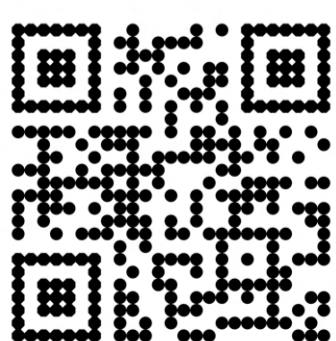


# NLP

## DISCOVER THE INTELLIGENCE INSIDE

Tucor's NLP Controller blends flexibility, scalability, and powerful features in a controller that can accommodate any commercial site's needs. From the simplest 50-valve decoder retrofit to a 500-valve system, the NLP can manage complex irrigation requirements with intelligent, water-saving algorithms that balance plant needs with limited water resources. Predict future water needs & test various irrigation methods with our powerful Simulation tool. With practical features such as on-demand controller backups and 2-Wire diagnostics, the NLP matches resource-conserving intelligence with features a water manager can practically apply.



NLP-C-AIR & NG Series Decoders

SCAN TO LEARN MORE

# NLP

## NO LIMITS PLATFORM

DISCOVER THE INTELLIGENCE INSIDE



### APPLICATIONS

- ✓ GREENHOUSES
- ✓ NURSERIES
- ✓ HOAS AND LARGE RESIDENCES
- ✓ SCHOOLS & UNIVERSITIES
- ✓ PARKS
- ✓ AQUACULTURE
- ✓ SMALL GOLF COURSES
- ✓ DENSE FARMS
- ✓ SENSOR MANAGEMENT
- ✓ VINEYARDS
- ✓ WASTEWATER



### NLP NET

Remote management tools that give you time & peace of mind

- User log with timestamp of personnel that accessed the controller
- Historical Reports
- Over-the-air firmware upgrades
- On-demand controller backups



### Resource Protection

Water more effectively while using less resources with our intelligent irrigation engine. Algorithms that balance plant needs with resource restrictions make the most of limited water supply, pump capacity & run times. Simulate 1 year of irrigation in minutes to stress-test your intended irrigation schedules with potential time & water constraints.



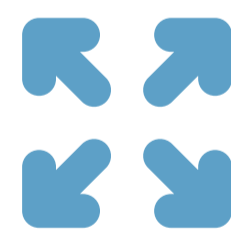
### 2-Wire Intelligence

The NLP's enhanced 2-Wire technology matches Tucor's 25+ year legacy of providing top-quality 2-Wire irrigation controllers. Determine leaks, predict future 2-Wire issues, and record individual decoder leak current, resistance & status to accelerate troubleshooting and prevent future issues on even the largest systems.



### Connectivity & Display

Connect & communicate with your controller almost instantly with multiple modes of communication. Make modifications and see them in real time, even during an irrigation event. The NLP's ruggedized tablet display makes quick irrigation adjustments & status changes a breeze.



### Flexibility & Scalability

Manage up to 500 decoders across 20 points of connection to individually manage up to 100 main lines. With up to 50 programs, try advanced program features such as hydraulic-based scheduling, station and station group prioritization, and MAD-based programming, all while still retaining your existing schedule-based programs. Create customized responses to a sensor or series of sensor values for chemical dosing, pressure regulation, thermal alarm regulation & more.



Your Trusted Irrigation Partner Since 1995

# NLIP

## NO LIMITS PLATFORM

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DISCOVER THE INTELLIGENCE INSIDE

### SPECIFICATIONS

#### Hardware

##### NLP Node

- 500 decoder capacity
- Up to 60 active outputs
- Up to 200 Sensor decoders
- Native RS232 & Ethernet (RJ45)
- Supply Voltage – 42VDC
- Power – 65W

##### Grounding

- Controller: < 10 Ohms, Mains Ground
- 2-Wire path: < 10 Ohms, Earth Ground (Do not ground to Mains)

##### Decoder Compatibility

- RKLD-050
- LD-series
- NG-series (New)

##### NLP Controller Assembly

- 12x12x20 Stainless Steel Cabinet
- Internal transformers
- 8" Ruggedized Touchscreen Display
- LED screen supports up to 1000 Nits of brightness
- Available in cellular or ethernet versions

#### Controller

##### Overview

- Flow management by managing multiple water sources & hydraulic tree
- Run up to 60 stations simultaneously
- Up to 50 programs & overlap supported
- Up to 500 stations
- Simulate a year's worth of water usage and alarms in seconds
- Use station groups for further organization/prioritization
- Customize sensor reactions, alarms & more with a built-in coding tool
- Large RAM for data storage in case of connectivity or power loss
- Modes – Auto, Manual, Pause & Test

