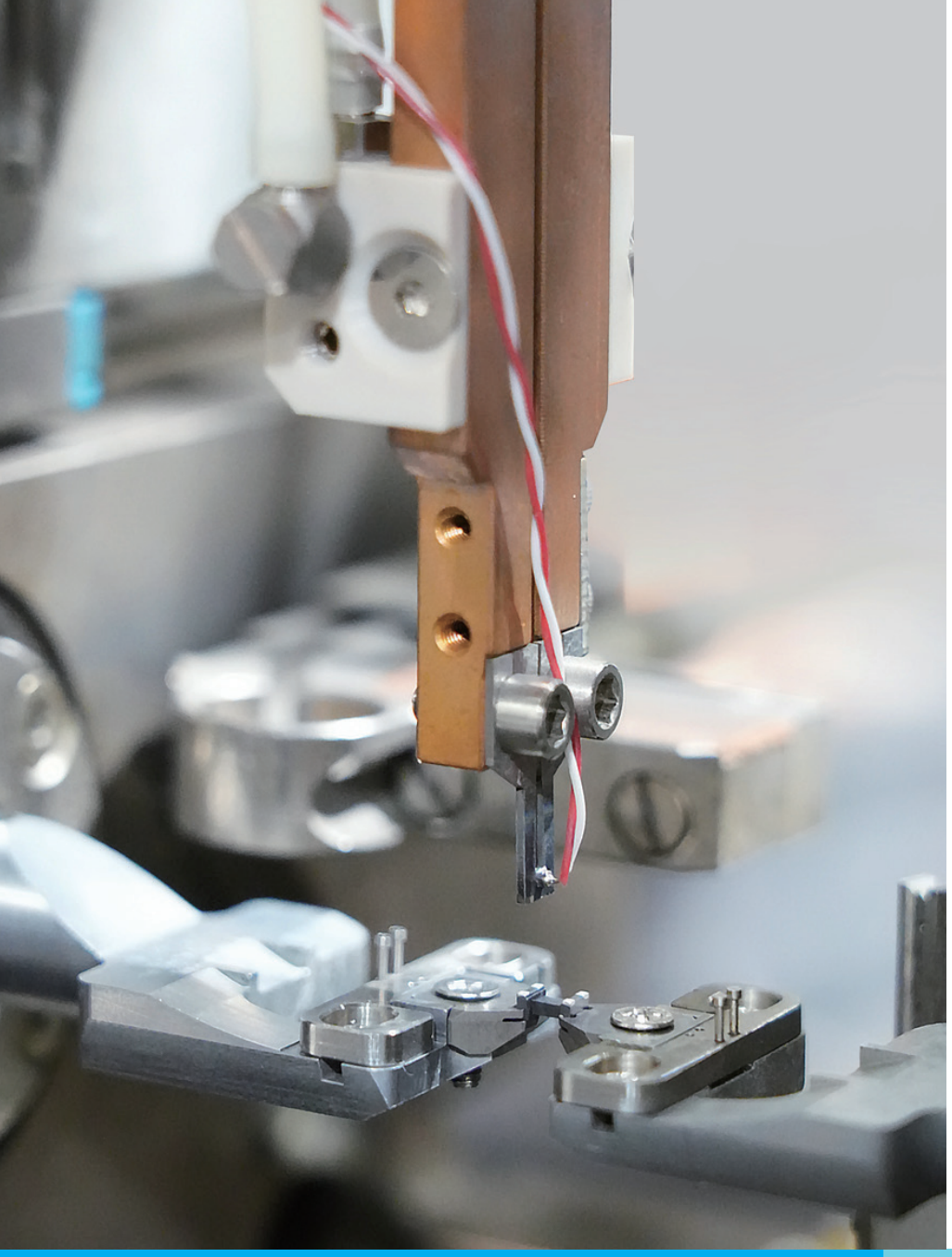
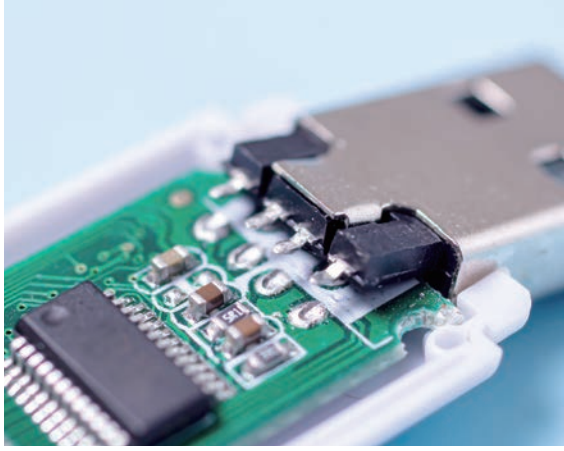
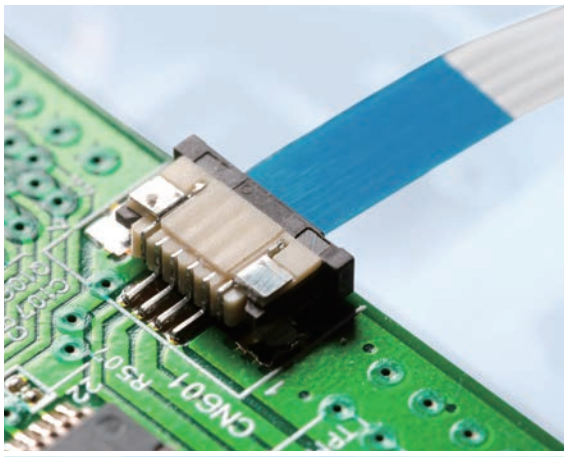








Digitized Automation for a Changing World

Delta Hotbar Pulse Heat Reflow Power Supply DTH Series



www.deltaww.com

Delta Hotbar Pulse Heat Reflow Power Supply DTH Series

The DTH Series is equipped with fast and stable temperature measurement capabilities, provides precise temperature control through PID control and DC pulse output, and supports efficient computing and data analysis with built-in temperature control algorithms and large storage capacity. The DTH series is an excellent tool for temperature control in hotbar soldering processes.

