

ICC PRO4

 **Take Control!**





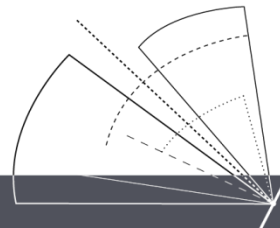
ICC PRO is the Motorola control center software designed to manage water and irrigation systems. The system was jointly developed by Motorola Solutions and Mottech Water Solutions.

ICC PRO software provides a professional and reliable platform for the central Motorola control system and supports connections and synchronization between all system components. The software is used to define the basic configurations for the system and communication components, as well as for routine control, management and command operations such as work programs ,detecting and reporting malfunctions, sensor monitoring ,generating reports and more. An integral part of the ICC PRO software is the ability to operate it via a mobile phone. The system supports user-friendly, efficient operations over smart phones.

ICC PRO supports and serves the company's three main applications:

- Irrigation and agricultural fertilization control system
- Irrigation control and water management system for public gardening
- Water distribution and supply system for rural areas

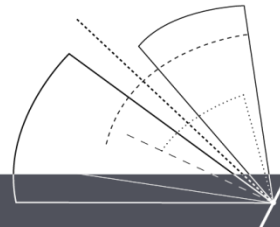
This presentation will focus on several of the main features of ICC PRO4. These features were developed based on many years of experience with irrigation and water management, and particularly through learning and understanding the needs of the software users.





ICC PRO4

14 main features





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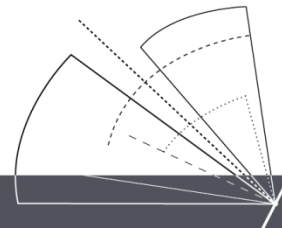
-[Network protection](#)

-[Crop types](#)

-[Sending text messages](#)

-[Water balance report](#)

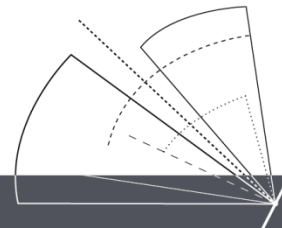
-[OPC](#)





Private server or cloud

The choice is yours



■ Private server or cloud

You can choose the location of your ICC PRO server. Unlike other systems, the ICC PRO control system supports two configurations :

Private server -Purchase a permanent license and install the software on the customer's server. This option is especially suitable for:

- Customers without internet access
- Organizations in which the database cannot be removed from the organizational network
- Organizations that do not allow access to external servers

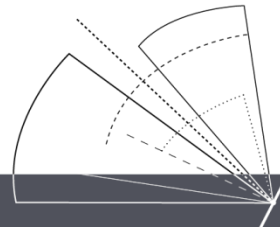
Cloud services - Use of cloud services. This option does not require a permanent license. The main advantages are:

- The cloud service provider is responsible for server maintenance, backup, and network access
- Quick and convenient access to ICC PRO
- Suitable for organizations that do not allow access to the server on the organizational network

How it works

When purchasing ICC PRO, the customer will decide whether to buy the software or use the cloud services. Installation - when installing a private server, install the full installation version and fill in the online form in order to automatically receive a license .

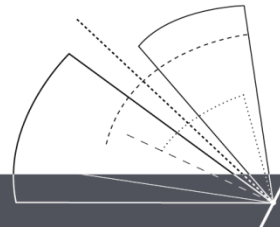
Cloud service users - install the client version and configure the server address.





Authorization

System for multiple users and roles



■ Authorization

The sophisticated ICC PRO authorization mechanism allows multiple users with different roles in the organization to use the software at the same time. Each user accesses the system based on individual roles and authorizations.

How it works

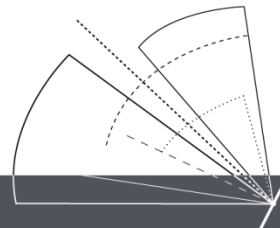
The ICC PRO authorization system is comprised of three stages:

Roles in the system - define the different roles (e.g. irrigation manager, maintenance contractor, crop manager, etc.), and for each role, define the authorization level. The authorization level refers to different elements of the system, including programs ,valves, sensors, field units, etc. There are several levels of authorization, ranging from "no access" to "editable".

Users - define the names of system users and the role of each user.

Domain - define [domains](#) and configure the domains that can be accessed each user.

After completing these three stages, a role and domain will be defined for each system user, and authorizations will be defined for each role based on the element types.



Example

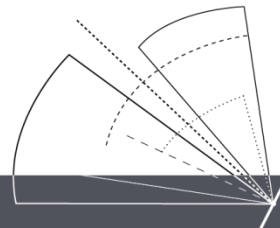
Many people with diverse roles are involved in Municipal irrigation control system ,including the control system supervisor, contractors, and the water corporation. Each of these entities access the ICC PRO server based on their roles and responsibilities .

Control system supervisor - will be defined as the system manager and will manage the authorizations defined for all system users.

Maintenance contractors - will be permitted to view and activate the valves in their maintenance area only. They will not have the option of changing water quantities in the program, but will be authorized to manually open the valves for a limited amount of time in order to test and cancel alarms.

Municipality supervisor - will be authorized to see the head controls within their specific areas only and to change water quantities in the program, but not to change the operational coefficients .

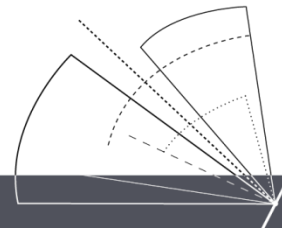
Water corporation - will be authorized to view the water consumption reports only, and will not be authorized to operate or view any other parts of the system.





Domains

Customized system management



In the ICC PRO we developed the DOMAINS ,a management tool that enables logical division of the system for [authorization](#), management, [reports](#) and routine operations.

A domain is a collection of items that are defined based on the needs of the user, to enable advanced operations and management. A large number of domains can be defined, and each item can be defined in multiple domains.

Items that can be included in a domain:

- Field units ,Head controls
- Valves, meters, digital and analog inputs
- Pumps, fertilizer farms and filters
- [Accumulation alarms](#)

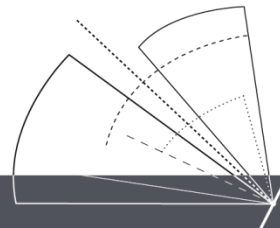
Domains can be used to:

- Associate [authorizations](#) with users
- Sort all software screens by [domain](#) : dashboard ,programs, valves ,Head controls ,etc.
- Generate [reports](#) per domain

How it works

Go to the Management tab to define a new domain. Add all of the desired items in the system to the domain based on item type.

