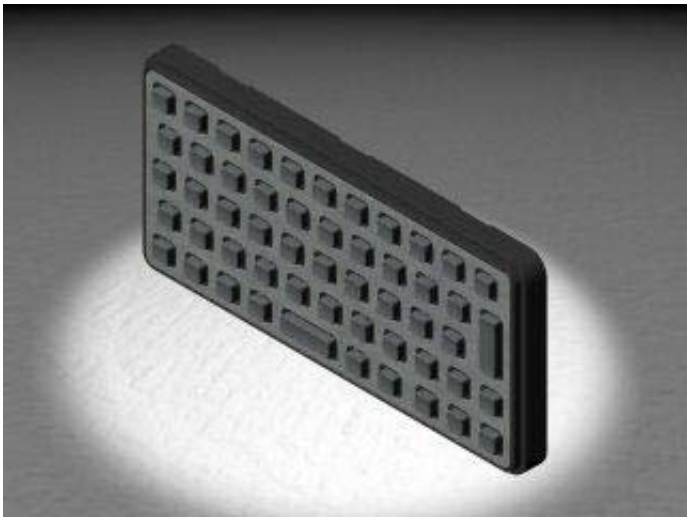
1200 Sub-Miniature Keyboard for Public Environments
Application/Engineering Manual

Contents

Section 1. Overview

The Storm Interface 1200 Series Sub-Miniature Keyboard has been developed for use in a new generation of web enabled public telephones and transaction terminals. This small but highly responsive keyboard is suitable for use in exposed or hostile environments and its robust construction is highly resistant to hard use, abuse and vandalism. It is sealed against water and dust to ensure responsive and reliable data entry in the most demanding situations. The keyboard's front panel and keytop characters can be customised to complement the colour scheme, design and function of almost any host equipment. Encoding electronics are an option that can be specified and integrated into the keyboard construction providing a plug compatible, ready to use, solution for almost any PC based application.

- ✓ **Weather and vandal resistant for outdoor and unsupervised public environments**
- ✓ **Integrated PC/USB compatible interface** (optional)
- ✓ **Rapid, responsive and reliable data entry**
- ✓ **Stainless steel front plate**
- ✓ **Easily and securely installed in public web-phones, vending machines, automated teller machines, transaction terminals, public internet kiosks etc.**



Section 2. Features & Options

The 1200 Series Sub-Miniature Keyboard is a versatile data entry keyboard suitable for many applications. The following table provides information on some of the keyboard's features and the types of connection offered.

Resistance to water and dust	**IP65*** low pressure water jet
Switch contact resistance	100 ohms (max)
Brushed stainless steel front plate	*
Silver chromed metal keys	*
Keyboard can be mounted against the under surface of a facia panel or equipment casing by using the mounting kit (supplied separately, see Section 3 Installation into Host Equipment)	
USB 2.0 only with fitted 2.5m USB cable Type A Male Matrix output	
Matrix version: supplied fitted with a Molex Picoflex connector, Molex part number: 90814-0820 (attached to the keyboard's rear surface)	
Matrix version: requires ribbon cable, recommended mating connector for ribbon cable is Molex Picoflex 90327 Series, 20 way	

*Indicates the features which are considered essential for a vandal resistant specification

Section 3. Installation into Host Equipment

The 1200 Series Sub-Miniature Keyboard must be securely fitted into a facia panel or equipment casing.

For effective resistance to vandalism, abuse and rough use the keyboard should be installed from the underside of a panel, with the operational face of the keyboard accessible through a rectangular aperture in the panel, see Appendix 2.

The keyboard is securely held in place by a retaining plate (supplied as part of the mounting kit, part number 1200-MK000x) which is positioned over 8 M3 x 16 mm studs, see Appendix 2.

Recommended dimensions and profile for the panel aperture and positions of the fixing studs are detailed as "non-revision supported copy". The keyboard's integral sealing rib (positioned on the top face of the peripheral flange) is compressed between the flange's top face and the rear surface of the fascia panel. The rear surface of the fascia panel must be rigid, flat and free of debris to achieve rated resistance to water and dust. The keyboard's integral seal should be checked to ensure it is free from damage and debris prior to installation or refit.

