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RKS – Conventional Controller

Smart Irrigation From the Ground Up

(800) 272-7472
www.tucor.com

THE RKS IS A STAND-ALONE, conventional controller, expressly designed for converting conventional systems to Tucor's exceptional remote management system. The RKS can operate up to 12 Stations simultaneously and up to 100 valves*. Our unique "Add-A-Zone" feature allows you to add Stations one at a time as your system grows. The RKS's simple, intuitive programming comes with a wealth of controller capabilities.

Operations include up to 10 Programs running simultaneously; timing per valve in one-second increments; flow sensing; multiple alarm options; ET inputs; remote control via Internet either browser-based or locally; and many flow management methods.

Power and flexibility arise from:

- Mist Manager – Configured as 100 Programs, one valve per Program, running in one second increments
- FloStack™ – Program stacking based on flow for up to 10 simultaneous Programs
- RealNet – Real-time, Internet-based water management via GPRS wireless or a LAN
- IntelliET – Smart irrigation using a host of ET-based capabilities
- FloGuard – Alarm and control options based on flow monitoring



The RKS stand-alone conventional controller supports from 1 – 100 valves

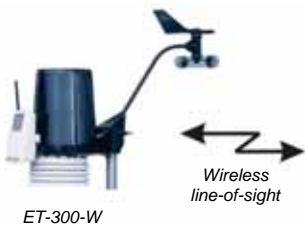
An RKS with WIN-100 RealNet cellular connection, configured as a "Group" node. The RKS wirelessly controls three RKXT-25 extensions, controlling 1 - 100 valves.



Zigbee mesh radio network



AT&T cellular network



Wireless line-of-sight



RKS with three direct-wired RKXT-25's ET-300-W (solar wireless Weatherstation) SMS-100, and SMP-12 (soil moisture sensors)



RealNet Web-browser
real-time remote control



RealNet
Monitoring Data

SPECIFICATIONS

HARDWARE:

ELECTRICAL:

Input: 115 VAC, 50 VA
Output: 24 VAC

STATIONS:

1-100, priced in single station increments †

MAXIMUM SIMULTANEOUS ACTIVE VALVES:

6 max per cabinet, 12 max per system *

MASTER VALVES:

1, 10 second stop delay

BOOSTER PUMPS:

2, 10 second stop delay

CABINET:

Wall mounted NEMA 4 rated locking metal cabinet

with internal Class 2 transformer

DIMENSIONS:

12" H x 12" W x 5" D (approx)

LIGHTNING PROTECTION:

Built-in

VALVE OUTPUT:

24 VAC, 1.0 A per station max., 1.5 A total max.

Wiring between RKSXT-25's:

4-conductor crossed, dual RJ-11 jacks, 7' max

OPERATING FEATURES:

PROGRAMS:

10 + 1 test program

CONCURRENT PROGRAMS:

10

START TIMES:

12 per program, 1 - 99 repeats per start

CALENDAR:

14 days or Odd/Even

STATION RUN TIMES: 0-999 MINUTES:

1 second increments (< 4 minutes)

10 second increments (4 - 999 minutes)

WATER BUDGET:

0-250% @ 1% increments

PROGRAM MODES:

Active & Passive

START METHODS:

Auto, Manual by Program, Manual by Station

DISPLAY:

Monitors active programs, run times, and alarms

REMOTE MANAGEMENT:

- Via the Internet‡ and any web browser when the

RKS is equipped with

- Tucor's WIN-xxx module and GPRS service, or

- Tucor's LAN-100 with your own Local Area Network

- Remote line-of-sight radio operations (RFA-200) to enable valves and Programs

ET:

ET Capable (requires ET weather station or WR-7RKD)

Local Weather Station: Pulses:

50 ms minimum width

2 pulses per second maximum

Maximum ET (prevent short run time)

Maximum ET (prevent run-off)

Maximum hourly rain (soil absorption)

Soil holding (save rain for next day)

ET period (definable start-of-day)

Historic Data (interpolated)

MISCELLANEOUS:

- Rain Sensor terminals

- Flow sensor inputs at controller, with:

- Alarms: High, Unscheduled, Deviation, Main Pump Failure; adjustable delay

(1 - 10 minutes)

Learn flow per Station

Maximum 250 pulses per second

ORDERING OPTIONS

RKS = Controller, conventional, 1-25 zones

RKSXT-25 = 1-25 zone extension assembly

RKS-Z = Keycode, per individual zone

ET-300-W = Wireless weather station

SMS/SMP = Moisture sensors

*Each cabinet of 25 Stations can operate 6 Stations simultaneously, given industry standard 0.25A per station, up to 12 Stations max for the system: 1 in each of 10 Programs and 2 in Manual mode.

