

Weld Checkers®

Resistance welding derives its ability to form a proper weld nugget from the simple formula for heat: $H = I^2 \times R \times T$, where “I” is the current, “R” is the resistance, and “T” is the time. The ability to keep these variables within predefined limits allows the process to be maintained. Weld consistency can vary over time due to a number of variables, which affect the heat delivered to the weld. Monitoring your process can result in:

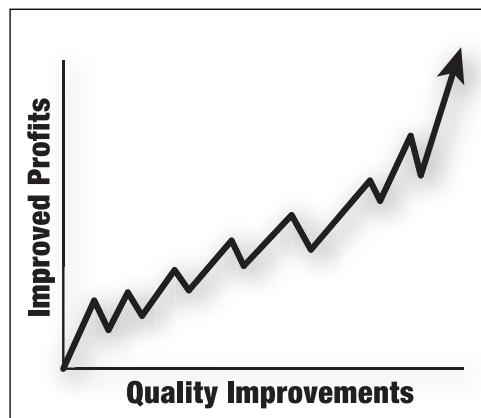
- High quality welds
- Improved uptime (identification of PM)
- Lower maintenance costs
- Increased revenue streams

AMADA WELD TECH’s range of checkers provide the ability to monitor the variables that result in changes in weld heat such as current and time. Other factors that affect weld quality can also be monitored, such as voltage, displacement and force.

USE with all AMADA WELD TECH power supplies and other power supplies

KEY FEATURES

- ISO 17657 – compliant measurement
- Lower scrap rate through identifying weld windows
- Improved process control
- ISO 9000 data collection
- Decreased machine downtime
- Accurate machine set up
- Weld optimization and Design of Experiments (DoE)
- Welding process diagnostics

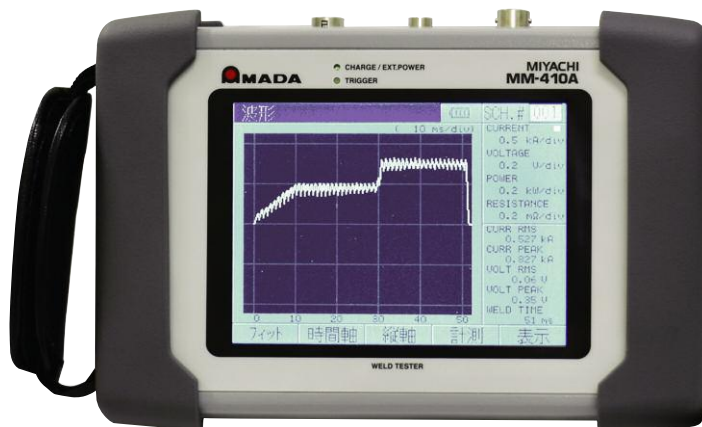


MM-410

Next Generation Hand-held Portable Weld Checker

KEY FEATURES

- Improved accuracy through ISO 17657 compliant toroidal coil
- Easy setup via 5.7" color touch panel
- Seam welding mode – Monitor AC current and voltage or DC voltage for up to 5 minutes
- ISO 17657 – compliant measurement for current – Requires ISO-compliant toroidal coil
- Data storage via on-board flash drive
- Ethernet (TCP/IP), and USB communication
- Multi-language support: English, Spanish, Japanese, Chinese, Korean, German and French



MA-770 and 771
weld thru sensors

Measure current, voltage and force

Understand, optimize and benchmark your process and equipment

Weld through sensor

Measure force, current and voltage simultaneously at the electrodes

Easy screen navigation

Scroll through and select menus with rotary dial

Waveform and data analysis

Precise graphical displays of waveform time and amplitude

Communication

Ethernet TCP/IP and USB

ACCESSORIES



Toroidal coil
MB-400M
(ISO 17657-compliant)



Toroidal coil
MB-800M
(ISO 17657-compliant)



Toroidal coil
MB-45F (10x sensitivity)
(conversion cable
SK-1193305 is required)



