SIEMENS

ControlPanelSCD1597K

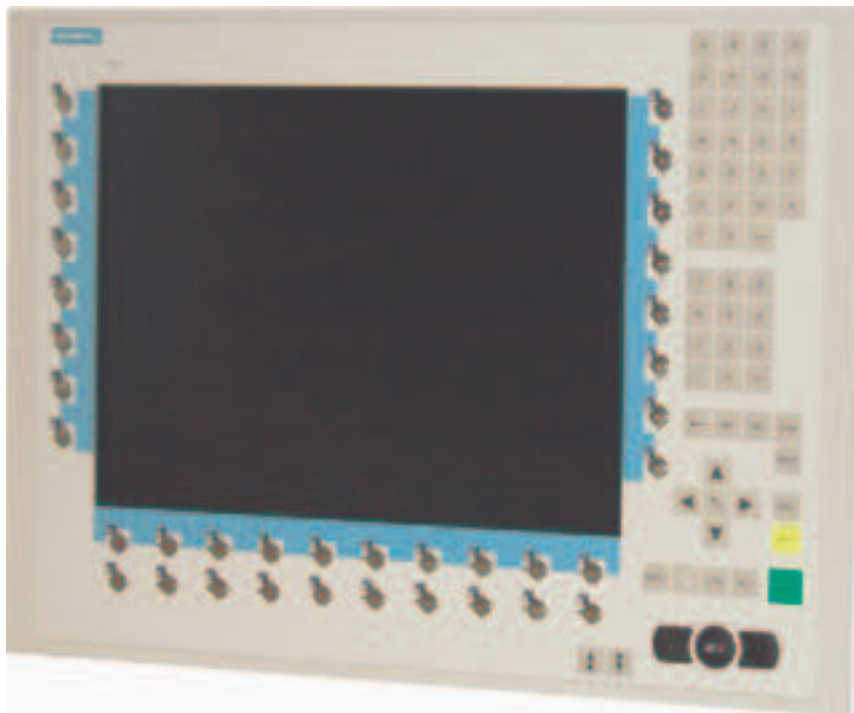**OperatingInstructions**

SCD1597-K(1)(Rack19")
6AV8100-1BC00-0AA1
(Int.ID:6GF6230-7MA01)

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(A   )   .

Contents

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1.Overview

TheSCD1597-KisacontrolpanelforPC-compatiblecomputersystemsandcanbeusedasaman machineinterface(MMI)platformforawidevarietyofvisualisationsystems.Specialinterfacesmake itpossibletohavetheSCD1597-Kinadifferentlocationasthecomputersystem.Ninety-fourkeys anda"fingermouse"areprovidedforsoftwarecontrolandoperation.The94keyscanbeindividually configured.

TheSCD1597-Kwasdevelopedandconstructedespeciallyforindustrialapplications.Itscompact 19"rackformatenablesittobeusedinapplicationswhereacompletecomputersystemwouldbe unsuitable,duetospaceorenvironmentalrestrictionsorwherethecomputerandoperatinginterface mustbeindifferentrooms.

As is the case for all industrial systems, the SCD 1597-K has been designed to withstand the particulardemandsplacedonsuchequipment,e.g.,itisresistanttoelectromagneticradiationand canwithstandalargetemperaturerange.TheTFT-LCDdisplayinthiscontrolpanelminimisespicture geometrydistortionandcolourpatches.Thescreenremainsflicker-freeevenatthelowrefreshrateof 50Hz.Imagesofhigherorlowerresolutionthanthatofthescreenwillbecontractedorexpandedto fitonthedisplay.

The SCD 1597-K can display up to 256k (16.7 million using interpolation) colours simultaneously allowingtruecolourimagesandvideostobedisplayedwithoutlimitations.TheSCD1597-Kcontains specialhardwaretoconverttheincomingVGAsignalintoaformrecognisabletothedisplaycontroller thusguaranteeingcompatibilitywithstandardCRTmonitors.

Aclearandeasy-to-useOSD(OnScreenDisplay)isusedtoadjustthealignmentofthedisplay.The "AutomaticAlignment"featureremovesthenecessityfortediousadjustmentsofpicturepositionand phase,etc.Atthepressofabutton,themonitorperformsthealignmentautomatically.

The SCD 1597-K is equipped with an active 15" colour TFT display module with a resolution of 800x600pixels.TheVESADPMSpowermanagementsystemallowssignificantreductioninpower consumptionwhenthesynchronisationsignalfromthecomputerhasbeenswitchedoff,compared withthatunder"normal"operation.

1.1. LayoutofthisHandbook

This handbook should be kept within reach when installing and operating the SCD 1597-K. It has been laid out so that even inexperienced users can find the information they require. Chapters are clearlyarrangedaccordingtosubject.

Indetail,thechaptersarearrangedasfollows:

- Chapter1   Introduction
This chapter provides a brief description of the SCD 1597-K, including its properties,applicationareasandspecialfeatures.

- Chapter2   Installation
This chapter is mainly concerned with preparing the LCD monitor for use,itsinstallation,cablingandconnectionwiththecomputersystem.

- Chapter3   Operation
All operation and adjustment possibilities for the SCD 1597-K are described here.Instructionsonhowtoprogramthefoilkeysarealsoincluded.

- Chapter4   TechnicalData
This chapter contains technical details such as dimensions, power supply, environmentalconsiderationsandEMCdata.

Important: We have gone to great lengths to match the quality of the documentation to the high standardofthisproduct.Wearegratefulforthesupportofourcustomers.

1.2. WarningsandSafetyNotes

Transport

TheLCDmonitorshouldonlybetransportedinitsoriginalpackaging.Thisistheonlywaytoensureit willbeprotectedagainstshocksandroughtreatment.

Settingup

Wheninstalling,itshouldbenotedwhetheranymoisture(condensation)hasenteredtheunitduring transportorstorage.Additionalimportantinstallationinformationcanbefoundinthe"TechnicalData" chapter.

EMC

This is a Class A piece of equipment and conforms to the regulations concerning interference emissionandinterferenceresistanceforindustrialequipment.

Repairs

Beforetheunitisopened,itmustbeswitchedoffandthepowersupplydisconnected.Onlyauthorised personsmayopentheunit.
AdditionsorchangestotheunitmaydamagethesystemoraffectitsEMCbehaviour.

Cleaning

Theunitmustbeisolatedfromthepowersupplybeforecleaning.Ifheavilysoiled,theSCD1597-K canbecleanedwithadampclothandmilddetergent.Caremustbetakentoensurethatnomoisture enterstheunitduringcleaning.
Scouringpowdersandsolventsmustneverbeallowedtocomeincontactwiththeunit.Theinsideof theunitistobecleanedbyqualifiedservicetechniciansonly.

1.2.1. Instructions for Handling Assemblies Susceptible to ElectrostaticShock

Most of the assemblies within the SCD 1597-K contain components which can be destroyed by electrostatic voltages. It is also possible for the assemblies to be damaged in such a way that total failuredoesnotoccur.

If you (as an authorised service technician) are handling such assemblies, then the following precautionsshouldbeobserved:

- Whensuchassembliesarebeinghandled,ameansofelectrostaticdischargemustbeavailable. This can be, for example, an earthed object, which can be touched to discharge electrostatic voltages.

- Thisalsoappliestoalltoolsused(insulated).Theymustalsobedischargedataneathedobject.