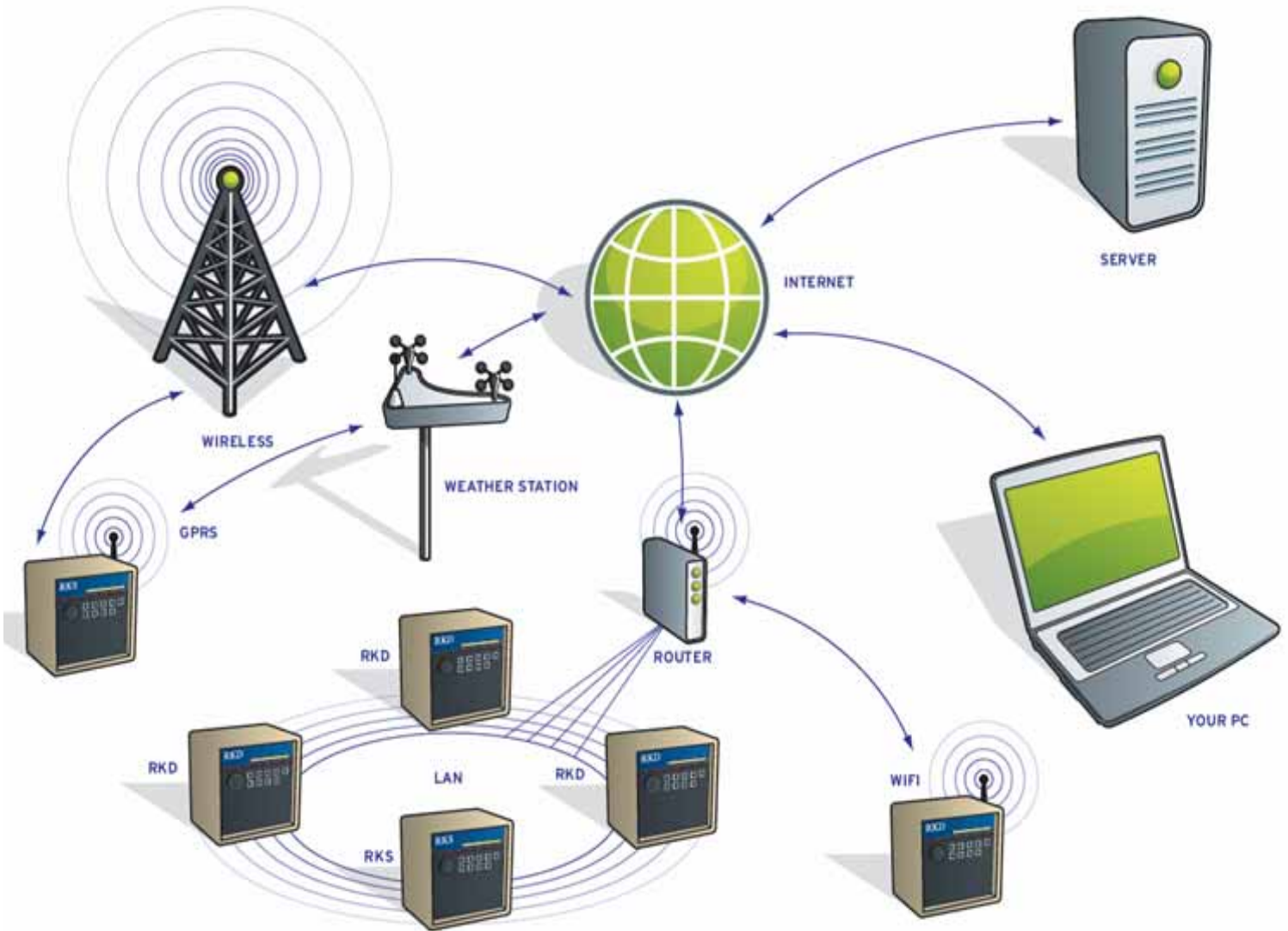
† Stations from 26-50, 51-75, and 76-100 each require an additional NEMA enclosure.

‡ Requires yearly subscription for Tucor's Server access



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RealNet Communication Options

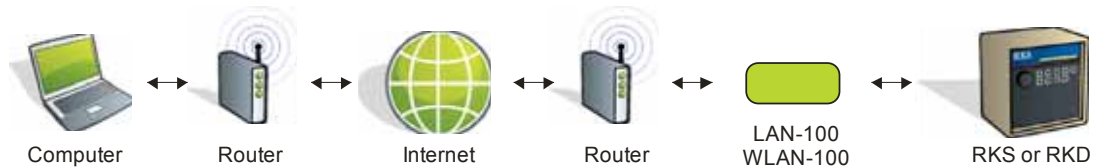
Connection to an RKD or RKS is through any web browser that supports Java, on computer operating systems such as Windows, Mac, or Linux. Hardware at the controller consists of four possibilities:

LAN

Access the Tucor RKD/RKS controllers through your existing LAN (local area network) or WAN (wide area network), using the Tucor LAN-100 serial-to-Ethernet device server.

Wireless LAN

Access the Tucor RKD/RKS controllers through your existing LAN (local area network) or WAN (wide area network), using the Tucor LAN-100-W wireless 802.11b/g serial-to-Ethernet device server.

