Management and control

Scalable concept suitable for all farm sizes
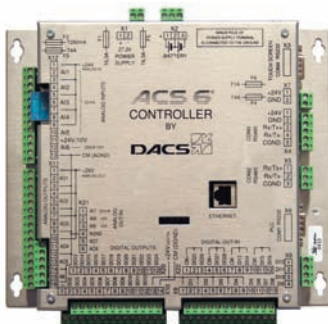
DACS
INNOVATION IN VENTILATION

The ultimate management system for poultry production

- **easy and intuitive operation via 15" touch screen**
- **both numerical and graphical presentation of data, critical values are highlighted in yellow or red**
- **screens and access to the system depends on user level and is individual adjustable from simple basic level to expert level**
- **more languages are included and are selectable any time**
- **background pictures can be replaced by user**
- **only the installed equipment and used functions are shown on the screens to prevent misunderstanding**
- **built-in database with data logging of all values and events**
- **automatic data transfer to external database via WEB services**
- **integrated control and management system in one**
- **built-in UPS supplies the computer, sensors and damper motors during the power interruption**
- **alarm management and optional GSM processor**
- **the touch screen is a powerful Windows based industrial PC typically mounted in the control board as shown**
- **communication with farm, external technical support and software update via Internet**

ACS6

The ACS6 climate and production controller is the sixth generation of high end climate and production controllers for the poultry industry from DACS. Thirty years of experience and know-how from the industry, together with the latest trends, make the ACS6 a powerful package for climate and production control in poultry houses and enables farmers to optimize even more on the in-house climate and production.

The core of the control system is ACS6 controller. Powerful ARM CPU running Linux OS and interface with wide range of inputs and outputs makes this controller able to handle the most advanced types of modern poultry production.

The ACS6 controller execute all control and registration functions independently even during the power interruption.

Energy saving control functions together with tools for efficient management are giving you very short payback of investment in our control and management system.

Cutting heat consumption by 30%

Full scale tests conducted at a Danish poultry producer show that the ACS6 enable farmers to cut heat consumption in a standard poultry house by 30%. A new software solution automatically reduces the dehumidification process depending on the outdoor conditions and thereby reduces the need for heating.

Traceability

The ACS6 keeps track of all parameters and users for an indefinite period of time. This huge collection of data gives full overview and traceability of the production.

Managed user access

The ACS6 comes with an 8" or a 15" touch screen.

The screens are designed specifically to meet the needs of each person allowed access, so that unauthorized persons will never be able to get access to critical parameters.

An important feature for large scale poultry operations, since each and every employee only has access to parameters concerning their function in the poultry production.

Any type of ventilation

The ACS6 is extremely powerful and designed to run any type of ventilation system for poultry production.

Online support

With the ACS6 DACS offers technical support online e.g. with the opportunity of finding faults in the technical installations. Software update can be done via Internet without need for local assistance.

Optimization of poultry production together with advice DACS.

Scalable concept suitable for all farm sizes

Farm with one house

Using the ACSnet only for one single house, you get the full functionality of the whole management system - all inclusive.

No fees for software licences are necessary, because the ACSnet management system is integrated part of the system.

4 block house

Another example showing building with four houses with main supply box where the ACSnet touch server is placed. From this touch screen all four ACS6 computers are operated.

Farms with more separate houses

Example shows typical setup in UK with more separate houses, each with its own controller and own touch screen, working as a gateway. All houses are connected to the main server in the office via local network. Depends on distances the different types of networks technologies are used (Ethernet, WiFi, fiber optic cables). Optional video monitoring and ACSnet server gives the farmer total overview about the production flow on the farm.

Mobile access

Remote access to the server can be done from smart phones or tablets using the standard apps for a given platform.

Advantage of this type of connection to the ACSnet is, that user is working directly on the ACSnet server.

All shown parameters are actual values from the system without any delay. For more comfortable editing the mobile units keyboard can be used.

