







Enhance Your Mission System with Accessories





The following accessories are for convenience and advanced applications. Mission RTUs include all of the parts for a standard application.

M110 and M800 Option Boards and Modules

Mission Part No.	Item	Description	Note	Photo
466 OP466 OP466b*	Option Board - Analog Input and Pulse Input ^{1, 2}	Four additional non-isolated analog inputs and two pulse inputs. Connect analog inputs to devices with a 4-20 mA or 0-5 V output to measure variables such as pressure, level, chlorine, pH, turbidity and more.	M800 series RTUs are recommended for analog inputs. Expansion analog inputs will alarm only on the hours for M110s.	
460 OP460 OP460b*	Option Board - Analog Output and Pulse Input ^{1, 2, 3}	Two 4-20 mA analog output channels and two pulse input channels. Use analog output channels for variable control such as chlorine dosers, VFDs, valves and more. See PN OP463 for pulse input description.	M800 series RTUs are recommended. Manually page output from portal, or mirror analog value from one RTU to another. Maximum load resistance is 300 ohms.	
650 OP650 OP650b*	Option Board - Digital Input Expansion ^{1, 2}	Eight additional dry contact alarm/status inputs (no pump runtimes).	Supports common ground wiring. No wire supervision available.	
463 OP463 OP463b*	Option Board - Pulse Input ¹	Two pulse input channels. Accepts dry contacts or open collector.	Maximum pulse frequency 60 Hz and 17 mSec pulse width. Connect to a rain tipping bucket (PN IT251) or a flow meter.	
651 OP651	Wet Well Module	Simplify and speed up the wiring of M110 and M800 series RTUs on sewer lift stations with the patented Wet Well Module. Includes two strap-on current sensors (PN OP499). High level float circuit taps into existing float circuit. One float provides local signal as well as signal for the RTU.	Pump run indicated when motor load is greater than 5 Amps. A third pump can be sensed by way of an extra strap-on current sensor (PN OP499). See specification sheet for more information.	
499 OP499	Sensor - AC Current	Current sensors are used with the Wet Well Module to sense true pump run indication. The Wet Well Module monitors up to 3 pumps and comes with two AC current sensors. Direct sensing avoids erroneous pump run indications.	6' twisted pair wire, red LED, nylon enclosure.	




Solar and Rainfall Kits

Mission Part No.	Item	Description	Note	Photo
275 KT275	Rainfall Kit - AC	Add this A/C power rainfall kit to your RTU for a complete rainfall monitoring station. It collects data for real-time alarming, reporting and storm water management.	Used on both M110 and M800 series RTUs. This kit includes a rain tipping bucket, a steel, powder-coated mounting stand with a built in leveling plate and a pulse input board. Shipped assembled if ordered with RTU.	
276 KT276	Rainfall Kit - 5W Solar	Add this 5W solar power rainfall kit to your M110 series RTU for a complete rainfall monitoring station. It collects data for real-time alarming, reporting and storm water management.	This kit includes a rain tipping bucket, a steel, powder-coated mounting stand with a built in leveling plate, a pulse input board, a 5 watt solar panel with a mounting bracket and a 7 Ah battery for additional power capacity. Shipped assembled if ordered with RTU.	


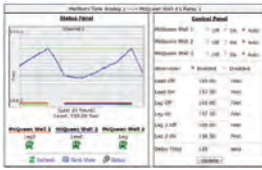
Note 1: One option board per RTU. **Note 2:** Requires annual service PN 581. **Note 3:** See Best Practices for Remote Control Applications document.

* This option board includes an option board mounting plate for enclosures manufactured prior to 2010.