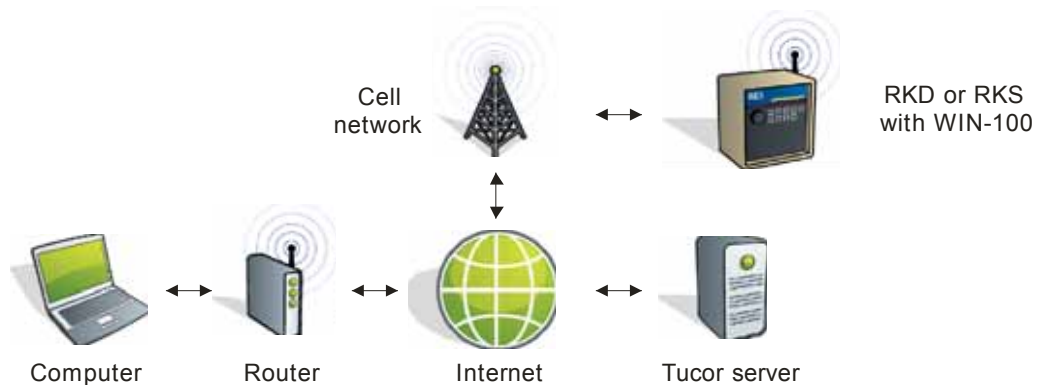


WMN

Access multiple Tucor RKD/RKS controllers wirelessly by creating your own wireless Ethernet infrastructure, utilizing the Tucor WMN-100 wireless mesh radios, in conjunction with a LAN-100 or LAN-100-W at each controller. Connect the WMN to an Internet portal to access the devices from the WAN.

WIN

Access remote Tucor RKD/RKS controllers by creating a wireless internet connection, utilizing the Tucor WIN-100 GPRS radio network.



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RKD – Decoder Controller

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(800) 272-7472
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THE RKD IS A STAND-ALONE, decoder-based, 2-wire controller supporting from 1-100 Stations (valves). It can operate up to 12 Stations simultaneously and run 10 Programs concurrently.

The RKD uses the RKLD-050 programmable line decoder, which can be addressed and tested at the controller. Integrated diagnostics test for decoder operation as well as the 2-wire path conditions.

Extraordinary flexibility for this inexpensive 2-wire controller is ensured by:

- Mist Manager – Valve operations controllable in 1 second increments
- FloStack™ – Program stacking based on flow for up to 10 simultaneous Programs
- RealNet – Real-time, Internet-based water management via GPRS wireless or a LAN
- Intellisets – Smart irrigation using a host of ET-based capabilities
- FloGuard – Alarm and control options based on flow monitoring

SPECIFICATIONS

ELECTRICAL INPUT:

Input: 115 VAC, 50 VA; Output: 24 VAC

MAXIMUM STATIONS:

100

MAXIMUM ACTIVE VALVES:

12 *

MASTER VALVES:

1

BOOSTER PUMPS:

2 (1 per program)

CABINET:

NEMA 4 rated locking metal cabinet with internal transformer

DIMENSIONS:

12" H x 12" W x 5" D (approx)

LIGHTNING PROTECTION:

Built-in (controller only: 2-wire requires Tucor's SP-100s)

MAX. WIRE RUN *:

12,500' with #14/2,

4,900' with #18/2

OPERATING FEATURES:

PROGRAMS:

10 + 1 test program

CONCURRENT PROGRAMS:

10

START TIMES:

12 per program

CALENDAR:

14 days or Odd/Even

STATION RUN TIMES:

0 - 999 minutes:

1 second increments (< 4 minutes)

10 second increments (4 - 999 minutes)

WATER BUDGET:

0-250% @ 1% increments

PROGRAM MODES:

Active & Passive

START METHODS:

Auto, Manual by Program, Manual by Station

DISPLAY:

Monitors active programs, run times, line conditions, and Alarms



The RKD stand-alone 2-Wire controller supports from 1-100 valves

DECODERS:

Addressed and tested at controller

DIAGNOSTICS:

DECODER TEST:

Pass/Fail

SHORT TEST:

Checks line condition

LINE SURVEY:

Displays 2-wire voltage and current

MISCELLANEOUS:

- Rain Sensor terminals
- Flow sensor inputs at controller, with:
 - Alarms: High, Unscheduled, Deviation, Main Pump Failure; adjustable delay
 - Learn flow per Station
- ET Capable (requires WR-7RKD or ET-200 weather station)
- Adjustable valve power output
- Test probe for 2-wire troubleshooting
- Remote line-of-sight radio operations (RKD-RFA-200)

*Using default valve power and 4 valves simultaneously. Fewer valves simultaneously will increase max. distance (to 17,800'); more valves simultaneously will decrease distance. Using a different valve power, changing the specified wiring type, valve distribution or connectors may result in diminished capability of active stations.