ACSnet Client

When needed the ACSnet client software can be installed on the client PC. This allow the client to work with other screens without disturbing user working on the ACSnet server.

More about DACS ventilation on **vimeo**

PRODUCTION MANAGEMENT

REGISTRATION

EGGS

FEED

WATER

SWITCHES

ARCHIVES

ALARM

LIGHT

TECH. CONFIGURATION

CLIMATE CONTROL

FARM REVIEW

CLIMATE

HOUSE

HEATING / DRYING / SPRAY

VENTILATION

Climate control

Temperature and humidity

- climate curves / programs
- growth related temperature and humidity offset
- humidity related temperature offset
- light program related temperature offset
- alarms with compensation for influence of the outside climate
- up to 4 temperature sensors and 2 humidity sensors
- temperature on the attic

Environmental sensors

- carbon dioxide sensor
- ammonia sensor

Heating system

- heaters controller with time modulated signal
- radiators with shunt valve
- circulation pump control
- supply and return temperature
- control of the AddAir heat exchanger fresh air dampers

Cooling Pads

- up to 2 groups controlled in steps or by time modulated signal
- analog or step control of cooling water pumps

Drying, humidifying and cooling

- AddAir heaters with fresh air damper
- energy saving functions controlled by outside climate
- auto-reducing of max.drying level
- drying via reduced temperature
- spray controlled by temperature and humidity
- air cleaning function

Ventilation

- up to 7 inlet stages / groups
- up to 8 exhaust stages / groups
- 3 maximum ventilation stages
- aeration - time controlled minimum ventilation
- time controlled semi-auto ventilation
- cycle ventilation
- inlet dampers in 2 groups
- exhaust dampers
- inlet speed
- exhaust speed

Pressure control

- pressure monitoring
- constant pressure control
- pressure control via pressure curve for whole batch

Tunnel Ventilation

- adjustable transition process between basic and tunnel ventilation
- up to 2 fan groups controlled by speed and 3 groups controlled in stages
- position controlled main tunnel doors and on/off controlled secondary tunnel doors

MultiFlexAir Ventilation

- minimum ventilation curve
- maximum ventilation curve
- CO_2 /NH_3 control
- adjustable allowed temperature and humidity deviation
- heating during minimum ventilation

FlexAir Direct Control

- individual fan control
- 32 inlets and 32 exhaust with individual programmable group control
- monitoring of operation state of each fan motor

Climate in Egg store

- temperature and humidity control in egg store
- cooling, heating and humidifying

Production control

Production management

- preheating mode - preparing house to next batch
- production mode - automatically activates all functions for new production
- catching mode - set ventilation and other equipment ready for catching
- idle - house is empty all equipment on standby and the most alarms are disabled
- production calendar as the batch number, production day,

Registrations

- feed and water consumption
- heating and electricity consumption
- ten user defined consumption parameters can be registered Feed conversion ratio (FCR)
- European Production Efficiency Factor (EPEF)

Animals

- one / two groups of animals
- animals placed
- mortality morning, afternoon, total, reason, percentage,..
- culled animals morning, afternoon, reason, total, percentage,…
- delivered to slaughter house
- manual control weighings
- PS1 automatic poultry weigher
- average and target weight, daily growth, uniformity and other statistics

Light control

- main light program with 3 light groups
- up to 2 more light zones with sunrise and sunset
- up to 2 light zones without sunrise and sunset
- daylight saving

- 4 silos content, filling information and alarms
- optional direct weighing of silos
- individual feed line control
- 2 feed weigher
- flow control and alarms
- monitoring of all parts of feeding system like proximity sensors, motors,…

Other equipment

- nests opening
- light in nests
- hoist systems
- window shutters control
- two universal timers
- monitoring of physical switches for manual control on panel

Feeding

- two feeding systems
- mixing and ratio program
- different emptying methods for silos

Drinking system

- time control and ratio program
- flow control and alarms

Egg production

- automatic and manual egg counting
- egg percent calculation
- egg store management
- floor egg registration