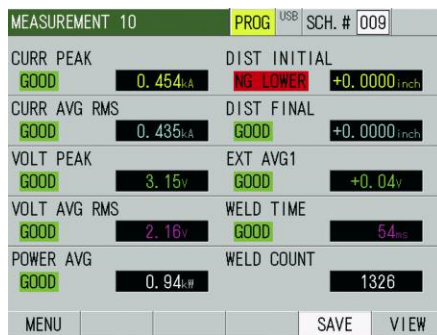
Force sensors
Top: MA-522B
Bottom: MA-521B/MA-520B
Current / force sensor



MA-770A / MA-771A
(conversion cable
SK-1200918 is required)



MM-410 with weld through sensor MA-771A



Measurement screen



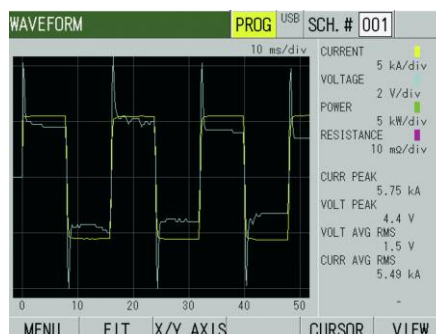
Force and current timing

HISTORY				PROG	SCH. # 001/193
DATE AND TIME	SCH	VOLTAGE PEAK			
~18/08/31 15:56:28	009	G 0.79 V			
~18/08/31 15:54:39	009	G 1.99 V			
~18/08/31 15:51:41	009	G 1.69 V			
~18/08/31 15:48:55	009	G 1.75 V			
~18/08/31 15:48:24	009	G 1.57 V			
~18/08/31 15:47:39	009	G 1.62 V			
~18/08/31 15:46:46	009	G 1.94 V			

Weld history



Current, voltage, power, resistance



Zoom of current and voltage (AC Inverter)

TECHNICAL SPECIFICATIONS

MODEL		MM-410A			
Current	Range	1×Sensitivity toroidal coil: 0.100-2.000 kA / 0.30-6.00 kA / 1.00-20.00 kA / 3.0-60.0 kA / 10.0-200.0 kA			
		10×Sensitivity toroidal coil: 0.010-0.200 kA / 0.030-0.600 kA / 0.100-2.000 kA / 0.30-6.00 kA / 01.00-20.00 kA			
Voltage	Item	PEAK / RMS* / Arithmetic mean RMS		Accuracy	±1% Full scale
	Range	0.30-6.00 V / 1.0-20.0 V		Accuracy	±1% Full scale
Force	Item	PEAK / RMS* / Arithmetic mean RMS			
	Range	4.90-98.06 N (MA-520B), 49.0-980.6N (MA-521B), 245-4903 N (MA-770A), 490-9806 N (MA-522B, MA-771A)			
External	Item	Mean RMS/maximum (peak) Before welding / After welding / Constant		Accuracy	±3% Full scale
	Input voltage / current range	-10 to +10 V / 4 to 20 mA			
Measurement time	Range	±0.5 to 10 V or 4.8 to 20 mA (5% to 100% of rated setting)			
	Item	Mean RMS/maximum (peak) Before welding / After welding / Constant		Accuracy	±3% Full scale
Units		V / N / kgf / lbf / °C / °F / Mpa / bar / psi			
	Current	ms-AC	1-5000ms		
AC	Voltage	CYC-AC	0.5-250.0CYC (50 Hz), 0.5-300.0CYC (60 Hz)		
	Power	CYC***Hz-AC	0.5-200.0CYC (M050: 50 Hz), 0.5-300.0CYC (M063: 63Hz), 0.5-2000.0CYC (M500: 500 Hz)		
DC	Resistance	LONG CYC-AC	0.5-500.0CYC (50 Hz), 0.5-600.0CYC (60 Hz)		
		CYC-DC	0.5-100.0CYC (50 Hz), 0.5-120.0CYC (60 Hz)		
Force external		ms-DC	1-2000 ms		
		SHORT ms-DC	0.50-300.00 ms (0.05 ms increment)		
Conduction angle		1 to 10000 ms		Accuracy	±9 degrees
Power supply voltage		0-180 degrees			
External data output		Single-phase 100 to 240 V (50/60 Hz) AC adapter output 9 V DC			
Languages		USB / Ethernet (Protocol; TCP/IP)			
No. of schedules		Japanese, English, Chinese, Korean, German, French, Spanish			
		127 schedules			