The overall dimensions are as shown below:

1200 Series Sub-Miniature Keyboard	
Overall Length mm (ins)	175,0 (6.8 in)
Overall Width mm (ins)	85,0 (3.3 in)
Overall Depth underpanel mm (ins)	21,5 (0.85 in)
Weight (kg)	0.549

Section 4. Connectors and Connections

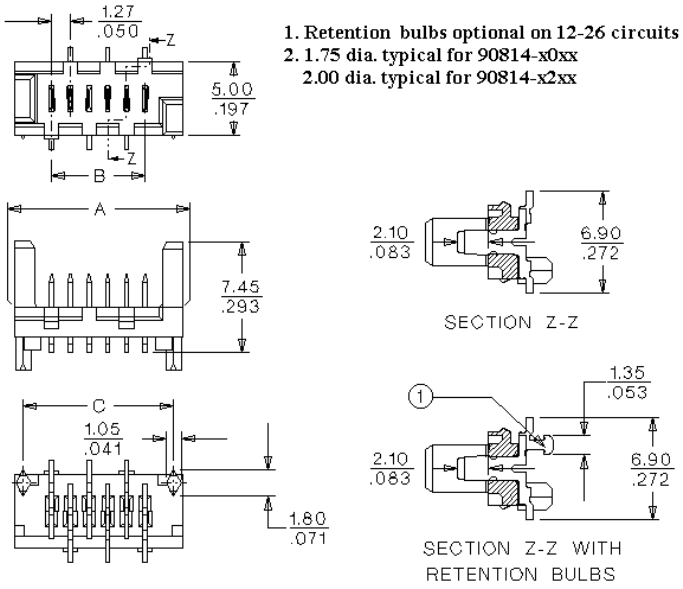
The 1200 Series Sub-Miniature Keyboard is supplied either as a matrix keyboard with row column output via a 20 way Molex Connector, or with an integral encoder USB output, with 2.5m cable included.

Matrix Version with Row/Column Output

The keyboard's 53 keys are momentary contact (carbon to gold on nickel on copper contact) switches, positioned on a 6 row x 14 column circuit matrix as defined in Table 1. This circuit matrix is terminated via a 20 way Molex Picoflex connector (part number 90814-0820). See Figure 1.

To connect a 20 line ribbon cable to this connector, it is recommended that the mating Molex Picoflex connector (Series 90327, 20 way connector) be used. Current specifications and ratings for these components (or other compatible molex connectors) should be sought from the manufacturer at www.molex.com

Figure 1. Picoflex Connector



	Dimensions in mm (inches)		
Number of Connections	**A (Overall Length)**	**B (1st to Last Ckt)**	**C**
20	**29.18**(1.149)	**24.13**(.950)	**27.98**(1.102)

Table 1 below shows the connector pin designation for the switch circuit matrix.

Please Note: When the keyboard is viewed from the rear, with the connector positioned towards the bottom edge of the keyboard, pin 1 is on the right, pin 20 is on the left.

Table 1

Connector Pin Designator	
Connector Pin Number	**Row/Column**
1	**Column 14**
2	**Column 13**
3	**Column 12**
4	**Column 11**
5	**Column 10**
6	**Column 9**
7	**Column 8**
8	**Column 7**
9	**Column 6**
10	**Column 5**
11	**Column 4**
12	**Column 3**
13	**Column 2**
14	**Column 1**
15	**Row F**
16	**Row E**
17	**Row D**
18	**Row C**
19	**Row B**
20	**Row A**

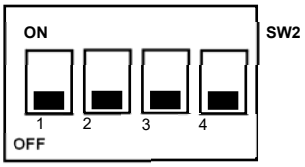
Keytop layouts are detailed in Appendix 1.

Appendix 3 shows the row and column connection for each switch position. Please note: The characters indicating row and column connections are not representative of keytop layouts.