Archives / built-in database

Daily reports

- desired values, minimum and maximum temperature and humidity in house, in egg store and outside climate
- carbon dioxide and ammonia values
- water and feed consumption total and per animal
- energy consumption
- two animal groups, mortality, culled, health info, weight, growing and other statistics
- up to ten user defined consumption informations / values
- silo contents
- registration of light time and number of dark periods
- egg store / production
- graphical comparison of production results between batches

Minute trends

- measurements from all important sensors
- desired values for temperature and humidity
- values of all analog control signals
- state of all digital inputs and outputs
- adjustable logging frequency
- feed and water flow

Hour trends

- all climate values
- animals weight
- feed and water consumption

Alarm archives

- date and time of the alarm
- alarm type
- alarm values
- info about user treating alarm

Event archives

- all events
- user info
- changed parameter's identifier and value

Analog trends

- all analog input and output signals

Daily reports data transfer

- automatic data transfer to external databases like KiK
- data export to Excel
- data export as XML or via clip board

Data export

- supported data formats XML, TXT, CSV
- charts formats WMF, EMF, BMP

Alarm system

Alarm registrations

- all alarm informations in table sorted by date and time or by alarm type
- whole alarm history saved in alarm archive

Alarm types

- 300 alarm types in 32 alarm groups
- climate alarms
- feeding system alarms
- motor protection
- fuses
- individual alarm delays for different equipment

Alarm outputs

- dry contact for external alarm equipment
- separate output with limited duration for acoustic alarm
- SMS and voice call via GSM processor

Remote service features

Interface monitoring

- all analog signals
- internal values
- state of digital inputs and out-puts
- monitoring of internal fuses and power supply

Configuration of interface

- all inputs and output are config-urable
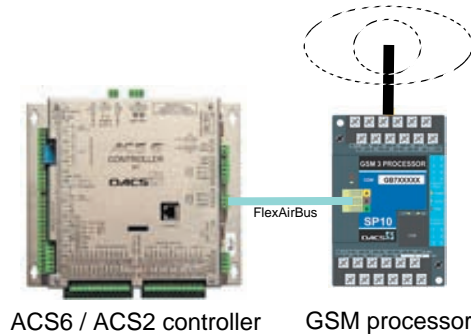- help by installation of new equipment

Software updates

- all system components (con-troller, touch screen, server, GSM processor) can be updated remotely via Internet

Alarms via GSM processor

SMS / call by alarm

FlexAirBus

ACS6 / ACS2 controller   GSM processor

GPRS Watching Central
in Prague, CZ

Alarm system of the ACS controller can be interfaced by GSM proces-sor. This opens for alarm manage-ment by phone via mobile network. Using the mobile phone can alarm informations be received as SMS and phone call.
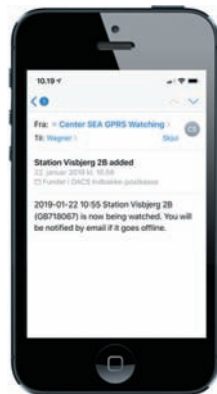
Features

- 32 alarm groups from ACS6
- remote alarm reset and test
- remote control of 8 outputs via SMS or phone call
- alarm for trespassing in 2 zones
- hand-free door opening
- 9 programmable inputs
- independent temperature sen-sor using alarm levels from ACS6 including compensation for high outside temperature during the summer
- built-in lithium battery keeps alarm system running in many hours after power failure
- programmable via USB or remotely via GPRS network
- basic functions such as chang-ing of the users phone numbers is also programmable via SMS

Tripled monitoring of the operation state

The 3rd generation of our GSM processor is totally redesigned. The most important news is tripled watching of the ability to send alarm:

- GPRS Watching Central checks the connection between the GSM processor and the GSM net every minute
- The ACS controller continuously communicates with the GSM processor
- And the GSM net status is con-stantly monitored.

