

Touch display unit

TAE 151

The installation touch terminal TAE 151 serves the visualizing of automated processes. Process diagnosis, control and the operation and observation of automatic procedures are simplified by this installation touch terminal.

A touch folio serves the input of process data and parameters. Output takes place on a 15 inch XGA TFT color display.



Technical data

Performance data

Display	15 inch TFT Color (6 Bit RGB)
Operating unit	Touch folio
Interfaces	Front side: 3 x USB V1.1 Back side: S-DVI 1 x USB Typ-A V1.1 1 x CAN with 2 connections

Electrical requirements

Supply voltage	Minimum +18 V DC	Maximum +30 V DC
Supply voltage (UL)	+18-30 V DC Class 2	
Current consumption supply voltage	Typically 825 mA (at +24V) (measured without connected external devices)	

(The supply voltage is made available by the IPC via the S-DVI cable, which is obtainable in 0,3m / 2m / 3m / 5m / 10 m / 15m lengths.)

For USA and Canada:

The supply must be limited to:

- a) max. 5 A at voltages from 0-20 V DC, or**
- b) 100 W at voltages from 20-60 V DC**

The limiting component (e.g. transformer, power supply or fuse) must be certified by an NRTL (Nationally Recognized Testing Laboratory).

Pour les États-Unis et le Canada:

L'alimentation doit être limitée à:

- a) max. 5 A pour des tensions de 0-20 V DC, ou**
- b) 100 W pour des tensions de 20-60 V DC**

Le composant imposant la limite (par exemple, transformateur, alimentation électrique ou fusible) doit être certifié par un NRTL (National Recognized Testing Laboratory, par exemple, UL).

Miscellaneous

Hardware version	3.x – 9.x
Article number	12-200-151
Standard	UL (E247993)
Approvals	CE, cUL _{us}

Environmental conditions

Storage temperature		-20 – +60 °C			
Environmental temperature		0 – +50 °C			
Humidity		20 – 95 %, non-condensing			
EMV stability		In accordance with EN 61000-6-2 (Industrial area)			
Shock resistance		EN 60068-2-27		150m/s ²	
Protection type		Switch cabinet mount with USB cover	Switch cabinet mount without USB cover	Carrying arm mount with USB cover	Carrying arm mount without USB cover
	EN 60529	Front: IP 54 Back panel: IP 20, IP 43 with cable channel, if the cable outlet is located below	Front: IP 20 Back panel: IP 20, IP 43 with cable channel, if the cable outlet is located below	Front: IP 54 Back panel: IP 20, IP 43 with cable channel, if the cable outlet is located below	Front: IP 20 Back panel: IP 20, IP 43 with cable channel, if the cable outlet is located below
	NEMA 250 (UL50)	Type 12	Type 1	Type 1	Type 1

Display

Type	15" TFT Color (6 Bit RGB)
Resolution	1024 x 768 Pixel
Color depth	18 Bit (262 144 colors)
Pixel grid	0,297mm x 0,297mm
Active area	304,128mm x 228,096mm
Background lightning (HW version 1.x – 8.x)	2 cold cathode fluorescent tube (CCFT)
Background lightning (from HW version 9.x)	LED
Brightness	Typically 350 cd/m²
Contrast	Typically 700 : 1
Perspective of (HW version 1.x – 8.x)	left and right 70°, above 65°, below 60°
Perspective of (from HW version 9.x)	left and right 80°, above and below 70°

Operating unit

Touch	Analog Resistant Film-Glass Touch Panel
Dimensions	325,5mm x 249,3mm x 2,2mm (L x H x D)
Active surface	304,1mm x 228,1mm
Resolution	12 bit controller (USB)
Data wheel	No
Keys	No
LEDs	No
Signal transmitter	until HW 14.30: yes since HW 15: no
Automatic display detection ¹⁾	Yes

¹⁾ An automatic display detection is only possible if both devices (display unit and IPC) support this functionality. Otherwise the resolution of the display has to be set correctly by hand via BIOS adjustment/OS adjustment.

