ver. 1.2

TouchMe™

Technical Supplement

September, 2002

Content

TouchMe is modular

How to fulfill your requirements

From the comprehensive list of available modules select all the modules (functions) that are needed (e.g. touch screen LCD + MCR + 32 programmable keys + iButton ID module)

↓

Choose the module that will be the base for the whole composition.
The possible base modules are listed by priority:

- Touch module
- The largest keyboard module (front keyboards excluded)
- Chameleon

↓

Select the Controller, which will be inserted in the base module, and also the corresponding connection cables (from the Touch me toward the PC).

↓

Add other modules around the base module

End the configuration with

- Left-hand side cover
- Right-hand side cover, ID module or pointing device

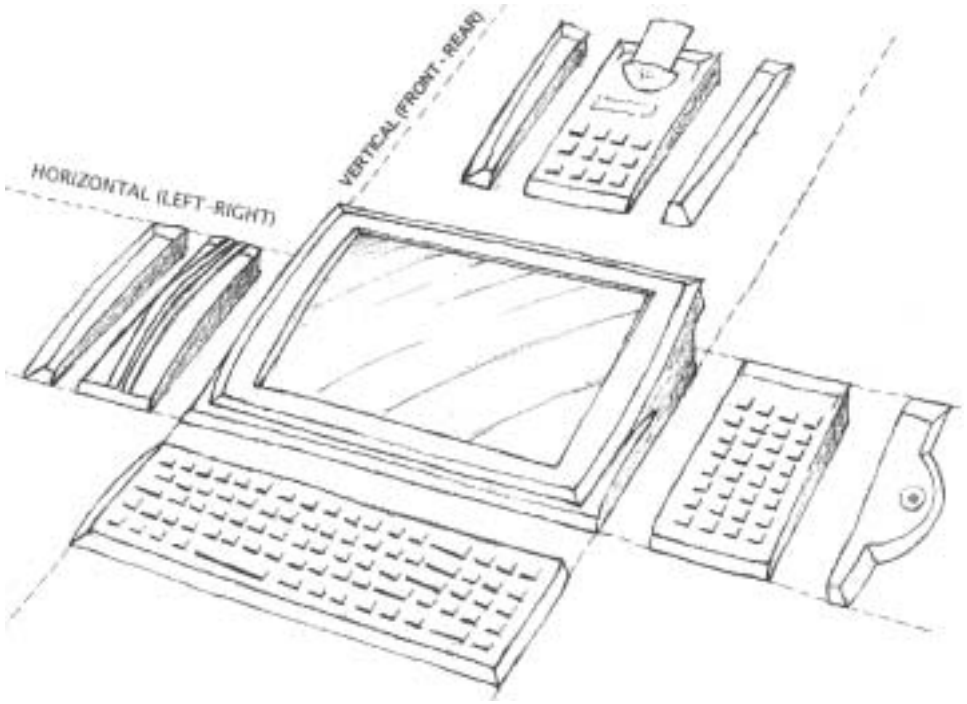
↓

Define contents and legends of all keys

TouchMe is modular in two directions

Left – Right (also referred to as horizontal)
- modules are mechanically and electrically connected
- various types of modules: keyboards, card readers, ID modules, pointing devices

Front – Rear (also referred to as vertical)
- modules are only electrically connected
- in Front:
  - front keyboard as small footprint alphanumeric or programmable XY keyboard
- at the Rear:
  - modules can be used as external modules on the customer's side (PIN pad unit)
  - Touch module and keyboard modules can be extended on the rear side with add-on modules, such as an alphanumeric LCD, magnetic card reader, smart card reader, video camera, etc.
    (* NOTE: some of the modules might not yet be available)



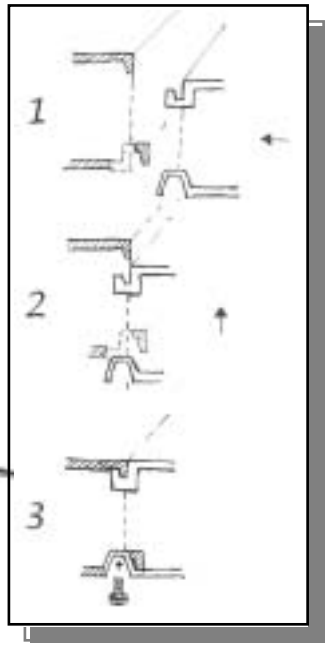
Modules can be joined together in a very simple way

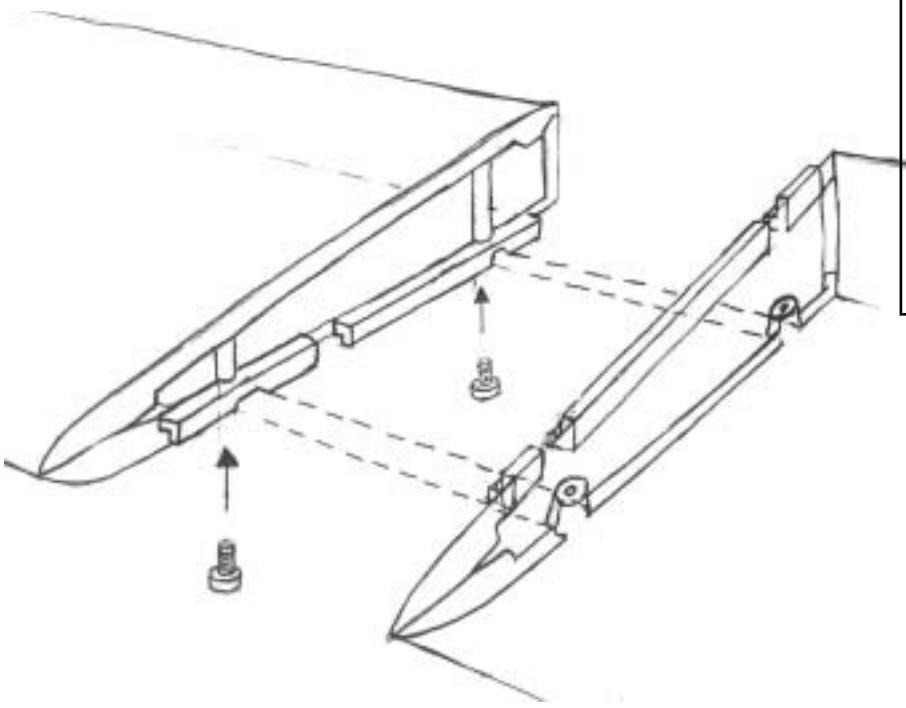
Electrical connection

- connect the cables, which are coming out of both sides of the modules

Mechanical joining

- place modules side by side
- raise the left-hand one for about 1 cm and slip it into the right-hand one
- secure the connection with two screws from the bottom side