The DTH Series offers pulse-heat reflow temperature control that enhances the processing speed of hotbar soldering, stabilizes quality yield, reduces solder material consumption, and provides high efficiency and energy-saving benefits.



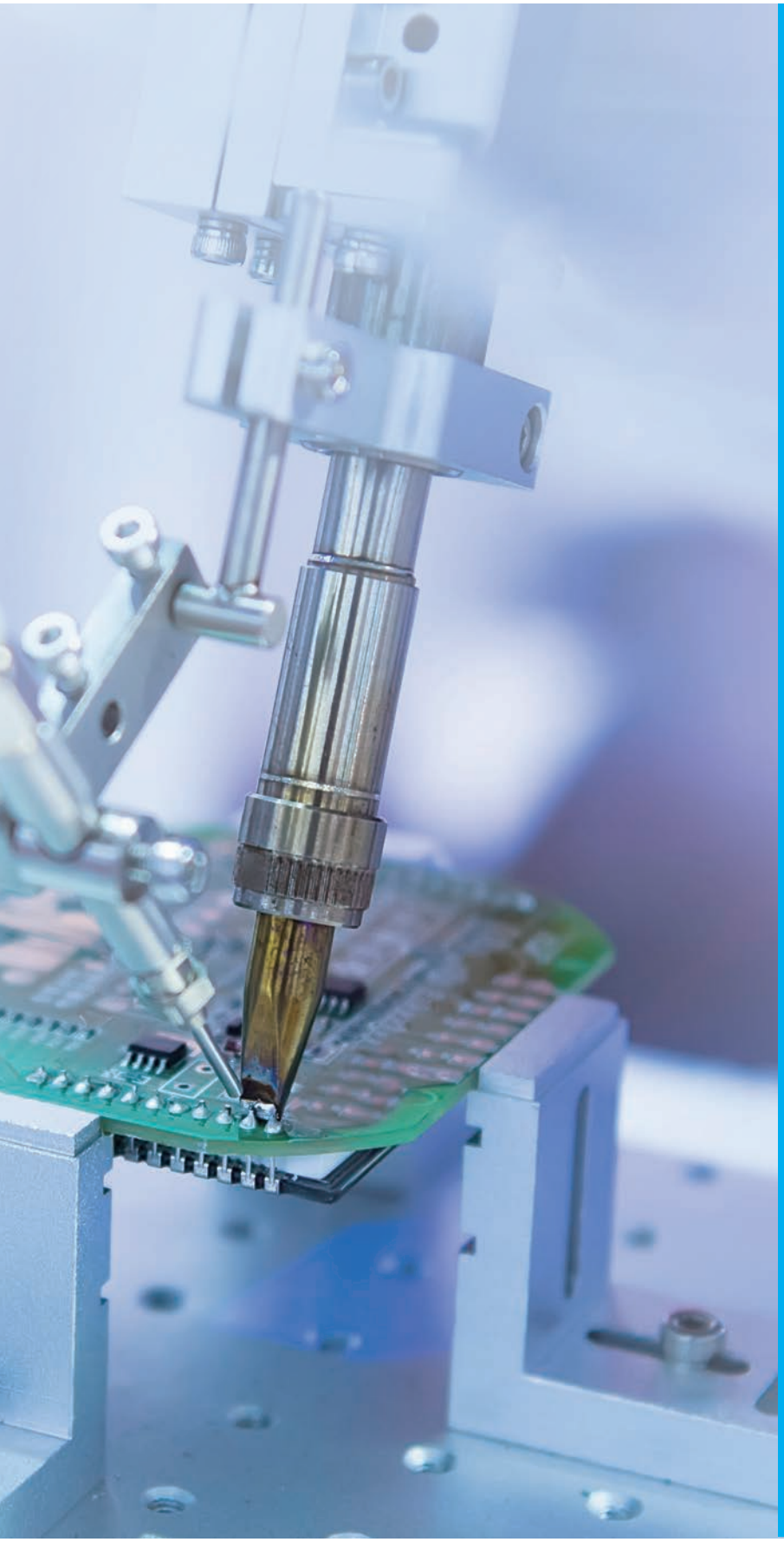


Table of Contents

Features 3

Applications 5

Exterior Features 7

Dimensions 7

Specifications 9

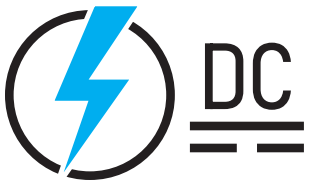
Ordering Information 10

Model Name Explanation 10

Features

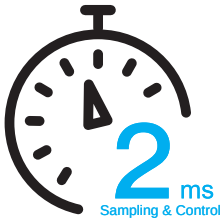
DC Pulse Output Ensures Stable Temperature Control

- **Stable temperature control:** A built-in power supply controls the heating output directly without relying on external components, thereby reducing time delays caused by transmission between different components.
- **All-in-one design:** Integrates temperature control, logic I/O, HMI, and high-power supply modules into a single unit, which is easier to use than traditional designs



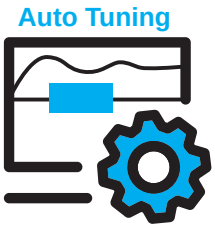
500 Hz High-Speed Sampling and High Repeatability

- Utilizes a DC power supply as the heating source for the hotbar, delivering an instantaneous 600 A DC pulse.
- Features high-speed temperature sampling at 2 ms intervals and a reliable PID control algorithm.
- The power output can be controlled using PWM with an output accuracy ranging from 0.1% to 100.0%



PID Auto-Tuning Complete in 10 Seconds

- **Auto-tuning (AT):** Auto-tuning provides multiple heating profiles and enables automatic PID parameter configuration in 6 to 10 seconds, which greatly minimizes on-site tuning time
- **Independent PID control for each heating segment:** Provides independent PID settings for each heating segment (including preheating and two heating stages), reducing the impact of ambient temperature on different heating segments and optimizing temperature control performance