The Summary tab displays all of the items that were selcted for the domain in a single list.



Example

A maintenance contractor is responsible for 15 Head controls in the east region, 7 Head controls in the south, and another 10 valves that are scattered among different head controls in the north .

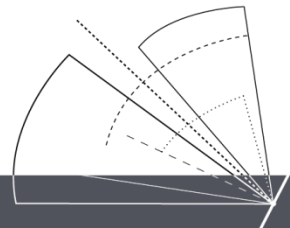
Define a domain that will include the 15 head controls in the east, 7 head controls in the south, and then add the 10 valves from the northern region to the domain. Now the domain can be managed separately from the other parts of the system.

Another example:

A potato crop manager at a farm is responsible for the irrigation and fertilizing system.

The potato fields are scattered throughout different parts of the farm and include : head controls, valves, water meters, fertilizing pumps ,water pumps and different types of sensors. Different types of potatoes grow in the fields, and have different planting schedules.

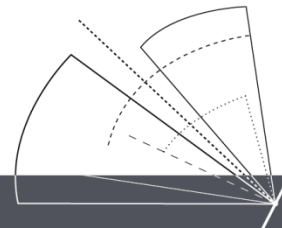
Define several potato domains based on types and planting schedules. Associate the desired items with each domain :head controls, valves, water meters, sensors, fertilizing machines and more.





Browser

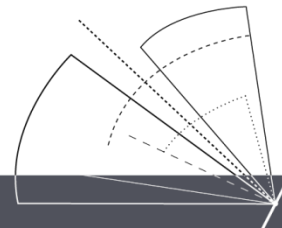
Full system control, any time and any place



The control system can be operated by a mobile phone, tablet, or any device with a browser. The browser allows multiple users to access the ICC PRO at the same time without installing any special applications. All that you need is a browser and access to the database.

The browser connects to the server just like any other user. The customized interface supports different, diverse actions necessary to operate and manage the control system :

- Operating, shutting down, and modifying irrigation programs
- Active use of [Google Maps](#) and direct links to navigation applications (Waze and Google Maps).
- Clear alarms of irrigation programs and lines
- [Dashboard](#)
- Modification of the operational coefficient, stopping and operating lines and programs in the [domain](#)
- [Opening valves manually](#)
- Events report
- Sensor , flow and accumulation values
- [Weather stations](#), types of crops ,[computed value](#) and [network protection](#)



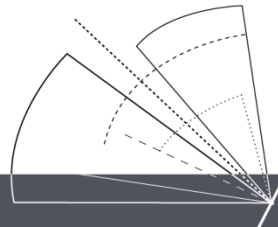
How it works

The browser is installed on the phone like any other application .

Download the ICC PRO Mobile application from the app store and define the IP address of the data server.

From this moment on, the entire system can be operated via the mobile device .

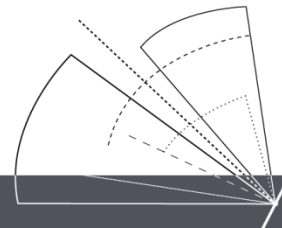
Authorization for browser use is defined in the ICC PRO software. Define which users are authorized to use the browser and which elements they can access .This simplifies, streamlines, and supports system operation from the field.





Reports and Graphs

In your inbox, every day



■ Reports and Graphs

ICC PRO generates a wide range of reports and graphs that provide comprehensive and up-to-date information for system users. All reports use an identical mechanism to generate, distribute and save information.

One-time only or permanently:

Reports and graphs can be generated one time only by rapidly retrieving data, or alternatively, the retrieved data can be saved permanently by saving the report and graph by name.

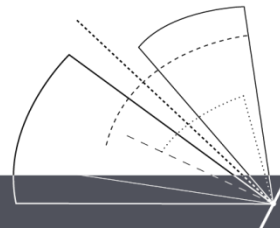
Format, save and distribute:

ICC PRO will automatically generate the required reports as needed on the defined day and time, in three different formats: WORD, PDF ,and EXCEL. The reports are automatically distributed via email as needed to the necessary recipients and/or are saved on the server, or printed.

Types of reports:

ICC PRO generates 4 types of reports:

- Events report :Events log | Events report
- Accumulation report: Meter accumulation | valve accumulation combined accumulation | [Water balance](#) report: planned vs. actual
- Input and output report: Inventory report for all elements in the system



■ Reports and Graphs

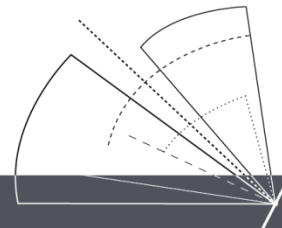
ICC PRO supports many options for generating reports and presenting data, including:

- Selecting a time period for the report: daily, weekly, monthly, annually, customized.
- Selecting the scope of the report: system, domain, field unit , head control ,valve, meter
- Fields: which of the supported fields will be shown in the report and in which order
- Order: the fields that will be used to sort, organize and display information in the report

ICC PRO support two types of graph displays:

- Generating a graph directly from an element - no prior definitions are needed for this graph
- Graphs based on prior definitions - for these graphs, select up to 6 different elements to be displayed together .

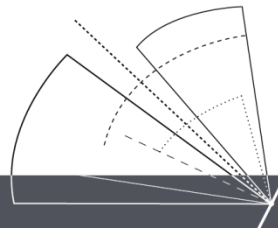
For example :flow (water meter), pressure (pressure sensor), valve state (status). Graphs of this kind can be saved and generated as permanent graphs at any time, without redefining them .The graph can be displayed as an active graph on the [user screen](#), or sent by email and printed.



How it works

Go to the Reports and Graphs tab on ICC PRO and select the type of report or graph that you would like to generate. Select the parameters to be retrieved for the report, including range of dates, data sections from the element level to the system level, items relevant for the report, columns, sorting order, etc.

