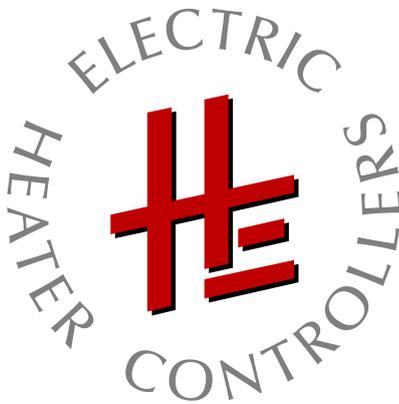


HC500 Heater Controller

Diagnostic



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2 LED diagnostic

2.1 CPU-unit (CU)

H1   H9
 H2   H10
 H3   H11
 H4   H12
 H5   H13
 H6   H14
 H7   H15
 H8   H16

H1 OC **H9** power supply
H2 VU **H10** power circles
H3 TU **H11** OC temperat.
H4 --- **H12** master com.
H5 ON normal **H13** HC-BUS
H6 ON softSART **H14** HC-NET/HC-COM
H7 volt. comp. **H15** PROFIBUS-DP
H8 save param. **H16** HC500-DIAG2

S3 CU no. (1 CU only = "0")

S1+S2 OC quantity

	off =	on =
S4 1	HC-standard	KISS
2	HC-COMascii	HC-COMhex
3	save TUQ & TALP	save all HC-parameters
4	---	---

LED	meaning	color	LED on	LED off	LED blinking [fast blinking]
H1	output-cards (OC)*	green	all OC present	CPU (CU) 24 Vdc supply voltage missing	min. 1 OC missing or S1 + S2 wrong
H2	voltage-unit (VU)	green	VU present & ok	VU not present	VU not present but power voltage fluctuation compensation = ON [error]
H3	temperature-units (TU)	green	all TU present & ok	no TU setup	min. 1 TU missing [min. 1 TU with failure]
H4	---	green	---	---	---
H5	power-outputs	green	heating ON with normalSTART	heating OFF	[automatic heating OFF because of communication problem]
H6		green	heating ON with softSTART(light)		
H7	power voltage fluctuation compensation	green	ON	heating OFF	---
H8	---	green	---	---	---

* OC = output-cards has same meaning as
 OM = output-modules and
 OU = output-units

continue

LED	meaning	color	LED on	LED off	LED blinking [fast blinking]
H9	power voltage	red	---	power voltage of all OCs ok	min. 1 OC with power voltage problem [emergency mode power voltage]
H10	power circles	red	error in one or more power circles	ok	---
H11	monitoring of HC-electronic temperature	red	min. 1 OC > 60 °C	normal	emergency mode electronic temperature
H12*	communication with master	red	missing	---	disturbed or faulty
H13	HC-BUS	yellow	all OC, VU, TU present	no OC, VU, TU found	min. 1 OC, VU, TU missing or wrong address
H14	HC-NET / HC-COM	yellow	data exchange	no data exchange	data exchange
H15	PROFIBUS-DP	yellow	data exchange	no data exchange	---
H16	HC-DIAG	yellow	HC-DIAG2 active	HC-DIAG2 not active	HC-DIAG2 is master [simulation mode]

* firmware 2.0 and higher

2.1.1 With PROFIBUS-DP

 H17

LED	meaning	color	LED on	LED off	LED blinking [fast blinking]
H17	DP	yellow	PROFIBUS-DP connected	PROFIBUS-DP not connected	---

2.2 Output-card (OC)

● H1

● H2

LED H1 (red)	meaning
on	min. 1 power circle with min. 1 failure = fuse, heater or cable broken or shorted triac
blinking 0.5 s on / 0.5 s off	power voltage problem
fast blinking 0.1 s on / 0.1 s off	"emergency mode - power voltage" is active
off	all power circles ok

LED H2 (yellow)	meaning
on	heating ON
long on blinking 0.9s on / 0.1 s off	ready for heating ON
blinking 0.5 s on / 0.5 s off	electronic temperature > 60 °C
fast blinking 0.1 s on / 0.1 s off	HC-BUS Problem
off	24 Vdc on HC-BUS missing or OC is defective

