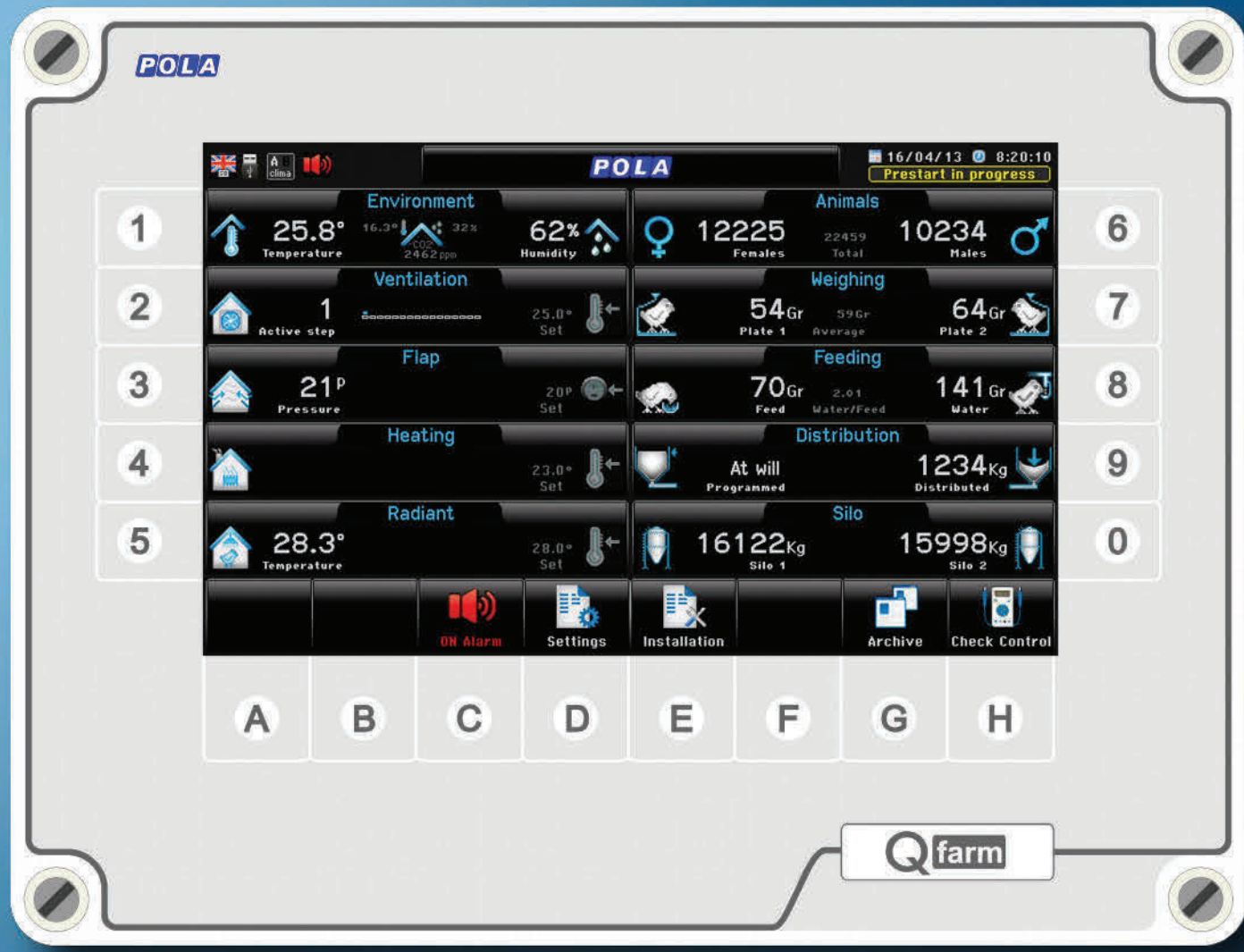


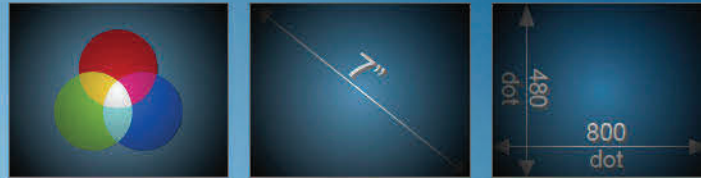
The easiest and most complete way to improve your livestock performances



Qfarm livestock controller

POLA

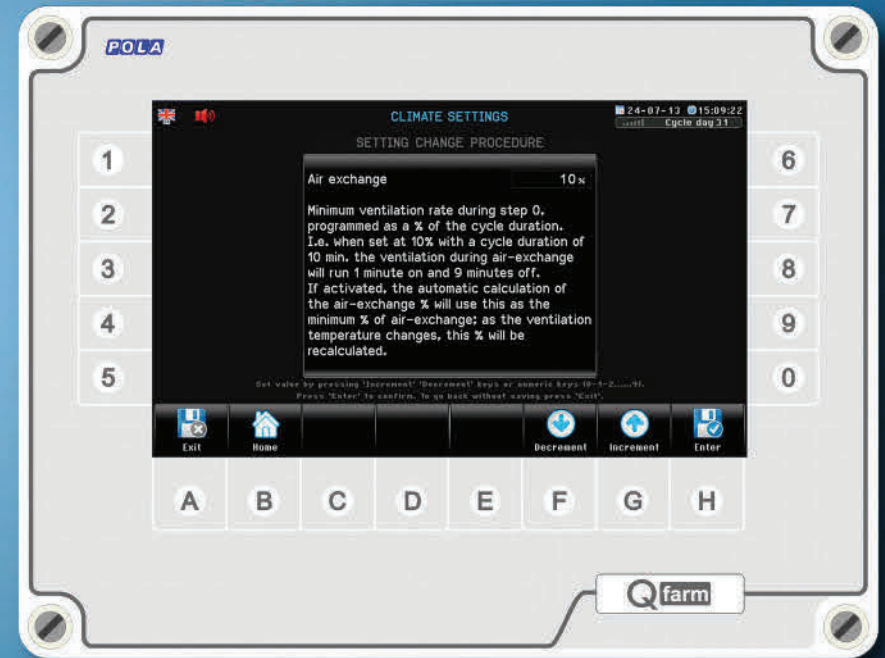
Main features



The main feature of the Qfarm line is the wide backlit display screen (7") with 800x480 dots resolution with led backlight.



The user interface is easy and friendly. The easy touch screen systems gives both the typical "easy to use" approach of a touch screen system and the strength and mechanical protection of a polycarbonate keyboard.



At every screens the function keys display a different graphic making the program very user friendly. Each programming step has its own help screen so the program has a "built in" instruction manual.

