

Operating Manual

Digital display unit

M3605

with five limit contacts



Warranty

Mostec warrants this product to be free of manufacturing defects for a 2-year period after the original date of purchase. Within this period, defective products will be repaired free of charge provided that the defect occurred during normal operation. This warranty does not cover damage to the product resulting from ordinary usage such as front panel scratches, broken control elements and corrosion, etc. The customer is responsible for shipping and packing charges for products returned under warranty to Mostec. Mostec warrants this product beyond the 2-year warranty period for an additional 2 years in case of long term damages due to improper manufacturing. Such damages as poorly soldered joints or other assembly problems are also covered by the warranty. Transportation damages are not covered by the warranty and should be referred to the respective delivery service.

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A. Front Elements And Keyboard

This listing only refers to the main screen, which shows up 3 seconds after power on.

Nr.	Element	Function	Page
a.	LED1	Errors, limit contacts, USB, wire break ⌚	-
b.	LED2	no function	-
c.	LED3	no function	
d.	LED4	no function	
	F1	setup menu, direct display of limit contact 1 value	5
	F2	setup menu, direct display of limit contact 2 value	5
	F3	setup menu, direct display of limit contact 3 value	5
	F4	setup menu, direct display of limit contact 4 value	5
	ENT	display the setup menu, input	5
	ESC	display the main menu, exit	6
	+	plus	5-12
	-	minus	5-12



B. Setup menu, setting the limits of the instruments

The M3605 has 3 ways to change the limit values of the limit contacts. To make the handling of the instrument simple, we have made a direct entry into the cursor menu available.

To enter the cursor menu below, you can either press the enter (**ENT**) key which leads you to limit contact 1 directly. By pressing (**ENT**) again, limit contact 2 can be changed and so on until limit contact 5.

By pressing (**F1** to **F4**) you end up in the same menu, but directly on the desired limit contact. Example: (**F1**) leads to limit contact 1, (**F3**) leads to limit contact 3 etc.

The third way, to set up the limit value is done by pressing the (**ESC**) key for more than 3 seconds. Then move with the arrow (+) / (-) keys to "**Relay** (Nr. of desired contact) **settings**", press the (**ENT**) key and move with the arrow (+) / (-) keys to "**Rel** (Nr. of desired contact): **set point**". Then press the (**ENT**) key again and change the limit value. Confirm with (**ENT**), skip with (**ESC**).

Quit the setup menu by pressing (**ESC**), or, wait a few seconds with no key operation. Values can be altered with (+) and (-), or, depending on the menu, with the (**F3**) and (**F4**) as well.

Access to the menu item	Menu Item	Display Reaction	Change Values
press ENT 1x	set limit contact value 1 Limit 1 can also be set by (F1) direct	LMT1 symbol blinks Limit value is displayed	Adjust the value with (+) and (-). (F1) or (ENT) saves the settings
press ENT 2x	set limit contact value 2 Limit 2 can also be set by (F2) direct	LMT2 symbol blinks Limit value is displayed	Adjust the value with (+) and (-). (F2) or (ENT) saves the settings
press ENT 3x	set limit contact value 3 Limit 3 can also be set by (F3) direct	LMT3 symbol blinks Limit value is displayed	Adjust the value with (+) and (-). (F3) or (ENT) saves the settings
press ENT 4x	set limit contact value 4 Limit 4 can also be set by (F4) direct	LMT4 symbol blinks Limit value is displayed	Adjust the value with (+) and (-). (F4) or (ENT) saves the settings
press ENT 5x	set limit contact value 5	LMT5 symbol blinks Limit value is displayed	Adjust the value with (+) and (-). (ENT) saves the settings
press ENT 6x	USB	USB-symbol blinks	Set the USB logger on/off

c. User Menu

Access to menu:

Navigation in the menu:

Access to a menu item:

Exit a menu item:

Adjust values:

press and hold **(ENT)** for 3 seconds

(+) and **(-)**

(ENT) = ENTER

(ESC) = ESCAPE

(+) and **(-)**

Menu Item	Submenu	Function/Comment
1/8 Measurement settings	Input range display, Display range, Decimal point display, Unit display, Input range signal, Output range signal	See section D
2-6/8 Relay 1-5 settings	Rel1-5: behavior Rel1-5: set point Rel1-5: norm/inv Rel1-5: LED norm/inv Rel1-5: turn on delay Rel1-5: turn off delay Rel1-5: hysteresis Rel1-5: label	See section E
7/8 USB settings	Time setup Date setup Data log period Remove memory stick	See section G
8/8 Instrument settings	Keyboard lock/unlock Language settings Custom label Factory setting Instrument info Contrast	See section H

D. Measurement settings

- 1) Press and hold (**ESC**) 3 seconds to enter the users menu.
- 2) Then you are already at item 1/8, "Measurement settings". If not move to 1/8 with (+).
- 3) Open menu item with (**ENT**)
- 4) Menu structure:
 Example 1: Input: 4 ... 18mA → Display: 1.70 ... 5.60 % → Signal output: 4 ... 20mA
 Example 2: Input: 2.5V ... 7.5V → Display: 37.5 ... 115.4 A → Signal output: 4 ... 20mA

Menu Item	Change Values	Function/Comment
1/6 Input range display	Min: Set the minimum point: Example 1: The instruments input signal: 0 ... 20mA Requested range: 4 ... 18mA Now set the Min to: (4mA : 20mA * 100%) = 20% Max: Set the maximum point: (18mA : 20mA * 100%) = 90% Min: 20% & Max: 90% leads to a new range of 4 ... 18mA	Example 2: The instruments input signal: 0 ... 10V Requested range: 2.5 ... 7.5V Min = (2.5V : 10V * 100%) = 25% Max = (7.5V : 10V * 100%) = 75% → 25% ... 75% leads to 2.5 ... 7.5V
2/6 Display range	Set minimum display range in the Example 1: (only parts, ignore decimal pt) Min: 170 (1.70 is desired) Max: 560 (5.60 is desired)	Example 2: (only parts ignore decimal pt) Min: 375 (37.5 is desired) Max: 1154 (115.4 is desired)
3/6 Decimal point display	Set the decimal point in the Example 1: XXX.X XX.XX (1.70 is requested) X.XXX XXXX	Set the decimal point in the Example 2: XXX.X (37.5 is requested)
4/6 Unit display	Select the unit for the Display: Start with the first character. Use the (+) and (-) key to select it (to the right the number of the current character can be seen) 1. Blank (character # 32) then select the second character with > (F3) 2. Percent symbol (char # 37) Store with (ENT) (max. 4 characters).	Example 2: (+) and (-) to select: 1. Blank (char # 32) (F3) to move the cursor (+) and (-) to select: 2. A (char # 65) Store with (ENT)
5/6 Input range signal	Example 1: Min: 1.70% with (+) and (-) (ENT) to store and select Max: 5.60% with (+) and (-) store and leave with (ENT)	Example 2: Min: 37.5A with (+) and (-) (ENT) to store and select Max: 115.4% with (+) and (-) store and leave with (ENT)
6/6 Output range signal	Example 1: Min: 4.0mA with (+) and (-) (ENT) to store and select the Max: 20.0mA with (+) and (-) store and leave with (ENT)	Example 2: Min: 4.0mA with (+) and (-) (ENT) to store and select the Max: 20.0mA with (+) and (-) store and leave with (ENT)

E. Relay Settings

- 1) Press and hold **(ESC)** 3 seconds to enter the customer menu.
- 2) Go to menu item 2/8 to 6/8, "Relay x settings" with **(+)**
- 3) Open menu item with **(ENT)**
- 4) To confirm a selection press **(ENT)**, exit with **(ESC)**
- 5) Menu structure:

Menu Item		Change Values
1/8	Relay 1-5: behavior	Switch with (+) between upper and lower limit, confirm the selection with (ENT)
2/8	Relay 1-5: set point	Change the set point value with (+) and (-)
3/8	Relay 1-5: norm/inv?	Switch with (+) between normal and inverse operation and confirm the selection with (ENT)
4/8	Relay 1-5: Led norm/inv?	Switch with (+) between normal and inverse operation and confirm the selection with (ENT)
5/8	Relay 1-5: turn on delay	Change the time delay with (+) and (-) , resolution is +/-1s
6/8	Relay 1-5: turn off delay	Change the time delay with (+) and (-) , resolution is +/-1s
7/8	Relay 1-5: hysteresis	Change the hysteresis of both set points with (+) and (-) , possible resolution is 5 to 200 parts of range
8/8	Relay 1-5: label	Change characters with (+) and (-) and jump with (F3) and (F4) to the next character, confirm the label text with (ENT) .

F. USB settings

- 1) Press and hold (**ESC**) 3 seconds to enter the user menu.
- 2) Go to menu item 7/8 "USB settings" with (+).
- 3) Open menu item with (**ENT**)
- 4) To confirm a selection press (**ENT**), exit with (**ESC**)
- 5) Menu structure:


Menu Item	Change Values	Function/Comment
1/4 Time setup	Toggle with (+) between 12h and 24h format, confirm it with (ENT)	Set time format and time for logging mode
2/4 Date setup	Toggle with (+) between DDMMYY and MMDDYY format, confirm with (ENT)	Set date format and date for logging mode
3/4 Data log period	Set recording time interval with (+) and (-) from 5 to 7200sec . Resolution: 1sec	
4/4 Remove thumb drive	Toggle with (F3) between stop/start logging	Close the current logging cycle before removing the memory stick. When the message "USB: Start logger?" shows up, you may remove the memory stick

USB characteristics

- Device accepts empty and FAT32 formatted memory sticks only.
- Date and clock settings remain stored up to 3 hours without power supply connection
- Set date and time before recording with the memory stick.
- Device starts automatically with logging data when memory stick is connected.
- ⌘: Wait with removing the memory stick. It may take up to 5 minutes to write data to the stick.
- Internal data sets are stored in CSV format every 15 minutes. The file name characteristics after a secure ejection, removing the memory stick in the USB sub menu, are:
"JJMMDDXX.csv"
JJ = last 2 digit of current year
MM = current month
DD = current day
XX = file counter 0-99
- Data will appear in a spreadsheet program as below:
- * The unit and the limit contact label is adjusted according to the instruments settings

Date	Time	Value[%]*	1*	2*	3*	4*	5*
04.07.2018	12:12:55	10.00	0	1	0	1	1
04.07.2018	12:13:03	10.01	1	1	0	1	0
04.07.2018	12:13:04	10.03	0	0	0	1	0
04.07.2018	12:13:06	10.15	1	0	1	1	1
04.07.2018	12:13:07	10.78	1	1	1	0	1

B. USB error code

 E: xx	error description
01	drive not formatted
02	drive wrong formatted
03	drive is write protected
04	sector size not supported

G. Instrument settings

- 1) Press and hold (**ESC**) 3 seconds to enter the user menu.
- 2) Go to menu item 8/8 "Device settings" with (+).
- 3) Open menu item with (**ENT**)
- 4) To confirm a selection press (**ENT**), exit with (**ESC**)
- 5) Menu structure:

Menu Item	Change Values	Function/Comment
1/6 Keyboard lock/unlock	Set a code with (+) and (-) between 1 and 999 to lock or unlock the device, confirm the code with (ENT)	If the keyboard is locked, you won't be able to make changes in the settings, until you have unlocked it with the valid code. Note: Please contact us if you forgot the code. We will then provide a factory unlock code.
2/6 Language setting	Set the required language with (+) and (-)	
3/6 Customer label	Change characters with (+) and (-), switch position with (F3) and (F4), confirm Text with (ENT).	Shows a customer label on main screen. Maximum 16 characters are possible.
4/6 Factory setting	Sets all values to default, confirm with (ENT) or exit with (ESC)	
5/6 Device info	Exit with (ENT)	Shows firmware version, serial number and calibrating points.
6/6 Contrast	Change the contrast with (+) and (-), confirm with (ENT)	Keep in mind, that you will not be able to move back to this item if you select a contrast which makes the graphics on the screen invisible (too dark or too bright)

