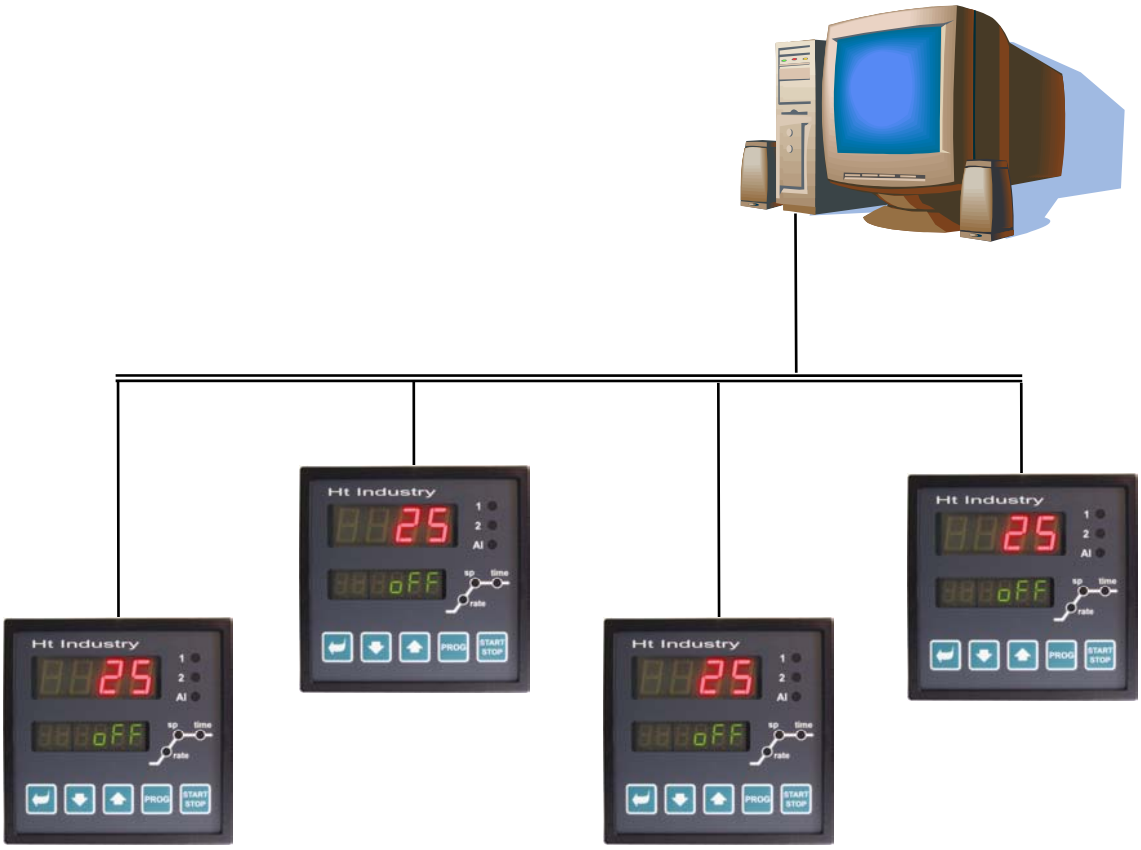
Instruction for Use



HtIndustry

Description of Communication Line

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1 Use of Communication Line

The communication line extends the application area of the regulator. The instruments can be connected to a PC or networked into more complex systems (MASTER – SLAVE, cascade regulation), … .

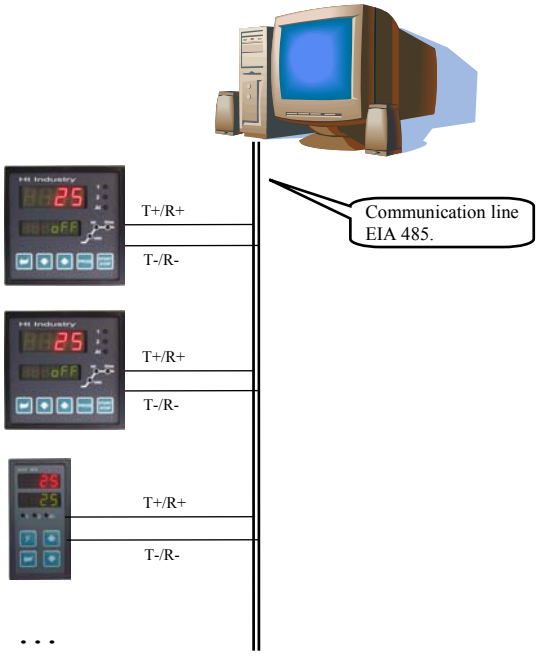
1.1 Regulator – Computer Connection

The computer may help monitor technological process status, configure the instruments, etc. … . More instruments may be connected to a single communication line (EIA485), on condition that then all communicate via the same protocol (MODBUS RTU for instruments HtIndustry, Ht40, …).

Regulator in position 1, 1st communication line.
Set: `CoMM1` = `Mod`.
`Addr1` = `1`.