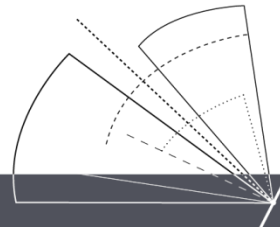
Now the report is ready to be generated or saved as a permanent report to be generated again in the future. If you want the report to be generated again, indicate when it should be automatically generated (date and time), and configure the recipients and format.





Interface

Convenient, user-friendly, customized



■ Interface

We developed the ICC PRO software with advanced graphical interface, tables, maps, graphs and reports that enable friendly management, professional and efficient control system.

The following are some of the most prominent features of the system interface:

Dashboard

We aggregated all of the data that is important for routine system management on a single control screen. One quick glance at this screen summarizes the status of your system. The dashboard can present the status of the programs, valves, head controls, hardware components, accumulations, fertilization pumps, and filters. The data changes based on the information selected.

Graphical interface:

The fixed graphical screens built according to the system settings. The color of the element indicates its status (open, alarm, etc.). The interface can be used to perform certain actions such as opening, closing or canceling an alarm. The graphical interface is simple and easy to use, and makes the work quick and efficient.

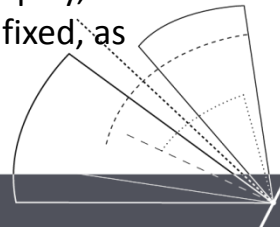
Adjusting Tables:

The ICC PRO allows any user to organize and arrange the tables in the software.

Each user defined and organizes the tables to suit personal preferences. The user can chose the fields in the table, the order in which they appear, column size, number of columns to freeze, etc.

Users can define how they want the information to be presented – in graphical form, in rows, brief summaries or detailed information. The screen that presents the tables includes quick links to other relevant tables, and offers the option of designing the main tables.

The Programs table, for example, can present large quantities of information (head control display, detailed display, list of active programs, etc.), which can be changed at the click of a button or remain fixed, as needed.

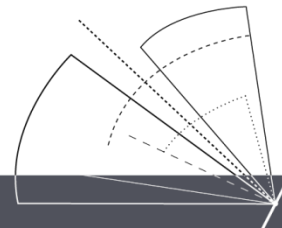


How it works

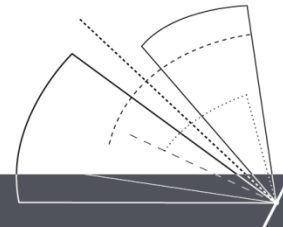
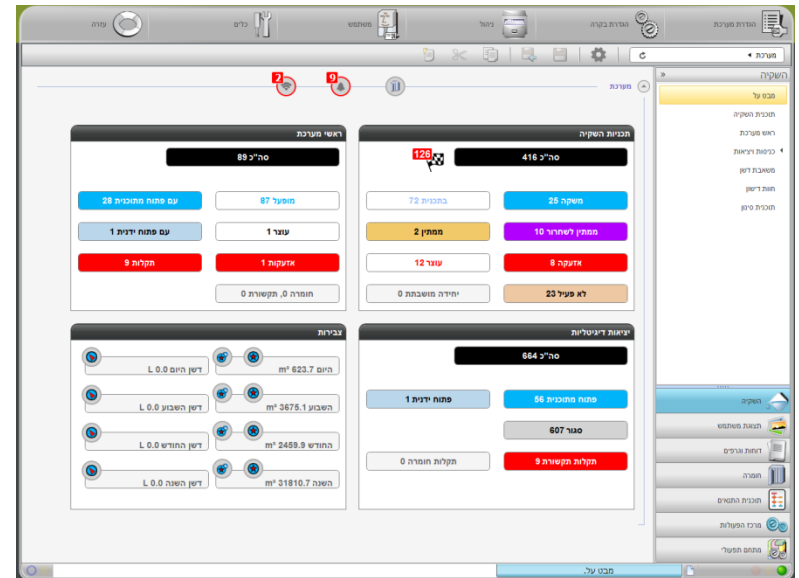
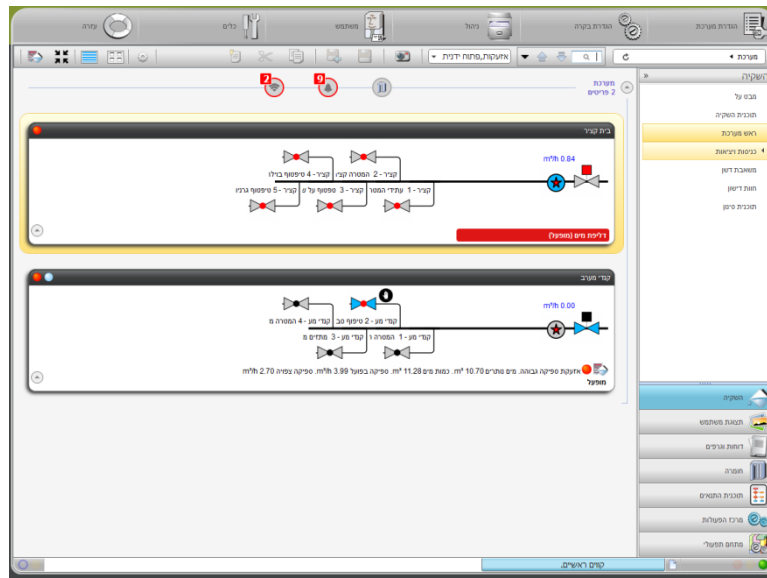
In order to edit a table, switch to edit table mode. In this mode, the table can be customized based on the various sections. From this point on, the customized table will appear each time the user logs into the system. This mechanism is available for each of the tables.

The tables contain 3 mechanisms that support searching, arranging and sorting the data in the table. This mechanism can be saved permanently for the user who defined it, or used one time only.

- Search – each screen that contains lists will also feature a search option on the upper corner of the screen. Search by entering the desired string of characters. The software will search for the sequence in each of the rows in the table.
- Arrange – data arrangement will present the data in the table in the desired order. Define the preferred order by clicking on the heading of the data that will be used to arrange the data. Primary and secondary arrangements are supported.
- Sort – Display only selected data from the entire system database. Data can be sorted from the top section of the screen, and refers to the required section (system, domain, field unit) and the different possible states.



