

# maXYmos TL / TL ML / TL L

Type 5877B...

## XY Monitor for complex evaluation of curves

The maXYmos TL (Top Level) captures, analyzes and evaluates XY curves of two measurands that have to stand in a precisely defined relationship to each other. Such curves arise in applications such as

- Press fitting of bearings or valve seat rings
- Riveting and flanging of casing parts
- Turning and swiveling of joints
- Turning of key switches
- Movement of drawer slides
- Compression and extension of shock absorbers
- Pressing of snap-in elements

The measurement curves can be used to assess the quality of an individual stage of production, an assembly or the product as a whole.

### Description

The functions of this XY monitor range from simple, single-channel force-displacement monitoring to complex multi-channel applications for use in assembly and product testing. The monitor, which can have up to eight cascadable channel pairs, is designed to satisfy the most demanding users who require maximum user-friendliness, user comfort and flexibility. With a wide range of powerful evaluation objects, even very complex XY curves can be evaluated. For example, the GET-REF object is able to determine the coordinates of significant points on a curve, e.g., the position of a snap-in point, and pass them to a CALC object. This then calculates, e.g., the distance between two such snap-in points and evaluates it.

### The main features of each MEM:

- Curve capture according to  $Y=f(X)$ ,  $Y=f(X,t)$ ,  $Y=f(t)$ ,  $X=f(t)$
- Curve evaluation with NO-PASS, LINE-X, LINE-Y, UNIBOX, ENVELOPE, GET-REF, CALC, GRADIENT-Y, GRADIENT-X, HYSTERESIS-Y, HYSTERESIS-X, TUNNELBOX-X, TUNNELBOX-Y, SPEED, AVERAGE, BREAK, INFLEXION, INTEGRAL, DIG-IN, DELTA-Y, TRAPEZOID-X, TRAPEZOID-Y, TIME, DISPLACEMENT RANGE, FORCE RANGE, PASS-THROUGH BOX
- Up to 10 evaluation objects (EOs) per curve
- Dynamic referencing of evaluation objects in X and Y directions
- 108 measurement programs and 20 master programs
- Measurement curve with up to 8 000 XY value pairs
- Access via web-browser using encryption
- EtherNet TCP/IP for measurement data, remote maintenance and channel cascading



- Choice of bus types available via menu: PROFIBUS DP, EtherNet/IP, PROFINET, EtherCAT
- Dig-IO (24 V) for control and results
- 2 switching signals on X or Y threshold
- 2+1 USB for USB stick and notebook
- Channel X: Pot,  $\pm 10$  V, LVDT, incremental, SSI
- Channel Y: Strain gauge,  $\pm 10$  V,  $\pm 10$  V (2 measurement ranges), or piezoelectric sensors
- Multiple data export formats, e.g. Q-DAS, QDA9, IPM 5.0, XML, CSV, PDF
- Desktop, wall or front panel mounting; can be repositioned in a few easy steps
- Informative NOK cause diagnosis, process value trend patterns, etc. incl. warnings and alarms
- Process value table with free choice of contents
- Selected process values for the curve graph
- Access protection with various levels of access
- Display module (DIM) with 10,4" color touch screen and front-mounted USB slot
- Sequencer Mode (logical sequence control)

### maXYmos TL ML

- FDA and MDR conform process monitoring

### Licensed functions

- Connections and Security (incl. LDAPS / AD)
- Multipoint Calibration
- IIoT connectivity via OPC-UA
- Audit trail

For more information visit [www.kistler.com/maxymos](http://www.kistler.com/maxymos)

## Technical data

### Measuring and evaluation module (MEM)

Degree of protection	IP	40
Operating temperature	°C	0 ... 45

### Measuring channels

Number	1 X-channel, 1 Y-channel	
Sampling rate X/Y max.	kHz	20
Resolution per (analog) channel	bit	24
Accuracy class	%	0,3
Low-pass filter per channel (in stages)	Hz	0,1 ... 2 000

### Sensors channel X

<b>Sensor Type 1</b>		Potentiometer
Linearity error	%FS	±0,05
Track resistance	kΩ	1 ... 5
Supply voltage	V	4 (4,16)
Connection system	3-wire	
Wiper current	μA	<1,0
<b>Sensor Type 2</b>		Process signal ±10 V
Signal output	V	±10
Linearity error	%FS	±0,05
Transmitter supply	VDC	24 ±5 %
max. mA X+Y Channel	mA	500
<b>Sensor Type 3</b>		Incremental TTL
Signal output	Sinus/Cos, RS-422 (A+B)	
Reference marker		yes
Counting depth	bit	32
Counting frequency	MHz	10 (RS-422)
	MHz	1 (sine/cos)
Impedance	Ω	120
<b>Sensor Type 4</b>		Inductive
Principle	LVDT, half-, full-bridge	
Sensor supply	Veff	1,8 ±5 %
	kHz	5,2 ±0,5 %
Linearity error	%FS	±0,05
Frequency range (–3 dB)	kHz	0 ... 1
<b>Sensor Type 5</b>		SSI
Signal output		RS-422
Clock frequency max.	MHz	1