Old OCs with one LED only:

LED H1 (yellow)	meaning
on	heating ON
long on blinking 0.9s on / 0.1 s off	ready for heating ON
short on blinking 0.1s on / 0.9 s off	power voltage problem
blinking 0.5 s on / 0.5 s off	min. 1 power circle with min. 1 failure = fuse, heater or cable broken or shorted triac
fast blinking 0.1 s on / 0.1 s off	"emergency mode - power voltage" is active
off	24 Vdc on HC-BUS missing or OC is defective

2.3 Output-module-master (OMM)

H1   H4
 H2   H5
 H3   H6

LED	meaning	color	LED on	LED off	LED blinking [fast blinking]
H1	OMM power voltage	green	ok	24 Vdc on X2 missing	
H4	HC-BUS	yellow	ok	24 Vdc on HC-BUS missing	communication problem
H2	OM-BUS1	yellow	all OM found	no OM (S1 = "0")	min. 1 OM missing or S1 = wrong
H3	power voltage and power circles of OM's at OM-BUS1	red	min. 1 power circle with min. 1 failure = fuse, heater or cable broken or shorted triac	ok	min. 1 OM power voltage problem or [min 1 OM emergency mode power voltage]
H5	OM-BUS2	yellow	all OM found	no OM (S2 = "0")	min. 1 OM missing or S2 = wrong
H6	power voltage and power circles of OM's at OM-BUS2	red	min. 1 power circle with min. 1 failure = fuse, heater or cable broken or shorted triac	ok	min. 1 OM power voltage problem or [min 1 OM emergency mode power voltage]

2.4 Output-module (OM)

H1 
H2 

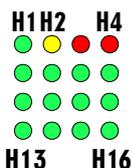
H3 
H4 
H5 

LED	meaning	color	LED on	LED off	LED blinking [fast blinking]
H1	power circles	red	min. 1 power circle with min. 1 failure = fuse, heater or cable broken or shorted triac	ok	power voltage problem [emergency mode power voltage]

LED H2 (yellow)	meaning
on	heating ON
blinking 0.5 s on / 0.5 s off	HC-BUS problem
fast blinking 0.1 s on / 0.1 s off	electronic temperature > 60 °C
short off blinking 0.9s on / 0.1 s off	ready for heating ON
off	24 Vdc on HC-BUS missing or OM is defective

LED	meaning	color	LED on	LED off	LED blinking [fast blinking]
H4	output 1	green	100% output	1 ... 99% output	0 % (no) output
H5	output 2	green			
H6	output 3	green			

2.5 Output-unit (OU)



LED on	LED off	LED blinking
H1 24Vdc at X2		
present	---	missing
H2 HC-BUS/OUI-BUS/OUI {heat ON}		
ok	no 24 Vdc	com error; no OUI {ready}
H3 SSR control outputs		
short circuit	all ok	---
H4 power circles {voltage at X3}		
failure	ok	[missing]
H5...H16 SSR ctr outputs {ESP}		
100 %	0 % (off)	1 ... 99 % {failure}

LED	meaning	color	LED on	LED off	LED blinking {0.9s on / 0.1 s off} [0.5 s on / 0.5 s off] (0.1 s on / 0.1 s off)
H1	24 Vdc at X2	green	present	---	missing
H2	HC-BUS, OUI-BUS and OUI	yellow	ok	24 Vdc on HC-BUS missing	communication problem or OUI missing {ready for heating ON}
H3	SSR control outputs	red	min. 1 short circuit	all ok	---
H4	power circles	red	min. 1 power circle with min. 1 failure = fuse, heater or cable broken or shorted SSR	ok	[power voltage at X3 missing] (not 50 or 60 Hz power voltage at X3)
H5... H16	SSR control outputs	green	working at 100 %	off	working at 1 ... 99% [fuse, heater or cable broken or shorted SSR]

2.6 Output-unit-ammeter (OUI)



LED	meaning	color	LED on	LED off	LED blinking
H1	amp measurement	green	active	not active	---
H2	OUI-BUS	yellow	ok	not present	error