If one of these communication channels fails, the user gets an SMS message, a call or an email.

Changes via SMS, from PC via USB or via Internet

Many changes in the processor configuration can be done just by sending an SMS. E.g. you can change the telephone numbers of the people, who should receive alarms or you can enable or disa-ble some of the users via SMS. More complicated changes in the configuration of the GSM processor can be done locally from PC via USB or from anywhere via Internet and GPRS communication.
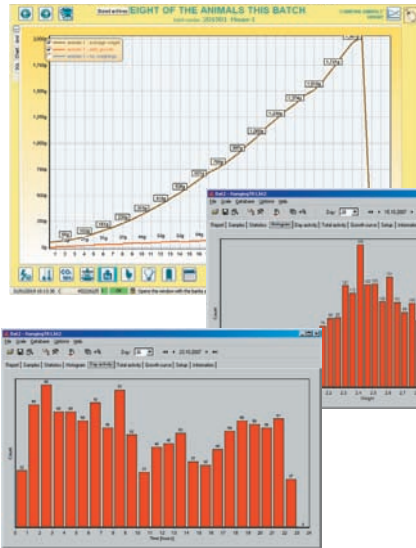
Bird weigher PS1

Our scales are designed for automatic weighing of live poultry. Each animal weight is stored individually into the memory after the poultry enters the weighing platform. The scales memory allows for storing weighing results continuously for one year including gender differentiation. All records in the memory can be viewed afterwards directly on the scales display or it is possible to transfer them to a computer for further processing. When connected to ACS6 controller, the weighing results are automatically transmitted to the controller and becomes a part of the daily archives.

Basic Features of Scales

- Graphical display shows all weighing results.
- Help on the display can be chosen in several languages.
- Weight display can be selected in kilograms and pounds.
- The memory capacity is up to 1 year of weighing.
- Each day, the number of weighed heads, the average weight, the standard deviation, CV, uniformity, daily increment, histogram, and up to 1,800 individual weighed samples including gender are stored into the memory.
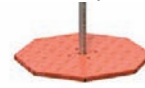
- Automatic gender recognition.
- Transfer of data into a computer using a memory module.

- Sending statistics using SMS messages (automatically at midnight and at any time upon request - only GSM model).

- Sharing the setup between more scales.
- Easy bird weigher setup from a computer.
- broiler platform up to 50kg

- turkey platform up to 100kg

PS1 Lite
- stand alone model
- all weighing features as in full version
- no memory stick interface
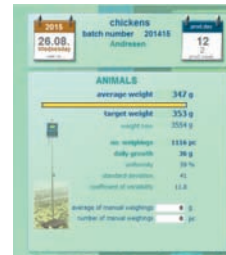- powered via power adaptor

PS1 GSM
- weighing results will be send automatically to mobile units or computers as a SMS
- can be battery powered

PS1 FlexAirBus
- communication with ACS6
- powered via RS485 cable connection form ACS6

PS1 Modbus
- communication with PC or other computer system via Modbus
- powered via Modbus
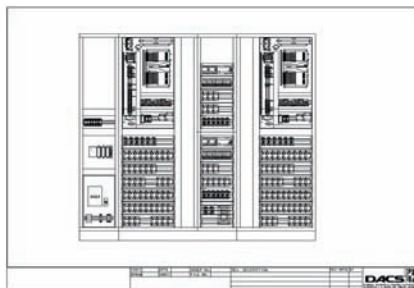
Main control board / Electrical panels

This saves you the time consuming task of connecting internal signal transmission cables, installing power supplies and backup systems, and it greatly simplifies the installation work and increases the level of electrical safety and equipment protection.

The panel offers a high degree of safety and facilitates service jobs on any part of the electrical installation. All components in the panels manufactured by DACS are documented and carefully described in the complete set of documents that comes with the panel.

In this set of documents you also have a complete list of the types of cables that should be used for the complete wiring between panel and equipment in the house, and where to connect the cables.

