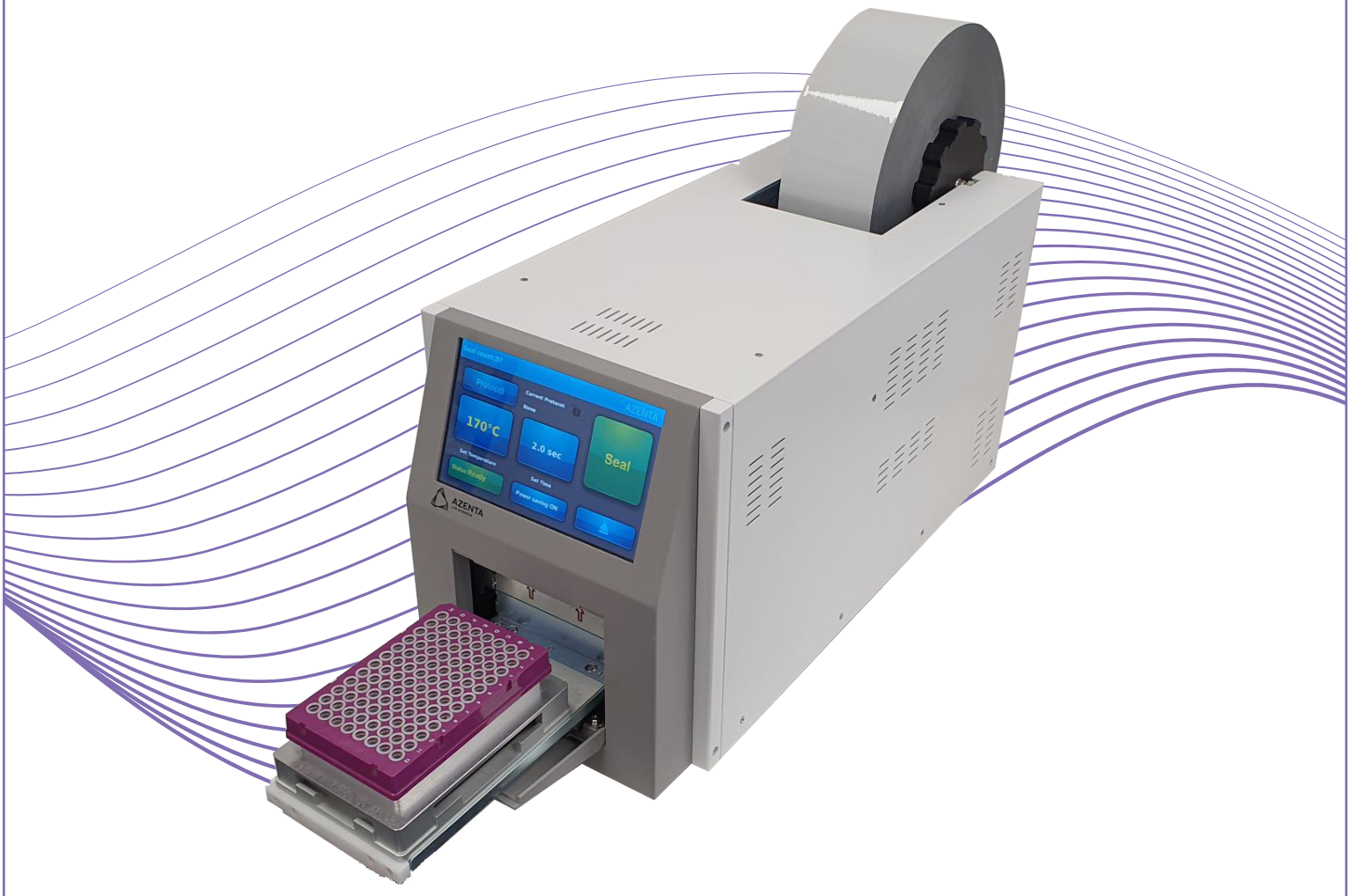
Automated Roll Heat Sealer Integration Mode Command Set User Manual



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Azenta, Inc.

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Original manual printed in English.

These are the original instructions for the Automated Roll Heat Sealer.