Multi Language

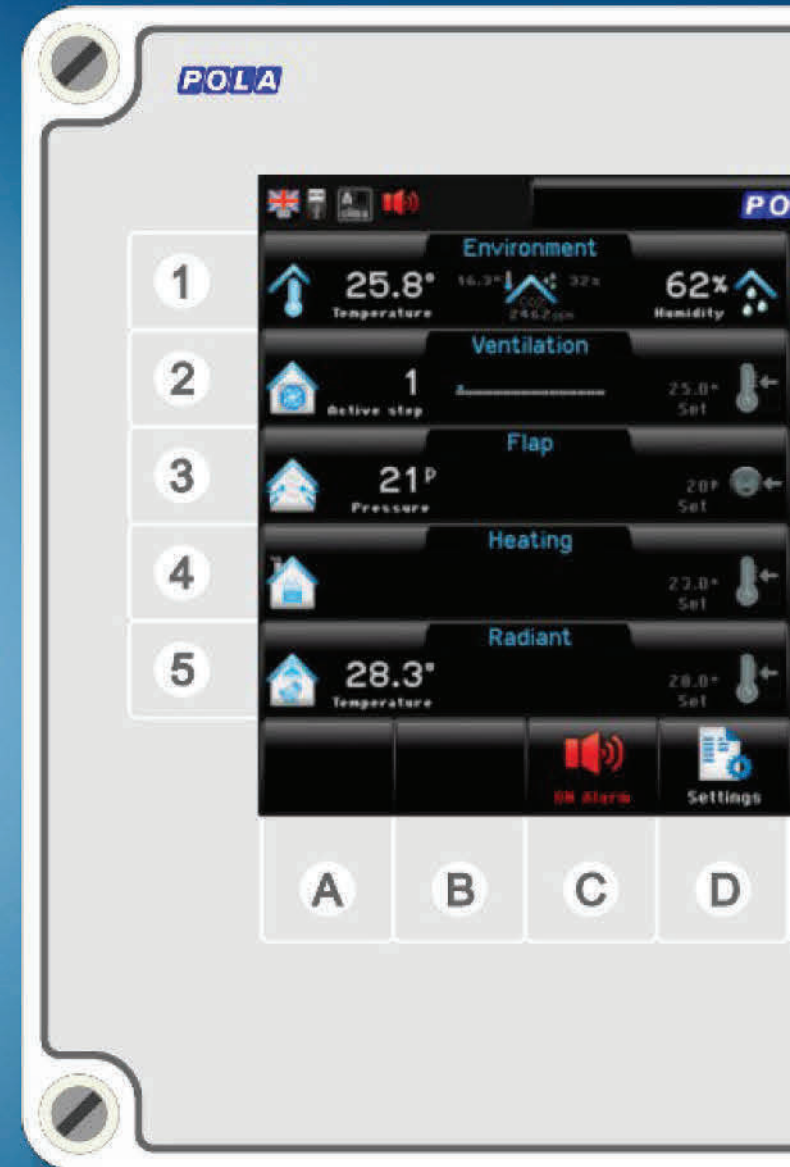


Choosing the language every screen will be displayed at the user language making the customer more confident with the Qfarm use



Qfarm

performs climate control of the livestock environment



Environmental climate control



Environment:

- Displaying and controlling several parameters due to the possibility to manage different kind of sensors.

Ventilation:

- Up to 16 completely independent steps according to the following typical conditions.

Flaps:

- Up to 16 flaps with many working mode.

Heating:

- 6 On-Off or 0-10V heating systems (also combined but 16 as max).
- 4 Fan-jet destratifiers.

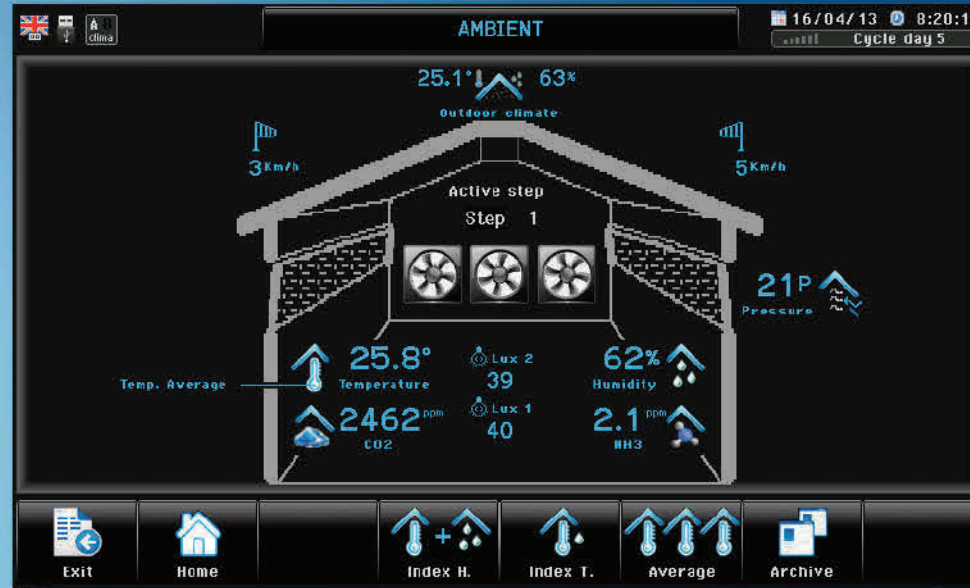
Radiant hoods:

- 1 Modulant output radiant heater or 1 x two stages automatic ignition radiant heater.

Alarm:

- Surveying of many parameters (e.g. Temperature, humidity, air-pressure, CO₂-NH₃, minimum amper absorption) and recording all the alarm events (including alarm exclusions).

Ambient



Complete control of environmental parameters, sensors available:



SX
Temperature probe



WT1
Psychrometric kit dry and wet bulb



Oppure



RHR
Humidity probe
0...100%



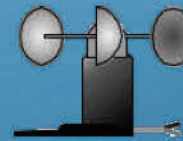
CO2E
CO2 probe
0...10.000ppm



NH3D
ammonia probe
0... 100ppm



LXD
Light sensor
0 ...1000 Lux



WX
Windo sensor



CWD
Water-counter



RHR+RHC
Outdoor humidity probe
+ radiation shield 0...100%

Ventilation



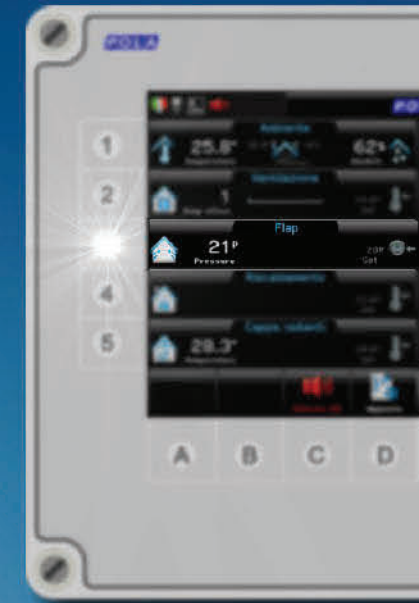
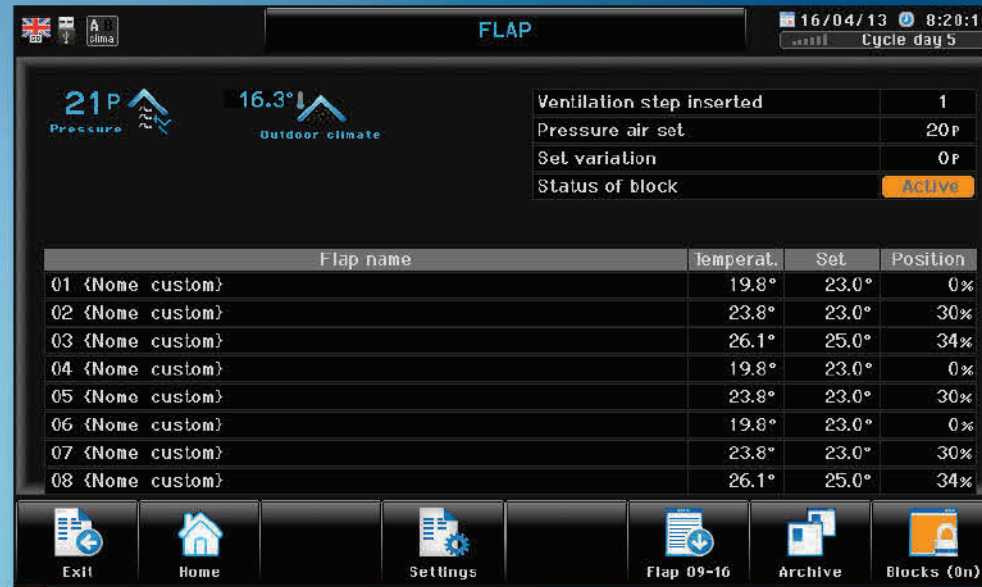
Up to 16 independent and fully configurable ventilation steps according to following typical options:

- On / Off
- Fan speed controlled by transformer.
- Proportional by an external inverter controlled by a 0-10 V output.
- Or a combination of the three systems above.

The minimum air ventilation exchanges can be determined in two ways:

- **Normal ventilation:**
Below the required minimum temperature the ventilation is managed by a timer to ensure a minimum air exchange rate. When On-Off ventilation is on step 0, the air changes are activated. They are automatically calculated by a timer and optimized to give minimum heating consumption and optimal air exchange. The working fans can also be cyclically rotated during the air changes (during normal working conditions the last fan can be cyclically rotated).
- **M3/h/Kg Ventilation:**
Below the required minimum temperature the ventilation is managed according to M3/h/kg.
The minimum value of air exchange (M3/h) that can be performed depends on the number and weight of birds and the specific M3/hour per Kg live weight parameter. When fans work in on-off mode, the system operates them by timer by cyclically shifting through the fans of each step. In case fans work by 0-10V regulation, the system works in "saw tooth" mode by increasing the fan speed gradually to reach 100% and then switching to the next fan (keeping previous fan at full speed).