### Sensors channel Y

<b>Sensor Type 1</b>		Piezo
Measuring ranges see following page 3		
Range selection		automatic
Drift	pC/s	0,05
Linearity error	%FS	±0,05
TKE	ppm/K	<±100
Frequency range (–3 dB)	kHz	0 ... 5
Low-pass filter (in stages)	Hz	in stages 0,1 ... 2 000

<b>Sensor Type 2</b>		DMS
Measuring range	mV/V	0 ... ±5
Supply voltage	VDC	5 ±5 %
Connection system		4-wire, 6-wire
Bridge resistance	Ω	≥300
Linearity error	%FS	±0,05
Frequency range (–3 dB)	kHz	0 ... 5
<b>Sensor Type 3</b>		Process signal ±10 V
Signal output	V	±10 ±10 (2 measurement ranges)
Linearity error	%FS	±0,05
Transmitter supply	VDC	24 ±5 %
max. mA X+Y Channel	mA	500

### Cycle control

Start – Stopp	Dig-Input/Fieldbus/Threshold X/Threshold Y/ Time/Manual
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### Measuring functions

Measurement curve according to  $Y=f(X)$ ,  $Y=f(t)$ ,  $Y=f(X,t)$ ,  $X=f(t)$

### Curve memory

Current curve	XY-pairs	max. 8 000
Historic curves (for NOK diagnosis)		the last 500

### Evaluation Objects (EOs)

EO types NO-PASS, LINE-X, LINE-Y, UNI-BOX, ENVELOPE, GET-REF, CALC, GRADIENT-Y, GRADIENT-X, HYSTERESIS-Y, HYSTERESIS-X, TUNNELBOX-X, TUNNELBOX-Y, SPEED, AVERAGE, BREAK, INFLEXION, INTEGRAL, DIG-IN, DELTA-Y, TIME, TRAPEZOID-Y, TRAPEZOID-X, DISPLACEMENT RANGE, FORCE RANGE, PASS-THROUGH BOX

Real-time EO-Typen NO-PASS, TUNNELBOX-X, TUNNELBOX-Y, SWITCH LEVEL

Reference points Absolute X, Dynamic: Block point X, Dynamic: X on trigger Y, Referencing in X and Y directions possible

### Data export

Protocol	Q-DAS®, QDA9, IPM 5.0, OPC-UA Event <sup>1)</sup>
Format	XML, CSV, PDF
Destination	USB, Server
Medium	USB, Ethernet

<sup>1)</sup> function requiring license

**Visualization**

Type across VNC®, or Display Modul (DIM), Browser basiert (Web)

**Serielle interfaces**

Ethernet	TCP/IP 100 Base TX with 2 Port Switch
USB	3 x USB (Device + Host)
BUS	PROFIBUS DP PROFINET, EtherCAT, EtherNet/IP, 2 Port Switch

**Dig-In/Out**

Norm		DIN EN61131
Level state "0"	V	0 ... 5
Level state "1"	V	15 ... 30
Number of inputs		22
Input current max.	mA	8 (at 24 V)
Number of outputs		23
Output current max. (per channel)	mA	500 (at 24 V)
Output current max. (in total)	mA	1500 (at 24 V)

**Measurement programs**

Number measuring programs		108
Number master programs		20
Switchover via		Menu/Dig.-In/BUS
Switchover time	ms	<50

**Switching signals**

Number		2
Channel assignment		X or Y (selectable)
Switching point		Threshold X exceed/underrun Threshold Y exceed/underrun
Output		Dig.-Out or Fieldbus
Mode		Free-running or latch
Influence on evaluation		No

**Real-time reactions**

Switching signals	ms	<1
EO type "NO-PASS"	ms	<1

**Power supply**

Voltage VDC	24	(18 ... 30)
Power consumption (typical)	VA	45
Power consumption (max.)	VA	80
Lossy line (MEM)	W	18
Screw-type/plug-in connector,		1 supplied with device Wago, order no. 734-103/037-000 Housing: order no. 734-603