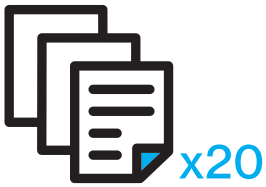
User-Friendly Interface, Intuitive Operation

- **Touch panel HMI:** Easy to use and easy to learn
- **Intuitive interface design:** Supports graphical preview of the thermal profile for parameter settings, providing easy-to-read information and ensuring accurate configuration
- **Project management:** Centralized management of each project's configuration details on the setting page



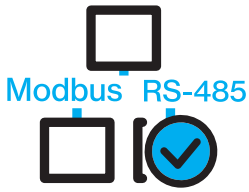
Comprehensive Temperature Records Facilitate Traceability and Analysis

- **Heating records:** Up to 20 sets of heating data can be recorded and saved even after a power outage, facilitating on-site inspection and analysis of anomalies
- **Temperature records:** The horizontal drag-and-drop element displays the preset and actual temperature values at each time point, allowing for examination of temperature variations with accurate details

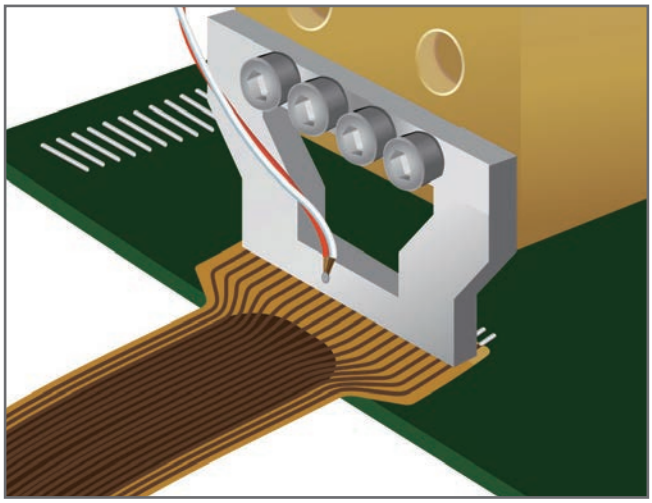


Connectivity for Smart Manufacturing

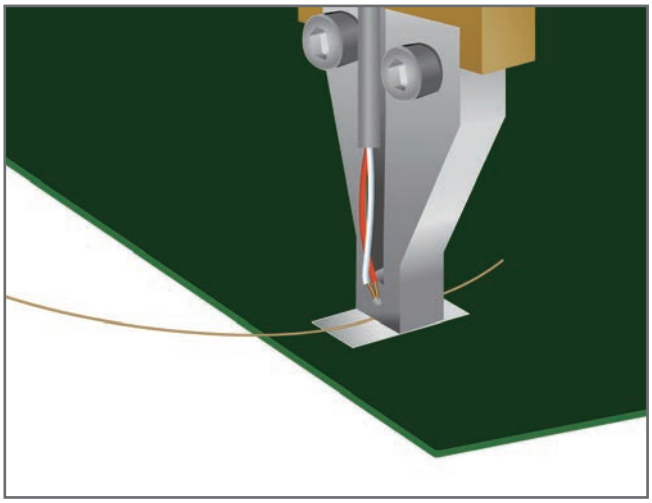
- **RS-485 communication:** Supports control by HMI or by host via I/O. The built-in RS-485 communication enables the host to collect data remotely and simplifies on-site wiring and maintenance
- **Modbus ASCII/RTU communication protocol:** Each operation component provides communication register addresses for customizing user interface settings on HMI or PC