Flaps



Up to 16 completely independent flaps for natural or forced ventilation with the pressure drop module connection.

Forced ventilation/Dynamic ventilation system

- Pressure drop by the DP59/W connection;
- Pressure drop with a potentiometer for every flap (in case of more flaps controlled by DP59 to align flaps to each other);
- Delta T = pressure drop with alignment flap potentiometer and zone temperature probe (the flap is controlled by depressiometer and the temperature probe acts only if the temperature difference, between two or more flaps, exceeds a certain value of Delta T);
- Associative, without depressiometer but with the feedback potentiometer: at each ventilation step the flap opens at a specific value (% of opening).

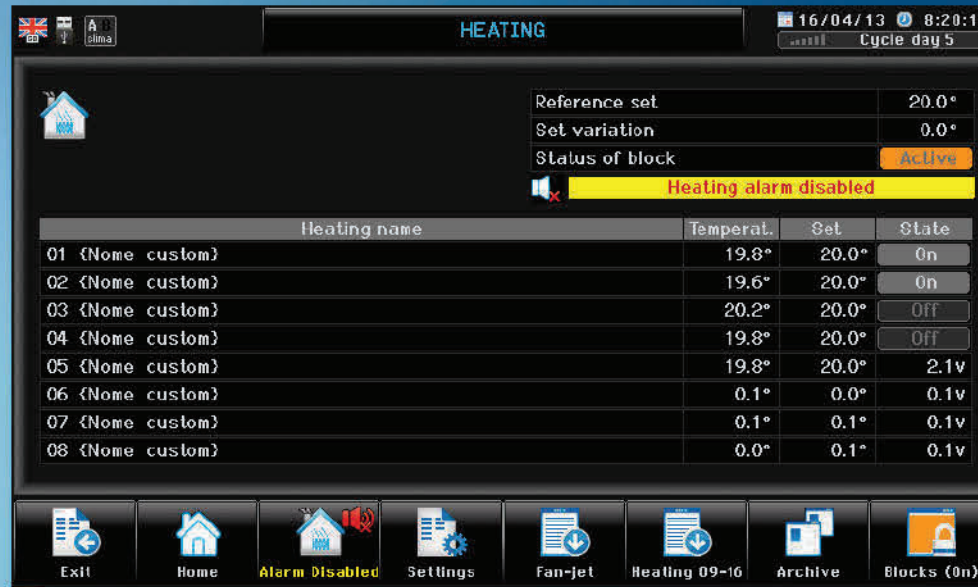
Natural Ventilaton

- Floating or derivative (no potentiometer but with the temperature probe);
- Proportional (with feedback potentiometer or 0-10 V signal actuator);
- Aligned (with feedback potentiometer to allign a flap to another flap also this controlled by a potentiometer).

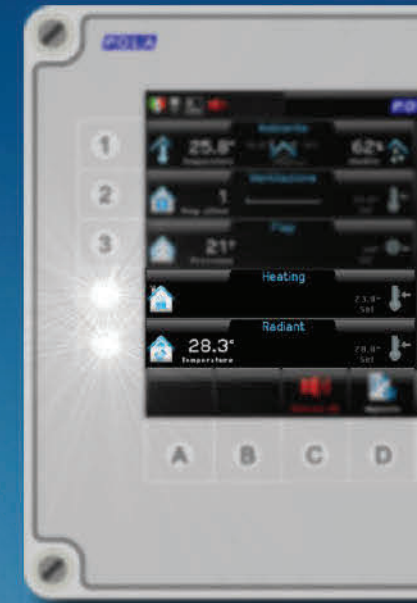
Emergency

- Flap is closed in normal working conditions. It opens up only as emergency unit.

Heating



Heating name	Temperat.	Set	State
01 {Nome custom}	19.8°	20.0°	On
02 {Nome custom}	19.6°	20.0°	On
03 {Nome custom}	20.2°	20.0°	OFF
04 {Nome custom}	19.8°	20.0°	OFF
05 {Nome custom}	19.8°	20.0°	2.1v
06 {Nome custom}	0.1°	0.0°	0.1v
07 {Nome custom}	0.1°	0.1°	0.1v
08 {Nome custom}	0.0°	0.1°	0.1v



Control of the following types:

16 On-Off heating or 0-10 V (also combined but 16 as max)
4 fan-jet destratifiers.



Parameter	Value
Radiant temperature set	28.0°
Set variation	0.0°
Minimum alarm set	20.0°
Heat demand	On
Cool demand	Off
Status of block	Active

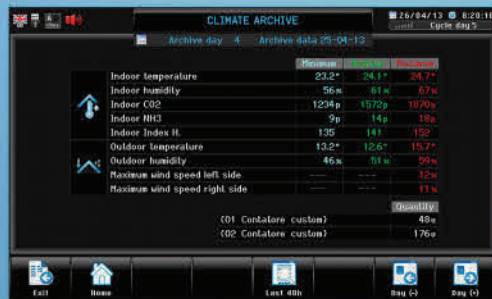
1 Modulant output radiant heater or 1 x two stages automatic ignition radiant heater.

Qfarm and the 2007/43/CE Directive (animal wellness)



In addition to the complete management of the climate (fans, air inlets, heating and cooling systems) and the feed supply some of the Qfarm features are already oriented to comply with "animal wellness" regulations:

- *Light-control*: management of darkness periods.
- *Birds archive*: (present, dead, taken away for each day of cycle).
- *"Daily inspections" archive*: by keyboard confirmation the system archives data and hours of the operator inspection in order to record the 2 mandatory daily inspections.



Moreover, to have higher animal densities:

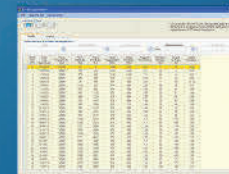
- *Alarm system* in case of computer or electronic devices failures (XP29).
- *Ventilation conditioning based on relative humidity, CO2, NH3* to make sure these parameters do not go beyond a critical value.
- Besides the daily archives of all days of cycle there are archives of the last 48 hours (measurements every 30 min) of:
 - Indoor and Outdoor temperature
 - Indoor and outdoor Relative Humidity
 - Indoor CO2 and NH3

Air changes according to the M3/H/Kg parameter:

air changes at minimum ventilation can be calculated according to the number of birds and their weight and the M3/h/Kg parameter.

Cycle data Archive

All significant data can be archived and exported into various formats (e.g. Excel format).



