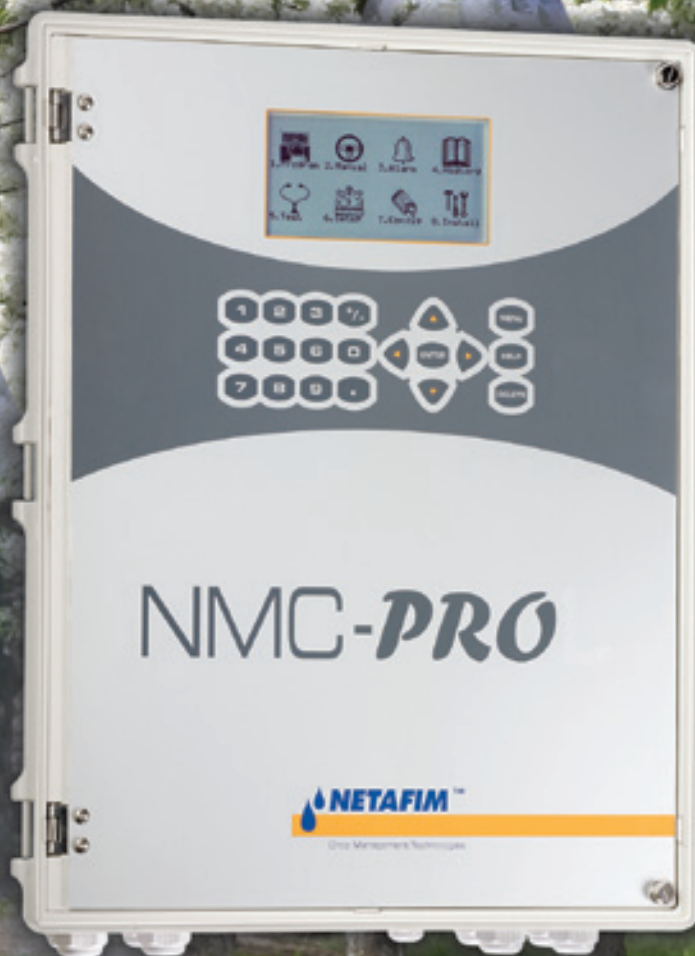


NMC Pro System Manager



*Maximize the
Performance of Your
Irrigation System from
One Central Location*



USA

DRIP/MICRO IRRIGATION PRODUCTS



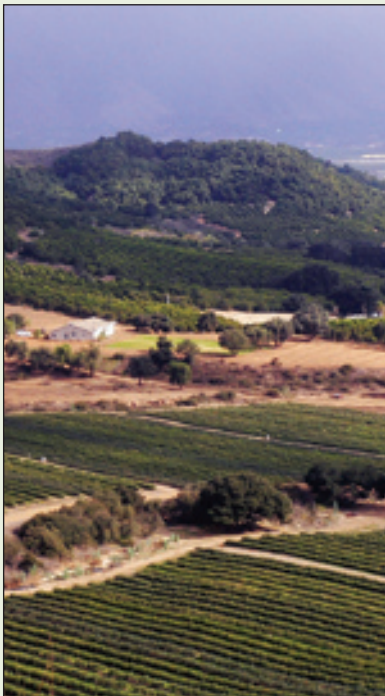
Monitor and Control from One Central Location

The NMC Pro System Manager does more than open and close irrigation valves - it integrates all of your control features in one easy-to-use unit. From one central location, you can operate, monitor and maximize the performance of your irrigation system.

It's an affordable system manager for growers with small or large operations. The flexibility and expandability of control outputs and inputs allows you to modify the system to accommodate growth. Advanced features like fertilizer and EC/pH control can be accessed if and when you want. It's truly a system that grows with your needs.

Automating with the NMC Pro System Manager allows you to maximize the return on your irrigation investment and realize the full benefits of drip/micro irrigation:

- Improved plant response through timely irrigation and fertilization
- Maximize nutrient availability (especially in sub-surface drip irrigation) by maintaining appropriate irrigation water pH
- Achieve high system uniformity through continuous treatment preventing emitter plugging
- Reduce and optimize input of water, energy, labor, chemicals and fertilizers



"We cut water use and costs by 30% ..."

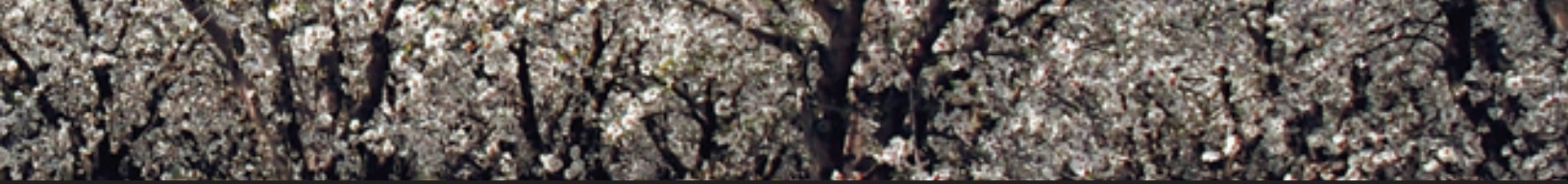
It's been several years and Bill Steed is very satisfied with his Netafim automation products. "Netafim has the strongest automation technology", said Steed. "By using the NMC System Manager in combination with other Netafim Crop Management Technology products, we have reduced the amount of water usage, cut water costs by 30% and the crop output has stayed consistent."

The reliability of the system manager is what he needs and depends on. "It's almost bulletproof," he said. Steed uses a NMC System Manager on his blueberry crop to control the injection of organic materials, fertilizer injection and valve control. "The system allows me to control the valves in a reliable and cost effective manner. Record keeping and accessing consistent data is crucial", he said.

Steed uses his PC communication software option to frequently view logs and events. He can remotely program settings or make adjustments based on what is happening in the field. "This is a system I trust. I know if it's working or not. I'll continue to use Netafim automation for future installations - the savings in time and water make it a great investment," said Steed.