WEIGHT & DIMENSIONS

Dimensions L x W x H	1.85 in x 8.82 in x 6.18 in (47 mm x 224 mm x 157 mm)
Weight	Approx. 1.98 lb (0.9 kg)

MM-400A Machine Mounted Weld Monitor

KEY FEATURES

- Seam monitoring mode
- Pre-weld part detection
- Measures current, voltage, force and displacement, weld time for spot welding
- Set limits for all parameters using the envelope function
- Comprehensive machine I/O
- Measured data and waveform data can be saved in a USB memory device
- Easy screen-menu navigation
- Built-in printer and RS232C/485/Ethernet TCP/IP
- Multilanguage support
- Measurement based on ISO17657 standard
- Touchscreen programming
- Successor to MM-370C
- Supports wide range of resistance welding power supplies - Linear DC, DC inverter, AC inverter, transistor and capacitive discharge



ACCESSORIES



Coils

*Displacement
Sensor*



*MA-770 and 771 Weld
Thru Sensors*



TECHNICAL SPECIFICATIONS

Current range	0.010 to 200.0 kA
Force range (MM-400A)	MA-770A-01: 55 to 1102 lbf, (25 to 500 kgf) MA-771A-01: 110 to 2204 lbf, (50 to 1000 kgf); MA-520B: 1.10 to 22.04 lbf, (0.50 to 10.00 kgf) MA-521B: 11.0 to 220.4 lbf, (5.0 to 100.0 kgf); MA-522B: 110 to 2204 lbf, (50 to 1000 kgf)
Displacement range	LGK-110, 10mm, 1 micron accuracy; LGF-125L-B, 25mm, 1 micron accuracy GS-1813 A: 0 - 13 mm, 1 micron accuracy; GS-1830 A: 0 - 30 mm, 1 micron accuracy (GS-1813/1830A require SK-1194374 conversion cable)
Voltage range	0.30 to 20.0 V
Current measurement time	AC current, cycles: 0.5 to 600.0 cycles at 60 Hz ; AC current, ms: 1 to 5000 ms DC current, cycles: 0.5 to 120.0 cycles at 60 Hz; DC current, ms: 1 to 2000 ms
Force measurement time	1 to 10000 ms
Measurement mode for voltage and current	Arithmetic mean RMS or maximum, (peak)
Data output	Data can be acquired using the built-in printer, USB port, standard RS-232/RS-485 port, or Ethernet TCP/IP port
Number of schedules	127
Power requirements	100 to 240 VAC, 50/60 Hz, 40 W

WEIGHT & DIMENSIONS

Dimensions (L x W x H)	10.5 in x 6.8 in x 11.3 in (266 mm x 172 mm x 288 mm) excluding protrusions
Weight	11 lb (5 kg)

MM-123A

High Precision “Miniature” Weld Monitor

KEY FEATURES

- Measures single phase AC, DC inverter, AC inverter, capacitor discharge, transistor, single-phase rectified, 3-phase rectified, 3-phase low frequency
- Monitors current, voltage, and time
- Current Range: 0.100 – 200.0 kA
- Voltage Range 0.3 V to 20.0 V
- RMS or PEAK values
- Conduction angle
- Measures time in milliseconds and cycles
- Upper and lower limits
- 31 weld schedules
- Data communications via Ethernet port
- “No weld current” detection
- Error signaling
- Analog output for waveforms
- Weld counter
- Measures stepped weld sequences
- Good/No-Good, Hi/Low machine outputs



The new standard in weld checker technology.

The MM-123A is the very latest in stand-alone weld checker technology. This full function, cost effective unit is designed to monitor every type of welding control. The unit’s “miniature” design allows it to be mounted in any position on the welding machine. Limits for Peak or RMS current and voltage provide vital weld quality indicators. Multiple schedules, error signaling and versatile I/O make this unit as valuable for bench systems as it is for automated welding systems. Ethernet port provides for data collection and weld process analysis, critical in today’s advanced manufacturing processes.

