

Dupline[®] - HiLine

Irrigation Control over 2 Wires



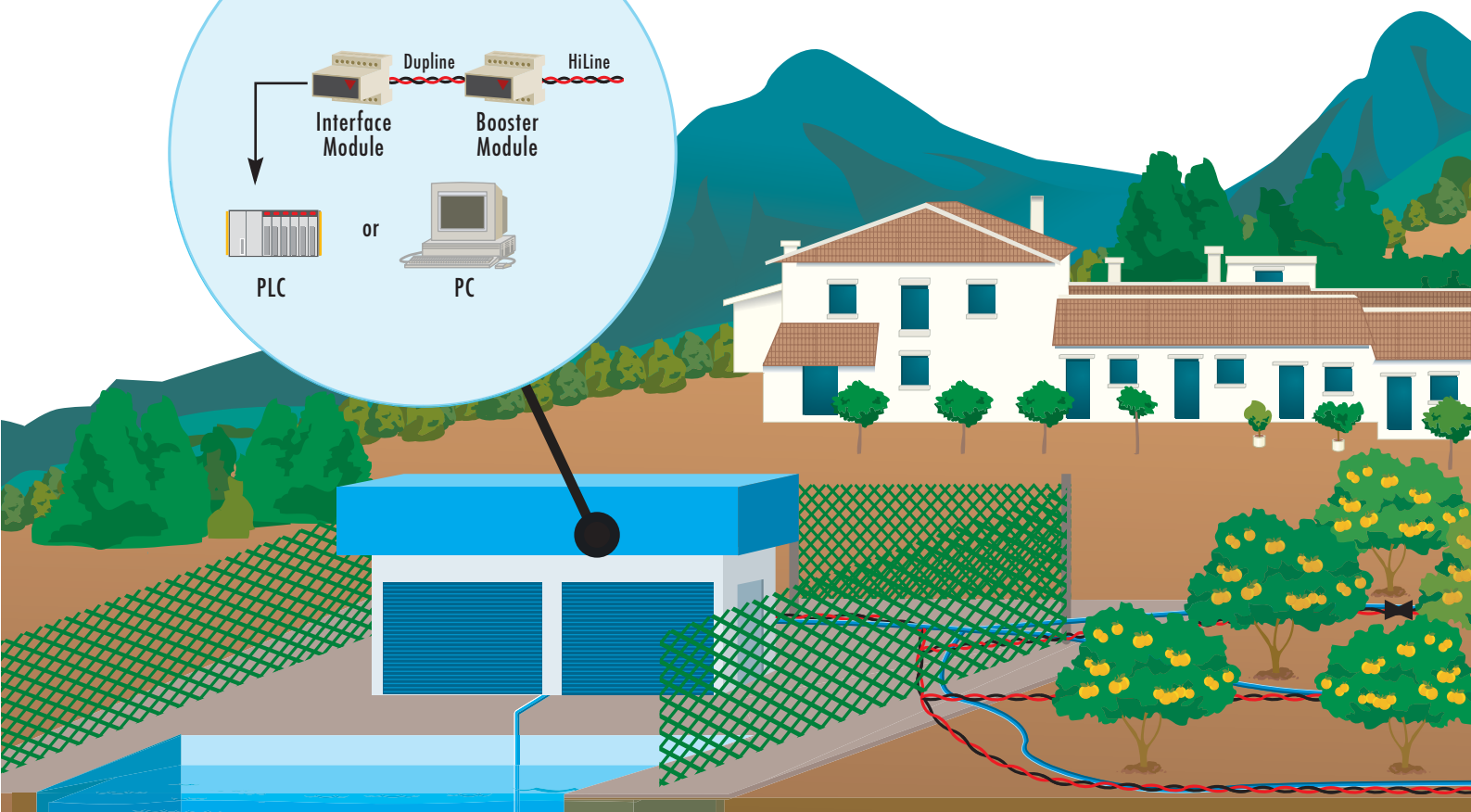
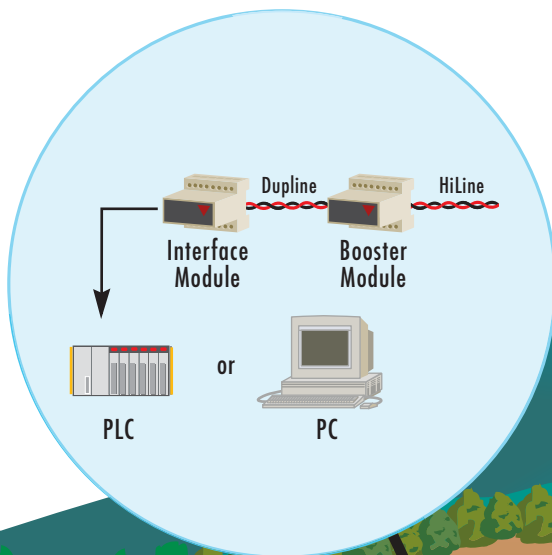
Dupline® - HiLine Irrigation Control over

