CATALOG

IRRIGATION & LOCATION

TEMPO®
COMMUNICATIONS

FAST. ACCURATE. RELIABLE.

COMMUNICATIONS | CABLE TV | FIBER TESTING

INTRODUCTION

Many utility companies rely on burying their distribution network plant beneath the street and elsewhere for security, safety and aesthetic reasons. However, that plant does not have an infinite life and can be subject to stresses that can cause failure in the future; knowing exactly where that plant is buried can become a challenge later. Some types of buried plant are extremely difficult to locate precisely from above ground; most notably those which are electrically non-conductive, such as gas and water pipes and communication ducts carrying only optical fibres.

We present our system that can be used to aid the marking, surveying, geo-tagging and future precision location of plant, particularly useful with the non-conductive types. Also, various locators and other tools useful for tracing buried cables and ducts and give details of some which are targeted at the “irrigation” market; tracing shallow buried cables and identifying solenoid valves etc.

Many buried utilities that are in use, are well over 40 years old and often as old as 100 years, therefore any records, should they exist are completely out of date; where a pipeline or duct was installed a certain distance from the kerb of a road, that was when the road was just two lanes and no longer relates to the modern four lane highway that may have also changed direction and position relative to the centre line.

The important questions that must be answered before digging in the ground are:

1. Where is it?
2. What is it?
3. Does it tally with the known records?
4. Can you see everything?
5. Am I safe to dig?

CONTENTS

LOCATORS
APPLICATION GUIDE

FEATURE	BLL-200	501	PE2003-G	508S-G	521A
Trace concealed wiring in walls and floors	✓	✓		✓	
Pinpoint solenoids / valves					✓
Locate shorts to ground	✓	✓	✓	✓	✓
Pinpoint shorts to ground			✓[1]		✓[2]
Trace wires in PVC (nonmetallic conduit)	✓	✓		✓	✓
Find opens in a buried cable	✓	✓		✓	✓
Operate on energized circuits	✓			✓	
Operate on telecom circuits	✓	✓	✓	✓	
Operate on power circuits (600VAC)	✓				
Trace coax / shielded cables or conduit	✓	✓[3]		✓[3]	✓[4]
Auto gain control for improved accuracy	✓				
AC voltage range	0-600V			0-120V	
DC voltage range	0-300V				
Distance-receiver from transmitter	5,000 ft.	✓[5]	5,000 ft.	1,000 ft.	✓[6]
Transmitter battery	(4) AA	(8) AA	12V rechargeable	(1) 9V	(8) D
Receiver battery	(4) AA	(1) 9V	(1) 9V	(1) 9V	(1) 9V
Peak vs Null Antenna	Peak	Peak		Either[7]	Null
Factory repairs offered	✓	✓	✓	✓	✓
Advanced replacement offered		✓			✓

1. Does not locate the cable path which has to be predetermined and only in direct burial applications. 5M ohm and les
2. 10,000 ohms and less-both ends isolated from grounds
3. Can trace coax if transmitter is connected to braid/outer shield
4. Will trace coax if transmitter is connected to braid/outer shield providing the bond is in place at the remote end-will disrupt service
5. Direct Connection 4,000 ft at 7 ft deep. Inductive Coupler 1,000 ft at 3 ft deep.Inductive Antenna 700 ft at 3 ft deep
6. Low frequency locators need a “path to earth” (dirt), 5000 ft. on an open conductor and 2500 ft. on a metallic pipe at 3 ft. deep
7. Orientation of antenna depends on how you hold the coil for each application, e.g. null for below ground wire tracing, peak for behind walls, etc.

BURIED FACILITY
LOCATION AND MARKING

501 TRACKER II

FEATURES

- Traces the path and determines the depth of wires and metallic pipes on active or dead systems without having to deactivate the system
- Lightweight receiver provides audible and visual indications of signal strength
- Transmitter output and receiver sensitivity are fully adjustable for maximum accuracy
- Transmitter offers three methods of connection: direct, inductive coupler and inductive antenna
- Includes transmitter assembly, receiver assembly, inductive coupler (clamp), built-in inductive antenna, two 8' (2.4 m) test leads with heavy-duty alligator clips and durable polyethylene case
- High frequency transmitter provides range up to 4,000' (1,219 m) and depths up to 7' (2 m)
- Receiver is 32" long (813 mm)
- Battery operated (eight AA and one 9V battery is not included)
- Molded carrying case included
- Factory repairs available