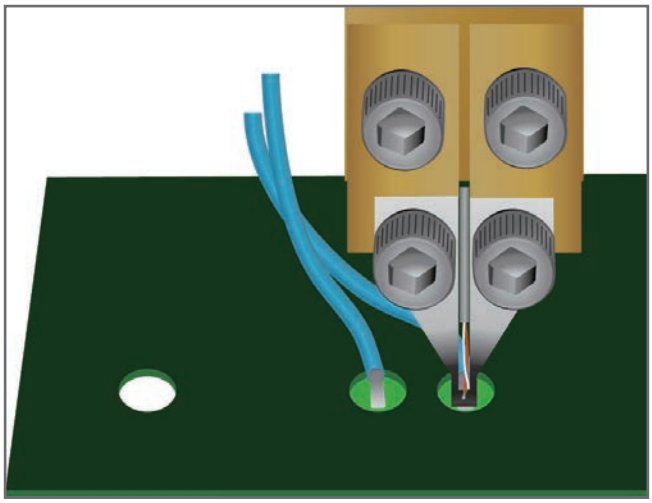
Applications



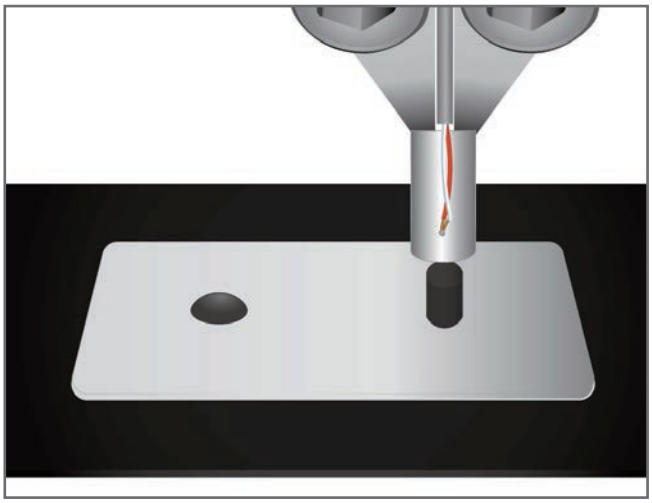
Flexible flat cable (FFC) bonding



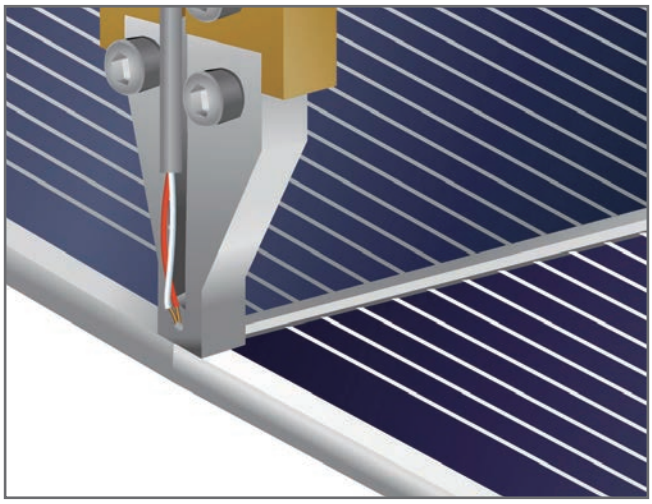
PCB wire bonding



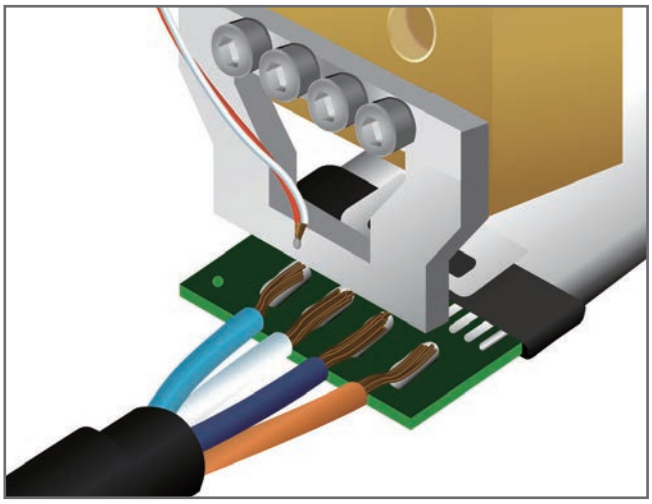
Conducting wire bonding



Plastic heat pressing



Solar panels conducting wire bonding



Type C / USB cable bonding

Product Application Cases: Power Inductor Winding Machine

Overview



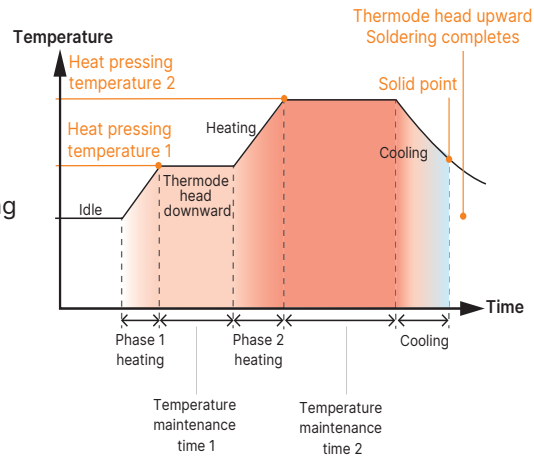
- For mass-produced electronic products, it is necessary to rapidly increase the temperature in the manufacturing process to enhance production capacity
- The heating time for soldering needs to be short to minimize the heat conduction damage to internal components
- The accuracy of temperature control should be within ±10 °C

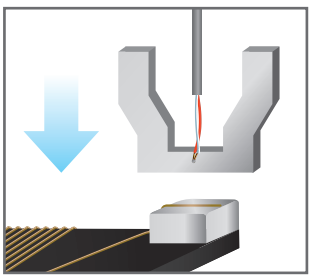
Implementation Success

- Completes heating to 450 °C within 400 ms and maintains temperature within ±10 °C
- Delta's Pulse Heat Pressing Temperature Controller reduces the heat pressing time by 35%

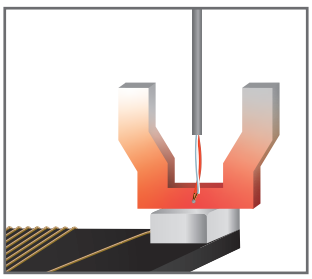
Process & Features

- Provides idle and after-heating temperature settings, with the ability to independently set up to 2 heating profiles
- Idle / Phase 1 heating / Phase 2 heating are controlled by 3 independent sets of PID parameters (generated through auto-tuning)
- Provides temperature setting for two sets of rising point and two sets of solid point. The thermode head's up and down movements are controlled by the host with I/O communication
- After heating is completed, the average, peak, and amplitude of each heating segment are displayed for assessing the stability of the heating profile
- Built-in second auxiliary thermocouple input provides protection in case of main thermocouple disconnection or poor contact
- Multiple built-in alarm and protection mechanisms: Overcurrent / extreme temperature / rising alarm / profile alarm / statistic alarm