Bill Steed -

Fairfield Farms LLC, Pauma Valley, CA



The NMC Pro Does More Than Just Open and Close Valves

Netafim USA's NMC Pro System Manager is fundamental to achieving the most production with the least amount of labor. Reducing irrigation labor costs means your time can be spent on other farming activities. This system provides the control necessary to optimize irrigation efficiencies and fertilizer injection functions.

System expandability means the control system can grow based on the future needs of your operation. When combined with optional expansion cards and boxes, the NMC Pro System Manager can control up to 256 outputs and 54 inputs. Additional output cards are easy and quick to install.

In addition to opening and closing valves, the NMC Pro System Manager also includes these software programs:

- **Irrigation Programs**
Repeat and modify your irrigation schedules as needed - with up to 60 valve run time programs using time or volume based scheduling.
- **Irrigation Trigger Programs**
Up to 15 external condition programs with programmable parameters for triggering irrigation events.
- **Pump Control Programs**
Control multiple pumps, delay start or shut down times between pumps and valves.
- **Filter Flushing Programs**
Schedules backflush programs eliminating the need for additional external backflush controllers.
- **Fertilizer and Nutrient Injection Programs**
A range of dosing options are available - by time, quantity or proportional along with detailed alarm messages.
- **Cooling Programs**
Programmable parameters including set points for activating cooling systems.
- **Alarm Programs**
A range of alarms protect the system by isolating the problem and providing event details.

Features

- Up to 256 Control Outputs
 - Up to 32 Digital Control Inputs
 - Up to 22 Analog Control Inputs
 - 15 Irrigation Programs
 - 8 Dosing Channels
 - Flushing up to 24 Filters
 - Cooling
 - Fertigation by Time, Quantity, Proportional Time or Proportional Quantity
 - History of Water and Fertigation Events
 - EC/pH Control
 - PC Communication
- Features for Greenhouse Applications:*
- Misting
 - Humidification



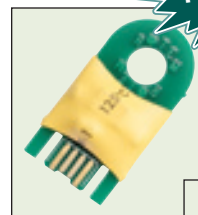
NMC Pro Features



Only Netafim Offers a Program Memory Back-up Key

All the programs of the NMC Pro are backed-up to a memory key. As an added benefit, the NMC Pro comes standard with an SD card for simple and quick software upgrades.

- Programs are secure - eliminates reprogramming to restore settings
- Gives you confidence to learn the program and make changes knowing all initial settings have been saved and can be restored
- Removable for safe storage



Memory Key



SD Card



Simulated LCD Display Screens

Easy to Read and Program with Large Graphic LCD Display

- Simple programming with large graphic LCD display - 16 lines x 40 characters - 5" x 2 1/2"
- Displays icons, text and graphics
- Readable in direct sunlight

Valve	Water	Chan. 1	Chan. 2
1	4125.0	0.00	3.79
2	4125.0	0.00	3.79
3	0.0	0.00	0.00
4	0.0	0.00	0.00
5	750.0	0.00	0.00
6	0.0	0.00	0.00

Press +/- to Toggle Quantity/Time

Displays water meter and fertilizer injection logging.

Evaluate and Manage the System with Real-Time and Historical Records

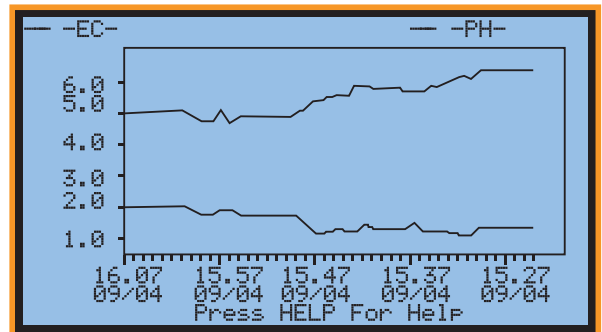
Graphical data and event logging appears on the LCD screen in graph or text formats

Logging:

- Water meter totals
- Fertilizer application totals
- Temperature and relative humidity sensors (requires additional equipment)
- Filter backflushing events
- EC/pH levels

Graphing:

- EC/pH levels



Displays EC and pH data in a graph format based on pre-programmed parameters.

Programming is Quick and Easy with a User-Friendly Keyboard

- Keys have tactile feel and are easy to read
- Hot key menu provides instant navigation
- Hot Keys are programmable for individual preferences
- Scrolling functions for quick access