SCAN TO WATCH THE VIDEO

SPECIFICATIONS:

Power Requirements	Transmitter - (8) AA batteries; Receiver - (1) 9V battery
Battery Life	Transmitter - 30 hours nominal; Receiver - 10 hours nominal
Transmitter Frequency	447.5kHz
Transmitter Power	40Vp-p (140mW) maximum
Voltage Protection	240VAC/500VDC
Automatic Shut Off	90 Min. Transmitter and Receiver
Construction	Transmitter/Receiver – powder coated aluminum Case – vacuum formed polyethylene
Dimensions	Transmitter - 4.25" x 3" x 3.25" (108 x 76.2 x 82.6 mm) Receiver - 32" x 2.75" x 4" (812.8 x 69.9 x 101.6 mm) Case - 33.5" x 8.25" x 3.75" (850.9 x 209.6 x 95.3 mm)
Weight	6.7 lbs. complete kit (3.04 kg)

ORDERING INFORMATION:

PART NO.	CAT. NO.	DESCRIPTION
50086626	501	Tracker II Kit
50603531	501T	Transmitter
50603523	501R	Receiver
50603540	IC1	Inductive Clamp
50603558	CS16	Transmitter Cord Set
50603515	500CA	Case with Antenna

BLL-200 BURIED LINE LOCATOR

FEATURES

- LED and LCD signal strength indicators make it quick and easy to find exact line location
- Lightweight and ergonomically balanced
- Automatic signal boost makes it easy to trace lines, even those with very weak signals
- Receiver may be used in active or passive mode
- Receiver locates multiple passive frequencies with a single setting
- Receiver automatically locks out passive range when it detects a transmitter signal, reducing the chance of tracing other lines carrying weaker signals
- Microprocessor-based circuitry delivers increased accuracy and features auto-gain control in all environments
- Traces 20' (6 m) underground and provides depth readings up to 15' (4.57 m)
- Transmitter can be connected to live lines up to 600V
- Molded carrying case included
- Factory repairs available

SCAN TO WATCH THE VIDEO

SPECIFICATIONS:

TRANSMITTER	
Operating Voltage	0-600VAC, 0-300 VDC
Current	13mA (open line) 150mA (live or shorted line)
Frequency	33.3kHz
Operating Temperature	0°F to 120°F (-17°C to 50°C)
Size	7.5" x 4" x 2.1" (190.5 mm x 101.6 mm x 53 mm)
Power	6 VDC (4 AA batteries)
Weight	15 oz. (425 g) (with batteries and clamp)

RECEIVER	
Depth Range	**Measures:** 0-15 ft **Traces:** 0-20 ft.
Depth Resolution	0.1 ft. increments
Passive Trace Frequency	12Hz-24kHz
Operating Temperature	0°F to 120°F (-17°C to 50°C)
Size	4.1" x 8.5" x 38" (104.1 mm x 215.9 mm x 965.2 mm)
Power	6 VDC (4 AA batteries)
Weight	1 lb. 12 oz. (794 g)

ORDERING INFORMATION:

PART NO.	CAT. NO.	DESCRIPTION
50077961	BLL-200	Buried Line Locator

PE2003-G PULSER GROUND FAULT LOCATOR

FEATURES

- Identifies the exact location of even the smallest breaks in insulation by “pulsing” a high-voltage signal that radiates into the earth at the location of the faults.
- With the A-frame mounted receiver, a visual analog meter points the way to the source of the voltage
- Multiple faults on a single wire can be identified indicating the need to replace instead of repair
- Extra-long test leads feature heavy-duty alligator clips for use on multiple cable types
- Includes a rechargeable transmitter, receiver, A-frame, ground stake, 120V charger and a 12V DC (cigarette lighter) adapter
- One rechargeable 12V lead-acid battery for transmitter included, 9V battery required for transmitter
- Molded carrying case included
- Factory repairs available

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SPECIFICATIONS:

Power Requirements	Transmitter: (1) 12V rechargeable battery Receiver: (1) 9V battery
Battery Life	Transmitter: 23 hours per charge; Receiver: 200 hours
Transmitter Power	2400VDC peak
Voltage Protection	240VAC/400VDC
Construction	Transmitter - aluminum housing in polyethylene case Receiver - powder coated aluminum
Dimensions	Transmitter – 17“ x 8.5“ x 6.5“ (421 mm x 215 mm x 160 mm) in case Receiver – 33.5“ x 21.75“ x 3.25“ (840 mm x 550 mm x 8 mm) on A-Frame
Weight	12.5 lbs. (5.7 kg) complete