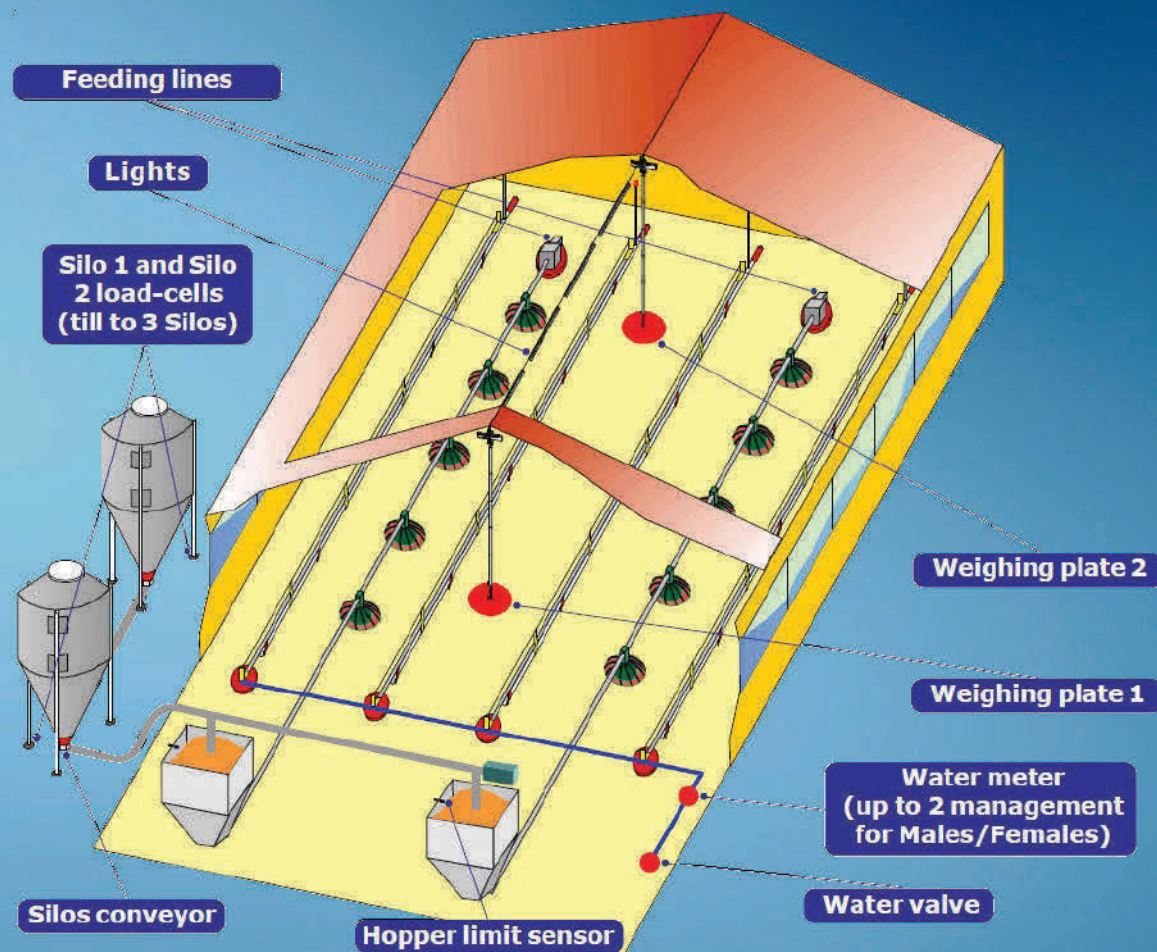


Qfarm

can manage the feeding system



Feeding control



According to a feeding cycle curve the feed is distributed at preset times of the day in two ways: limited and unlimited.

The distributed feed weight can be determined either by silo load cells (Up to 3 silos) or by a volumetric system (no load cells) that converts the working period of the silo auger into kg of feed or by an external weighing system (i.e. a mechanical weigher).

Furthermore the signal of the water meter is collected to check the daily water consumption with the possibility to manage medicated feed.

In the archives (managed on a daily basis) are recorded all the data related to the day meal, bird weight, silos upload/download and birds performances.

Animal counting



ANIMALS ACCOUNT TODAY 16/04/13 0:08:20
Cycle day 5

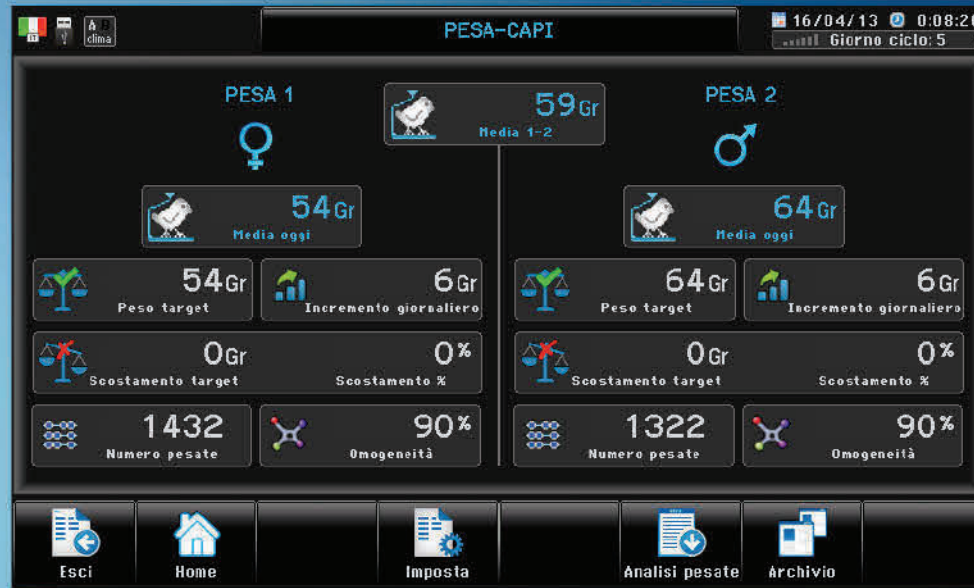
♀ 22459 (females + males) ♂

FEMALES		MALES	
12225 Present	0 Dead	10234 Present	0 Dead
0 Removed	0 Culled (legs problems)	0 Removed	0 Culled (legs problems)
0 Introduced	0 Culled (other problems)	0 Introduced	0 Culled (other problems)

Exit Home Settings Today Cycle total Archive

Daily log of the entered, taken away and dead birds.

Birds weighing



The average birds weight is determined by the 2 weighing plates (1 plate available as option).



PWS0
weighing scales on the ground
(floor scales) for breeders



PWS1
hanging weighing plates
for chickens



PWS2
hanging weighing plates for
turkeys

Weighing plates available

Weighing plate



Why an oscillating weighing plate ?

Here some good reasons about the scale:

- The plate can be adjusted to be close to the litter so birds can easily jump on it.
- The oscillating plate prevents birds to stay too long on the plate (or even to get sleep on it) reducing the number of daily measurements.
- The multiple weighing system captures all the birds that go on the plate even if there were already other birds on it.
- The round plate (diam 76 for chicks and 98 for turkeys) makes easy to birds to jump on it.

Here some good plant reasons:

- The connecting cable is NOT on the floor, preventing wear off and cuttings.
- The load cell is well protected from moisture and dust.
- The mechanical part of the weighing system is easily removed during the thinning and at end of cycle.
- It is well visible in the shed, preventing bumps and crashes.
- Any height can be reached by adding extensions
- Load cell is easily reached and easy to be serviced



Bird-weighing: why 2 plates per shed?

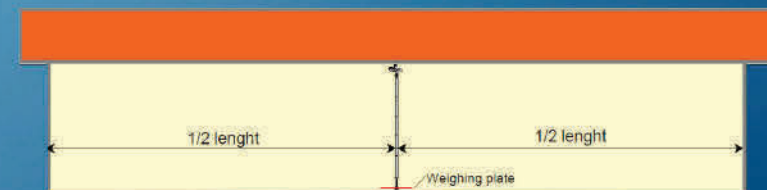
Even if one good weighing plate system can do the work, still there are some good reasons to install two plates:

- In case of mixed cycle (males and females) you get an accurate average measurement all along the shed. When the females are taken away, the second plate is automatically converted into a 2nd males plate so the measurement is more accurate as males birds which take the place of females are already used to the plate.
- In a "All males" cycle (All females) 2 plates give a more accurate average weight of the birds highlighting the possible weight difference between the 2 sectors of the shed.

The Plate should be placed in the centre between drinking and feeding line.



In case of 2 plates the suggestion is to put the first at 1/3rd and the second at 2/3rd of the length of the shed.



In case of 1 plate the suggestion is to put it in the middle of the shed.

Feeding system



FEEDING ARCHIVE		16/04/13 8:20:10	
Archive day 4		Archive data 25-04-13	
Feed		Water	
Programmed feed	At will	Programmed water	At will
Distributed feed	612Kg	Distributed water	1234Lt
Distributed Gr/bird feed	70gr	Distributed water Gr/bird	141 gr
Females programmed curve Gr/bird	9999gr	Programmed water Gr/bird	9999gr
Males programmed curve Gr/bird	9999gr	Water meal programmed time	02:05'
Feed meal programmed time	02:05'	Water meal distribution time	02:05'
Feed meal distribution time	02:05'	Programmed Water/Feed	0.00
Light switching total time	05:44'	Distributed Water/Feed	2.01
Supplementary meal	0Kg	Line 1 distributed Water/Feed	52%
Meal variation	0%	Line 2 distributed Water/Feed	48%
Fixed meal	No	Conversion	1.76
Manual feed supply	0Kg		
Down. silo 1	612Kg		
Down. silo 2	0Kg		

Feed

Detection and recording of feed consumption either by silos load cells connection (up to 3 silos) or by volumetric system (no load cells). Command of silo auger, feeding lines, raising and lowering of mangers, lights, water and medication. Sequential control of lights for laying hens.

Water

Detection and recording of water consumption by water meter connection, min and max water consumption alarm and managing of medication tank.

Lights

Managing up to 8 On-Off lights and simulation of dawn and sunset by 0-10V outputs, furthermore there is the possibility to control the opening and closing of the hens nests.

