Operating instruction

DC Voltage Measuring Amplifier with Data Logger

GM 80 TG / PA (V1.__)

Safety Notes

General References

The enclosed operating instruction is intended for technically qualified personnel who has corresponding knowledge in the field of measurement and industrial process & control technology.
The precise information about all safety notes contained in this operation manual and warnings, as well as its perfect technical implementation are precondition for the safe installation, the initiation, the secure operation and the maintenance of technology devices. For this purpose it is absolutely necessary that all measures are carried out by qualified personnel. All persons concerned with the project planning, installation and service of devices, must be familiar to the security concepts in automatic control and should be qualified in this sense.
For clarity reasons, the enclosed operating instruction can not represent complete details in all conceivable cases of applications for the handling of devices. Further, we cannot consider the entire types of installation, handling and maintenance. If you wish further information or if special problems occur, which were not ,or not at length represented in this operating instruction, contact us, please.

The oblivion of the safety notes can and will lead to material damages, body injuries and death.

The devices may only be operated in accordance with the applications described in this operation manual. Built-in devices may only be operated in appropriate installations.

With the connection and the initiation of the device, the customer accepts the general sale and delivery conditions. Further, he accepts eventually incomplete operation manuals. The information described is without guarantee. Errors and changes are reserved.

Intended Purpose, Improper Usage

A device is used for displaying, processing and controlling or regulation of processes. It shall not be used as the only tool for the prevention of dangerous states to machines and plants. Machines and plants must be constructed in such a way, that erroneous states can not lead to a dangerous situation for the staff (e.g. by independent limit switches, mechanical locking devices). It must be guaranteed in particular that device-operating errors, its malfunction or it's breakdown do not lead to great property damages or danger for the staff. Consequently, the device then can be used to prevent the machine or the technical installations from error conditions.
It is also important that the use of devices does not endanger precautions for the safety of technical installations. Emergency-off settings must remain effective in all operation modes.

Installation Notes

The devices must be installed and connected by compliance with the relevant DIN- and VDE-norms. They must be installed in such manner that an unintentional use is sufficingly excluded. The corresponding hardware and software safety precautions are to be observed in such manner that an interruption of the supply and signal cables cannot lead to an undefined or dangerous state. Supply and signal cables must be installed in such way, that disturbing signals (e.g. inductive or capacitive intersperses) will not cause derogations to the function of devices.

Disturbance, Maintenance and Repair Notes

The devices do not contain parts which can be maintained on the customer side. Repairs shall be carried out by exclusively. If assuming that a safe operation of the device is not possible anymore, it must be closed down and protected against unintentional handling immediately. This, in particular, applies:

If the device shows visible damages
If the device is no longer operative
If parts of the device are loose or slack
If the connection cables show visible damages

Furthermore, we point out that all obligations of exclusively result from the respective sales contract in which the guarantee has been conclusively settled.

Brief Description:

The GM 80 TG / PA is a DC measuring amplifier for passive, active sensors or sensors with current interface.

GM80 TG	Table device with 24 V DC wall power supply
GM80 PA	Panel device 72 x 144 norm, cut-out in cabinet: 138 x 68 mm
Inputs:	Passive (SG) 0,35-3,3mV/V; active: 0-1V...0-5V / 0/4 – 20mA
Data logger :	can store up to 3000 measured values. For short-term to long-term measurements with many operation modes.
RS 232:	Data transfer or queries of the measured or logged values to a pc or a printer.
10 parameter sets:	Here, the calibration data, the sensor designation and the physical unit are stored.
Control inputs:	3 opto coupler inputs with functions such as data logging, RS232-issue, clear memory, tare or second limit value set.
Limit values:	2 very fast photoMos relays as closing contacts are freely configurable
Measuring functions:	Tare, min./max. value and delete min./max., are callable during the measurement.

If the GM 80 is being delivered with one or more sensors, these sensors will be in-calibrated to the GM 80 and are immediately ready for operation.
The assignment of these sensors to the corresponding parameter set is documented on the rear of the device.

Operation Example:

- GM 80 PA after current supply is immediately in the measuring mode of the previous selected parameter set.
- GM 80 TG is switched on by pressing **ENTER**.

Key Assignment:

Key	**Menu:**
⇑	Scroll up
⇓	Scroll down
ENTER	Confirmation, one step up in the menu
ESC	Discard, one step back in the menu

- Control time and date in SYSTEM menu or adjust if necessary
  - Adjust language
    Call menu 2 SYSTEM – 2.1 LANG. When **ENTER** button was pressed, the GM 80 is in the selection mode. With keys **PLUS** and/or **MINUS** the language can be selected. With **ENTER** the selected language will be stored. With **ESC** the selected language will be discarded.