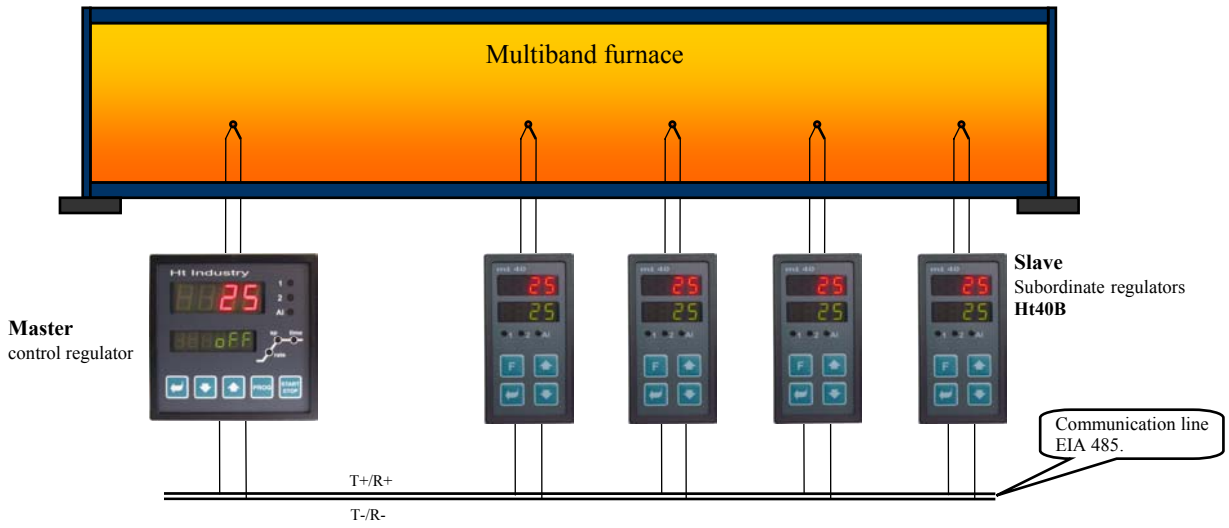
Regulator in position 2, 1st communication line.
Set: `CoMM1` = `Mod`.
`Addr1` = `2`.

Regulator in position 3, 1st communication line.
Set: `CoMM` = `Mod`.
`Addr` = `3`.



1.2 A Simple "MASTER – SLAVE" System

Each regulator regulates a separate section. The main control regulator, "MASTER", transmits the required values to its subordinate regulators, "SLAVES". The slave regulators receive the required values, may adjust them with the difference (parameter `dIF`).



MASTER Regulator Setting (HtIndustry Regulator)

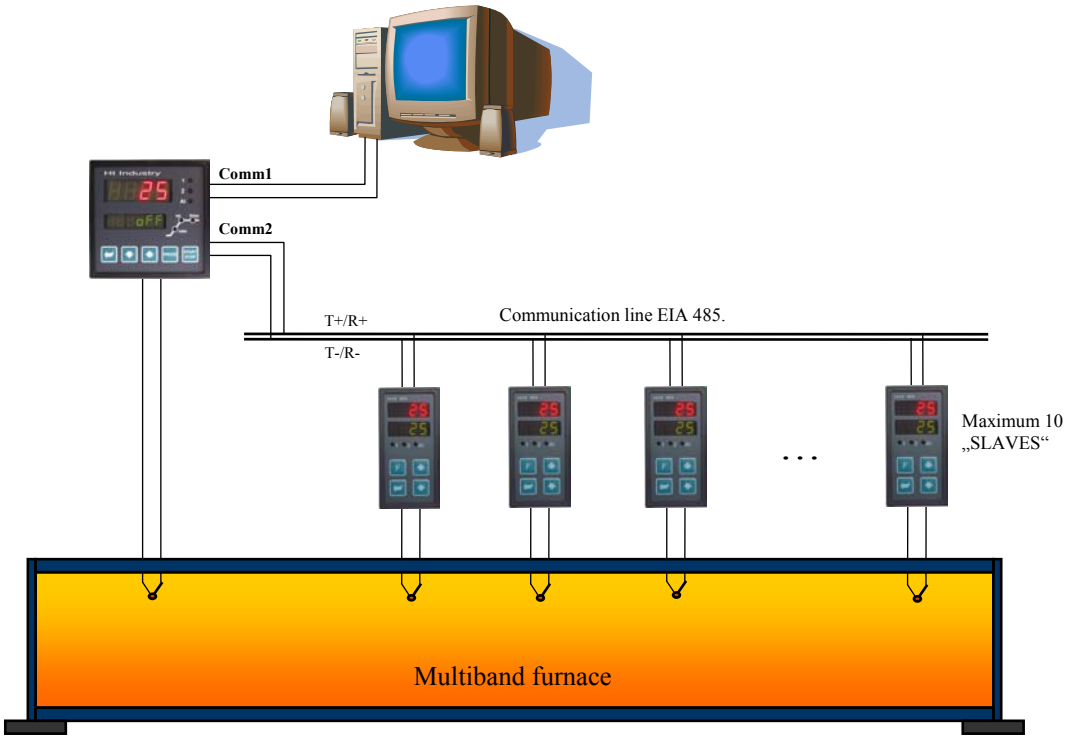
- On the ***configuration level***, menu **CoMM**, set parameter **CoMM** = **SGnL**.