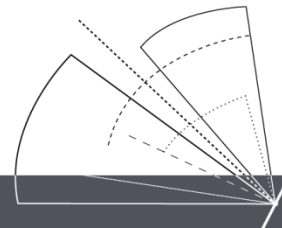
Example





User screens

Design your own screen





The ICC PRO user screens can be modified and designed by the user. User screens allow the user to edit and display information that is most valuable for the user. Unlike other ICC PRO screens that cannot be modified, user screens can be designed by the user with simple, user-friendly editing tools. This allows users to create screens that will help them manage the system in the way that is most efficient and convenient for them.

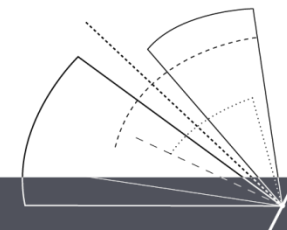
What can be displayed on the user screens?

- All existing elements: valves, water meters, sensors, fertilizing pumps, etc.
- Hardware: field units, IRRInet units, Remote units and more.
- Head controls, irrigation programs, filters
- Images, video clips, maps, graphs

The user screens display active elements that change their color and texts based on the state of the system. For example, a closed valve appears in grey and becomes red in case of alarm. Clicking on the right button when pointing at a specific element will open a list of additional actions that can be performed for that element. For example, valves can be opened or closed, lines can be activated, and alarms can be cleared.

User screens are very useful for many different purposes, including:

- Displaying different types of sensor data such as pool depth, water pressure, amount of water in a tank, weather data
- Displaying aggregated information such as alarms, flow, pressure, etc.
- Displaying large geographical areas on a map
- Displaying hydraulic flow charts with many elements and sensors.



Incorporating maps on user screens

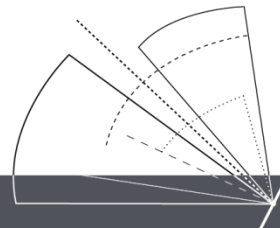
ICC PRO incorporates many different types of maps that can be defined as user screen backgrounds. The map software has many advantages: the maps are free, they are updated periodically, they can be used to measure distances, and more. We have combined these advantages with active elements in the ICC PRO software. Combining these two capabilities helps users manage the control system using maps.

Types of maps that can be used in the ICC PRO:

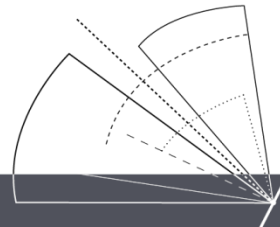
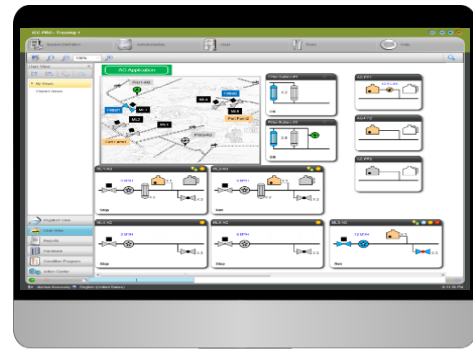
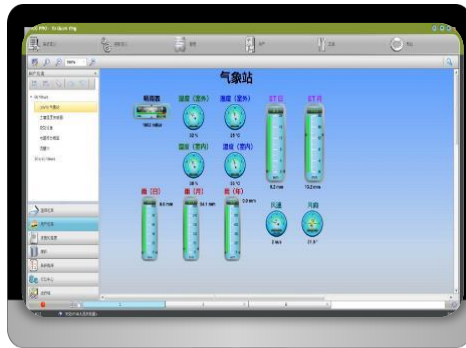
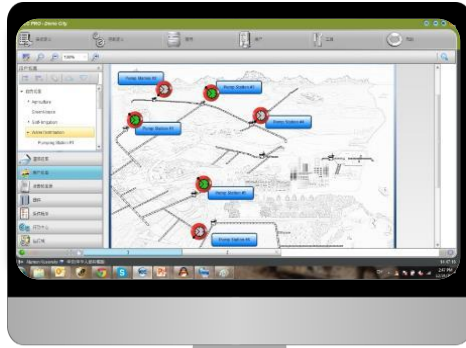
- Google Maps | Google Hybrid Maps
- Bing Maps | Bing Hybrid Maps
- Yandex Maps | Yandex Hybrid Maps
- Open Street Maps | Open Street 4U Maps
- Open Cycle Maps
- Open Quest Maps
- Wiki Mapia Maps

How it works

Switch to editing mode on the user screens. To select a map to use as a background, select the desired type of map. The longitude and latitude points of each element in the system can be found in the Map tab. When using a map as a background image, elements for which waypoints have been entered will appear automatically on the map.



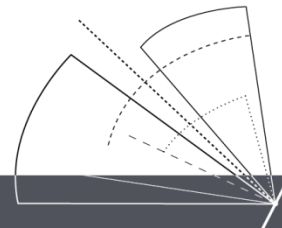
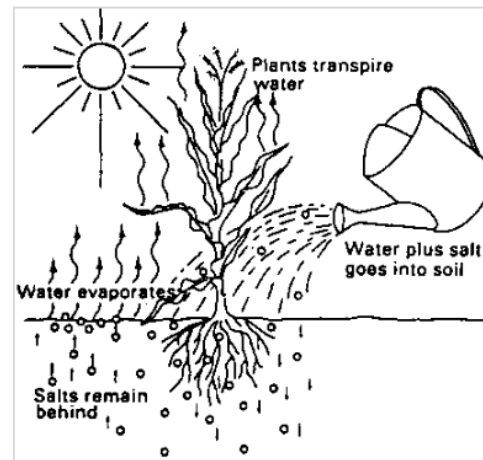
Example





Control methods and weather stations

Professional, efficient and cost-effective irrigation



Control methods and weather stations

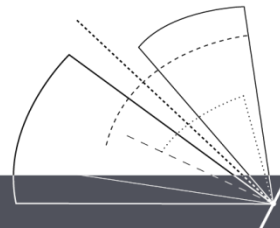
Water quantities for irrigation programs – This is a main parameter in the irrigation control system. Correct water quantities that are based on professional parameters will improve the quality of the crops or the appearance of the park, will comply with water allocations, and cut costs.

Determining accurate water quantities for irrigation -

In the ICC PRO software we developed professional tools that will enable the software to adjust the amount of irrigation water to each program in the system.

The tools are based on formulas - when the daily calculation is done automatically by the software.