**Environment**

Working temperature	°C	0 ... 45
Storage temperature	°C	0 ... 50
IP degree of protection (EN 60529)		
– Connector and cable running downwards	IP	53
– Standard rail version	IP	20

**Display module (DIM)**

Size	Inches	10,4
Color		yes
Touchscreen		yes
Resolution	Pixels	800x600 (SVGA)
Technology		TFT-LCD
Backlighting		LED
Supply voltage (of MEM)	VDC	24
Power consumption	VA	6
IP degree of protection (EN 60529)		
– Front	IP	65
– Rear	IP	53
Operating temperature range	°C	0 ... 45

**Sensor Channel Y**

Measuring range		Number 4
<b>maXYmos TL Standard Type 5877B0</b>		
Measuring range 1	pC	±100 ... ±1 000
Measuring range 2		±1 000 ... ±10 000
Measuring range 3		±10 000 ... ±100 000
Measuring range 4		±100 000 ... ±1 000 000

**Sensor Channel Y**

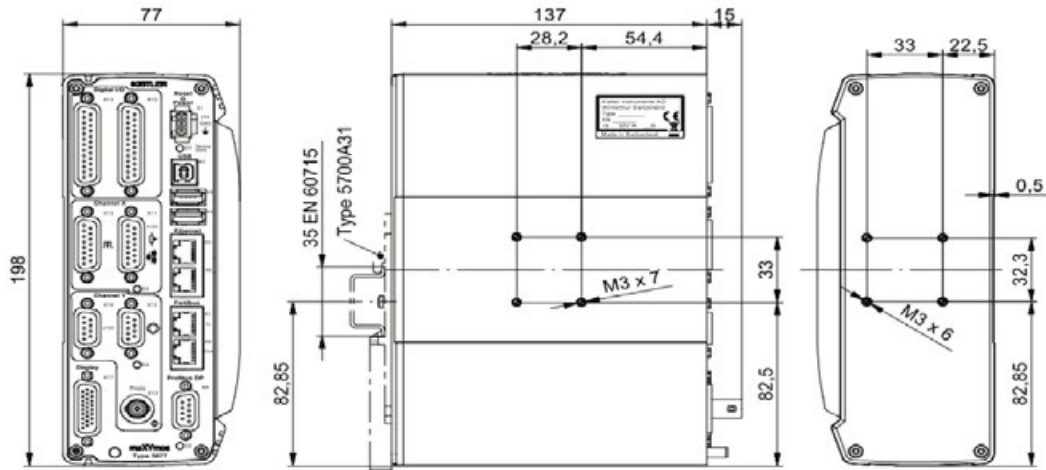
Measuring range		Number 4
<b>maXYmos TL ML Medical Low measuring range Type 5877B2</b>		
Measuring range 1	pC	±0 ... ±40
Measuring range 2		±40 ... ±400
Measuring range 3		±400 ... ±1 000
Measuring range 4		±1 000 ... ±10 000

**Sensor Channel Y**

Measuring range		Number 4
<b>maXYmos TL L Low measuring range Type 5877B3</b>		
Measuring range 1	pC	±0 ... ±40
Measuring range 2		±40 ... ±400
Measuring range 3		±400 ... ±1 000
Measuring range 4		±1 000 ... ±10 000

