

Controller Assembly Options

Specifications For Tucor Controller Options

Communications Equipment

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

PART#	DESCRIPTION
TWIN-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>

RADIO COMMUNICATION – (RKS Controllers only)

PART#	DESCRIPTION
TWDR1	TUCOR® WIRELESS POINT TO POINT RADIO – RKS TO RKX EXTENSION(S)
TWDR2	TUCOR® WIRELESS GROUP RADIO MESH – RKS TO RKX EXTENSION(S)
TWMR	TUCOR® WIRELESS MESH RADIO – RKS TO RKX EXTENSION(S)

EXTENSION BOARD– (RKS Controllers Only)

PART#	DESCRIPTION
RKX	TUCOR® 25 STATION RKS CONTROLLER EXTENSION (for 25, 50 and 75 additional stations)

FLOW SENSORS & HYDROMETERS

See General Options Section

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WEATHER STATION and SENSOR OPTIONS (RKD and RKS Only)

PART#	DESCRIPTION
ET3W	<p>TUCOR® WIRELESS WEATHER STATION</p> <p>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</p> <p>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>

MOISTURE SENSORS

PART#	DESCRIPTION
ET3W	<p>TUCOR® SOIL MOISTURE SENSOR</p>
ET3W-P	<p>TUCOR® WIRELESS WEATHER STATION – POLE MOUNTED</p> <p>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>

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>

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TFRA1-HH	<p>TUCOR® VHF REMOTE CONTROL RADIO TRANSCEIVER(FOR TWC Only) 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) 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 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) 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) The Controller Assembly shall be provided with a Transceiver (Receiver Only) Kit for the purpose of receiving commands from a hand held transmitter (TFRA2-HH) remotely for a distance of 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 Hand Held Transceiver (Transmitter). A Nema enclosure shall be provided for housing transceiver unit.</p>
TFRA2-R (LE)	<p>TUCOR® VHF REMOTE CONTROL RADIO TRANSCEIVER - No Encl (FOR RKD/RKS Only) The Controller Assembly shall be provided with a Transceiver (Receiver Only) Kit for the purpose of receiving commands from a hand held transmitter (TFRA2-HH) remotely for a distance of 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 Hand Held 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 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. The Decoder Interface Board two-wire converter shall be capable of converting any controller from 1-48 stations and expansion capabilities to 96 stations. The Decoder Interface Board shall be mounted on the backboard and pre-wired to the controller.</p> <p>Note: the RKDEC may be used for remote control valve, master valve (NC or NO) and pump start</p>

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TWO WIRE DECODERS (TWC only)

PART#	DESCRIPTION
	SINGLE OR TWO VALVE FIELD DECODER
LD-050	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 single output with one valve maximum. 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'
	TWO VALVE FIELD DECODER
LD-200	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 outputs with two valves 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'
	FOUR VALVE FIELD DECODER
LD-400	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 with four valves 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)
	SIX VALVE FIELD DECODER
LD-600	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 outputs with six valves 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).

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

PART#	DESCRIPTION
	LINE SURGE PROTECTION (LOCATED NO MORE THAN 500' APART WITH GR-K)
TSP	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 #GR-K is included separately.
	GROUND ROD and CLAMP
GR-K	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).

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HANDHELD DECODER PROGRAMMER (RKD and HYBRID 3D)

PART#	DESCRIPTION
	HAND HELD FIELD DECODER PROGRAMMER
THCP	The Controller Assembly shall be provided with a Hand Held Decoder Programmer for the purpose of field programming decoders for use with RKDEC Decoders and 3DDEC Decoders.

HYBRID 3D MODULES

PART#	DESCRIPTION
	TUCOR DECODER INTERFACE BOARD
TU3D-6	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. The Universal Decoder Module two-wire converter shall be capable of converting any controller from 1-6 stations. The Decoder Interface Board shall be mounted on the backboard and pre-wired to the controller.
	TUCOR DECODER INTERFACE BOARD
TU3D-24	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. The Universal Decoder Module two-wire converter shall be capable of converting any controller from 1-24 stations. The Decoder Interface Board shall be mounted on the backboard and pre-wired to the controller.

HYBRID 3D DECODERS

PART#	DESCRIPTION
	HYBRID 3D SINGLE STATION DECODER (TO BE USED WITH HYBRID 3D MODULE ONLY)
3DDEC	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 hand held programmer. The 3DDEC is capable of a single output with one valve maximum. The recommended splice kit shall be 3M #DBY. The Field Decoder may be installed in a valve box or direct buried.
	HYBRID 3D FLOW SENSOR DECODER (TO BE USED WITH HYBRID 3D MODULE ONLY)
3DSD	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 hand held programmer. The 3DSD is capable of a single output with one flow sensor. The recommended splice kit shall be 3M #DBY. The Sensor Decoder may be installed in a valve box or direct buried.

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

PART#	DESCRIPTION
TW18/2**	<p>TUCOR® TWO WIRE DECODER CABLE - 2 conductor 18 AWG tin coated, soft draw, annealed, solid copper conforming to ASTM 33 with 4/64" thick PVC insulation, conforming to UL Standard #493. The two insulated conductors shall be encased in a single outer jacket of 3/64" thick, high density, sunlight resistant polyethylene, having a minimum wall thickness of .045". The outer jacket shall be pressure extruded so as to completely fill the interstices between the two insulated wires. The two conductors shall be of the same size and color coded with one conductor black and the other red. Maximum distance shall be 4900'.</p>
TW16/2**	<p>TUCOR® TWO WIRE DECODER CABLE - 2 conductor 18 AWG tin coated, soft draw, annealed, solid copper conforming to ASTM 33 with 4/64" thick PVC insulation, conforming to UL Standard #493. The two insulated conductors shall be encased in a single outer jacket of 3/64" thick, high density, sunlight resistant polyethylene, having a minimum wall thickness of .045". The outer jacket shall be pressure extruded so as to completely fill the interstices between the two insulated wires. The two conductors shall be of the same size and color coded with one conductor black and the other red. Maximum distance shall be 7800'.</p>
TW14/2**	<p>TUCOR® TWO WIRE DECODER CABLE - 2 conductor 18 AWG tin coated, soft draw, annealed, solid copper conforming to ASTM 33 with 4/64" thick PVC insulation, conforming to UL Standard #493. The two insulated conductors shall be encased in a single outer jacket of 3/64" thick, high density, sunlight resistant polyethylene, having a minimum wall thickness of .045". The outer jacket shall be pressure extruded so as to completely fill the interstices between the two insulated wires. The two conductors shall be of the same size and color coded with one conductor black and the other red. Maximum distance shall be 12500'.</p>
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>

****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. It is recommended to use 3M DBY or DBR connectors for all splice connections on two wire path. All splices and decoders should be installed in valve boxes.**