

# Perfect for SMD Rework



## Introducing the new CV-510 Connection Validation™ Soldering System

Metcal is pleased to introduce the CV-510 Connection Validation Soldering System, the companion station to the CV-5210 system. The CV-510 packs all of the Connection Validation technology into a compact, economical housing.

The CV-510 soldering system also features SmartHeat® power on demand technology, a 2.8" color touchscreen with bold graphics, an integrated net power meter with optional tip temperature display and much more.

The CV-510 system excels at SMD touch-up and small component rework using the Ultrafine hand-piece and Ultrafine tweezer hand-piece (both sold separately).

**Connection Validation is...  
A patented technology that identifies the  
intermetallic compound formation,  
then enables the system to  
provide closed loop  
feedback to the  
operator.**



# CV-500 Series Connection Validation™ Soldering System

The intermetallic compound thickness is critical in the formation of a solder joint. Connection Validation (CV) evaluates the quality of the solder joint by calculating the intermetallic compound formation and provides closed loop feedback to the operator.

CV provides feedback to the operator via the LED light ring integrated in the hand-piece. It takes the risk associated with the variables involved in the soldering activity and removes the success and failure determination of a good solder joint out of the hands of the operator.

CV complements the skill of the operator to judge the quality of a solder joint by introducing an objective method of evaluating solder joint quality. This systemic and objective approach provides repeatability and a measurable standard to the soldering process.

## Features and Benefits

- SmartHeat® Power on Demand Technology
- Patented Connection Validation IMC Formation Technology
- 2.8" color touchscreen with bold graphics
- Communications Port for process traceability and firmware updates
- Integrated Net Power Meter
- Precise tip temperature display
- Patented Chip-in-Cartridge technology
  - Stores and records cartridge attributes
  - Provides traceability information
  - Protects power supply from non-conforming cartridges
  - Cartridges are backwards compatible with MX series
- Password protection



LED equipped hand piece signals to operator when a good solder joint is formed.



Tip temperature displayed on large color screen.

Part Number	Description
CV-510	Solder System Includes:
CV-PS500	Power Supply*
CV-H1-AV	Advanced hand-piece for CV with LED Light*
CV-CP1	Cartridge Removal Pad*
CV-W1AV	TipSaver Workstand* <i>Can be ordered separately*</i>
CV-UK1	Upgrade Kit, CV Advanced Hand-piece and Workstand (also available)

## Technical Specifications

Power Supply CV-PS500	
Ambient Operating Temp.	10 - 40 °C
Max. Enclosure Temp.	55 °C
Input Line Voltage	100 - 240 VAC, grounded
Input Line Frequency	50/60 Hz
Rated Power Consumption	45 W(nominal), 85 W (max.)
Output Power	40 W (max.)
Output Frequency	13.56 MHz
Heating Method	SmartHeat®
Display	2.8" Color TFT LCD Display
Resolution	320 x 240, RGB
Size	2.8" Diagonal
Active Area	43.20 x 57.60 mm
Connections	Single Port
Communications	USB
Power Supply Dim. W x D x H	121 x 121 x 222 mm
Power Supply Weight	3.35 kg
Certification / Marking	CE, TUV
Tip-to- Ground Potential	< 2 mV
Tip-to-Ground Resistance	< 2 Ohm
Idle Temperature Stability	1.1 °C in still air
Tip Temperature Accuracy	Meets or exceeds IPC J-STD-001 Standard
Hand-piece cable length	L = 183 cm, burn proof, ESD-safe
Hand-piece connectors	
RF Connector	F-type power connector
LED Power Connector	6 pin DIN
Operation	2 single ports
Firmware upgrade	Via USB port and appropriate software with compatible computer and cables.

# CV-500 Series Connection Validation™ Soldering System

## Hand-pieces and Upgrade Kits

Metcal offers six different hand-pieces and upgrade kits for the Connection Validation Soldering system. These ergonomic hand-pieces transform the CV system into a complete soldering solution for a wide variety of applications.