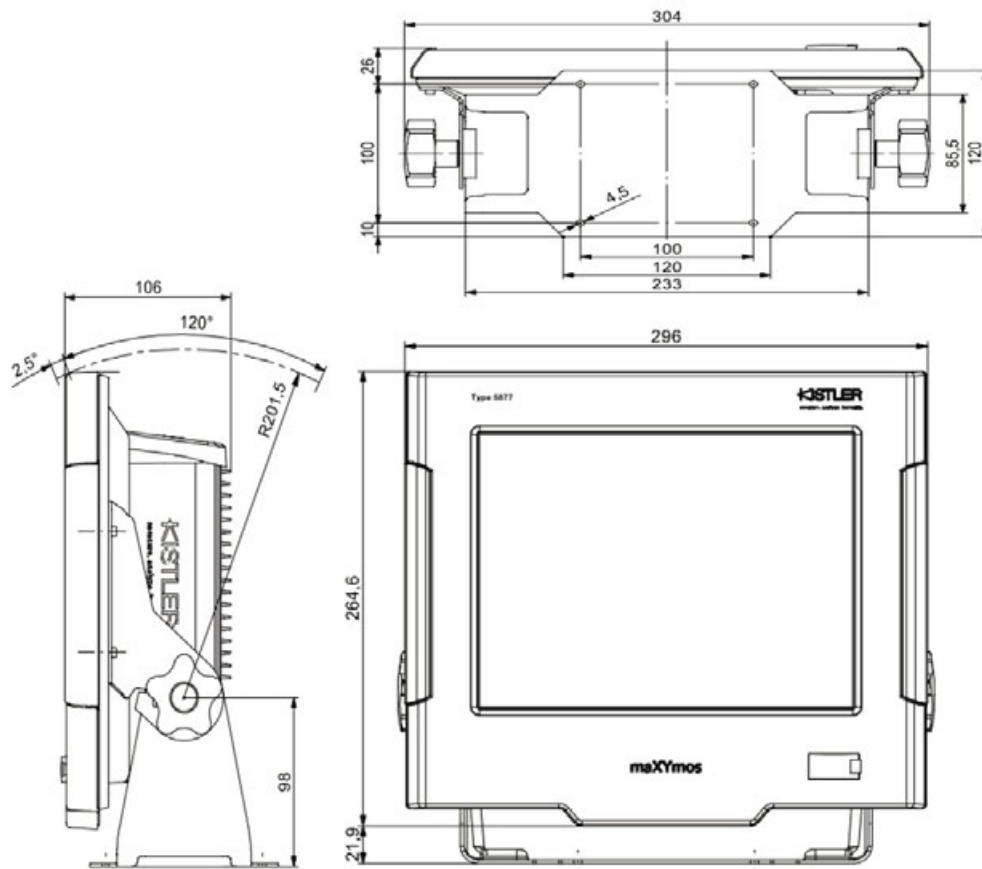
## Dimensions

### Measuring and evaluation module (MEM)

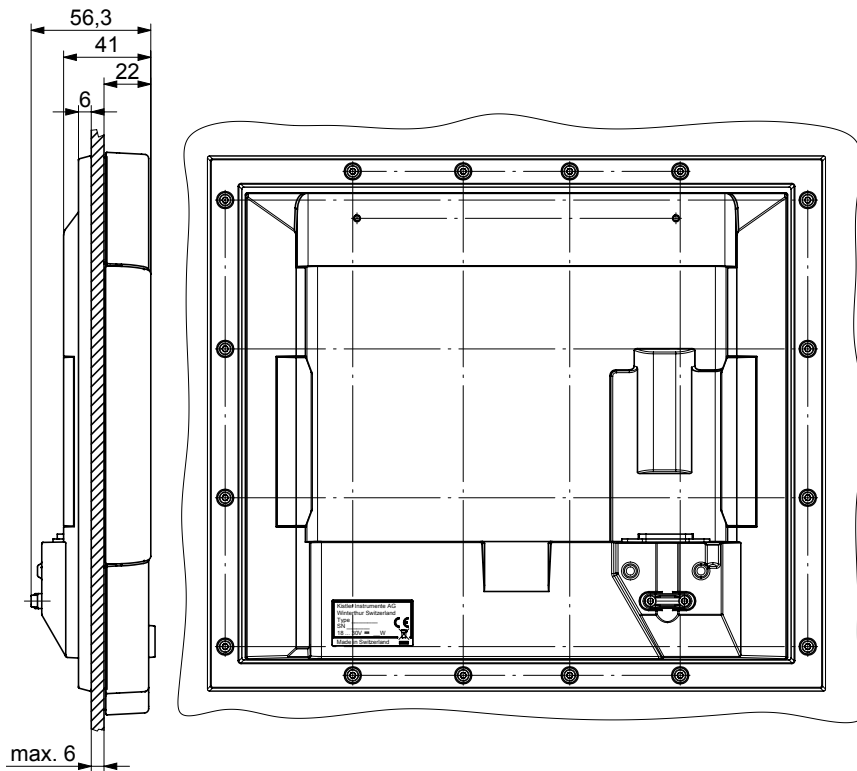


Note: Observe minimum spacing of >10 mm between the MEM's!