ORDERING INFORMATION:

PART NO.	CAT. NO.	DESCRIPTION
52083233	PE2003	Pulser
50603574	2000H	Transmitter (Includes CH1 & CH2)
50603582	2000R	Receiver
50604821	AF2	A-Frame
50603604	CH1	AC Charger
50603612	CH2	DC Charger
52025430	59F0002	Battery, Replacement (12V 2.5 Ah)

TEMPO COMMUNICATIONS

508S-G WIRE FINDER/ MINI LOCATOR

ALSO SEEN IN THE COPPER TELECOMMUNICATIONS CATALOG

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FEATURES

- Traces energized or non-energized wires in walls, floors and drop ceilings
- Provides reliable results on buried cables to depths of 3' (1 m) and lengths up to 1000' (308 m)
- Determines the approximate depth of the wire before digging
- Compact design and easy-to-understand operations
- Fully adjustable transmitter and receiver for accurate locating
- Quick change test leads for use in any industry, even international power outlets
- Voltage protection to allow use on live AC circuits
- Automatic shut-off to prevent accidental battery discharge
- Housed in a durable, molded carrying case with a quick reference operation guide on the inside of the lid
- Battery-operated: (2) 9V batteries required
- Factory repairs available

SPECIFICATIONS:

Power Requirements	(1) 9V each (transmitter and receiver, included)
Battery Life	Transmitter 35 hours nominal; Receiver 20 hours nominal
Transmitter Frequency	447.5kHz
Transmitter Power	9Vp-p (11mW)
Voltage Protection	240VAC/500VDC
Construction	Transmitter/Receiver – high-impact ABS plastic, Case – vacuum-formed polyethylene
Dimensions	Transmitter - 4" x 2.3" x 1" (101.6 x 58.4 x 25.4 mm), Receiver - 6" x 2.35" x 1" (152.4 x 59.7 x 25.4 mm), Case â€" 9.5" x 8" x 3"(241.3 x 203.2 x 76.2 mm)
Weight	2.6 lbs. (1.2 kg)

ORDERING INFORMATION:

PART NO.	CAT. NO.	DESCRIPTION
52082815	508S-G	Wire Finder/Mini Locator Kit
52082816	508ST-G	Transmitter
52082817	508SR-G	Receiver
50603663	CS14	Alligator Clip Cord set

521A WIRE & VALVE LOCATOR

SCAN TO WATCH THE VIDEO

FEATURES

- Locate irrigation control cables, solenoid valves and similar shallow and direct buried conductors.
- Adjustable transmit power allows you to select the best signal for maximum performance
- Transmitter's high power output offers extended range and use on higher resistance wire paths that other locators can't touch
- Receiver provides both audible and visual indications of signal strength
- Lightweight receiver wand makes it easy for you to move along quickly to locate even the longest wire path
- Rugged headphones block ambient noise and improve "feel" for the signal
- Includes transmitter, receiver, headset, ground stake, and complete instructions
- Battery-operated: (8) "D" Cells and (1) 9V
- Factory repairs available

SPECIFICATIONS:

Power Requirements	Transmitter: (8) "D" Cell; Receiver: (1) 9V battery
Battery Life	Transmitter: 50 hours nominal Receiver: 100 hours nominal
Transmitter Frequency	1748Hz

Transmitter Power	750Vp-p 285Vrms
Voltage Protection	120VAC/250VDC
Construction	Powder-coated aluminum housing in polyethylene case
Case Dimensions	33.5" x 8.25" x 3.75"
Weight	12 lbs. complete

ORDERING INFORMATION:

PART NO.	CAT. NO.	DESCRIPTION
52025222	521A	Wire and Valve Locator Kit
52033346	521A-R	Receiver
50086952	HS-1	Headset

EML-100 MARKER-MATE®

FEATURES

- Designed to locate buried electronic markers, including Omni Marker™ and SPIKE Marker™ electronic markers.
- Five+ foot depth range with standard markers
- Detects up to nine different marker types
- Scan mode provides simultaneous detection of all marker types
- User-adjustable Detection Threshold
- Digital signal processor accuracy
- Large-character display is easy to read
- Bar graph, numeric & audible signal strength indicators
- Speaker volume adjust
- Headphone jack
- Battery level indicator
- Low battery warning
- Adjustable time out feature prolongs battery life (and can be turned off)
- Weather resistant
- Rugged construction
- Factory repairs available