  - Adjust time
    Call menu 2 SYSTEM – 2.8 DATE. When **ENTER** button was pressed TIME will appear on the LCD. Press **ENTER** again and the time can be adjusted. With **PLUS** and **MINUS** the hours can be adjusted. After **ENTER** the minutes can be adjusted with **PLUS** and **MINUS**. With **ENTER** the selected time will be stored. With **ESC** the selected time will be discarded.

- Change to the measuring mode
  From menu 1 MEASUR by pressing **ENTER** the list of all sensors is called. With **PLUS** and/or. **MINUS** a sensor parameter set is being chosen. With **ENTER** the GM 80 is being adjusted to this sensor parameter set. With **ESC** it is possible to switch back to menu 1 MEASUR from any mode.

- Change measuring rate by measuring mode

  The measuring mode can be left by pressing **ESC**. After pressing **ESC** again, the GM 80 will be in menu 1 MEASUR. From there the menu 2 SYSTEM – 2.4 Rate can be called.Select RATE by key **PLUS** and/or **MINUS**. By pressing key **ENTER** the set measuring rate is being displayed first.By key **PLUS** and/or **MINUS** a new measuring rate can be adjusted. By **ENTER** the new measuring rate will be taken over, by **ESC** the new measuring rate will be discarded.

- Switch off GM 80 TG

  If the GM80 TG is operating in menu 1 MEASURE it can be switched off, when **ESC** is pressed for >3 seconds.

- Switch off GM 80 PA

  This device can only be switched off by disconnecting from current supply.

Measuring with the GM 80:

Selected Sensor:	Force sensor with measuring range:	200KN
	Sensitivity	2mV/V
	Designation e.g.:	Press
	Parameter set: Sensor no.:	3
	Option:	100% Calibration control

In order to be able to now measure with this sensor, the sensor " Press" is selected in the measuring mode. During a measurement, a minimum and maximum value buffer can be called with the **MINUS** key. The respective displayed minimum or maximum value can be deleted by **ENTER**.
If the measured value shall be sent through an interface to a pc or printer, the baud rate must be adjusted to the receiver and at SCI-MODE the operating mode must be chosen. For example: HAND, a measured value with time is displayed during every keystroke on **ENTER** while measuring.
For data logging, adjust operating mode in the logger mode, e.g. choose AUTO and interval time e.g. 10 sec and change to measuring mode. A measured value with time is now stored every 10 sec. In mode LOGGSEND, these data can then be sent through the interface.

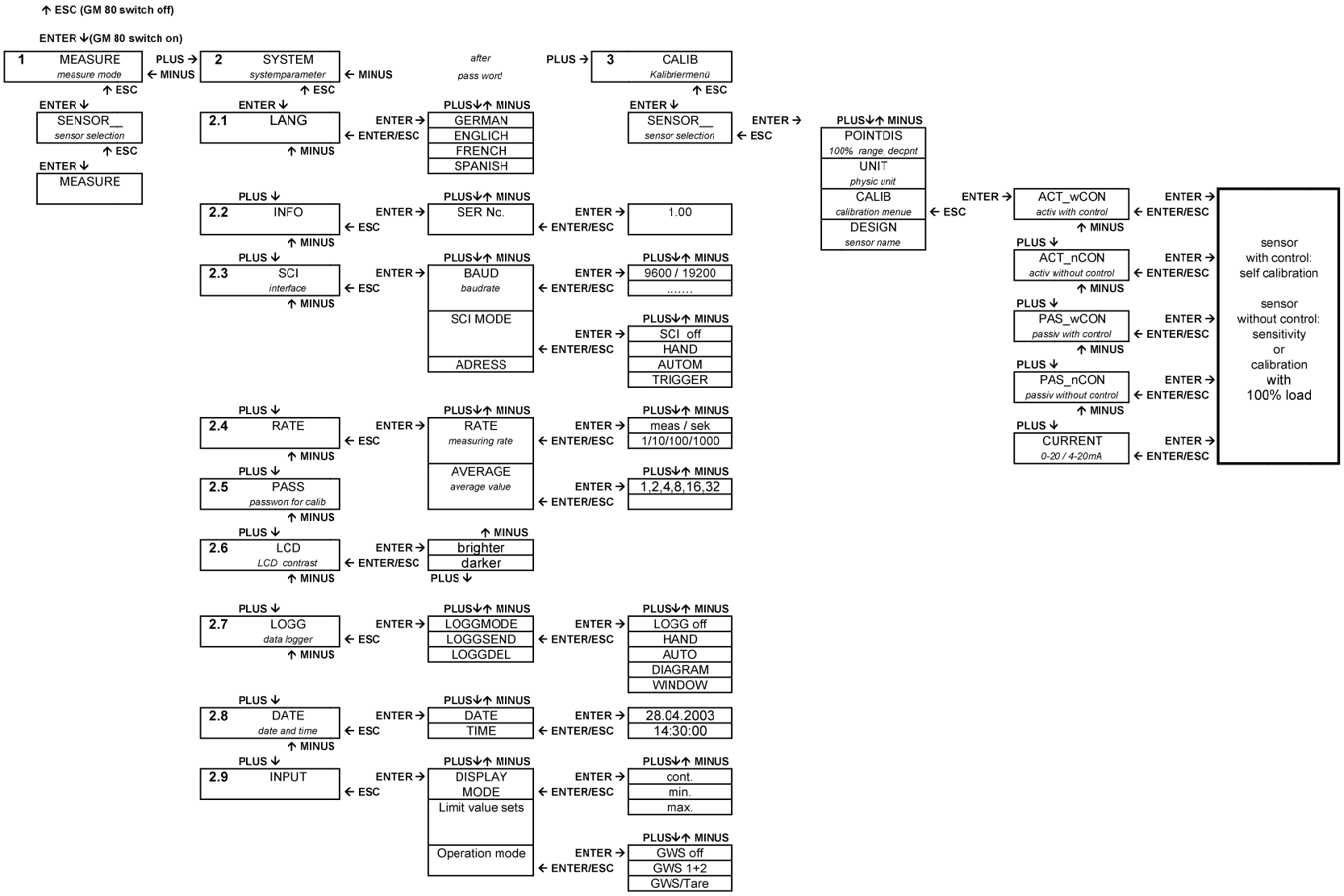
Key Assignment:

Key	**Measuring Mode:**
⇑	Press = TARE
⇓	MEASURING---MIN---MAX--- MEASURING...
ENTER	At MEASURING: send data At LOGG: store measured value, if adjusted At MIN: delete MIN At MAX: delete MAX
ESC	Back to menu / Press for 3 sec. = Off

Parameters of a Sensor:
After entering the password (9373) in menu 2SYSTEM-2.5PASS, the sensor can be installed in the calibration menu.
Following parameters are possible:

Sensor__I	Sensor no. 3	Sensor 0 – 9 possible
POINTDIS	200,0	Match meas. range and decimal point (max. 9999)
UNIT	_kN	1 – 3 digit unit possible
DESIGN	Press	Up to 8 digit name (or numbers) arbitrary
CALIB	PAS_wCON	Select Passive with cal. control. See data sheet of sensor
0% LOAD	Unload sensor	0% value of sensor is assigned to display 0
100% CON	Autom. calibration	100% value of sensor is assigned to display 200,0 kN
SAVE	ENTER or ESC	Confirm or discard

GM 80 program overview



Mains Operation:

GM80 TG: Wall power supply with 24V DC / 250mA is part of the delivery scope.
GM80 PA: The supply voltage of 16-30V DC is connected via a BMS-plug.

Battery for Date and Time:
A commercial CR2032 lithium battery with 3V is used. If time and date continuously begins at 0.00 hrs and date of 01.01.70, the battery must be exchanged. **Switch the GM80 off-circuit first!!!** At the GM80-TG both screws are unfixed at the bottom and the housing top has to be removed.
At the GM80-PA the front framework is removed and the front foil has to be slightly lifted at all 4 corners, then the underlying screws need to be unfixed. Then the circuit board can be pulled out carefully. The battery is located on a clamp on the circuit board and can easily be exchanged. “Plus” on top!

Control inputs: Trigger, Enable, Tare/GWS2
This input can be controlled e.g. with a PLC, remote switch, foot switch... or similar.
It is an optocoupler input and therefore it is separated galvanically.
As a control signal, 0V - 2V is recognized as low level, 3,5V -27V as high level.

Trigger:
Thus depending on the adjustment, data can be stored or interface data can be issued.
This input has a high sampling rate, therefore very short impulses are recognized as well.

Enable:
By this the min. and max. value is deleted externally.
In the display mode Max or Min, e.g. after each measurement the min. or max value can be deleted in order to acquire the next min. or max. value.

Tare / GWS2 (limit value set 2):
Select in the menu which function should be carried out while applying a signal.
Tare: tare externally.
GWS2: by this the second limit value set is being activated, parameters are being adjusted in the menu.

Operation Mode	**Low level**	**High level**
GWS1 + TARE	GWS1	TARE
GWS1 + GWS2	GWS1	GWS2

Serial Interface Adjustment:
Parity: none
Data bits: 8
Stop bits: 1

Limit Values:
2 switching points (SP), independent from each other, can be configured in value and the switching direction. The second limit value set has to be activated by the control input.

