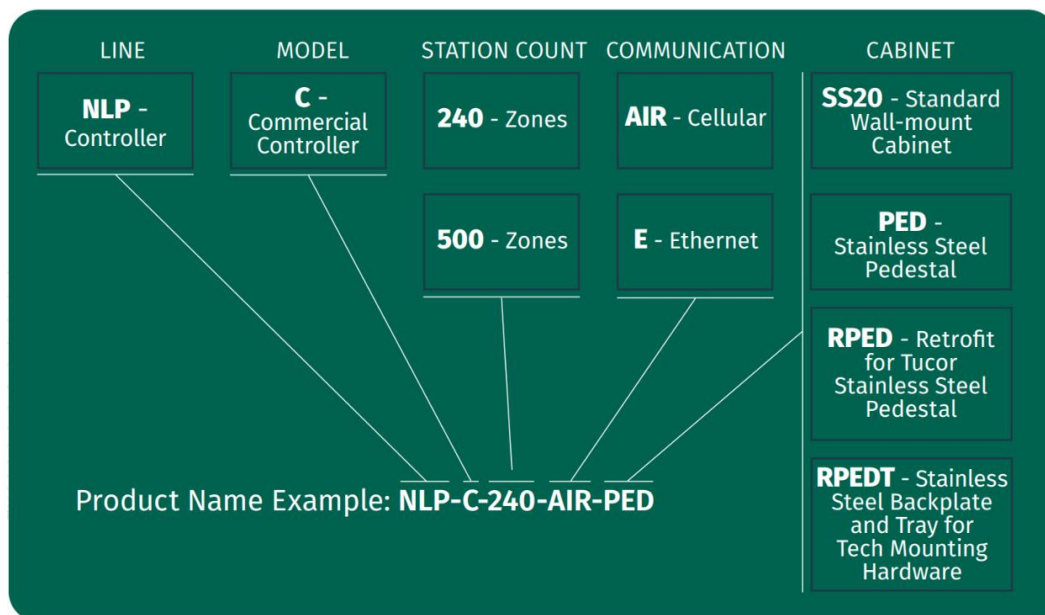


NLP Specification Summary

This specification summary is designed to be used as an at-a-glance summary for identifying the correct Tucor product models for a specification. This is not a comprehensive guide. For more detailed information, contact tucorsalesteam@tucor.com or visit our website <https://tucor.com/nlp-controller/>.

1. Choose an NLP Commercial Controller Model

The NLP is offered with two levels of station counts, two different forms of communication, and four different forms of enclosure. For example, a 240-station NLP with cellular communication and a standard wall-mount cabinet would be the *NLP-C-240-AIR-SS20*. For other configurations, please consult the configurator chart below.



Cabinet Summary:

- SS20 – 20" Stainless Steel custom-form cabinet (Standard)
- PED - Controller mounted in Stainless Steel Strongbox Top Entry Pedestal (SB-16SS)
- RPED – Retrofit kit for mounting in Stainless Steel Strongbox Top Entry Pedestal (SB-16SS)
- RPEDT – Universal retrofit kit for non-standard retrofit mounting

2. Add a Remote Access Plan

All NLP controllers come with a built-in communication module with a user choice of either cellular or ethernet connection. The NLP must be connected to the *NLPNet* server for proper operation (no offline version of the NLP is available). The end user must pay for a one-time activation after bringing the NLP online and must pay a yearly subscription fee for NLPNet access. The line items are designated with *-E-* or *-AIR-* respectively, as shown below.

NLPNET	
ACT-E-NLP	NLP one-time activation fee/re-activation fee for Ethernet connections
ACT-AIR-NLP	NLP one-time activation fee/re-activation fee for cellular connections
R-1-E-NLP	NLP yearly remote access for Ethernet connections
R-1-AIR-NLP	NLP yearly remote access for cellular connections

3. Choose Decoders

Tucor's *NG-Series* decoders should be specified to connect to each irrigation valve. NG decoders have advanced remote troubleshooting features and built-in short protection across the entire decoder size range. The NG decoders are available in standard single-address form as well as multi-address form, as shown in the chart below.

NLP SERIES DECODERS	
NG-050	Single address new generation decoder for 1 output
NG-200	Dual address new generation decoder for 2 outputs with built-in SP-100
NG-400	Multi-address new generation decoder for 4 outputs with built-in SP-100
NG-600	Multi-address new generation decoder for 6 outputs with built-in SP-100

Single address (one decoder per valve) is the most common decoder model. Multi-address decoders support multiple outputs.