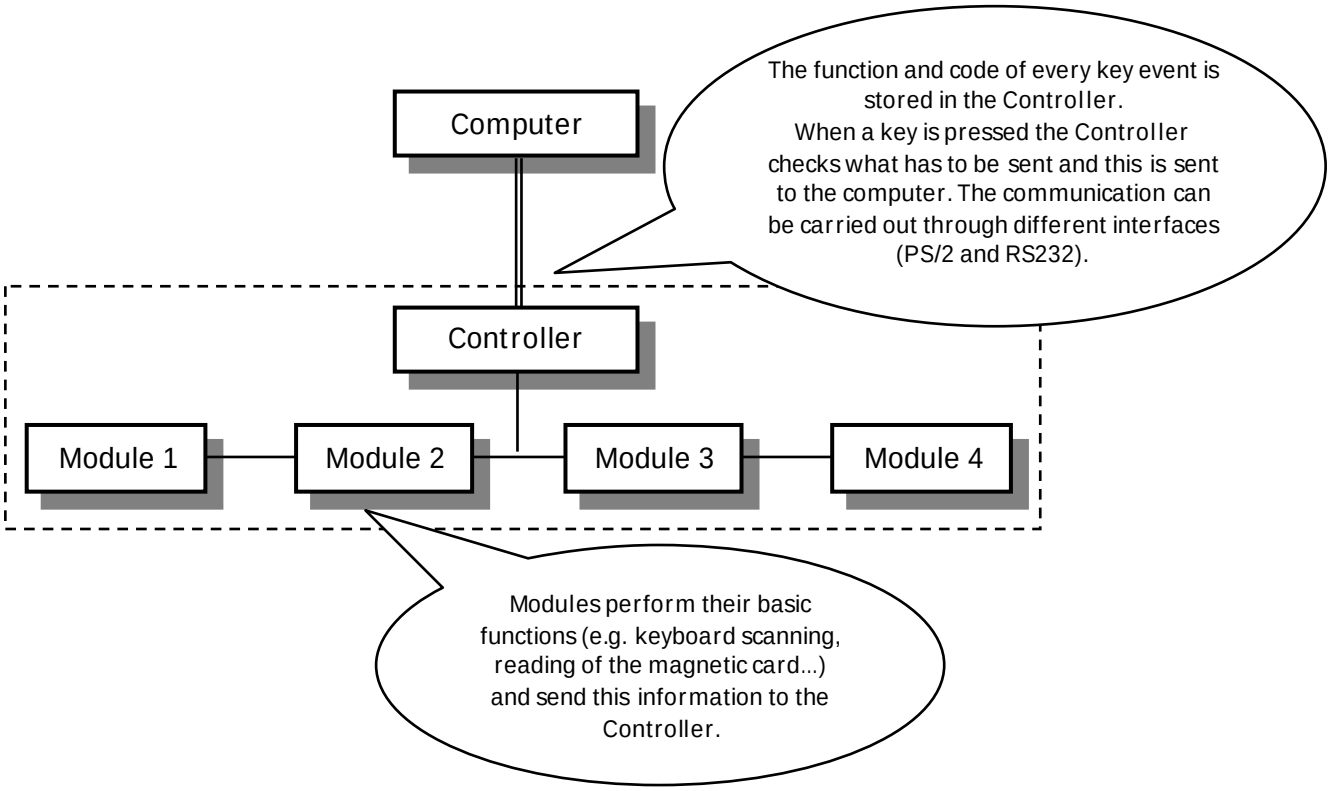


TouchMe is flexible

TouchMe is a composition of one Controller[1] and different modules which are joined together physically and electrically. The TouchMe modules that compose the device can be selected from a long list of various modules

([1] NOTE: In the MID generation the Controller was referred to as “Master”)

(NOTE: the Touch module can be also used without Controller)

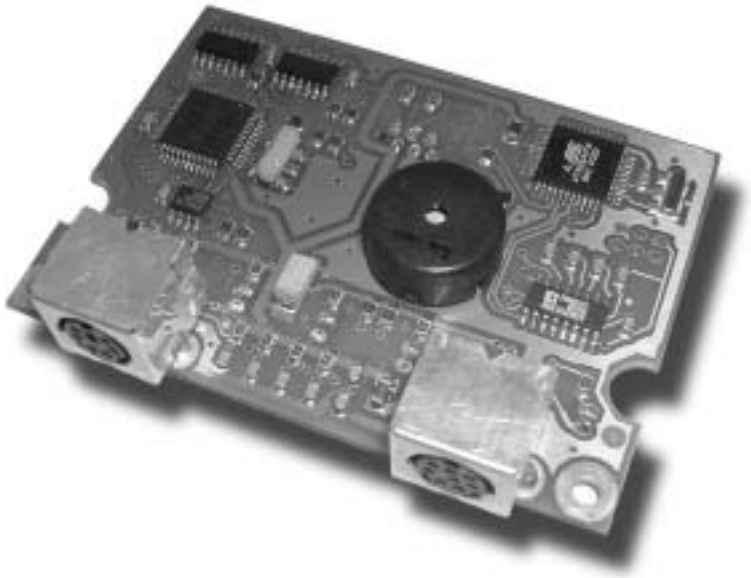


TouchMe Controller

The TouchMe Controller provides control over the connected modules and is the primary communication interface toward a host system. Therefore it acts as a communication bridge between the modules and the host system.