Tip

Each time the display or IPC is exchanged, the touch function must be recalibrated; the calibration data is stored in the IPC and not in the display unit.

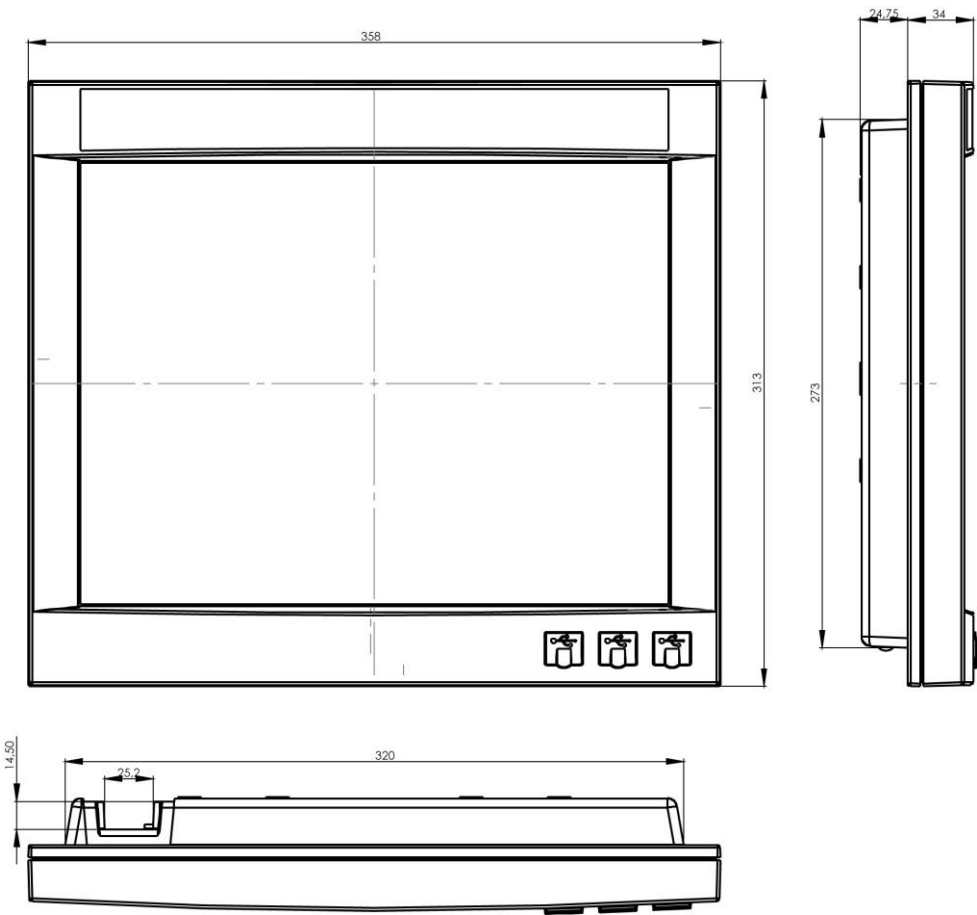
Conseil

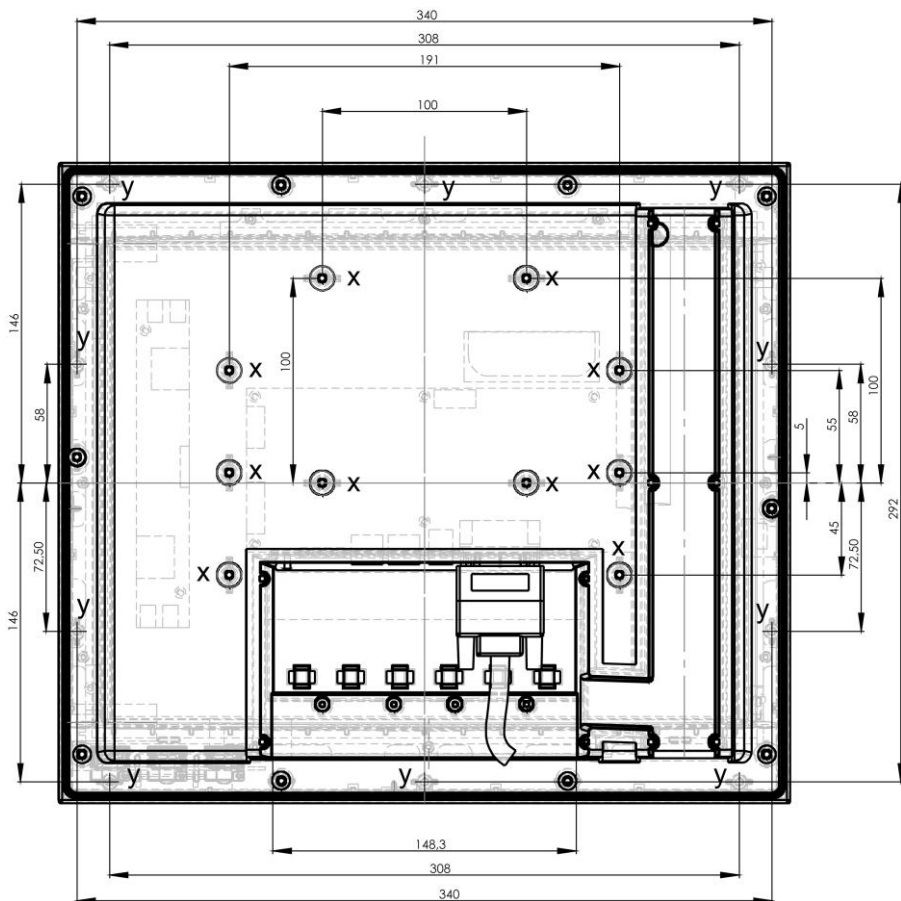
Chaque fois que l'affichage ou IPC sont échangées, la fonction tactile doit être réétalonnée, les données d'étalonnage sont enregistrées dans le IPC et non pas dans l'unité d'affichage.

Terminal

Dimensions	358mm / 313mm / 62mm (L x H x D)
Material	Housing plastic: ASA
Weight	Typically 4,2kg