ICC PRO automatically calculates and updates irrigation water quantities for unlimited irrigation programs. This guarantees efficient, professional, and cost-effective irrigation.



Control methods and weather stations

The software allows users to choose from five available control methods to set water quantities. Each method calculates water quantities using different parameters.

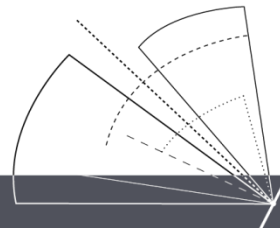
Manual control – Avoid automatic changes to water quantities. The quantities defined by the user will not change until a new water quantity is defined. This is the system’s default setting.

Semi automatic | evaporation-based automation – automatically changes water quantities for irrigation programs based on daily evaporation rates. This data is supplied by the ICC PRO [weather station](#).

Depth-based automatic control – based on the depth required for irrigation. This method is used mostly for agricultural irrigation and allows the user to determine the desired daily, weekly or monthly irrigation depth for each area.

External system control – allows an external system to determine water quantities for irrigation. Decision-supporting systems calculate the optimal water quantity for irrigation, and automatically “plant” the result in the irrigation program.

ICC PRO places a strong emphasis on the user’s ability to manage water use and to closely track actual irrigation vs. planned quantities. The software offers a variety of tools and methods that can be used to plan future water consumption and to continuously track actual use vs. planned use using the [water balance report](#).



Formulas:

Manual control:

water quantities will not change unless a different value is entered.

Automatic control, depth-based:

area-size X irrigation depth per dunam

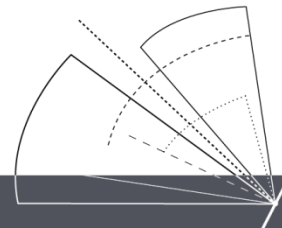
Automatic control, evaporation-based:

area-size X actual evaporation X evaporation coefficient for vegetation


Semi-automatic control:

$$\frac{\text{actual evaporation X base quantity}}{\text{base evaporation}}$$


* The formula can include additional parameters as well




How it works

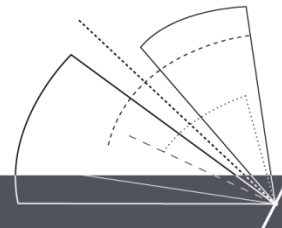
When using the manual track  there is no need for prior definitions. The water quantity input into the system will remain unchanged until a different quantity is entered. This track is the system default.

When using the depth-based automatic method,  define the area size and [crop type](#) for the valves in this method. The type of crop will be selected from the predefined list of crops.

When using the evaporation-based automatic method,  define the area size for each valve and use the crop type screen to define the agronomic evaporation coefficient. Also define the [weather station](#) that will adjust the water quantity daily based on the daily evaporation rate.

When using the semi-automatic track,  define the base evaporation data (systemic data) and the base quantity data (time or quantity) for each program. Also define the weather station that will adjust the daily water quantity.

When using the external system method – purchase a suitable license and connect the two databases. Note that when using this track, the ICC PRO system has no impact on the water quantity calculated.



Water quantities for evaporation-based automatic control

Area size: 1.5 dunam

Actual evaporation: 7 mm, 6 mm, 5 mm

Vegetation evaporation coefficient: 0.5

Water quantity calculated for the program:

$$1.5 * (7+6+5)*0.5 = 13.5 \text{ cubic meters}$$

Water quantities for depth-based automatic control

Area size: 1.5 dunam

Irrigation depth: 7 mm

Water quantity calculated for the program:

$$1.5 * 7 = 10.5 \text{ cubic meters}$$

Water quantities for semi-automatic control

Base quantity: 60 minutes

Base evaporation: 8 mm

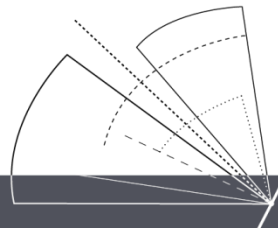
Actual evaporation: 5 mm, 4 mm, 3 mm

Water quantity calculated for the program:

$$\text{Average evaporation} = 5+4+3/3 = 4 \text{ mm}$$

$$60*4 = 30 \text{ minutes}$$

8



Use of weather stations – ICC PRO supports incorporation of weather stations into the control system in order to calculate water quantities based on evapotranspiration (ET) and to present additional data from the weather stations (temperature, wind, rain).

Weather stations can be incorporated into ICC PRO in two ways:

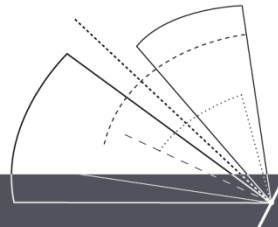
- Link the weather station directly to the Motorola IRRInet ACE controller.
- Link the weather station to ICC PRO via the station's data server. This connection is made using a driver that is written specifically for the weather station data. This driver gives ICC PRO access to the weather station data, The water quantities are updated based on the irrigation program.

How it works

Define a local weather station on ICC PRO or define a connection with the station's data server. Define the time to update the ET. If the station is unavailable, define the source for ET backup data.

To avoid automatic calculations of irregular water quantities, minimal and/or maximum ETs can be defined for each weather station.

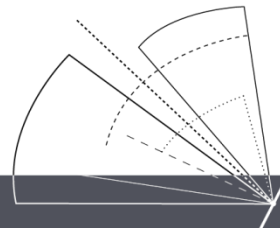
Note –
Virtual weather stations can be defined as well. The station does not actually exist, but it enables the user to enter the ET manually and to use this data to update the water quantity.





Operational domains

Operate the system at the click of a button



Operational domains

Large, complex systems require simple operational tools. That's why we developed operational domains for ICC PRO. The operational domain feature groups items that do not necessarily have a geographical or hydraulic connection. The operational domain is managed as a single unit and at the click of a button.

The following elements can be associated with an operational domain:

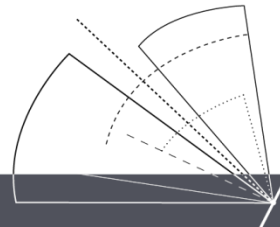
- Field unit
- head control
- Valves

Actions that can be performed using the operational domain:

- Changing a program's water quantities
- Associating a [weather station](#) with the operational domain
- Run and stop main lines
- Stop and pause programs in the [domain](#)

Examples for using an operational domain:

- Divide the system based on [crop types](#) and sub-types – parent domain and sub domain
- Divide the system based on growers/contractors
- Divide the gardening system into parks, sports fields, etc.