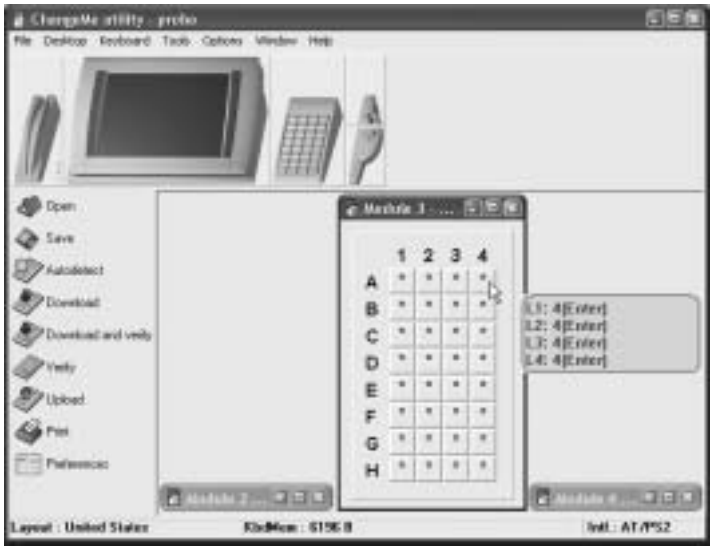
The TouchMe family has three types of Controllers; a Touch-, a Keyboard- and a Chameleon type. Besides controlling all modules, which task is the same for all types, the Touch type also drives the LED indicators on the Touch module's edge and scans the shortcut keys at the sides of the screen.

Built-in buzzer
for "keyclick" and warning tones
Four LEDs for layer indication
Three LEDs
for Caps Lock, Num Lock and Scroll Lock indication
Memory: 8 KB (equivalent of approximately 3000 characters – depends on the configuration and used layers)



TouchMe is programmable

- automatic recognition of attached configuration
- 4 functions per key
- use of single, double and quadruple keys
- any combination of individually or simultaneously pressed keys from standard keyboard is accepted
- programming of inter-character and inter-byte delay
- programming of beep as part of key content
- programming of autorepeat and click function for each key separately
- comfortable programming – pressed keys are clearly displayed in the programming line
- cut & paste function for key content
- upload and verify functions
- support for various national layouts
- batch downloading
- saving layout files for future use
- exporting and importing layout files on a module level
- rollover detection
- testing the keyboard after downloading
- supported operating systems:
  Windows 95, 98, ME, NT, 2000, XP



Windows 95, 98, ME, NT, 2000 and XP are registered trade marks of Microsoft Corporation

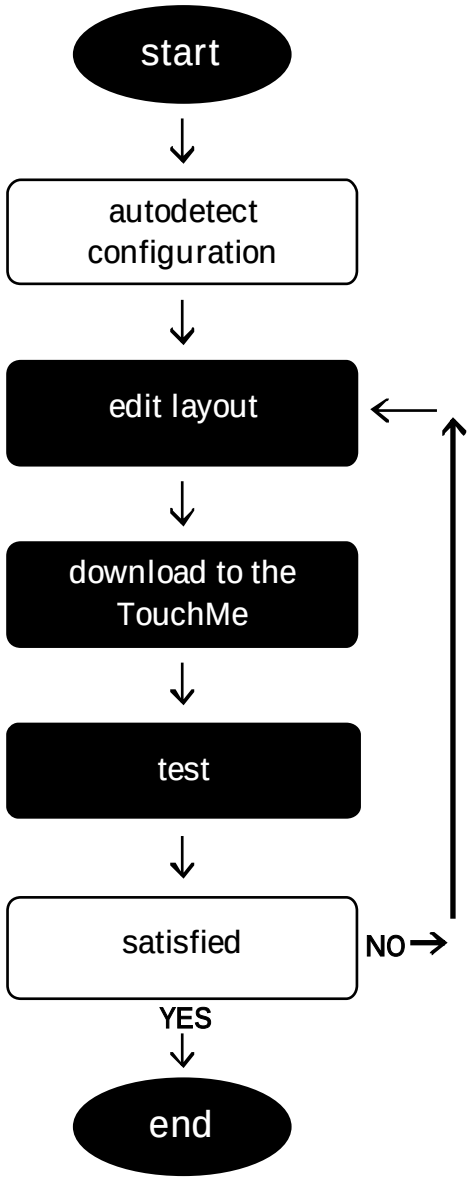
Click – Click – Done

1. The configuration of the connected TouchMe keyboard is detected automatically and displayed on the desktop.

2. The user friendly program guides you to set the properties of the programmable keys as well as all other modules (card readers, ID modules ...). Entered contents are colored according to their function.

3. Once all properties are downloaded into the internal non-volatile memory TouchMe can be used on different workstations as a stand alone device without using any additional software.

4. After programming the user can test the keyboard with the integrated test utility. It supports PS/2 and RS232 interface examination as well as changing test parameters.



Touch Module

The Touch module is a combination of three human interface devices within a single unit: display, pointing device and keyboard.

12.1" color TFT
- resolution: 800 x 600 pixels
- viewing angle (Bottom/Top/Left/Right): 20/40/50/50 $_{TYP}$
- brightness: 180 cd/m^2 $_{TYP}$
- displayed colors: 262.000 colors

Analog resistive touch screen
- RS232 output

16 fully programmable shortcut keys

8 LED indicators
- power status
- Caps/Num/Scroll Lock
- 4 Layer indicators

Adjustable angle (preliminary):
- initial: 15°
- using special mechanism: adjustable in range from 30° to 45°

Audio
- stereo loudspeakers:
  - output power: 2 x 1 W_{MAX}
  - integrated amplifier
- microphone: on the front edge

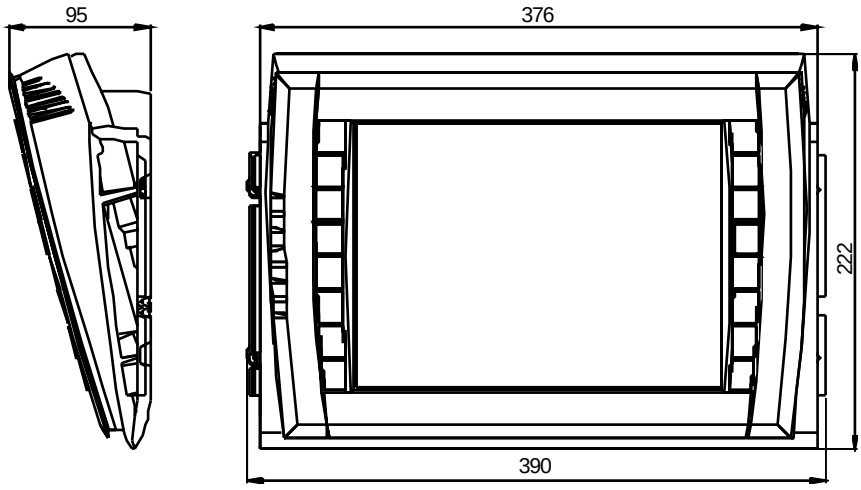
Required power supply: 12V, 25W

Touch module without touch screen

Suitable for applications where the touch screen is not required or is substituted by another pointing device (e.g. trackball). The module has the same technical characteristics as the Touch module, except that the touch screen is replaced with glass plate, which protects the LCD from mechanical damage.