M110 and M800 Expansion Boards and Modules

Mission Part No.	Item	Description	Note	Photo
277 KT277	Rainfall Kit - 20W Solar	Add this 20W solar power rainfall kit to your M800 series RTU for a complete rainfall monitoring station. It collects data for real-time alarming, historical trends, reporting and storm water management.	This kit includes a rain tipping bucket, a steel, powder-coated mounting stand with a built in leveling plate, a pulse input board, a 20 watt solar panel and mounting bracket, a 12 V 35 Ah battery for additional power capacity and a large Nema 4X enclosure. Shipped assembled if ordered with RTU.	
461 KT461	Solar Kit - 5W	Add this solar panel to your M110 RTU to create a solar monitoring device. Includes one small solar panel (5W), a mounting bracket and a 7 Ah battery.	17 V max. operating voltage, 0.29 A max. operating current, 21.6 VDC max. open circuit voltage; typically used with M110 series RTUs.	
861 KT861	Solar Kit - 20W	Includes one large solar panel (20W), a mounting rack, a large nema 4X enclosure, a 35 Ah battery and a solar charge regulator.	20 W max power, 1.11 A current at Pmax, 18 V at Pmax; typically used with M800 series RTUs.	

Specialty Software and Upgrade Options

Mission Part No.	Item	Description	Note	Photo
586 SW586	OPC Link for Integration with existing SCADA	The OPC package links data from Mission's central servers into your SCADA HMI software. Mission driver resides on your server to pull tag data for all Mission RTUs. Data flows over internet.	OPC documentation describes supported tags. Features and reports available on your Mission web portal are still available.	
590 SW590	SCADA Integration - VPN Setup for OPC	Virtual Private Network (VPN) setup for additional security from Mission central servers to your servers.	Requires PN SW586.	
587 SW587	Tank and Well Control Package ³	Maintains the amount of water in a storage tank by continuously monitoring the level and sending out commands to control remote pumps. One analog input (at tank) can control up to three outputs either on the same RTU or remote RTUs.	M800 RTUs required. Not to be used as a lift station control package. Read "Best Practices for Control Applications".	
800AG SW800	Upgrade - M110 to M800	Over-the-air conversion from an M110 to an M800 service package.	Service is prorated.	

Antennas and Antenna Accessories

Mission Remote Terminal Units (RTUs) include a standard antenna and mounting system that is appropriate for most applications. The majority of Mission systems do not need additional antenna hardware. The antennas and accessories described here are for special applications such as locations where the signal strength is marginal or the antenna must be located further away from the RTU than normal.

Frequency: The cellular transceiver integrated into the Mission RTU supports different frequency bands – between 850 MHz and 1900 MHz. The radio will automatically select the best tower signal based on the site and the cellular carrier. Mission can often determine the frequency band used by the nearby cellular towers through telemetry with the radio or through our special relationships with the carriers. Using an antenna designed for the wrong frequency can be an impairment to the performance of the RTU. Mission technical support personnel can recommend the most versatile antenna option.

Signal Strength: Signal strength is measured in decibels (dBm). It can be improved, or "gained", by clearing obstacles or by installing

a special antenna, but just as easily can be "lost" in excessively long cable runs or corroded or wet connections. It is best to measure the distance and only order the amount of cable necessary.



Antenna Location: For best performance, the antenna should be installed outdoors and as high as possible – if mounted on a structure, the antenna whip should be above the highest point. Avoid locations that position the antenna around steel structures like a power cabinet or a water tank.

Low-Profile Options: Low profile antennas are inconspicuous and deter vandalism, but are best used in areas with great signal strength.

Directional Antennas: These yield higher gain but may prevent the RTU from receiving signals from multiple towers. Routine tower maintenance is rare, but service outages are more likely to occur if only a single tower is available for communications. The directional, multiband antenna (PN R3004) operates on 700-2700 MHz bands and is the preferred technology for extremely low signal strength situations.