Menu Description:

1 MEASURE: **Measuring mode**

SENSOR__: **Sensor selection for measuring mode, sensor 0 - 9**
Here the sensor parameter set for the measurement is being selected.
The sensor parameter set must match the connected sensor.

2 SYSTEM: **All system parameters are being stored in this menu column.**

2.1 LANG **Language adjustment**
The menu language can be chosen in German, English, French or Spanish.

2.2 INFO **Information query was configured factory-sided and is not variable.**
VERS NO. Software version

2.3 SCI **Interface configuration**
BAUD: Baud rate adjustment must be conform with the receiver (pc or printer).
SCI MODE Interface configuration only refers to the measuring mode, not the logg mode!
OFF Interface off
HAND At key stroke "ENTER“ the measured value is issued
AUTO Interval time, adjustable from 10ms to 1h (at high measuring rate only possible with highest baud rate)
TRIGGER At a trigger pulse a measured value is issued
TRIGGER2 At a trigger pulse a measured value is issued and the MIN-MAX-value is deleted.
deleted.
ADDRESS Address selection

2.4 RATE **Measuring rate and average value**
RATE Measuring rate adjustment can be chosen between 1/s and 1000/s. At fast courses (screw joint, insert press...) always choose a fast measuring rate, e.g. 1000/s, at very slow courses a small rate, e.g. 1/s.
AVERAGE Forming an average value, the numbers indicate by how many measurements an average value is accumulated. Applicable at e.g. vibrations, control oscillations.....

2.5 PASS **Password query**
After entering the password ***9373*** it is possible to enter menu **3 CALIB** .
There the sensor parameters can be modified.

2.6 LCD **LCD-contrast adjustment**
If the LCD becomes unreadable by external influences e.g. solar radiation, heat or cold, the LCD-contrast can be corrected here.

2.7 LOGG **Data logger adjustments**
LOGGMODE Data logger configuration.
OFF Off-switch for logger operation, by this the measuring mode is possible only.
HAND At each key stroke on Enter a logg value is being taken over.
AUTO Adjustment of the measuring intervals.
DIAGRAM With each increasing flank of the trigger signal a logg value is being taken over.
WINDOW The window operation is being started by an increasing trigger flank and can only be finished by a decreasing flank. During this time, measured values will be deposited in the data logger in 1ms raster.
TRIGGER2 With each increasing flank of the trigger signal a logg-value is taken over and the MIN-MAX-value is deleted.
LOGGSEND Logger values are issued through the interface, press ENTER twice
LOGGDEL Logger values are deleted, beforehand there will be a safety query whether the buffer should be deleted. Before deleting please assure that you have received the desired data.

2.8 TIME **Date and time adjustment**

DATE	Date
TIME	Time

2.9 INPUT **Mode of operation and limit value adjustments**

DISPLAY	Cont	continuous measurement
	Min	min. measured value is displayed and restored by a trigger pulse.
	Max	max measured value is displayed and restored by a trigger pulse.
LIMIT	Limit values are active only when mode of operation is selected.	
VALUE SETS	SP1_1	switch point 1 of (GWS1) switch point and switching direction adjustable.
	SP1_2	switch point 1 of (GWS2) switch point and switching direction adjustable.
	SP2_1	switch point 2 of (GWS1) switch point and switching direction adjustable.
	SP2_2	switch point 2 of (GWS2) switch point and switching direction adjustable.
OPERATION	GWS off	all limit values and external tare are switched-off.
MODE	GWS/TARE	GWS 1 and external tare is active.
	GWS 1+2	GWS 1 and 2 are active, GWS2 is activated via control input.

3 CALIB Calibration menu – this is active only, if the password has been entered correctly in 2.5PASS. For the calibration the sensor needs to be connected to the sensor socket.

Sensor__	Sensor number or name of the sensor which is to be calibrated.
POINTDIS	Measuring range with decimal indication of the sensor, e.g. 100,0; 200,0; 63,00;... Call menu "POINTDIS", after pressing **ENTER** the final value of the sensor can be entered, by **PLUS** or **MINUS** the numeric character can be edited, by **ENTER** the next figure can be edited, if all figures are edited, by **PLUS** and/or **MINUS** the comma will be shifted. For the completion of the input press **ENTER,** thereafter the final value is being logged in the GM 80.
UNIT	Input of the physical unit, e.g. Kg, Ncm, t, gr, kN, N·m, bar...
DESIG	Name of the sensor e.g. sensor 1,2,3, silo, tank, mixer, balance1, motor, test1..
CALIB	Selection of the sensor type (active, passive, 4-20mA, with or without calib. control..)