Operational domains

How it works

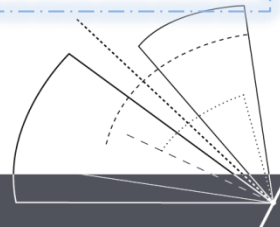
Access the Operational Domain screen on ICC PRO to define operational domains.

Associate one or more of the following items with the desired operational domain: valve, main line and field unit. The operational domain is assigned a [weather station](#) that will impact the calculated water quantities. The operational domain can be managed separately. Actions can be performed through the domain at the click of a button that impact all of the irrigation programs (stopping or pausing the programs) and the main lines (stopping or activating all of the lines in the operational domain or changing water quantities by changing the factor). The operational domain can also be managed via the [conditions programs](#).

Example

Due to a heatwave expected tomorrow, the municipality decided to increase water quantities for the seasonal flowers planted recently by 50%. Water quantities for other types of plants will remain unchanged. Associate all of the valves that control the water used to irrigate seasonal flowers with a single operational domain. Use the Operational Domain tab to set the irrigation coefficient for that operational domain to 150%.

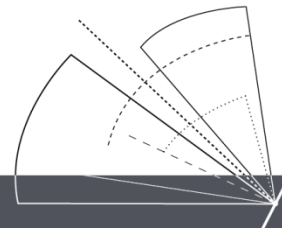
Define that the irrigation coefficient for that operational domain will automatically return to 100% on the following day.





Condition programs

What if...



The condition program is a simple and friendly tool that expands and improves the ability to control and manage the ICC PRO software.

The Condition Program are a series of actions that are based on “if-then” conditions. In other words, if a certain scenario occurs, define what will happen in response.

Condition Program can be simple statements comprised of a single element, or complex ones comprised of many conditions that are connected with “and” or “or” statements. There are many different types of actions that can be taken if the conditions are met, including changing an element status, changing a data value, or sending a text message. Condition Program support a wide range of solutions. They are especially useful for creating dependencies between elements defined for different field units. In this case, Condition Program creates the link between elements in the various field units.

Examples:

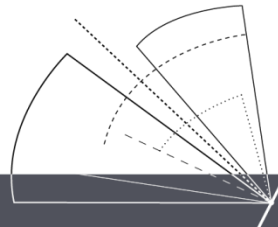
If Valve 20 is opened – open Valve 30 as well, and vice versa – when Valve 20 is closed, close Valve 30 as well.

If the time and date are in the future – change the irrigation coefficient defined for the operational domain.

If the water meter measures over 20 m³/h and the pressure drops below 5 bar – send a text message.

How it works

On the Conditions Programming screen, define a group of conditions. Define the systems conditions for each group. The condition definition includes the name of the condition, when the conditions are met (“if”), and what happens if they are met (“then”). You can also define the time period in which the condition will be met and what will happen once the condition is no longer met.

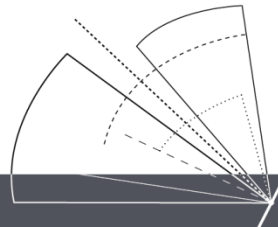


Example:

In an agricultural farm – the irrigation program will begin based on the wind speed measured at the weather station, minimal pressure measured by the analog pressure sensor, and the flow range measured by the water meter. Each of these elements is controlled by a different IRRInet in the system. Use the Condition Program tool to define the permitted wind speed, minimal pressure that enables irrigation, and the permitted flow range. These three conditions must be met at the same time in order for the irrigation program to begin. Also, use Condition Program to define that whenever the three conditions for beginning the program are met and the program is indeed activated, send a text message to the operator.

Another example –

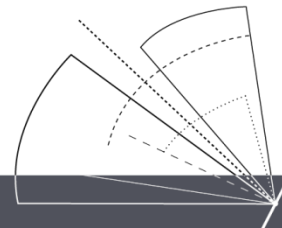
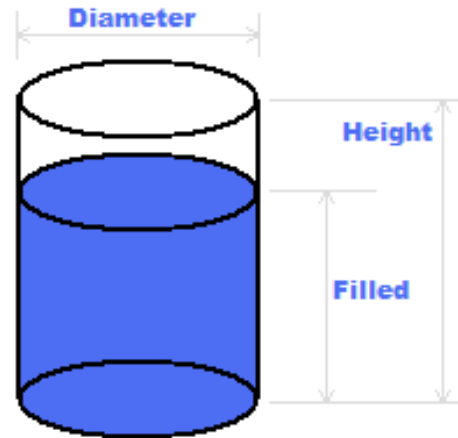
A turf irrigation control system must deactivate lawn irrigation in a specific area in one week from now. Use Condition Program to define the required date as a condition. When the date arrives, the system will change the irrigation coefficient for the lawn's operational domain to 0%.





Calculated Value

How much water is in the tank?



■ Calculated value

Calculated Value is a unique ICC PRO feature. This tool is a mathematical expression that is prepared by the user and is used to combine the values of different elements in the system with mathematical operations and functions.

Elements that can be incorporated into Calculated values and the data that will be presented:

- Digital sensors: their current value of 0 or 1 can be assigned, or count the number of times that the sensor was in the 1 state.
- Analog sensors: will display their current value
- Water meters

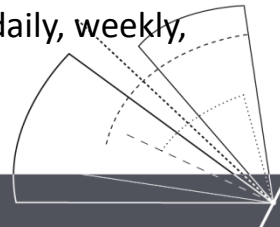
Two types of computed values can be defined:

1. Digital Calculated value:

- The result of the expression will be either 0 or 1
- Digital sensors will be represented in the expression as 0 or 1, depending on their current value
- Analog sensors will be represented in the expression as follows: 1 – if the sensor value is different than 0, or 0 if the sensor value equals 0.
- Water meters will be calculated in the expression as follows: 1 if the flow or accumulation is different than 0, or 0 if the flow or accumulation equals 0.