Connectors at the rear side (maximum configuration)

- video: VGA 15 female
- touch screen: DSUB9 female
- keyboard port: mini DIN 8 female
- secondary keyboard port: mini DIN 6 female
- external “Tipro bus” connection: mini DIN 5 female
- DC power socket 2.1 mm (center positive)
- 2 x 3.5 mm stereo jack (loudspeakers and microphone)

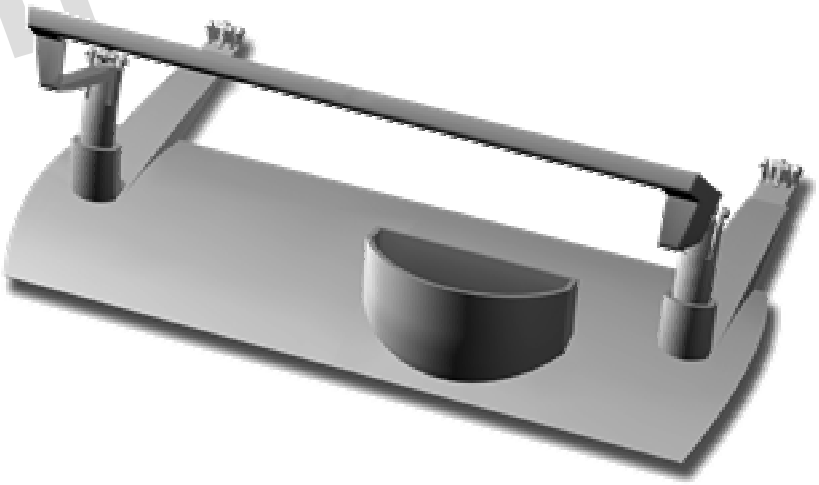


Ordering codes	Description
TM – TVR-A20	Touch module with short travel keys
TM – TVR-A00	Touch module
TM – TV0-A20	Touch module without touch screen; with short travel keys
TM – TV0-A00	Touch module without touch screen

Angle adjustment mechanism

Using this special mechanism you can adjust the angle of the Touch module and the LCD module. The initial angle between the screen and the table is 15°, while using this mechanism you can change it in the range between 30 and 45°.

The angle of 15° is suitable for applications where the operator works in standing position. In cases where the operator is sitting, the initial angle can be enlarged with the mechanism.

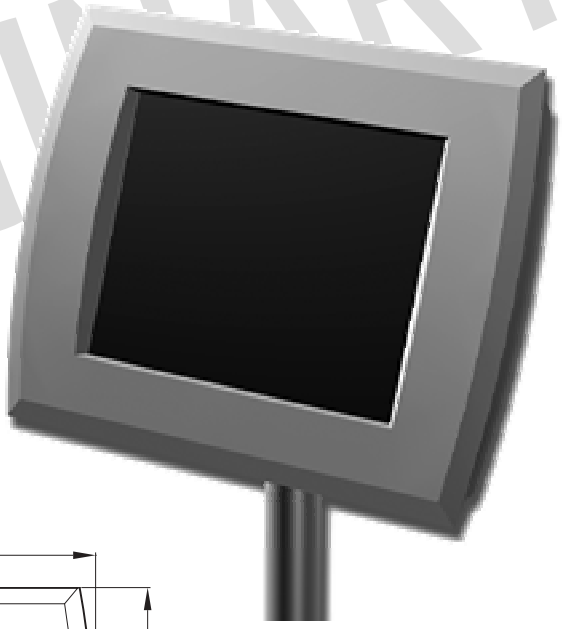


PRELIMINARY

Customer LCD

This module is a graphic LCD, which can replace and enhance the standard alphanumeric display. It can show both the price and the picture of the purchased or offered item. Besides its elementary function it can be used also for advertisement purposes.

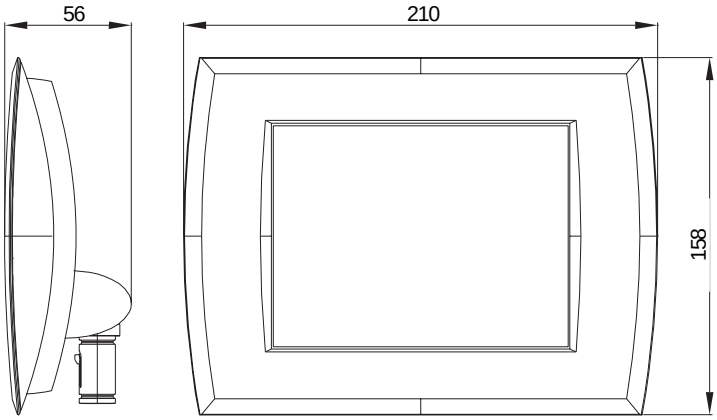
PRELIMINARY



6.4" color TFT LCD

- resolution: 640 x 480 pixels
- displayed colors: 262.000 colors

Protective glass
Adjustable angle (tilt and swivel)
Video input: VGA

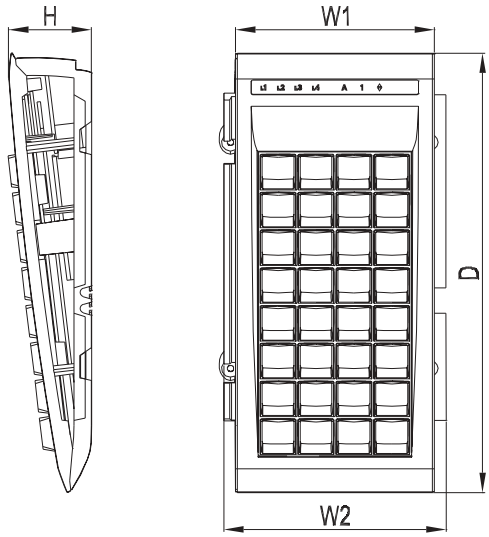


Keyboard Modules

Keyboards modules with their excellent tactile feedback enable quick and efficient data entry and so complement the touch screen input when used in combination with Touch module.