RKD – Decoders & Wire

Smart Irrigation
From the Ground Up

(800) 272-7472
www.tucor.com

THE RKD is a decoder-based, 2-wire controller supporting from 1-100 Stations (valves). The RKD uses the RKLD-050 decoder to energize valves in the field. The RKLD-050 is easily programmed by the user with a specific Station ID, then is connected anywhere along the 2wire path. Enabling that Station then turns on the valve. The decoder can energize almost any 24 VAC solenoid on the market, and can be reprogrammed with a different ID when desired.

Tucor wire is the preferred means of connecting the field decoders to the RKD. Tucor wire is designed expressly to ensure a secure, watertight electrical pathway for decades in the future.

Field disruptions due to lightning are minimized by use of the SP-100 surge protector, which safely absorbs 2wire voltage surges. It adds substantial protection to the 2-wire path.

SPECIFICATIONS

RKLD-050 Line Decoder:

Dimensions: 1.5" x 1.4" x 2.3"

Lead length: 11"

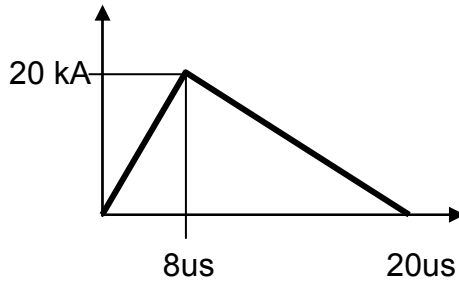
Ordered in box-quantity of 10

SP-100 Surge Protector:

Normal spark-over voltage: 230V

Max. spark-over voltage: 450V

Max. current:



An SP-100 must be installed and grounded every 500 feet and at the end of a wire run. Resistance of the 2-wire to ground must be 50Ω max.

Tucor Wire:

Insulation: Polyvinylchloride

Jacket: Polyethylene

Sizes: 12-18 AWG

Colors: Red, Green, Yellow, Orange, Purple, Blue ‡

Spool lengths (feet): 500, 1000, 2500 ‡

‡ Certain colors and spool sizes are special order: contact Tucor for specifics.



The RKLD-050 Line Decoder
SP-100 Surge Protector
Tucor Wire

Number of simultaneous Programs	Valves evenly distributed along 2-wire (ft.)		
	AWG 18	AWG 16	AWG 14
1	7,000	11,000	17,800
2	6,400	10,200	16,300
3	5,500	8,800	14,100
4	4,900	7,800	12,500
5	4,400	7,000	11,200
6	4,000	6,300	10,100
7	3,600	5,800	9,200
8	3,300	5,300	8,500
9	3,100	4,900	7,800
10	2,800	4,600	7,300
10 + 1 manual	2,700	4,300	6,800
10 + 2 manual	2,500	4,000	6,400



Soil Moisture Monitoring

Smart Irrigation
From the Ground Up

(800) 272-7472
www.tucor.com

Soil Moisture Monitoring maintains Tucor's lead at the forefront of the water conservation and plant health movement. By using sensors embedded in the soil root zone, Tucor controllers are able to continuously monitor the soil for the proper amount of moisture, specific to your particular location and your plants' needs. Installed along with any of our various ET devices, Tucor's Cycle Manager software will ensure that your soil both *starts* and *remains* at the proper moisture content, even as the ET feedback adjusts your irrigation around that optimal level.

Tucor's Soil Moisture Monitoring devices come in two styles:

- The Sensor, which measures one moisture level within the soil.
- The Probe, which incorporates multiple sensors within one housing for a range of measurements in a depth of soil.

Whichever method you use, Soil Moisture Monitoring will ensure that Tucor controllers will economically deliver just the water your plants need to stay healthy and green.

SPECIFICATIONS

SMS Sensor (SMS-100):

The SMS-100 is a single-sensor design. Buried within the root zone, the SMS-100 will continuously monitor the moisture content and provide feedback to the Tucor controller.

Compensation factors are included for a range of soil types.

Cable length: 13', extendable to 2000'.

Operating temperature: 23°F – 122°F

Dimensions (approx.): 7" x 0.6" x 2.75"



SMS-100 Sensor

SMP Probes (SMP-12, -20, -40, -60):

The SMP Probes come in four lengths for use in different environments. Probe lengths are 12", 20", 40", and 60". Each probe contains multiple sensors. Using multiple sensors within the probe permits the measurement of moisture levels within a depth of soil.

The number of sensors within the probe and spacing between sensors is:

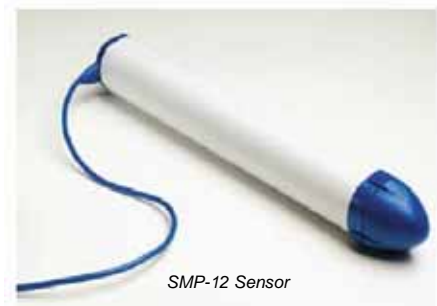
- -12: 6, 2"
- -20: 5, 4"
- -40: 10, 4"
- -60: 15, 4"

Cable length: 13', extendable to 2000'

Operating temperature: 23°F – 122°F

Operations and features:

- All sensors within each probe can be monitored and the moisture levels and soil temperatures recorded. Results are displayed in a color-coded spreadsheet for quick analysis. Email alarms may be sent under certain fault conditions.*



SMP-12 Sensor

* Data monitoring, recording, and alarming requires a RealNet subscription.