2. Analog Calculated value:

- The results of the expression will be the calculated analog number
- The digital sensor will be calculated as 0 or 1 values based on its current value, or the number of times that the sensor was in the 1 state.
- The analog sensor will be calculated based on its current value
- The water meters will be calculated based on the current or accumulated flow value (daily, weekly, monthly, annual).



■ Calculated value

Mathematic operations supported:

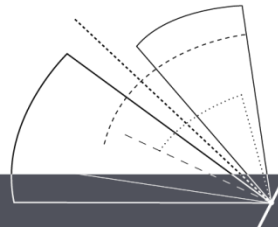
- All arithmetic operations
- All known functions

Examples for using Calculated values:

- Calculating accumulated flow from multiple water meters in the system
- Calculating average of multiple sensors
- Calculating tank volume
- Reducing variation using factorization

The Calculated value is displayed in ICC PRO

- On the [user screen](#) , [browser](#) and [map](#)
- On a [graph](#)
- Under [Condition program](#)
- In the Action Center



■ Calculated value

How it works

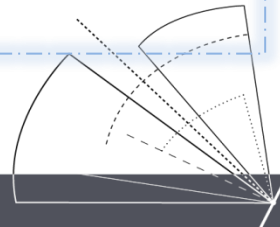
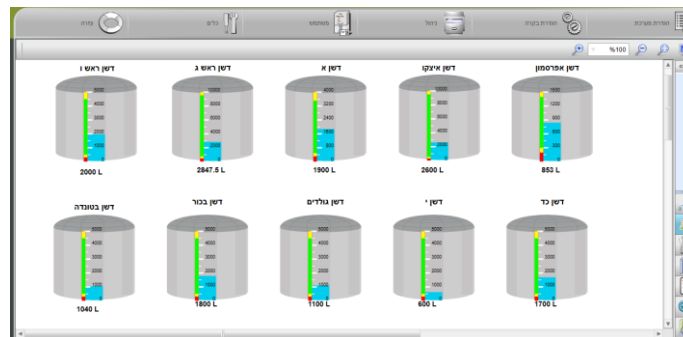
In the action center, define the type of Calculated value required, whether analog or digital. For each Calculated value, chose the elements and the arithmetic operations and/or functions to be included in the equation. When defining a Calculated value, it is possible to simulate the value, or to define additional parameters such as measurement units and upper and lower thresholds. There are two reasons to define these thresholds: a) if the value deviates from the threshold, its color will change on the [user screen](#) and on the map and b) the system will [send a text message](#).

Example

An agricultural farm wants to track the volume of the fertilizer in the tank, and if the volume drops below a certain threshold – to send a text message.

Define an analog calculated value. The expression will include the level sensor in the tank (variable) multiplied by the area of the base of the tank (fixed value). The computed values of the fertilizer tanks will be displayed on a single computer screen. The quantities in the tanks will change visually based on the calculation.

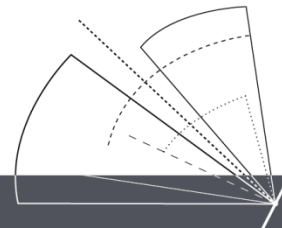
Add a system condition – send a text message if the volume in the fertilizer tank is below the threshold value defined.





Accumulation alarms

Maintain water allocations



■ Accumulation alarms

ICC PRO has enhanced the ability to manage water consumption in each of the water meters that are defined in the system. The accumulated value of each of the meters in the system is displayed in the system [dashboard](#) on a daily, weekly, monthly and annual basis. Total water consumption values change based on the section selected for viewing on the overview screen.

ICC PRO enables users to define deviations from minimal and/or maximal accumulation values for each water meter in the system. This feature can be used to allocate water quantities in advance for each water meter. The allocation can be set per day, week, month or year.

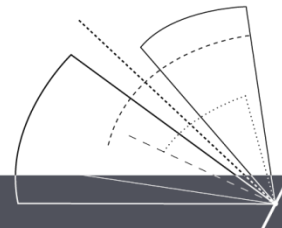
Three levels of water consumption can be defined for each meter: normal consumption will appear in green, consumption above the defined range will appear in yellow, and very high consumption will appear in red. Water meters with irregular values will be highlighted in the dashboard.

Consumption data can be displayed with fixed graphics, on the [user screen](#), and on the map. This data can also be used to calculate the analog and digital [calculated value](#). Water consumption values and meters with irregular consumption rates can also be displayed on the [browser](#).

How it works

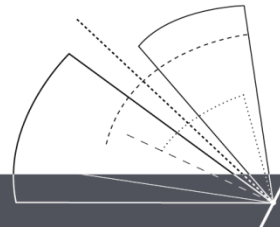
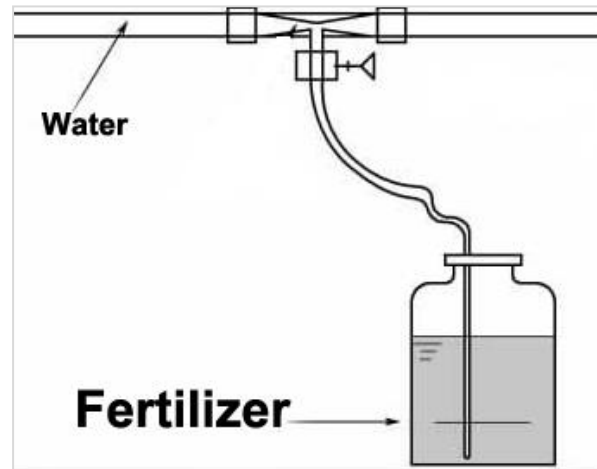
The system default is that each water meter defined in the system will automatically be included in the water consumption summary. Users can define that a specific water meter will not be included in the calculation.

Defining irregular consumption values – when defining the meter, select the Accumulated Alarms tab. Define minimum and/or maximum alarms per day, week, month and year.





Fertilizer



Fertilizer

The ICC PRO/IRRIInet system supports incorporating fertilization as an integral part of the irrigation program. Fertilizer quantities are defined as a parameter in the irrigation program to allow full synchronization between the water program and the fertilization program. The system supports incorporation of one or more fertilizing machines for local or central fertilization using different types of fertilizer.