Calibration Procedure:

	ACT_wCON	**Active sensor with calibration control**
	0% LOAD	unload sensor
	100%Con	after pressing ENTER the calibration takes place automatically.
	SAVE	query for takeover of calibration data
	ACT_nCON	**Active sensor without calibration control**
	0% LOAD	unload sensor
	100%Con	calibration by 100 % load (apply the nominal load/nominal torque) or switch to nominal value
	NOMVALUE	enter the nominal value in mV/V or switch to 100 % load
	SAVE	query for takeover of calibration data
	PAS_wCON	**Passive sensor with calibration control**
	0%LOAD	unload sensor
	100%Con	after pressing ENTER the calibration takes place automatically.
	SAVE	query for takeover of calibration data
	PAS_nCON	**Passive sensor without calibration control**
	0% LOAD	unload sensor
	100% LOAD	calibration by 100 % load (apply the nominal load/nominal torque) or switch to nominal value
	NOMVALUE	enter the nominal value in mV/V or switch to 100 % load
	SAVE	query for takeover of calibration data
	CURRENT	**Sensor with 4 - 20mA**
	0% LOAD	unload sensor
	100% LOAD	calibration by 100 % load (apply the nominal load/nominal torque) or switch to nominal value
or	NOMVALUE	fixed value 4-20 mA
	SAVE	query for takeover of calibration data

Edit and Adjust Limit Values

In menu 2 SYSTEM - 2,9 INPUT - Setpoint the limit value parameters can be adjusted. If menu LIMIT VALUE SETS is selected and confirmed by ENTER, the limit values are listed. Switch to the next limit value with the PLUS key. With the MINUS key the switching level HI or LO can be selected.

Definition of the switching levels:

HI... if the measured value exceeds the SP, the output will be switched on.
if the measured value falls below the point of hysteresis, the output will be switched off.
LO.. if the measured value exceeds the SP, the output will be switched off.
if the measured value falls below the point of hysteresis, the output will be switched on.

The adjusted level is taken over by pressing ENTER. If ENTER was pressed, the SP can still be edited. With the keys PLUS and/or MINUS the leading sign and the digits can be adjusted. Jump to the next digit with ENTER. By confirming with ENTER the new adjusted SP is accepted; with ESC the new adjusted SP gets discarded.

Operation via the Serial Interface (SCI):

Through the serial interface, measurement values can be issued singly or automatically by the GM 80.
The commands can be sent to the GM 80 via a terminal program or PLC.
If several devices are connected to the RS232-BUS, none of the devices should be operated in the SCI-mode “AUTO”.

Protocol set-up

0x02	0xXX	"x"
(STX)	Address	Command

At the device with address 0x00 all parameters (company header, sensor designation...) are issued when changing into the measuring mode. If these parameters are not indicated, an address unequal 0x00 has to be adjusted.

If the GM 80 is in the measuring mode, following commands are available:

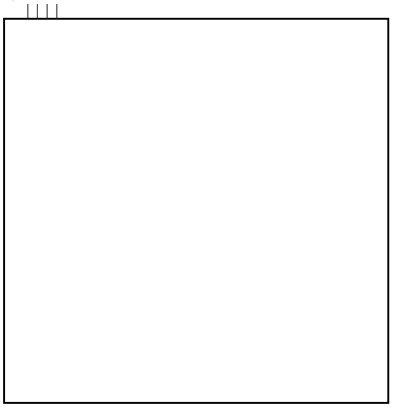
ASCII	HEX	Description
0	0x30	Query continuous measured value (signed integer)
1	0x31	Query maximal value (signed integer)
2	0x32	Query minimal value (signed integer)
3	0x33	Tare display
4	0x34	Reset maximal value
5	0x35	Reset minimal value
6	0x36	Actuate calibration control for sensors with 100 % control resistance
7	0x37	Switch off calibration control for sensors with 100 % control resistance
A	0x41	Read-Out datalogger
B	0x42	Delete datalogger
C	0x43	Read-Out current sensor parameter
D	0x44	Read-Out status
E	0x45	Read-Out complete status
g	0x67	Change protocol setup
k	0x6B	ENTER
l	0x6C	PLUS
m	0x6D	MINUS
n	0x6E	ESC

Outside of the measuring mode following commands are available:

ASCII	HEX	Description
A	0x41	Read-Out datalogger
C	0x43	Read-Out current sensor parameter
D	0x44	Read-Out status
E	0x45	Read-Out complete status
a	0x61	Write time
b	0x62	Read-Out time
c	0x63	Write company header
d	0x64	Read-Out company header
e	0x65	Write all sensor parameters
f	0x66	Read-Out all sensor parameters
g	0x67	Change protocol setup
k	0x6B	ENTER
l	0x6C	PLUS
m	0x6D	MINUS
n	0x6E	ESC

Read-out of present sensor parameter:

Sensor designation	8Byte	ASCII
Display final value	2Byte	packed BCD-figure
Unit	3Byte	ASCII

Sensor type and digits	1Byte	0xAB: A ... Sensor type, B ... digit of the dec. point (binary coded) Sensor type: 0xXXXX XXXX ||||  0000 ... active withcalibration control 0%load and 100% load calibration 0001 ... active without calibration control 0%load and 100% load calibration 0010 ... active without calibration control 0%load calibration and edit 100%load V 0011 ... active without calibration control edit 0%load V and 100%load V 0100 ... passive with calibration control 0%load and 100% load calibration 0101 ... passive without calibration control 0%load and 100% load calibration 0110 ... passive without calibration control 0%load calibration and edit 100% load in mV/V 0111 ... passive without calibration control edit 0%load and 100% load in mV/V 1000 ... current 0%load and 100% load calibration 1001 ... current 0%load calibration and edit 100%load in mA 1010 ... current edit 0%load mA and 100%load mA Dec. point: 0xXXXX XXXX |||| 000 ... _5000___ 001 ... _5,000__ 010 ... _50,00__ 011 ... _500,0__ 100 ... 5,000___
0%load	2Byte	HEX-value (MSB/LSB)
100% load	2Byte	HEX- value (MSB/LSB)

Read-out of status:

Status	2Byte	general error condition of the GM80

Read-out of complete status:

Status	2Byte	general error condition of the GM80
Meas. rate	1Byte	0x01 ... 1000/sec 0x02 ... 100/sec 0x03 ... 10/sec 0x04 ... 1/sec
Average value	1Byte	0x01 ... x/1 0x02 ... x/2 0x04 ... x/4 0x08 ... x/8 0x10 ... x/16 0x20 ... x/32
SCI_MODE	1Byte	0x00 ... interface off 0x04 ... hand mode 0x08 ... automatic mode 0x0C ... trigger mode
SCI_MODE_DELAY	1Byte	0x02 ...10ms 0x03 ... 100ms 0x04 ... 1s 0x05 ... 10s 0x06 ... 1min 0x07 ... 10min 0x08 ... 1h
LOGGMODE	1Byte	0x00 ... logger off 0x04 ... hand mode 0x08 ... automatic mode 0x0C ... graph mode 0x10 ... screen mode
LOGGMODE_DELAY	1Byte	0x01 ... 1ms 0x02 ...10ms 0x03 ... 100ms 0x04 ... 1s 0x05 ... 10s 0x06 ... 1min 0x07 ... 10min 0x08 ... 1h
Language	1Byte	0x00 ... GERMAN 0x02 ... ENGLISH 0x04 ... FRENCH 0x06 ... SPANISH
Protocol status	1Byte	0xXXXX XXXX (binary coded) |||| |||| |||| |||1 ... do not send conclusion character |||| ||1 ... send CR/LF |||| |1 ... send CR |||| 1 ... send LF

Read Time:
Output**:**

DAY.MONTH.YEAR

2xspace

HOURS:MINUTES:SECONDS

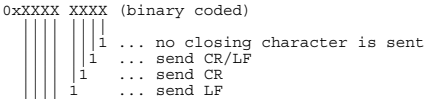
Write Time:
The writing is identically with the data block for receipt of time, however, the data block for writing is protected with a checksum and the corresponding weighted checksum.

Read Company Header:
With this command the company header, which is stored in the GM 80, can be read.

Write Company Header:
The input is ended either if 256 characters are received or if the character ETX (0x03) Strg-C is contained in the character string.

Change of Protocol Setup:

Protocol status 1Byte



Calculation of the Checksum (CS) and the Weighted Checksum (gewCS)
The calculation takes place via all parameter bytes (without the command byte). At the CS all bytes are added (overflows are not considered here). For the calculation of the gewCS the CS is added to the gewCS. At overflow the gewCS is incremented by 1.

Formatting of the Serial Interface Output

Output format in SCI mode:

HAND:		Algebraic sign, measured value, unit, time and CRLF
AUTO:	**10ms**	Signed integer and CRLF
	100ms	Signed integer and CRLF
	1s	Algebraic sign, measured value, unit, time and CRLF
	10s	Algebraic sign, measured value, unit, time and CRLF
	1min	Algebraic sign, measured value, unit, time and CRLF
	10min	Algebraic sign, measured value, unit, time and CRLF
	1h	Algebraic sign, measured value, unit, time and CRLF
TRIGGER:		Signed integer and CRLF
TRIGGER2:		Signed integer and CRLF

Output format in LOGG mode:

HAND:	Algebraic sign, measured value, unit, time and CRLF
AUTO:	Algebraic sign, measured value,unit and CRLF
DIAGRAM:	Algebraic sign, measured value,unit and CRLF
WINDOW:	Algebraic sign, measured value,unit and CRLF
TRIGGER2:	Algebraic sign, measured value,unit and CRLF

Adjustments in the SCI Mode

SCI OFF: At this adjustment a transfer of measured values from the GM 80 is disabled.
The GM 80 can be controlled however with the GM 80-commands.

HAND: In this mode a measured value is issued via the serial interface when the Enter key is pressed at the GM 80.

AUTO: In this mode a measured value is issued via the serial interface in the adjusted delay

TRIGGER: At a trigger event In this mode, a measured value is written in the logger. Since the trigger pulses may occur in 10ms raster and additional time-logg is not possible. The flank of the trigger pulse must be on HIGH for at least 4ms. Then it must be on LOW for at least 6ms.

TRIGGER2: This mode functions like the trigger mode, however here the MIN value and the MAX value are set back at a recognized trigger pulse. The display is set back to the display mode which was adjusted in menu 2.9 INPUT-DISPLAY.

Connection to the Serial Interface

As a single device, the GM 80 can directly be connected to a PC by a serial 1:1 connecting cable.

By internal circuitry, up to 6 devices can be connected to the RS232 interface parallel.
The connection with the GM 80 takes place parallel via a 1:1 connection (Rx on Rx, Tx on Tx and GND on GND). The connection to the pc then takes place with a zero-modem cable. In the BUS operation mode all GM 80 units operate as SLAVE; a connected control as MASTER.

Operation and Function Principle of the GM 80-Data Logger

The data logger can, if the GM 80 is not in the measuring mode, be read by the menu option 2,7 LOGG - SENDING or by the command "A" via the interface. Outside of the measuring mode the data logger is deleted only by the menu option 2,7 LOGG - DELETION.

If the GM 80 is in the measuring mode, the data logger can be read with the command "A" and be deleted with the command "B".

If the measuring mode is being switched on from the menu option 1MEASURING-sensor selection,
the starting time of the measurement, the current sensor designation, the final value of the measuring range, the adjusted measuring rate and the logger mode (e.g.: AUTO 1ms) are saved in the logger.
NOTE: All previous measured values are deleted here!

With the read-out of the data logger via the serial interface different adjustments are sent from the GM 80.

a) Company header
b) Starting time of the measurement
c) Sensor designation
d) Final display value
e) Adjusted measuring rate
f) Adjusted logger mode
g) Thereafter the measured values

In the HAND MODE the measured values are always logged with the time. The measured value is logged at the data in the AUTOMODE. A time can be assigned to each measured value by the indicated starting time.
Since in GRAPHS and in the WINDOW MODE trigger events smaller than 1sec can occur, an additional time log is not possible.

Adjustments in the Logg Mode

LOGG OUT: Here the data logger is switched off. The logg mode in the measuring mode is switched to "LOGG OUT" as soon as the entire data logger has been edited.

HAND: In this mode a measured value is written into the data logger when the enter key was pressed at the GM 80. By an additional logg of time, there is a time assignment for each measured value.