- Whenassembliesareremovedoraddedtothesystem,theunitmustalwaysbeswitchedoffand thepowersupplycableunplugged.

- The vulnerable assemblies should always be held by their edge. Avoid touching tracks and contactpins.

2.GeneralInstallation

PreparationforinstallingtheLCDmonitorincludesthefollowingpoints:

- Removalofallpackaging

- Checkingofcomponentsfordamage

- Comparisonofcomponentsreceivedwiththoseonthedeliverynote

- Connectiontothecomputersystemandpowersupply

- Buildingintoyoursystem,bearinginmindtechnicalandergonomicaspects

2.1. RemovalofPackagingandCheckingofIndividualParts

After unpacking all the delivered components, they should be checked for completeness and for possibletransportdamage(visualinspection).Ifanydeficienciesarefoundthenpleasecontactthe servicedepartmentgivenonthedeliverynote.Havethedeliverynotenumber,serialnumberanda descriptionofthedeficiencytohand.

Theoriginalpackagingshouldbekeptforfuturetransportation.

2.2. InstallationoftheMonitor

TheSCD1597-Kisa19"rackmoduleandismountedinastandard19"cabinet.Guiderailsarenot
necessary.
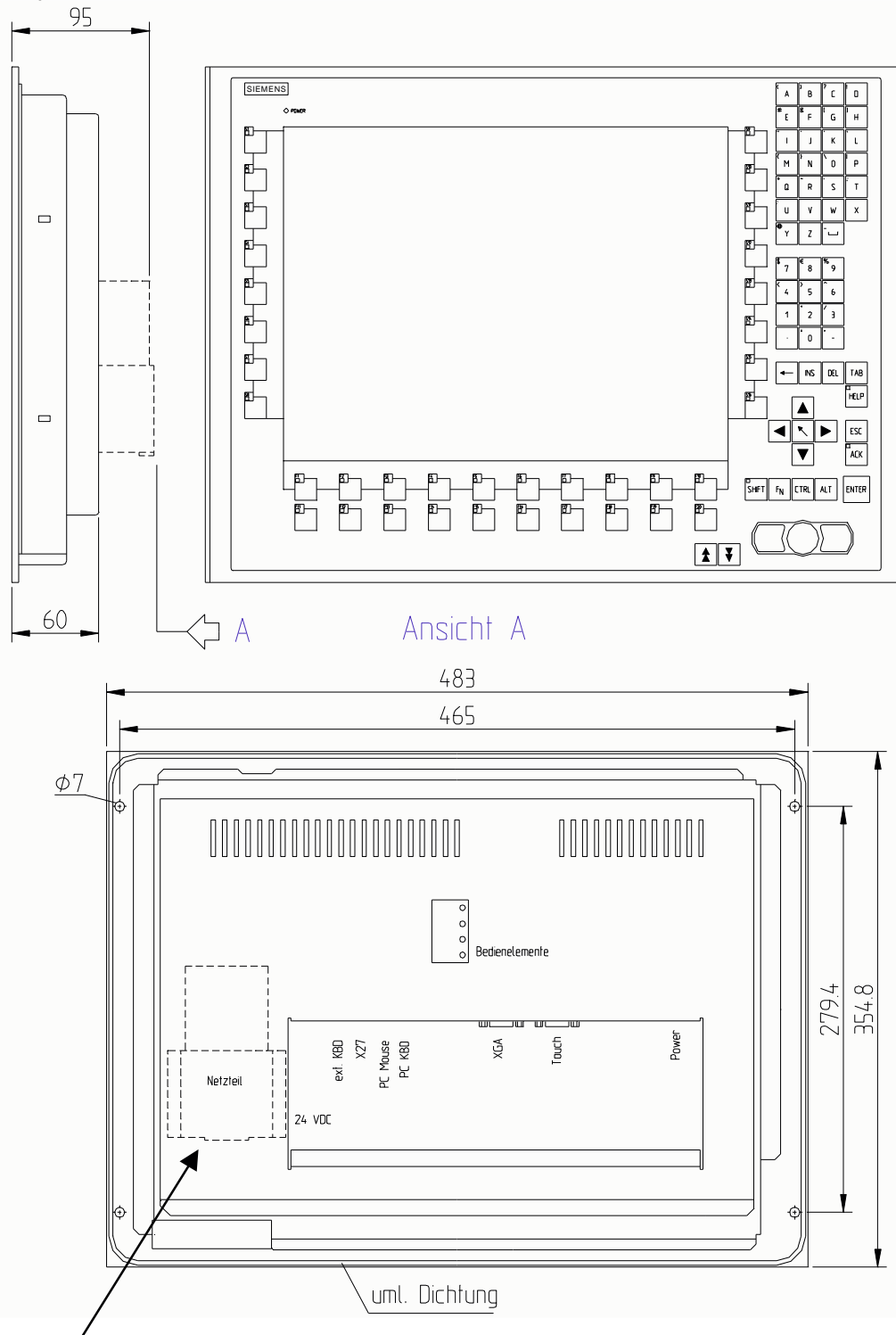
Ansicht A

Fig.1:DimensionsoftheSCD1597-K

448

Schalttafelausschnitt

333
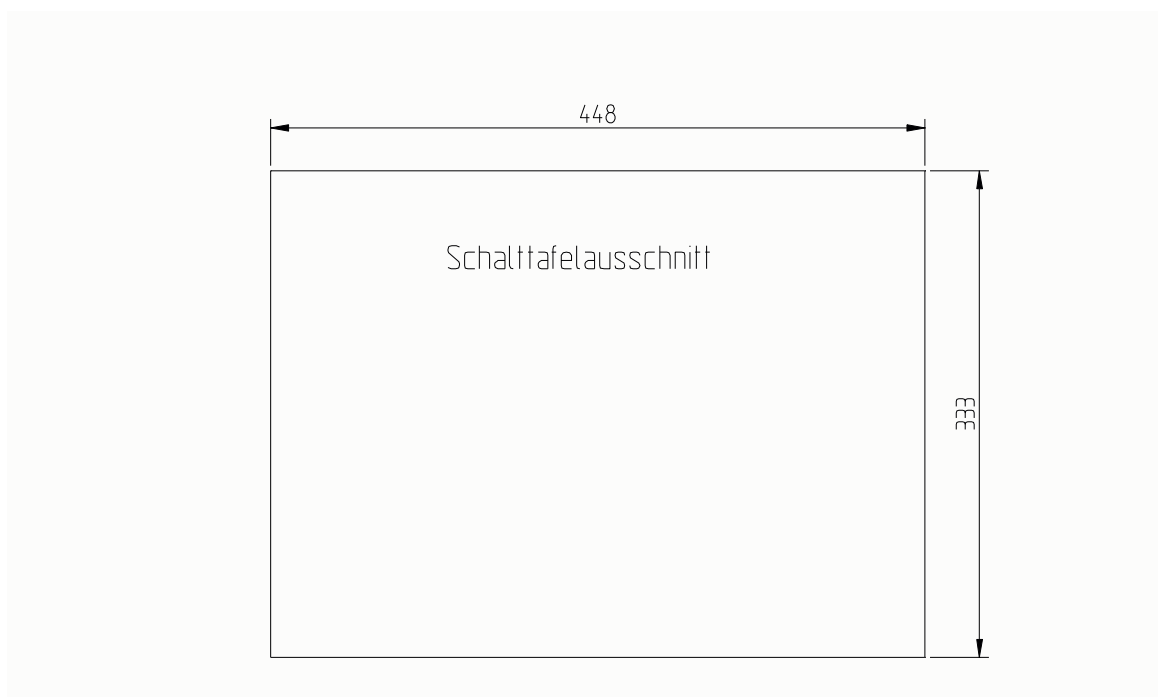
<u>ThermalProblems</u>

InorderthattheSCD1597-Kmaintainsanoptimumoperatingtemperaturewhileinuse,airmustbe
allowedtocirculatefreelyaroundtheenclosure.Thisisespeciallyimportantfortherearoftheunit.A
convectioncurrentmustbeallowedtocirculatearoundtheenclosure

Pleasebearinmindthatincreasedtemperaturescanleadtodefectsandtoasignificantreductionin
thelifetimeofthemonitor.