ICC PRO supports different options for advanced fertilization solutions:

Fertilization options:

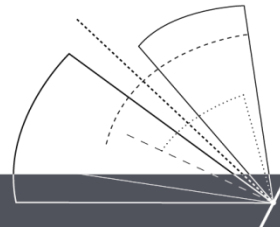
- Fertilization based on time or quantity
- Quantitative or relative fertilization
- Irrigation before and after fertilization

Calculating fertilizer quantities:

- Fertilization based on water/fertilizer ratios
- Fertilization based on area/fertilizer ratios
- Fertilization based on fertilizer units

Alarms in case of alarms:

- Fertilizer pump alert
- Fertilizer leaks
- Shortage of fertilizer in the tank



Preventing users from entering incorrect fertilization values:

- Protection against a fertilizer/water ratio that is too high
- Protection against a fertilizer/area ratio that is too high

Fertilizer tanks:

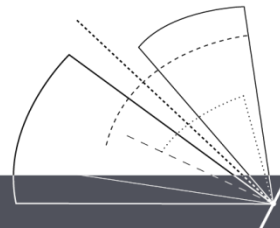
- Visual presentation of the fertilizer tank level
- Visual presentation of the fertilizer quantity in the tank
- Alarms in case of a shortage of fertilizer in the tank.

Fertilizer usage reports:

- Fertilization reports from the valve level to the system level
- Divide fertilization data based on [crop type](#), fertilizer type, plot, etc.
- In case of central fertilization, the data will be divided between the valves based on the nominal flow of each valve.

How it works

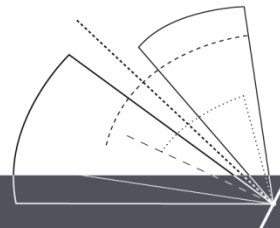
Define a fertilization pump and configure the type of fertilization and control data. Associate a fertilizer meter (if applicable) and define it as local or central fertilization. After defining the fertilization pump, configure fertilization quantities for the relevant programs.





Good to Know

A quick review of things that are good to know



Opening a valve manually:

When a valve is opened manually, the valve operates independently of a program. This means that the valve opens immediately without any control or alarms. Valves can be opened using the fixed graphic screen or from the [user screen](#) by right-clicking on the desired valve.

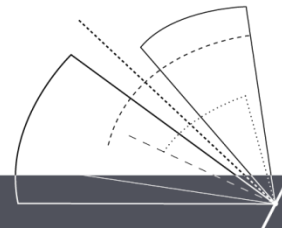
There are three options for selecting duration time when manually opening a valve:

- Open manually for an unlimited time – the valve will remain open indefinitely, until it is explicitly closed
- Open manually for a limited time – the valve will close at the end of the duration time defined by the user
- Open manually for a limited time, based on default values – at the end of the duration time defined in advance, the valve will close

Network protection:

In a closed water system there must be a reasonable difference between the flow of water and the amount of water entering the system and the flow and quantity Out of the system. The network protection tool enables the user to chose the incoming water meters for network protection, the outgoing water meters, and the permitted flow and quantity gaps .

The network protection status is displayed at all times in the action center. The status can also be displayed on the user screens and as part of the [condition program](#).



Crop types

ICC PRO allows users to define as many crop types as needed. Define the following parameters for each type, including the agronomic evaporation coefficient (K_c) which can be either:

Fixed, i.e. the coefficient will remain the same all year round, or Varying, i.e. the software will allow users to define different evaporation coefficients on a daily, weekly or monthly basis.

The agronomic evaporation coefficient is one of the parameters used to [calculate water quantities](#) when using evaporation-based automatic control. In addition, planning and irrigation for depth-based automatic control is configured on this screen. Water quantities for irrigation using this method can be defined per depth on a daily, weekly or monthly basis in depth measurement units.

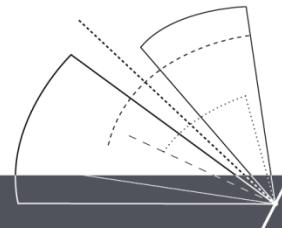
The action center displays a list of crop types. This screen supports several actions, including changing the operational coefficient of each type of crop, changing the agronomic evaporation coefficient, and changing the irrigation water quantity for depth-based automatic control.

Text messages

ICC PRO supports receiving text messages directly from the control system. Define whether each user can receive text messages and which message to send.

Also, ICC PRO software supports system operation via text messages.

Different elements of the system can be operated, including irrigation programs, valves, and more, by entering a code that includes the type of element, element access code, and type of operation.



Water balance report

The ICC PRO water balance report facilitates professional planning of future water allocations. During irrigation, the software supports making comparisons between water allocations and actual use.

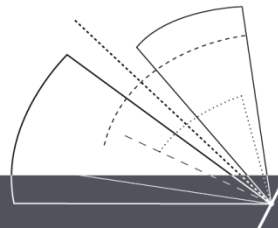
The water balance tool enables operators to keep close track of the efficiency of their water consumption, and offers many options for analyzing water consumption data.

Future water allocations can be planned, and the actual performance of each of the system components can be assessed, including individual valves, head controls, [domains](#), [crop types](#), and the entire system.

Water allocation planning can be done using one or more of the following methods:

- Based on ET – size of valve area X daily evaporation rate X agronomic evaporation coefficient
- Depth: size of valve area X daily depth (mm)
- Trigger program: amount of water prepared for irrigation for the program
- Actual program: amount of water actually used by the program and during manual operation
- Projection program: amount of water prepared for irrigation in the program X efficiency per valve

The planned water quantities are compared with actual use. Data for the selected area is displayed and water consumption data can be presented in units of time, quantity, and amount per area size (cubic meter per dunam).



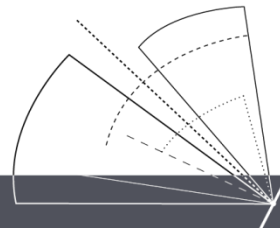
OPC:

ICC PRO supports connectivity with other databases via the OPC (Open Platform Communications) protocol. This connectivity defines the protocol by linking two databases and enabling synchronization and data transfers.

ICC PRO OPC allows all databases with OPC applications to connect and share data as needed. The data can be presented on each of the programs and can be modified as well with the appropriate permissions. This connectivity enables data from two different databases (e.g. an organizational ERP system or other control system) to be displayed and combined.

How it works

When ordering the software, define in advance that ICC PRO connectivity is needed. Beforehand, study and design the data transfer and how it will be presented.





Good to know



 Thank you!