Numerous keyboard modules, different by sizes and functionality, can be combined in versatile combinations:

- fixed to the Touch module
- connected in front of the Touch module
- or used as a programmable keyboard



Ordering codes	Number of keys	Housing dimension (mm)			
		W1	W2	D	H
TM –KMX–032A	32	100	114	222	42
TM –KMX–064A	64	176	190	222	42
TM –KMX–096A	96	253	267	222	42
TM –KMX–128A	128	329	343	222	42
TM –KMQ–128A	120	329	343	222	42
TM –KMP–128A	120	329	343	222	42

Keyboard modules are equipped with Cherry's MX mechanical keyswitches.

It is possible to use and combine single, double and quadruple keycaps in different colors. Color palettes are available on request.

A metal supporting plate improves the mechanical strength of the whole construction, improves the resistibility to spilled liquids and at the same time acts as an effective shield against electromagnetic noise.

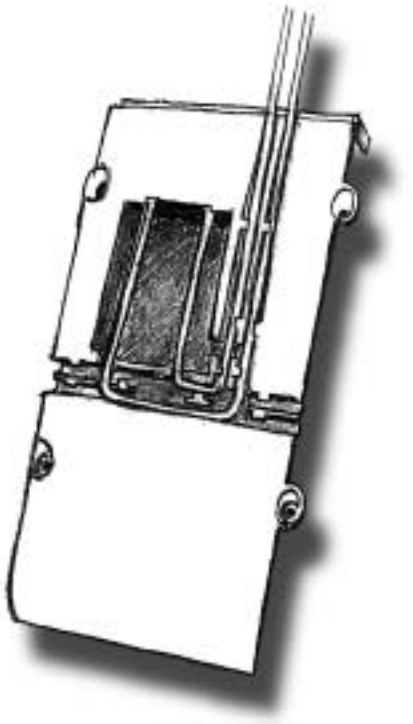
Integrated long travel keyswitches:

- tactile feedback
- ergonomic keycaps
- extremely long lifetime (1 billion operations typically)
- actuating force (60±20) cN
- key travel ($4^{+0.0}/_{-0.4}$) mm

The cable that connects the keyboard to the PC needs to be attached from the bottom side.

The advantages of this concept are

- cable is securely fixed and cannot be accidentally detached
- space occupied by the module matches dimensions of the module itself
- connection point is hidden from the outside so is more resistant to environmental and electrical influence



Front keyboard

The front keyboard is used for vertical extension of the Touch module or programmable keyboard. Due to its compact footprint the keyboard is an ideal replacement of the standard PC keyboard. Both variants , with qwerty and straight xy matrix, are fully programmable and can therefore be customized to meet specific requirements.

two layout variants: qwerty and straight xy

keys divided in two blocks

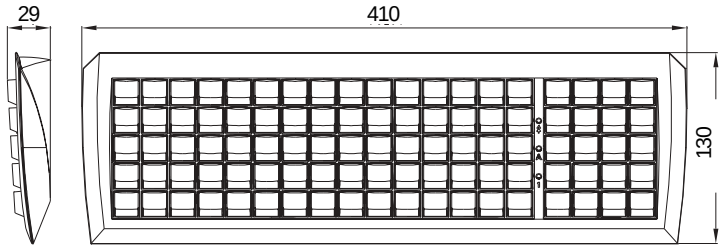
- left: 15x5 (qwerty variant: 68 keys organized in 5 rows)
- right: 4x5 (full numpad)

3 LED indicators:

- CapsLock, NumLock, Second Layer

interface

- slave TouchMe module
  - connection possible to TouchMe configuration only
  - mini DIN 5 connector (TIPRO BUS)
  - cable length: 80 cm
- PS/2 keyboard interface
- connection possible to TouchMe as the auxiliary keyboard or to any standard PC as the primary keyboard
- mini DIN 6 connector (standard PS/2)
- cable length: 180 cm
- not modular in horizontal direction
- can be extended at the rear side using special fixing mechanism



Ordering codes	Number of keys	External TouchMe module	PS/2 + RS232 output
TM –KFX–095E	95	✓	
TM –KFQ–095E	85	✓	
TM –KFQ–095R	85		✓

32 key module

The functionality of the touch screen input can be enhanced with the additional 32-key keyboard module, joined to its left- or right-hand side.
This module is a small add-on that brings excellent full travel numpad or quick selection of common commands and frequently used menus.

All keyboard modules can be used as stand-alone programmable keyboard or can be combined with other modules (e.g. card readers, ID modules, Chameleon).

TM – KMX–032A: module with 32 full travel keys

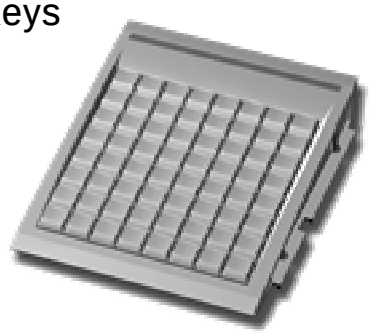
- 32 programmable keys (8 rows by 4 columns)
- 1 extender hole at the rear side (snap-on option)
- 2 horizontal and 2 vertical cable canals
- numpad layout as an option

64/96/128 key modules

Keyboard modules with 64, 96 or 128 keys are used as the main unit. All keys are programmable in 4 layers and equipped with 1x1 keycap bodies and transparent keycap covers.