<u>EMCProblems</u>

Thisunithasbeendesignedforbuildingintoanindustrialsystem.Theoperatoroftheentireplantis
responsibleformaintainingelectromagneticcompatibilityaccordingtoEMClaws.

<u>SafetyProblems</u>

Allvoltageandsignalconnectionsmustadheretolegalrequirements.

<u>Ergonomics</u>

Thescreenshouldbeeasilyviewablefromallsideswithoutreflections.

Ahigh-quality75-ohmcoaxialcablemustbeusedfortheVGAsignals.Lowqualitycablescanresult
ininterferenceandshadowingonthedisplay.

2.2.1. InstallationoftheAC/DC-powersupplyunitor24VDC/DC Converter

EitheranAC/DCpowersupplyunitoraDC/DCconvertercanbeusedtosupplythecontrolpanelwith
24VDC. If an AC/DC power supply unit is used, it is attached to the enclosure using the bracket
indicatedinFig.1onpage10.

IftheDC/DCconverter,whichisdeliveredwiththeunit,istobeusedthenitshouldbeinsertedbelow
theAC/DCpowersupplyunit,sothatthe24Vconnectorisaccessible.TheDC/DCconvertershould
thenbescrewedtotheenclosureusingtothetwoholesprovidedforthebracket
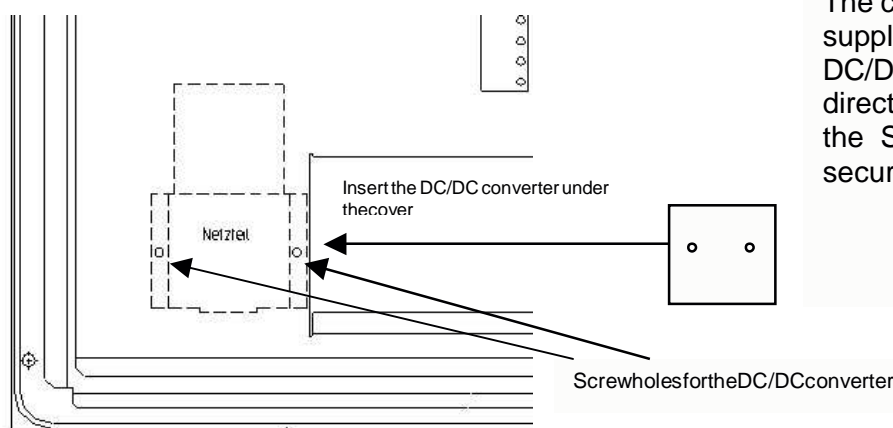
The cable from the AC/DC power supply unit (12VDC) or from the DC/DC converter is plugged directly into the socket (power) on the SCD 1597- K. It should be securedusingapull-relief.

Insert the DC/DC converter under thecover

Netztel

ScrewholesfortheDC/DCconverter

2.3. Interfaces

ButtonsforOSD

X8 X9 X2 X27 X4 X3 X1 X6 X7
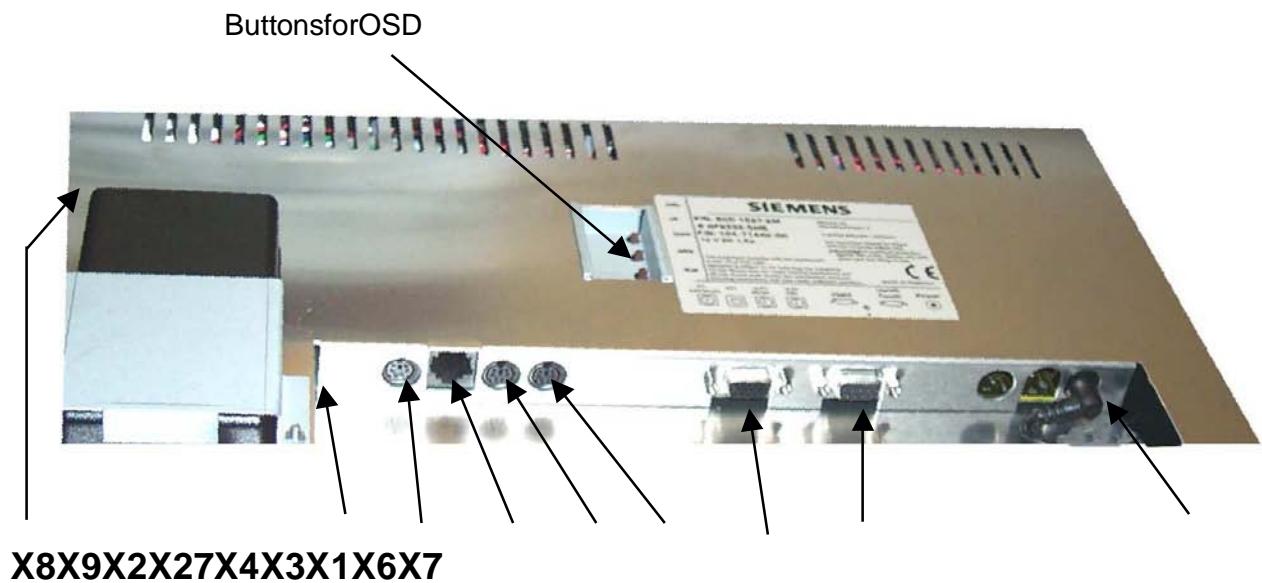
2.3.1. VGA-InterfaceX1

TheVGAinterfaceisastandard15-pinfemaleHD-D-typeconnector.

Pin	Signal
1	VideoinputRED
2	VideoinputGREEN
3	VideoinputBLUE
4	Notused
5	Notused
6	GND(RED)
7	GND(GREEN)
8	GND(BLUE)
9	Notused
10	GND
11	Notused
12	Notused
13	H-Sync.
14	V-Sync.
15	Notused
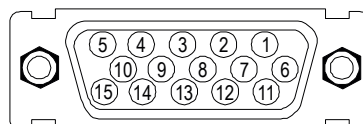
2.3.2. ExternalKeyboardX2

AstandardPS2keyboardcanbeconnectedattherearoftheunit.Thiskeyboardwillthenworkin parallelwiththebuiltinkeyboardonthefrontoftheunit.

Pin	Signal
1	Data
2	-
3	GND
4	+5V
5	CLK
6	-

2.3.3. PCInterfaceKeyboardX3

This interface provides the keyboard connection to the computer system and is a standard PS2 femaleconnector.AstandardPS2cable(male-male)withamaximumlengthof5mshouldbeusedto connecttheunitwiththecomputersystem.