2.7 Voltage-unit (VU)

● H1

● H2

LED	meaning	color	LED on	LED off	LED blinking
H1	phase voltage L1, L3, L3	red	min. 1 phase absent or non 3 different phases	ok	all phases not present
H2	HC-BUS	yellow	ok	24 Vdc on HC-BUS missing	communication problem

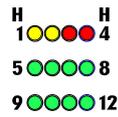
2.8 Temperature-unit

2.8.1 (TU)

H1 ● ● H6
 H2 ● ● H7
 H3 ● ● H8
 H4 ● ● H9
 H5 ● ● H10

LED	meaning	color	LED on	LED off	LED blinking [fast blinking]
H1	channel 1 and sensor/input	green	channel enabled and sensor/input ok	channel not enabled	[sensor defective or missing or input defective]
H2	channel 2 and sensor/input	green			
H3	channel 3 and sensor/input	green			
H4	channel 4 and sensor/input	green			
H6	channel 5 and sensor/input	green			
H7	channel 6 and sensor/input	green			
H8	channel 7 and sensor/input	green			
H9	channel 8 and sensor/input	green			
H5	HC-BUS	yellow			
H10	temperature controller	yellow	min. 1 temperature controller active	no temperature controller active	auto tuning active

2.8.2 (TU-V2)



LED	meaning	color	LED on	LED off	LED blinking [fast blinking]
H1	HC-BUS	yellow	ok	24 Vdc on HC-BUS missing	communication problem
H2	temperature controller	yellow	min. 1 temperature controller active	no temperature controller active	auto tuning active
H3	---	red	---	---	---
H4	channels 1...8	red	of all enabled channels, min. 1 sensor is defective or missing and/or min. 1 input is defective	inputs and sensors of all active channels are ok	---
H5	channel 1 and sensor	green	channel enabled and sensor/input ok	channel enabled and sensor/input ok	[sensor defective or missing or input defective]
H6	channel 2 and sensor	green			
H7	channel 3 and sensor	green			
H8	channel 4 and sensor	green			
H9	channel 5 and sensor	green	channel enabled and sensor/input ok	channel enabled and sensor/input ok	[sensor defective or missing or input defective]
H10	channel 6 and sensor	green			
H11	channel 7 and sensor	green			
H12	channel 8 and sensor	green			

3 Diagnostic with WINDOWS software

For a more detailed diagnostic of the HC500 system, we e-mail the freeware WINDOWS diagnostic software

- HC-DIAG2 (sucessor of HC500-DIAG2)



for CUs with firmware version 2.00 or higher

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

or

- HC500-DIAG



for CUs with firmware version 1.15 to 1.19.

HC500-DIAG

Com 1

CPU-unit (CU) Voltage-unit (VU) Output-cards (OC) Temperature-units (TU)

OCS OV% ESP TE Ich

OCC CH%2 CH%2 CFI ULa Ichmin Urc

Help Channel-values OC no. 1-8 OC no. 9-16 OC no. 17-24 OC no. 25-32 OC no. 33-40 OC no. 41-48 OC no. 49-56 OC no. 57-64 Send all 0 %

	OC no. 01		OC no. 02		OC no. 03		OC no. 04		OC no. 05		OC no. 06		OC no. 07		OC no. 08	
	Read	Send														
Channel 1	15		0		0		0		0		0		0		0	
Channel 2	12		0		0		0		0		0		0		0	
Channel 3	12		0		0		0		0		0		0		0	
Channel 4	12		0		0		0		0		0		0		0	
Channel 5	12		0		0		0		0		0		0		0	
Channel 6	12		0		0		0		0		0		0		0	
Channel 7	12		0		0		0		0		0		0		0	
Channel 8	12		0		0		0		0		0		0		0	
Channel 9	12		0		0		0		0		0		0		0	
Channel 10	12		0		0		0		0		0		0		0	
Channel 11	12		0		0		0		0		0		0		0	
Channel 12	12		0		0		0		0		0		0		0	
Channel 13	12		0		0		0		0		0		0		0	
Channel 14	12		0		0		0		0		0		0		0	
Channel 15	12		0		0		0		0		0		0		0	
Channel 16	12		0		0		0		0		0		0		0	