NG-Series decoders can be utilized to operate:

- Standard irrigation valves
- Master valves
- Most 12V relays
- Most 24V relays

4. Specify 2-Wire Path Wiring & Connections

Tucor specifies that Regency Parallel Communication Cable (*R7072D*) is used for all Tucor 2-Wire controller installations. To be eligible for Tucor's Extended Warranty on 2-Wire controllers, all connections must be made with 3M-DBR Y/6 splice kits in valve boxes. For more details on wire specifications, please go to <https://tucor.com/nlp-controller/>.

Tucor does not recommend designing "Looped" systems for troubleshooting purposes. Tucor's maximum wire run is equivalent to 45 Ohms in a Star Configuration.

Max Wire Run for Critical Path	Wire AWG
2.63 Miles	12-2
1.65 Miles	14-2

The NLP has two terminals to accommodate two different wire paths. If more 2-Wire paths are desired, Tucor provides a wire terminal with switches for troubleshooting (*LTB-NLP*). For more information on the LTB-NLP, see *Section 7 - Optional Accessories*.

5. Specify Grounding

The NLP controller must be connected to an electrical ground. The NLP's ground lug must also be connected to Earth ground via grounding rod(s)/plate(s) with less than 10 Ohms of resistance.

Tucor's 2-Wire grounding specification requires *SP-100* surge protectors to be installed every 500', at the end of every wire run over 25' in length. Each SP-100 must be properly grounded to a ground rod/plate with a resistance of 50 Ohms or less.

6. Sensors & the NLP

The NLP can be connected to various analog, pulse, and digital sensors with the *SD-110* universal sensor decoder. Each SD-110 supports one input.

The NLP Controller supports most industry-standard flow meters and rain sensors. For convenience and performance, Tucor offers recommended sensors designed to work optimally with the NLP system:

- Tucor's standard rain sensor is the *TRB-NLP*, which can be configured as either an on-off rain sensor or a tipping rain bucket with a fine resolution of 0.04" per tip.
- Tucor's standard flow meter is the *UFM*, available in sizes 1-4". This meter can be paired with a brass Superior normally-open or normally-closed master valve in a preconfigured assembly (*UFMV-A*), available in sizes 1-3".

7. Optional Accessories

The NLP can accommodate up to five separate 2-Wire paths by installing the optional LTB-NLP Line Termination Board. The user can isolate each 2-Wire path with individual toggle switches for troubleshooting purposes. The LTB-NLP is recommended for controllers with high station counts and multiple wire paths.

For ET-based irrigation, the user may pay for a yearly subscription to the Davis Weather Server (*R-1-API-NLP-DAVIS*). If connected to the Davis Weather Server, the NLP will receive live ET updates hourly and recalibrate program run times (even mid-program run).

8. Retrofit Applications

For retrofit applications, the NLP can support both 2-Wire and conventionally-wired zones. For conventional connection, utilize the Station Extension Relay Board in either 24-zone (*SER-24-B-NLP*) configuration or 48-zone (*SER-48-B-NLP*) configuration. Each SERB includes a 24VAC transformer.

For retrofit applications, the NLP is also compatible with all Tucor legacy decoder lines for the TWC, TWC-NV & TWI Controller (LD-series) and RKD, LTD, RKD+, TDI, TDI-F (RKLD-050 decoders). Tucor will translate data of legacy controllers into the NLP at no cost to the customer. Please contact tucorsalesteam@tucor.com for retrofit considerations & questions.

9. Example Specification

Specifying a 300 Zone 2-Wire controller with two critical paths of 5,600 ft each, 11,200 feet of total wire, 1 rain sensor, 2" flow sensor, and 1 normally-closed master valve. Cellular connectivity is the best option for this site. The controller can be wall mounted.

1. Controller -
 - NLP-C-500-AIR-SS20
2. Remote Access –
 - ACT-AIR-NLP (One-Time Activation & Onboarding Fee)
 - R-1-AIR-NLP (Yearly Remote Access, Cellular Connections)
3. Decoders –
 - 301 NG-050 (1 per valve + master valve)
4. Wire & Splice Kits -
 - 12-2 Regency R7072D Cable
 - 3M-DBR Y/6 connections for every connection & splice
5. Grounding – Specify SP-100 surge protection decoder
 - Estimated ~22 SP-100s for wire length, plus additional count for ends of wire runs
 - Ground plates shall be connected to each SP-100
6. Sensors – 2 SD-110 universal sensor decoders (1 for flow meter & 1 for rain sensor)
 - UFM-2 - Tucor 2" Ultrasonic Flow Meter
 - TRB-NLP – Tucor RainMate Compact Tipping Rain Can/Rain Sensor Combination