Mechanical dimensions



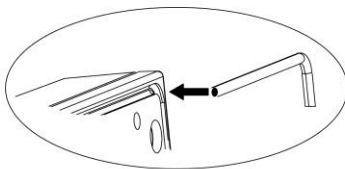


x => Assembling bore holes for jib mounting (10x).

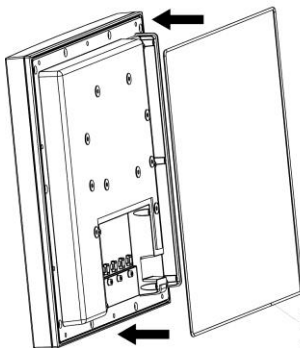
y => Assembling bore holes for switchboard mounting (10x).

The installation kit for the control box assembly (12-209-021) for the plate thickness 1.0 – 3.0 mm are supplied.

Notes / Installation kit switch cabinet installation:



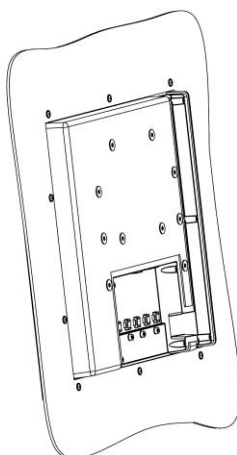
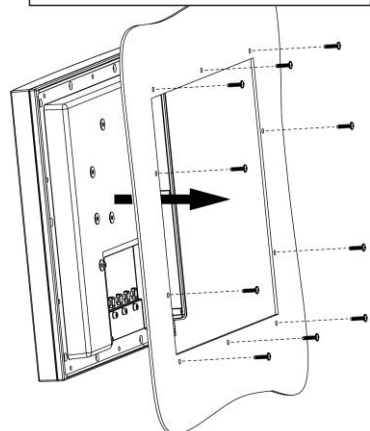
- ① Sponge rubber band should be inserted in the groove provided on the back of the terminal.