SPECIFICATIONS:

Electrical	Twelve AA batteries Battery Life: 20 hours typical
Environment	
Operating Temperature	-4°F to 122°F (-20°C to 50°C)
Storage Temperature Weather Resistant	-40°F to 158°F (-40°C to 70°C)
Physical	
Length	30.7 in. (780 mm)
Width	7.8 in. (198 mm)
Height	12.8 in. (325 mm)
Weight	4.5 lbs. with batteries (2 kg)

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ORDERING INFORMATION:

PART NO.	CAT. NO.	DESCRIPTION
50607984	EML-100	Marker-Mate™ Electronic Marker Locator

OMNI MARKER-II

Electronic markers are a low-cost, extremely reliable way to mark buried utilities and other plant, making it easy for contractors to find the exact location of critical components like fittings and splices, while helping to avoid expensive damage and unfortunate accidents. Omni Marker II from Tempo Communications builds upon our three decades of experience with the original Omni Marker, providing the same reliability and range in a more compact package. With no active components or potentially hazardous fluids, Omni Marker II can be located by all compatible marker locators. Dig Safe. Dig Right. Save Time.

USE THE OMNI MARKER II TO MARK AND FIND:

- Buried splices
- Buried service drops
- Pipe ends
- Conduit stubs
- Road crossings
- Cable paths
- Fiber optic facilities
- Snow-covered
- Manholes under pavement or grade changes installations
- Military caches
- Survey points
- Septic installations
- Repair points
- Non-metallic lines

SPECIFICATIONS:

Size	4.0 inch diameter (100 mm) Min
Weight	0.3 lb (0.15 kg)
Shipping Weight	11.3 lbs per carton of 30 (5.2 kg per carton of 30)
Range	5 feet typical (1.5 meters)
Field Type	Vertical dipole
Package Material	High-density polyethylene

ORDERING INFORMATION:

PART NO.	CAT. NO.	COLOR	DESCRIPTION
52085010	OM-01	Purple	OmniMarker II, Non-Potable
52085007	OM-02	Orange/ Black	OmniMarker II, CATV
52085008	OM-03	Yellow	OmniMarker II, Gas
52085016	OM-04	Yellow/ Black	OmniMarker II, Fiber Optic
52085012	OM-05	Orange	OmniMarker II, Telephone
52085009	OM-06	Green	OmniMarker II, Sanitary
52085015	OM-07	Red/Blue	OmniMarker II, Europower
52085013	OM-08	Blue	OmniMarker II, Water
52085011	OM-09	Red	OmniMarker II, Power

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CMA-360B

A clamp meter measuring into the milliampere range is a necessity in today's growing market of 2-wire irrigation. Testing and troubleshooting a variety of applications in the irrigation and landscape industry requires test equipment that can address multiple problems and environments.

PRO MILLIAMP CLAMP METER CMA-360B

FEATURES

- True RMS
- Backlit display
- Auto-ranging
- 0.001 mA (1 µA) current resolution
- Auto Power Off
- Includes case and 2 x AAA batteries

SPECIFICATIONS:

FUNCTION	RANGE	RESOLUTION	ACCURACY
ACmA	6.000mA/60.00mA/600.0mA	1 µA/10 µA/100 µA	± 1%rdg ± 3dgts
ACA	6.000A/60.00A	0.001A/0.01A	± 1%rdg ± 3dgts
DCV	60V/600V	0.01V/0.1V	±1%rdg ± 2dgts
ACV	60V/600V	0.01V/0.1V	± 1%rdg ± 3dgts
Ohms	600Ω/6KΩ/60KΩ/600KΩ	0.1Ω/1Ω/10Ω/100Ω	±1%rdg ± 2dgts
DISPLAY:	4 digital Liquid display, Maximum reading 6000		
SAMPLING RATE:	2 times/sec		
BATTERY:	1.5V size AAA battery x 2		
DIMENSIONS:	8.1 in x 2.9 in 1.3 in (206 mm x 76 mm x 33.5 mm)		
WEIGHT:	0.6 lb (0.27 kg)		
MAXIMUM JAW OPENING:	ø 0.9 in (23 mm)		