SLAVE Regulator Setting – SLAVE (Ht40B Regulator)

- On the ***configuration level***, menu **CoMM**, set parameter **CoMM** = **Mod**, the setting of parameter **Addr** may be left unchanged.
- On the ***service level*** set parameter **L-r** = **M-S**.
- Failure response to receipt of the required value may be set on the ***configuration level***, menu **SYS** , parameters **rtI** and **rErr**.
- Required value receipt failure may be indicated by the second output, set to **ot2** = **rSP**. If the regulator fails to receive the required value from the communication line the other output will connect.

1.3 Extended "MASTER – SLAVE" System

In the extended "MASTER – SLAVE" system the "MASTER" regulator transmits the required values to the "SLAVE" regulators via the Comm2 communication line, simultaneously reading the currently measured values form the "SLAVES". The Comm1 communication line is used for connection of the "MASTER" regulator to the PC monitoring the required values transmitted by the "MASTER" regulator and the values measured by all regulators, "MASTER", „SLAVE1", „SLAVE2", … . The "SLAVES" are of the Ht40B type and maximum 10 of them may be connected to the HtIndustry type MASTER regulator.



MASTER Regulator Setting (HtIndustry Regulator)

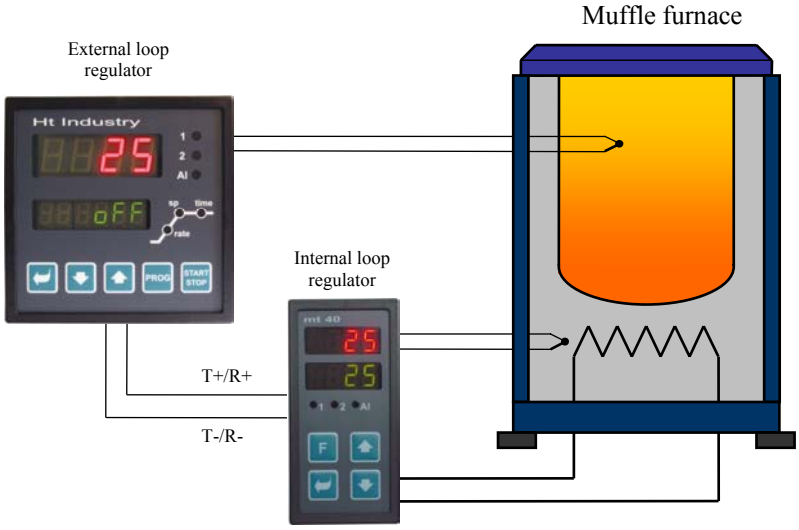
- On the ***configuration level***, menu **CoMM**, set parameter **CoMM** = **SG 1** (1 "SLAVE" regulator), **SG 2** (2 "SLAVE" regulators), … .

SLAVE Regulator Setting – SLAVE (Ht40B Regulator)

- On the ***configuration level***, menu **CoMM**, set parameter **CoMM** = **Mod**, parameter setting **Addr** = 1 for 1st "SLAVE" regulator, **Addr** = 2 for 2nd "SLAVE" regulator, … .
- On the ***service level*** set parameter **L-r** = **M-S**.
- Failure response to receipt of the required value may be set on the ***configuration level***, menu **SYS** , parameters **rtI** and **rErr**.
- Required value receipt failure may be indicated by the second output, set to **ot2** = **rSP**. If the regulator fails to receive the required value from the communication line the other output will connect.

1.4 Cascade Regulation

Cascade regulation is used in systems with extensive traffic delays, i.e. in systems where the response to connection of the actuator is too big (as for example with the muffle furnaces,…). Connection of the regulator in a cascade regulation system will result in division of the traffic delay into 2 parts, and thus in improvement of regulation quality.



External Loop Regulator Setting (HtIndustry Regulator)

- On the ***configuration level***, menu `CoMM`, set parameter `CoMM` = `SGnL`.
- On the ***service level*** it is obligatory to have parameter `L-r` = `L`.

Internal Loop Regulator Setting (Ht40B Regulator)

- On the ***configuration level***, menu `CoMM`, set parameter `CoMM` = `Mod`, parameter `Addr` setting may be left without change.
- On the ***service level*** set parameter `L-r` = `CSCd`.
- On the ***service level*** use parameters `CdLo` and `CdhI` to set the temperature range, for internal loop regulator action.
- Regulator connection failure may be indicated by the second output, set to `ot2` = `rSP`. If the regulator fails to receive the required information from the communication line the other output will connect.