Pin	Signal
1	Data
2	-
3	GND
4	+5V
5	CLK
6	-

2.3.4. PCInterfaceMouseX4

ThisinterfaceprovidesthemouseconnectiontothecomputersystemandisastandardPS2female connector. A standard PS2 cable (male-male) with a maximum length of 5m should be used to connecttheunitwiththecomputersystem.

Pin	Signal
1	Data
2	-
3	GND
4	+5V
5	CLK
6	-

2.3.5. PCInterfaceKeyboard/Mouse(LongDistance)X27

Thisinterfaceisusedwhenthecomputersystemandthecontrolpanelareseparatedbymorethan 5m. The mouse and keyboard signals are transmitted via a common cable. A standard CAT5/6/7 ethernet cable with an RJ45 connector is used. If this interface is used the PC must have a correspondingreceiverwhichcanconverttheincomingsignalsbacktostandardkeyboardandmouse signals(seepage17)

Pin	Signal
1	KBD-DATA+
2	KBD-CLK+
3	KBD-DATA-
4	
5	
6	KBD-CLK-
7	
8	
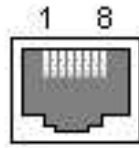
2.3.6. ServiceConnectorX6

ThisfemaleconnectorisusedforupdatingtheSCD1597-Ksoftware.

2.3.7. PowerSupplyX7/X8/X9

PowerissuppliedtotheSCD1597-KviaaDCconnector,X7,ontherearoftheunit.TheDCinput (12V)hasbeendesigntomakeitimpossibletoconnectthesupplyvoltagethewrongwayround.

AsdescribedinChapter2.2.1onpage12,theSCD1597-KcanbesuppliedusinganAC/DCpower supplyunitoraDC/DCconverter.

X7	DCinput(12V)
X8	ACinput(100-240V)
X9	DCinput(24V)

2.4. ConnectingtotheComputerSystem

Themonitorhasbeentestedandsetupatthefactory.Therefore,alltheremainstobedonebefore usingtheunitistoconnectallthenecessarycables,suchasthepowersupply,mouse,keyboardand video(VGA)totheconnectorsprovided.TheseconnectionsmustadheretoEMCregulations.

Therearetwopossiblewaysofconnectingtothecomputersystem.IfthecablebetweentheSCD 1597-Kandthecomputersystemislessthan5mlongthenstandardPS2cablescanbeused.

However,itshouldbenotedthattheseinterfaceshavenotbeendesignedforindustrialenvironments. External interference can affect the computer system or even put it out of operation. Use a X27 connection(seefig.3.)
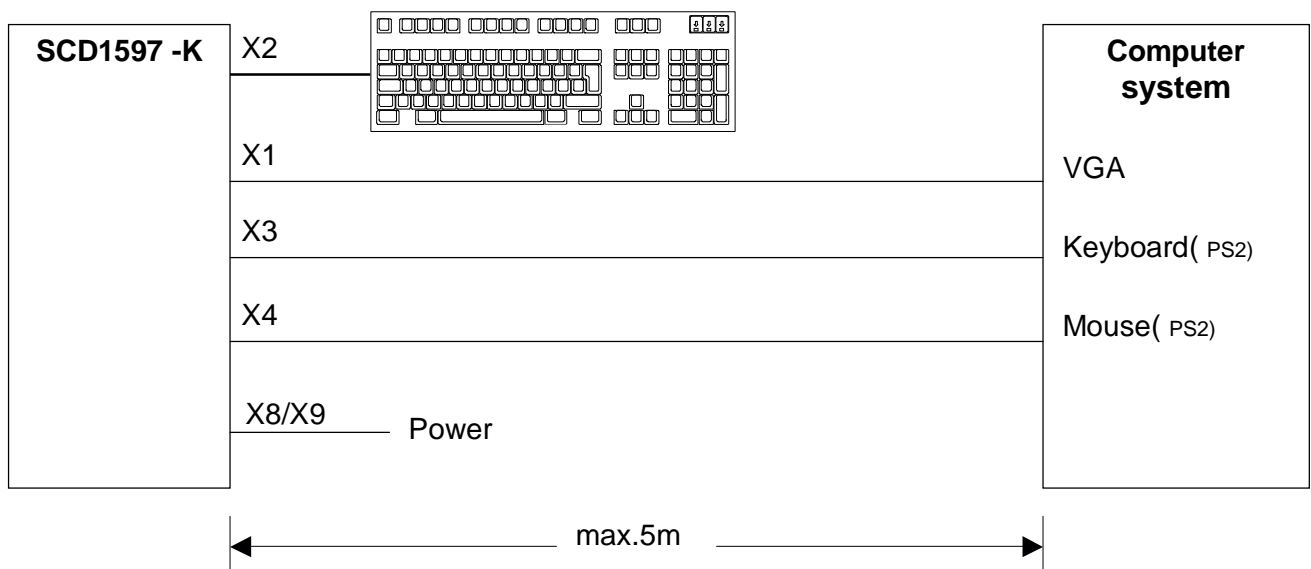
Fig.2:ConnectingtheSCD1597-Ktothecomputersystemoverashortdistance

If the control panel and the computer system are further apart or if there are strong interference fields in the vicinity then the second variation using the special interface (long distance, X27) should be used for the mouse and keyboard. Here, both mouse and keyboard signals are transmitted over one cable, a standard CAT5/6/7 ethernet cable (note the signal configuration).
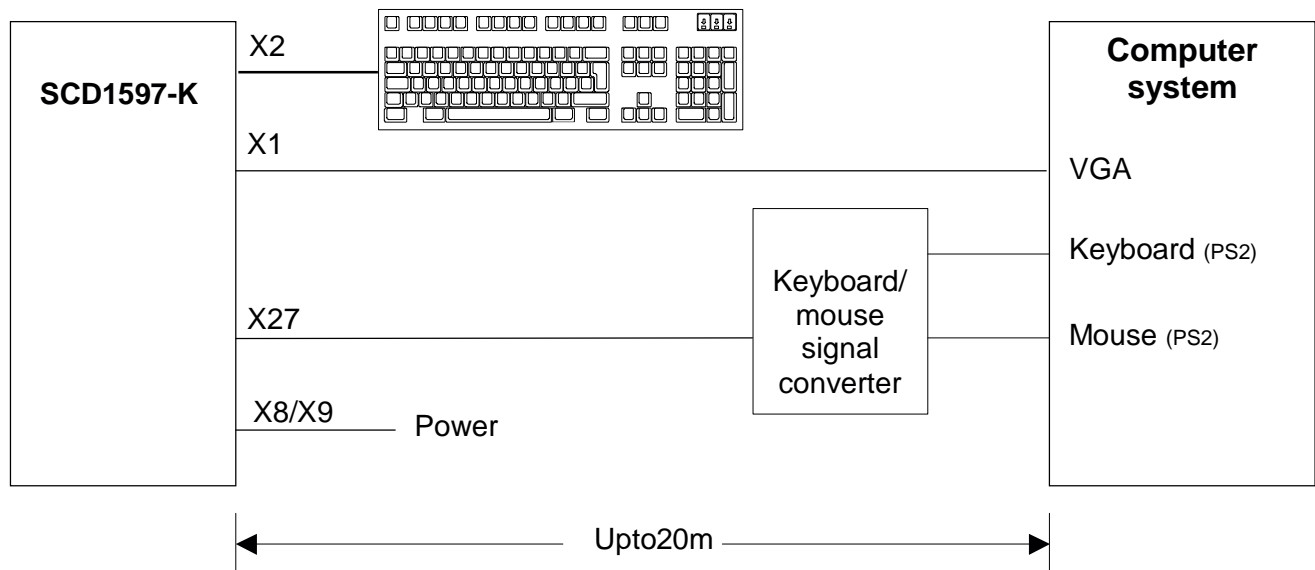
Fig. 3: Connecting the SCD1597-K to the computer system over a longer distance

2.5. Electrical Installation

Before applying power to the SCD 1597-K, check that all connectors are plugged in correctly and secured. If a VGA signal is present, a picture should appear immediately on the display.