ORDERING INFORMATION:

PART NO.	CAT. NO.	DESCRIPTION
55504706	CMA-360B	PRO MILLIAMP CLAMP METER

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STATION MASTER PRO KIT 24BK

FEATURES

- Troubleshoot irrigation systems
- Chatter mode for audible locating of valves
- Activate any 24V AC valve solenoid
- Test solenoids for continuity
- Send tone to identify wires
- Check clock AC voltage
- Low battery indication
- Easy-to-understand LEDs
- Test leads with 'bed-of-nails' and piercing pin clips
- Tracing valve wiring
- Locates underground solenoids

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SPECIFICATIONS:

Minimum voltage for clock LED	15 VAC
Minimum Battery while Testing	10.5 VDC
Maximum Input Voltage between Test Leads	28 VAC
Solenoid activate output voltage	27 to 18 VAC
Battery	2- 9V Alkaline Batteries
Operating/storage temp.	32°F to 122°F (0°C to 50°C)
Relative humidity (max.)	80%

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ORDERING INFORMATION:

PART NO.	CAT. NO.	DESCRIPTION
52025221	24BK	STATION MASTER PRO KIT

MULTIMETERS

Meeting today's stringent safety standards is essential.

Tempo's certification of selected instruments to both the most recent IEC and UL requirements brings you assurance of the highest level of protection currently available.

What you should know about Measurement Category ratings.

IEC Category standards specify protection levels that are far above a system's rated capacity. Without this additional protection, transient overvoltages, which are becoming increasingly common, can lead to serious injury or death.

Measurement Category I is the signal level for telecommunications and electronic equipment or other circuits that are not directly connected to the utility mains.

Measurement Category II is the local level for fixed or nonfixed powered devices – everything from lighting to appliances to office equipment such as copiers; may also be used in Category I areas.

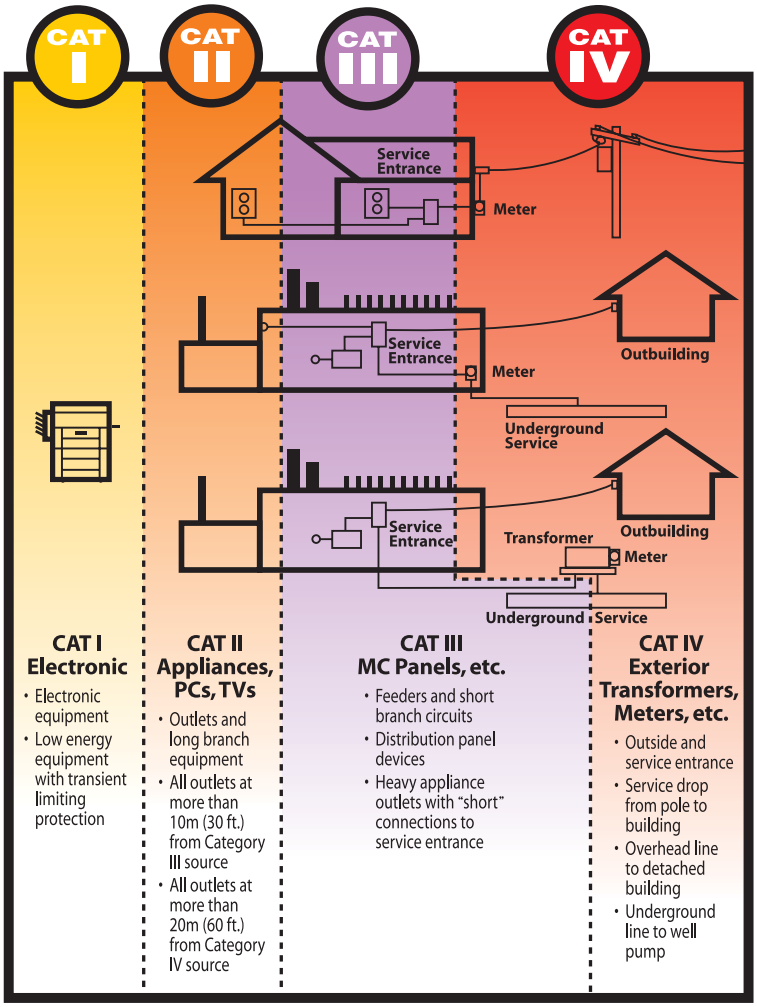
Measurement Category III is the distribution level – fixed primary feeders or branch circuits. These circuits are usually separated from Category IV (whether utility service or other high-voltage source) by a minimum of one level of overvoltage protection; may also be used in Category II and Category I areas.