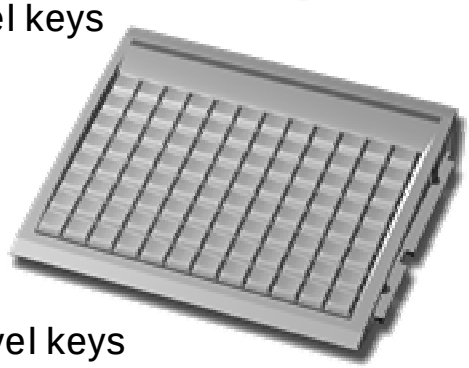
TM – KMX–064A: module with 64 full travel keys

- 64 programmable keys (8 rows by 8 columns)
- 2 extender holes at the rear side (snap-on option)
- 2 horizontal and 4 vertical cable canals



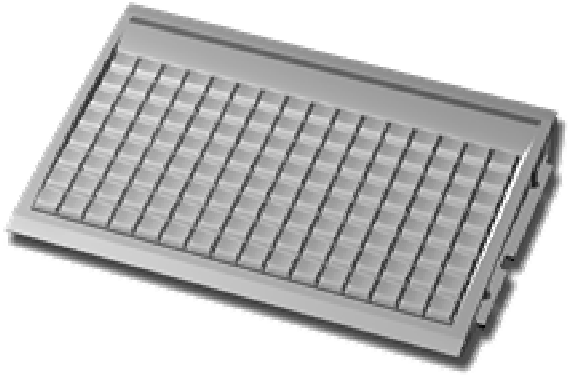
TM – KMX–096A: module with 96 full travel keys

- 96 programmable keys (8 rows by 12 columns)
- 3 extender holes at the rear side (snap-on option)
- 2 horizontal and 6 vertical cable canals



TM – KMX–128A: module with 128 full travel keys

- 128 programmable keys
  (8 rows by 16 columns)
- 4 extender holes at the rear side (snap-on option)
- 2 horizontal and 8 vertical cable canals



Qwerty modules

Qwerty modules are a combination of a predefined alphanumeric- and a free programmable section. The alphanumeric part is also (re)programmable. These modules are suitable for applications with the need for alphanumeric data input and additional programmable features.
2 variants differ in placement of both sections.

TM – KMQ–128A: keyboard with qwerty down layout

- 75 alphanumeric keys (in lower 5 rows)
- 48 programmable keys (in upper 3 rows)
- 4 extender holes at the rear side (snap-on option)
- 2 horizontal and 8 vertical cable canals

TM – KMP–128A: keyboard with qwerty up layout

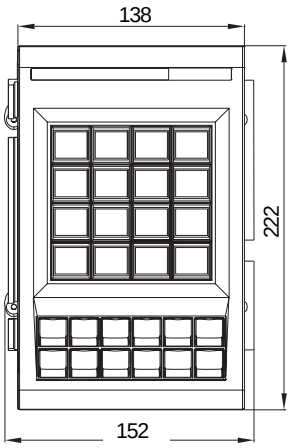
- 75 alphanumeric keys (in upper 5 rows)
- 48 programmable keys (in lower 3 rows)
- 4 extender holes at the rear side (snap-on option)
- 2 horizontal and 8 vertical cable canals

Chameleon

The Chameleon combines standard mechanical keyswitches with LCD keyswitches. It can be pictured as a keyboard that dynamically changes its appearance and function.
The resolution is 32x16 pixels, which allows two lines of text or detailed graphics.

16 programmable LCD keyswitches

- graphic LCD on the top
  - resolution: 32x16 pixels
- backlighting
  - 8 different colors: green, dark green, red, dark red, orange, dark orange, reddish-orange, greenish-orange
- Screen size (W x H): 19.5 x 16.0 mm
- Key switch
  - key travel: 2.4 mm
  - actuating force: 30 – 40 cN
  - lifetime: 1 Million operations



12 programmable full travel keyswitches

- key travel ($4\,^{+0.0}/_{-0.4}$) mm
- long lifetime (1 billion operations typically)
- actuating force (60±20) cN

1 extender hole at the rear side (snap-on option)
integrated Controller (option)
7 LED indicators (option)

Card readers

TM – RxA: magnetic card readers

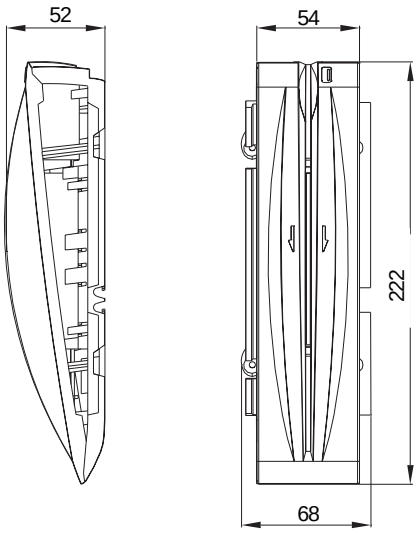
The magnetic card reader (MCR) module reads magnetic cards which are compliant with the ISO 7811 standard. It can be used in many different applications, where the use of identification or credit cards is supported. Each track on the magnetic card can be identified through a programmable header and terminator, as well as two other programmable event descriptions for identifying successful/failed readings

- In conformance with ISO7811 standard
- Head operating life:
  up to 1 million card passes with ISO7810/7811 conformed cards
- Card thickness range: 0.18 mm to 0.84 mm
- Stripe media coercitivity range:
  both Lo-Co and Hi-Co (more than 4200 Oe)
- Card feeding speed: (5 – 150) cm/s

TM – RDA: bar code slot reader

The Bar Code slot Reader (BCR) accepts a large variety of bar code cards while supporting diverse types of printed bar code. The module also provides appending of fully programmable header and terminator to the bar code read, as well as two other programmable event descriptions for identifying successful/failed readings.

- light source: 660nm red LED
- resolution: 0.15 mm (6 mils)
- height of scan line: 10.5 mm
- card feeding speed:
  100 – 1000 mm/sec (3.9 – 39.0 inch/sec)
- card thickness: up to 1.8 mm
- supported bar codes:
  - by default: all types of UPC/EAN/JAN, Code 3 of 9, Code 128, Codabar
  - on request: Code 3 of 9 full ASCII, Code 93, Interleaved 2 of 5, Industrial 2 of 5, Matrix 2 of 5, MSI/Plessey, Code 11
- ambient light: up to 3000 lux



Ordering codes	Description
TM – RAA	Magnetic card reader ISO tracks 1+2
TM – RBA	Magnetic card reader ISO tracks 2+3
TM – RCA	Magnetic card reader ISO tracks 1+2+3
TM – RJA	Magnetic card reader JIS – II
TM – RUA	Magnetic card reader AAMVA tracks 1+2+3
TM – RDA	Bar code slot reader

Identification Modules

All identification modules are used for user identification and for restriction of some functions and rights. Two additional short travel keys are fully programmable and can be used for instance as LOG ON/LOG OFF keys.
All modules have equal housing, which can be connected only to the rightmost position in a TouchMe configuration.