Adaptable to Your Environment with a Choice of Power Sources

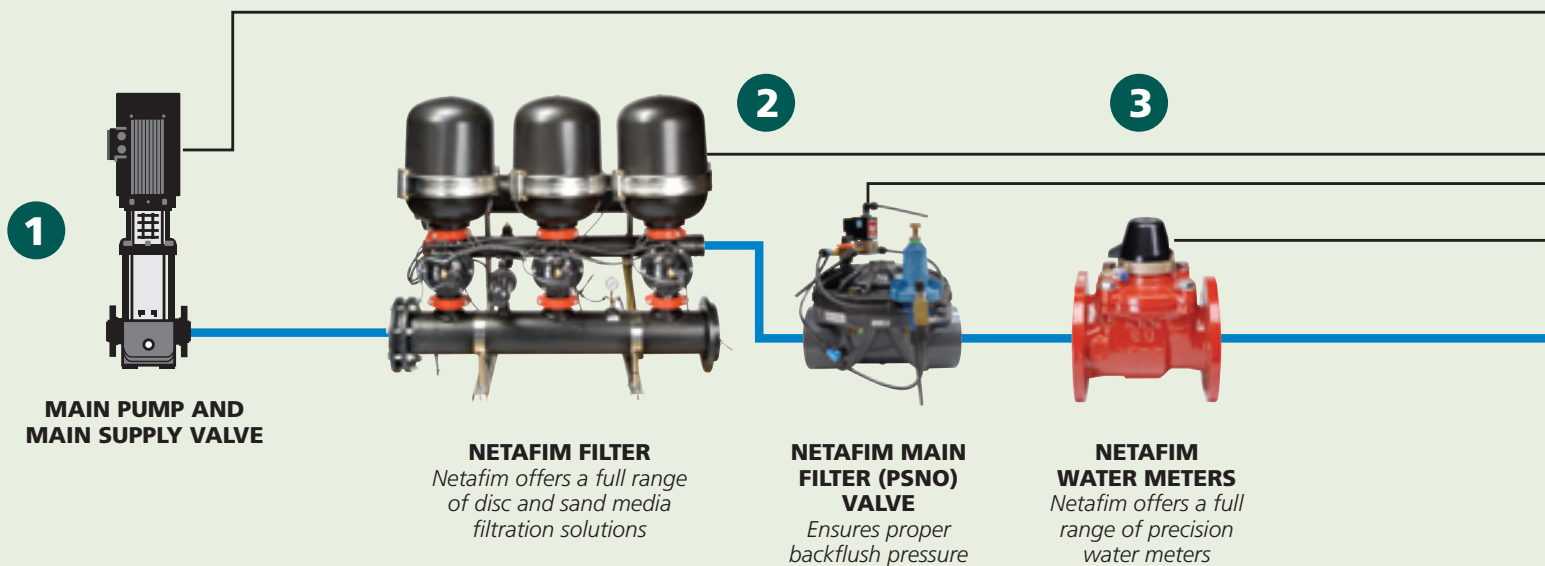
- Application with AC voltage uses the 115VAC power supply card
- Application with DC voltage uses the 12VDC power supply card
- AC power supply uses an optional 12VDC backup battery to keep the system manager on during power failure reducing the risk of lost or damaged data



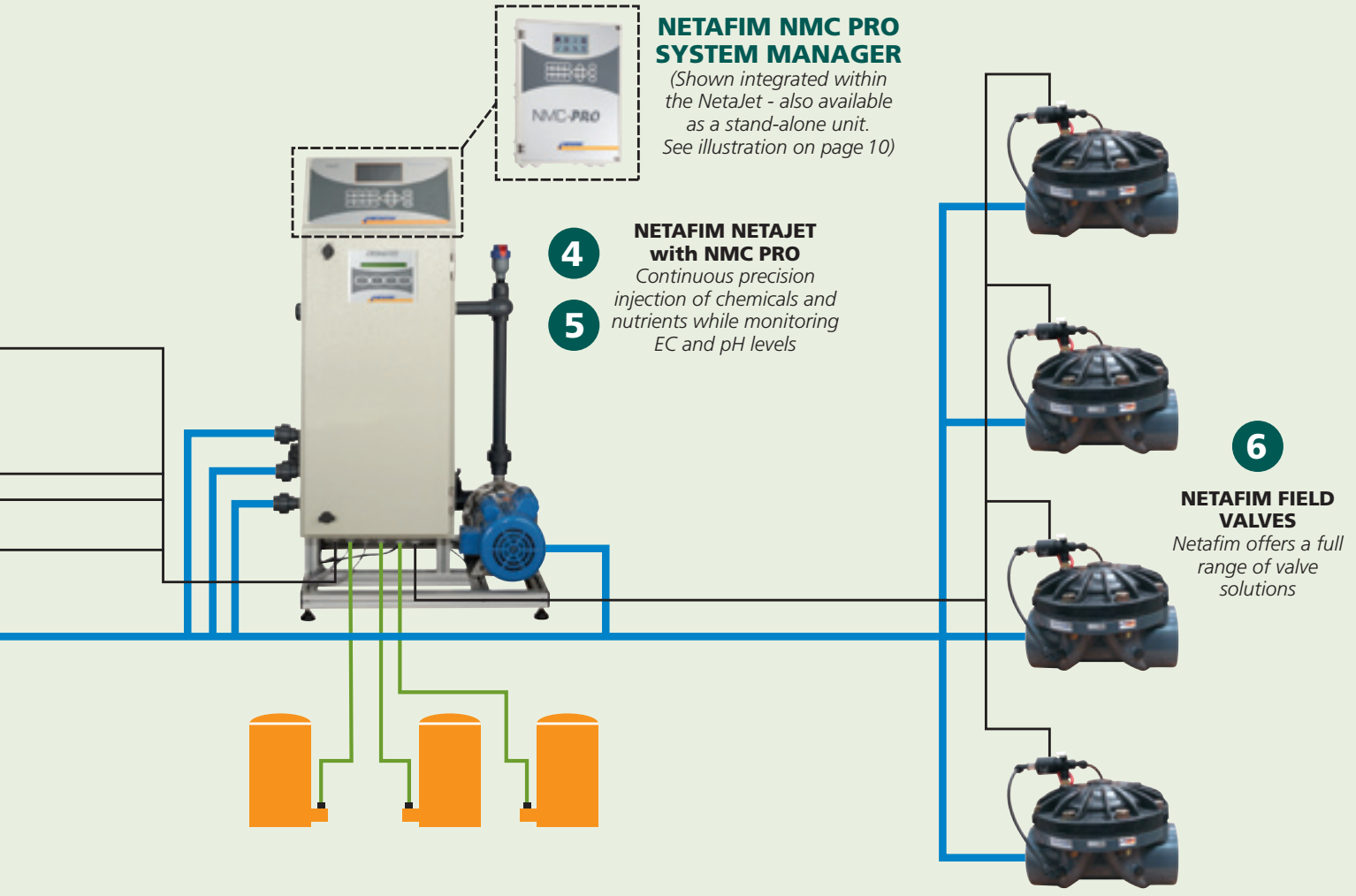
NMC Pro Provides an Expandable Integrated Irrigation System Solution

As part of Netafim's integrated system approach, the NMC Pro System Manager monitors and controls Netafim quality filters, valves, and water meters maximizing the performance of the irrigation system.