Antennas and Antenna Accessories Continued












CONNECTIONS

Mission Part No.	Item	Description	Note	Photo				
	MMCX (Male & Female) 0.095" OD		SMA (Male & Female) 0.36" OD		N Connector (Male & Female) 0.785" OD		TNC (Male & Female) 0.570" OD	
413C RF413C	Antenna Cable - 15'	Low loss 15' 9913 RG-58 cable replaces the standard antenna cable. It has TNC-M connectors on both ends.	Includes 7.5" TNC-F to molded antenna base and 8" TNC-F to SMA-M. RG-58 adapter cables.					
414C RF414C	Antenna Cable - 20'	Low loss 20' 9913 RG-58 cable replaces the standard antenna cable. It has TNC-M connectors on both ends.						
415C RF415C	Antenna Cable - 25'	Low loss 25' 9913 RG-58 cable replaces the standard antenna cable. It has TNC-M connectors on both ends.						
416C RF416C	Antenna Cable - 50'	Low loss 50' 9913 RG-58 cable replaces the standard antenna cable. It has TNC-M connectors on both ends.						
417 RF417	Antenna Cable - 10'	RG-58 N-M to SMA-M 10' antenna cable.	Used with the Antenna - Low Profile (PN RF411).					
418 RF418	Antenna Cable - 11'	RG-58 antenna cable with molded antenna base and SMA-M connector.	Included with M110 and M800 series RTUs.					
R3004 RF3004	Antenna - Directional Yagi	11 dB gain, multi-band antenna, 700-2700 MHz, includes RG-58 adapter cable with N-F end connector and U-Bolt mounting hardware.	50 W max. input power, mechanical tilt +/- 10°; comes with N-M to TNC-F connector; antenna cable sold separately. Pole not included.					
R8005 RF8005	Antenna Kit - Pole Mount	Standard antenna package includes: Bracket - Universal Antenna Mount, Antenna Cable - 11' RG-58, Antenna Whip and (2) mounting clamps.	Included with M110 and M800 series RTUs.					
410 RF410	Antenna - Low Profile with Cable	3 dB gain, dual band tamper resistant antenna with 10' RG-58 cable ending in a SMA male connector. Deters vandalism.	821-896/1850-1990 MHz, white, 2.3" h, 100 W max. power.					
411 RF411	Antenna - Low Profile without Cable	3 dB gain, dual band tamper resistant antenna without cable. Comes with N-M to TNC-F connector. Deters vandalism.	821-896/1850-1990 MHz, white, 2.3" h, 100 W max. power.					
432 RF432	Antenna Whip	Replacement, dual band, open coil antenna whip.	Included with M110 and M800 series RTUs.					
434 RF434	Bracket - Universal Antenna Mount	Replacement, aluminum LBracket used to mount the standard antenna whip (PN RF432).	Included with M110 and M800 series RTUs.					