2 MODBUS RTU Protocol

The MODBUS RTU communication protocol is designed for the "Master - Slave" type network creation, where the "Master" is a PC or another control system and the "Slaves" are always the regulators. The system is characterised with a simple but reliable structure with the following typical aspects:

- Defined length of transmitted commands
- Identification of the end device with an address
- Back confirmation of every command
- Report security with CRC code
- Forwarding of failure reports

2.1 General Structure of Protocol

Device address	Command	Register address and/or data	CRC
1 byte	1 byte	n bytes	2 bytes

Commands:

- **Reading** – 03H or 04H
- **Writing** into one register – 06H
- **Back inquiry** – 08H

2.2 Reading Operation (03H or 04H)

This operation allows for reading of up to 32 registers in a row. If a register is not defined the returned value is – 32000.

Command:

Device address	03H	1st read register address	No of read registers	CRC
1 byte	1 byte	2 bytes (1st byte higher)	2 bytes (1st byte higher)	2 bytes

Response:

Device address	03H	No of bytes	1st read register	…	Last read register	CRC
1 byte	1 byte	1 byte	2 bytes (1st byte higher)		2 bytes (1st byte higher)	2 bytes

Example: Reading of register 100 (64H, required value), device address 12 (0CH)

- Command: 0C 03 00 64 00 01 C4 C8
- Response: 0C 03 02 01 C8 95 83

2.3 Writing Operation (06H)

This operation allows for writing a value into one of the device registers:

Command:

Device address	06H	Register address	Data	CRC
1 byte	1 byte	2 bytes (1st bye higher)	2 bytes (1st byte higher)	2 bytes

Response, if the command is executed (identical with the command):

Device address	06H	Register address	Data	CRC
1 byte	1 byte	2 bytes (1st bye higher)	2 bytes (1st bye higher)	2 bytes

Example: Entry into register 100 (64H, required value), device address 12 (0CH)

- Command: 0C 06 00 64 01 C8 C9 0E
- Response: 0C 06 00 64 01 C8 C9 0E

Response, failure report:

Device address	Command + 80H	Failure reports	CRC
1 byte	1 byte	1 byte	2 bytes

Failure reports:

- 01 – command error, CRC error
- 02 – register non-existent or just for reading
- 03 – data outside limits
- 04 – failed entry into register (for example hardware failure, extensive interference, …)

Example: Require register failure

- Command: 0C 01 00 64 04 20 7F D0
- Response: 0C 81 01 10 53

Example: Non-existent register

- Command: 0C 06 00 69 04 20 5B D3
- Response: 0C 86 02 52 62

Example: Data outside limits

- Command: 0C 06 00 64 4E 20 FD 70
- Response: 0C 86 03 93 A2

2.4 Back Inquiry Operation (08H)

This operation is only designed for device detection on the given address.

Command:

Device address	08H	Data	CRC
1 byte	1 byte	4 bytes	2 bytes

Response:

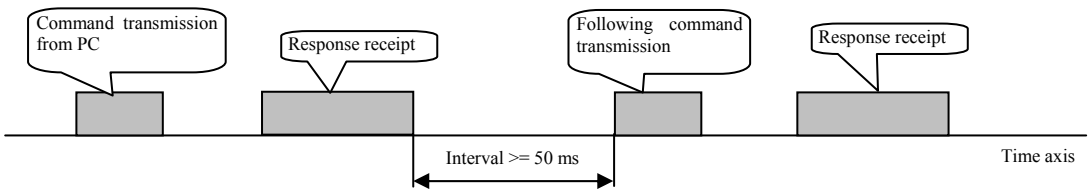
Device address	08H	Data	CRC
1 byte	1 byte	4 bytes	2 bytes

Example: Back inquiry, device address 12 (0CH)

- Command: 0C 08 0A 14 1E 28 AB 74
- Response: 0C 08 0A 14 1E 28 AB 74

2.5 Line Timing

If there are more than one devices on the line (just for line EIA 485) then the timing showed in the below picture must be observed.
The time **interval** (the delay between the receipt end and the following command transmission) must be **equal to or longer than 50ms,** or else data collision may occur.



3 List of Registers

The table contains a full list of registers accessible for the communication line. The individual columns have the following meanings:

- **Display** … Register identification on the device display. If not filled out the register identification will not show on the display.
- **Address** … Register address and access to the register, r … just for reading, r/w … reading and writing.
- **Range** … Register value range.
- **Initialisation** … Initialisation value on first switch on or after restart.
- **Decimals** … Number of decimal positions displayed. For conversion see the below table.
- **Note** … Mostly the role of the register.