Basic irrigation and filtration functions (1,2, 3 and 6 below) can be automated with a few simple programming steps. Additional programs, chemical injection and EC/pH control are possible through the NMC Pro with the purchase of additional equipment and control kits. The NMC Pro System Manager can be used as a stand-alone unit or as a standard component within the NetaJet precision injection unit.

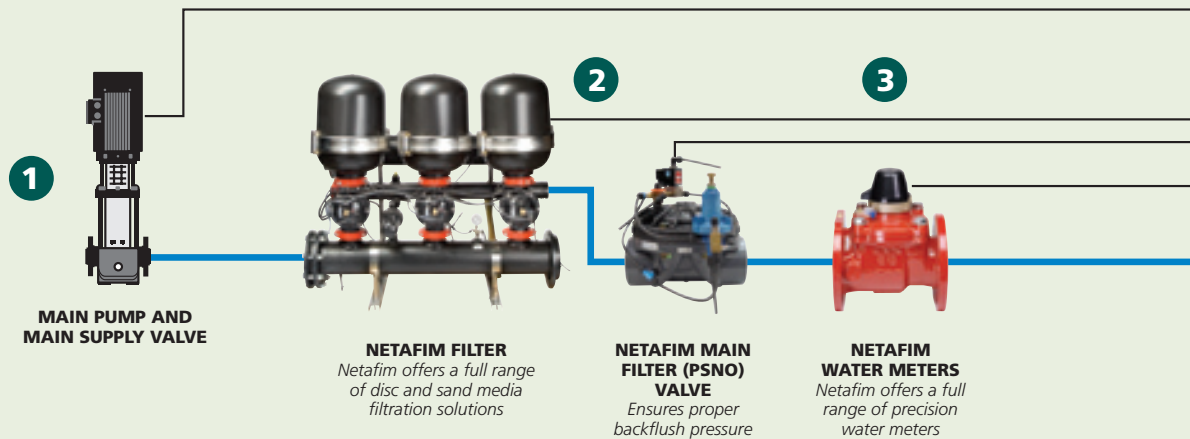


- 1 Operates Main Pump(s) and Main Supply Valve(s)**
- 2 Monitors, Controls and Logs Filter Backflushing and Controls Main Filter (Pressure Sustaining Normally Open - PSNO) Valve**
- 3 Monitors and Logs Water Flow**



- 4** Controls Fertilizer and Chemical Injection
- 5** Monitors and Controls EC and pH Levels
- 6** Operates Field Valves

NMC Pro System Manager Does It All For You



1 6 Operates Main Pumps, Main Supply Valves and Operates Field Valves

The NMC Pro turns the main irrigation pumps or main supply and field valves on and off.

- Activates up to 6 main irrigation pumps or up to 6 main supply valves
- Differential operation of pumps based on real-time flow rates
- Schedules irrigation application totals via time or quantity with up to 15 irrigation programs
- Operates field valves via 24VAC solenoids
- Operates up to 60 valve run time programs
- Operates up to 255 irrigation field valves

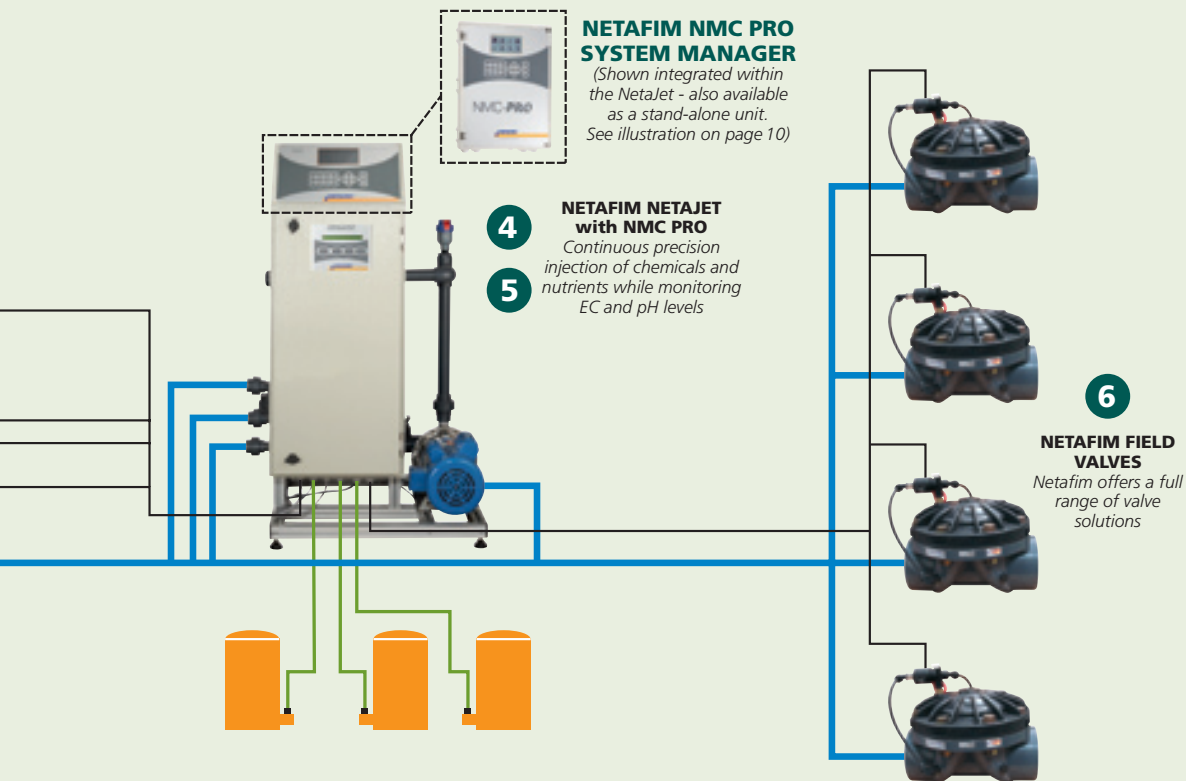


2 Monitors, Controls and Logs Filter Backflushing and Controls Main Filter (PSNO) Valve

Flexible programming options for filter backflushing eliminates the need for additional external backflush controllers. These programming options ensure smooth, reliable performance.