Instrumentation and Transducers

Mission Part No.	Item	Description	Note	Photo
475 IT475	Loop Isolator - Analog	Universal signal conditioning module features 3-way isolation of analog signals and over 100 input and output analog conversion combinations.	Power requirements: 11-36 VDC, 3 W max. or 24 VAC, 50/60 Hz, 4.8 VA max, UL recognized.	
476 IT476	Loop Isolator	Passive loop isolator, loop powered, Non-adjustable range/span, 0-20 mA.	Standard DIN rail mounting, slim 1/4" width.	
254 IT251	Rain Tipping Bucket	Corrosion resistant rainfall measuring device records rainfall measurements in 0.01" of rainfall.	NOAA compliant; requires Option Board - Pulse Input (PN OP463). Rain tipping buckets must be level for accuracy. Refer to Rainfall Kit - AC (PN KT275) for rainfall kit containing a mounting stand.	
482 IT482	Surge Suppressor - Analog	Surge suppressor for use with 4-20 mA loop circuits, 24 V nominal line voltage.	Replacement for surge suppressor included with non-submersible pressure transducer.	
484 IT484	Transducer - Current	Converts AC current draw to a 4-20 mA signal.	Switchable current ranges (0-30, 0-60, 0-120 Amps); 4-20 mA output, 30 mA (max. draw) @ 12-30 VDC sensor power, 5° to 140° F temp range, UL listed.	
470-1 IT470-1	Transducer - Level, 0-15' Range, 40' Cable	Submersible, PVC body, 1.25" unobstructed limp elastomeric diaphragm, electrically-isolated, oil sealed, loop-powered. 4-20 mA DC output over 6.5 PSI/ 0-15 foot span.	Includes sealed breather system.	
470-2 IT470-2	Transducer - Level, 0-23.1' Range, 40' Cable	Submersible, PVC body, 1.25" unobstructed limp elastomeric diaphragm, electrically-isolated, oil sealed, teflon coated, loop-powered. 4-20 mA DC output over 10 PSI/0-23.1 foot span.	Includes sealed breather system.	
470-3 IT470-3	Transducer - Level, 0-23.1' Range, 65' Cable	Submersible, PVC body, 1.25" unobstructed limp elastomeric diaphragm, electrically-isolated, oil sealed, teflon coated, loop-powered. 4-20 mA DC output over 10 PSI/0-23.1 foot span.	Includes sealed breather system.	
477S IT477S	Transducer - Pressure, 0-15 psi	316 Stainless steel, non-submersible pressure transducer for use with ground tanks or water line pressure. 4-20 mA, 0-34.65' range, 18" cable.	0.20% accuracy, calibrated to produce industry standard electrical outputs. Includes surge suppressor (PN PW482).	
465S IT465S	Transducer - Pressure, 0-30 psi	316 Stainless steel, non-submersible pressure transducer for use with elevated tanks or water line pressure. 4-20 mA, 0-69.3' range, 18" cable.		
472S IT472S	Transducer - Pressure, 0-75 psi	316 Stainless steel, non-submersible pressure transducer for use with elevated tanks or water line pressure. 4-20 mA, 0-173.25' range, 18" cable.		
474S IT474S	Transducer - Pressure, 0-75 psi	316 Stainless steel, non-submersible pressure transducer for use with elevated tanks or water line pressure. 0-5 V, 0-173.25' range, 18" cable.	Recommended for solar applications. Includes surge suppressor (PN PW482).	
473S IT473S	Transducer - Pressure, 0-150 psi	316 Stainless steel, non-submersible pressure transducer for use with elevated tanks or water line pressure. 4-20 mA, 0-346.5' range, 18" cable.	0.20% accuracy, calibrated to produce industry standard electrical outputs. Includes surge suppressor (PN PW482).	


Power Accessories and Related Components

Mission Part No.	Item	Description	Note	Photo
441 PW441	Battery - 5 Ah	12 VDC, 5 Ah, sealed, lead-acid battery. Includes quick-disconnect tabs and is UL Recognized.	Included with M110 and M800 RTUs.	
442 PW442	Battery - 7 Ah	12 VDC, 7 Ah, sealed, lead-acid battery. Includes quick-disconnect tabs and is UL Recognized.	Included with solar-powered Rain-fall Kits (PN KT276 and KT277). Extends standard RTU battery backup to 45 hours.	
862 PW862	Battery - 35 Ah	12 V, 35 Ah battery for solar applications or to extend battery backup duration. Fits inside nema 4X large enclosure.	Dimensions: 5" x 7.5" x 7", Weight: 25 lbs.	
863 PW863	Charge Regulator - Solar	12 V, 4 Amp., charge regulator for solar RTUs.	14.5 V nominal boost, 4 Amp. maximum solar panel current, RoHS compliant; included in Solar Kit - 20W.	
P7002 PW7002	Power Booster	Power booster has 24 VDC regulated output, 12-24 VDC input, 0.75A max output.	100 mA practical load limit when powered by Mission auxiliary output.	
426 PW426	Power Supply - Plug-In, 24 V	Black plug-in power supply with 100-240 V input. Includes LED power indicator. 24 VDC, 1 Amp.	UL Listed and RoHS compliant.	
479 PW479	Relay	Single pole double throw relay powered by 12 VDC. Coil is protected by a shunt diode to prevent spikes when relay is de-energized. Use when controlling larger A/C relays - up to 120 V. Includes MOV to minimize EMI at load.	12/24 VDC, 35 mA coil. Contacts rated 120 VAC, 10 Amp.	
480 PW480	Relay - Solid State	Single pole single throw, N/O Only, 5-24 VDC control, 120 VAC 20 amp load.	Relay includes zero-cross feature to prevent spike generation when switching load. Minimum 1A load to ensure proper switching of load current.	
453 PW453	Transformer	120 VAC step-down to 12.6 VAC 20 VA.	Use for hard wired transformer in UL 508 installations. UL Recognized.	
429 PW429	Transformer - Flying Lead	120 VAC step-down to 12.6 VAC, 1 Amp.	UL Recognized.	
430 PW430	Transformer - Plug-In	120 VAC step-down to 12.6 VAC MOV protected.	UL Listed.	