Lights control for broilers

The features of this system are:

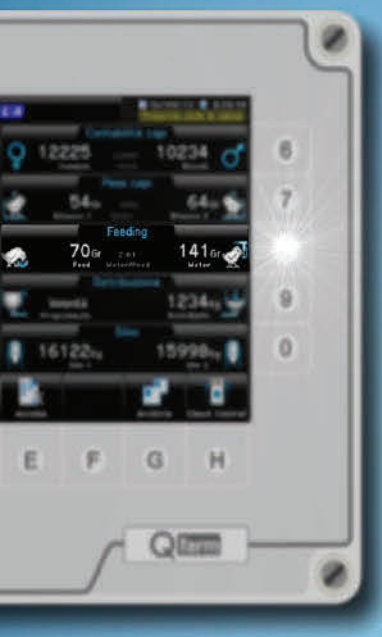
- Ambient light command by On-Off output
- Ambient light command by dawn and sunset function (0-10V output)
- Automatic adjustment of the ambient light intensity by an LXD probe.

Lights control of laying hens

The features of this system are:

- Up to 8 ambient light (floors) commands by dawn and sunset function (0-10V output)
- Opening and closing of the nests and timing of eggs collecting.

Special feeding functions



Fast period

This procedure allows to program in advance day and hours of fast starting. This is usually done before the thinning or on last day of cycle.
 At fast start up, silos spyral and feeding lines are switched off and lights are switched on (if previously off) and water is turned on (during off hours). After a certain period of time feeding lines can be turned on again for another period of time to empty the system.

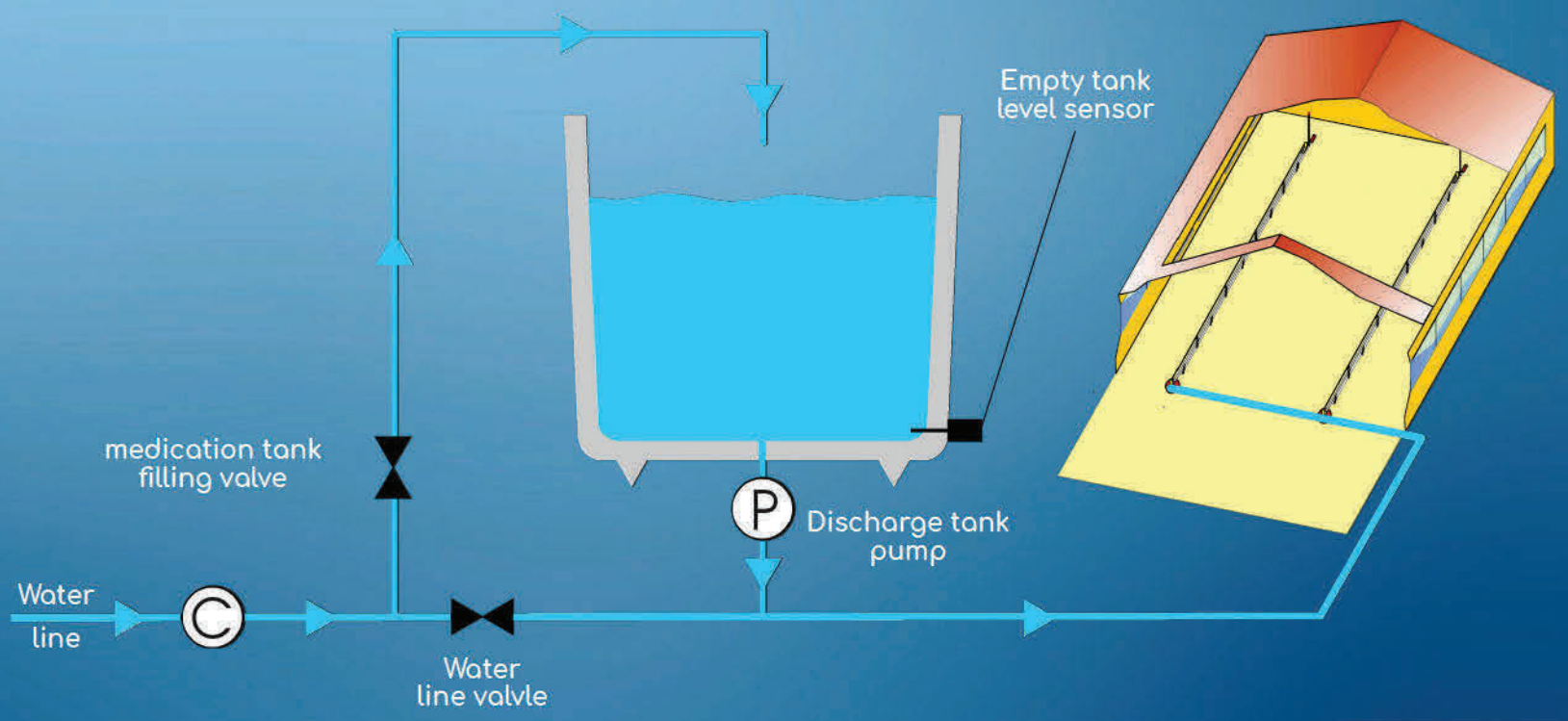
Medicated water control

Setting of medication:

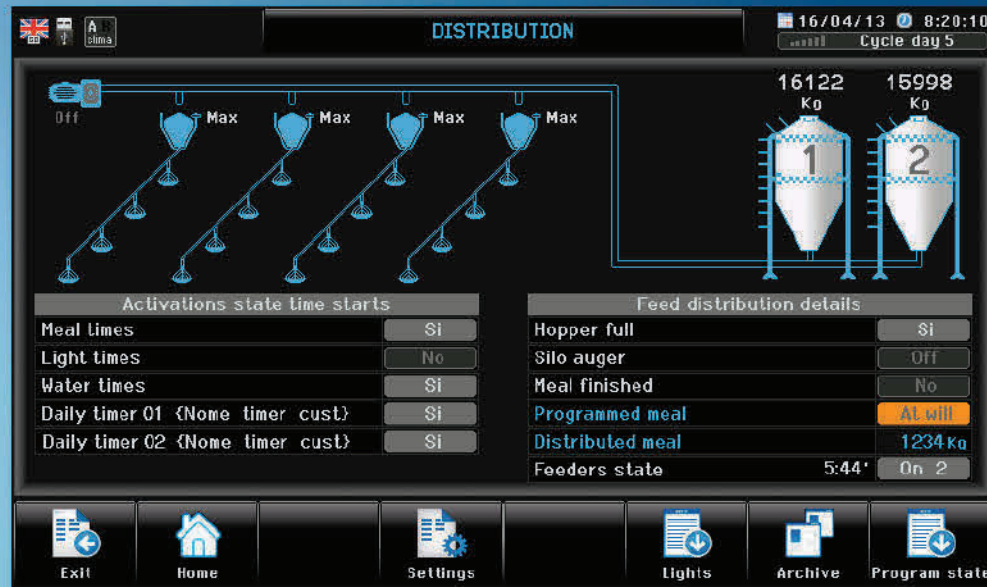
The procedure sets the liters of medicated water and confirms ther start up of medication process.

Working mode:

when the process starts the water line valve closes and the tank filling valve opens (medication loading) till the tank reaches the level set.
 The water pump works until is switched off by the tank level sensor (Sensor medication tank) then the pump (Empty Medication tank) is switched off and the Water line valve is opened again.



Feed distribution



Silos-weight: feed weight control with volumetric system or by cells?

Load cells system:

This system allows silo weight control during the unloading (distribution) by mounting load cells under silos.

Cells load advantages:

- Total quantity of feed in the silos can be displayed, weighing measurement is very accurate, Alarm "Stock/meals" can be activated (number of meals until the end of the stock feed).

Volumetric system:

- This systems allows the feed weight control by counting the working time of the silos auger and converting it in Kg of feed.

