utilize up to 15 external I/O modules and one communication module.

Legend:

DI	Digital input
AI	Analog input
DO	Digital output
AO	Analog output
COM	Communication
COM-M	M-Bus communication

Modul	DI	DO	AI	AO	Com
ISC2000	4	4	8	4	RS232 Ethernet USB LON-FT (Option)
ISC2000DI	8				
ISC2000DO		8			
ISC2000AI			8		
ISC2000AO				8	
ISC2000COM					R232, 3-wire RS485/RS232 combo
ISC2000COM-M					M-bus, RS485/RS232 combo

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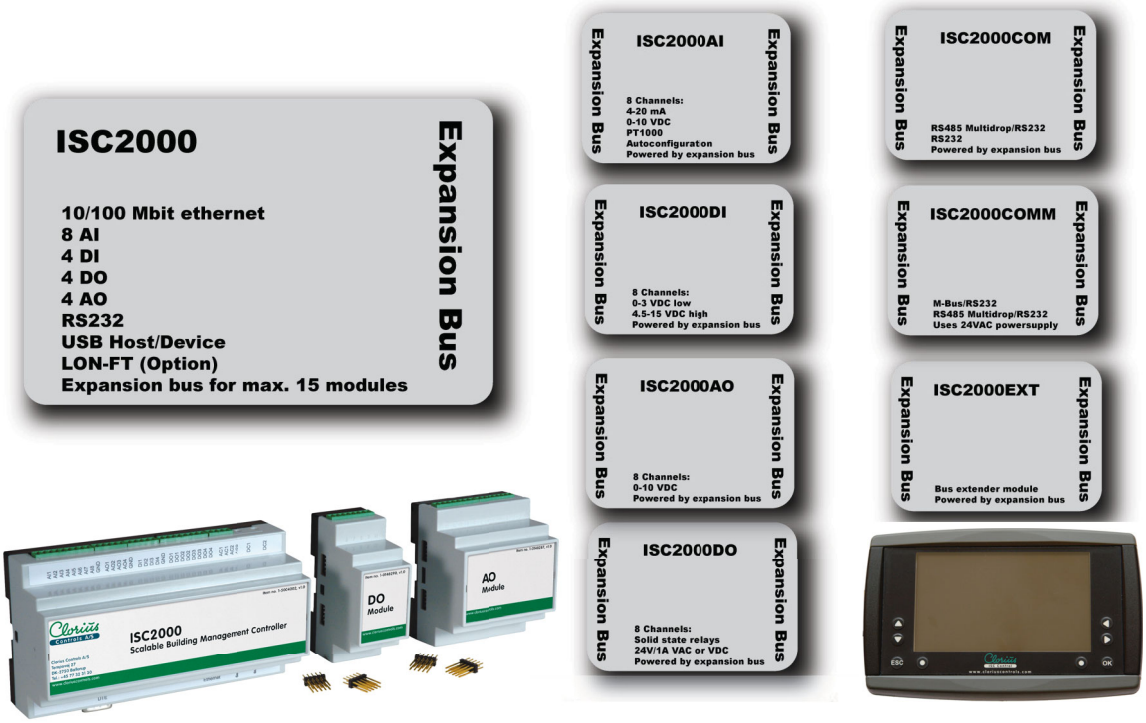

Software tools

Using the ISC Manager tool the ISC2000 be programmered to meny different tasks.

For an overview of the programming language please see the ISC Series Script Manual. Some programming objects/possiblities are mentioned here:

- Control of digital inputs (Alarms, pulsecount)
- Control and scaling of analog inputs so any read value is translated into human readable form, ie. Temperature and ohms for a PT1000 input etc,
- Control og digital outputs
- Control and scaling og analog outputs
- On/Off delays
- Alarmhandling from inputs and calculated values (including data read from foreign equipment)
- Timercontrol with weektimer, vacations and special days
- PID functions
- Logging of data, up to 160 000 measurements in all
- Communication with foreign equipment, logging, alarm control and calculations using these data
- All data can be monitored, logged and used in calculations etc.

The program is saved in flash and is kept even during powerloss. Selected data be saved i EEPROM so that fx. PID trim data can be saved

If USB memory is used the ISC can save trendcurves and eventlog data across reboots and power loss.

A Windows XP/Vista/Windows 7 emulation of the ISC2000 exists and most programs can thus be tested outside the physical installation.