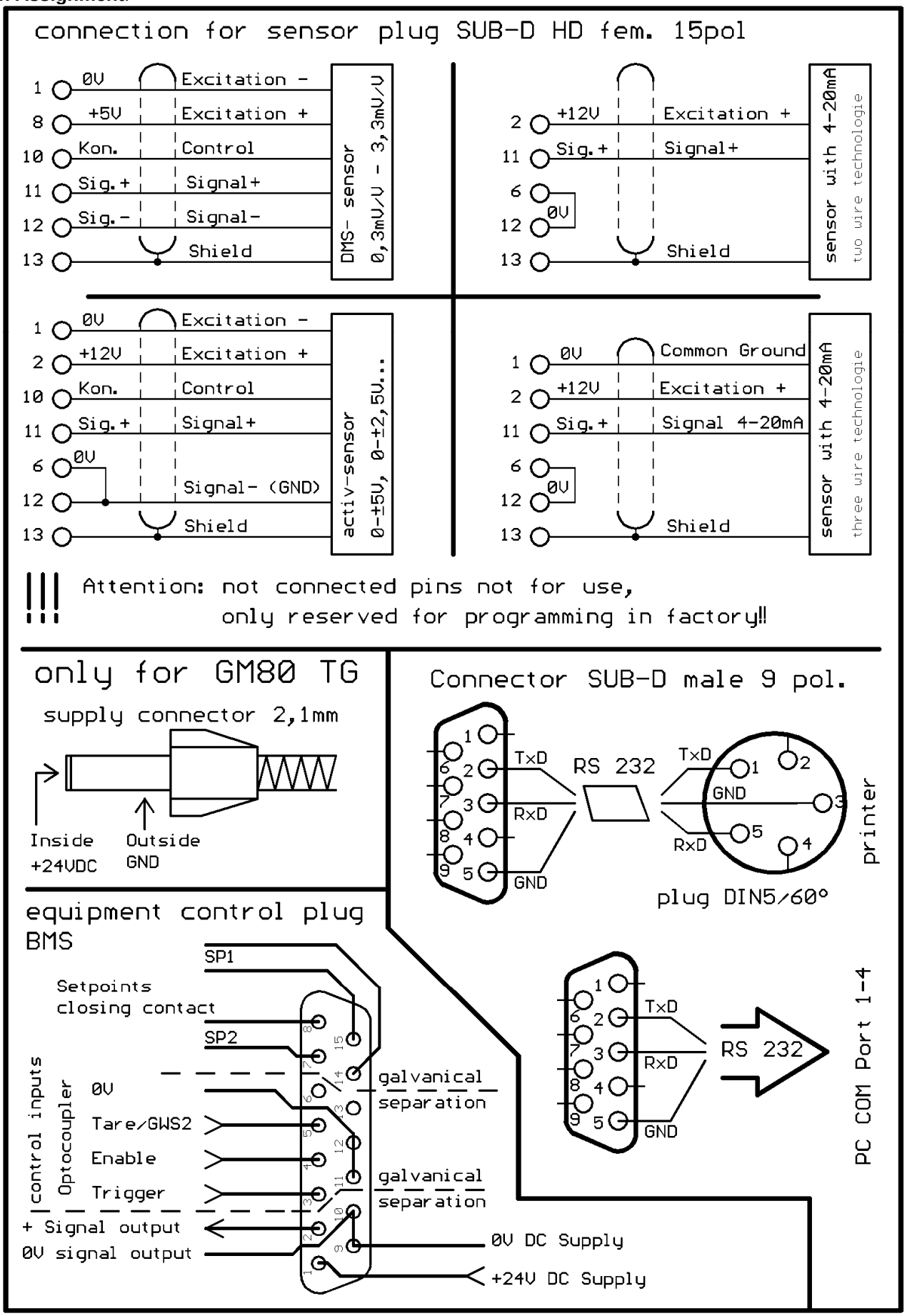
AUTO : In this mode in the adjusted Delay a measured value is written into the data logger. By the stored starting time there is a time assignment for each measured value.

GRAPH: In this mode at a trigger event a measured value is written into the logger. Since the trigger pulses occur in 10ms raster, an additional logg of the time is not possible. The flank of the trigger pulse must stand on HIGH for 4ms at least. Afterwards on LOW for at least 6ms.

WINDOW: This mode reacts to increasing and/or decreasing flanks. At an increasing flank the logging of the measured values is started. From now on the measured values are written in the data logger with 1ms raster. A decreasing flank ends the recording.

TRIGGER2: This mode functions like the graph mode, however, here the MIN value and the MAX value are set back at a recognized trigger pulse. The display is set back to the display mode which was adjusted in menu 2.9 INPUT-DISPLAY.

Pin Assignment:



Supplement

Device Disposal:

Please dispose the unserviceable device according to the legal rules.
By this you meet the legal obligations and contribute to the environmental protection!

Tendance:
The device may be cleaned with a slightly moistened cloth.

FAQ – Trouble Shooting

Device can not be turned on
Battery/accumulator inserted correctly?
Connect power supply at operation with accumulators.

The display begins to flash.
Charge the accumulators and/or exchange the batteries.

The calibrated adjustments do not match with the sensor anymore.
Was the sensor overloaded?
Is the correct sensor selected?
Possibly recalibrate the sensor.

Wrong values are indicated after the calibration
Was the sensor type selected correctly?
At calibration with calibration control check sensor for this option.

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Siège Social - *Headquater* : Technosite Altéa - 294, Rue Georges Charpak - F.74100 JUVIGNY
SCAIME SAS - 294, RUE GEORGES CHARPAK - CS 50501 - 74105 ANNEMASSE CEDEX
Tél. : +33 (0)4 50 87 78 64 - Fax : +33 (0)4 50 87 78 46 - info@scaime.com - www.scaime.com
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