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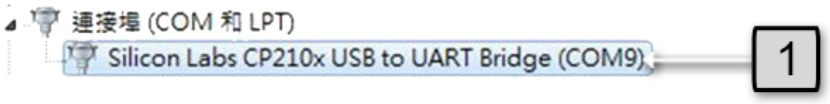
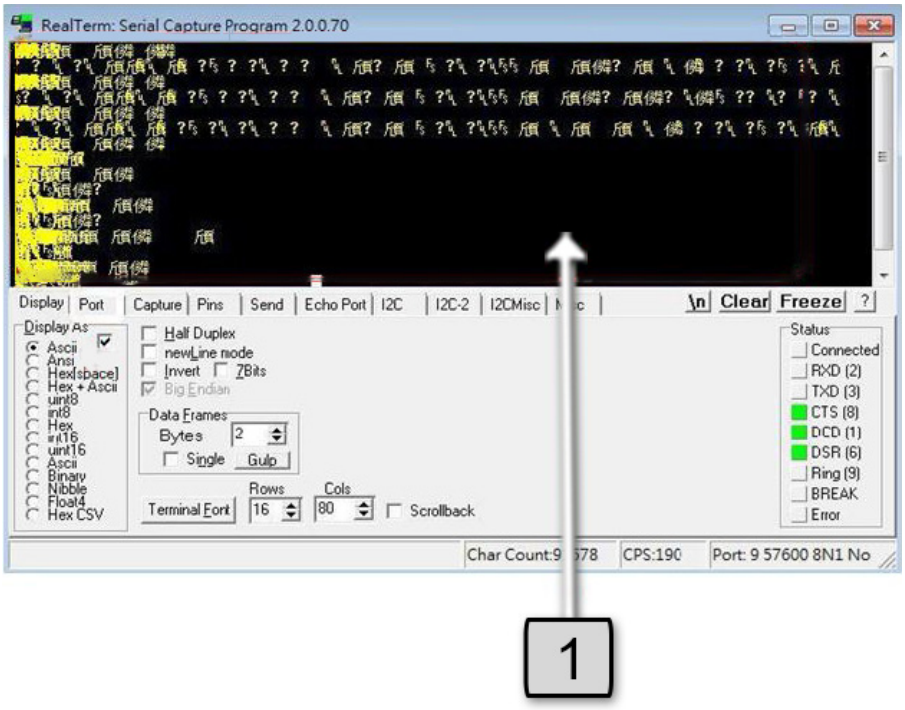
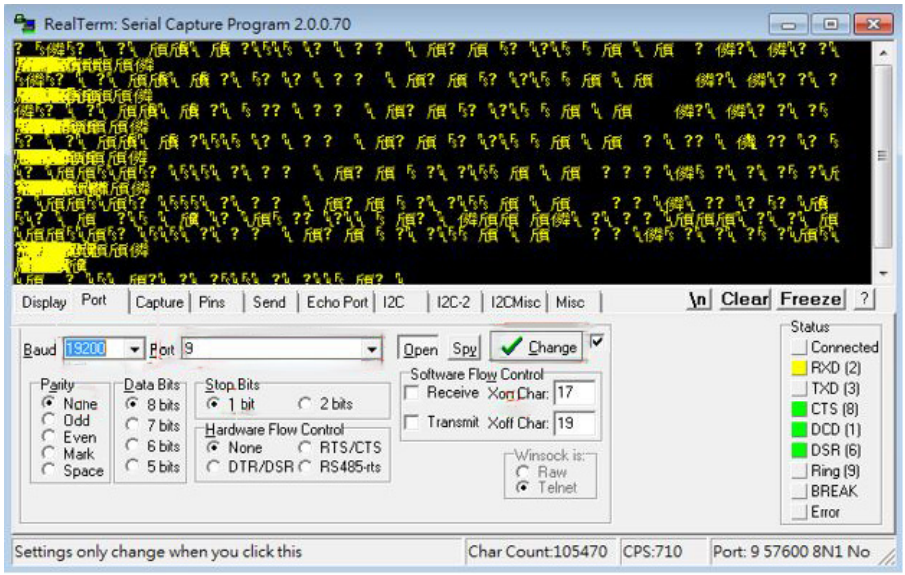
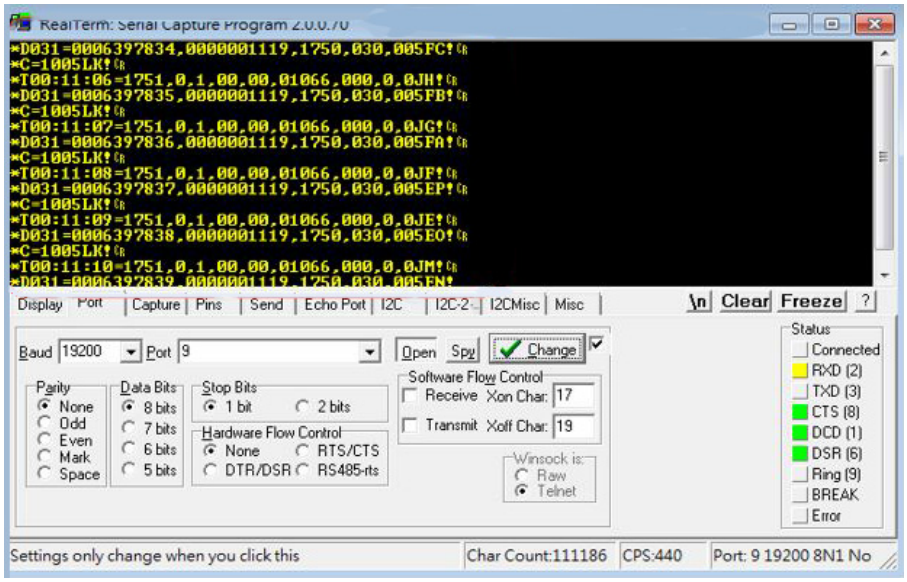
Table of Contents