##### Hydraulics

- Plan system by Hydraulic tree to organize irrigation by maximizing flow capacity
- Support up to 20 points of connection minimizing irrigation disruption during flow event
- Supports system of up to 100 "pipes" or main lines.
- 20 flow valves (N/C, N/O, Booster Pump, or Pump Start Relay)
- 20 flow-related alarms
- 20 high frequency pulse sensors
- Full REST JSON API for all decoder & controller commands
- Override Hydraulic logic with station or station group-level prioritization

#### Programs

- Up to 50 with active/passive modes
- Run by time, amount or MAD
- Run programs simultaneously
- Calendar-based scheduling including custom days & periods of exclusion

#### MAD method

- Enable at the individual station level or system-wide
- Enable for varying programs
- MAD-based stations:
  - Active/Passive
  - Name
  - Precipitation Rate
  - Expected (Learned) Flow
  - Pipe Section (Hydraulics)
  - Station Group
  - Landscape Factor
- MAD logic recalculated every second
- ET polled & updated hourly
- ET reference (Up to 10, 12 Historic)
- ET Method: Remote (API) with Historical back-up. Compatible with a local Tipping Rain Bucket
- Plant & Soil Reference (up to 30 each)
- Automatic Cycle & Soak optimizes irrigation & prevents run-off



The NLP accommodates all legacy Tucor decoders, protecting your investment by leaving existing decoders right where they are. Existing Tucor controller data can be easily transferred to the NLP, removing the workload out of a typical upgrade.



# NLIP

## NO LIMITS PLATFORM

DISCOVER THE INTELLIGENCE INSIDE

### NG DECODER SERIES

Tucor's new NG-series of smart decoders simplifies installation, accelerates troubleshooting, and comes in 1, 2, 4 & 6 output & sensor decoder options.



#### 2-Wire Modes

- Short Finding
- Leak Finding
- Off

#### Line Decoder (NG-X)

- 2-Way communication:
  - Line Resistance
  - Voltage from decoder to controller (determine voltage drop)
  - Leak Current (predict future issues, determine state of corrosion-protection)
  - Decoder On/Off
  - Solenoid/Coil Inductance (predict future solenoid issues)
  - Solenoid/Coil Resistance (predict future solenoid issues)
- Electrical
  - Input
    - Nominal/Minimum Voltage: 40V/21V peak from 2-Wire
    - Standby Current: 0.3mA @ nominal voltage
  - Output
    - Max Voltage: 42VDC Switching
    - Max Current: 600mA per output
    - Available in 1, 2, 4 & 6 Output models
- Installation
  - Auto-discover (Plug & play recognition of decoder)

#### Sensor Decoder (SD-110)

- Compatibility:
  - 200 digital input
  - 40 analog 4-20mA
  - 20 pulse count(rate of flow)
- Electrical
  - Input
    - Nominal/Minimum Voltage: 40V/21V peak from 2-Wire
    - Standby Current: 0.6mA @ nominal voltage (35V)
  - Max Current: 12mA @ nominal voltage (35V)

#### Sensor Decoder (SD-110 Continued)

- Configuration
  - Custom configurations supported for non-standard sensors:
    - Custom expression
    - Sensor communication – multiple options for speed and communication type
- Installation
  - Auto-discover (Plug & play recognition of decoder)
  - Programmable for various sensor types

#### NLP Net

##### Alarms

- Up to 15 alarms
  - Station error
  - Program error
  - Two Wire error
  - High Flow
  - Program On/Off
  - Station On/Off
  - Flow Alarm Triggered
  - Wilt Point Station Error
- Subscribe to all alarms in an organization or individual devices

##### Reports

- 15+ report options for water usage, historical irrigation run & more

##### Access

- Real-time controller updates - no data syncing required
- Simultaneous user access for the same controller
- Real-time controller connection with any web browser
- Over-the-air firmware updates
- On-demand configuration backups in .JSON

##### Administration & Security

- Varying authentication levels, including admin. & read-only
- User timestamped log tracks user access
- Password management – generated by user, administrator may change

##### Integrators

- Bearer Token Authentication/ Auto-generate API Token
- Full REST API

## SPECIFICATIONS

### 2-Wire

#### Cable Length\*

- Assuming 250 stations, 10 Simultaneously Activated, and 2 Flow Sensors
- Up to (Star Configuration):
  - 16 AWG – 1.6 Miles
  - 14 AWG – 2.6 Miles
  - 12 AWG – 4.2 Miles

\* Varies by decoder type, decoders deployed, simultaneous active outputs & sensors

#### Ground

- Ground every 500ft & at the end of wire runs via SP-100 & Ground Rod
- Resistance: <50 Ohms

#### General system Measurements (all decoders)

- 2-Wire Output Voltage (each line)
- 2-Wire Capacitance (each line)
- 2-Wire Leak and Standby Current (each line)
- Current draw for individual decoders (predictive health of decoders & 2-Wire areas)
- Built-in corrosion protection