- Operates via time and/or pressure differential
- Programmable dwell/delay times for main filter valve and between individual filter units
- Records backflush history for easy troubleshooting and fine-tuning
- Programs and controls up to 24 individual filter units





3 Monitors and Logs Water Flow

Water flow is monitored and logged with recorded data for totals, limits, alarms and actions.

- Provides water flow data for setting flow limits
- Shuts down system based on high/low flow limits
- Records high/low occurrences as alarms
- Monitors and controls up to 6 water meters



4 5 Controls Fertilizer and Chemical Injection and Monitors and Controls EC and pH Levels

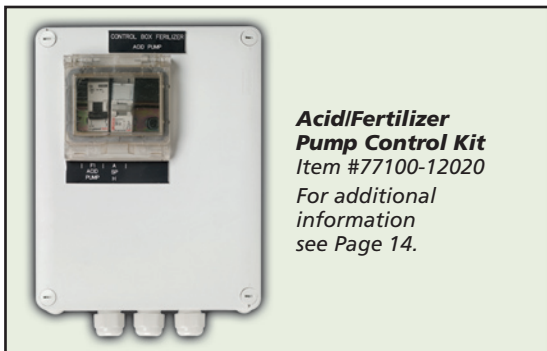
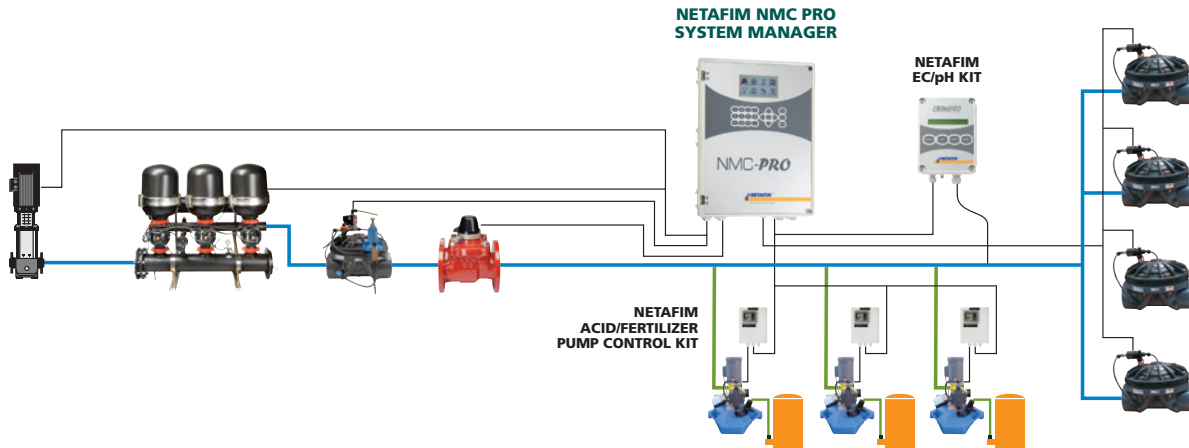
Controls precision injection and dosing when combined with a compact unit such as a NetaJet.

- NetaJet offers three to five proportional dosing channels
- Precision injection based on time, quantity, EC and pH sensors or proportional to water flow for optimum system performance
- EC and pH programs do not have to use the same program parameters. As an example, fertilizers can be programmed to inject based on time or quantity while acid is programmed to inject based on proportion to water flow and pH set point
- Logs fertilizer meter flow rates and accumulates totals
- Maintains consistent pH level in most irrigation water ensuring maximum availability of nutrients within the root zone (especially in sub-surface irrigation)



Optional Kits for Fertilizer Injection and EC/pH Control

If you are not using an all-in-one injection and dosing unit like the Netafim NetaJet, optional control kits can be used to control fertilizer and chemical injection and monitor and control EC and pH levels through the NMC Pro System Manager (shown in the following system illustration).



Acid/Fertilizer Pump Control Kit
Item #77100-12020
For additional information see Page 14.

Fertilizer and Chemical Injection

An Acid/Fertilizer Pump Control Kit connects the NMC Pro to existing or new single phase injection pumps. Unique spread command calculates chemical injection over the entire irrigation period using real-time flow rates.

- Operates up to (8) Pump Control Kits simultaneously
- Injects by time, quantity, proportional time and/or quantity
- Requires an individual Pump Control Kit for each electric pump or injector
- Stops fertilizing during backflush cycles when needed

EC and pH Monitoring and Control

EC and pH data is displayed and transmitted to the NMC Pro allowing chemical injection to regulate EC and pH levels. The self-contained dual EC/pH transmitter has a menu driven calibration procedure and error reporting.

- pH control helps prevent plugging and chemical precipitation
- EC monitoring can be useful in controlling specific concentrations of fertilizers



EC/pH Kit
Item #33000-003320
For additional information see Page 14.