2.5.1. Installing the Keyboard and Mouse

When a computer starts up it usually checks and initialises the keyboard and mouse. If either is not connected or is connected incorrectly, the computer's startup procedure may stop or else the input device may not be available after it has been subsequently connected. This is especially applicable when a mouse is connected to a PC compatible computer after it has booted up.

The keyboard and/or the mouse should not be plugged in or unplugged while the computer is running. This could result in misinterpretation of the keyboard codes/mouse signals.

Therefore, the control panel should always be switched on before or at the same time as the computer system so that the keyboard and mouse are recognised and initialised correctly.

3.OperationandAlignment

Thischaptercontainsadescriptionoftheoperatingandalignmentfunctions.

3.1. LocationoftheOperationandAlignmentControls

The operating controls such as the keyboard and mouse are accessible from the front of the unit. Buttonsforaligningthedisplayarelocatedontherearoftheunit.Thelocationofthe4keysforthe OSDcanbeseenin Fig. 1: Dimensions of the SCD 1597-K on page 10. The display can also be alignedusinganexternallyconnectedPS2keyboard.

3.2. IntegratedFoilkeyboard

The integrated foil keyboard has 94 keys which can each be defined separately. The keys can be separatedintotwogroups.Onegroupconsistsoftheso-calledsoftkeys,whicharelocatedtotheleft of,totherightandabovethedisplay.Thesekeyscanbelabelledwiththehelpofaslideinstrip.The secondgroupofkeysisalreadylabelled.

ThesoftkeysandtheHELP,SHIFTandACKkeysalsohaveanLEDeachwhichcanbeswitchedon andoffviathekeyboardinterface.

3.2.1. ProgrammingtheKeys

All the keys in the integrated foil keyboard can be freely programmed. A small DOS program, "TCLOAD.EXE"isusedtoprogramthekeysviathekeyboardinterface.Thekeysaredefinedinan editablelistoranExceltable.ThisisreadandinterpretedbytheDOSprogram,whichthensends thesedefinitionstothecontrolpanel.

```
┌──────────────┐
│ Keydefinition│
│   TXTFile    │───────────┐
└──────────────┘           │        ┌──────────────┐      ┌──────────────┐
                           ├───────▶│  DOS-Program │─────▶│ Controlpanel │
┌──────────────┐  Save ┌──────────┐ │  TCLOAD.EXE  │      │  SCD1597-K   │
│    Excel-    │  as... │ TXTFile  ├─┘ └──────────────┘      └──────────────┘
│    table     │───────▶│          │
└──────────────┘        └──────────┘
```
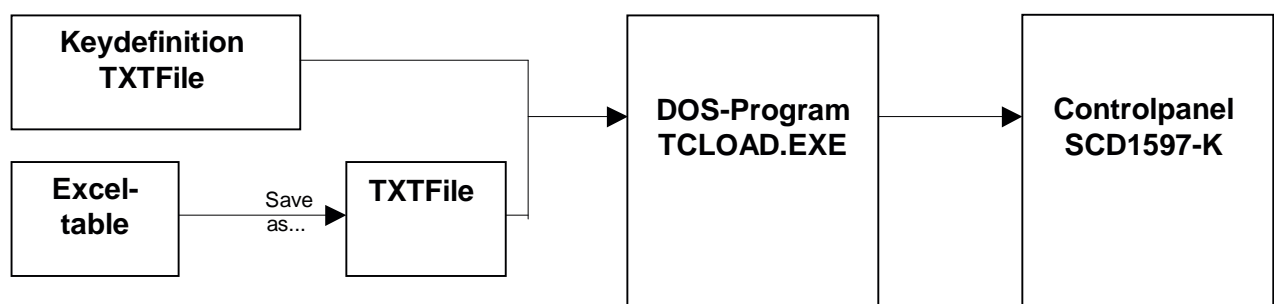
Important
TheTCLOAD.EXEprogramcanonlyreadandprocesstextfiles.Therefore,inExcel,itisnecessary tosavethetableusing"Saveas..."andtoselectthefiletype"Formattedtext(spacedelimited)".

KeyDefinitionTable

Variouskeywords,charactersandsyntaxareusedinthetable.Thetable,whichissuppliedwiththe controlpanel,containsdefinitionsforallofthekeyswithpermanentlabels.

;KeytableforcontrolpanelXXYatplantZYX						
;						
#NameSimatictable23						
;						
;Basiclevel,level0						
;	X(0...11)	Y(0...7)	MF-IIKeyNo.	Flags		Comments
	0	0	19	T	;	E
	1	0	38	T	;	K
	2	0	17	T	;	Q
	3	0	18	T	;	W
	4	0	11	T	;	0
	5	0	6	T	;	5
	6	0	83	T	;	CursorUp
	7	0	76	T	;	Delete

Fig.4:Keydefinitiontable

The table consists of a header in which the user can enter information as comments, the key definitiontableforthefirstkeylevelandthekeydefinitiontableforthesecondkeylevel.Thekey, whichwillbeusedtoswitchbetweenthetwolevels,isdefinedbetweenthetablesforthetwokey levels.

Keywords/characters

#Name Thetablecanbegivenanamehere.Thisnameisstoredinthecontrolpanelandisused forsubsequentidentificationoftheloadedtable.

#Level1 Thekey(co-ordinates)usedtoswitchbetweenthetwolevelsfollowsthiskeyword.
Example:#Level186
i.e.thekey,X=8,Y=6,willbeusedastheshiftkey.

; Asemi-colonindicatesthestartofacomment.

Syntaxofatableentry

Xkeyco-ordinate	Ykeyco-ordinate	Keynumber	Flag	Comment

TheindividualentrieslikeXkeyco-ordinateandYkeyco-ordinatemustbeseparatedbyaspace.

Keyco-ordinates
Thismatrixco-ordinatespecifiesthekeytobedefined.Fig.5onpage29intheappendixshowsall
theSCD1597-Kkeysandtheirco-ordinates.

Keynumber
ThekeynumberreferstotheequivalentMF2key.Fig.6onpage30intheappendixshowsthekey
numbersforastandardMF2keyboard.

Onlykeynumbersareexchangedbetweenacomputerandakeyboard.Thedefinitionofakey,i.e.,
whethera"Z"ora"Y"appearsonthescreenisdeterminedbytables(keyboarddrivers)storedinthe
computer.

Flags
Theflagsdefinespecificbehaviour,e.g.,whichcontrolkeyshouldalsobeactivatedwhenthiskeyis
pressed:

   R,r Rightshiftkey
   L,l Leftshiftkey
   G,g AltGrkey
   A,a Altkey
   C,c Controlkey/Strgkey
   T,t Autorepeat,Typematic

Comment
Commentsbeginwithasemi-coloncharacter,";".Theendoflinecharacter(CRorCR/LF)indicates
theendofthecomment.