Measurement Category IV is the primary supply level. Tempo is leading the way in offering protection certified to conform with the highest level of protection as specified by UL & IEC standards; may be used in all Category environments.

Tempo's Instruments – Independently tested and certified to meet the standards. Throughout this catalog, you'll see Category designations for many Tempo's instruments indicating that they comply with UL & IEC Category II, III, IV. All of these designations reflect third-party testing by independent testing organizations such as UL and ETL – added assurance for you. While there is no requirement for independent verification, we believe you deserve it.

Get the right protection for the job.

Wherever you need overvoltage protection, choose at least the rating appropriate to the type of work you expect to be doing. If you have any questions on using Tempo's test instruments to help ensure user safety, please contact Tempo Communications.



FEATURES	PM100	MM200	MM810
Size	Pocket	Compact	Full
Main Display	6000	6000	6000
Disp. Update Rate	5 per sec	5 per sec	5 per sec
Aux. Display			9999
Bar-Graph (upd. rate)		24 segment (40 Hz)	41 segment (60 Hz)
Autoranging	✓	✓	✓
DCV & ACV	0 to 450 V	0 to 1000 V	0 to 1000 V
DCA & ACA		0 to 10 A	0 to 10 A
True RMS			✓
Frequency Response	50 to 60 Hz	50 to 400 Hz 10 to 50 kHz	50 Hz to 20 kHz 15 Hz to 50 kHz
Frequency Meter	10 Hz to 30 kHz	5 Hz to 1 MHz logic level	5 Hz to 1 MHz logic level
Duty Cycle %			0 to 100% (5 Hz to 10 kHz)
Resistance	0 Ω to 6 MΩ	0 Ω to 60 MΩ	0 Ω to 60 MΩ
Continuity Beeper	✓	✓	✓
Capacitance	100 µF		25000 µF
Diode Check		✓	✓
Non Contact EF detect	✓	✓	
Beep-Jack		✓	✓
Auto power off	✓	✓	✓
CAT II	450V	1 kV	1 kV
CAT III	300V	600V	1 kV
CAT IV		300V	1 kV

PM100 POCKET MULTIMETER

FEATURES

- Auto-select mode for hassle-free use
- Low impedance eliminates stray or "ghost" voltage readings
- AC/DC voltage measurement
- Hassle-free, automatic measurement of voltage and resistance
- Autoranging for quick, convenient measurements
- Non-contact voltage detection for identifying live lines without contacting conductors
- Intelligent Auto-Off for longer battery life
- Low battery indicator
- Resistance measurement
- Audible continuity test
- Frequency measurement in voltage mode
- Capacitance measurement
- 6000-count LCD for high resolution
- Accessories included: (1) 3 V battery (CR2032) and carrying case

SPECIFICATIONS:

Display	6000-count LCD
Polarity	Automatic
Display Update Rate	5 per second
Temperature Coefficient	Nominal 0.15 x (specified accuracy) per °C below 18 °C or above 28 °C
Intelligent Automatic Power Off	After 3 minutes of inactivity (approximately)
Noise Rejection	Common Mode Rejection Ratio: > 60 dB from 0 Hz to 60 Hz when measuring ACV; Common Mode Rejection Ratio: > 100 dB at 0 Hz, 50 Hz, and 60 Hz when measuring DCV; Normal Mode Rejection Ratio: > 30 dB at 50 Hz and 60 Hz when measuring DCV
Operating Conditions	Temperature: 0 °C to 40 °C (32 °F to 104 °F)
Relative Humidity	80% maximum for temperatures up to 31 °C (88 °F), decreasing linearly to 50% maximum at 40 °C (104 °F)
Altitude	2000 m (6500') maximum
Pollution Degree	2
Storage Temperature	-20 °C to 60 °C (-4 °F to 140 °F), 0% to 80% relative humidity (non-condensing)
Battery	3 V standard button battery (IEC-CR2032; ANSI-NEDA-54004LC)
Low Battery	Below 2.4 VDC
Overvoltage Protection	450 VDC/VAC RMS, 50/60 Hz
Measurement Category	Cat II, 450 V Cat III, 300 V