TECHNICAL SPECIFICATIONS

Power supply	Single Phase 100 – 240 VAC $\pm 10\%$ 50/60 Hz or 24 VDC $\pm 10\%$
Current sensor	Toroidal coil (see table in this brochure)
Current range	0.100~2.000 kA, 01.00~20.00 kA, 010.0~200.0 kA
Voltage range	0.3 V to 20.0 V
Monitored value	RMS or PEAK
Time range	1-2000 ms (DC) 1-3000 ms (AC) 0.5 to 180 cycles (AC 60 Hz)
Conduction angle	30°–180°
Data output	Ethernet TCP/IP

WEIGHT & DIMENSIONS

Dimensions (L x W x H)	9.7 in x 2.8 in x 7.5 in (246 mm x 70 mm x 190 mm)
Weight	4.2 lb (1.9 kg)

MM-315B Pocket Weld Testers

KEY FEATURES

- Simple current measurement in the palm of your hand
- For AC and Inverter power supplies
- Measures current, cycles, milliseconds and conduction degrees
- Impulse memory, 9 welds
- Rechargeable batteries or AC
- Includes coil, charger and carrying case
- Easy-view LCD
- Memory function for easy recall of impulses



The perfect pocket size troubleshooter.

TECHNICAL SPECIFICATIONS

Power supply	Rechargeable battery and AC charger
Current sensor	Toroidal coil (see table in this brochure)
Current range	1.00-9.99A, 5.0-49.9kA
Time range	1 – 99 cycles or 0.01 – 0.80 sec
Conduction angle	30° – 180°

WEIGHT & DIMENSIONS

Dimensions L x W x H	1.18 in x 2.95 in x 6.7 in (30 mm x 75 mm x 170 mm)
Weight	1.1 lb (0.5 kg)

ELECTRONIC FORCE GAUGE



Portable force setting and verification tool.

MM-601A

KEY FEATURES

- Simple and accurate handheld force measurement
- Hold and zero functions
- One touch tare setting
- Rechargeable batteries or AC
- External I/O for analog out and measurement hold
- Easy-view LCD
- Analog force output

TECHNICAL SPECIFICATIONS

Power supply	Rechargeable battery and AC charger
Force sensor	MA-520: 1.10 to 22.04 lbf (0.50 to 10.00 kgf) MA-521: 11.0 to 220.4 lbf (5.0 to 100.0 kgf) MA-522: 110 to 2204 lbf (50 to 1000 kgf)
Accuracy	±3% full scale
Measurement speed	Approx. 4 times per second

WEIGHT & DIMENSIONS

Dimensions (L x W x H)	1.18 in x 2.95 in x 6.7 in (30 mm x 75 mm x 170 mm)
Weight	1.1 lb (0.5 kg)

TOROIDAL COILS



- For use with all current monitors.

MB-400K	400 mm long 1.0 x sensitivity, 5 in I.D.* (127 mm)
MB-800K	800 mm long 1.0 x sensitivity, 10 in I.D. (254 mm)
MB-29F	10 x sensitivity, 1 1/2 in I.D. (29 mm)
MB-35E	1.0 x sensitivity, 1 3/8 in I.D. (35 mm)
MB-45F	10 x sensitivity, 1 3/4 in I.D. (45 mm)
MB-60E	1.0 x sensitivity, 2 3/8 in I.D. (60 mm)
MB-500-15	500 mm long 1.0 x sensitivity, 3 in I.D. (76 mm)

*Inner diameter

Extension cables for toroidal coils are optional.

These coils connect directly with MM-315 and MM-123A, use with MM-400A, MM-410A requires conversion cable SK-1193305

ISO TOROIDAL COILS

- MB-400M (ISO17657 compliant)
- MB-800M (ISO17657 compliant)
- Can only be used with MM-400A and MM-410A

FORCE SENSORS & ACCESSORIES

FORCE AND CURRENT SENSORS



Part Number	Description	Product
MA-520/MA-520B	Force sensor 1.10 to 22.04 lbf (0.50 to 10.00 kgf)	MM-601A/MM-400A, MM-410A
MA-521/MA-521B	Force sensor 11.0 to 220.4 lbf (5.0 to 100.0 kgf)	MM-601A/MM-400A, MM-410A
MA-522/MA-522B	Force sensor 110 to 2204 lbf (50 to 1000 kgf)	MM-601A/MM-400A, MM-410A
MA-770A	Force sensor 55 to 1102 lbf, (25 to 500 kgf)	MM-400A, MM-410A
MA-771A	Force sensor 110 to 2204 lbf, (50 to 1000 kgf)	MM-400A, MM-410A