### UltraFine Hand-piece & UltraFine Tweezer Hand-piece

Metcal's UltraFine hand-pieces add a specialty tool for soldering and rework of very small components, restricted access or high-density component packaging on a PCB.



#### Key Features and Benefits:

Improved temperature control: Metcal's SmartHeat® inside means lower risk of over-shooting delicate components

Very fast heat-up speed means you can get to your next task even faster

Ergonomic, lightweight hand-piece keeps you comfortable even on large industrial jobs

Designed for use under a microscope

Compatible with UFC cartridges and available in 600 and 700 series temperatures for the UltraFine hand-piece.

Compatible with UFT cartridges and available in 600 and 700 series for the UltraFine Tweezers hand-piece

Part Number	Description
CV-H2-UF	UltraFine Hand-piece for CV systems
CV-UK2	Upgrade Kit, UltraFine Hand-piece and Workstand
CV-H4-UFT	UltraFine Tweezer Hand-piece for CV System
CV-UK4-UFT	Upgrade Kit, Ultrafine Tweezer Hand-piece and Workstand

## Precision Tweezer Hand-piece

Transform the Connection Validation Soldering Systems into a rework system for applications requiring the removal of surface mount components from 1 x 1 mm on up.



#### Key Features and Benefits:

Adjustable tip alignment for both height and rotation ensures co-planarity of the cartridges

Dual position pitch-switch enables adjustment to the component width, improving operator ergonomics

Lightweight and ergonomic hand-piece

Quick change cartridges with keyway to prevent misalignment

For use with PTC Tweezer cartridges

Part Number	Description
CV-H4-PTZ	Precision Tweezer Hand-piece for CV System
CV-UK4	Upgrade Kit, Precision Tweezer Hand-piece and Workstand

## Desolder Hand-piece

Transform the Connection Validation Soldering Systems into a rework system for applications requiring the removal of solder such as through hole components.



#### Key Features and Benefits:

Designed for plated through hole component desoldering

Ergonomic easy-to-grip handle

The hand-piece requires shop air for operation

Compatible with DSC cartridges. Available in 700, 800 and 900 series temperatures

Part Number	Description
CV-H5-DS	Desolder Hand-piece for CV System with Airline Kit and Accessories
CV-H5-DSHP	Desolder Hand-piece only
CV-UK5	Upgrade Kit, Desolder Hand-piece, Workstand Airline Kit and Accessories

# CV-500 Series Connection Validation™ Soldering System

## Solder Wire Feeder Hand-piece

Metcal's Solder Wire Feeder System adds control and convenience to your soldering process. The digital controls, high performance and its ability to handle multiple solder wire diameters provide repeatability and functionality to your process.



## Key Features and Benefits:

Improved temperature control: Metcal's SmartHeat® inside means lower risk of overshooting delicate components

Very fast heat-up speed means you can get to your next task even faster

Compatible with solder diameters from 0.5 to 1.27 mm

Compatible with CVC and SMC series cartridges for standard applications

Part Number	Description
CV-H7-AV	Solder Wire Feeder Advanced Hand-piece for CV System
CV-UK7	Upgrade Kit, Solder Wire Feeder, Advanced Hand-piece, Workstand and accessories

## Introducing the All-New CV Monitoring Software

Improve your solder process traceability and create a performance baseline using CV's intelligent cartridges plus CV-5000 Monitor software. Using our Connection Validation patented technology, CV Monitor software allows you to capture solder process information over time for each joint when attached to the communication port.

Now that you have a baseline, you can quickly analyze your soldering performance, identify changes in your solder conditions and make changes to your process. Download the free CV-5000 Monitor software and start monitoring your process.



### You'll get...

- Power demand
- Tip temperature
- Solder time
- Data collection for improved process control
- Intermetallic Compound (IMC) Formation\*

\*Metcal exclusive

Download the free software  
to get started  
[www.Metcal.com](http://www.Metcal.com)