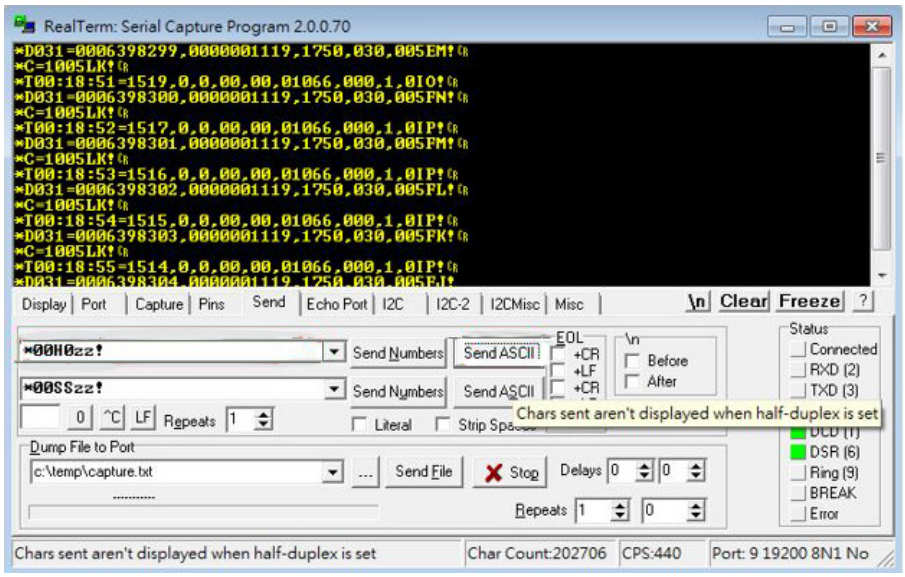
1. Communication

Establish Communication by Realterm APP

Step	Action
1.	Download and install the communication device driver: CP210X VCP driver.
2.	Check the device port number in the *Computer Device Manager*. The device's name is *Silicon Labs CP210x USB to UART Bridge*. For example, the device COM port number is COM9.  **Number** / **Description** 1 — Port number
3.	Install the communication app, Realterm. You can download Realterm on its website: https://realterm.sourceforge.io.

Step	Action
4.	a. Open Realterm. b. In the *Display As* field, select **Ascii**. ***NOTE:*** *It is normal to see distorted text.*  **Number** | **Description** 1 | Distorted text

Step	Action
5.	a. Click the *Port* tab. b. In the *Baud* field, input `19200`. c. Find the port number in the *Computer Device Manager*. d. In the *Port field*, input the port number. e. Click **Change**.  If the settings are correct, the text resembles the following image. 

Step	Action
6.	a. Click the **Send** tab. b. Input a command. c. Click **Send ASCII**. 

2. Displayed Messages

Message Introduce (Slave to Host)

Slave means instrument.

Host means remote control computer.

Message Category	Message Item
System status	Real-time temperature
	System status
	Heating block status
	Error number
	Warning message number
	Sensor status
	Countdown of heating time
Operation status	Instrument total running time
	Total sealing cycles
Command accepted	Confirm the command is correct
Command rejected	Command is a mistake
Communication busy	Communication is busy

Examples of the message categories:

System status:

Operation status:

Command accepted:

Command rejected:

Communication busy:

Message Format

System Status Message Format

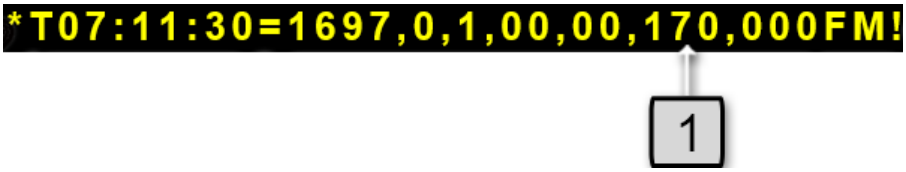
1 byte	1 byte	8 bytes	1 byte	n bytes	2 bytes	1 byte
*	T	Time stamp (07:11:30)	=	Parameter 1 ~ Parameter 7 (1697,0,1,00,00,170,000)	CRC (FM)	!
		hh:mm:ss		Every parameter is partitioned with a comma	See "Checksum" on page 16.	

Parameter 1 ~ Parameter 7

Item	Description	Definition
1	Current temperature (°C)	Real time temperature *10
2	System status	0 = Idle 1 = Single cycle 2 = Repeat cycle 3 = Error 4 = Finish
3	Heating block status	0 = Heater off 1 = Ready 2 = Heating 3 = Cooling 4 = Converging
4	Error code	0 = No error ***NOTE:*** *Check the error code table in the service manual.*
5	Warning message code	0 = No warning ***NOTE:*** *Check the warning message table in the service manual.*
6	Sensors status	Remark 1
7	Countdown (sealing time)	Remaining time

Sensor and bit number comparison table:

Bit	Dec code	Hex code	Indicated sensor	Remark
Bit 0	1	0x0001	Shuttle middle sensor	1: ON/ 0: OFF
Bit 1	2	0x0002	Shuttle open sensor	1: ON/ 0: OFF
Bit 2	4	0x0004	Shuttle close sensor	1: ON/ 0: OFF
Bit 3	8	0x0008	Clean door sensor	1: ON/ 0: OFF
Bit 4	16	0x0010	Seal roll sensor	1: ON/ 0: OFF
Bit 5	32	0x0020	Heater motor up sensor	1: ON/ 0: OFF
Bit 6	64	0x0040	Heater motor down sensor	1: ON/ 0: OFF
Bit 7	128	0x0080	No connect	Reserve



#	Description
1	Sensor status code

Sensor status code: 170 = 0100 0010 1010 (binary code)

Sensor status:

Bit	Sensor	Status	
Bit 0	Shuttle middle sensor	0	OFF
Bit 1	Shuttle open sensor	1	ON
Bit 2	Shuttle close sensor	0	OFF
Bit 3	Clean door sensor	1	ON
Bit 4	Seal roll sensor	0	OFF
Bit 5	Heater motor up sensor	1	ON
Bit 6	Heater motor down sensor	0	OFF
Bit 7	No connect	1	–

Operation Status Message Format

1 byte	1 byte	n bytes	1 byte	n bytes	2 bytes	1 byte
*	D	FW version (511A)	=	Parameter 1 ~ Parameter 2 (0010564936,0000001399)	CRC (DI)	!
				Every parameter is partitioned with a comma.	See "Checksum" on page 16.	

Parameter 1 ~ Parameter 2

Item	Description
1	Total running time
2	Total sealing cycles

Message value	Actual information
511A	FW version is 511A
0010564936	10564936 seconds had run
0000001399	1399 sealing cycles had run

Response of Command Accepted Message Format

1 byte	1 byte	2 bytes	2 bytes	1 byte
*	Y	Command index	CRC	!
		00 ~ 99		

Example: *Y01PL!

This example means command 01 was received and accepted.

Response of Command Rejected Message Format

1 byte	1 byte	2 bytes	2 bytes	1 byte
*	N	Command index	CRC	!
		00 ~ 99		

Example: *N010G!

This example means command 01 was received but rejected because of a mistake.

Communication Busy

1 byte	1 byte	2 bytes	2 bytes	1 byte
*	X	Command index	CRC	!
		00		

Example: *X00PN!

This example means the last command is checking. The instrument cannot accept any entry code.

> ***NOTE:*** Do not attach any unnecessary code after the command. It will cause a busy response.

3. Command Definition (Host to Slave)

Host means remote control computer.

Slave means user's instrument

Command Format

Command = Head + Command + Checksum

Head		Command			Checksum	
1 byte	2 bytes	2 bytes	1 byte	n bytes	2 bytes	1 byte
*	Index	Command	=	Parameter 1, Parameter n	CRC	!

Command Head

	Size (bytes)	Description
*	1	Start to talk
Index	2	Command index: 00 ~ 99 00 is the highest priority index. Index check process is ignored if the command index = 00. Index check process is performed if the index is not 00. Index needs to be arranged from smallest to largest. Otherwise, the message *Index error* appears and the command is rejected. For example, 00, 01,02 ... 97,98,99,01,02 is the correct index order.