3.2.2. ProgrammingtheLEDs

The foil keyboard has 39 LEDs which are arranged in combination with some of the keys. These
LEDscanbeused,forexample,asreceiptorreadysignals.

TheLEDsareswitchedviathekeyboardconnectionbetweenthecomputerandthecontrolpanel,ina
similarmannertotheprogrammingofthekeys.Aspecialcommandhasbeenimplementedfordriving
theLEDssince,intheMF2specification,thereareonlyNumLock,CapsLockandScrollLockLEDs.
ThiscommandenablestheindividualLEDstobeswitchedonandoff.

ThecorrelationbetweenLEDnumberandLEDpositionisshowninFig.5onpage29.

The special command for LED data is 0xEA followed by 10 bytes of LED information.

Protocol

0xEA	B1H	B1L	B2H	B2L	B3H	B3L	B4H	B4L	B5H	B5L

0xEA : Special command
BxH, BxL : LED Information in ASCII-Hex format (H=high, L=low)

Important: Each of the LED bytes, B1 to B5 is in ASCII hex format, i.e. for each LED byte, 'Bx', two bytes of data are transmitted.
For each byte that the contral panel receives from the computer, a receipt byte (0xFA) is sent back.

The correlation between the LED bytes B1–B5 and the individual LEDs is shown below:

Byte	LED	Taste		Beispiel	Byte	LED	Taste		Beispiel
B1.0	LED40*		0	**'B1L'**	B3.4	LED20	F4 X	1	**'B3H'**
B1.1	LED39	Shift X	1	A=0x41	B3.5	LED19	F3 X	1	B=0x42
B1.2	LED38	ACK	0		B3.6	LED18	F2	0	
B1.3	LED37	Help X	1		B3.7	LED17	F1 X	1	
B1.4	LED36	F20 X	1	**'B1H'**	B4.0	LED16	S16	0	**'B4L'**
B1.5	LED35	F19	0	1=0x31	B4.1	LED15	S15	0	0=0x30
B1.6	LED34	F18	0		B4.2	LED14	S14	0	
B1.7	LED33	F17	0		B4.3	LED13	S13	0	
B2.0	LED32	F16 X	1	**'B2L'**	B4.4	LED12	S12 X	1	**'B4H'**
B2.1	LED31	F15	0	D=0x44	B4.5	LED11	S11	0	D=0x44
B2.2	LED30	F14	1		B4.6	LED10	S10 X	1	
B2.3	LED29	F13	1		B4.7	LED9	S9 X	1	
B2.4	LED28	F12	0	**'B2H'**	B5.0	LED8	S8	0	**'B5L'**
B2.5	LED27	F11	0	4=0x34	B5.1	LED7	S7	0	8=0x38
B2.6	LED26	F10 X	1		B5.2	LED6	S6		0	
B2.7	LED25	F9	0		B5.3	LED5	S5 X	1	
B3.0	LED24	F8	0	**'B3L'**	B5.4	LED4	S4 X	1	**'B5H'**
B3.1	LED23	F7 X	1	E=0x45	B5.5	LED3	S3 X	1	F=0x46
B3.2	LED22	F6 X	1		B5.6	LED2	S2 X	1	
B3.3	LED21	F5 X	1		B5.7	LED1	S1 X	1	

*: There is no LED40 on the foil keyboard.

ASCII-Kodierung: 0...9 => 0x30...0x39; A...F => 0x41…0x46

Samples:

all LED „ON"
0xEA,0x46,0x46,0x46,0x46,0x46,0x46,0x46,0x46,0x46,0x46

all LED "OFF"
0xEA,0x30,0x30,0x30,0x30,0x30,0x30,0x30,0x30,0x30,0x30

Sampel (X=LED "ON"):
0xEA,0x31,0x41,0x34,0x44,0x42,0x45,0x44,0x30,0x46,0x38

3.3. IntegratedMouse(Finger-mouse)

The"finger-mouse"onthefrontofthecontrolpanelfulfilsthesamefunctionasastandardMicrosoft-compatible2-buttonmouse.Themouseismovedusingthecentralpositioningsurface.Thesurface shouldbepressedinthedesireddirection.Thedegreeofpressureappliedtranslatestothespeedat whichthemousemoves.Thebuttonstoeithersidecorrespondtotheleftandrightmousebuttons.

Leftmousebutton

Mouse positioning surface

Rightmousebutton
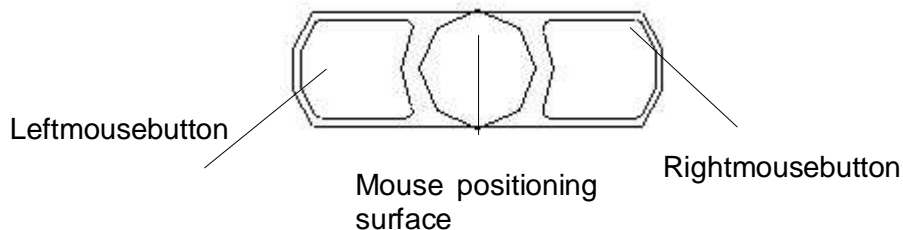
3.4. DisplayAlignment

Since there are no standards for video output signals from VGA cards, the first time the unit is switchedon,it **automatically**adjuststothegraphiccardinuse.

3.4.1. AligningtheDisplayviaanExternalKeyboard

Asalreadymentioned,theOSDcanbeoperatedfromanexternalMF2keyboard.Thecursorkeys areusedtonavigateintheOSD(seeOSD-Menu,page23)

In order to activate the OSD via an external keyboard, the keys CRTL, ALT and "M" should be pressed **simultaneously**.

Ifnootherkeysarepressedwithin10secondsthenthedisplayswitchesbacktothenormalkeyboard mode.TheOSDalsodisappearsfromthedisplayafteraround10seconds(dependingonthesetting intheutilitymenu).

3.4.2. OSD-Menu

The „On Screen Display" OSD is a menu system, which is shown on the display. With the help of OSD and the described controls elements, all adjustments of the monitor are executable. There are just 4 keys S1 to S4 to control the OSD.
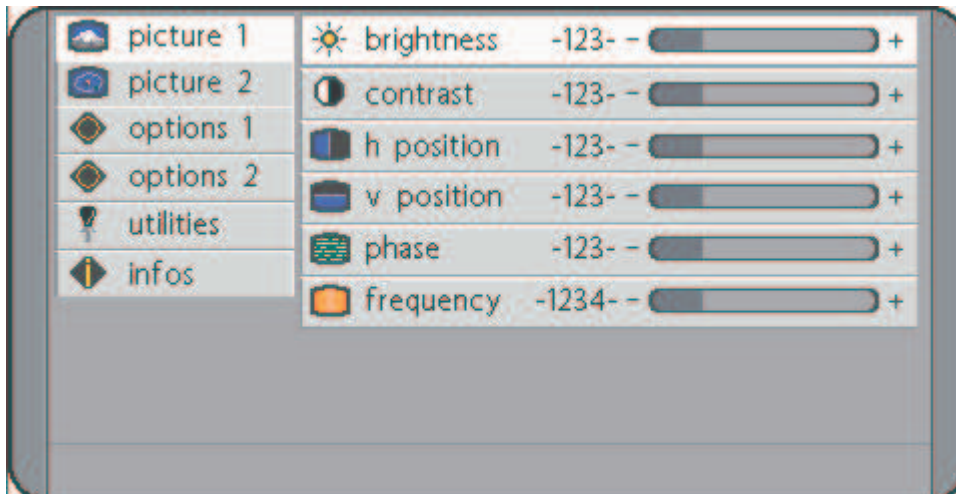
OSD-Menu/Quick-OSD-Menu