H. Factory Settings

(OEM factory settings can differ from the standard MOSTEC factory settings)

Measuring settings:

Input range display Min:	20.00%
Input range display Max:	100.00%
Display range Min:	0
Display range Max:	1000
Decimal point display:	XXX.X
Unit display:	" %"
Input range signal Min:	0
Input range signal Max:	1000
Output range signal Min:	4.00mA
Output range signal Max:	20.00mA
→ leads to 4 ... 20mA equals 0.0 to 100.0%	
→ Signal output: 4 ... 20mA	

Relay 1 settings:

Rel 1: behavior	upper limit
Rel 1: set point	80.0%
Rel 1: norm / inv	normal
Rel 1: LED norm / inv	normal
Rel 1: turn on delay	0s
Rel 1: turn off delay	0s
Rel 1: hysteresis	5
Rel 1: label	"1 "

Relay 2 settings:

Rel 2: behavior	upper limit
Rel 2: set point	60.0%
Rel 2: norm / inv	normal
Rel 2: LED norm / inv	normal
Rel 2: turn on delay	0s
Rel 2: turn off delay	0s
Rel 2: hysteresis	5
Rel 2: label	"2 "

Relay 3 settings:

Rel 3: behavior	upper limit
Rel 3: set point	40.0%
Rel 3: norm / inv	normal
Rel 3: LED norm / inv	normal
Rel 3: turn on delay	0s
Rel 3: turn off delay	0s
Rel 3: hysteresis	5
Rel 3: label	"3 "

Relay 4 settings:

Rel 4: behavior	upper limit
Rel 4: set point	20.0%
Rel 4: norm / inv	normal
Rel 4: LED norm / inv	normal
Rel 4: turn on delay	0s
Rel 4: turn off delay	0s
Rel 4: hysteresis	5
Rel 4: label	"4 "

Relay 5 settings:

Rel 5: behavior	upper limit
Rel 5: set point	15.0%
Rel 5: norm / inv	normal
Rel 5: LED norm / inv	normal
Rel 5: turn on delay	0s
Rel 5: turn off delay	0s
Rel 5: hysteresis	5
Rel 5: label	"5 "

USB settings:

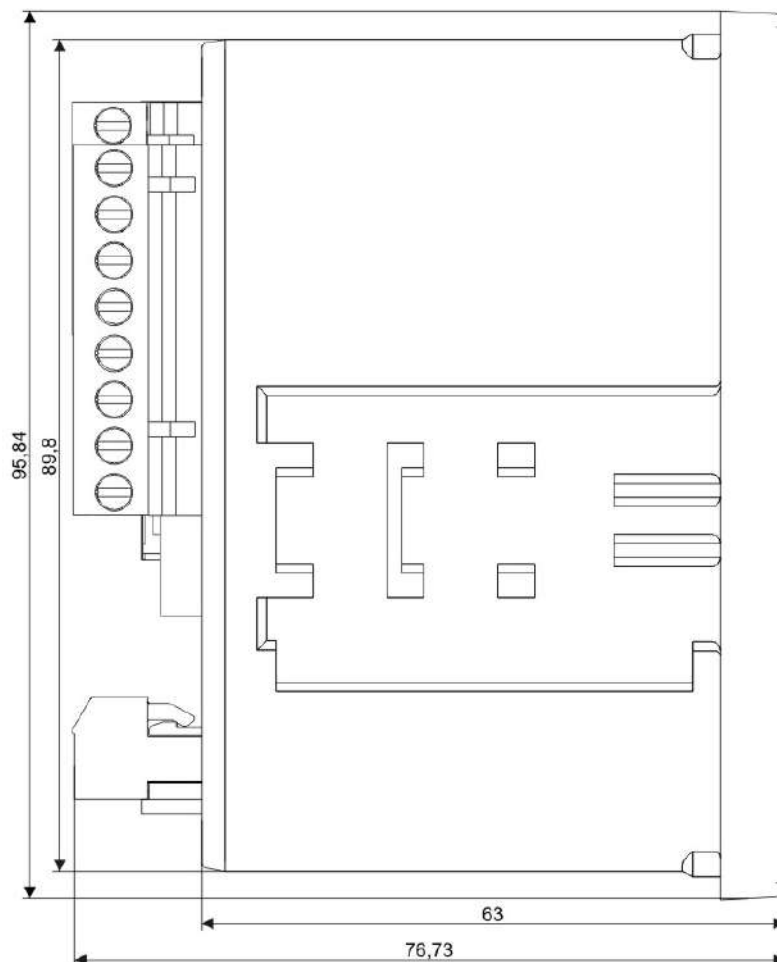
Clock setup:	24h
Date setup:	DDMMYY
Log period:	5s