*MA-520/521/522B for use with MM-400, MM-410 only

**MA-520/521/522 for use with MM-601, can be used with MM-400/410, required conversion cable SK-1200686

ACCESSORIES

Part Number	Description	Product
145-013	Rechargeable battery, 1.2 V 500MAH (4 required for checker)	MM-315B, MM-601A
TP-50KM-A60	Printer paper, 60 mm x 25 mm (W x L)	MM-400A optional printer
18-042-01	Toroidal coil extension (specify length)	MM-123A and MM-315B only
SK-1194040	Toroidal coil extension (5 meters)	MM-400A and MM-410A only
SK-1194041	Toroidal coil extension (10 meters)	MM-400A and MM-410A only
SK-1194042	Toroidal coil extension (20 meters)	MM-400A and MM-410A only

DATA COLLECTION SOFTWARE – WINWEDGE®

Taltech™ Winwedge software can be used to collect data from most checker models. AMADA WELD TECH has written some front-end programs that accept basic data to start you on the road to process control and data collection. Exports data directly into Microsoft Excel®

Applicable Models	MM-123A, MM-400A, MM-410A
Part Number	10-900-02

MODEL	MM-123A	MM-315B	MM-400A	MM-410A	MM-601A
Current	✓	✓	✓	✓	–
Voltage	✓	–	✓	✓	–
Time	✓	✓	✓	✓	✓
Force	–	–	✓	✓	✓
Displacement	–	–	–	–	–
Schedules	31	–		127	–
Stand-alone	✓	–	✓	–	–
Hand held	–	✓	–	✓	✓
Pocket	–	✓	–	–	✓
Communications	232/485	–	USB/Ethernet RS232/485	USB/Ethernet	–
Printer	Option	–	✓	–	–
Battery powered	–	✓		✓	✓
Line powered	✓	✓	✓	✓	✓
ISO17657 measurement			✓	✓	



AMADA WELD TECH INC.

1820 S. Myrtle Ave. • Monrovia, CA 91016 US
T: (626) 303-5676
info@amadaweldtech.com • www.amadaweldtech.com
ISO 9001 Certified Company • 24/7 Repair Service: 1-866-751-7378

AMERICAS

AMADA WELD TECH
(Midwest Technical Center)
Detroit, Michigan
T: (248) 313-3078
midwestsales@amadaweldtech.com

AMADA WELD TECH
(Mexico Office)
El Paso, Texas
T: (915) 881-8765
mxsales@amadaweldtech.com

AMADA WELD TECH DO
LTD.
São Paulo, Brasil
T: +55-11-4193-3607
antonio.ruiz@amadaweldtech.com

EUROPE

AMADA WELD TECH
GmbH
Munich, Germany
T: +49-89-839403-0
info@amadaweldtech.eu

ASIA

AMADA WELD TECH
CO., LTD.
Isehara, Japan
T: +81-4-7125-6177
sales@miyachi.com

AMADA WELD TECH
SHANGHAI CO., LTD.
Shanghai, China
T: +86-21-6448-6000
jwu@msc.miyachi.com

AMADA WELD TECH
KOREA CO., LTD.
Seoul, Korea
T: +82-31-8015-6810
sales@amadaweldtech.co.kr

AMADA WELD TECH
TAIWAN CO., LTD.
Taipei, Taiwan
T: +886-2-2585-0161

AMADA
(THAILAND) CO., LTD.
Bangkok, Thailand
T: +66-2170-5900
info@amada.co.th

AMADA
VIETNAM CO., LTD.
Ha Noi, Vietnam
T: +84-4-6261-4583

AMADA WELD TECH
INDIA PVT., LTD.
Bangalore, India
T: +91-80-4092-1749
info@miyachiindia.com

Specifications subject to change without notice. Copyright© 2020 AMADA WELD TECH INC. The material contained herein cannot be reproduced or used in any other way without the express written permission of AMADA WELD TECH INC. All rights reserved.

follow us on:

