

Heater Jacket Control unit

Model HJCU-COM

Manual



Heater Jacket CONTROL UNIT

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Manual version 2.7

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AQ M-Tech AB

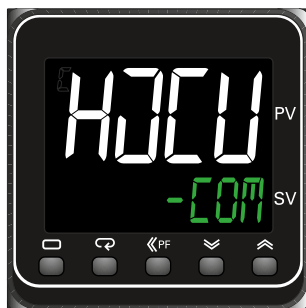


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1. Manufacturer information

AQ M-Tech AB operates a policy of on-going development and reserves the right to make changes and improvements to any of the products described in this manual without prior notice.

Under no circumstances shall AQ M-Tech AB be held responsible for any loss or indirect damage howsoever caused. The contents of this document are provided as it is. AQ M-Tech AB reserves the right to revise this document or withdraw it at any time without prior notice.

CE Declaration of Conformity

Manufacturer: AQ M-Tech AB Sweden declares, that the product:

Heater Jacket Control Unit marked with CE-label conforms to the following standards:

EN 61000-6-2:2005, EN 61000-6-4:2007, WEEE Directive 2012/19/EU, RoHS Directive 2011/65/EU, EN55011 (Group 1, Class B).

Limited Warranty

AQ M-Tech AB gives its end customers a warranty that the Heater Jacket Control Unit is free from defects in its materials and operation for a period of one year from the date of purchase.

Should the Heater Jacket Control Unit show signs of manufacturing defects or material defects during the warranty period, AQ M-Tech AB will repair or replace the defective product at no charge.

The warranty becomes void immediately should the Heater Jacket Control Unit, during the warranty period, in any way be, modified, used incorrectly or be subject to tampering, abnormal working conditions. Such as overheating or used in any other way than what is described in this manual.

The repair or replacement of other equipment in addition to the Heater Jacket Control Unit can not be provided under the terms of this warranty.

The purchaser pays the carriage charges to AQ M-Tech AB. AQ M-Tech AB can in no way be held liable by the purchaser for damage caused to any other equipment.

Warning

Ensure that the Heater Jacket Control Unit is connected to an earthed outlet socket.

Check the supply voltage in relation to Heater Jacket before connecting

The Heater Jacket is manufactured with different supply voltages. The supply voltage to the Heater Jacket Control Unit is governed by the prescribed supply voltage for Heater Jacket. When the supply voltage to the Heater Jacket Control Unit is changed, the Heater Jacket must also be changed.

Always disconnect the voltage when working on the Heater Jacket Control Unit, for example when replacing the fuse.

Use an exact type and size when replacing the fuse. See the "Technical Specification"

The Heater Jacket Control Unit may only be connected to an approved Heater Jacket

The Heater Jacket (Model HJSA...-..., HJSB...-...) must not be heated above 140°C

When routing Heater Jacket cables, only cables provided by AQ M-Tech AB may be used.

The Heater Jacket Control Unit may only be connected to one Heater Jacket.

The Heater Jacket Control Unit is not approved for use in Ex-classified environments.

Manufacturer information

Manufacturer:	AQ M-Tech AB
Address:	Bolandsgatan 10 SE-753 23 Uppsala Sweden
Phone:	+46 184702900
Web:	www.aqgroup.com/en/aqm-tech/aq-m-tech
E-mail:	info.aqtech@aqgroup.com

2. Check list

This material is included in your shipment.

One "Heater Jacket Control Unit Communication" (HJCU-COM).

One "Heater Jacket" (HJSA ...-...or one HJSB ...-...)

One "Extension cable kit", includes two cables each 2,5 meter (Temp & Heat cable)

One "Alarm" connector, "Alarm output" 4-way female

One "Mains" connector, Mains input power 3-way female

One "Communication" connector, Communication RS-485 4-way male

Two Spare fuses 5X20mm, one T 4,0A L/250VAC and one T 8,0A L/250VAC

One "Heater Jacket Control Unit" manual, model HJCU-COM

One "Heater Jacket" manual, model HJSA & HJSB

Three "E5CC Temperature Controller" manuals, six languages (ENG - JPN, DE - IT, FR - ES)

One "E5CC Temperature Controller Communication Event Input" manuals, six languages (ENG, DE, FR, JPN, IT, ES)

One "E5CC Temperature Controller Option Units" manuals (E53-CNQO3N), six languages (ENG, DE, FR, JPN, IT, ES)

IF TCViews are ordered this also includes

One TCViews Software

One TCViews Manual

3. Introduction Heater Jacket Control Unit

Heater Jacket Control Unit (HJCU) is designed for use together with one Heater Jacket (HJ).

HJCU monitors and controls the Heater Jacket temperature. The temperature on HJ¹ can easily be altered. HJCU has two alarm outputs, upper limit and lower limit.

HJCU-COM communicates with RS-485.

4. Installing Heater Jacket Control Unit

Check the main fuse, make sure it's of the correct value in relation to the mains voltage and conforms to specifications for the HJ. See "Technical specification".

Mount the HJCU on a vertical wall with screws intended for the supporting surface. Use the screw holes under the cover screws.

Mount the HJCU so that the mains switch and regulator are not blocked.

Connect the HJ to the HJCU using "Extension cable kit".

If used, connect the alarm cable to the HJCU. See "Alarm description" & "Technical specification".

Fit the HJ as described in the manual "Heater Jacket HJSA & HJSB"

Connect Mains to the HJCU using the correct supply cable to an earthed electrical outlet socket.

Requisite knowledge is required.

Press the power switch. The equipment is now operational.

The default factory setting of SV² is 80°C. SV can be changed within the range 30°C to 140°C

Should an error message be displayed on the regulator see the manual Omron E5CC Temperature controller.

In the event of a fault see "Fault tracing"

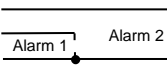
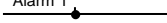
1. HJ = Heater Jacket, HJSA...-..., HJSB...-...
2. SV = Set value, Set working temperature.

5. Rating signs

Rating sign	Connector	Explanation
Heater	3-way female	Supply to the Heater Jacket
Temp	2-way female	Temperature detection on Heater Jacket
Alarm	4-way male	Alarm 1 (HT) ³ and Alarm 2 (LT) ⁴
Mains	3-way male	Supply voltage to the Heater Jacket Control Unit
Communication	4-way female	RS-485 and output 12VDC $\overline{\text{---}}$, 21mA

6. Connections

Connector connections

Name	Connector type	Connection	Description
Heater Jacket	3-way female	pin L & pin N	Supply to the Heater Jacket
		pin $\underline{\quad}$	Earth connection
Temp input	2-way female	pin 1	Temperature sensor on Heater Jacket (PT100), A
		pin 2	B & B
Alarm output	4-way male	pin 2 & pin 3	Alarm 1 ³ (NO) 
		pin 1 & pin 3	Alarm 2 ⁴ (NO) 
Mains	3-way male	pin L & pin N	Supply to the Heater Jacket Control Unit
		pin $\underline{\quad}$	Earth connection
Communication	4-way female	pin 1	RS-485 (B)
		pin 2	RS-485 (A)
		pin 3	Output, + 12VDC $\overline{\text{---}}$, 21mA
		pin 4	Output, - 12VDC $\overline{\text{---}}$, 21mA

Alarm description

Alarm outputs may be connected to external devices. Use the supplied connector for connection of alarms. Use approved cables with an outside diameter of $\varnothing 6\text{--}8$ mm, max wire area 1.5 mm² (see “Material selection”) We can supply you with an Alarm cable (HJAC, see Accessories / Spare parts) with following connections: Black to pin 1, Brown to pin 2 and Blue to pin 3.

Connection terminals for alarms connectors see the section “Connections”

For more information read the instructions in the manual for Omron E5CC Temperature controller.

Replacing the supply cable

Read the text in the section “Warning” before replacing the supply cable!

Also, remember that the earth wire should be the longest so that it releases last.

Replacing the supply cable: With 230 VAC connect: Black to L, Blue to N and Yellow/Green to $\underline{\quad}$.(Earth)
With 115 VAC connect: Black to L, White to N and Yellow/Green to $\underline{\quad}$.(Earth)

3. HT = High temperature alarm.
4. LT = Low temperature alarm.

7. Replacing the Main Fuse

Unplug the supply cable “Mains” from the HJCU.

Unscrew the cover on the HJCU.

Open the fuse holder, marked F1, pull the tab straight up using your forefinger, see figure 1.

Press out the fuse and replace with a new fuse Use the fuse size & type, according to “Technical specification”. otherwise a fire or other danger can occur.

Press the fuse holder back into its original position.

A click should be heard

Screw on the cover on the HJCU

Plug-in the supply cable “Mains” to the HJCU.

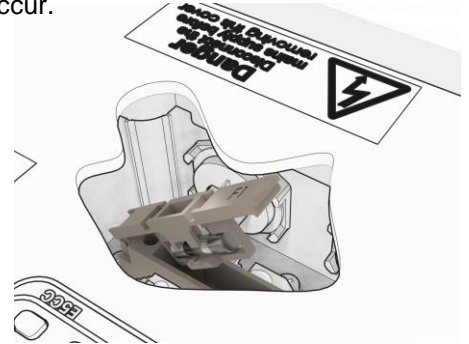







Figure 1

8. Regulator settings

Regulator Description

-  Level key, change levels
-  Mode key, scroll parameters
-  Shift key, move to change the value shown on display 2
-  Down key, increment the value shown on display 2
-  Up key, increment the value shown on display 2

OUT1 Indicates HJ is heating

SUB1 High temperature alarm

SUB2 Low temperature alarm



Display 1
Shows PV
Process Value
Actual temp. in HJ.

Display 2
Shows SV
Set Value

Temperature settings

Set value (SV) is initially set to 80°C and is changeable with Up Key and Down Key.

Alarm outputs

- Alarm 1: High temperature alarm Is initially set to: SV + 5°C
- Alarm 2: Low temperature alarm Is initially set to: SV - 5°C

Regulator Communication

The communication connector on HJCU-COM can be connected to a PC (Personal Computer) via a PC-Transformer⁵. TCViews is a logging program that gives the user a possibility to view 32 HJCU-COM at the same time on a PC screen. TCViews provides you with a possibility to operate, monitor and change temperature controller parameters. With TCViews you create projects, add users with different access rights, change operating parameters, log and view data (temperature graphs according to time scale are available). More information can be found in TCViews manual.

For further information about the regulator see the manual for Omron E5CC Temperature Controller. For further information about the regulator communication see the manual for Omron E5CC Temperature Controller Communication Event Input and Temperature Controller Option Unit E53-CNQ03N2.

9. Dimensions and weight

Item	Width mm	Height mm	Depth mm	Weight kg	Item no.
Heater Jacket Control Unit	125	175	100	1,3	HJCU
Heater Jacket Control Unit Communication	125	175	100	1,3	HJCU-COM
Heater Jacket Control Unit Current Com.	125	175	100	1,3	HJCU-COM-S

5. PC-Transformer = Transforms Communication signal from HJCU-COM RS-485 to RS-232 for PC connection.

10. Technical specification

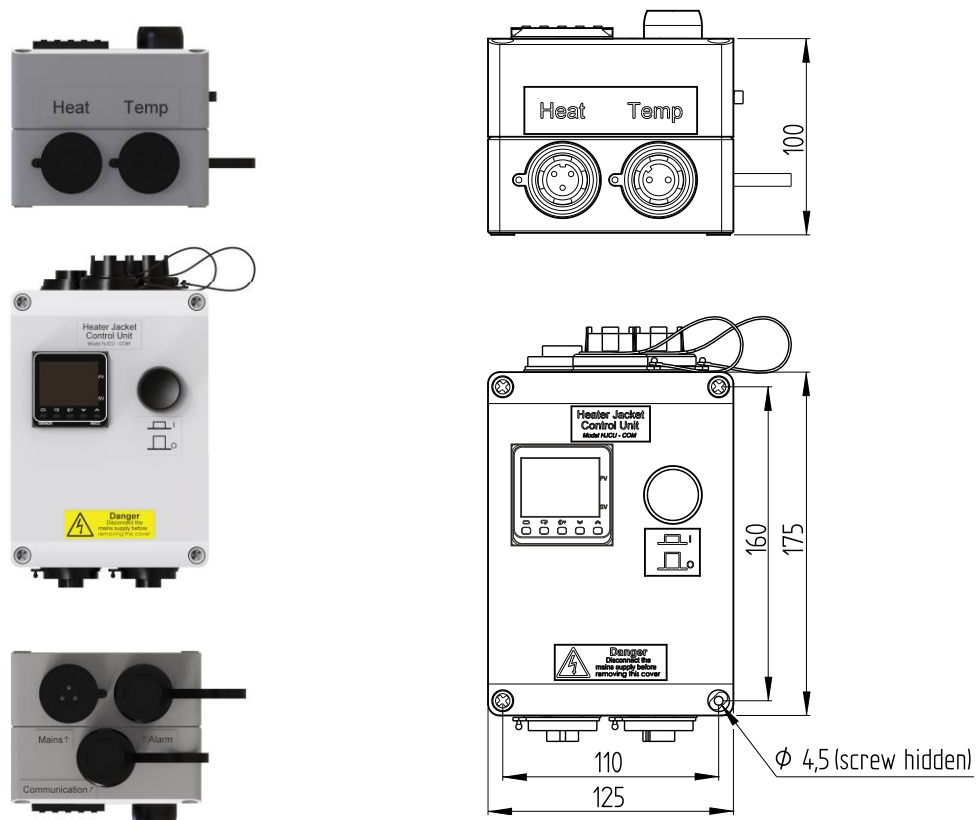
Connection voltage	115 VAC (100-120 VAC) 50/60 Hz	230 VAC (220-240 VAC) 50 Hz
Maximum power consumption	800 Watt	800 Watt
Temperature range (SV) ⁶	30°C – 140°C	30°C – 140°C
Normal working temperature	30°C – 100°C	30°C – 100°C
Main fuse (FUSE, F1)	T 8.0 A L/250VAC ⁷ , 5x20mm	T 4.0 A L/250VAC ⁸ , 5x20mm
Output voltage	100-120 VAC 50-60 Hz	220-240 VAC 50 Hz
Protection class	IP 65	IP 65
Working temperature	+5°C – +40°C	+5°C – +40°C
Alarm outputs (Relay output)	High & Low, NO	High & Low, NO
Maximum resistive load / alarm output	1A, 250 VAC	1A, 250 VAC
Communication	RS-485	RS-485

11. Cleaning

The Heater Jacket Control Unit is cleaned using washing-up liquid on a slightly damp cloth.

12. Material selection

All devices & cables on the product are/shall be approved according to UL, CSA & CE.



All dimensions shown in mm.

6. SV = Set value, Set working temperature. Shown on the regulator's display.

7. Fuse supplied on delivery. Intended for Heater Jacket supply voltage. 100-120 VAC 50-60 Hz.

8. The fuse is fitted in the fuse holder on the Heater Jacket Control Unit. Intended for Heater Jacket supply voltage. 220-240 VAC 50 Hz

13. Accessories / Spare parts

Heater Jacket Control Unit

Item	Model	Size (WxLxH)	Item no.
Control Unit	230/115 VAC	125x175x100 mm	HJCU
Control Unit Communication	230/115 VAC	125x175x100 mm	HJCU-COM ⁹
Control Unit Current Com.	230/115 VAC	125x175x100 mm	HJCU-COM-S ¹⁰

Supply and alarm connector without cable is included.

Fuses

Item	Model	Size	Connection voltage Heater Jacket	Item no.
Main fuse (Fuse, F1)	5x20 mm	T 4.0 A L/250 Vac	230 VAC	HJFT2
Main fuse (Fuse, F1)	5x20 mm	T 8.0 A L/250 Vac	115 VAC	HJFT4

Extension cables and alarm cables

Item	Length	Approval	Type designation	Item number
Supply cable Control unit Sweden	2.0 metres	CEE 7/VII	Y003-B/B	CCUS
Supply cable Control unit USA/Canada	2.4 metres	UL817, CSA- CC22.2n21	TA-3/2.4mG/SVT	CCUU
Extension cable kit Heater Jacket ¹¹	2.5 metres	CE, UL, CSA	Silflex, 3G1,0	HJEC-3M
Extension cable kit Heater Jacket ¹¹	5.0 metres	CE, UL, CSA	Silflex, 3G1,0	HJEC-5M
Extension cable kit Heater Jacket ¹¹	10.0 metres	CE, UL, CSA	Silflex, 3G1,0	HJEC-10M
Alarm Cable Heater Jacket	2.5 metres	CE, UL, CSA	Silflex, 3G1,0	HJAC-3M
Alarm Cable Heater Jacket	5.0 metres	CE, UL, CSA	Silflex, 3G1,0	HJAC-5M
Alarm Cable Heater Jacket	10.0 metres	CE, UL, CSA	Silflex, 3G1,0	HJAC-10M

Communication software

Item	Designation	Item number
TCViews	PC Logging software	COM-Views

9. HJCU-COM – Communication with RS-485

10. HJCU-COM-S – Communication with 4-20mA DC

11. The cable kit includes 2 cables (Temp & Heater cables).

14. Dealer

Dealer: **AQ M-Tech AB**
Address: Bolandsgatan 10
SE-753 23 Uppsala
Sweden

Phone: +46 184702900
Web: www.aqgroup.com/en/aqm-tech/aq-m-tech
E-mail: info.aqmtech@aqgroup.com

15. Fault tracing

Problem	Probable cause	Corrective action¹²
The E5CC regulator on the HJCU does not start	Power switch not pressed in No voltage Fuse blown in the HJCU Faulty regulator	Press the power switch Check the incoming voltage Change the main fuse in the HJCU (F1) Contact the dealer
HJ does not become warm	Power switch not pressed in No voltage Fuse blown HJCU or HJ faulty	Press the power switch Check the incoming voltage Change the main fuse in the HJCU (F1) Contact the dealer
Error message on the E5CC regulator (s.err)	Faulty cable connection HJ Short circuit in HJ Faulty cable connection Temp	Check the connection Contact the dealer Check the connection
HJ becomes significantly warmer than the set value	Faulty temp element Faulty overheating cut-out HJCU	Contact the dealer Contact the dealer Contact the dealer
No alarm on the alarm output	Faulty cable connection Faulty setting on the E5CC regulator	Check the connection Check the settings, see the Manual for Omron E5CC Temperature controller

12. The Heater Jacket Control Unit must be disconnected from the main supply when working inside the enclosure.