Device settings:

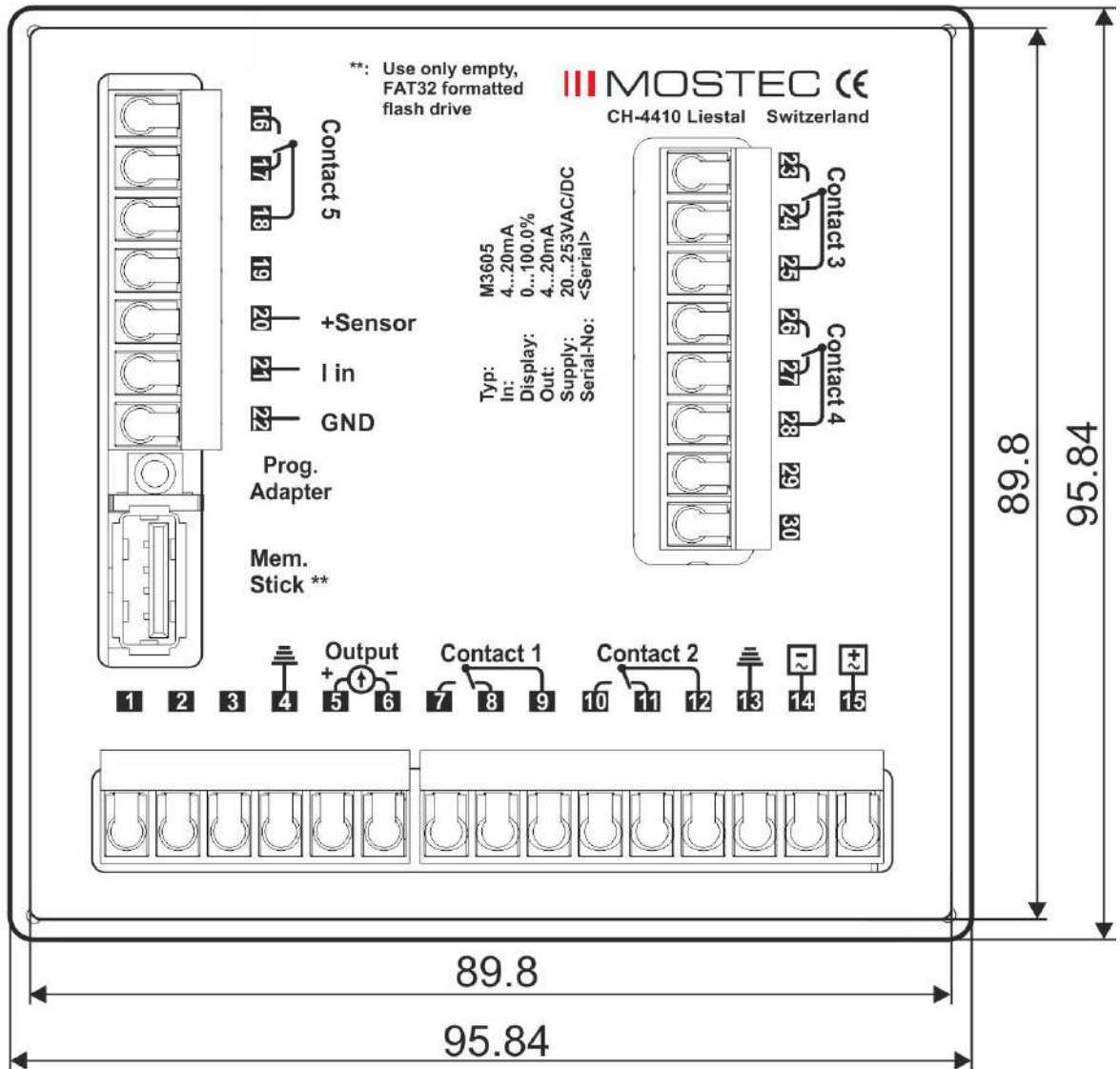
Switch lock/unlock	off
Language:	English
Custom label:	all Blanks
Contrast:	66