SPECIFICATIONS

- One sensor per device (SMP or SMS), selectable by the user, can be used as the reference point to interrupt irrigation.
- Each device can be assigned to interrupt one or more Programs.
- Up to 10 devices may be connected to the controller.
- Up to 150 sensors can be monitored (e.g., ten SMP-60's, each with 15 sensors).
- One SMI-232 interface board is required for each controller.
- The extension cable must be approved Tucor cable.
- All devices must be connected to a single extension cable. The maximum

distance from controller is 2000'. The maximum distance of the device from the extension cable is 13'.

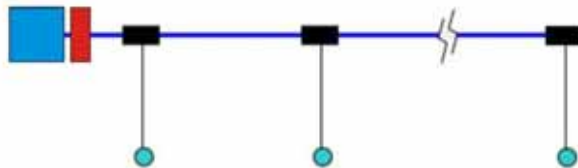
- A RealNet subscription is required to enable data monitoring. All other features may be programmed at the controller.
- Moisture Sensors may not be used in conjunction with an RKD-RFA-200 remote control.
- Connections from the probes to the TW-18/4MS wire are to be made with standard DBYs in a valve box (4 per connection).






Application:

RKD and RKS controllers.

Ordering Configuration:

Part Number	Item	Dimension	Embedded Sensors	Sensor Spacing
SMS-100	Sensor	7" x 0.6" x 2.75"	1	-
SMP-12	Probe	12"	6	2"
SMP-20	Probe	20"	5	4"
SMP-40	Probe	40"	10	4"
SMP-60	Probe	60"	15	4"
SMI-232	Interface	-	-	-
TW-18/4MS	Wire	-	-	-



Symbol	Name
	Tucor Controller
	Soil Moisture Sensor or Probe with 13' cable
	Waterproof connection
	TW-18/4MS wire
	SMI-232 Interface



Smart Irrigation
From the Ground Up

(800) 272-7472
www.tucor.com

Tucor's **RKD and RKS controllers** can retrieve ET data directly from a variety of devices. Tucor controllers can use this ET information to provide precise watering of your soil, based on local environmental factors. You are able to program the controllers with a range of parameters so as to use the local ET data to its maximum effectiveness,

using neither too much nor too little water in your irrigation programs.

In today's environmentally-conscious society, proper use of scarce water resources is a must. Tucor can help you keep plants green, costs low, and water available for future generations.

SPECIFICATIONS

ET-200:

The Tucor ET-200 Weather Station is intended for those sites that require their own weather station. The ET-200 is a direct-connect station that produces a pulse output for both ET and rain.



ET-200

ET-300-W:

The Tucor ET-300-W is a low cost alternative for onsite weather stations. The ET-300-W is directly connected to the Tucor controller and produces a pulse output for both ET and rain.



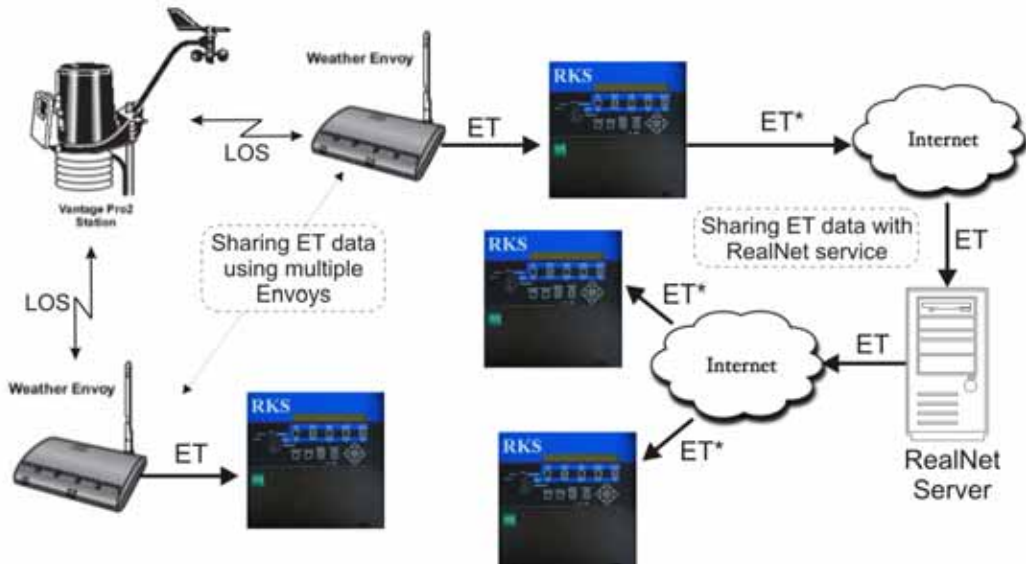
ET-300-W

IRRISOFT WR-7RKD:

The Irrisoft Weather Reach WR-7RKD has been modified exclusively for use with Tucor products. The WR-7RKD provides an ET and rain pulse directly to the RKD and RKS controllers. The Tucor controllers provide a 16v power source for internal installation. Third party service providers are required for activation and ET service.