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ORDERING INFORMATION:

PART NO.	CAT. NO.	DESCRIPTION
55500083	PM100	PM100 POCKET MULTIMETER

MM200 MULTIMETER

FEATURES

- Testing| Troubleshooting| Accuracy
- Supplied with a zipper case
- high-quality safety test leads
- Fast response 24 segment “bar-graph”
- 6000 Count large digit LCD
- Core accuracy better than 0.5%
- Average responding AC measurements

SPECIFICATIONS:

Display	LCD (6000) and 24-segment bar graph
Polarity	Automatic
Sampling Rate	Numeric Display: 5 per second Bar Graph Display: 40 per second
Temperature Coeffi-cient	Nominal 0.15 x (specified accuracy) per °C below 18 °C or above 28 °C
Automatic Shut-Off	After 34 minutes of inactivity
Noise Rejection	Normal Mode Rejection Ratio > 60 dB at 50 Hz and 60 Hz when measuring DCV Common Mode Rejection Ratio > 60 dB from 0 Hz to 60 Hz when measuring ACV Common Mode Rejection Ratio > 100 dB at 0 Hz, 50 Hz and 60 Hz when measuring DCV
Operating Conditions	0 °C to 40 °C (32 °F to 104 °F)
Relative Humidity	80% maximum for temperatures up to 31 °C (88 °F), decreasing linearly to 50% maximum at 40 °C (104 °F)
Altitude	2000 m (6500') maximum
Pollution Degree	2
Storage Temperature	-20 °C to 60 °C (-4 °F to 140 °F)
Battery	Two 1.5 V batteries (AAA, NEDA 24A or IEC LR03)
Volts & AutoCheck	1100 V DC/AC rms
mV, Ω, and Others:	1000 V DC/AC rms
µA and mA:	0.4A/1000V DC/AC rms, IR 30kA @ 1000V DC/AC rms; Dimension: 6 x 32 mm
A:	11A/1000V DC/AC rms, IR 20kA @ 1000V DC/AC rms; Dimension: 10 x 38 mm
V/ohms/mA/A to COM:	Category II 1000V, CAT III 600V and CAT IV 300V AC & DC
E.M.C.	Meets EN61326-1:2013

ORDERING INFORMATION:

PART NO.	CAT. NO.	DESCRIPTION
55500084	MM-200	MM200 MULTIMETER

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MM810 MULTIMETER

FEATURES

- True RMS response for AC measurements
- Dual display allows, for example AC V and frequency
- Fast response 41 segment “bar-graph” with 60 updates per second
- 9999 or 6000 Count large digit LCD with 5 updates per second
- Core accuracy better than 0.1%
- Millivolt and microampere ranges for precision measurements

SPECIFICATIONS:

Display	9999 counts: ACV, DCV, Hz, and nS; 6000 counts: mV, µA, mA, A, ohm, and capacitance
Polarity	Automatic
Sampling Rate	Numeric Display: 5 per second; 41-Segment Bar Graph Display: 60 per second
Temperature Coeffi-cient	Nominal 0.15 x (specified accuracy) per °C below 18 °C or above 28 °C
Automatic Shut-Off	After 30 minutes of inactivity
Noise Rejection	Normal Mode Rejection Ratio > 60 dB at 50 Hz and 60 Hz when measuring DCV Common Mode Rejection Ratio > 60 dB from 0 Hz to 60 Hz when measuring ACV Common Mode Rejection Ratio > 120 dB at 0 Hz, 50 Hz and 60 Hz when measuring DCV
Operating Conditions	0 °C to 45 °C (32 °F to 113 °F), 0% to 80% relative humidity (non-condensing)
Storage Temperature	-20 °C to 60 °C (-4 °F to 140 °F)
Battery	9-Volt (NEDA 1604, JIS 006P or IEC 6F22)
µA and mA:	0.44 A/1000 V DC/AC rms, interrupting rating 10 kA, F fuse,13/32” x 1-1/2”
A:	11 A/1000 V DC/AC rms, interrupting rating 20 kA, F fuse, 13/32” x 1-1/2”
V	1100 V DC/AC rms
mV, Ω, and Others:	1000V DC/AC rms
Safety	Double insulation per IEC/UL/EN61010-1 Ed. 3.0, IEC/ EN61010-2-030 Ed. 1.0, IEC/ EN61010-2-033 Ed. 1.0, IEC/UL/EN61010-031 Ed. 1.1 and CAN/ CSA-C22.2 No. 61010-1-12 Ed. 3.0 to Category IV 1000 VAC and VDC
All Terminals	Category IV 1000 VAC and VDC