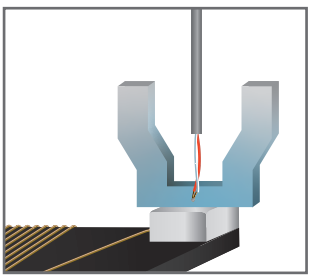




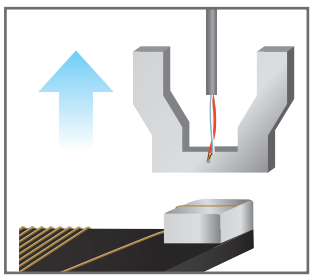
Thermode head downward



Heating



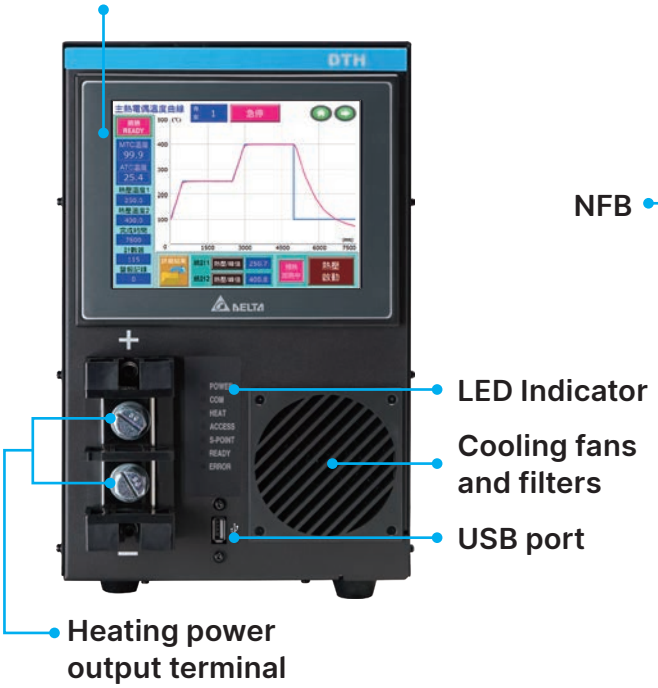
Cooling



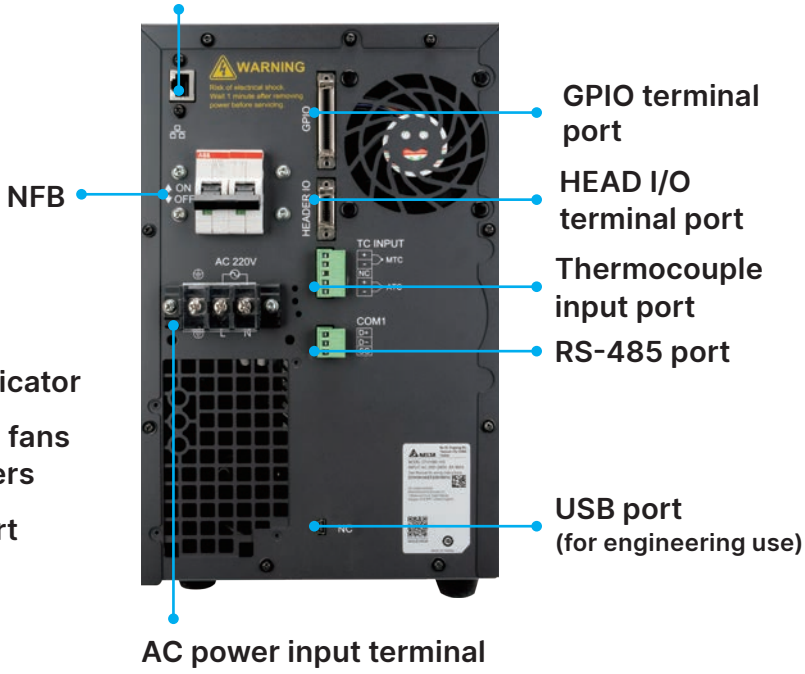
Thermode head upward
Soldering completes