Dupline Irrigation Bus System - the Wiring Concept of the Future

Traditional irrigation systems are characterized by costly and complicated wiring. Each valve needs a separate hot wire running back to the Irrigation controller which can be located kms away. Expansion is also a problem due to the high cost and impracticality of getting extra wires for valves that need to be added to the system. The Dupline irrigation bus system offers a simpler and more flexible wiring concept than traditional systems. By running the power, valve control signals and pulses from flowmeters on a single 2-wire cable, Dupline reduces the wiring and cable cost significantly and makes expansion easy.

The 4 Basic Elements of the System

Valve I/O-modules	These bus-powered modules are installed at the actual position of the valve. They are available with an IP68-rating which allow underground installation. The Valve I/O-modules have Valve open/close outputs and two inputs that e.g. can be used for transmitting pulses from flowmeters or tamper switches.
Master Module	Generates the Dupline carrier signal and acts as interface to the Irrigation Controller via serial RS232 or RS485 communication. The Controller can be a PLC, PC or Dedicated Irrigation Controller. Plug&Play interfaces are available for all major PLC brands and Modbus. It is also possible to interface to the Irrigation Controller via hardwired I/O-boards.
Dupline Booster	Boosts the Dupline voltage from 8 to 28 VDC in order to obtain sufficient voltage for operating the 3-wire 12 VDC latching valves.
Handheld Test Unit	A Dupline-powered test device that can be connected to the 2-wire at any point in the system. It is used in the field to check real-time signal status and operate valves manually.