WR-7RKD



Various ET-300-W data delivery methods



Tipping Rain Bucket

Smart Irrigation
From the Ground Up

Tucor's Tipping Rain Buckets come in two styles. They are used along with the ET data from a remote Tucor Weather Station to generate accurate local rain data. While the Weather Station's ET data may be used by controllers that are some

distance away from each other, the rain data may vary considerably over that area. The TRBs will ensure that the Rain pulses being sent to your controller will reflect what is actually falling around that particular controller.

(800) 272-7472
www.tucor.com

SPECIFICATIONS

TRB-100:

Resolution: 0.01" rain per tip
Sensor: Magnetic reed switch
Output: Contact closure
Cable type: 4 cond., 26 AWG
Cable length included: 40'
Maximum cable length: 900'
Dimensions (approx.):
8.75" (D) x 9.5" (H)
Weight: 2 lbs, 3 oz.

Mounting Shelf:

Hardware necessary for mounting the TRB-100 to the shelf includes eight screws, nuts, and lockwashers. Additional mounting hardware may be necessary, depending upon your application.

TRB-200:

Resolution: 0.04" rain per tip
Output: Contact closure
Cable type: 2 cond., 22 AWG
Cable length included: 30'
Maximum cable length: 60'
Dimensions (approx.):
4" (L) x 2" (W) x 4" (H)



TRB-100



Mounting shelf for TRB-100



TRB-200



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From the Ground Up

(800) 272-7472
www.tucor.com

THE TWC-NV IS THE WORTHY SUCCESSOR to Tucor's powerful and flexible TWC Flowmaster line, still based on Tucor's proven 2-wire technology. The NV continues all of the irrigation control concepts and features of the TWC, and adds a number of enhancements; it takes advantage of significant improvements in modern electronics technology; and it is encased in a robust NEMA housing. It is directly compatible with all TWC components.

The TWC-NV requires only 2-wires to control up to 200 valves, up to 7 miles away. This remarkable feat is accomplished by connecting a uniquely-addressed decoder to the 2-wire path; the decoder

is also connected to the valve. Turning on the decoder then turns on the valve: up to ten at the same time!

Feedback, flow control, alarm functions, and Excel-based reporting features are unsurpassed. Options such as a phone modem, Ethernet connection, and radio remote control add functionality and convenience. Included "RMS" Windows-based software makes controller remote operations and programming changes a breeze.

The NV is available in four sizes, for 50, 100, 150, and 200 decoders. Upgrades are easily performed at the controller via software keycodes.

SPECIFICATIONS

HARDWARE (TWC):

SYSTEM CAPACITY:

50 / 100 / 150 / 200 decoders

VALVES OPERATING SIMULTANEOUSLY:

10*

ELECTRICAL INPUT:

120 VAC, 60 Hz. 50 VA

ELECTRICAL OUTPUT:

34 V Peak to Peak square wave

SIGNAL CABLE (2-WIRE):

12-22 AWG

BATTERY BACKUP:

Clock, decoder data, schedule data, monitoring data

ENVIRONMENTAL:

Locking metal cabinet with internal transformer

SOFTWARE (RMS):

MICROSOFT WINDOWS BASED, 98 - XP

IRRIGATION SCHEDULES:

10 + test schedule

START TIMES:

Each schedule – 6 start times / day

START METHODS:

Day & time start, linked schedule start

TIMING:

0-999 minutes, in one minute steps

PROGRAM CYCLE:

14 or 15 days

OPERATION:

100 Steps per Schedule

DRY RUN:

Total run time is displayed



TWC-NV

MONITORING (DISPLAY):

Remaining time, system flow, 2-wire voltage and current

PUMP CONTROL:

Full automatic control, main (1, assigned to all valves) and booster pumps (up to 9, 1 assigned per valve)

SENSOR FEEDBACK:

Rain and pump alarm, line conditions monitored and displayed as alarm, up to 10 flows

TROUBLE-SHOOTING:

Built-in test programs

FIELD TRANSMITTER:

Supports field access units (direct 2-wire or radio-based)

REMOTE OPERATIONS:

PC via serial cable, modem, cellular connection, LAN/WAN, or Internet

LOCAL OPERATIONS:

Panel, PC (desktop or laptop)

TWC-NV Controller

SOFTWARE

- RMS Remote Monitoring Software
 - remote access and management of multiple sites
 - initialization and editing of installation data and irrigation schedules
 - data collection from and transfer to individual controllers
 - edit installation data and irrigation schedules on-line
 - monitor flow on-line
 - extract and view logged data via Logviewer™ and Microsoft Excel®
 - global Auto On/Off (call all sites and take out of Auto, call all sites and restore to Auto)
 - automatic Monitoring data retrieval on a daily basis