Exterior Features

Front terminal & interface

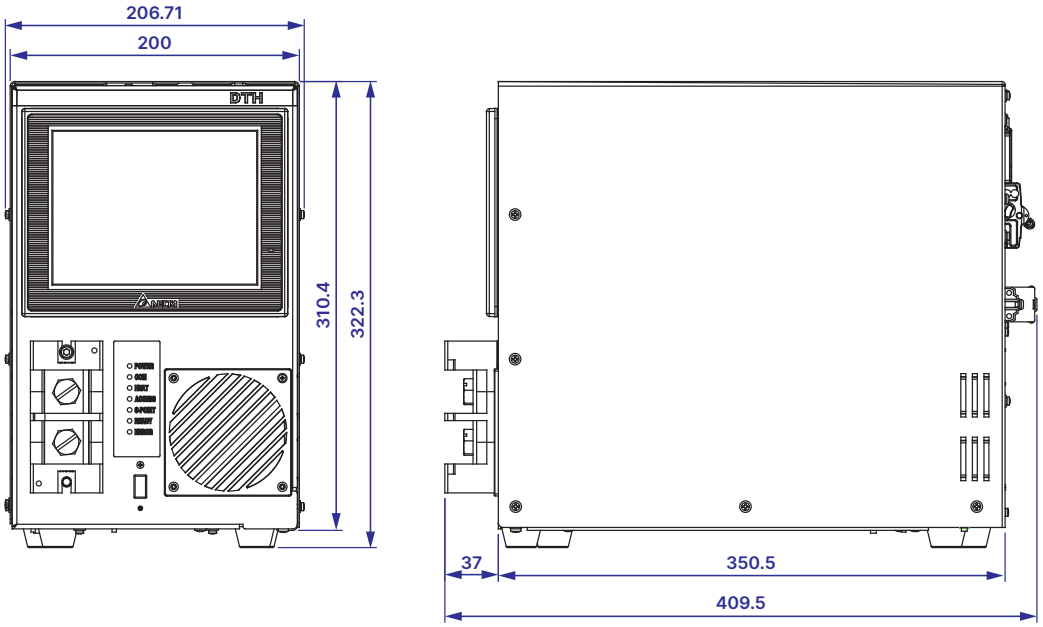


Back terminal & interface



Dimensions Unit: mm

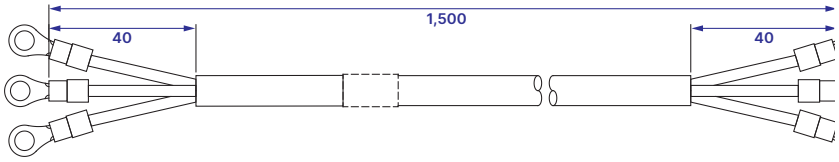
Main Unit



Dimensions Unit: mm

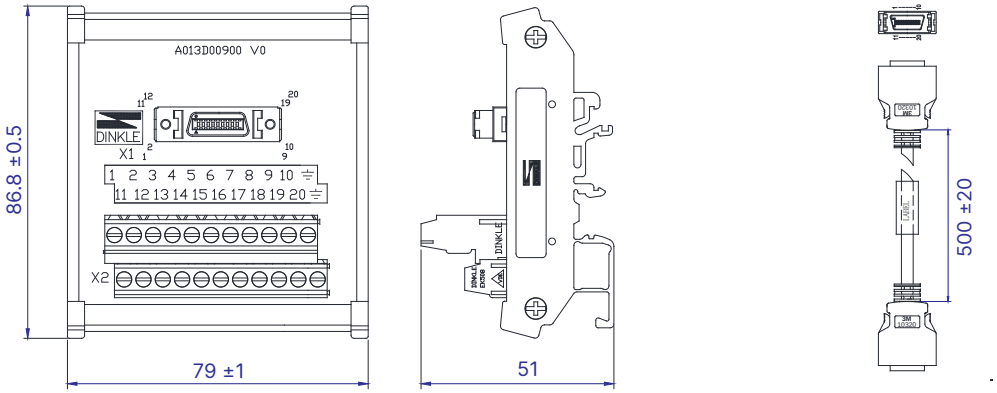
Power Cable and Removable Terminal

- Power cable: Terminal specifications: RNYS2-5 (Ø5.3*Ø8.5*22.8), tightened with a tightening torque of 14 kg*cm ± 1.5 (M5 screw)
- Removable terminal: Thermocouple and RS-485 removable terminal, and tightened with a tightening torque of 3.8 kg*cm



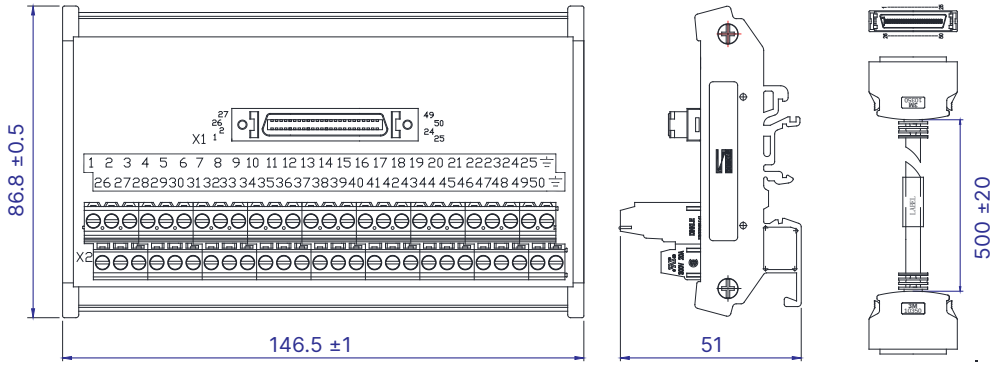
20 Pin I/O Box + Cables

The terminal should be tightened with a tightening torque of 3.8 kg*cm



50 Pin I/O Box + Cables

The terminal should be tightened with a tightening torque of 3.8 kg*cm



Specifications

Model		DTH1080-1AS		
Input Power		1Ø AC 200 ~ 240 V 50 / 60 Hz		
Rated Current Consumption		MAX. 8.0 A / 200 V		
Maximum Output Wattage / Current / Voltage		1,080 W / 600 A (DC 0.5 ~ 1.8 V)		
Power Conversion Mode		DC / DC conversion module		
Output Voltage Segments		DC 0.5 V ~ 1.8 V digital settings. Minimum unit: mV		
Thermocouple Type		J, K, or E type. The default is E type.		
Temperature Measurement Accuracy		**Thermocouple pair:** ±(0.3 % FS, +1 °C)		
Temperature Display Precision		0.1 °C (Display range: 0 ~ 999.9 °C)		
Control Cycle		2 ms		
Established Range for Temperature Profile	**Start Temperature**	-0.1 ~ 200.0 °C (set to -0.1, representing the current temperature)		
	Idle Temperature	50 ~ 200.0 °C		
	Phase 1 Heat Pressing Temperature	50 ~ 650.0 °C		
	Phase 2 Heat Pressing Temperature	50 ~ 650.0 °C		
	After-Heat Pressing Temperature	50.0 ~ 500.0 °C		
Profile Time Settings (Unit: ms)		0 ~ 10,000 ms		
External Input Response Time Settings		**Adjustment range:** 30 ~ 100 ms. Adjustable based on different control requirements		
PID Temperature Control		Adopts PID temperature control to enable independent configuration of each heating segment		
Auto-Tuning (AT)		The three PID parameters for idle, phase 1, and phase 2 heating are automatically generated after AT		
Monitoring Alarm and Protection		**Protection:** Triggers an alarm and emergency stop when the thermocouple disconnects, falls, or reverses / an output module heating anomaly occurs / the measured temperature exceeds limit / an output voltage anomaly occurs / an output current anomaly occurs / heating speed is lower than the alert setpoint **Alarm:** Anomalies of heat pressing monitor range / anomalies of statistical alert range		
Temperature Curve Records Playback		Records and updates the 20 most recent heating data		
Communication		**COM1:** RS-485 Slave 3 PIN P5.0 European terminal (up to 115,200 bps)		
External I/O Port		**GPIO:** 50 pin high-density connector (DI: 14 / DO: 22 / AVO: 2)		
		HEAD I/O: 20 pin high-density connector (DI: 3 / DO: 3)		
External I/O Electrical Specifications		• **DI:** Built-in +12 V power. when an external N-type switch is connected and turned on, the DI contact conducts 5 mA of current • **DO:** GPIO rated current: 20 mA; Head I/O rated current: 100 mA • **AVO:** Rated output of 0 ~ 10 V. AVO_0 and AVO_1 correspond to MTC and ATC outputs respectively; corresponding range and fine-tuning offset value can be configured • **GPIO terminal:** Provides +12 V rated 200 mA power output • **Sensor input:** Divided into main thermocouple MTC and auxiliary thermocouple ATC inputs • **Pulse current output:** DC pulse output marked with "+" and "-" on the front of the panel		
Electrical Isolation		The internal system circuit / GPIO / HEAD IO / MTC / ATC / communication circuit / pulse output with 500 V_{DC} insulation between each other		
Console		Touch Panel HMI 7-inch touchscreen interface		
Multistate Indicator		Status indicator × 7		
Cooling Method		Forced cooling. The built-in fan automatically adjusts speed based on the machine temperature		
Dimensions		206.71 (W) × 322.3 (H) × 409.5 (D) mm		
Applicable Ambient Humidity		35 ~ 85 % relative humidity (without condensation)		
Applicable Ambient Temperature		0 ~ 45 °C	**Temperature of Storage Environment**	-20 ~ +70 °C
Enclosure Rating		IP20	**Weight**	Around 13.5 kg