Encoded Version with USB Output

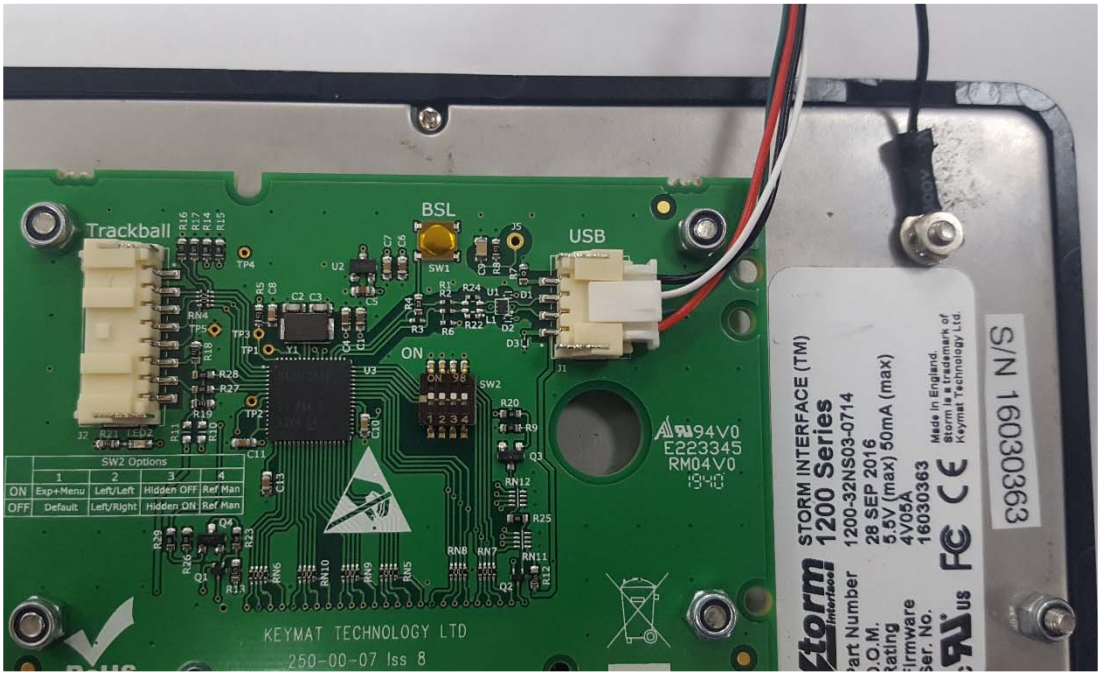
The encoder daughterboard has a male connector which mates with the corresponding female housing supplied fitted to the cable

The scan codes for each key position are listed in Appendix 3.



The keyboard is fitted with the 250 Series encoder and a 2.5m USB 2.0 cable. A

C



Section 5. Ratings and Performance

The following table shows the designed operational and performance data. Achieved performance may vary depending on environmental or operational conditions and mode of use.

Resistance to water and dust	**IP65 *** low pressure water jet
Operational temperature	-20°C to +60°C
Impact resistance	20 Joules via 50mm dia steel striker to EN60068-2-75: 1997
Switch contact resistance	100 ohms (max)
Switch contact bounce	5ms (max)
Insulation resistance	50 Mohms (min)
Breakdown voltage	500V AC (max 60 secs)
Operating voltage	24V DC (max)
Operating current	50mA (max)
Operational life	4 million cycles per key (min)
Keytop travel	1.25mm nominal
Key actuation force	120gms nominal
Matrix Version	
Connector (factory fitted to the rear face of the keyboard)	Molex Picoflex Part Number 90814-0820
Recommended mating connector for ribbon cable.	Molex Picoflex 90327 Series, 20 way

*Indicates the features which are considered essential for a vandal resistant specification

Flammability of Major Plastic Parts (taken from material supplier's datasheets)	UL94 Rating
Case moulding	V-0
Rubber actuators	HB
Insulator	V-0
Circuit boards	V-0

Section 6. Availability/Reliability/Maintainability

Firmware

The firmware version is shown on the back of the microchip controller.

Serviceability

The 1200 Series Sub-Miniature Keyboard is designed for use in exposed, unsupervised public environments. It is rugged, reliable and weather resistant to provide years of trouble free and responsive data entry. The keyboard is assembled and sealed under strictly controlled factory conditions, using calibrated and highly specialized tooling. It should not be disassembled or modified by anyone other than trained technicians (under controlled conditions) in Storm's UK manufacturing facility. ***There are no user serviceable parts contained within the keyboard. Disassembly or modifications carried out by non-authorised personnel will invalidate any warranties and have a detrimental effect on the product's performance and reliability****.*

The keyboard should be regularly cleaned by washing the operational surface with a weak solution of detergent and water. Care should be taken to ensure that no liquids enter the rear face of the keyboard or the connector mechanism.

Warranty

Policy Statement

It is Keymat Technology's intention to provide a fair and rapid response when any customer reports a defect in any product supplied by Keymat Technology.

If a valid warranty claim is received, then it is our policy to repair, replace or provide a credit note for those defective products as quickly as possible and with minimum inconvenience to our customers.

Exclusions:

- *Product shipped more than 12 months before the date of claim is not covered by warranty*
- *Product damaged in use is not covered by warranty*
- *Product that has been modified is not covered by warranty*
- *Product where the serial number/batch numbers have been removed or modified are not covered by warranty*
- *Product that has been stripped down for any reason by the customer is not covered by warranty*

Section 7. Ordering Details

Keyboards

The table below shows the part numbering scheme for the 1200 Series keyboard range. Each digit is listed with the corresponding meaning. Other options, finishes, layouts may be available – contact your Storm distributor for details.