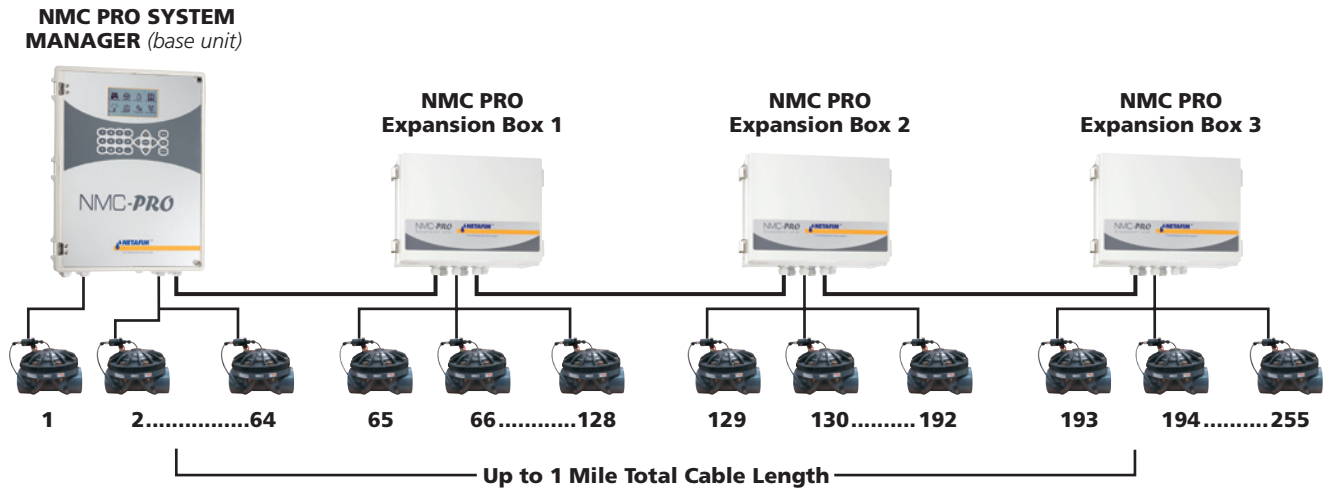


A System That Grows at Your Pace

Now it's easier than ever to modify the system for growth changes. For growers needing more than 64 outputs, expandability is available with the Netafim NMC Pro Expansion Box. Each expansion box provides an additional 64 control outputs. Expansion boxes can run up to 1 mile from the NMC Pro System Manager base unit with simple two-wire communication. Maximum system control outputs (field valves) is a total of 255. For expansion capabilities over 1 mile and up to 6.2 miles from the base unit, the SingleNet Single Cable Control System is available. Contact Netafim USA Customer Service for more information on the SingleNet System.

The following graphic illustrates the simple expandability of the NMC Pro System Manager and the total number of control outputs (field valves) available with the addition of each expansion box.

NMC Pro System Manager (base unit).....	Control Outputs 1 through 64
NMC Pro Expansion Box 1	Control Outputs 65 through 128
NMC Pro Expansion Box 2	Control Outputs 129 through 192
NMC Pro Expansion Box 3	Control Outputs 193 through 255



	Outputs	Digital Inputs	Analog Inputs
NMC Pro	64	32	22
Expansion Box 1	64	32	0
Expansion Box 2	64	32	0
Expansion Box 3	64	32	0
Total	Up to 256 Total	Up to 32 Total	Up to 22 Total

NMC Pro Expansion Box

Remote input and output terminal box that connects to the NMC Pro System Manager through a network connection and does not function independently. A maximum of three (3) expansion boxes can be connected to the NMC Pro System Manager.



NMC Pro Ordering Information

Use the NMC Pro Ordering Chart below to determine the NMC Pro System Manager and Components needed for your application.

NMC Pro Ordering Chart

						
	NMC Pro with Power Line Protector	NetaJet	Acid/Fertilizer Pump Control Kit	EC/pH Kit	Temperature & Humidity Sensors	NMC Pro Expansion Box
Item Numbers	74340-003095	Call	77100-012020	33000-003320	74340-008200	74340-014100

Call Netafim USA for NMC Pro System Manager spare parts and additional components.

NMC Pro Control Outputs and Inputs

NMC Pro Control Outputs

Control Outputs	Pumps	Filter Tanks	Main Filter Valve	Dosing	Agitator	Main Valves	Field or Zone Valves	Cooling	Misting	Alarms
Maximum Limit	6	24	1	8	3	6	255	16	40	1

Maximum combination of **256 total** outputs.

NMC Pro Control Digital Inputs

Control Inputs	Water Meters	Fertilizer Flow Meters	Pressure Differential Switch	General Inputs (Counters, Auxiliary Meters)
Maximum Limit	6	8	1	26

Maximum combination of **32 total** inputs.