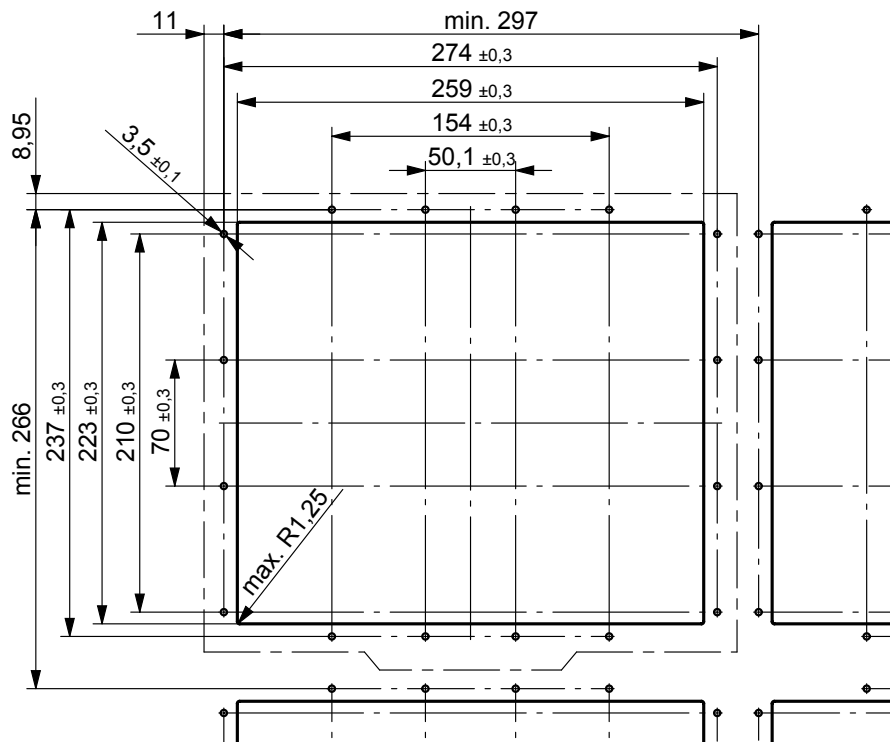
### Display module (DIM)



Display Module (DIM) switch panel mounting

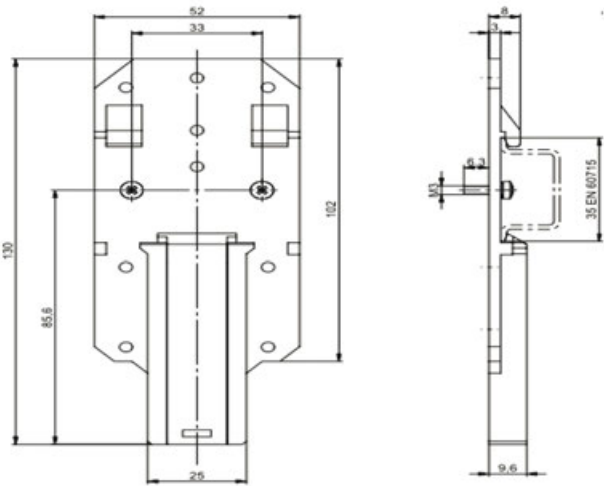


Display Module (DIM) – panel cut-out for switch panel mounting.  
With lateral distance to adjacent displays.



**Accessories**

• Display module (DIM)	Type 5877AZ000
• Set of connectors maXYmos TL for sensors, digital I/O and supply	5877AZ010
• Connecting cable between MEM and DIM, length 2,5 m	1200A161A2,5
• Connecting cable between MEM and DIM, length 5 m	1200A161A5
• Ethernet connecting cable between MEM's, length 0,5 m	1200A49A3
• Ethernet connecting cable between MEM's, length 5 m	1200A49
• Power supply 90 - 264 VAC/24 VDC ready for connection max. 90 W (3,75A), configurable country cable	5781B5
• DIN rail clip for MEM control cabinet mounting	5700A31
• DIM Cable Extender	1200A163



DIN rail clip dimensions

**Windows®-Software maXYmos PC (Basic)**

**2830A1**

- Organize firmware updates
  - Save device settings in a backup file
  - Restore settings to the device
- (included in the scope of delivery of the measuring and evaluation module type 5877B)

**Included accessories for Type 5877B0**

**Type/Mat. No.**

- Set of connectors maXYmos TL for sensors, digital I/O and supply
- 5877AZ010

**Ordering key**

		Type 5877B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MEM maXYmos TL Standard	0							
Standard								
MEM maXYmos TL ML	2							
Medical Low measuring range								
MEM maXYmos TL L	3							
Low measuring range								
Only hardware	-							
Initial buy of hardware and licenses	H							
Additional buy of licenses	S							
Connections and Security	No 0 Yes 1							
Multipoint Calibration	No 0 Yes 1							
IIOT Connectivity	No 0 Yes 1							
Audit Trail	No 0 Yes 1							

**Note:** maXYmos licenses are applicable to hardware R7 from firmware version 1.8.6. Hardware R6 does not support multi-point calibration. Older hardware may additionally experience performance degradation.

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