Sponge rubber band
Ø3mm (Joint below)

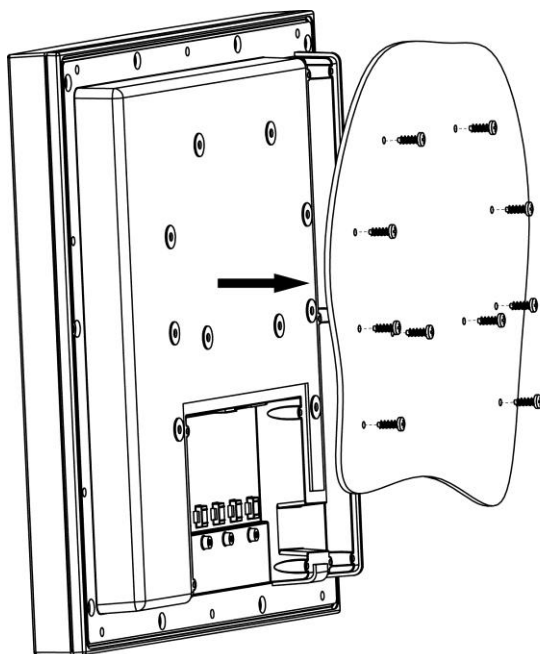
Screw length	Plate thickness	Art. No. Installation kit switch cabinet installation
 16 mm	1,0 - 3,0mm	12-209-021
 18 mm	4,0 - 6,0mm	12-209-022
Caution must be taken that the correct screw length is used!		

- ② Incorporate section with the switch cabinet. Connect the terminal with the supplied screws.

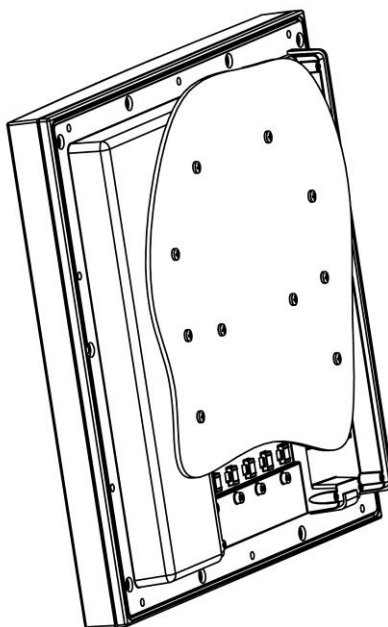


- ③ Completed mounted terminal.

Notes / Installation kit carrying arm:



Screw length	Thickness of plate	Art. No. Installation kit carrying arm
 12mm	1,0 - 3,0mm	12-209-011
 16mm	4,0 - 6,0mm	12-209-012
Caution must be taken that the correct screw length is used!		



Chemical Proof

Plastic housing ASA:

Solvent	Visual Effect
Acetic acid (5%) at 23°C	None
Chrome acid dilution (40%) at 23°C	None
Citric acid dilution (10%) at 23°C	None
Hydrochloric acid (36%) at 23°C	None
Lactic acid (10%) at 23°C	None
Nitric acid (40%) at 23°C	None
Sulfuric acid (38%) at 23°C	None
Sulfuric acid (5%)	None
Ammonia hydroxide dilution (10%) at 23°C	None
Caustic soda (1%) at 23°C	None
Caustic soda (35%) at 23°C	None
Ethyl alcohol at 23°C	None
Isopropyl alcohol at 23°C	None
Methanol at 23°C	None
Iso-Octane at 23°C	None
N-Hexane at 23°C	None
Toluene at 23°C	Yes
Acetone at 23°C	Yes
Diethyl ether at 23°C	Yes
SAE 10W40 motor oil at 23°C	None
Sodium carbonate dilution (20%) at 23°C	None
Sodium chloride dilution (10%) at 23°C	None
Sodium hypochloride dilution (10%) at 23°C	None
Zinc chloride dilution (50%) at 23°C	None
Ethylacetat at 23°C	Yes
Water at 23°C	None