Decimals	Value transmitted from communication line	Data on display	Note
0	2300	2300	Fixed setting, without decimals
1		230.0	Fixed setting, 1 decimal position
2		23.00	Fixed setting, 2 decimal positions
dEC1 (0)		230	Pursuant to par. dEC1 (without decimals), input tc, rtd
dEC1 (1)		230.0	Pursuant to par. dEC1 (1 decimal position), input tc, rtd
dEC1 (0)		230	Pursuant to par. dEC1 (without decimals), input proc
dEC1 (1)		23.0	Pursuant to par. dEC1 (1 decimal position), input proc
dEC1 (2)		2.30	Pursuant to par. dEC1 (2 decimal positions), input proc
dEC1 (3)		0.230	Pursuant to par. dEC1 (3 decimal positions), input proc

HW Configuration of Controller

Display	Address	Range	Initialisation	Decimals	Note
SoFt	0 r				SW version
	1 r	0 … tc + rtd 1 … proc			Measurement input
	2 r	0 … unoccupied 1 … communication			1st universal input/output
	3 r	0 … unoccupied 1 … communication			2nd universal input/output
	4 r	0 … unoccupied 1 … SSD 2 … relay 3 … proc. voltage 4 … proc. current			1st output
	5 r	0 … unoccupied 1 … SSD 2 … relay 3 … proc. voltage 4 … proc. current			2nd output
	6 r	0 … unoccupied 1 … relay			3rd output, alarm
	7 r	0 … unoccupied 1 … 1 relay (output 4) 2 … 2 relays (outputs 4, 5) 3 … 3 relays (outputs 4 to 6) 4 … 4 relays (outputs 4 to 7)			4th to 7th outputs
	8 r	0 … unoccupied 1 … additional memory			Additional memory of data logger for 4,000 records
	10 r	0 … no system failure 1 … device system failure (FLASCH, EEPROM, translator)			Internal failure of device

Controller Status Reading

Display	Address	Range	Initialisation	Decimals	Note
	20 r	Measured value Top display		dEC1	Unless the sensor is set the returned value is -22000. If there is sensor failure then the returned values is - 22001.
	21 r	Currently required value Bottom display		dEC1	If oFF when the returned value is -22000.
	22 r	Ambient temperature		1	
	23 r	0 to 100		1	Output in percent of 1st output.
	24 r	Regulation: 0 to -100 Other: 0 … off 1 … on			2nd output: Output in percent for cooling regulation. Output status for other.
	25 r	0 … no alarm 1 … alarm activated			3rd output, alarm
	26 r	0 … off 1 … on			4th output
	27 r	0 … off 1 … on			5th output
	28 r	0 … off 1 … on			6th output
	29 r	0 … off 1 … on			7th output
	40 r	0 … regulation to constant temperature / output off 1 … program run 2 … "HOLD" status 3 … "ABORT" status			Regulator status
ProG	41 r	1 to 30			Currently running program
StEP	42 r	1 to 15			Currently running step
EnSP	43 r				Final required value
trEM	44 r				Time to end of step, in hours
trEM	45 r				Time to end of step, in minutes
	50 r	0 to 9999		0	Total consumption in kWh. After reaching the value of 9999 the counter is reset and the new count starts from 0.
	51 r	0 to 9999		0	Power consumption in kWh per firing. At program start the counter is reset and consumption reading starts from 0.
	52 r	0 to 9999		0	Total runtime of the output member in hours.

Program Start/Stop

Display	Address	Range	Initialisation	Decimals	Note
	60 r/w	1 to 30	1	0	By entry to this address the relevant program will start (1 to 30).
	61 r/w	0 … without interference 1 … program end	0	0	By entering "1" to this address the running program will stop.

Program Start with Timer

Display	Address	Range	Initialisation	Decimals	Note
PCLK	70 r/w	0 to 30 0 … oFF	0	0	Required program
Mon	71 r/w	0 to 12 0 … oFF	0	0	Month
dAtE	72 r/w	1 to 31	1	0	Day
hour	73 r/w	0 to 23	0	0	Hour
Min	74 r/w	0 to 59	0	0	Minute

Other Commands

Display	Address	Range	Initialisation	Decimals	Note
AL oFF	80 r/w	0 … without interference 1 … cancellation of permanent alarm		0	By setting "1" you cancel permanent alarm.