An electrical installation in a modern poultry house is very complex and is comparable with high-end industrial installation. There are many different types of equipment such as fans, heaters, feeding systems, lights, sensors etc being controlled. Fault function of any component can have influence on the production result and last but not least on the life of animals.

Therefore is it essential to monitorize all devices and as fast as possible inform the responsible personnel, so they can solve the problem.

Our electrical panels are built to meet all this criteria. All internal wiring in the panel being done by professionals at DACS.

In other words, you get a panel and detailed set of information that will enable any skilled electrician to complete the electrical installation swiftly and professionally and it takes your entire installation to a higher level of quality.

A panel from DACS has been designed and tested according to European standards. No panels leave our workshop without through testing.

- user specified all inclusive solution
- configured and tested together with controller
- connect to Internet and DACS can help you also during installation
- no IP network set-up needed
- only cable connections should be established
- complete documentation received before delivery of the electrical panel (cable lists, diagrams, technical manuals,…)
- built in battery back-up
- all control switches position monitorize by controller

- remote access disabling manual control of selected equipment
- emergency switches activates devices even when fault in all power supplies
- space for expansion
- customization using PLC can be done by local electrician

System components hardware specifications

Analog interface	ACS6 Controller	PLC	analog inputs	analog outputs
Software functions for 32 analog outputs and 32 analog inputs				
sensors 4-20mA	6	-	12	-
battery voltage monitoring	2	-	-	-
sensors 0-10V	3	-	-	-
outputs 0-10V	8	-	-	12

Digital interface			multiplex input unit	multi output
Software functions for 256 digital inputs and 316 digital outputs				
relay outputs	24	16 (up to 1024)	-	-
isolated outputs	4 (2x2)	-	-	-
outputs for fan motor starters (FlexAir Direct Control)	-	-	-	24-64
inputs	12	24 (up to 1024)	127	
power / fuse monitoring	6	1	1	-
isolated inputs	4 (2x2)	-	-	-

Computers	Controller	Touch 8	Touch 15	PLC
ACSnet communication local and via Internet Remote access from different platforms FlexAir bus for GSM processor, PLC, bird weigher				
Operating system	Linux	Windows Embedded	Windows Industr. Embedded 8.1	
serial COM ports	2 x RS232 2 x RS485	1-3 x RS232 0-1 x RS485 2W	1 x RS232 1 x RS485 2W	1 x RS232
Ethernet / LAN	1	2	2	optional
other interfaces	DACS SDcard	4 x USB 2.0 VGA, CF/SD card	2 x USB 3.0	mini HMI graphical display
IP rating	IP20	IP65	IP65	IP20

Other system components	GSM3 processor	PS1 bird weigher	AOM1 analog output module	DOM1 digital output module
Via FlexAirBus controlled GSM processor and poultry weigher. Automatic and manual control of all outputs with monitoring and emergency functions via DOM1 or AOM1 modules				
Features	32 alarm groups	max load 50kg / 100kg	automatic and manual control with monitoring	
	temperature.sensor	graphical display		
Interfaces	9 digital inputs 2x4 bipolar outputs	PS1 memory stick interface	2 analog out 2 digital out 1 24V power out	1 digital out 1 relay out emergency out
controlled by / communication via	RS485 / GPRS	RS485 / GSM	0-10V	digi 24V

Innovative solutions for livestock production

DACS is a family-owned company with more than 30 years experience in developing, producing and servicing ventilation and control systems for livestock production.

We have used our comprehensive knowledge on both livestock production and ventilation in the development of among others our award winning wall fan, MagFan.

Our ventilation system is simply the most energy efficient system you can get on the market.

We run tests in our own wind tunnel, and we develop our products in close cooperation with farmers and the best researchers in the field.

Our overall focus is on optimum animal welfare and on maximum energy efficiency.

DACS brings you:

- **Energy efficient ventilation systems**
- **Total production and climate control**
- **Improved animal welfare**

DACS
INNOVATION IN VENTILATION

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