

Controller Assembly Options

Specifications For Tucor Controller Options

Communications Equipment

ETHERNET and GSM/GPRS COMMUNICATION (RKD and RKS Controllers)

PART#	DESCRIPTION
TWIN4-X	<p>TUCOR® GSM-GPRS MODEM (X = NUMBER OF YEARS OF DATA SERVICE) The Controller Assembly shall be provided with an Internal GPRS Wireless Internet Network with SMA Antenna for the purpose of allowing web access control from a server to RKD or RKS controller. The Controller Assembly shall be provided with an X year(s) Wireless Data Service Plan for communication between the server and controller.</p>
TLAN-X	<p>TUCOR® NETWORK ADAPTER (X = NUMBER OF YEARS OF DATA SERVICE) The Controller Assembly shall be provided with an Ethernet modem for the purpose of allowing web access control from a server to RKD or RKS controller. The Controller Assembly shall be provided with an X year(s) Data Service Plan for communication between the server and controller.</p>
TWLAN-X	<p>TUCOR® WIRELESS NETWORK ADAPTER (X = NUMBER OF YEARS OF DATA SERVICE) The Controller Assembly shall be provided with a WIFI modem for the purpose of allowing web access control from a server to RKD or RKS controller. The Controller Assembly shall be provided with an X year(s) Data Service Plan for communication between the server and controller.</p>
TACT	<p>TUCOR® ACTIVATION FEE FOR WIN CARD The Controller Assembly shall be provided with a Activation Fee for a TWIN GPRS Wireless Internet Network Modem (only).</p>
TU-SSRPH	<p>900 MHz SPREAD SPECTRUM RADIO WITH 3dB PHANTOM TYPE ANTENNA The Controller Assembly shall be provided with a 900 MHz Spread Spectrum Radio and 3dB Phantom Antenna for the purpose of communicating directly from a Server Satellite to Client Satellite. For Server to Client Satellite communication, both the Server and Client must have Spread Spectrum Radio communication. A radio survey must be conducted prior to shipping Controller Assembly to site to confirm successful communication from either Tucor Platform to Server Satellite or Server Satellite to Client Satellite when using Spread Spectrum communication.</p>

FLOW SENSORS & HYDROMETERS

See General Options Section

WEATHER STATION and SENSOR OPTIONS (RKD and RKS Only)

PART#	DESCRIPTION
ET3W	<p>TUCOR® WIRELESS WEATHER STATION The RKD and RKS Decoder System Assembly shall be provided with a solar powered, wireless weather station with ET and rain pulse for either direct connect to field based RKD or RKS controllers or interfaced to single RKD or RKS controllers and directed to multiple controllers via a server based access. The TET3W weather station shall be no more than 1000' line of sight from RKD or RKS controller.</p>
ET3W-P	<p>TUCOR® WIRELESS WEATHER STATION – POLE MOUNTED The RKD and RKS Decoder System Assembly shall be provided with a solar powered, wireless weather station with ET and rain pulse for either direct connect to field based RKD or RKS controllers or interfaced to single RKD or RKS controllers and directed to multiple controllers via a server based access. A galvanized pole (size to be determined) shall be included for field mounting. The TET3W weather station shall be no more than 1000' line of sight from RKD or RKS controller.</p>