CONTROLLER

Input Voltage	120 volts, 50/60Hz, 50VA
Output Voltage	34 VAC Peak to Peak
Max Number of Decoders	50 / 100 / 150 / 200
Max Number of Sensor Decoders	10
Max Simultaneous Valves	10*
Max Schedules	10 + 1 test schedule
Max Simultaneous Schedules	10
Irrigation Methods	
Steps	1–10 decoders per Step; 1 - 999 minutes per Step; 100 Steps per Schedule
Days	14 or 15
Start Times	6 per Schedule
Start Methods	Day and time start, linked schedule start
Run Time	0 to 999 minutes / Step
Water Budget	0 to 250%
Pump Control	10 pumps (1 master + 9 booster)
Manual Operation	Individual decoders Schedules
Sensors	Rain check Alarm (general) ET
Monitoring	Active decoder shown with remaining time
Schedule Pause	Pause/edit and manual Start/resume both at the controller and via PC communications
Alarms (Flow)	High flow on system total High flow on valve basis Low flow on valve basis Unscheduled flow No flow (pump safety)
Dimensions	12" x 12" x 5.2" (approx.)
Weight	12 lbs.
Ingress protection	IP65 / NEMA 4
Ambient temperature	32° F – 132° F
Mounting	Wall (pedestal optional)
Display language	English

REMOTE OPERATION

- PC Windows software, (included): Direct serial cable (RS-232)
Dial-up via phone modem
LAN/WAN
GPRS † (subscription)
- Palm Treo software (optional): With Treo service and
controller's phone modem
- Local (field access) Direct 2-wire plug in (FA-100)
Radio handheld (RFA)

ALARM & REPORTING CAPABILITIES

- Alarm to Call-Out via Pager, Cell, SMS †, Email †
 - Short Circuit
 - Rain Detection
 - Auxiliary Device Alarm
- Alarm and Reaction
 - Unscheduled flow (leak detection)
 - System maximum flow
 - Valve % over/under flow
 - Identification of failed valves (on percent flow deviation)
 - Pump protection, minimum flow required (auto shut down)
 - Rain shutdown
 - Capable of storing 3200 events
 - Microsoft Excel-based reporting

OPTIONS

FA-100	Field Access Unit
RFA-100-F	Radio Field Access (450 MHz)
RFA-100-P	Portable Field Access Unit
WIN-xxx	Module for GPRS service, internal and external versions
LAN-100	Interface and PC software for local/wide area network connection, CAT-5
LAN-100-W	Wireless LAN connection
WMN-100	Wireless Mesh network radio
PDA-200	Palm Treo PDA software (requires third party dial-up access)
PD-100	Integrated pump decoder
CAM-25	Controller Adaptor Module – adapts conventional systems to Tucor controllers
SC-25/50	System Conversion terminal – converts existing wiring to a two-wire system
FS 100 – 400	Flow Sensors, T-type: 1" – 4"
FS-IN	Flow sensor, brass insert (saddle)
PED-xxx	Pedestal and Cabinet mounts

ORDERING CONFIGURATIONS

TWC-NV-xxx-y

Where

xxx = **50 / 100 / 150 / 200** (# of decoder addresses)

y = empty, or **C** for an internal analog modem

* Using default valve power and typical valve distribution on the 2-wire.

† With Tucor's WIN-xxx and GPRS service





Flowmaster LD – Line Decoder

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From the Ground Up

(800) 272-7472
www.tucor.com

The Flowmaster Line Decoders — LD-050, LD-100, LD-200, LD-400, LD-600 — turn one, two, four, and six solenoid valves on and off independently of each other. They receive power and control signals via the two-wire path.

The Flowmaster series of decoders are compatible with the PROCOM, TWC, TWC-NV and COM controllers.

The decoder contains a micro-processor that provides it with many features for controlling and testing. From the controller it can be adjusted to operate almost any existing valve on the market.

With 19 years' experience and over 1 million decoders in the ground, Tucor decoders are sure to stand the test of time!

SPECIFICATIONS

Electrical Input:

- Nominal voltage: 33 VAC from line
- Minimum voltage: 21 VAC
- Nominal standby current:
 - LD-050, -100, -200 = 0.5 mA
 - LD-400, -600 = 0.8 mA
- Wiring: 1.5 mm solid copper, PVC insulated

Electrical Output:

- Max. voltage: 24 VAC
- Max. current: 1200 mA
- Max. load: 1-2 watt solenoids on each output

Output control:

- Inrush voltage
- Inrush time
- Holding voltage
- Holding time

Max. Decoder to valve distance:

- 18/2 = 150 ft.
- 14/2 = 300 ft.