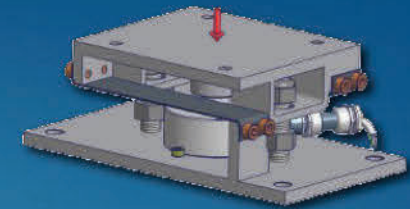
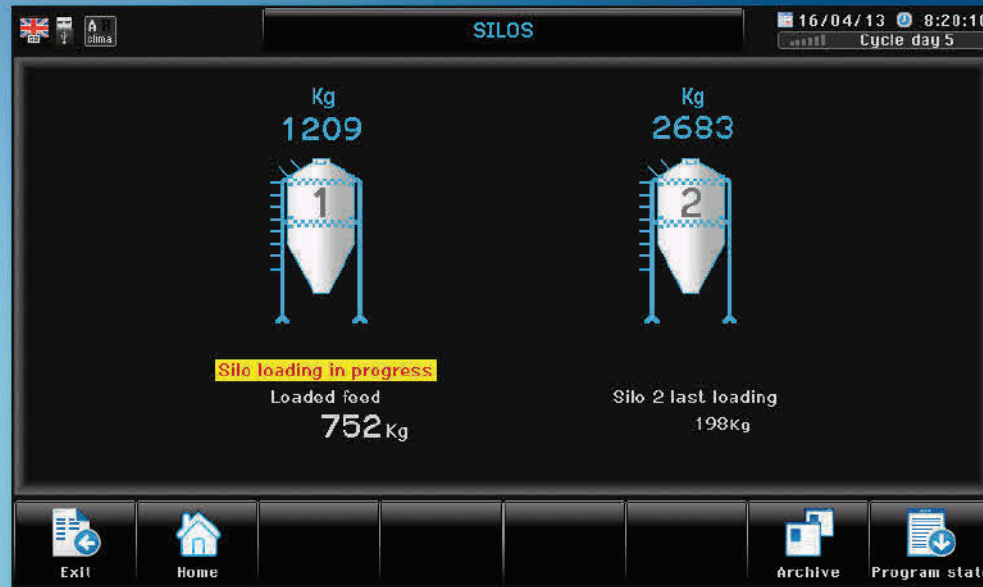
Advantages of the volumetric system:

- No load cells required.

Disadvantages:

- The weight of the feed contained in the silos can not be displayed, the accuracy of system depends on the accuracy of calibration and K factor.
- The alarm "Stock/meals" (how many meals are contained in the silos) cannot be activated.

weighing of the silos



CN5+U10
Stainless steel compression load cell
5000 Kg IP68 for silo weighing.
Complete with cable and sheath of
protection IP68 5 m.

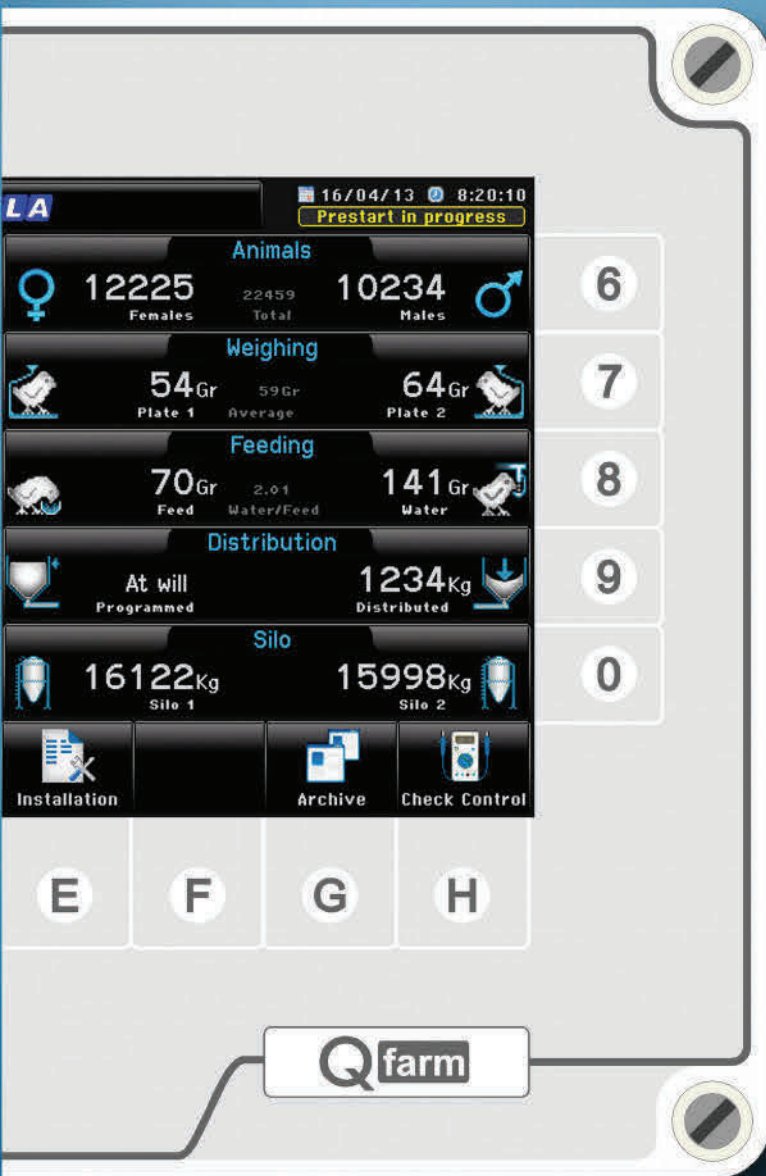
Load cells system

This system allows silo weight control during the unloading (distribution) by mounting load cells under silos.

HP63/W Silos weight repeater

HP63/W is a repeater of silos weight and also of the silos weight during the loading (if load cells mounted) so the value can be easily read near the silos. It has been designed for outdoor installation and 1 units can be connected for each silos (up to to 3 silos).

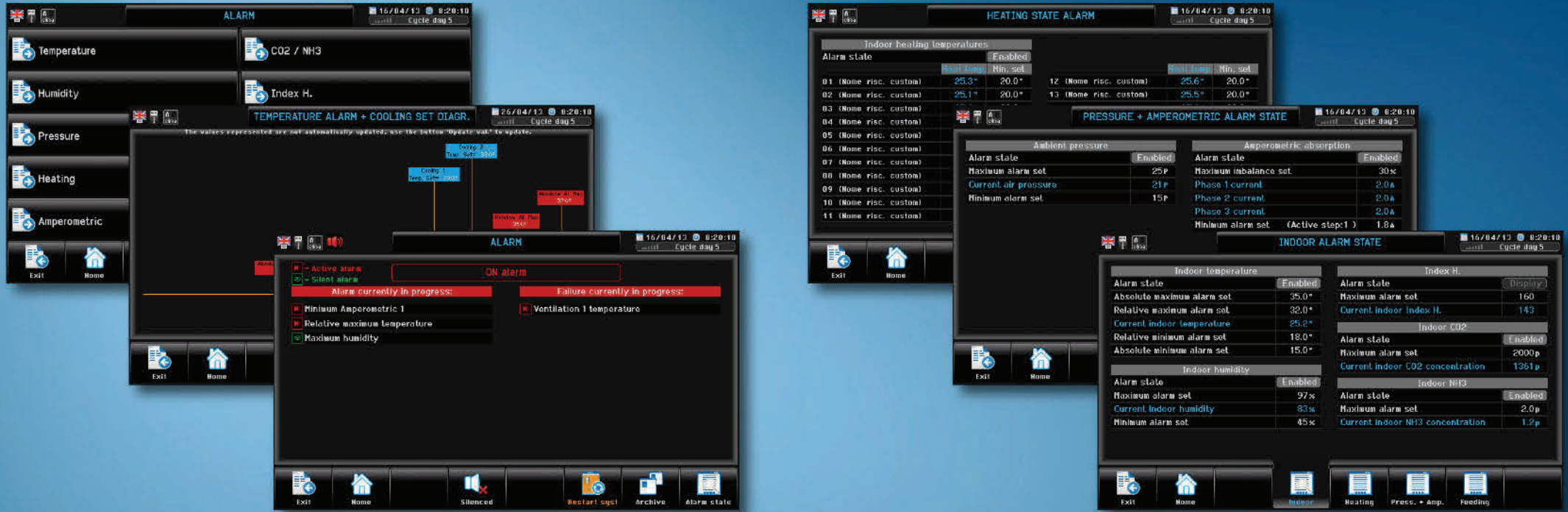




- Alarms
- Archives
- USB functions
- Qfarm Dialogue
- Supervisor
- Qfarm Net PRO
- Cloud



Alarms



Alarm

Temperature, humidity, air-pressure, C02-NH3, minimum amper absorption, recording all the alarm events (including alarm exclusions).

Alarm test

The automatic test allows to test the whole alarm transmission circuit. It's possible to set the days of the week when to perform the automatic test.

XP29 independent alarm

Independent ventilation alarm unit which is a supplementary source of the following alarm:

- Minima e massima pressione aria.
- Minimum and maximum air pressure.

Correct operations of Qfarm

Check of Qfarm correct functions by a signal sent every 6 min (watchdog).



XP29

Archives

ARCHIVE 16/04/13 0:20:10
Cycle day 5

- Alarms / Failures / Events
- Bird weighing
- Climate
- Silo upload
- Heating times
- Daily inspection
- Animals present
- Cycle total
- Feeding

EXIT Home Memory 1%

CLIMATE ARCHIVE 26/04/13 0:20:10
Archive day 4 Archive data 25-04-13
Cycle day 5

	Minimum	Maximum
Indoor temperature	23.2°	24.3°
Indoor humidity	56%	61%
Indoor CO2	1234p	1572p
Indoor NH3	9p	14p
Indoor Index H.	135	141
Outdoor temperature	13.2°	12.6°
Outdoor humidity	46%	51%
Maximum wind speed left side		
Maximum wind speed right side		

(01 Contatore custom)
(02 Contatore custom)

EXIT Home Last 48h

HEATING ARCHIVE 26/04/13 0:20:10
Archive day 4 Archive data 25-04-13
Cycle day 5

	Minutes		Minutes
01 (None risc. custom)	253'	09 (None risc. custom)	
02 (None risc. custom)	146'	10 (None risc. custom)	
03 (None risc. custom)	231'	11 (None risc. custom)	
04 (None risc. custom)	0'	12 (None risc. custom)	
05 (None risc. custom)	0'	13 (None risc. custom)	
06 (None risc. custom)	0'	14 (None risc. custom)	
07 (None risc. custom)	0'	15 (None risc. custom)	
08 (None risc. custom)	0'	16 (None risc. custom)	

Radiant minimum working time 157'
Radiant maximum working time 46'

Total time Heating 1...16

EXIT Home

BIRD WEIGHING ARCHIVE 16/04/13 0:20:10
Archive day 4 Archive data 25-04-13
Cycle day 5

	♀	♂	AVERAGE
Average today	54gr	64gr	59gr
Target weight	54gr	64gr	
Target deviation	0gr	0gr	
% Target deviation	0.0%	0.0%	
Daily increase	6gr	12gr	
Number of weighing	1432	1322	
Uniformity	90%	90%	

EXIT Home Graphics Day (-)

FEEDING ARCHIVE 16/04/13 0:20:10
Archive day 4 Archive data 25-04-13
Cycle day 5

Feed	At silo	Water	At silo
Programmed feed	612Kg	Programmed water	1234l
Distributed feed	70gr	Distributed water Gr/bird	141gr
Females programmed curve Gr/bird	9999gr	Programmed water Gr/bird	9999gr
Males programmed curve Gr/bird	9999gr	Water meal programmed time	02:05'
Feed meal programmed time	02:05'	Water meal distribution time	02:05'
Feed meal distribution time	02:05'	Programmed Water/Feed	2.01
Light switching total time	05:44'	Line 1 distributed Water/Feed	52%
Supplementary meal	0Kg	Line 2 distributed Water/Feed	49%
Meal variation	0%	Conversion	1.76
Fixed meal	No		
Manual feed supply	0Kg		
Down. silo 1	612Kg	Down. silo 2	0Kg

EXIT Home Graphics Day (-) Day (-)

BIRD WEIGHING ARCHIVE 16/04/13 0:20:10
Archive day 4 Archive data 25-04-13
Cycle day 5

	♀	♂	AVERAGE
Average today	54gr	64gr	59gr
Target weight	54gr	64gr	
Target deviation	0gr	0gr	
% Target deviation	0.0%	0.0%	
Daily increase	6gr	12gr	
Number of weighing	1432	1322	
Uniformity	90%	90%	

EXIT Home Graphics

SILO UPLOAD ARCHIVE 26/04/13 0:20:10
Archive day 4 Archive data 25-04-13
Cycle day 5

Silo upload done	Date	Vol
Silo 1 upload	11012	18-03-13 16:
Silo 2 upload	13212	18-03-13 15:
Silo 3 upload	9432	18-03-13 14:
Silo 1 upload	1023	15-02-13 18:
Silo 2 upload	11789	15-02-13 17:
Silo 3 upload	13480	15-02-13 17:
Silo 1 upload	7649	11-01-13 13:
Silo 2 upload	8572	11-01-13 13:

EXIT Home

DAILY INSPECTION ARCHIVE 26/04/13 0:20:10
Archive day 4 Archive data 25-04-13
Cycle day 5

To perform the "daily inspection" press "C" key.

Daily Inspection	
Recording in the period (00:00 ... 11:59)	Performed at: 07:36
Recording in the period (12:00 ... 23:59)	Not performed

Alarm working test	
Alarm working test recording	Performed at: 07:39

EXIT Home Daily Inspect. Day (-)

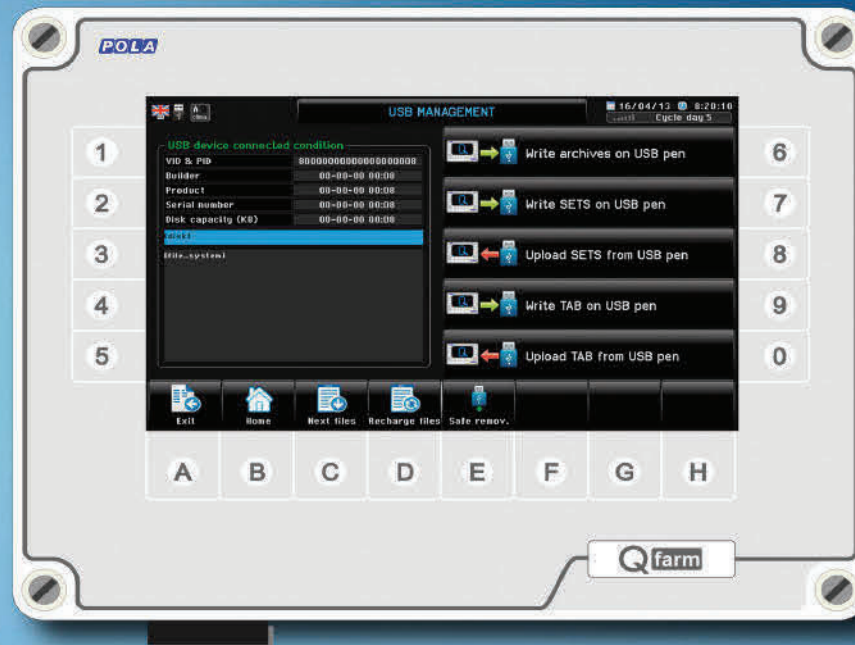
FEEDING TOTALS (DISTRIBUTION) 16/04/13 0:20:10
Cycle day 5

Feeding		Silo 1 upload	
Conversion	1.80	Total upload	1610g
Feed total	60lb	Total download	60lb
Water total	120lb		
Water / Feed	2.01	Silo 2 upload	
Feed Gr / Bird	70gr	Total upload	120g
Water Gr / Bird	141gr	Total download	0g
		Silo 3 upload	
		Total upload	0g
		Total download	0g
		Feed manually added	
		Total feed manually added	0g

EXIT Home Distribution Bird account. Eggs collect.

Archives management includes recording both daily data and total cycle data. There are also specific screens to display graphs.

USB functions (Data transfer)



USB plug

Communication with external world is by USB pen drive.

The main programming parameters, the archive downloads and software updates can be done by PC connection via the USB pen drive.



Video-tutorial on exporting archives



Video tutorial on data transfer

Qfarm Dialogue (software PC)

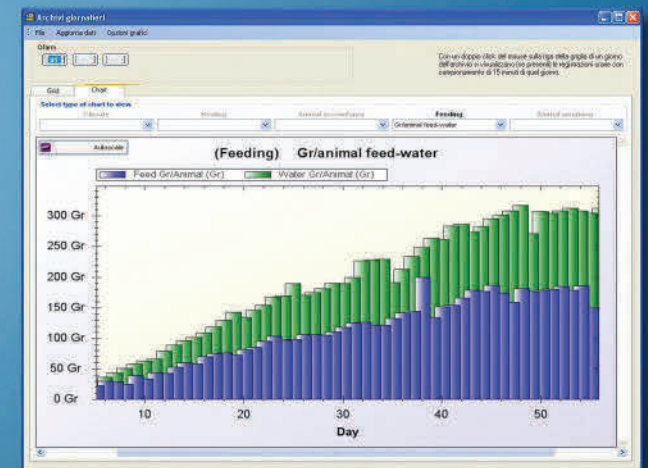


PC program to display archives exported from Qfarm by USB connection.