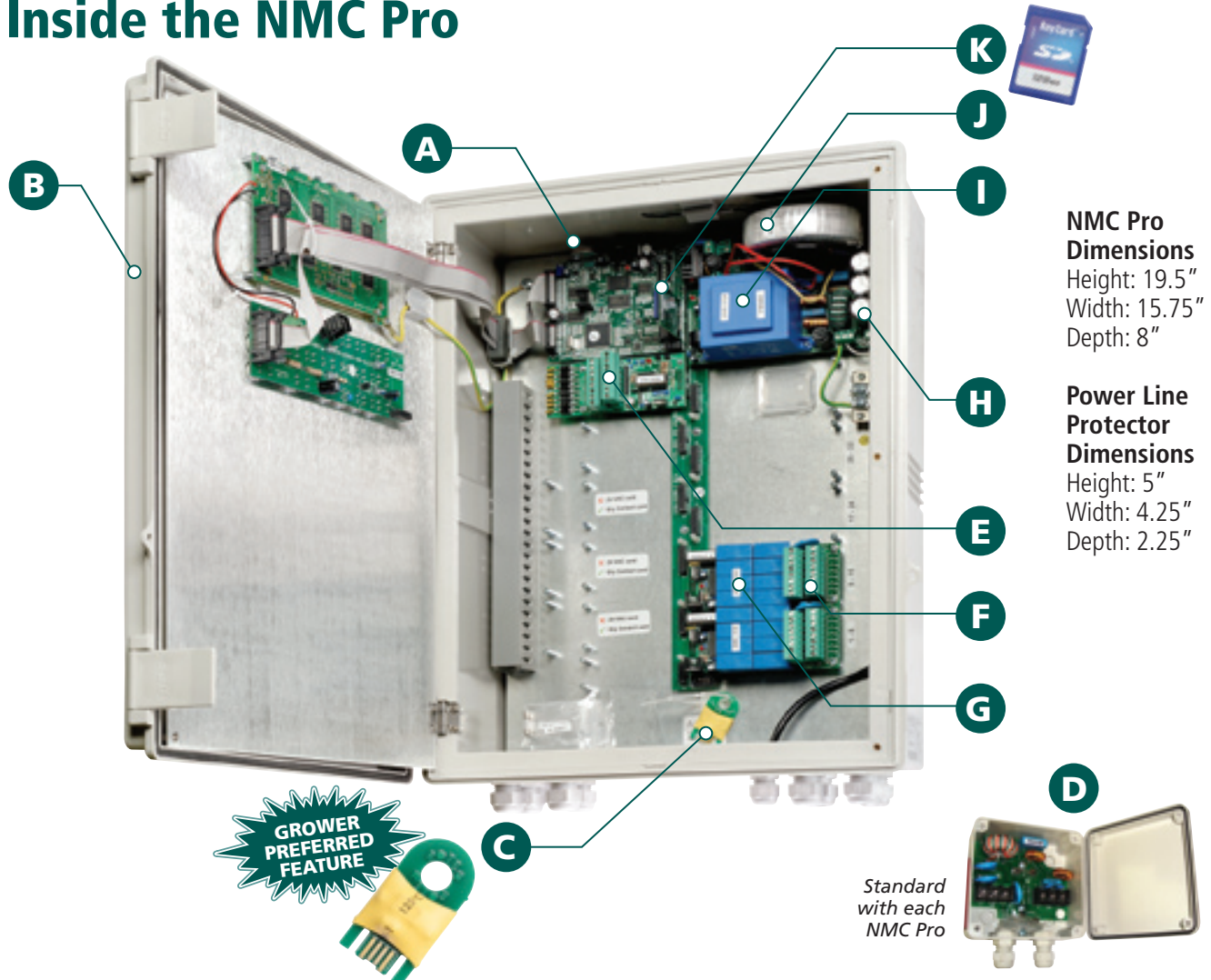
NMC Pro Control Analog Inputs

Control Inputs	EC and pH	Temperature	Relative Humidity	Pressure Transducer
Maximum Limit	5	3	6	2

Maximum combination of **22 total** inputs.

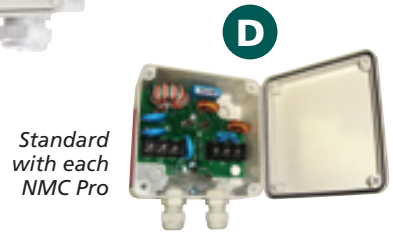


Inside the NMC Pro



NMC Pro Dimensions
Height: 19.5"
Width: 15.75"
Depth: 8"

Power Line Protector Dimensions
Height: 5"
Width: 4.25"
Depth: 2.25"



- A** **Lithium Battery Back-up** - ensures settings and logs are not lost due to power failure
- B** **Plastic Enclosure** - rugged all-weather reinforced plastic housing (IP 56) with screw-on lid withstands tough climates
- C** **Removable Memory Key** - no reprogramming needed to restore settings
- D** **Power Line Protector** - protects against power surges, plastic housing (IP 56), 115VAC, 50-60 Hz
- E** **Protected Input Connections**
- F** **Protected Output Connections**
- G** **Output Relays** - 24VAC, 5 amp maximum
- H** **Power Filtering and Surge Suppression** - 120VAC surge suppression significantly increases reliability
- I** **Controller Power Supply Transformer**
- J** **Output Transformer**
- K** **SD Card** - for updating or upgrading software

NMC Pro Optional Equipment



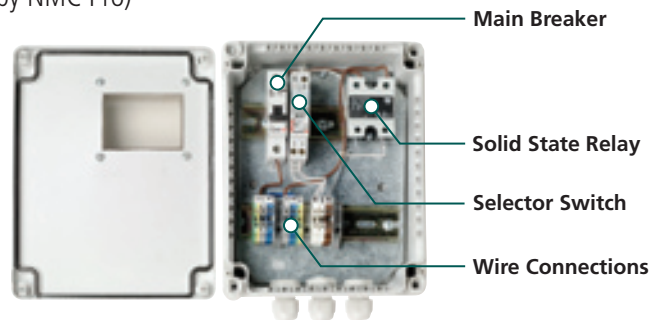
Acid/Fertilizer Pump Control Kit (Item #77100-012020)

The electrical control box of the Acid/Fertilizer Pump Control Kit connects the NMC Pro to existing or new single phase fertilizer/acid pump. Up to (8) Pump Control Kits can operate simultaneously. A water resistant plastic box has a clear window for easy access to the main breaker and selector switch. The three position selector switch determines the pump operation.

- M** = Manual Operation (pump operates constantly when the switch is in this position)
- A** = Automatic (pump is operated by NMC Pro)
- ST** = Stop (Off)

Technical Specifications

- Solid state electronic relay: 40 AMP
- Thermal protection for device: 10 AMP
- Input/Output power: 110VAC
- 24VAC Input from NMC Pro activates 40 AMP Relay
- Dimensions: 10 ¼" H, 7 ½" W, 4 ½" D



EC/pH Kit (Item #33000-003320)

The EC/pH Kit includes a self-contained dual EC/pH transmitter, EC sensor, pH sensor and three packets of calibration fluids. EC/pH transmitter displays EC and pH with a menu driven calibration procedure within the unit. It also displays error reporting with easy to use troubleshooting instructions.

Technical Specifications

- Input Power: 24VAC
- EC Sensor Range: 0 to 10 mS
- EC Sensor Accuracy: 0.05 to 0.1 mS
- pH Sensor Range: 0 to 14
- pH Sensor Accuracy: 0.05
- Transmitter Dimensions: 9 ¼" H, 6" W, 3" D



Temperature and Relative Humidity Sensors (Item #74340-008200)

This unit connects to the NMC Pro and contains one temperature and one relative humidity sensor. Data is graphed and shown on the LCD display. The sensors are on a passive radiation shield.