In addition to the **OSD** menu there are more possibilities to adjust important functions like brightness, contrast and automatic adjustment directly via a **Quick-OSD-menu.**

Function(s) of the control keys:

<+>
> Increase value, menu navigation (go to submenu/go to right)
> Invoke Quick-OSD-menu: To execute an automatic adjustment

<->
> Decrease value, menu navigation (go to left)

MENU
> Invoke OSD
> Menu navigation (switching between main- and sub-menu)

SET
> Menu navigation (go down)
> Invoke Quick-OSD-menu: Brightness and contrast adjustment

3.4.3. Quick-OSD-Menu-Functions

FollowingadjustmentscandoviatheQuick-OSD-menu:

Brightnes   **Contrast**   **Autoadjust**

Invokeviakey**< SET>**

Function	Adjustment/value	Description
Contrast	Range: 0 to 100 viakey< +>/<->	Contrastadjustment
Brightness	Range: 0 to 100 viakey< +>/<->	Brightnessadjustment

Invokeviakey**< +>**

Function	Adjustment/value	Description
Automatic image adjustment	Press key <+> to start the adjustment	Perform an automatic image adjustment. Adjustment of frequency, phaseandimageposition.

3.4.4. OSD-Menu-Function

Invokeviakey**<MENUE>**

Mainmenu	Function	Adjustfunction/value/range	Description
Picture1	Brightness	setting range: 0to100throughkey(+/-)	adjustbrightness
	Contrast	setting range: 0to100throughkey(+/-)	adjustcontrast changecontrastbetweendarkandlightcolors
	HPosition	setting range: 0to100throughkey(+/-)	movepictureinhorizontaldirection
	V-Position	setting range : 0to100throughkey(+/-)	movepictureinverticaldirection
	Phase	setting range : 0to31throughkey(+/-)	adjustphaseofinputsignal
	Frequency	setting range : 950 to 1050 (dependent to picture) throughkey(+/-)	adjustfrequencyofinputsignal
Picture2	Sharpness	1,2,3,4,5	adjustsharpnessofthepicturebyusingno.1to5 1=sharp,5=soft
	Gamma	LinearorCRT	correctionofgammacurve valueofcolorswillbeforwardedtothedisplay
	Colortemperature	5000 - 6500 – 9300 - VAR	color temperature / adjust color three defined and one adjustable color temperatures are for selection activate„VAR"-forRGBshowsupaadjustmentbeam. 0to 100%(50%correspondtofactor1)
Option1	OSD	selectbetweenninedefinedOSDpositionsf	definepositionOSD
	OSDH-Position	setting range : 0to100throughkey(+/-)	moveOSD-menuinhorizontalposition
	OSDV-Position	setting range : 0to100throughkey(+/-)	moveOSD-menuinverticalposition
	OSDtimeout	5...60seconds	adjust time after the OSD menu is automatically fade out theadjustmentensuresbetween5to60sinstepsof5s.
	OSDbackground	Opaque–Transparent	select background color of the OSD menu you have the choice between transparent and colored background.
	Backlight	setting range : 0to100throughkey(+/-)	adjust brightness ob backlight display herewith you can match the brightness of the picture with the brightnessoftheroom.
	Noisesuppression	ON-OFF	StandardadjustmentOFF. By ON: Activate the function noise suppression. This function suppressesinterferenceatthesyncsignallinestoavoid Anewautoadjustmentduringshortinterference.

Mainmenu	Function	Adjustfunction/value/range	Description
Option2	DPMS	ON–OFF	Display Power Management System (DPMS) on or off If DMPS activated, the monitor is turn off (backlight) when a synchsignalisleft.Thescreenisdark.
	Sourcescan	OFF–ON–Standard	Standard:ON Note: To scan new video source is not relevant because the monitorhasoneRGBinputsourceonly.
	Blankcolor	red–reen–blue–black	Choosethebackgroundcolorofthescreenwhennoinputsignal ispresent.
	Display	–	Displayresolution(notfromtheinputsource)
	Infosignalsource	ON–OFF	Inputsourceicononoroff The icon is shown when input signal are changed. The icon showsthefollowinginformation's: - signalsource(e.g.RGBanalog) - Modenumber(internalmodenumberofthetiminglist) - Imageresolutionoftheinputsignal - H-andV-frequency Analog RGB1 Modus: %d, %d x %d %u,%03u kHz / %u Hz
Utilities	Language	Englisch–German	OSDlanguage
	Calibration	<+>press	AdjustmentoftheinternalA/Dconverter (followingthemenuinstruction)
	Factoryreset	<+>press	Resetofvalueslikebrightness,contrast,..todefaultvalues
	Installation RGB-Mode	<+>press	Enteranewtimingwhichisnotintheinternaltimingtable.This functionshouldused,whentheshownimageresolutionisnot theresolutionareexpect. Whenpress<+>thesubmenuexpect9timingparameter.
	When<+>, H- and V-Frequency	–	ShowtheH-andV-Frequencyofthepresentinputsignal.
	H/V-total,H/V-start	–	Showtheusedtimingparameterofthepresentinputsignal
	Option	Var. RGB-Mode inactive, Mode1, Mode2, Mode3	Inaktiv:usedtheinternaltimingtableonly Mode1:usethetimingparameterandperformacompleteauto adjustment.(usuallyused) Mode2: use the timing parameter and perform an auto adjustmentwithoutanautomaticimagepositionadjustment. Mode3: use the timing parameter and perform an auto adjustmentwithoutanautomaticfrequencyadjustment.
	H-resolution	100to2000throughkey(+/-)	Horizontalimageresolution(importantparameter)
	V-resolution	100to2000throughkey(+/-)	Verticalimageresolution(importantparameter)
	H-total	100to2500throughkey(+/-)	Wholepixelperline(importantparameter)
	H-Start	0to750throughkey(+/-)	NumberofPixelsfromH-syncstarttoimagestart
	V-Start	0to500throughkey(+/-)	NumberoflinesfromV-syncstarttoimagestart
	Install	<+>press	Activatethefeedtimingparameter
	testpattern	<+>press	Showatestimage
Info	Firmware, Resolution,Timing	–	Showthefirmwareversionandtimingdataofthepresentinput signal

4. TechnicalData

4.1. Displaymodule

Type	ActivecolourTFT-LCD
Diagonalsize	38.1cm(15,0")
Displayarea(WxH)	304,1x228,1mm²
Resolution	1024x768pixels
Pitch	0.273x0.273mm
Colours	262144
Backlight	2xCCFT(**C**old **C**athode **F**luorescent **T**ube)
Brightness(typical)	approx.200cd/m²

4.2. PowerSupply

InputvoltageDC(X7)	10–14VDC
InputvoltageAC(X8)	100–240VAC,50/60Hz
InputvoltageDC(X9)	18–36VDC
PowerconsumptionDC(normal operation)	approx.30W
PowerconsumptionDC(StandBy)	approx.7W

4.3. OperatingConditions

Operatingtemperature	+5to+45°C
Storagetemperature	-25to+60°C
Humidity	Max.95%(noncondensing)

4.4. Protection

Protectionclass-front	IP65
Protectionclass-rear	IP20

4.5. Enclosure

Weight	approx.4.5kg
Enclosurematerial	Aluminium

4.6. InputSignal(Video)

Level	0.7VssRGBanalogat75 Ω
Bandwidth	140MHz(-3dB)
Impedance	75 Ω
Synchronisation	- Sep.Sync.(TTL) - Syncongreen - CompositeSync
Hfrequency	30to75kHz
Vfrequency	50to100Hz

4.7. EUDeclarationofConformityonEMC

Product	LCD-Monitor SCD1597-K	
Testfoundations	EUframeworkguidelines	No.89/336/EWG No.92/031/EWG No.73/23/EWG No.93/68/EWG

Harmonised standards used EN50081-2   Interferenceemissions
(EN55022ClassA)

EN61000-6-2   Interferenceresistance
EN610003-2
EN610003-3

EN60950   Edition11/1997   Safety
ThispieceofequipmentalsofulfilstherequirementsofFCCClassA.

4.8. AdditionalLicensing
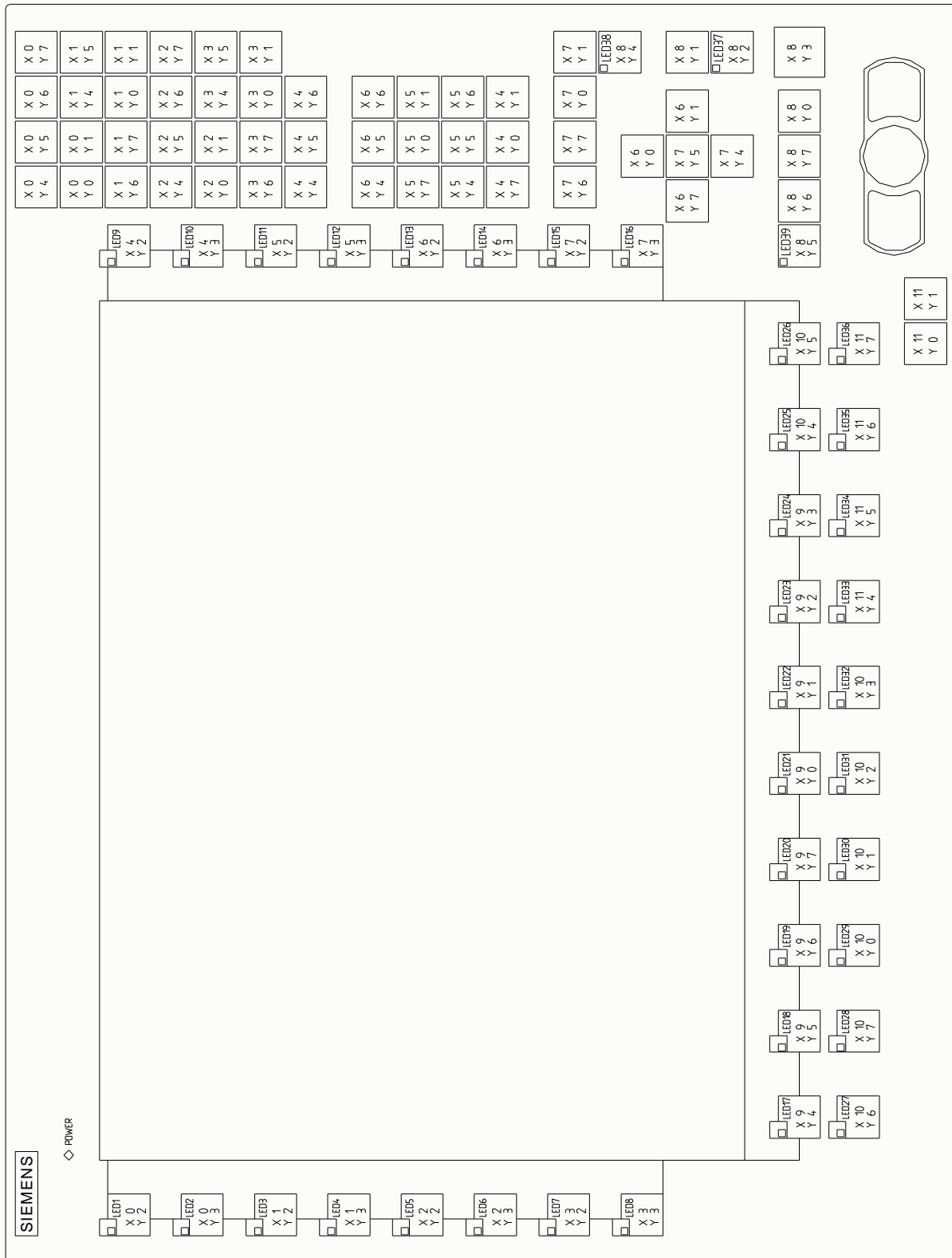
ThispieceofequipmenthasCE,ULandCULlicensing(correspondstoCSA).
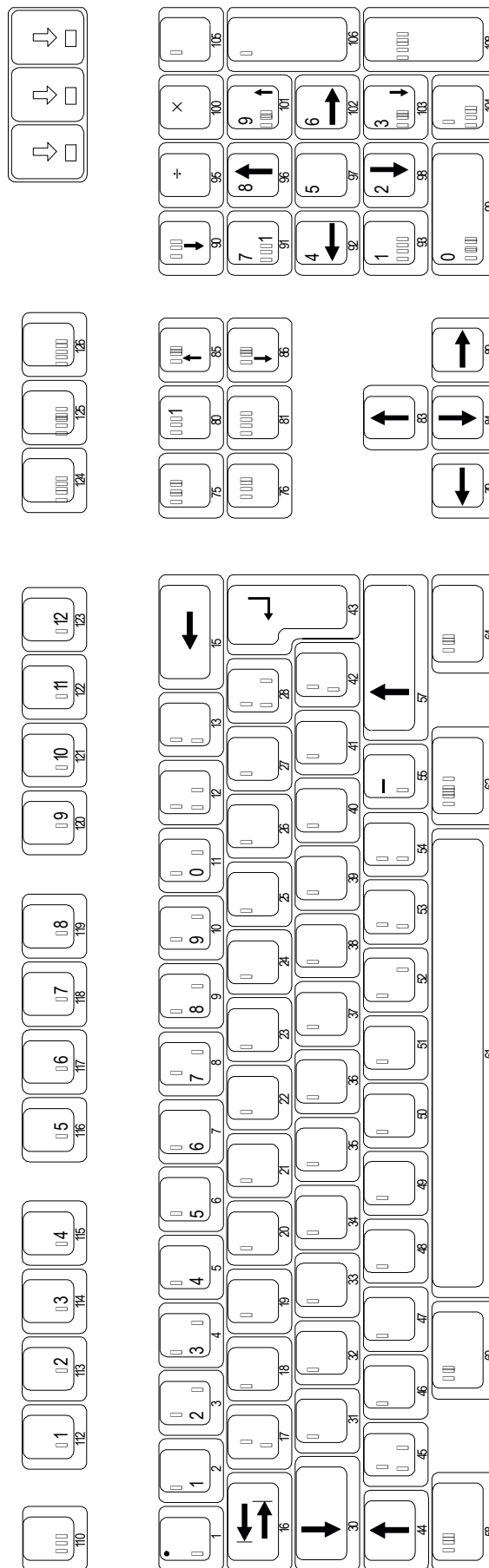
5.Appendix

Fig.5:Keyboardmatrix

Fig.6:MF2keynumbers