TM – IKA: keylock module

- 8 position keylock
- 7 different keys in set
- every keylock position can be programmed as:
  - specific content sequence, which is sent toward PC
  - change active layer (valid for the whole keyboard)
  - change security level

TM – IBA: iButton® reader

- magnetized socket in order to firmly hold the inserted iButton
- unique 64-bit registration number permanently stored on every iButton
- supported iButtons: DS 1990A (Serial Number iButton), DS 1992 (1 Kbit Memory iButton), DS 1993 (4 Kbit Memory iButton)
- programmable event descriptions: insertion header, insertion terminator, removal header
- programmable insertion/removal debounce time: from 0.3s to 2.0s, default 0.6s
- one DS 1990A with plastic angled fob (black) enclosed with the module

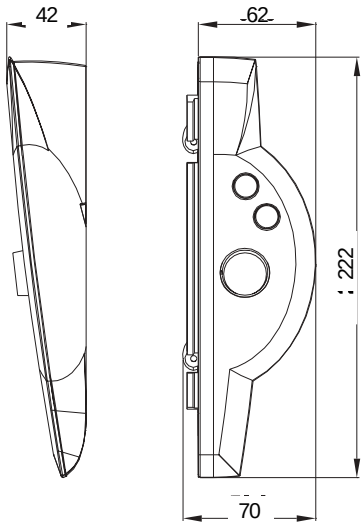
Pointing devices

Pointing devices are built into equal housing as the identification modules and can be also positioned only on the rightmost position in a TouchMe configuration.

TM – PBA: trackball module

- 16 mm trackball
- PS/2 output
- left and right mouse key

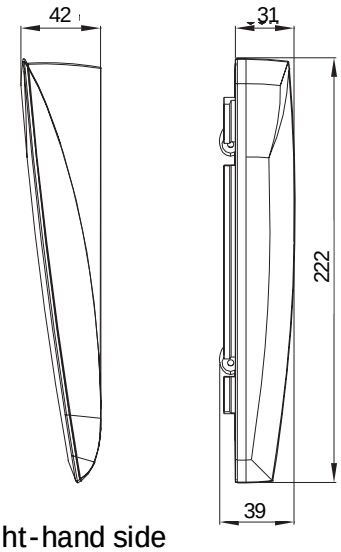
Ordering codes	Description
TM – IKA	Keylock module
TM – IBA	iButton® Reader
TM - VDA	DS 1990A iButton snapped into the angled plastic fob
TM – PBA	16 mm trackball



iButton® is a registered trade mark of DALLAS SEMICONDUCTOR

Blind side covers

Blind side covers are used to close configurations from the left and right hand side.
Instead of the right side cover you can use also either an identification module or a pointing device.



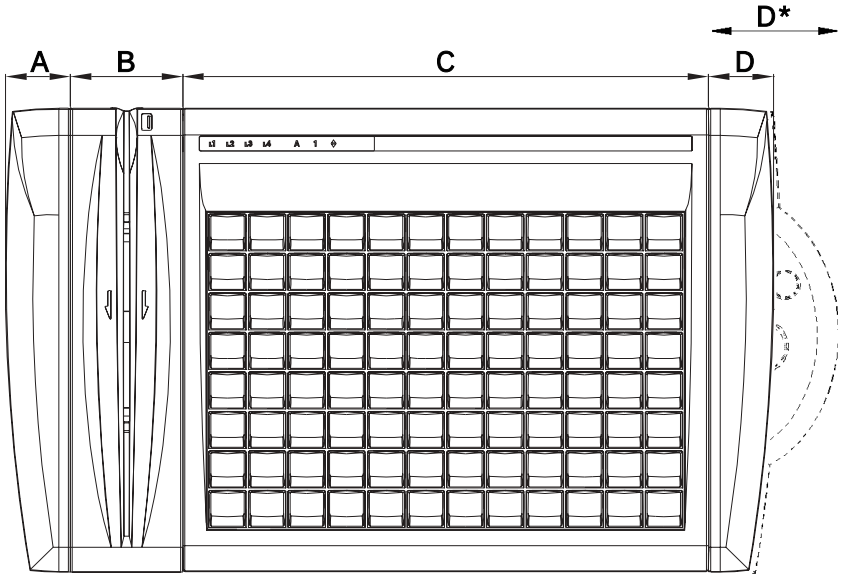
How to calculate the whole width of a configuration

using L and R blind side covers

W = A + B + C + D = 31 + 54 + 253 + 31 = 369 mm.

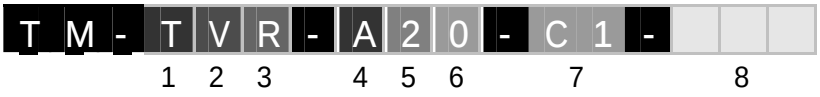
using L blind side cover and identification- or pointing device on the right-hand side

W = A + B + C + D* = 31 + 54 + 253 + 62 = 400 mm.



Ordering codes

Touch modules



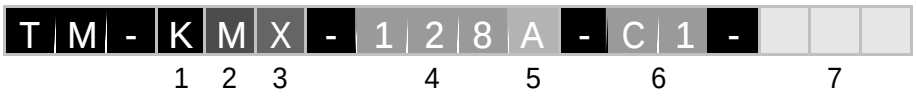
1. T : touch module
2. Video input
   V : VGA analog
3. Touch screen output
   0 : without touch screen
   R : RS-232 output
4. TFT LCD display type
   A: standard version, 800 x 600
5. shortcut keys along the sides
   0 : no shortcut keys
   2 : short travel shortcut keys
6. Integrated audio
   0 : no audio
   1 : stereo loudspeakers and microphone
7. Color (see below for details)
8. Custom version (optional)

Colors

C1 : light gray
C2 : medium gray
C3 : dark gray

Note: All modules except the Touch module can be made in one color only. If the Touch module is made of two colors than the color option (position 7) is defined as CxCy (x is the color of the bottom and middle part, y is the color of the top part).