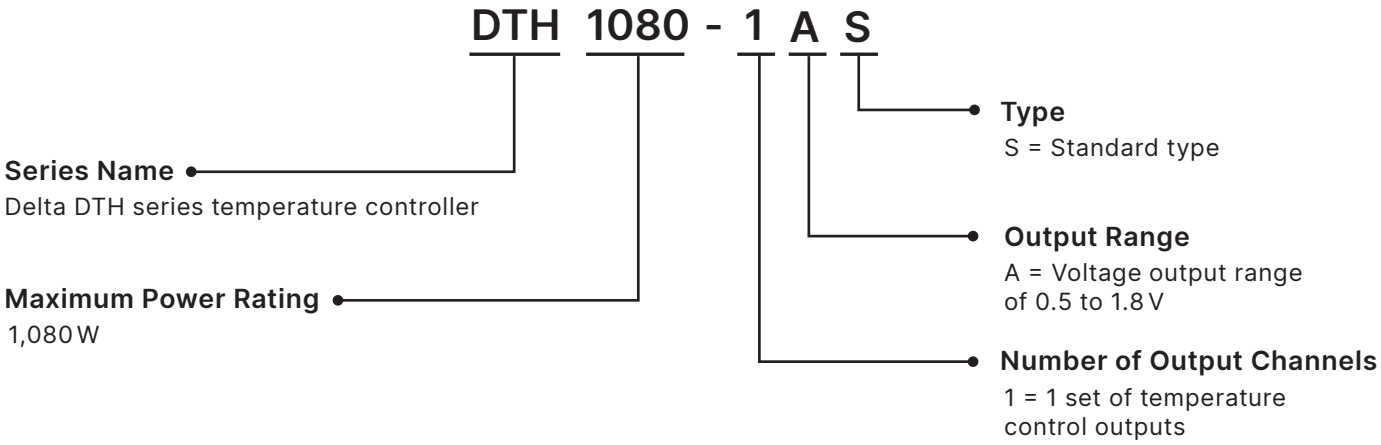
Ordering Information

Category	Model	Description
Main Unit	DTH1080-1AS	Hotbar Pulse Heat Reflow Power Supply (Control output × 1, Maximum power rating: 1080 W, Voltage output range: 0.5 ~ 1.8 V)
Accessories	DTH-EWM20050	20 pin I/O box + 0.5 m I/O cable
	DTH-EWM50050	50 pin I/O box + 0.5 m I/O cable
	DTH-CABPWR150CHN	1.5 m power cable, in compliance with China regulations
	DTH-CABPWR150TWN	1.5 m power cable, in compliance with Taiwanese regulations
	DTH-CABPWR150USA	1.5 m power cable, in compliance with US regulations

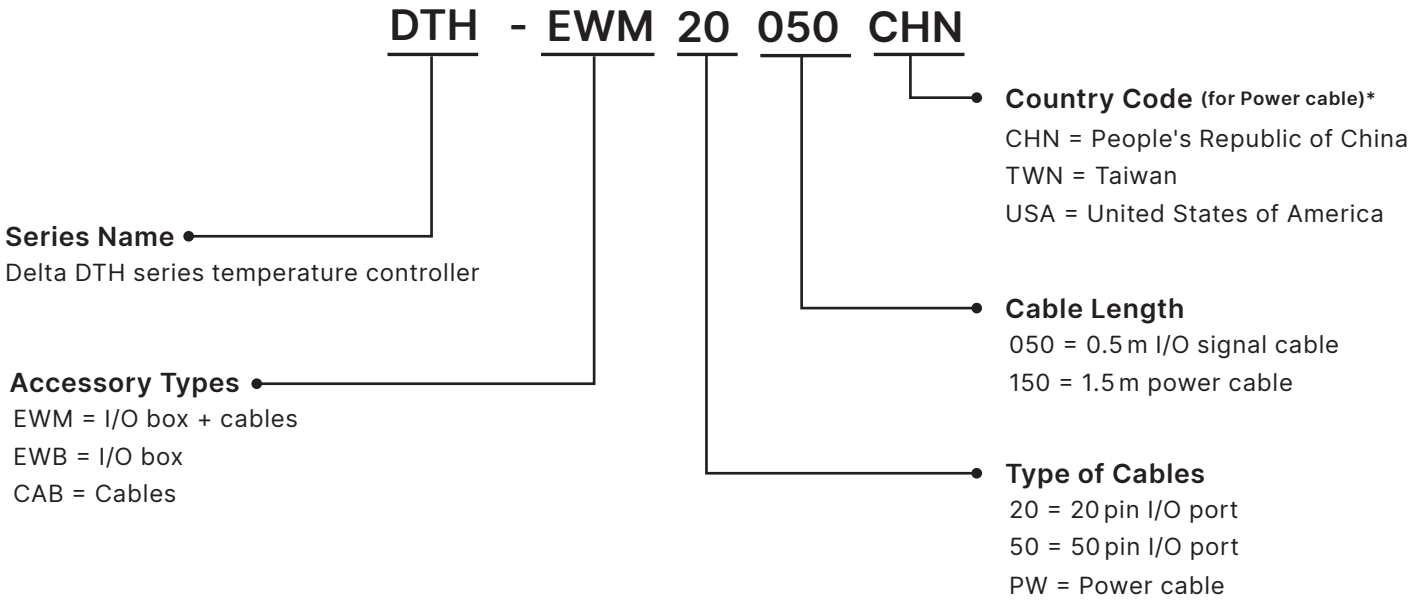
Note: Each country has specific regulations for the exporting of power cables, and labeling must comply with the regulations of the exporting countries. The country code and country names should follow the ISO 3166-1 standard.