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REMOTE CONTROLS

PART#	DESCRIPTION
TFRA1-HH	<p>TUCOR® VHF REMOTE CONTROL RADIO TRANSCEIVER (FOR TWC Only)</p> <p>The Controller Assembly shall be provided with a Remote Transmitter Kit for the purpose of activating irrigation valves remotely for a distance of approximately one and one half miles from the controller location (line of sight) that is to be activated.</p>
TFRA1-F	<p>TUCOR® VHF REMOTE CONTROL RADIO TRANSCEIVER (FOR TWC Only)</p> <p>The Controller Assembly shall be provided with a permanent mount Remote Receiver Kit for the purpose of receiving a signal from a hand held transmitter (TRFA1-HH) to activate irrigation valves remotely for a distance of approximately one and one half miles from the controller location (line of sight) that is to be activated. One receiver (TRFA1-F) shall be permanently mounted in each controller enclosure with pre-mounted antenna.</p>
TFRA2	<p>TUCOR® VHF REMOTE CONTROL RADIO TRANSCEIVER AND HANDHELD</p> <p>The Controller Assembly shall be provided with a Remote Transmitter and Receiver Kit for the purpose of activating irrigation valves remotely for a distance of approximately one and one half miles from the controller location (line of sight) that is to be activated. The receiver shall have up to 255 outputs and a master valve output and is adaptable to LX Series Controllers. One transmitter may communicate up to 128 different addressed receivers with custom names assigned for up to 20 receivers. The Receiver and Transmitter Kit include antennas and carrying case.</p>
TFRA2-HH	<p>TUCOR® VHF REMOTE CONTROL RADIO HANDHELD (FOR RKD/RKS Only)</p> <p>The Controller Assembly shall be provided with a DTMF keypad Remote Transmitter Kit for the purpose of activating irrigation valves remotely for a distance of approximately one and one half miles from the controller location (line of sight) that is to be activated. One transmitter may communicate up to multiple addressed receivers.</p>
TFRA2-R	<p>TUCOR® VHF REMOTE CONTROL RADIO TRANSCEIVER (RECEIVER for RKD/RKS Only)</p> <p>The Controller Assembly shall be provided with a Transceiver (Receiver Only) Kit for the purpose of receiving commands from a handheld transmitter (TFRA2-HH) remotely for approximately one- and one-half miles from the controller location (line of sight) that is to be activated. Multiple TFRA2-R Receivers shall be pre-programmed and capable of communication with a single handheld Transceiver (Transmitter). A Nema enclosure shall be provided for housing the transceiver unit.</p>
TFRA2-R (LE)	<p>TUCOR® VHF REMOTE CONTROL RADIO TRANSCEIVER - No Encl (FOR RKD/RKS Only)</p> <p>The Controller Assembly shall be provided with a Transceiver (Receiver Only) Kit for the purpose of receiving commands from a handheld transmitter (TFRA2-HH) remotely for approximately one- and one-half miles from the controller location (line of sight) that is to be activated. Multiple TFRA2-R Receivers shall be pre-programmed and capable of communication with a single handheld Transceiver (Transmitter). The TFRA-R(LE) shall be provided for mounting in a stainless-steel enclosure without a NEMA housing.</p>

DECODER INTERFACE BOARD

PART#	DESCRIPTION
TUIB	<p>TUCOR® DECODER INTERFACE BOARD</p> <p>The Controller Assembly shall be provided with a Tucor Decoder Interface Two-Wire Converter that adapts to any controller and converts output to a two-wire system from a traditional multi-wire system controller. <u>The Decoder Interface Board two-wire converter shall be capable of converting any controller from 1-48 stations and expansion capabilities to 96 stations.</u> The Decoder Interface Board shall be mounted on the backboard and pre-wired to the controller.</p>

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TWO WIRE DECODERS (RKD and TUIB only)

PART#	DESCRIPTION
RKDEC	<p>ONE STATION VALVE DECODER</p> <p>The RKD Decoder System Assembly shall be provided with a single valve field Decoder for the purpose of providing an interface between the RKD controllers to each valve. Each Decoder shall be field programmed via the controller or handheld programmer. The RKDEC is capable of a <u>single output with one valve maximum</u>. The recommended splice kit shall be 3M #DBY. The Field Decoder may be installed in a valve box or direct buried.</p> <p>Note: the RKDEC may be used for remote control valve, master valve (NC or NO) and pump start</p>

TWO WIRE DECODERS (TWC only)