Checksum

	Size (bytes)	Description
CRC	2	Checksum: AA ~ PP The Checksum check is ignored if the Checksum = zz or ZZ. If the Checksum is not zz or ZZ, the Checksum check is performed. If there is a mistake, the command is rejected.
!	1	Stop to talk

Checksum calculation:

Step	Action
1.	Set the Checksum to zero.
2.	Translate the ASCII code of the whole command to the hex code. Use one byte to calculate the summation of them.
3.	Map the high nibble of the summation hex code to an ASCII code from the table below. Input `CRC1` into the table.
4.	Map the low nibble of the summation hex code to an ASCII code from the table below. Input `CRC2` into the table.

0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P

Example:

*	0	0	S	R	=	CRC1	CRC2	!
0x2A	0x30	0x30	0x53	0x52	0x3D	0	0	0x21

Set CRC1, CRC2 = 0

Summation: 0x2A + 0x30 + 0x30 + 0x53 + 0x52 + 0x3D + 0x0 + 0x0 + 0x21 = 0x8D

Calculate: 0x100 - 0x8D = 0x73

The high nibble is 7, mapping to CRC1 = H

The low nibble is 3, mapping to CRC2 = D

The complete command is: *00SR=HD!

NOTE: It can use ZZ to bypass the Checksum check process.

Command List

Set Heating Time

DT=XXXX

Purpose	Set the sealing time of the instrument from the remote control computer.
Command	DT
Parameters	XXXX
Notice	4 bytes Range: 0001 to 0100, unit is 0.1 seconds
Example: Command: *00DT = 0031zz! Set the sealing time at 3.1 seconds. Index = 00, bypass index check Checksum = zz, bypass CRC check	

Set Heating Block Temperature

DH = XXXX

Purpose	Set the sealing temperature of the instrument from the remote control computer.
Command	DH
Parameters	XXXX
Notice	4 bytes Range: 0050 to 0200, unit is °C
Example: Command: *00DH=0170zz! Set the sealing temperature at 170 °C. Index = 00, bypass index check Checksum = zz, bypass CRC check	

Drawer Opening

MO

Purpose	Ask the instrument to move the drawer forward to the outside position from the remote control computer.
Command	MO
Parameters	N/A
Notice	N/A
Example: Command: *00MOzz! Index = 00, bypass index check Checksum = zz, bypass CRC check	

Drawer Closing

MC

Purpose	Ask the instrument to move the drawer backward to the inside position from the remote control computer.
Command	MC
Parameters	N/A
Notice	N/A
Example: Command: *00MCzz! Index = 00, bypass index check Checksum = zz, bypass CRC check	

Seal

GS

Purpose	Ask the instrument to perform the sealing cycle from the remote control computer.
Command	GS
Parameters	N/A
Notice	N/A
Example: Command: *00GSzz! Index = 00, bypass index check Checksum = zz, bypass CRC check	

System Reset

SR

Purpose	Reset the system status, error, and warning alarm from the remote control computer.
Command	SR
Parameters	N/A
Notice	N/A
Example: Command: *00SRzz! Index = 00, bypass index check Checksum = zz, bypass CRC check	

Execute Load Film Step

GF = XXXX

Purpose	Ask instrument to execute reload film process from the remote control computer.
Command	GF
Parameters	0002 ~ 0004
Notice	• GF=0002: ask drawer goes to the standby position for user to insert the seal loading tool • GF=0003: ask instrument to close front clamp and cut seal • GF=0004: ask instrument to finish Seal Loading Process
Example: Command: *0002zz! ask drawer goes to the standby position for user to insert the seal loading tool. Index = 00, bypass index check Checksum = zz, bypass CRC check	

Heater On

H1

Purpose	Ask the instrument to turn the heater on from the remote control computer. ***NOTE:*** *The temperature of the heater is governed by a previously set temperature. To avoid confusion, it is recommended to directly use the DH command to set the temperature, which can also have the Heater On effect. See* *"Set Heating Block Temperature " on page 17*.
Command	H1
Parameters	N/A
Notice	N/A
Example: Command: *00H1ZZ Index = 00, bypass index check Checksum = zz, bypass CRC check	

Heater Off

H0

Purpose	Ask the instrument to turn the heater off from the remote control computer.
Command	H0
Parameters	N/A
Notice	N/A
Example: Command: *00H0ZZ Index = 00, bypass index check Checksum = zz, bypass CRC check	