Digit: 123		4			5		6		7		8		9		10
		Spec			Key Style		Encoder			Cable		Pointing Device		Language	Distribution
120		**0**	VR	**-**	**3**	Metal	**0**	None	**0**	None	**0**	None	**1**	UK	
							~~**1**~~	~~PS2~~	**2**	2.5m USB			**2**	USA	
							~~**2**~~	~~PS 2/USB~~							
							5	USB only							

For Example
1200-310011 is a 1200 Series Keyboard with:

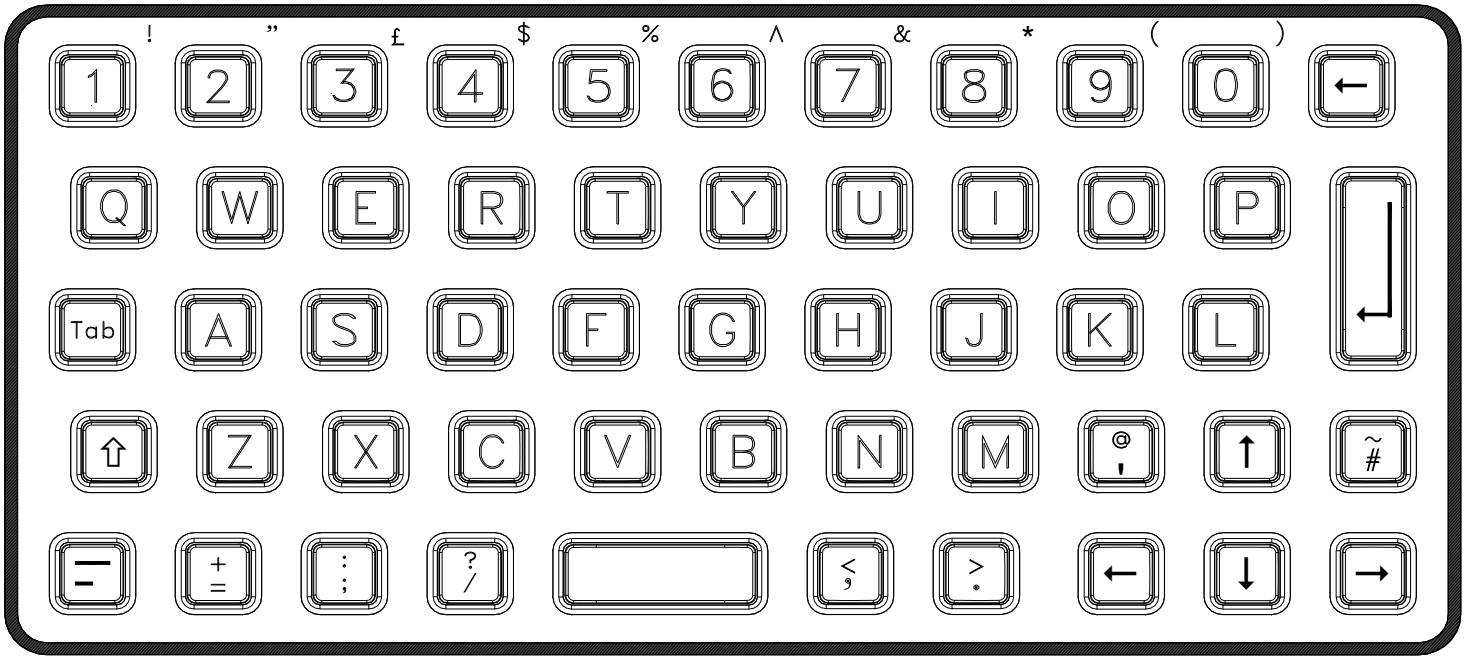
1200	***-***	***3***	***5***	***0***	***0***	***1***	***1***
Vandal Resist Spec		*METAL KEYS,*	*USB ENCODER,*	*NO CABLE,*	*NO POINTING DEVICE,*	*UK LAYOUT*	