PART#	DESCRIPTION
LD-050	<p>SINGLE OR TWO VALVE FIELD DECODER</p> <p>The Tucor TWC Decoder System Assembly shall be provided with a single valve field Decoder for the purpose of providing an interface between the Tucor TWC controllers to each valve. The LD-050 is capable of a <u>single output with one valve maximum</u>. The recommended splice kit shall be 3M #DBY. The Field Decoder may be installed in a valve box or direct buried with maximum Decoder to valve distance of 300'</p>
LD-200	<p>TWO VALVE FIELD DECODER</p> <p>The Tucor TWC Decoder System Assembly shall be provided with a two valve field Decoder for the purpose of providing an interface between the Tucor TWC controllers to each valve. The LD-200 is capable of two <u>outputs with two valves</u> maximum. The recommended splice kit shall be 3M #DBY. The Field Decoder may be installed in a valve box or direct buried or direct buried with maximum Decoder to valve distance of 300'</p>
LD-400	<p>FOUR VALVE FIELD DECODER</p> <p>The Tucor TWC Decoder System Assembly shall be provided with a four valve field Decoder for the purpose of providing an interface between the Tucor TWC controllers to each valve. The LD-400 is capable of a four outputs <u>with four valves</u> maximum. The recommended splice kit shall be 3M #DBY. The Field Decoder may be installed in a valve box or direct buried or direct buried with maximum Decoder to valve distance of 300'. The LD-400 includes internal surge protection (TSP)</p>
LD-600	<p>SIX VALVE FIELD DECODER</p> <p>The Tucor TWC Decoder System Assembly shall be provided with a six valve field Decoder for the purpose of providing an interface between the Tucor TWC controllers to each valve. The LD-600 is capable of six <u>outputs with six valves</u> maximum. The recommended splice kit shall be 3M #DBY. The Field Decoder may be installed in a valve box or direct buried or direct buried with maximum Decoder to valve distance of 300'. The LD-400 includes internal surge protection (TSP).</p>

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SURGE PROTECTION (RKD, TUIB, AND HYBRID 3D only)

PART#	DESCRIPTION
TSP	<p>LINE SURGE PROTECTION (LOCATED NO MORE THAN 500' APART WITH GR-K)</p> <p>The RKD Decoder System Assembly shall be provided with a Line Surge Protector for the purpose of providing a surge protection interface between the controllers and two wire path to valve and ground rod. The Line Surge Protection shall protect an area of ~500 feet in diameter and at dead end runs. The Tucor Surge Protection Decoders shall be installed every 500 feet on the 2-wire path. A ground rod kit (#GR-K) must also be installed at each TSP location. The #GRD-K is included separately.</p>
GRD-K	<p>GROUND ROD and CLAMP</p> <p>The Controller Assembly shall be provided with a Ground Rod and Clamp for the purpose of providing grounding protection to the controller electrical and field installed Tucor Surge Protection Decoders (#TSP).</p>
GP8-K	<p>8' GROUND PLATE and 25' of #6 GROUND WIRE</p> <p>The Controller Assembly shall be provided with a 4" x 96" Copper Ground Plate, and 25' of #6 ground wire for the purpose of providing grounding protection to the controller electrical components. The #GP8-K Kit shall be used primarily with an 8' Ground Rod per National Electric Code requirements for grounding. Includes 2- 50 lb. bags of PowerFill™ or PowerSet® backfill material for ground plate installation.</p>
GP3-K	<p>3' GROUND PLATE and 10' of #6 GROUND WIRE</p> <p>The Controller Assembly shall be provided with a 4" x 36" Copper Ground Plate, and 10' of #6 ground wire for the purpose of providing grounding protection to the controller electrical components. The #GP3-K Kit shall be used primarily on two wire decoder system path grounding along with the specific manufacturer's surge suppression device per each specific manufacturer's grounding requirements. Includes 1- 50 lb. bag of PowerFill™ or PowerSet® backfill material for ground plate installation.</p>
TWIS	<p>TWO WIRE ISOLATION SWITCH</p> <p>The Controller Assembly shall be provided with Two Wire Isolation Switch (TWIS) for the purpose of isolating a two-wire decoder system two wire path for troubleshooting up to three separate two wire paths at locations throughout a two-wire run. The TWIS is designed to visually display short or no short conditions of the two-wire decoder cable when the decoder controller indicates an alarm condition on one or up to three paths. The TWIS is fully waterproof and designed to be mounted in a separately supplied valve box in the field. Typically placed at tee intersections of the two-wire decoder path, no more than four should be placed on a single decoder controller system.</p>

HANDHELD DECODER PROGRAMMER (RKD and HYBRID 3D)