Operation Level

Display	Address	Range	Initialisation	Decimals	Note
	100 r/w	SP1 Lo to SP1 hI			Required value, displayed on the bottom display.
Pb1A	110 r/w	10 to 24990	200	dEC1	Proportionality zone
It1A	111 r/w	0 to 999 0 … oFF	100	1	Integration constant
dE1A	112 r/w	0 to 999 0 … oFF	24	2	Derivation constant
Pb1b	113 r/w	10 to 24990	200	dEC1	Proportionality zone
It1b	114 r/w	0 to 999 0 … oFF	100	1	Integration constant
dE1b	115 r/w	0 to 999 0 … oFF	24	2	Derivation constant
hYS1	116 r/w	10 to 2490	20	dEC1	Regulation output closing hysteresis
Pb2A	120 r/w	10 to 24990	200	dEC1	Proportionality zone
It2A	121 r/w	0 to 999 0 … oFF	100	1	Integration constant
dE2A	122 r/w	0 to 999 0 … oFF	24	2	Derivation constant
hYS2	123 r/w	10 to 2490	20	dEC1	Regulation output closing hysteresis
AL Lo	130 r/w	-4990 to AL hI	-4990	dEC1	Bottom alarm limit for absolute alarm
AL hI	131 r/w	AL Lo to 24990	24990	dEC1	Top alarm limit for absolute alarm
AL Lo	132 r/w	-9990 to 0	-990	dEC1	Bottom alarm limit for alarm preset as deviation from the required value
AL hI	133 r/w	0 to 9990	990	dEC1	Top alarm limit for alarm preset as deviation from the required value
ot4 Lo	140 r/w	-4990 to ot4 hI	-4990	dEC1	Bottom signalling limit for setting in absolute values
ot4 hI	141 r/w	ot4 Lo to 24990	24990	dEC1	Top signalling limit for setting in absolute values
ot4 Lo	142 r/w	-9990 to 0	-990	dEC1	Bottom signalling limit for setting the deviation from the required value
ot4 hI	143 r/w	0 to 9990	990	dEC1	Top signalling limit for setting the deviation from the required value
ot5 Lo	150 r/w	-4990 to ot5 hI	-4990	dEC1	Bottom signalling limit for setting in absolute values
ot5 hI	151 r/w	ot5 Lo to 24990	24990	dEC1	Top signalling limit for setting in absolute values
ot5 Lo	152 r/w	-9990 to 0	-990	dEC1	Bottom signalling limit for setting the deviation from the required value
ot5 hI	153 r/w	0 to 9990	990	dEC1	Top signalling limit for setting the deviation from the required value
ot6 Lo	160 r/w	-4990 to ot6 hI	-4990	dEC1	Bottom signalling limit for setting in absolute values
ot6 hI	161 r/w	ot6 Lo to 24990	24990	dEC1	Top signalling limit for setting in absolute values
ot6 Lo	162 r/w	-9990 to 0	-990	dEC1	Bottom signalling limit for setting the deviation from the required value
ot6 hI	163 r/w	0 to 9990	990	dEC1	Top signalling limit for setting the deviation from the required value
ot7 Lo	170 r/w	-4990 to ot7 hI	-4990	dEC1	Bottom signalling limit for setting in absolute values
ot7 hI	171 r/w	ot7 Lo to 24990	24990	dEC1	Top signalling limit for setting in absolute values
ot7 Lo	172 r/w	-9990 to 0	-990	dEC1	Bottom signalling limit for setting the deviation from the required value
ot7 hI	173 r/w	0 to 9990	990	dEC1	Top signalling limit for setting the deviation from the required value

Display	Address	Range	Initialisation	Decimals	Note
dt PEr	180 r/w	1 … 60	10	0	Archiving period in minutes
dt Sto	181 r/w	0 … oFF 1 … ProG 2 … AlMr 3 … Cont	1		Archiving condition

Configuration Level

Display	Address	Range	Initialisation	Decimals	Note
Sen1	200 r/w	Thermocouple input: 0 … no 1 … J 2 … K 3 … t 4 … n 5 … E 6 … r 7 … S 8 … b 9 … C 10 … d 11 … rtd Process input: 0 … no 1 … 0-20 2 … 4-20 3 … 0-5 4 … 1-5 5 … 0-10	0		Measuring input setting
dEC1	201 r/w	Thermocouple input: 0 … 0 1 … 0.0 Process input: 0 … 0 1 … 0.0 2 … 0.0 3 … 0.0	0		Decimal point setting
CAL1	202 r/w	-9990 to 9990	0	dEC1	Measuring input calibration
r Lo1	203 r/w	-4990 to 24990	0	dEC1	Process input range, bottom limit
r hI1	204 r/w	-4990 to 24990	1000	dEC1	Process input range, top limit
Ftr1	205 r/w	0 to 1000 0 … oFF	10	1	Input filter
out 1	230 r/w	0 … oFF 1 … ht 2 … ht2	1		Regulation output setting
Pr1 tY	231 r/w	0 … 0-10 1 … 0-5 2 … 0-20 3 … 4-20	0, 2		1st output, process signal
Ct1	232 r/w	1 to 200	1 … SSD output 15 … relay output	0	Cycle time
ALGo	233 r/w	0 … PID 1 … 2PID	0		Algorithm of PID regulation
SWPID	234 r/w	-4990 to 24990	250	dEC1	Dividing line between PID1 and PID2.
PL Lo	235 r/w	0 to 100	100	0	Limitation of output below SW PL.
SW PL	236 r/w	-4990 to 24990	250	dEC1	Output limitation switch
PL hI	237 r/w	0 to 100	100	0	Limitation of output above SW PL.