I. Mechanical Dimensions

Side view:



Rear view:



J. Technical Data

Measuring ranges:	0/4 ... 20mA free programmable 0 ... 1 /10V or other signals on request
Input load / impedance:	Current signal = 51Ω; voltage signal = 1MΩ
2-Wire transmitter supply:	20VDC, max 25mA
Accuracy:	± 0.1% @ 23°C ambient temperature
Reproducibility:	± 0.1%
Temperature drift:	Zero drift:30ppm/°C typical Gain drift 25ppm/°C typical
Long-term stability:	± 0.1%
Working temperature range:	-5°C to +45°C
Display:	Graphic LCD 128x128 pixel
Pixel size:	0.4x0.4mm
Max. humidity:	Non condensing
ENT key:	Quick access to settings or to save parameters
ESC key:	Access to the main menu, press and hold for 3 seconds, or exit menu item
+ / - key:	Set values
F1-F4 key:	Direct access to change the set point of relais 1 - 4
Signal current output:	0...20mA, galvanically isolated and adjustable over full range
Max load:	<500Ω
Output impedance:	Typ. >1MΩ
Relay contact:	Adjustable over the full range
Hysteresis:	5 - 200 digits adjustable
Limit value status:	Displayed with symbol on screen, LED's not available
Relay outputs:	Floating changeover contacts, max. 2A at 230VAC resistive load
USB:	Logger function, programmable log-time, 5 to 7200 sec. Use only FAT32 formatted, empty USB flash drives. Stop logging mode before removing.
Supply:	20..253VAC/DC, up to 4.5W
CE-conformity:	Fullfilled
Terminals:	

(n.o. =normally open contact, n.c. =normally closed contact, c.o. =changeover contact)

1	Pt100 sense -	11	contact 2 n/c	21	+ current signal or voltage signal input
2	Pt100 -	12	contact 2 c/o	22	- (Gnd) current signal or voltage signal input
3	Pt100 +	13	PE supply	23	contact 3 n/o*
4	PE Pt100/ current output	14	N supply	24	contact 3 n/c*
5	Signal current output +	15	L1 supply	25	contact 3 c/o*
6	Signal current output -	16	contact 5 n/o	26	contact 4 n/o*
7	contact 1 n/o	17	contact 5 n/c	27	contact 4 n/c*
8	contact 1 n/c	18	contact 5 c/o	28	contact 4 c/o*
9	contact 1 c/o	19	do not use		
10	contact 2 n/o	20	sensor supply 20VDC		

*optionally available

Terminals:	Plug-in terminals on the back panel
Weight:	304g
Hardware:	2 quick-mounting clips 1 operating instructions
Warranty:	2 years
Other options:	– special measuring range / signal output – customer functions, OEM customer home screen / logo – Transparent cover IP55