PART#	DESCRIPTION
THCP	<p>HANDHELD FIELD DECODER PROGRAMMER</p> <p>The Controller Assembly shall be provided with a handheld Decoder Programmer for the purpose of field programming decoders for use with RKDEC Decoders and 3DDEC Decoders.</p>

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HYBRID 3D MODULES

PART#	DESCRIPTION
TU3D-6	<p>TUCOR DECODER INTERFACE BOARD</p> <p>The Controller Assembly shall be provided with a Tucor Decoder Interface Two-Wire Converter that adapts to any controller and converts output to a two-wire system from a traditional multi-wire system controller. <u>The Universal Decoder Module two-wire converter shall be capable of converting any controller from 1-6 stations.</u> The Decoder Interface Board shall be mounted on the backboard and pre-wired to the controller.</p>
TU3D-24	<p>TUCOR DECODER INTERFACE BOARD</p> <p>The Controller Assembly shall be provided with a Tucor Decoder Interface Two-Wire Converter that adapts to any controller and converts output to a two-wire system from a traditional multi-wire system controller. <u>The Universal Decoder Module two-wire converter shall be capable of converting any controller from 1-24 stations.</u> The Decoder Interface Board shall be mounted on the backboard and pre-wired to the controller.</p>

HYBRID 3D DECODERS

PART#	DESCRIPTION
3DDEC	<p>HYBRID 3D SINGLE STATION DECODER (TO BE USED WITH HYBRID 3D MODULE ONLY)</p> <p>The Hybrid 3D Decoder System Assembly shall be provided with a 3DDEC single valve field Decoder for the purpose of providing an interface between the Hybrid 3D Module and each valve. Each Decoder shall be field programmed via the Hybrid 3D Module or handheld programmer. The 3DDEC is capable of a <u>single output with one valve maximum.</u> The recommended splice kit shall be 3M #DBY. The Field Decoder may be installed in a valve box or direct buried.</p>
3DSD	<p>HYBRID 3D FLOW SENSOR DECODER (TO BE USED WITH HYBRID 3D MODULE ONLY)</p> <p>The Hybrid 3D Decoder System Assembly shall be provided with a 3DSD Sensor Decoder for the purpose of providing an interface between the Hybrid 3D Module and flow sensor. The 3DSD Sensor Decoder shall be field programmed via the Hybrid 3D Module or handheld programmer. The 3DSD is capable of a <u>single output with one flow sensor.</u> The recommended splice kit shall be 3M #DBY. The Sensor Decoder may be installed in a valve box or direct buried.</p>

DECODER (RKD) and FLOW SENSING CABLE (Specified and purchased separately)

PART#	DESCRIPTION
P-7072D**	<p>PAIGE ELECTRIC COMMUNICATION CABLE</p> <p>14 AWG/2 Conductor "MAXI" Cable with two type UF wires with a PE outer jacket. The colors of the outer jacket shall be as called-for in the irrigation plans and specifications. Multiple colors available.</p> <p>The Maximum Critical path for: 14AWG is 1.65 miles (Star pattern) and 6.61 miles (Loop pattern). 12AWG is 2.63 miles (Star) and 10.52 miles (Loop). 10AWG is 4.18 miles (Star), and 16.71 miles (Loop).</p> <p>**It is recommended that Communication Cable be installed in conduit with pull boxes located every 250' and at all crossings. Please refer to the customer's requirements for specific conduit size and pull box requirements.</p>

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DECODER (RKD) and FLOW SENSING CABLE (Specified and purchased separately) cont.

PART#	DESCRIPTION
FSW16**	<p>FLOW SENSING CABLE 2 conductor 16 AWG stranded, annealed copper covered with a .004 wall of stabilizing nylon. The conductors shall be twisted and encased in a single outer jacket of .050". The two conductors shall be color coded with one conductor red and the other black. Maximum distance is 2000'.</p> <p>**It is recommended that Decoder and Flow Sensing Cable be installed in conduit with pull boxes located every 250' and at all crossings. Please refer to the customer's specific requirement for conduit size and pull box locations.</p> <p>It is recommended to use 3M DBR connectors for all splice connections on two wire path. All splices and decoders should be installed in valve boxes.</p>