Display	Address	Range	Initialisation	Decimals	Note
out 2	240 r/w	0 … oFF 1 … CL 2 … CL2 3 … AHt	0		Function of 2nd output
Pr2 tY	241 r/w	0 … 0-10 1 … 0-5 2 … 0-20 3 … 4-20	0, 2		2nd output, process signal
SP2 dE	242 r/w	0 to 10000	10	dEC1	Required value of 2nd output (deviation from 1st required value).
Ct2	243 r/w	1 to 200	1 …SSD output 15 … relay output	0	2nd output cycle time (for PID regulation)
PCnt	244 r/w	0 to 100	100	0	Additional heating output limitation
out 3	250 r/w	0 … oFF 1 … ALPr 2 … ALdE	0		Alarm output function
Lat 3	251 r/w	0 … oFF 1 … on	0		Alarm time setting
SIL 3	252 r/w	0 … oFF 1 … on	0		Suspension of unwanted alarm on device start
SidE 3	253 r/w	0 … both 1 … hI 2 … Lo	0		Selection of active limits for alarm
hYS 3	254 r/w	10 to 2490	20	dEC1	Connection hysteresis of alarm output
out 4	260 r/w	0 … oFF 1 … Ent1 2 … SGPr 3 … SgdE 4 … ProG 5 … PEnd	0		4th output
I Ent1	261 r/w	0 … hoLd 1 … oFF 2 … on	0		Condition of attributed output Ent1 on program interruption
SidE 4	262 r/w	0 … both 1 … hI 2 … Lo	0		Selection of active limits for signalling
hYS 4	263 r/w	10 to 2490	20	dEC1	Connection hysteresis of signalling output
tiME 4	264 r/w	1 to 999	10	0	Length of signalling on program end in seconds
out 5	270 r/w	0 … oFF 1 … Ent5 2 … SGPr 3 … SgdE 4 … ProG 5 … PEnd	0		5th output
I Ent2	271 r/w	0 … hoLd 1 … oFF 2 … on	0		Condition of attributed output Ent2 on program interruption
SidE 5	272 r/w	0 … both 1 … hI 2 … Lo	0		Selection of active limits for signalling
hYS 5	273 r/w	10 to 2490	20	dEC1	Connection hysteresis of signalling output
tiME 5	274 r/w	1 to 999	10	0	Length of signalling on program end in seconds

Display	Address	Range	Initialisation	Decimals	Note
out 6	280 r/w	0 … oFF 1 … Ent3 2 … SGPr 3 … SgdE 4 … ProG 5 … PEnd	0		6th output
I Ent3	281 r/w	0 … hoLd 1 … oFF 2 … on	0		Condition of attributed output Ent3 on program interruption
SidE 6	282 r/w	0 … both 1 … hI 2 … Lo	0		Selection of active limits for signalling
hYS 6	283 r/w	10 to 2490	20	dEC1	Connection hysteresis of signalling output
tiME 6	284 r/w	1 to 999	10	0	Length of signalling on program end in seconds
out 7	290 r/w	0 … oFF 1 … Ent4 2 … SGPr 3 … SgdE 4 … ProG 5 … PEnd	0		7th output
I Ent4	291 r/w	0 … hoLd 1 … oFF 2 … on	0		Condition of attributed output Ent4 on program interruption
SidE 7	292 r/w	0 … both 1 … hI 2 … Lo	0		Selection of active limits for signalling
hYS 7	293 r/w	10 to 2490	20	dEC1	Connection hysteresis of signalling output
tiME 7	294 r/w	1 to 999	10	0	Length of signalling on program end in seconds
SP1 Lo	300 r/w	-4990 to SP1 hI	0	dEC1	Bottom working range
SP1 hI	301 r/w	SP1 Lo to 24990	1000	dEC1	Top working range
SLEEP	302 r/w	0 … oFF 1 … SP1	0		Regulator status, if program is not running
PoWEr	310 r/w	0 to 9990	0	1	Output of regulation system in kWh.
rA tYP	311 r/w	0 … StPt 1 … rAtE 2 … both	2		Step type “start up/drop“ allowed by program
GS dE	312 r/w	10 to 9990	100	dEC1	Band width guarantee
Po tIM	313 r/w	0 to 999	0	0	Time of allowed outage in minutes
Po ACt	314 r/w	0 … Cont 1 … HoLd 2 … Abrt	0		Reaction to power cut
StArt	315 r/w	0 … Prog 1 … PrSt	0		Setting of program start option
StoP	316 r/w	0 … C E 1 … CH E 2 … C AE 3 … CHAE	0		Setting of program end or interruption option
dEr tI	317 r/w	10 to 1000	25	1	Precision of the nature of the derivation component

Display	Address	Range	Initialisation	Decimals	Note
StEP 1	320 r/w	0 … no 1 … run 2 … Erun 3 … Pcn1 4 … Pcn2 5 … PPrG 6 … Ptot 7 … AoFF 8 … Aut 9 … dPer 10 … dSto 11 … Ent1 12 … Ent2 13 … Ent3 14 … Ent4 15 … dLoG 16 … CLK	15		Position 1 of user menu
StEP 2	321 r/w	Like StP1	1		Position 2 of user menu
StEP 3	322 r/w	Like StP1	0		Position 3 of user menu
StEP 4	323 r/w	Like StP1	0		Position 4 of user menu
StEP 5	324 r/w	Like StP1	0		Position 5 of user menu
StEP 6	325 r/w	Like StP1	0		Position 6 of user menu
StEP 7	326 r/w	Like StP1	0		Position 7 of user menu
StEP 8	327 r/w	Like StP1	0		Position 8 of user menu
StEP 9	328 r/w	Like StP1	0		Position 5 of user menu
StEP10	329 r/w	Like StP1	0		Position 6 of user menu
StEP11	330 r/w	Like StP1	0		Position 7 of user menu
StEP12	331 r/w	Like StP1	0		Position 8 of user menu
PAS oP	340 r/w	0 to 9999 0 … oFF	0	0	Password for access to service level
PAS Co	341 r/w	0 to 9999 0 … oFF	0	0	Password for access to configuration level
PAS SE	342 r/w	0 to 9999 0 … oFF	0	0	Password for access to service level