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Communication

ISC2000 has many communications possibilites:

Ethernet
Various serial ports
SCADA system
ISC Series Handterminal
ISC Manager

Ethernet
ISC2000 can communicate and an arbitrary number of data can be read and/or sent to other ISC Series substations. Also Modbus/IP and BACnet/IP can be used

Serial ports
ISC2000 can read M-Bus data, read/write ModBus data from foreign ModBus units, read data from Multical/Maxical/Infocal over a serial line, read/write data on Genibus (Grundfos pumps) and read/translate data from NMEA units (weather stations).

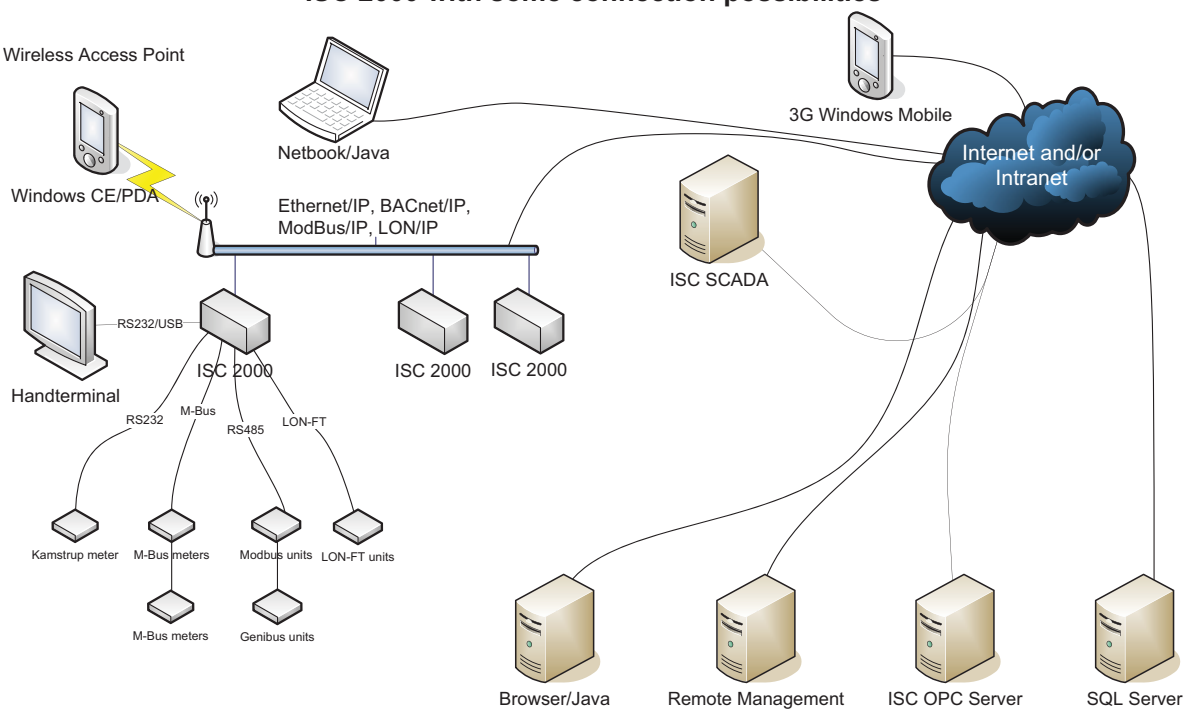
ISC SCADA
Via the ISC SCADA system all data, both calculated and I/O data, be presented as a symbol, as a text, as a number etc. with rich color graphics. Data can be fetched, changed and written. Communication to the ISC2000 uses TCP/IP over ethernet.

ISC Series Handterminal
Via the ISC Series Handterminal parameters are shown via a menustructure and can be shown and changed as needed. Data can be password protected. Alarms can acknowledged, eventlog can be shown etc. Uses the RS232 or USB port.

ISC Manager
The ISC Manager software can be used for configuring and programming the ISC2000. It can also view the same menu structure as used by the ISC Series Handterminal. Can use RS232/RS485/USB or Ethernet

ISC Web
Via a browser and Java an applet a full fledged graphical interface can be shown

ISC 2000 with some connection possibilities



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Cabinet option (for smaller installations)

Cabinet - closed

Cabinet - open

Cabinet without cover

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