Accessories

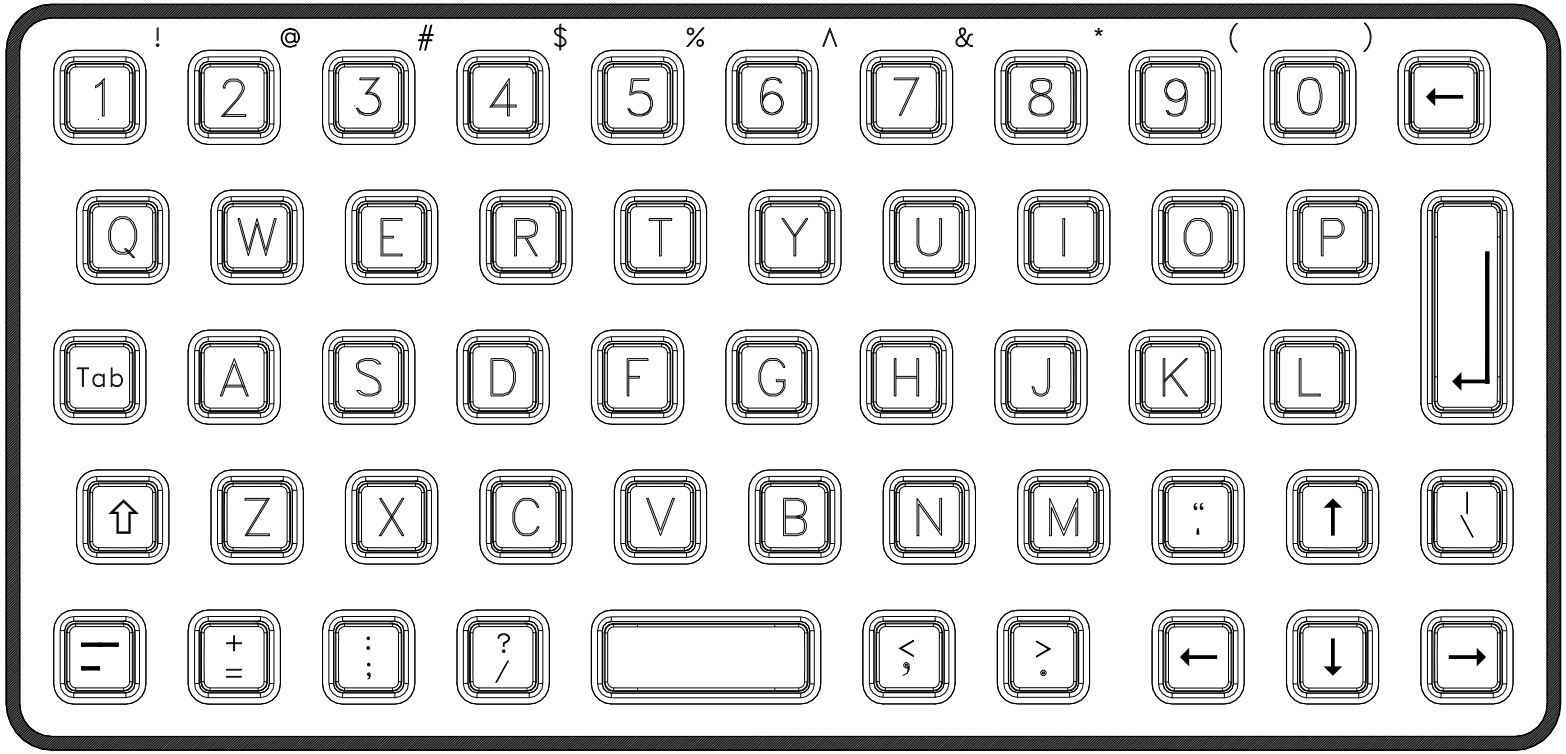
Description	***Stock Code***
UNDERPANEL MOUNTING KIT	*1200-MK000(X)*