Operation:

- Number of addresses and valves:
 - LD-050: One address; one valve
 - LD-100: One address; 1 - 2 valves (working in parallel)
 - LD-200: two addresses; 1 - 2 valves per address (in parallel)
 - LD-400: Four addresses; four valves; includes internal SP-100
 - LD-600: Six addresses; six valves; includes internal SP-100



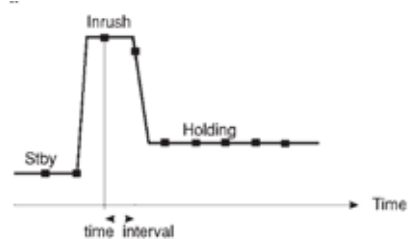
The Flowmaster LD Line Decoders

All addresses on multi-pack decoders can be initiated at the same time
All addresses on multi-pack decoders do not have to be used; they will not "waste" address space in the controller.

Ordering Configurations:

- LD-050
- LD-100
- LD-200
- LD-400 (includes SP-100)
- LD-600 (includes SP-100)

Typical current draw:





Tucor Control Cable

Smart Irrigation
From the Ground Up

(800) 272-7472
www.tucor.com

TUCOR CONTROL CABLE is a tough, reliable wire designed to operate valve decoders and sensor decoders. It consists of bare copper conductors insulated with PVC and a high-density polyethylene, direct burial jacket. Operating 2 valves simultaneously, the cable can extend to 17,100 feet on 16 gauge and 27,300 on 14 gauge.[†] Additional gauges are available on

special order. In most applications, 16 gauge is the wire of choice, as it is easier to handle than 14 gauge yet is still durable. Wires are color-coded red and black for troubleshooting ease. Jackets are available in multiple colors for easy wire identification and tracing.

Use only the best wire: install Tucor!

SPECIFICATIONS

FLOWMASTER WORKING RANGE: [†]

The length of the cable that will permit reliable operation of the valves depends upon the size of the wires and the number of valves that need to be operated simultaneously. If the line is supplied with power from one end only (not looped), the ranges can be read off the table below. The table is based on standard valves (24 VAC, 2 W, 28 Ω), using default Tucor switch code settings. Looping the wire greatly extends the range.

# OF SIMULT. OPEN VALVES	WIRE #22* (FEET)	WIRE #18 (FEET)	WIRE #16 (FEET)	WIRE #14 (FEET)	WIRE #12* (FEET)
1	2,100	13,700	21,200	33,700	53,600
2	1,750	11,200	17,100	27,300	43,400
3	1,470	9,400	14,400	22,900	36,400
4	1,270	8,100	12,400	19,800	31,500
6	1,000	6,400	9,800	15,600	24,800
8	810	5,200	8,100	12,900	20,500
10	700	4,500	6,800	10,900	17,300

SPECIFICATIONS:

Insulation: Polyvinylchloride
Jacket: Polyethylene
Wire: copper, tin coated
Sizes: 12-18 AWG

ORDERING CONFIGURATIONS:

Colors: Red, Green, Yellow, Orange, Purple, Blue [‡]
Spool lengths (feet): 500, 1000, 2500 [‡]



Tucor control cable

* 12 gauge is available as a special order; 22 gauge shown for demonstration.

[†] Tucor Flowmaster line only, using default valve power. Using a different valve power, changing the specified wiring type, length, valve distribution or connectors may result in less capability of active stations.

[‡] Certain colors and spool sizes are special order: contact Tucor for specifics.



SD-100 – Sensor Decoder

Smart Irrigation
From the Ground Up

(800) 272-7472
www.tucor.com

The SD-100 sensor decoder is a fully programmable, direct-bury decoder that provides an interface between Flowmaster controllers and field sensors. This means that virtually any type of sensor, such as flow, temperature, or moisture, can be added to a new or existing system. The sensor decoder is installed on the same two-wire path as the line decoders, so the sensor may be a

considerable distance from the controller. It may be programmed to operate with a 4-20 mA or pulsed digital input (as with a standard flow meter). Up to ten SD-100's may be used on Tucor controllers.* The SD-100 can add yet another level of flexibility and logging data to your Tucor controller.

SPECIFICATIONS

INPUT ELECTRICALLY:

2 different interfaces may be selected:

- 4-20 mA
- Pulses per time

Sensor resolution is 200 steps.
Accuracy is better than 1% of maximum value.
Unique sensor ID is factory programmed.

OPERATION:

When used with an appropriate flowmeter, output is measured and recorded as flow rates. Various controller responses may be defined based on sensor input. The controller polls the sensors for data either once or twice per minute, depending upon the number of sensors installed.*

INSTALLATION:

The sensor is wired directly to the 2-wire path. Inputs are color-coded for proper polarization, if necessary. The sensor calibration is defined in the appropriate controller's PC software and is then transferred to the controller via the RS232 connection. Includes built-in SP-100 for added surge protection.



*The SD-100
Sensor Decoder*

APPLICATION:

- TWC
- COM
- Procom

ORDERING CONFIGURATIONS:

SD-100 Sensor Decoder

* See controller specifications for maximum allowable decoders.