Technical Specifications

Temperature Sensor

- Type: 30 Kohm Thermistor
- Maximum Cable Length: 1,640'
- Operating Temperature: -75° to 320° F
- Accuracy: ± 2%

Humidity Sensor

- RH Range: 0 to 100%
- Maximum Cable Length: 1,000'
- Operating Temperature: 14° to 158° F
- Accuracy: 10% to 90% (± 2%)
90% to 100% (± 3.5%)



Features for Nursery & Greenhouse Applications

Cooling/Humidification

The program can be configured for either cooling or humidification. It is used to keep the temperature below a set value and/or the humidity above a set value. Each program can be set to maintain temperature or humidity as its first priority:

- Up to 8 cooling/humidification programs with two periods in each program
- Periods can be defined to overlap, creating "dynamic" cooling or humidification
- Different temperature and humidity sensors can be connected to each program

Misting

The misting program is a time-based program that is used to open/close a misting valve or any other device that is operated sequentially and does not require the use of any sensors. It can be a part of or separate from the irrigation system. This gives you the flexibility to use these programs for automatic control of non-irrigation devices without interfering with your irrigation equipment:

- Up to 40 misting programs
- One misting valve per program

Additional Programs

The NMC Pro offers additional programs for Nursery and Greenhouse applications. Call Netafim USA for application specific information.

"Our fungicide savings are at least 15%"

"Our lives are so much easier since we installed the NMC System Manager on our 287 acre outdoor nursery," says Jamie Modlin. "It's really simple and easy to use - you don't have to be a rocket scientist." He programs irrigation schedules, filter flushing and runs the fertigation system. "Everything is in one program and the display is easy to read and follow," said Modlin.

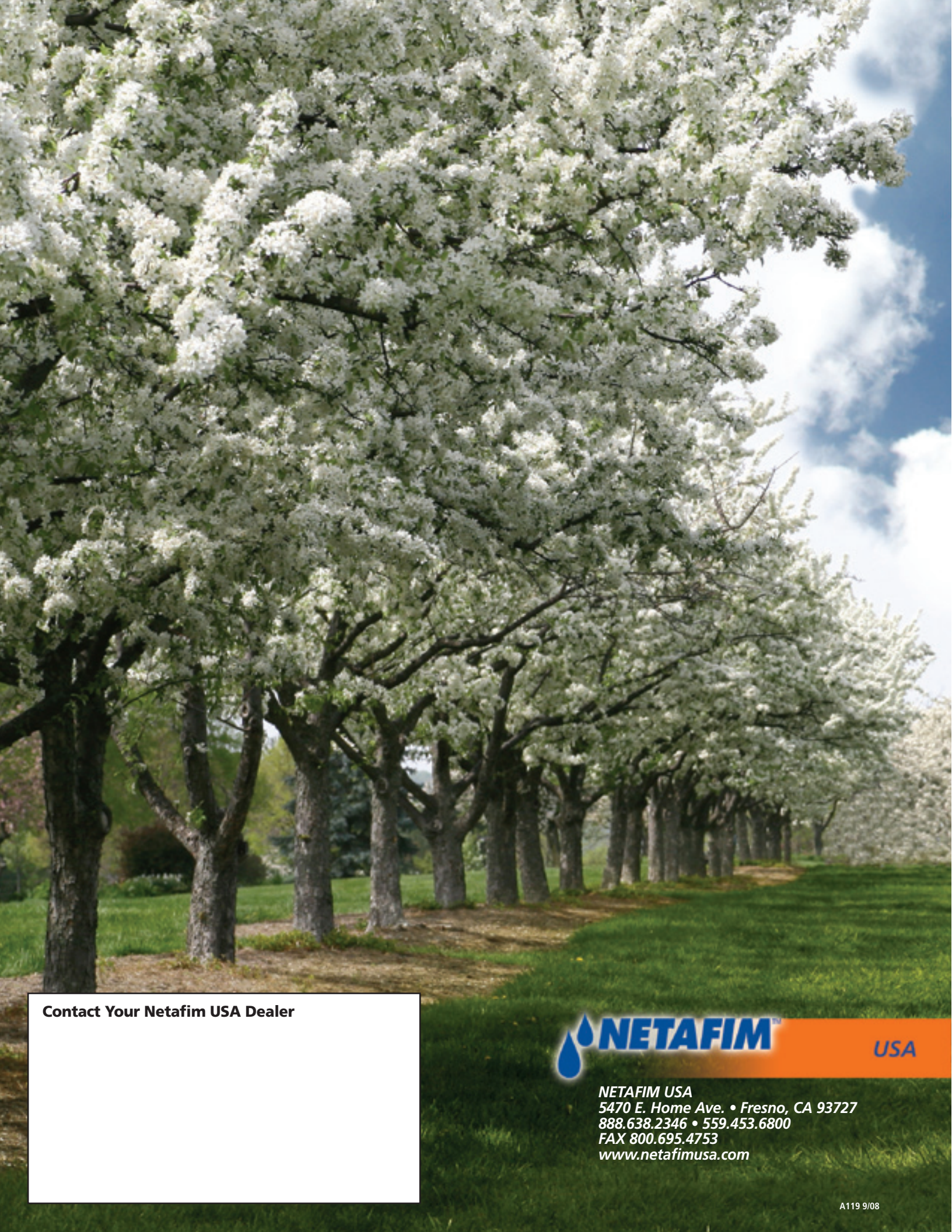
At Long Creek Farms, controlling the fertilizer input through the fertigation system is resulting in over 10% savings on fertilizer costs. Modlin says they have decreased the amount of water put into the field through the drip irrigation system reducing the overall costs associated with irrigation operations.

"The quality of our crop has increased because we control the amount of water the plants are getting and we don't have to use as much fungicide. Fungicide savings are at least 15%. I've tried other landscape-type irrigation controllers, but they just don't work for my operation. They weren't designed with the features, capability, and ease of use like the NMC System Manager. We don't experience issues - the system is trouble-free," said Modlin.

Jamie Modlin -

Long Creek Farms & Nursery, Rocky Point, NC





Contact Your Netafim USA Dealer



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