Appendix 1. Keyboard Layouts

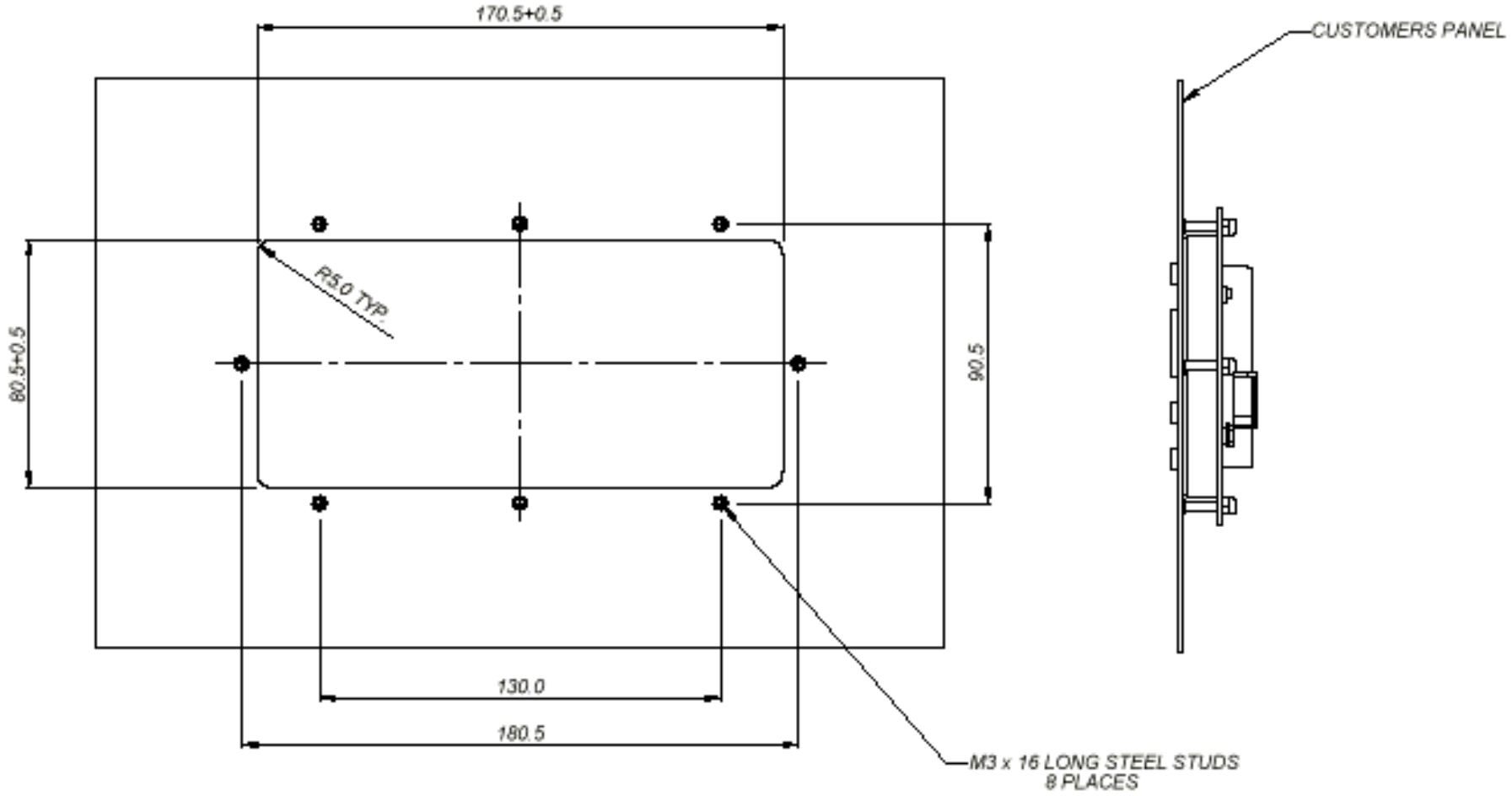
UK



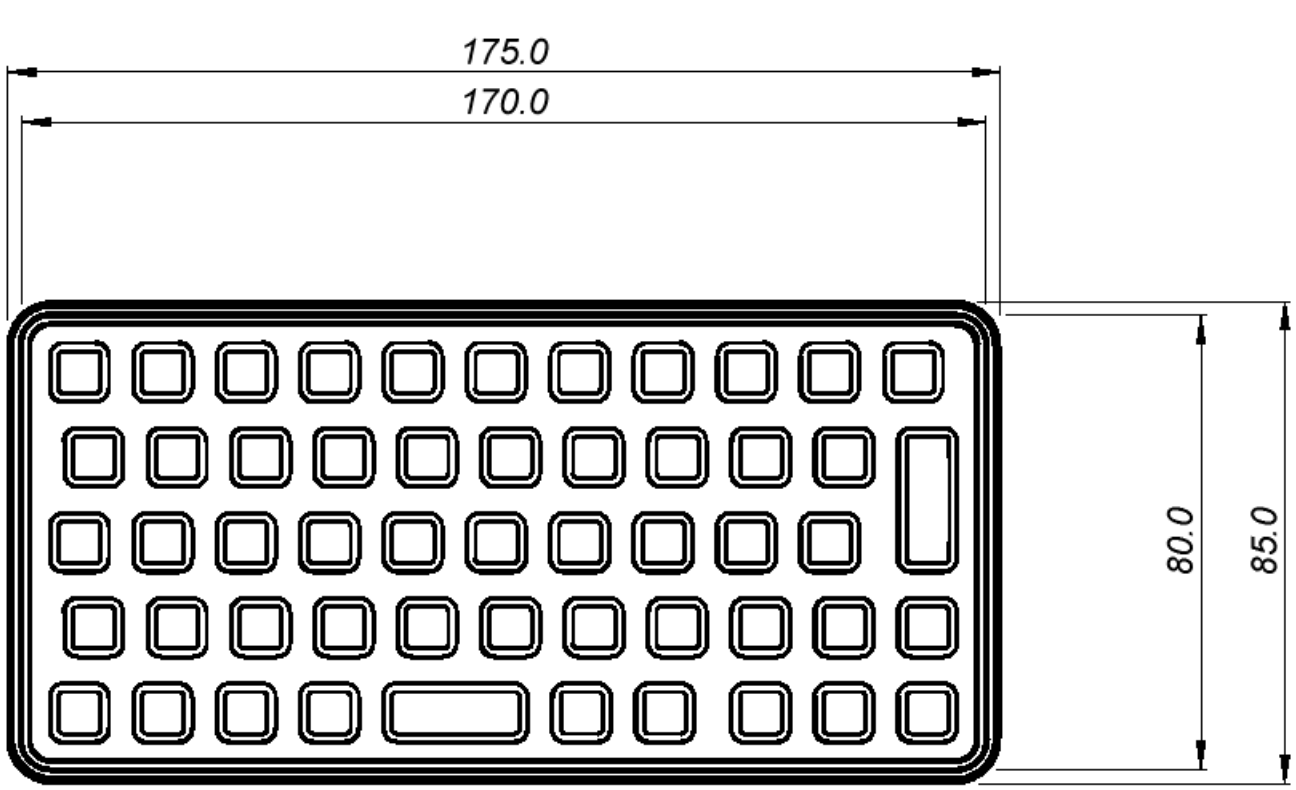
US

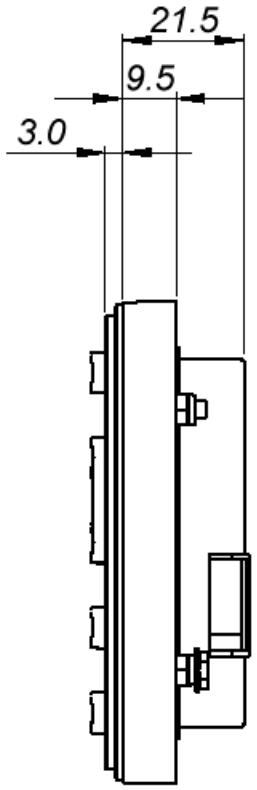


Appendix 2. Panel Mounting Details/Overall Dimensions



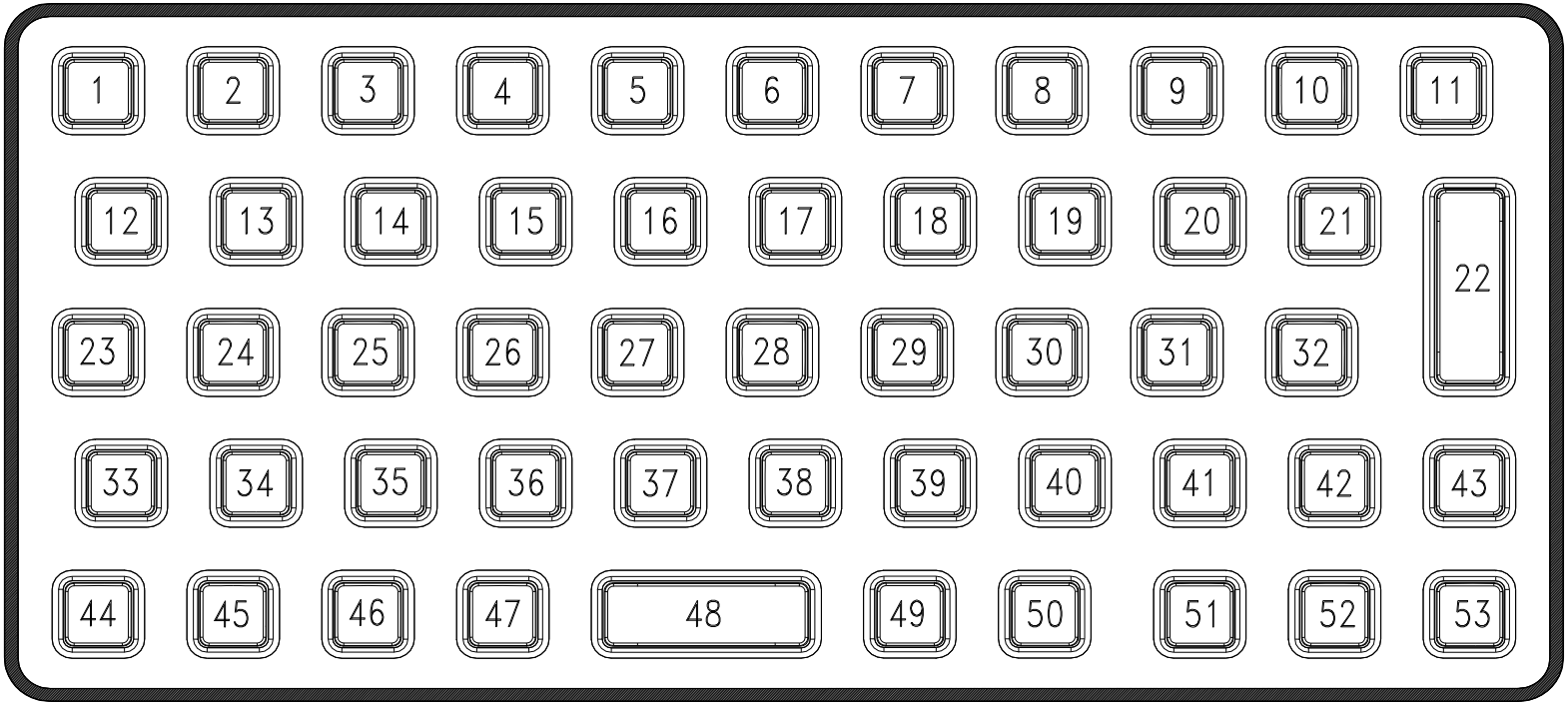
Keyboard Overall Dimensions





Appendix 3. Keyboard Scan Codes

Drawing Reference for Key Positions



Scan Codes

Key Position	Column	Row	Key Assignment UK Layout		Key Assignment US Layout		USB HID Code (Decimal)
			Base	Shifted	Base	Shifted	
1	2	1	1	!	1	!	30
