

7. Commands overview

Allocation of functions

All devices

^{D6} Sensors

◦ Only V5 devices

^G Only devices with graphics display 2590-x, 2690, 2890, 5690-2, 5990-2

* Only V6 devices

*^G Only V6 devices with graphics display 2690, 2890, 5690-2

*³ Only V6 devices 2390-5/8

*² Only higher V6 devices 2690, 2890, 5690, 8590

*^K Only V6 devices with KL option

7. Commands overview

7.1 Measured value processing

Function	Command, ►: Response	Printout
^{D6} Select measuring point xx (including input channel)	Mxx	
^{D6} Select input channel xx only	Exx	
^{D6} Output measured value for measuring channel (without rescanning)	p ►01: +0023.5 °C	
^{D6} Output measured value for input channel (without rescanning)	P01 ►12:34:00 01: +0023.5 °C	
^G Output measured value for input channel (without time, with designation)	P35 ►01: +0023.5 °C Temperature	
^{D6} Set measured value to zero (base value)	C01	
Sensor adjustment (zero-point and gain)	f1 C01	
** Zero-set timer 3 (1 s)	f3 C01	
** Zero-set timer 4 (0.1 s)	f4 C01	
** Calibration switch ON / (OFF)	o(-)01	
** Enter setpoint	f2 gxxxxxx	
** Adjust setpoint	f2 C01	
** Output setpoint	P45 ►SETPOINT: 01: 1100.0°C	
* Enter temperature compensation in 0.1 °C	f1 gxxxxxx	
** Define temperature sensor for TC	f2 \$*T .. CR	
* Output temperature compensation	P44 ►COMPENSATION 01: 25.0°C	
^{D6} Enter atmospheric pressure in mbar for pressure compensation	g0xxxxx	
^{D6} Define atmospheric pressure sensor as reference	f2 \$*P .. CR	
^G Output atmospheric pressure	P43 ►ATM. PRESSURE: +01013.mb	
Define temperature sensor as reference for cold junction compensation	f2 \$*J .. CR	
Peak values		
Delete maximum value	C02	
Output maximum value	P02 ►MAX. VALUE: 01: +0020.0 °C	
** Output maximum time	P28 ►MAX. TIME: 01: 12:32 01.02	
Delete minimum value	C03	
Output minimum value	P03 ►MIN. VALUE: 01: -0010.0 °C	
** Output minimum time	P29 ►MIN. TIME: 01: 12:32 01.02	
Averaging		s. P15 MITTEL
Cancel the averaging mode	m0	- - -
Averaging mode, continuous	m1	CONT
Averaging mode, cyclic	m2	CYCL

^G Output averaging mode

P21

►AVERAGE MODE: 01: CONT

^G Output number of values averaged

P22

►AVERAGE NO.:01: 00178.

Delete the average value

C14

Output the average value

P14

►AVERAGE VAL.: 01: +0017.8 °C

* Smoothing (number of values averaged xx)

f1

zxx s. f3 P15: DG

* Output smoothing

P32

►SMOOTHING: 01: 10

Volume flow measuring

* Enter cross-section in cm² for volume in question

Qxxxxx s. f3 P15: CROSS-SEC

* Output cross-section

P26

►CROSS-SECTION: 01: 00078 cm2

* Output diameter

P25

►DIAMETER: 01: 00100 mm

*^G Output volume flow

P27

►VOLUME FLOW: 01: 00000 m3/h

7.2 Measuring point scans, record and output measured data

7.2.1 Process control

Enter the **time-of-day**

Uhhmss

Delete the time-of-day

C10

Output the time-of-day

P10

►TIME: 12:34:00

Enter the **date**

dddmmyy

Delete the date

C13

Output the date

P13

►DATE: 12:03:06

Enter the **start time** for the measuring operation

f1

Uhhmss

Delete the start time

f1

C10

Output the start time

f1

P10

►START TIME: 12:00:00

Enter the **end time** for the measuring operation

f2

Uhhmss

Delete the end time

f2

C10

Output the end time

f2

P10

►END TIME: 18:00:00

Enter the **start date** for the measuring operation

f1

dddmmyy

Delete the start date

f1

C13

Output the start date

f1

P13

►START DATE:12.03.06

Enter the **end date** for the measuring operation

f2

dddmmyy

Delete the end date

f2

C13

Output the end date

f2

P13

►END DATE: 12.03.06

* Enter the **measuring duration**

f2

Ihhmss

** Output the measuring duration

P47

►DURATION: 06:30:00

** Output the measuring time	P46		
	►MEAS. TIME:	03:12:45.67	
* Enter the cycle / °print cycle	Zhhmmss		
** Saving per cycle ON / (OFF)	f1 A(-)4		
Delete the cycle	C11		
Output the cycle	P11		
Memory, format, scan mode (see below)	►PRINT CYCLE: 00:01:30	Sn s	
Cycle timer	f1 P11		
	►PRINTIMER: 00:01:23		
* Enter the cycle	Ihhmmss		
With saving to memory	I+hhmmss		
Without saving to memory	I-hhmmss		
Measuring rate and mode			
Measuring rate, 2.5 mops, semi-continuous	f5 k0	s. P15	W003
Measuring rate, 10 mops, semi-continuous	f5 k1		W010
** Measuring rate, 50 mops, semi-continuous	f5 k7		W050
** Measuring rate, 100 mops, semi-continuous	f5 k8		W100
** Measuring rate, 400 mops, (option)	f5 k9		W400
Continuous scanning ON / (OFF)	f5 k(-)2		C
Continuous saving ON / (OFF)	f5 k(-)4		S
Continuous output ON / (OFF)	f5 k(-)5		U
Output more frequently than measuring rate ON / (OFF)	f6 k(-)5		
Scanning mode			
** Sleep mode ON / (OFF)	o(-)11	s. P11	s
Input sleep delay time xxx seconds	f2 uxxx		M
** Monitor mode ON / (OFF)	f1 A(-)1		M
** Fail-safe mode ON / (OFF)	f2 A(-)1		F
Output format ON / (OFF)			
Measured values in list format (one below the other)	N0	s. P15	-
Measured values in column format (one beside the other)	N1		n
Measured values in table format	N2		t
Enter and activate number (e.g. 123001)	n123002		
Same - but enter letter characters (-, ,A,F,N,P)	f3 \$A1-N02		
Increment number	n+		
Output number	P05		
	►NUMBER:	A1-N02	
° Output number	P23		
	►NUMBER:	01-012	
** Enter the file name (maximum 8 characters)	\$Name CR		
** File name for automatic daily files	\$&Name CR		

7.2.2 Start and output measuring point scan - once-only, manual

Command S1
List format ► 12:00:00 01: +0012.0 °C DESIGNATION
 02: +0009.9 °C Water
Column format ► 12:00:00 01: +0012.0 °C 02: +0009.9 °C
Table format ► "12.03.06";"12:30:00";12,;9,9
^{D6}Same - but without date s
 and time-of-day ► ;;12,;9,9
 Output other modules G01, G02, G..
 ► ;;123,4;25,2
 Output without scan f1 G01
 ► ;;123,4;25,2

7.2.3 Start and output measuring point scan - cyclic

Command S2
List format ► DATE: 12:03:06
 12:00:00 01: +0012.0 °C
 02: !+0009.9 °C
 Limit value overshoot 12:01:30 01: +0012.5 °C
 02: >+0400.0 °C
 Measuring range overshoot
Column format ► DATE: 12:03:06
 12:00:00 01: +0012.0 °C 02: +0009.9 °C
 12:01:30 01: +0012.5 °C 02: +0010.7 °C
Table format ► "DATE";"TIME";"M01: °C";"M02: °C";;;
 "12.03.06";"12:00:00";12,;9,9
 "12.03.06";"12:01:30";12,5;10,7

Start and output with program header

Command S3
Answer in list format / column format

► AMR ALMEMO 8590-9
 CH RANGE LIM-MAX LIM-MIN BASE D FACTOR EXP AVG. COMMENT
 01:NiCr +0123.4 - - - °C 1.0350 E+0 - - - Designation
 02:NiCr - - - +0012.0 - - - °C - - - E+0 CONT Water
 MEAS. CYCLE: 00:00:00 - S0500.3 F0312.4 ARS W010 C-SU-
 PRINT CYCLE: 00:01:30 Sn 9600 bd
 DATE: 12:03:06
 12:00:00 01: +0012.0 °C 02: +0009.9 °C
 12:01:30 01: +0012.5 °C 02: +0010.7 °C

Answer in table format

```

► "ALMEMO";"RANGE:";"NiCr";"NiCr";;;;;;
"8590-9";"COMMENT:";"Designation";"Water";;;;;;
;"LIM-MAX:";123.4;;;;;;;
"MODUL:00";"LIM-MIN:";12;;;;;;;
"DATE";"TIME";"M01: °C";"M02: °C";;;
"12.03.06";"12:00:00";12;9,9
"12.03.06";"12:01:30";12,5;10,7

```

Stop cyclic scan X

Output measured values P18

(without rescanning)

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► CH MEAS-VAL MAX-VAL MIN-VAL AVERAG-VAL COUNT
01:+0023.0 +0025.0 +0019.0 +0022.0 99999

```

****Extended measured values** f1 P18

```

► CH MEAS-VAL MAX-VAL MIN-VAL AVERAG-VAL COUNT MAX-TIME MIN-TIME
01:+0023.0 +0025.0 +0019.0 +0022.0 99999. 12:32 01.02 12:32 01.02

```

7.3 Outputs from measured value memory

Output memory capacity	f1 P04
(S = total ; F = free)	► MEMORY: S0500.3 F0312.4
° Output the function - free memory	P33
	► MEMORY: S0512.1 F0324.4
** Output the version of MMC connector	f4 t0
	► MMC1.04
Output the table header	f2 P04 (s. output memory in table format)
Clear the memory, format the MMC	C04
Clear the memory and delete all measured data	f1 C04
Define the start and end of memory output	
Enter the start time	f3 Uhhmmss
Delete the start time	f3 C10
Output the start time	f3 P10
	► START TIME: 14:00:00
Enter the end time	f4 Uhhmmss
Delete the end time	f4 C10
Output the end time	f4 P10
	► END TIME: 16:00:00
Enter the start date	f3 dddmmyy
Delete the start date	f3 C13
Output the start date	f3 P13
	► START DATE: 12.03.06
Enter the end date	f4 dddmmyy
Delete the end date	f4 C13
Output the end date	f4 P13
	► END DATE: 12.03.06
Output excerpt start to end	f3 P04
Output the total memory	P04
Selectively output memory area identified by number coding	

Enter and activate number (e.g. 123001)	n123002
Same - but enter letter characters (-, ,A,F,N,P)	f3 \$A1-N02
Check whether the number exists in the memory	t4
	►OK or ERROR
Output the numbers list	f1 P05
	►NUMBER:
	11-001
	11-002
	A1-N02
After activation output the memory accordingly	P04

Answer in list format / column format

► MEMORY:

NUMBER:	12-001	if programmed
DATE:	12:03:06	
12:00:00	01: +0012.0 °C	02: +0009.9 °C
12:01:30	01: +0012.5 °C	02: +0010.7 °C

Answer in table format

► MEMORY:

"NUMBER: "; "12-001"	if programmed
"ALMEMO"; "RANGE: "; "NiCr"; "NiCr"; ; ; ; ; ; ;	
"8590-9"; "COMMENT: "; "Designation"; "Water"; ; ; ; ; ; ;	
"MMC1.04"; "LIM-MAX: "; 123,4; ; ; ; ; ; ;	
"ALMEMO.001"; "LIM-MIN: "; ; 12; ; ; ; ; ; ;	
"DATE"; "TIME"; "M01: °C"; "M02: °C"; ; ; ;	
"12.03.06"; "12:00:00"; 12,; 9,9	
"12.03.06"; "12:01:30"; 12,5; 10,7	

° Cancel the memory output X

** Output all data in the memory

Memory capacity, internal (R = ring memory)	f4 P19
Memory capacity, external	►SI:0512.4k R
Memory available	SE:256.00M
Remaining memory time dddd.hh:mm	SF:0324.5k
Start time for memory output	SZ:0001.18:20
Start date for memory output	U3:07:00:00
End time for memory output	D3:01.02.06
End date for memory output	U4:17:00:00
File name of new file	D4:02.02.06
File name of current file in the memory	DT:FILE NEW.001
	FI: ALMEMO.001

7.4 Sensor programming

^{D6}Select the input channel Exx

Reference channel 1 b1, absolute

Reference channel 1 b1, relative

Reference channel 2 b2, absolute

Reference channel 2 b2, relative

Command

Printout

Exx		
f1 Eb1	B1:	b1
f1 E-b1		-b1
f2 Eb2	MX:	b2
f2 E-b2		-b2

7.4.1 Measuring ranges

Abbreviation

Pt100-1, 4 liters	-200..850.0 °C	B01	P104
Pt100-2, 4 liters	-200..400.00 °C	B03	P204
** Pt100-3, 4 liters	-8..65.000 °C	B00	P304
Ni100, 4 liters	-60.. 240.0 °C	B63	N104
NTC type N	-50..125.00 °C	B09	Ntc
NiCr-Ni (K) with CJC	-200..1370.0 °C	B04	NiCr
NiCrSiI-NiSiI (N) with CJC	-200..1300.0 °C	B34	NiSi
Fe-CuNi (L) with CJC	-200.. 900.0 °C	B05	FeCo
Fe-CuNi (J) with CJC	-200..1000.0 °C	B35	IrCo
Cu-CuNi (U) with CJC	-200.. 600.0 °C	B06	CuCo
Cu-CuNi (T) with CJC	-200.. 400.0 °C	B36	CoCo
PtRh10-Pt (S) with CJC	0..1760.0 °C	B07	Pt10
PtRh13-Pt (R) with CJC	0..1760.0 °C	B37	Pt13
PtRh30-PtRh6 (B) with CJC	+400..1800.0 °C	B08	E118
AuFe-Cr with CJC	-270... 60.0 °C	B38	AuFe
Millivolt	-10..55.000 mV	B10	mV
Millivolt 1	-26..26.000 mV	B27	mV 1
Millivolt 2	-260..260.00 mV	B28	mV 2
Volts	-2.6..2.6000 V	B11	Volt
Difference - millivolt	-10..55.000 mV	B50	D 55
Difference - millivolt 1	-26..26.000 mV	B51	D 26
Difference - millivolt 2	-260..260.00 mV	B52	D260
Difference - volt	-2.6..2.6000 V	B53	D2.6
Milliampere	-32..32.000 mA	B12	mA
Percent	4-20.000 mA	B13	%
Battery	0..25.000 V	B14	Batt
Ohms	0..500.00 Ω	B15	Ohm
Frequency	0..25000	B29	Freq
Pulses per cycle	0..65000	B54	PuIs
^{D6} Digital	-65000..+65000	B55	DIGI
Rotating vane, normal	0.3..20.00 m/s	B30	S120
Rotating vane, normal	0.4..40.00 m/s	B31	S140
Rotating vane, micro	0.5..20.00 m/s	B32	S220
Rotating vane, micro	0.6..40.00 m/s	B33	S240
Rotating vane, macro	0.1..20.00 m/s	B24	L420
Water turbine, micro	0...5.00 m/s	B25	L605
Dynamic pressure with TC	0.5..40.00 m/s	B40	L840
Dynamic pressure with TC	0..90.00 m/s	B41	L890

Measuring range

		Command	Abbreviation
Relative humidity, capacitive	0..100.0 %	B16	% rH
Relative humidity, capacitive, with TC	0..100.0 %	B42	HcrH
Relative humidity, capacitive, with TC	0..100.0 %	B56	H rH
Absolute humidity, capacitive, with PC	0..500.0 g/kg	B43	H AH
Dew point, capacitive	-25..100.0 °C	B44	H DT
Vapor pressure, capacitive	0..1050 mbar	B59	H VP
Enthalpy, capacitive, with PC	0..400.0 kJ/kg	B58	H En
Humid temperature	-50..100.00 °C	B45	P HT
Relative humidity, psychrometric, with PC	0..100.0 %	B46	P RH
Absolute humidity, psychrometric, with PC	0..500.0 g/kg	B47	P AH
Dew point, psychrometric, with PC	-25..100.0 °C	B48	P DT
Vapor pressure, psychrometric, with PC	0..1050 mbar	B49	P VP
Enthalpy, psychrometric, with PC	0..400.0 kJ/kg	B57	P En
pH probe with TC (Units = pH/PH)	0..14.00 pH	B53	D2.6
Conductivity, with TC	0..20.00 mS	B60	LF
CO ₂ concentration	0..25.00 %	B64	CO2
O ₂ saturation, with TC and PC	0..260 %	B65	O2-S
O ₂ concentration, with TC	0..40.0 mg/l	B66	O2-C
Temperature, digital, internal (option)	-20..80 °C	B68	D °C
Relative humidity, digital, internal (option)	0..100 %	B69	D %H
Digital input	0..100.00 %	B70	Imp

Function channels

Difference (b1 - b2)		B71	Diff
Maximum value (b1)		B72	Max
Minimum value (b1)		B73	Min
Average value over time \bar{M} (b1)		B74	M(t)
Average value over meas. points \bar{M} (b2 to b1)		B75	M(n)
Total from measuring points (b2 to b1)		B76	S(n)
Total number of pulses (b1)	0..65000	B77	S(t)
Number of pulses / print cycle (b1)	0..65000	B78	S(P)
Thermal coefficient = \bar{M} (b1) / \bar{M} (b2)	650.00 W/m ² K	B79	q/dt
WBGT = 0.1M (b2) + 0.7M (b2+10) + 0.2M (b1)	-200..400.00 °C	B02	WBGT
Alarm value (b1)	0..100.00 %	B80	Alrm
Measured value (b1)		B81	Mess
Cold junction temperature	-30..100.0 °C	B82	CJ
Number of values averaged (b1)	0..65000	B83	n(t)
Volume flow m ³ /h = M(b1)*CS	m ³ /h	B84	Flow
Timer	0..65000 s	B85	Time
Timer with exponential -1	0..6500.0 s	B85	Time
Atmospheric pressure (option AP)	300..1100.0 mb	B86	AP

CJC = Cold junction compensation; TC = Temperature compensation; PC = Atmospheric pressure compensation

Function

	Command
Deactivate programmed measuring point	C00
** Reactivate programmed measuring point	o00

Function

°Output the range

D6 Change units 'xy'

D6 Measuring point designation 'Name' (10 char.)

7.4.2 Measured value scaling and correction

D6 Enter the base value

D6 Delete the base value

Output the base value

D6 Enter the factor

D6 Delete the factor

D6 Enter the exponential

D6 Delete the exponential

Output the factor and exponential

D6 Enter the zero-point correction

D6 Delete the zero-point correction

Output the zero-point correction

D6 Enter the gain correction

D6 Delete the gain correction

Output the gain correction

Command

P24

► RANGE: 01: NiCr

f1 \$xy CR s. P15: D

f2 \$NameCR s. P15: COMMENT

0(-)xxxxx s. P15: BASE VAL

C06

P06

► BASE VALUE: 01: -0273.0 °C

Fxxxxx s. P15: FACTOR

C07

Vx

V0

P07

► FACTOR: 01: +1.0350E-1

f1 Fxxxxx s. f1 P15: ZEROPKT

f1 C06

f1 P06

► ZEROPOINT: 01: -0000.7 °C

f1 Fxxxxx s. f1 P15: GAIN

f1 C07

f1 P07

► GAIN: 01: +1.0013

7.4.3 Limit values

D6 Enter the maximum limit value

D6 Delete the maximum limit value

Output the maximum limit value

Action on reaching **max. limit value** - alarm only

Action - start measuring point scan

Action - stop measuring point scan

** Action - measuring point scan, manual

** Action - zero-set the timer

** Action - execute macro 5 to 9

Action - drive alarm relay x, A2

** Action - alarm relay port pp ON / (OFF)

D6 Enter the minimum limit value

D6 Delete the minimum limit value

Output the minimum limit value

Action on reaching **min. limit value** - alarm only

Action - start measuring point scan

Action - stop measuring point scan

** Action - measuring point scan, manual

H(-)xxxxx

C08

P08

► Limit MAX: 01: 0100.0 °C

h0 AH: --

h1 S-

h2 E-

h3 M-

h4 T-

h5..h9 5-

f1 hx -x

f2 R(-)pp s. f3 P15: RH: pp

L(-)xxxxx

C09

P09

► Limit MIN: 01: -0020.0 °C

10 s. f1 P15: AL: --

11 S-

12 E-

13 M-

Function	Command	Printout
** Action - zero-set the timer	14	T-
** Action - execute macro 5 to 9	15..19	5-
Action - drive alarm relay x, A2	f1 1x	-x
** Action - alarm relay port pp ON / (OFF)	f3 R(-)pp s. f3 P15:	RL: pp

7.4.4 Special functions

^{D6} Sensor locking - none	f1 k0 s. f1 P15:	VM: 0
Measuring range, element flags	f1 k1	1
Measuring range, zero-point, gain	f1 k2	2
Measuring range, units	f1 k3	3
plus zero-point, gain	f1 k4	4
^{D6} plus base value, factor, exponential	f1 k5	5
plus analog output, start / end	f1 k6	6
plus limit values	f1 k7	7
Apply definitive sensor lock	f8 kx	x.
* Cancel definitive sensor lock	f-8 kx	
Output lock (see f1 P15)	f1 P00	
	► LOCK:5	
	P42	
	► LOCK:5	
Enter the start of analog output	a(-)xxxxx s. f1 P15:	ANA-ANF
Delete the start of analog output	C16	
Output the start of analog output	P16	
	► ANALOG START:01: -0010.0 °C	
Enter the end of analog output	e(-)xxxxx s. f1 P15:	ANA-END
Enter the end of analog output (4 to 20 mA)	f1 e(-)xxxxx	
Delete the end of analog output	C17	
Output the end of analog output	P17	
	► ANALOG END: 01: +0040.0 °C	
Print cycle factor	zxx s. f1 P15:	ZF
^{D6} Minimum sensor supply voltage	uxxx s. f1 P15:	UMIN
Set sensor supply voltage	f1 uxxx s. f2 P19:	US
* ^K Output serial number of sensor	f3 t0	
	► jjmm1234	
* ^K Enter calibration cycle for sensor (Mon.)	f9 zmm (only option KL)	
* ^K Enter next calibration date	f9 dddmmy	
* ^K Output next calibration date	f9 P13	
	► KF:02.02.06 12	

Function	Command	Printout
Change multiplexer, connections for range Bxx	f1 Bxx	MX: M1
	f2 Bxx	s.f1 P15 M2
	f3 Bxx	M3
Difference	f4 Bxx	M4
	f5 Bxx	M5
Output function	Measured value f1 m0	FUNC:Meas
	Difference f1 m1	Diff
	Maximum value f1 m2	Max
	Minimum value f1 m3	Min

	Average value	f1	m4	M(t)
	Alarm value	f1	m5	Alrm
Set element flags	Meas. current 1/10	f2	k(-)1	EF: 01
Emission and background temperature	Infra-red	f2	k(-)2	02
Activate jumper switch	Jumper	f2	k(-)3	04
** DIGI - cyclic scan only	DIGI cyclic	f2	k(-)4	08
** To deactivate electrical isolation	Iso OFF	f2	k(-)5	10
Without sensor breakage detection	Sensor breakage	f2	k(-)7	40
Analog output, 0/4 to 20 mA	4 to 20 mA	f2	k(-)8	80
Re-import sensor programming			t5	

D6 Output standard programming

All active channels with cycles, memory, measuring rate P15

```

► AMR ALMEMO 8590-9
  CH RANGE LIM-MAX LIM-MIN BASE VAL D FACTOR EXP AVERAG. COMMENT
  01:NiCr +0123.4 -0012.0 +0000.0°C 1.0000 E+0 - - - Temperature
  MEAS CYCLE: 00:00:00 - S0500.3 F0312.4 ARS W010 C-SU
  PRINT CYCLE: 00:01:30 Sn 9600 bd
  TIME START: 07:00:00 (if programmed)
  TIME END: 19:00:00

```

Input channel only P00

```

► 01:NiCr +0123.4 -0012.0 +0000.0°C 1.0000 E+0 - - - Temperature

```

D6 Extended sensor programming f1 P15

```

► AMR ALMEMO 8590-9
  CH ZERO PT GAIN CJ K FUNC EOFSET EFAKT ANA-START ANA-END B1 MX EF AH AL ZF UMIN
  01:+0000.0 +1.0000 5. 1 MESS +00000 32000 +0000.0 +1000.0-01 M1 -- S- E2 05 12.0

```

D6 Full standard programming

All active channels, cycles, memory, meas. rate f2 P15

```

► AMR ALMEMO 8590-9
  H RANGE LIM-MAX... VM K FUNC EOFSET EFAKT ANA-ST ANA-END B1 MX EF AH AL ZF UMIN
  01:NiCr +0123.4... 5. 1 MESS +00000 32000 +0000.0 +1000.0-01 M1 -- S- E2 05 12.0
  MEAS CYCLE: 00:00:30 S S0500.3 F0312.4 A W010C-SU
  PRINT CYCLE: 00:10:00 U 9600 bd

```

Input channel only f2 P00

```

► 01:NiCr +0123.4... 5. 1 MEAS +00000 32000 +0000.0 +1000.0-01 M1 -- S- E2 05 12.0

```

**New sensor reprogramming f3 P15

```

► CH RANGE LIM-MAX LIM-MIN BASE VAL D FACTOR EXP AVERAG COMMENT DG CROSS-SEC RH RL
  01:NiCr +0123.4 -0012.0 +0000.0°C 1.0000 E+0 - - - Temperature 05 01234. 21 22

```

Input channel only f3 P00

```

► 01:NiCr +0123.4 -0012.0 +0000.0°C 1.0000 E+0 - - - Temperature 05 01234. 21 22

```

**Connector programming f4 P15

```

► ST SENSOR SERIAL-NO KAL-DAT. ZY
  01:FHA6461..... 12345678 01.10.06 12 (option KL only)

```

Input channel only f4 P00

```

► 01:FHA6461..... 12345678 01.10.06 12 (option KL only)

```

7.5 Device programming

^{D6}Select device / module, output measured values

Select device / module, output measured values

Software reset, re-initialize RAM and ports

^{D6}Enter additional designation (maximum 40 characters)

Output device designation

^{D6}Output device type and version

** Scan available functions

Memory, connector / MMC, start and end, ring memory

Sleep, CRC, KL, P15, P18, P19 (command number) | version

** For systems with all modules

Output type (MF,MU,KS,TH), version, address

** Output serial number of device

**K Enter next calibration date

**K Output next calibration date

A = Registration activated

Enter hysteresis for alarm processing

** Enter language (DE=0, EN=1, FR=2, X=3)

^{D6}Modify baud rate (6=9.6, 7=57.6, 8=115.2 kilobaud)

Operating parameters

60 Hz hum suppression

At start delete max. value, min. value, average value

Ring memory

° Date (year number, 4-digit)

* Allow oversampling of data output

Switch the signal transmitter OFF

Date and time-of-day in EXCEL format 'dd.mm.yy hh:mm:ss'

** Enter macros 5 to 9 (maximum 30 characters)

** Output macros 5 to 9

** Run macros 5 to 9

V5 output modules Set version x

Relay driving x ON / (OFF)

Program analog value output ?? of A2

Analog value output from measuring channel

Reference channel, absolute, for analog output 1

* Reference channel, absolute, for analog output 2

** Set **V6 peripheral port** pp (A1=1p, A2=2p)

** Relay port pp ON / (OFF)

** Set variant x of port address pp (- =invers)

** Trigger function of port p8, macro 5 to 9

** Select analog type of pp, 1 = 10 V, 2 = 20 mA

** Program analog value output of pp

Command

Printout

	Gxx	after scan
f1	Gxx	without scan
	C19	
f4	\$ Device Designation CR	
f1	t0 oder °P36	
	► Device Designation	
	t0	
	► A8590-9 6.xx	
	t6	
	► S-ARLCK524 2	
f5	t0	
	► A5690-SL MF 1.10 Adr: 02	
	A5690-SL MU 1.06 Adr: 04	
f2	t0	
	► Hjjmm1234	
f8	ddmmyy (Option KL only)	
f8	P13	
	► KG:02.02.06 -/A	
	Yxx	
	kx	
f1	bx	
		CONFIG:
f6	k(-)1	F
f6	k(-)2	C
f6	k(-)3	R
f6	k(-)4	D
f6	k(-)5	A
f6	k(-)6	S
f7	k(-)7	E
f-5...	\$bxx bxcr	
f-5...	P20	
-9	► bxx bx	
	m-5...-9	
f9	kx	
	R(-)0x	
f9	a(-)xxxxx	
f9	E-00	
f9	Exx	
f8	Exx	
ipp		
f1	R(-)pp	
ipp	f9	k(-)x
ipp	f9	kx(k-5...k-9
ipp	f9	Ax
ipp	f9	a(-)xxxxx

** Reference channel of port pp (analog output)

** Switch watchdog ON / OFF

7.5.1 ^{D6} Output D6 device parameters

Address, channels possible, active, primary

Atmospheric pressure see 6.2.6

Cold junction temperature

LoBat and sensor voltage

Hysteresis see 6.2.7

Configuration see 6.10.7, 6.10.13

Alarm status of relays 0 to 3 see 6.10.8

Output module at A1 see 6.10.9

Output module at A2

**Output all fixed device parameters

Device designation

Version, options

Serial number

Baud rate

Device Address, total measuring points, active

System Modules (/!=MF !=MU-old .=MU-new ;=KS ,=TH)

Hysteresis

Configuration 60 Hz, CrMv, Ring mem., sampling, signal OFF

Setpoint

Conversion rate Cont, -, memory, V24

Number

Print cycle Sleep / Monitor / Fail-safe

Measuring cycle

Start time

Start date

End time

End date

Measuring duration

Device locking

Next calibration

Date, alarm

Language

Display Contrast, illumination level, illumination duration

Sleep delay in seconds (Sleep delay, e.g. 123 s)

**Output all device variables

Temperature used for compensation

Atmospheric pressure used for compensation

Temperature used for cold junction compensation

Time-of-day

Date

Print timer

Measuring timer

Measuring time

Timer 3

ipp f9 Exx

i20 o(-)19

P19

DEVICE: G00 M20 A08 P10/mm/uu

AIR PRESS: +01013. mb

CJ-TEMP: +0023.5 °C

U-SENSOR: ! 12.5 V

HYSTERESE: 10

CONFIG: FCRDAS-8 -L-- B01

ALARM: -1-3

A1: DK0 Un

A2: AA

f1 P19

►GB:ALMEMO 2690-8

VO.2690-8 RKL

SN.H12345678

BR:57.6k

GE.G00 M040 A008

G00 M100 A068 40/10!20.30;10,

HY:10

KF:FCR-AS-- -----

SW:+1100.0°C

WR:010C-SU

NR:123456

Z1:00:10:00 Sn -/s/M/F

Z2:00:00:00

U1:07:00:00

D1:01.02.06

U2:17:00:00

D2:02.02.06

MD:00:10:00

GV:MOFO

KG:01.10.06 -/!

SP:E

DI:G2 050 2 1

SD:123 s

f2 P19

►TK:+ 25.0°C

LD:+01013.mb

CJ.+0023.5 °C

UZ:12:34:00

DA:01.02.06

T1.00:01:23

T2.00:00:00

MZ.00:00:00.00

T3. 65000. s

Timer 4	T4. 6500.0 s
U battery	UB. 3.9 V
U setpoint	US. 12.0 V
U sensor	UF. ! 12.5 V
Number of rechargeable batteries	AZ.3
Rechargeable battery capacity	AK.1600mAh
Charging mode	LM.L1
Charging current	LS.0500mA
Charging time	LZ.2.50 h

**Output of output modules

DC socket Mains adapter ALMEMO® connector

Voltage 12 V, maximum admissible current 1A

Socket P0 Internal relays (option)

Normally open, 0.5 A Variant 0 Inverted active Open

Normally open, 0.5 A Variant 8 Active Closed

Socket A1 USB data cable

Socket A2 Analog output cable

Analog output, 2 V Measuring channel M01

Socket A3 Memory card Micro-SD

Socket A4 Relay trigger adapter, analog, V6

Normally open, 0.5 A Variant 0 Passive Open

Normally closed, 0.5 A Variant 8 Inverted active Open

Changeover, 0.5 A Variant 2 Active Closed

D/A converter 10V Reference channel M01

D/A converter 20mA Driven COM

Trigger Key Variant 0 start / stop

Socket A5 Relay trigger cable, V6

Normally open, 0.5 A Variant 2 Active Closed

Normally closed, 0.5 A Variant 2 Inverted active Open

Triggger Optocoupler Variante 1 Manual

Trigger Optocoupler Variant -5 Macro 5

Bus B6 to B9

f3 P19

► DC.ZA1312NA8
12V 1000mA
P0.0A2490Rxx
00:N00-0 1 0
01:N00 8 1 C
A1.ZA1919DKU
DK0
A2.ZA1601-RK
RK
A3.ZA1904SD
A4.ZA8006RTA3
40:N00 0 0 0
41:NC0-8 1 0
42:C00 2 0 C
46:DA1 B01 +08.234 V
47:DA2 COM +12.345mA
48:TR1 0
A5.ZA1006EKA
50:N00 2 1 C
51:NC0-2 1 0
58:TR1 1
59:TR2-5
B6.ES8006RTA5
60:...69:
xx: function is programmable,
xx. function is fixed or meas. value

**Memory configuration

Memory capacity, internal (R = ring memory)

Memory capacity, external

Memory available

Remaining memory time dddd.hh:mm

Memory output, start time

Memory output, start date

Memory output, end time

Memory output, end date

File name of new file

File name of current file in the memory

f4 P19
SI:0512.4k R
SE:256.00M
SF:0324.5k
SZ:0001.18:20
U3:07:00:00
D3:01.02.06
U4:17:00:00
D4:02.02.06
DT:FILENEW.001
FI: ALMEMO.001

7.5.2 Program the simulator:

Program port 01, range V
 Program port 01, range mV
 Program port 01, range TC, type K
 Program port 01, range TC, type N
 Program port 01, range TC, type J
 Program port 01, range TC, type T
 Program port 01, range TC, type S
 Program port 01, range TC, type R
 Program port 01, range TC, type B
 Program port 03, range 4000 Hz
 Program port 03, range 10 kHz
 Program port 03, range 40 kHz
 Program port 03, range 100 kHz
 Program port 03, range 99 ms
 Program port 03, range 99 s
 Program cold junction temperature in digits e.g. 23.4 °C
 Program value of simulator port pp in digits

Command

i01 B11
 i01 B10
 i01 B04
 i01 B34
 i01 B35
 i01 B36
 i01 B07
 i01 B37
 i01 B08
 i03 B29
 i03 f1 B29
 i03 f2 B29
 i03 f3 B29
 i03 B54
 i03 f1 B54
 f1 g00234
 ipp f9 a(-)xxxxx

Output programming and status:

Pxx	Interface element	Variant	Value
00	Pt100 output	controlled	300.0°C
01	Analog output 10V	controlled	10.00 V
01	Analog output 60mV	controlled	60.00mV
01	Analog output TC TypK	controlled	1370.0°C
01	Analog output TC TypN	controlled	1300.0°C
01	Analog output TC TypJ	controlled	1000.0°C
01	Analog output TC TypT	controlled	400.0°C
01	Analog output TC TypS	controlled	1760.0°C
01	Analog output TC TypR	controlled	1760.0°C
01	Analog output TC TypB	controlled	1800.0°C
02	Analog output 20mA	controlled	20.000mA
03	Frequency output 0.4kHz	controlled	4000.Hz
03	Frequency output 10kHz	controlled	10.00kHz
03	Frequency output 40kHz	controlled	40.0kHz
03	Frequency output 100kHz	controlled	100.kHz
03	Pulse output 99ms	controlled	99.999ms
03	Pulse output 99 s	controlled	99.999 s
04	Continuity voltage		1000.mV

f3 P19
 P0.KA7531
 00:T00 COM +0300.0°C
 01:DA1 COM +10.000 V
 01:DA7 COM +60.000mV
 01:TC0 COM +1370.0°C VK:+025.1°C
 01:TC1 COM +1300.0°C VK: - - -°C
 01:TC2 COM +1000.0°C VK: - - -°C
 01:TC3 COM +0400.0°C VK: - - -°C
 01:TC4 COM +1760.0°C VK:+025.1°C
 01:TC5 COM +1760.0°C VK: - - -°C
 01:TC6 COM +1800.0°C VK: - - -°C
 02:DA2 COM +20.000mA
 03:F00 COM +04000.Hz
 03:F01 COM +010.00kHz
 03:F02 COM +0040.0kHz
 03:F02 COM +00100.kHz
 03:P00 COM +99.999ms
 03:P01 COM +99.999 s
 04:IN0 +01000.mV

7.5.3 Menu configuration

- ^g Enter designation text 1 (maximum 21 characters)
- ^g Enter designation text 2 (maximum 21 characters)
- ^g Enter menu title U1 (maximum 16 characters)

f5 \$Designation1 CR
 f6 \$Designation2 CR
 f7 \$Menu title U1 CR

- ^G Enter menu title U2 (maximum 16 characters)
- ^G Enter menu title U3 (maximum 16 characters)
- ^G Output designation text 1

^G Output designation text 2

^G Output menu title U1

^G Output menu title U2

^G Output menu title U3

^G Output empty line

^G Output line

^G **Select menu line xx**

```
f8 $Menu title U2 CR
f9 $Menu title U3 CR
P37
  ► Designation text 1
P38
  ► Designation text 2
P39
  ► Menu title U1
P40
  ► Menu title U2
P41
  ► Menu title U3
P30
  ►
P31
  ► -----
```

ixx

Select menu and function

- ^G Limit value, maximum
- ^G Limit value, minimum
- ^G Base value
- ^G Factor
- *^G Exponential
- ^G Zero-point correction
- ^G Gain correction
- ^G Analog start
- ^G Analog end
- ^G Range
- ^G Maximum value
- ^G Minimum value
- ^G Average value
- ^G Print cycle
- ^G Measuring cycle
- ^G Date, time-of-day
- ^G Measured value - small
- ^G Measured value - medium
- ^G Measured value - large
- ^G Measured value, bar chart
- ^G Measured value, line graphic
- ^G Averaging mode
- ^G Measuring rate
- ^G Print timer
- ^G Measuring timer
- ^G Number of items
- ^G Number
- ^G Range, designation
- ^G Diameter (mm)
- ^G Cross-section (cm²)

Menu U1	Menu U2	Menu U3
f1 o00	f2 o00	f3 o00
f1 o01	f2 o01	f3 o01
f1 o02	f2 o02	f3 o02
f1 o03	f2 o03	f3 o03
f1 o48	f2 o48	f3 o48
f1 o04	f2 o04	f3 o04
f1 o05	f2 o05	f3 o05
f1 o06	f2 o06	f3 o06
f1 o07	f2 o07	f3 o07
f1 o08	f2 o08	f3 o08
f1 o09	f2 o09	f3 o09
f1 o10	f2 o10	f3 o10
f1 o11	f2 o11	f3 o11
f1 o12	f2 o12	f3 o12
f1 o13	f2 o13	f3 o13
f1 o14	f2 o14	f3 o14
f1 o15	f2 o15	f3 o15
f1 o16	f2 o16	f3 o16
f1 o17	f2 o17	f3 o17
f1 o34	f2 o34	f3 o34
f1 o35	f2 o35	f3 o35
f1 o18	f2 o18	f3 o18
f1 o19	f2 o19	f3 o19
f1 o20	f2 o20	f3 o20
f1 o21	f2 o21	f3 o21
f1 o22	f2 o22	f3 o22
f1 o23	f2 o23	f3 o23
f1 o24	f2 o24	f3 o24
f1 o25	f2 o25	f3 o25
f1 o26	f2 o26	f3 o26

Menu configuration

^G Volume flow (m ³ /h)	f1 o27	f2 o27	f3 o27
^G Maximum value, date and time-of-day	f1 o28	f2 o28	f3 o28
^G Minimum value, date and time-of-day	f1 o29	f2 o29	f3 o29
^G Empty line	f1 o30	f2 o30	f3 o30
^G Line	f1 o31	f2 o31	f3 o31
^G Smoothing	f1 o32	f2 o32	f3 o32
^G Memory available	f1 o33	f2 o33	f3 o33
^G Device designation	f1 o36	f2 o36	f3 o36
^G Designation text 1	f1 o37	f2 o37	f3 o37
^G Designation text 2	f1 o38	f2 o38	f3 o38
^G Menu title U1	f1 o39	f2 o39	f3 o39
^G Menu title U2	f1 o40	f2 o40	f3 o40
^G Menu title U3	f1 o41	f2 o41	f3 o41
^G Locking	f1 o42	f2 o42	f3 o42
^G Atmospheric pressure (mbar)	f1 o43	f2 o43	f3 o43
^G Temperature compensation	f1 o44	f2 o44	f3 o44
^G Setpoint	f1 o45	f2 o45	f3 o45
^G Measuring time	f1 o46	f2 o46	f3 o46
* ^G Measuring duration	f1 o47	f2 o47	f3 o47
* ^G Exponential	f1 o48	f2 o48	f3 o48
* ^G File name	f1 o49	f2 o49	f3 o49
^G Output of menu configuration Ux	fx P20		
Menu title of menu Ux	U1:Menu title U1		
In line 00 Function 30, empty line	00:30		
In line 01 Function 39, menu title	01:39		
In line 02 Function 16, measured value m	02:16		
In line 03 Function 24, range, designation	03:24		
	04:30		
	05:42		
	06:45		
	07:44		
	08:43		
		
^G Output the selected menu	P20		
(all functions, e.g. measurement correction, see above)	►		
Menu title	Meas. correction		
Measured value - medium	00: +025.67 °C		
Range and designation	Ntc temperature		
Empty line			
Locking	LOCKING:0.		
Setpoint	SETPOINT: 00: +0000.0 °C		
Temperature compensation	COMPENSATION: +0025.0 °C		
Atmospheric pressure	ATM. PRESSURE: +01013. mb		
.....			