Model Name Explanation

Main Unit



Accessories



Smarter. Greener. Together.

Industrial Automation Headquarters

Taiwan: Delta Electronics, Inc.
Taoyuan Technology Center
No.18, Xinglong Rd., Taoyuan District,
Taoyuan City 330477, Taiwan
TEL: +886-3-362-6301 / FAX: +886-3-371-6301

Asia

China: Delta Electronics (Shanghai) Co., Ltd.
No.182 Minyu Rd., Pudong Shanghai, P.R.C.
Post code : 201209
TEL: +86-21-6872-3988 / FAX: +86-21-6872-3996
Customer Service: 400-820-9595

Japan: Delta Electronics (Japan), Inc.
Industrial Automation Sales Department
4-11-25, Shibaura, Minato-ku, Tokyo 108-0023, Japan
TEL: +81-3-6811-5470 / FAX: +81-3-6811-5802

Korea: Delta Electronics (Korea), Inc.
1511, 219, Gasan Digital 1-Ro., Geumcheon-gu,
Seoul, 08501 South Korea
TEL: +82-2-515-5305 / FAX: +82-2-515-5302

Singapore: Delta Energy Systems (Singapore) Pte Ltd.
4 Kaki Bukit Avenue 1, #05-04, Singapore 417939
TEL: +65-6747-5155 / FAX: +65-6744-9228

India: Delta Electronics (India) Pvt. Ltd.
Plot No.43, Sector 35, HSIIDC Gurgaon,
PIN 122001, Haryana, India
TEL: +91-124-4874900 / FAX: +91-124-4874945

Thailand: Delta Electronics (Thailand) PCL.
909 Soi 9, Moo 4, Bangpoo Industrial Estate (E.P.Z),
Pattana 1 Rd., T.Phraksa, A.Muang,
Samutprakarn 10280, Thailand
TEL: +66-2709-2800 / FAX: +66-2709-2827

Australia: Delta Electronics (Australia) Pty Ltd.
Unit 2, Building A, 18-24 Ricketts Road,
Mount Waverley, Victoria 3149 Australia
Mail: IA.au@deltaww.com
TEL: +61-1300-335-823 / +61-3-9543-3720

Americas

USA: Delta Electronics (Americas) Ltd.
5101 Davis Drive, Research Triangle Park, NC 27709, U.S.A.
TEL: +1-919-767-3813

Brazil: Delta Electronics Brazil Ltd.
Estrada Velha Rio-São Paulo, 5300 Eugênio de
Melo - São José dos Campos CEP: 12247-004 - SP - Brazil
TEL: +55-12-3932-2300 / FAX: +55-12-3932-237

Mexico: Delta Electronics International Mexico S.A. de C.V.
Gustavo Baz No. 309 Edificio E PB 103
Colonia La Loma, CP 54060
Tlalnepantla, Estado de México
TEL: +52-55-3603-9200

EMEA

EMEA Headquarters: Delta Electronics (Netherlands) B.V.
Sales: Sales.IA.EMEA@deltaww.com
Marketing: Marketing.IA.EMEA@deltaww.com
Technical Support: iatechnicalsupport@deltaww.com
Customer Support: Customer-Support@deltaww.com
Service: Service.IA.emea@deltaww.com
TEL: +31(0)40 800 3900

BENELUX: Delta Electronics (Netherlands) B.V.
Automotive Campus 260, 5708 JZ Helmond, The Netherlands
Mail: Sales.IA.Benelux@deltaww.com
TEL: +31(0)40 800 3900

DACH: Delta Electronics (Netherlands) B.V.
Coesterweg 45,D-59494 Soest,Germany
Mail: Sales.IA.DACH@deltaww.com
TEL: +49 2921 987 238

France: Delta Electronics (France) S.A.
ZI du bois Challand 2,15 rue des Pyrénées,
Lisses, 91090 Evry Cedex, France
Mail: Sales.IA.FR@deltaww.com
TEL: +33(0)1 69 77 82 60

Iberia: Delta Electronics Solutions (Spain) S.L.U
Ctra. De Villaverde a Vallecas, 265 1º Dcha Ed.
Hormigueras – P.I. de Vallecas 28031 Madrid
TEL: +34(0)91 223 74 20

Carrer Llacuna 166, 08018 Barcelona, Spain
Mail: Sales.IA.Iberia@deltaww.com

Italy: Delta Electronics (Italy) S.r.l.
Via Meda 2–22060 Novedrate(CO)
Piazza Grazioli 18 00186 Roma Italy
Mail: Sales.IA.Italy@deltaww.com
TEL: +39 039 8900365

Turkey: Delta Greentech Elektronik San. Ltd. Sti. (Turkey)
Şerifali Mah. Hendem Cad. Kule Sok. No:16-A
34775 Ümraniye – İstanbul
Mail: Sales.IA.Turkey@deltaww.com
TEL: + 90 216 499 9910

MEA: Eltek Dubai (Eltek MEA DMCC)
OFFICE 2504, 25th Floor, Saba Tower 1,
Jumeirah Lakes Towers, Dubai, UAE
Mail: Sales.IA.MEA@deltaww.com
TEL: +971(0)4 2690148

*We reserve the right to change the information in this catalogue without prior notice.

DELTA_IA-SSM_DTH_C_EN_20250418