2	3	1	2	“	2	@	31
3	4	1	3	£	3	#	32
4	5	1	4	$	4	$	33
5	6	1	5	%	5	%	34
6	7	1	6	^	6	^	35
7	8	1	7	&	7	&	36
8	9	1	8	*	8	*	37
9	10	1	9	(	9	(	38
10	11	1	0	)	0	)	39
11	13	3	B/Space		B/Space		42
12	2	2	q	Q	q	Q	20
13	3	2	w	W	w	W	26
14	4	2	e	E	e	E	08
15	5	2	r	R	r	R	21
16	6	2	t	T	t	T	23
17	7	2	y	Y	y	Y	28
18	8	2	u	U	u	U	24
19	9	2	i	I	i	I	12
20	10	2	o	O	o	O	18
21	11	2	p	P	p	P	19
22	13	4	Enter		Enter		40
23	1	2	TAB		TAB		43
24	2	3	a	A	a	A	04
25	3	3	s	S	s	S	22
26	4	3	d	D	d	D	07
27	5	3	f	F	f	F	09
28	6	3	g	G	g	G	10
29	7	3	h	H	h	H	11
30	8	3	j	J	j	J	13

Key Position	Column	Row	Key Assignment UK Layout		Key Assignment US Layout		USB HID Code (Decimal)
31	9	3	k	K	k	K	14
32	10	3	l	L	l	L	15
33	14	4	Shift		Shift		225
34	3	4	z	Z	z	Z	29
35	4	4	x	X	x	X	27
36	5	4	c	C	c	C	06
37	6	4	v	V	v	V	25
38	7	4	b	B	b	B	05
39	8	4	n	N	n	N	17
40	9	4	m	M	m	M	16
41	12	3	‘	@	‘	“	52
42	11	6	↑		↑		82
43	12	2	#	~	\	|	50
44	12	1	-	_	-	_	45
45	13	1	=	+	=	+	46
46	11	3	;	:	;	:	51
47	12	4	/	?	/	?	56
48	7	5	Space		Space		44
49	10	4	,	<	,	<	54
50	11	4	.	>	.	>	55
51	10	6	←		←		80
52	12	6	↓		↓		81
53	13	6	→		→		79