Some screenshots about cycle data analysis available on Qfarm Dialogue program.

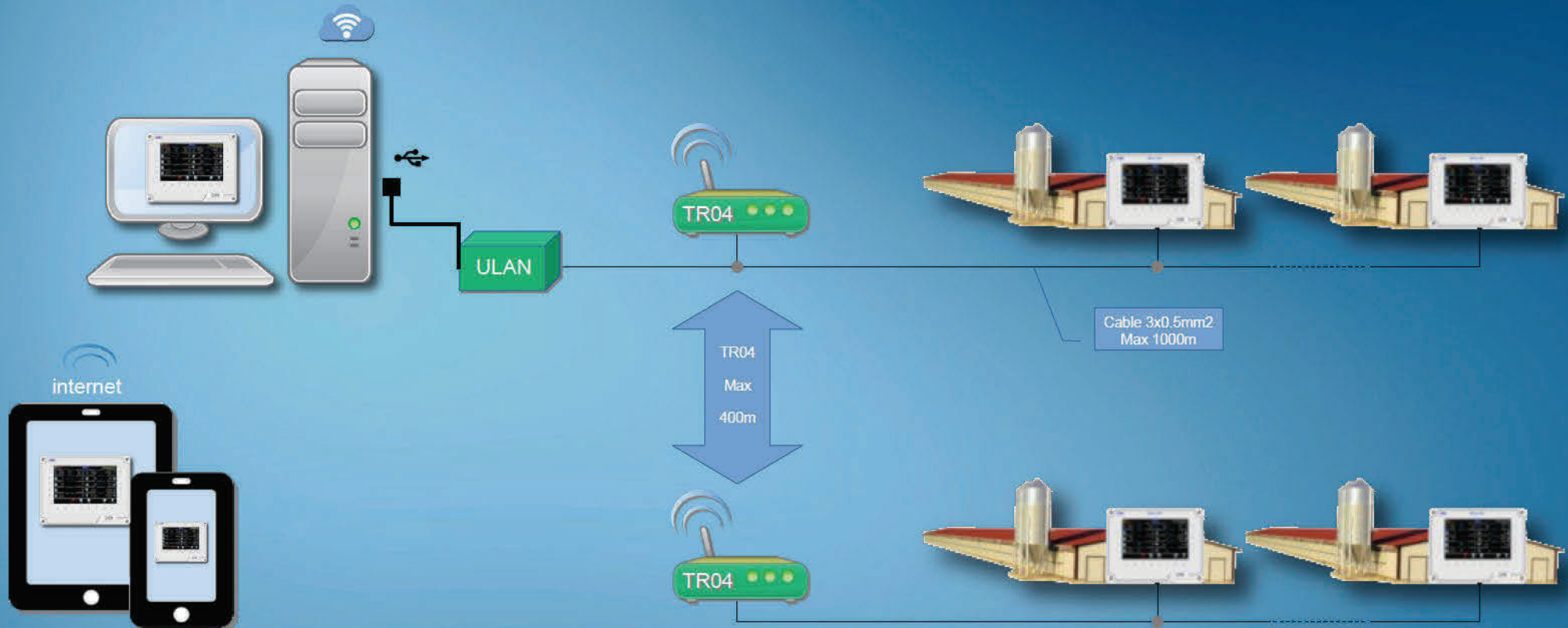


Day	Date	Head	Head	Value	Time	New	Conversion	Feed	Water	Value
Code	DDMMYY	Programmed	Observed	Distilled	Min	Distilled	Rate	Distilled	Distilled	Feed
1	16/04/16	2000	970	141	1431	1440	616	25	6	6,25
2	17/04/16	2000	870	233	1438	1440	3,5	42	14	8,54
3	18/04/16	2000	890	366	1379	1410	2,99	37	24	6,63
4	19/04/16	2000	25	478	1078	884	2,27	1	30	27,12
5	19/04/16	2000	1142	852	1078	884	2,53	90	38	8,71
6	19/04/16	2000	822	980	1078	884	2,89	22	48	1,96
7	19/04/16	2000	843	1152	1078	884	2,89	30	91	1,66
8	19/04/16	2000	440	1320	1078	884	2,52	28	60	2,06
8	19/04/16	2000	570	1427	1078	884	1,61	25	62	2,90
10	19/04/16	2000	852	1904	1078	779	1,44	39	95	1,69
11	20/04/16	2000	780	1702	1078	884	1,44	34	79	2,36
12	20/04/16	2000	894	2027	1078	884	1,36	44	89	3,04
13	20/04/16	2000	876	2170	1078	884	1,30	40	95	2,22
14	20/04/16	2000	1176	2140	1078	884	1,3	63	762	1,93
16	06/07/16	2000	1389	2472	1078	884	3,3	60	108	1,62
16	06/07/16	2000	1377	2399	1078	884	1,29	59	133	2,06
17	07/07/16	2000	1382	2629	1078	884	1,38	70	132	1,68
19	08/07/16	2000	1659	3226	1078	884	1,29	75	143	1,96
19	08/07/16	2000	1711	3019	1078	884	1,29	79	134	1,74
20	09/07/16	2000	1622	3209	1078	884	1,3	75	144	1,58
21	07/07/16	2000	1845	3485	1078	884	1,3	82	154	1,66
22	08/07/16	2000	1762	3796	1078	884	1,32	86	164	1,96
22	09/07/16	2000	2135	3840	1078	884	1,22	95	179	1,89
24	09/07/16	2000	2284	4291	1078	884	1,34	104	198	1,82
25	09/07/16	2000	2195	4696	1078	884	1,35	82	171	1,74
26	08/07/16	2000	2216	5044	1078	884	1,38	98	172	1,78
27	10/07/16	2000	2287	4908	1078	884	1,41	108	182	1,72



The Qfarm Dialogue software is provided in the Qfarm package.

Supervision (Qfarm remote management)



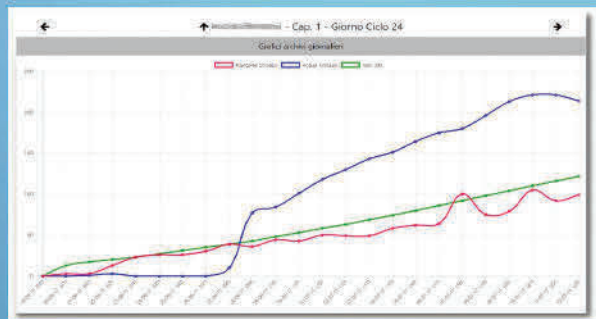
Remote monitoring of Qfarm allows complete management from a PC.

The Qfarm Net PRO supervision software installed in PC allows remote management of Qfarms connected in the network. The connection between the PC and the peripheral ULAN is via USB connection, whereas the ULAN-Qfarm connection consists of a standard 3-wire cable. In applications where a cable can not be used, the solution is to install a 485 radio modem for a maximum distance of 400 meters.

Components needed for a supervision system:

- ULAN: Network server Pc (with USB connection)
- Qfarm Net PRO: Qfarm Supervision Software
- TR04: 485 Radio-modem (optional, only if a cable can not be used)

Qfarm.cloud
(Optional Online Clouding service on request)



Some screenshots of cycle data analysis available on qfarm.cloud service.

The Qfarm.cloud service is based on Qfarm Net PRO program and allows remote connection between a browser web (by PC, tablet, smartphone) and an our server to display information about cycle data of sheds where Qfarms are installed.
 This new easy to use software function allows remote check of cycle parameters comparing environmental parameters as temperature, humidity, CO2, NH3, daily feed intake, chickens weight,... with a standard reference based on the type of animal breed (i.e. Ross 308) bred in the shed.
 The visualization of parameters trend is focused on the comparison between recorded data on the last 3 days and the reference curves and it consist of 3 light signals that can turn into green or red according to the matching between recorded value and allowed range of the reference curve.
 Daily graphs for every cycle day and of the last 48 hours with a recording every 15 minutes.

The software interface was developed in a "pyramidal" mode to allow the access to the farmer, the technician and the parent company.

The figure that is connecting to the cloud can operate differently according to its qualification, here the following features:

- Qualification: "Parent company", it controls all the sheds but can not change any curves and parameters.
- Qualification: "Technician", he/she can check and change the settings, limits and the reference curves of sheds under his control.
- Qualification: "Farmer", he/she can check only his/her own sheds.

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