Real Time Setting

Display	Address	Range	Initialisation	Decimals	Note
YEAr	500 r/w	0 to 99		0	Year
Mon	501 r/w	1 to 12		0	Month
dAY	502 r/w	1 to 31		0	Day
Hour	503 r/w	0 to 23		0	Hour
Min	504 r/w	0 to 59		0	Minute

Entry, Program Editing

Display	Address	Range	Initialisation	Decimals	Note
E Prog	600 r/w	1 to 30	1	0	Edited program
E StEP	601 r/w	1 to 15	1	0	Edited step
tyPE.xx	610 r/w	0 … End 1 … StPt 2 … rAtE 3 … SoAK 4 … JuMP	0		Step type
EnSP.xx	611 r/w	-4990 to 24990	250	dEC1	Required value
tIME.xx	612 r/w	0 to 5999	10	0	Time of step in minutes
rAtE.xx	613 r/w	10 to 30000	1000	dEC1	Speed of increase, drop in units/hour

Display	Address	Range	Initialisation	Decimals	Note
GSd.xx	614 r/w	0 … Strt 1 … oFF 2 … on			Band width guarantee
Ent1.xx	615 r/w	0 … oFF 1 … on	0		1st attributed output
Ent2.xx	616 r/w	0 … oFF 1 … on	0		2nd attributed output
Ent3.xx	617 r/w	0 … oFF 1 … on	0		3rd attributed output
Ent4.xx	618 r/w	0 … oFF 1 … on	0		4th attributed output
J Pr.xx	619 r/w	1 to 30	1	0	Leap to program
J St.xx	620 r/w	1 to 15	1	0	Leap to step

If the parameters f the same program and step are set simultaneously from the keyboard and from the communication line the values transmitted by the communication line are not accepted.

Data Transfer and Data Logger Memory Clear

Display	Address	Range	Initialisation	Decimals	Note
	700 r/w	0 to 39 for basic memory 0 to 3999 for extended memory	0	0	Position setting for data history reading. 0 sets the most recent value, 39 (3999) sets the earliest value.
	701 r			dEC1	Measured value on position with address 700. Unless the sensor is set the returned value is –22000. In the case of sensor failure the returned value is –22001.
	702 r	0 to 99		0	Year, position address 700.
	703 r	1 to 12		0	Month, position address 700.
	704 r	1 to 31		0	Day, position address 700.
	705 r	0 to 23		0	Hour, position address 700.
	706 r	0 to 59		0	Minute, position address 700.
	720 r/w	0 … no action 1 … memory clear	0		Writing "1" to this address will clear the datalogger memory

System Status Transmission, Extended "MASTER – SLAVE"

Display	Address	Range	Initialisation	Decimals	Note
	1200 r	Current required value Bottom display		dEC1	If off oFF, the returned value is -22000.
	1201 r	Measured value Top display		dEC1	Unless the sensor is set the returned value is -22000. In the case of the sensor failure the returned value is -22001.
	1202 r	Measured regulator value for address 1		dEC1	Unless the sensor is set the returned value is -22000. In the case of the sensor failure the returned value is -22001.
	1203 r	Measured regulator value for address 2		dEC1	Unless the sensor is set the returned value is -22000. In the case of the sensor failure the returned value is -22001.
	1204 r	Measured regulator value for address 3		dEC1	Unless the sensor is set the returned value is -22000. In the case of the sensor failure the returned value is -22001.
	1205 r	Measured regulator value for address 4		dEC1	Unless the sensor is set the returned value is -22000. In the case of the sensor failure the returned value is -22001.
	1206 r	Measured regulator value for address 5		dEC1	Unless the sensor is set the returned value is -22000. In the case of the sensor failure the returned value is -22001.
	1207 r	Measured regulator value for address 6		dEC1	Unless the sensor is set the returned value is -22000. In the case of the sensor failure the returned value is -22001.
	1208 r	Measured regulator value for address 7		dEC1	Unless the sensor is set the returned value is -22000. In the case of the sensor failure the returned value is -22001.

Display	Address	Range	Initialisation	Decimals	Note
	1209 r	Measured regulator value for address 8		dEC1	Unless the sensor is set the returned value is -22000. In the case of the sensor failure the returned value is -22001.
	1210 r	Measured regulator value for address 9		dEC1	Unless the sensor is set the returned value is -22000. In the case of the sensor failure the returned value is -22001.
	1211 r	Measured regulator value for address 10		dEC1	Unless the sensor is set the returned value is -22000. In the case of the sensor failure the returned value is -22001.

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