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ORDERING INFORMATION:

PART NO.	CAT. NO.	DESCRIPTION
55500085	MM-810	MM810 MULTIMETER

IRRIGATION TECHNICIAN TOOL KITS

The Tempo Communications Irrigation Technician Tool Kits provide multiple kit options to outfit Irrigation Technicians and Specialists with all common tools required to get the job done. Each tool kit is supplied in a ruggedized belt bag that can conveniently be hand carried, worn around the waist, or over the shoulder. Extra pockets are available to hold accessories and additional tools.

ITK SPECIALIST TOOL KIT

INCLUDES

- Belt Bag ITK PA9150
- Irrigation Tester Kit 24BK
- Wire Stripper PA1117
- Contour Cable Cutter PA1175
- Needle Nose Pliers PA1180
- Pocket Multimeter PM100
- 6-in-1 Screwdriver SD6-in-1
- Milliamp Clamp Meter CMA-360B

ITK TECHNICIAN TOOL KIT

INCLUDES

- Belt Bag ITK PA9150
- Irrigation Tester Kit 24BK
- Wire Stripper PA1117
- Contour Cable Cutter PA1175
- Needle Nose Pliers PA1180
- Pocket Multimeter PM100
- 6-in-1 Screwdriver SD6-in-1

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ORDERING INFORMATION:

PART NO.	CAT. NO.	DESCRIPTION
55504773	ITK-SPECIALIST	ITK SPECIALIST TOOL KIT
55504772	ITK-TECH	ITK TECHNICIAN TOOL KIT

These tool kits feature the same collection of the basic required tools for Irrigation Technician and Specialists organized in the Pro Tool Backpack with lots of extra room for additional tools.

ITK SPECIALIST BACKPACK TOOL KIT

INCLUDES

- Pro-Tool Backpack PA9000
- Irrigation Tester Kit 24BK
- Wire Stripper PA1117
- Contour Cable Cutter PA1175
- Needle Nose Pliers PA1180
- Pocket Multimeter PM100
- 6-in-1 Screwdriver SD6-in-1
- Milliamp Clamp Meter CMA-360B

ITK TECHNICIAN BACKPACK TOOL KIT

INCLUDES

- Pro-Tool Backpack PA9000
- Irrigation Tester Kit 24BK
- Wire Stripper PA1117
- Contour Cable Cutter PA1175
- Needle Nose Pliers PA1180
- Pocket Multimeter PM100
- 6-in-1 Screwdriver SD6-in-1

ORDERING INFORMATION:

PART NO.	CAT. NO.	DESCRIPTION
55504889	ITK-SPECIALIST-BCKP	ITK SPECIALIST BACKPACK TOOL KIT
55504888	ITK-TECH-BCKP	ITK TECHNICIAN BACKPACK TOOL KIT

TOOL BAGS

PRO-TOOL BACKPACK PA9000

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FEATURES

- Functional, rugged, modern design
- 40 pockets for tool and cable storage
- Handle supports over 200 lbs
- Separate pocket protects up to 17" laptop from tools
- Molded bottom protects from elements and holds bag upright
- Opens to lay flat for easy accessibility
- Ergonomic fit with padded lumbar support
- Durable material with rugged stitching
- High tool visibility
- Storage for adapters and cables

5 GALLON BUCKET BAG PA9100

FEATURES

- High quality 600D Fabric with PVC coating
- Holds all your irrigation tools for the most advanced projects
- Fits standard 5 gallon buckets
- 30 pockets, 9 slots and 1 D-ring Tape Loop
- Padded Handle for an easier grip

TECHNICIAN TOOL BAG PA9150

FEATURES

- 13 pockets 4 slots to organize tools
- Made from high quality 1680D Fabric
- Leather Bottom for ultimate protection and support
- 3 different modes: shoulder, waist, and handle

ORDERING INFORMATION:

PART NO.	CAT. NO.	DESCRIPTION
55500963	PA9000	PRO-TOOL BACKPACK
55504709	PA9100	5 BUCKET BAG
55504833	PA9150	ULTIMATE TECHNICIAN TOOL BAG

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