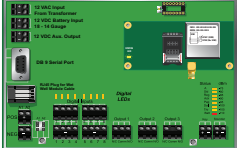
Manhole Monitor Hardware

Mission Part No.	Item	Description	Note	Photo
R8006 RF8006	Antenna - Above-ground	Dual band antenna with 12' SMA-M to SMA-F coaxial antenna cable housed in a 6' L x 3' D vandal resistant PVC post.		
R8003 RF8003	Antenna - In-ground	Replacement, dynamic load, omni directional antenna.	RG-58 coaxial 7' cable with SMA-M end connector. For use with Manhole Monitor.	
P8200 PW8200	Battery Pack Kit	Replacement lithium manganese dioxide, 6.6 V, 6.1 AH, 36.6 WH battery pack with 5+ year nominal lifetime, O-ring, hardware and Nitrile gloves.		
C8807 CP8807	Carabiner	Replacement, Snap hook, 3-1/8" L, 316 rated stainless steel.		
A8401 CP8401	Connection Kit	EN3 Connector, solderable.	This connector is used to connect devices other than floats to the Manhole Monitor. For example, a switch on the manhole lid for illegal entry.	
F8000 CP8000	Drill Bit	3/8" x 24" masonry bit.	Used during antenna installation to drill through the road bed and into the manhole.	
I8503 IT8503	Float - 10'	Normally closed, mercury-free, mechanically activated, milliampmaster, RoHS compliant float with small weight attached; non-wicking, heat, chemical, and abrasion resistant Super Vu-Tron cable with molded water-tight termination w/ integral O-ring and locking bayonet.		
I8502 IT8502	Float - 20'			
I8504 IT8504	Float - 30'			

Replacement and Component Parts

Mission Part No.	Item	Description	Note	Photo
422 CP422	Annunciator	Replacement sounder. Produces an alarm sound when the electronic key is used or when the RTU is connecting.	1.5-24 VDC, 95 dB at 12 VDC.	
574 CP571	Conformal Coating	Protects printed circuit boards from corrosive environments.	Includes the Main Printed Circuit Board (PN CP125) and the Radio Adapter along with the Wet Well Module (PN OP651) and Option Board if used.	

Replacement and Components Parts Continued

Mission Part No.	Item	Description	Note	Photo
450 CP450	Keys - Electronic	Electronic keys place RTUs into service mode when doing maintenance, and can also acknowledge alarms. Check-ins are recorded on the web portal for a maintenance log. Each new customer receives one package of five keys. Order additional packs for additional personnel. Assign and program keys on the web portal.	RoHs compliant, lead-free. For use with M110 and M800 series RTUs.	
421 CP421	Key Reader	Replacement, stainless steel, weatherproof.	For M110 and M800 series RTUs.	
XXX CALL	Key Reader Extension Kit	Place the key reader up to 50 feet away from the RTU with this extension kit.	Most common use is to log or grant access to an equipment room.	
652 CP652	Printed Circuit Board - Wet Well Module	Replacement Wet Well Module V2 printed circuit board.	Refer to Wet Well Module (PN OP651) for the entire kit.	
CP125	Printed Circuit Board - Main	A replacement main board has 8 digital inputs, 2 analog inputs, 3 output control relays, and a RJ45 connection for the optional Wet Well Module (PN OP651).		



(877) 993-1911 • sales@123mc.com
www.123mc.com

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