System Characteristics

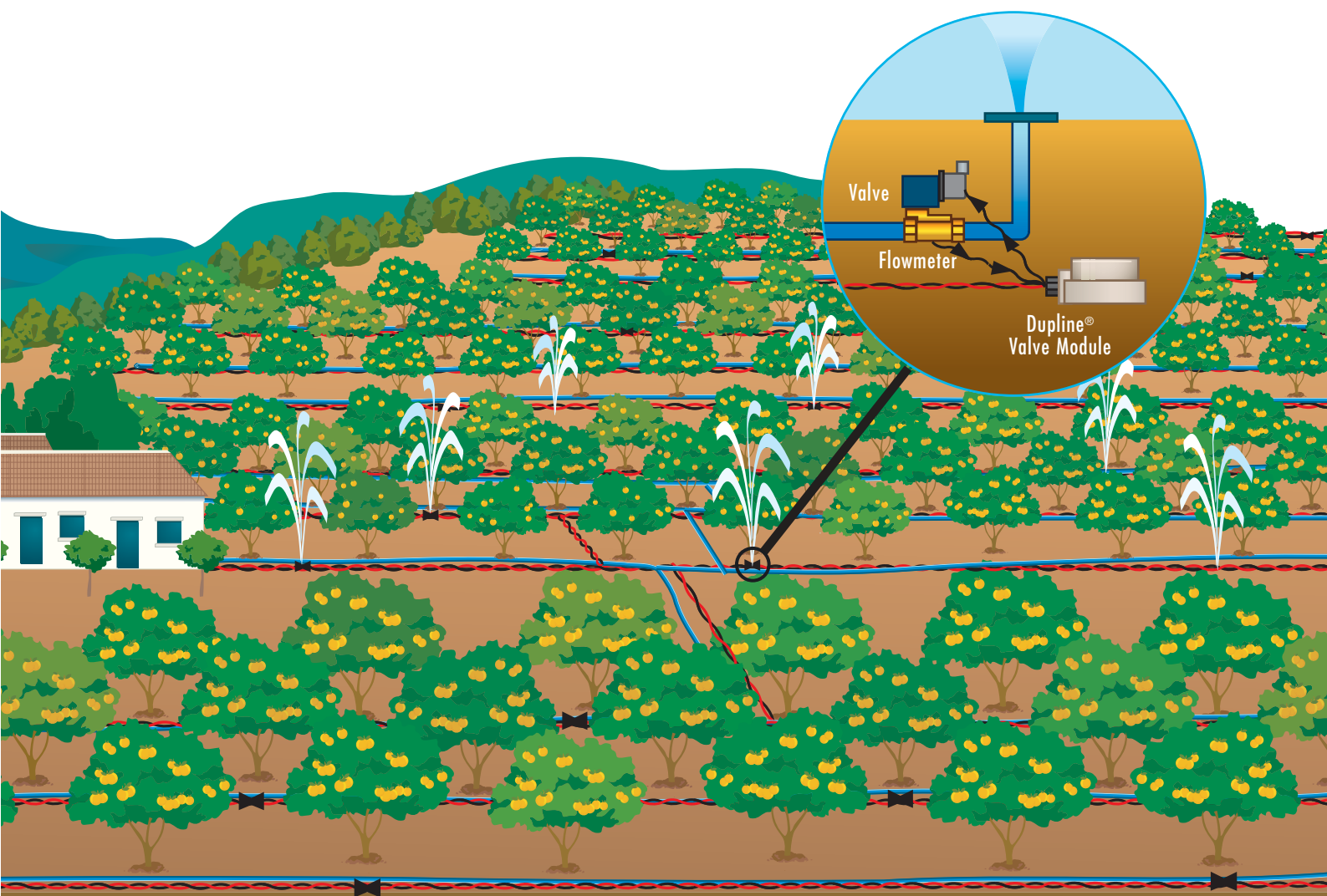
Cable requirements	A single two-wire cable is used for bi-directional communication and power for all the valves in the installation. There are no special cable requirements, but a min. cross-section of 1.5 m ² is recommended. Existing cable can be used
Cable Routing	Cable branches can be made freely (free topology)
Valve type	3-wire 12 VDC latching type valves are required
Distance	Max. distance from the Master Module to the farthest valve is 7 km
Number of valves	One Dupline network can handle 64 valves. Up to 32 Dupline networks can be linked, thus enabling control of 2048 valves.

Features and Benefits at a Glance

- Reduced installation time
- Reduced cable cost
- Easy to expand or change an installation
- Control of valves and reading of pulses from flow meters
- Easy and aesthetic underground installation possible
- Can be used to modernize existing installations
- Extremely user-friendly system
- Robust, reliable and proven technology
- Flexible interfacing to Irrigation Controllers
- Cost-effective

A Proven Technology with Strong Features

After 16 years of use and with an installed base of more than 100.000 systems, the Dupline fieldbus technology is already well-proven within industrial applications and water distribution systems. Dupline has become known as an extremely user-friendly, reliable and flexible fieldbus with the capability to transmit signals over long distances - features that make Dupline ideal as fieldbus for irrigation systems.



Test Unit

- Can be connected anywhere on the 2-wire bus
- Read-out of realtime signal status
- Manual operation of valves on site
- Powered via the bus

Dupline Booster

- Boosts the Dupline voltage from 8 to 28 VDC
- Can power up to 64 valves
- For DIN-rail mounting
- Built-in gas arrestor for lightning protection

Valve I/O-module IP67

- 2 outputs for control of 3-wire 12 VDC latching valve
- 2 inputs for flowmeter pulse counting and tamper switch
- Can be buried into the ground at the actual valve position
- Built-in gas arrestor for lightning protection
- Powered via the bus- no external power source required

Note: Also available in H4-housing for DIN-rail mounting

Master Module

- Generates Dupline carrier signal
- Acts as serial interface (RS232 or RS485) to the irrigation controller
- Dedicated versions for all major PLC brands and Modbus
- Option for built-in GSM Modem for SMS control and alarming



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