Keyboard modules



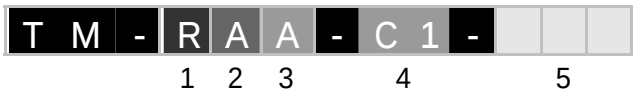
1. K : keyboard
2. Keyswitch type
   - M : long travel keyswitches
   - B : short travel keyswitches
   - F : front keyboard (full travel)
3. Matrix alignment
   - X : xy matrix
   - Q : qwerty layout down (5 rows)
   - P : qwerty layout up (5 rows)
4. Housing size
   - 032 : max. 32 keyswitches
   - 064 : max. 64 keyswitches
   - 095 : max. 95 keyswitches
   - 096 : max. 96 keyswitches
   - 128 : max. 128 keyswitches
5. Module type
   - A : standard module
   - E : external module
   - R : PS/2 + RS232 output
6. Color (see page 26 for details)
7. Custom version (optional)

Keyboard modules with national layout (optional)

8. National layout (optional)
   (TM-KMQ-128A- , TM-KMQ-128A- and TM-KMQ-128A-)
   - US : US English
   - DE : German
   - UK : UK English
   - ES : Spanish
   - SE : Swedish

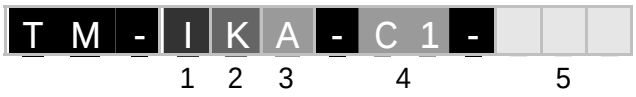
8. Numpad layout (optional)
   (TM-KMX-032A-)
   - US : US English

Card readers



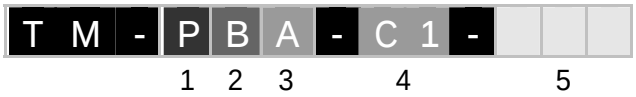
1. R : reader
2. Reader type
   - A : MCR TRACK 1+2
   - B : MCR TRACK 2+3
   - C : MCR TRACK 1+2+3
   - D : BCR
3. Module type
   - A : standard module
   - E : external module
4. Color (see page 26 for details)
5. Custom version (optional)

Identification modules



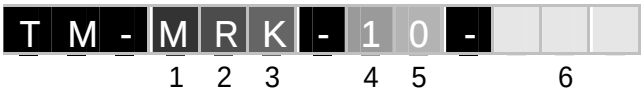
1. I : ID module
2. Unit type
   - K : keylock
   - B : iButton
3. Reserved
4. Color (see page 26 for details)
5. Custom version (optional)

Pointing devices



1. P : pointing device
2. Unit type
   - B : track ball 16 mm
   - G : touch pad (glide point)
3. Reserved
4. Color (see page 26 for details)
5. Custom version (optional)

Controllers

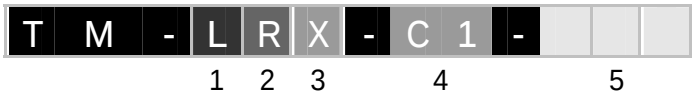


1. M : Controller (Master)
2. Protocol
   R : PS/2 + RS232
3. Integration type
   K : keyboard
   L : Chameleon (LCD keys)
   T : Touch module
4. Connection for external modules
   0 : without
   1 : one mini DIN5 connector
   2 : two mini DIN5 connectors
5. Integrated RS232 pass through port
   0 : without
   1 : integrated one RS232 port

Note: the code on position 4 is related to the integration type.
At the time of printing the following versions are possible:

- MRK-1x
- MRL-0x
- MRT-2x

Chameleon



1. L : LCD keys
2. LCD Key type
   R : resolution 32 x 16
3. Matrix alignment
   X : xy matrix
4. Color (see page 26 for details)
5. Custom version (optional)

Customer Display

1. D : Display
2. Video input
   V : VGA analog
3. Touch screen output
   0 : without touch screen
   R : RS-232
4. TFT LCD display type
   A : standard version, 640 x 480
5. Base type
   0 : without
   1 : with a base
6. Reserved
7. Color (see page 26 for details)
8. Custom version (optional)

PRELIMINARY

Cables

T	M	-	C	D	A	-			
			1	2	3			4	

1. C : cable
2. Cable connector (Outer Side)
   - S : MINI DIN 6 male + D SUB 9 female
   - W: MINI DIN 6 male + D SUB 9 female + DC Power Socket 2.1 mm
   - F : MINI DIN 6 male + MINI DIN 5 male
   - B : D SUB 9 male
   - K : D SUB 9 male + MINI DIN 6 female
   - E : MINI DIN 5 male
   - V : VGA 15 cable male
   - G : D SUB 9 female
   - L : 2 x 3.5 mm stereo jack
   - 2 : power supply cable (see below)
   - N : D SUB 15 male
3. Cable connector (TouchMe Side)
   - A : MINI DIN 8 male
   - B : MINI DIN 6 male
   - E : MINI DIN 5 male
   - J : JAE 10 connector
   - V : VGA 15 cable male
   - H : D SUB 9 male
   - L : 2 x 3.5 mm stereo jack
   - D : DC power plug 2.1mm
   - R : RJ 45 plug
   - F : D SUB 15 female
4. Custom version (optional)

Various

T	M	-	V	L	A	-	C	1	-			
			1	2	3			4			5	

1. V : various
2. Unit
   - L : blind Left-hand side cover
   - R : blind Right-hand side cover
   - D : DS 1990A iButton snapped into the angled plastic fob
   - P : AC/DC adapter (see below)
3. Unit type
   - A : standard version

   In case of power supply see below
4. Color (see page 26 for details)
5. Custom version (optional)

Power supply

T	M	-	V	P	A	-			
			1	2	3			4	

1. V : various
2. Unit
   - P : AC/DC adapter
3. Unit type
   - A : +5 V regulated output
   - B : +12 V regulated output
4. Custom version (optional)

Power supply cables

T	M	-	C	2	E	-			
			1	2	3			4	

1. C : cable
2. Power supply side connector
   - 2 : IEC 320/C13 socket
3. Country power mains connector
   - E : Central Europe
   - U : North America
4. Custom version (optional)

Errors, omissions and modifications excepted.