Touch folio

Sovent	Visual effect
Mineral coal tar oil / Toluene	None
Trichlorethylene	None
Acetone	None
Alcohol	None
Benzine	None
Machine oil	None
Glas cleaner	None
Mayonnaise	None
Ketchup	None
Wine	None
Salad oil	None
Vinegar	None
Lipstick	None
Ammonia	None

Interfaces

General

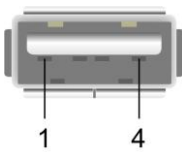
The connection to the IPC is carried out via S-DVI with a special cable with a 26 pole HD-SubD-connector, which also carries the +24V power supply. It is available in lengths from 0,3m to 15m. An additional access of a supply voltage is not necessary. The locking is carried out by knurled thumb screws.

The ongoing CAN-connection e.g. to the keyboard is realized with 8 pole Weidmüller connectors RM3,5mm.

Connectors Front



X5, X6, X7: USB Typ-A V1.1



Pin	Function
1	VCC
2	D0-
3	D0+
4	GND

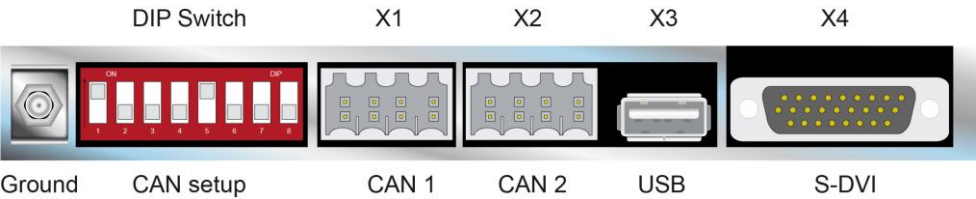
NOTE

X3 (backside) can not be used with X5 (front side) at the same time!

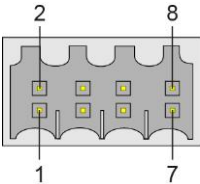
NOTE

X3 (face arrière) ne peut pas être utilisé en même temps que X5 (face avant)!

Connectors Backside

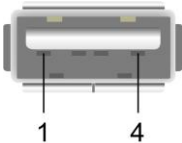


X1, X2: CAN (Weidmüller B2L/B2CF 3,5/8)



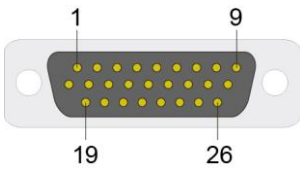
Pin	Function
1	CAN A (LOW)
2	CAN B (HIGH)
3	CAN A (LOW)
4	CAN B (HIGH)
5	GND
6	(+5 V)
7	GND
8	+24 V

X3: USB Type-A V1.1



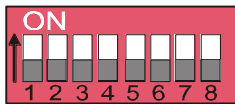
Pin	Function
1	VCC
2	D0-
3	D0+
4	GND

X4 DVI/CAN (26-pol. HD-DSUB) (male)



Pin	Function	Pin	Function
1	DVI1+	14	shield
2	DVI1-	15	shield
3	DVI2+	16	shield
4	DVI2-	17	shield
5	DVI3+	18	shield
6	DVI3-	19	+24V
7	DVIC+	20	+24V
8	DVIC-	21	(USB) Ext. In+
9	reserved	22	(USB) Ext. In-
10	GND	23	(USB) Ext. Out+
11	GND	24	(USB) Ext. Out-
12	shield	25	CAN A
13	shield	26	CAN B

DIP SWITCH CAN BUS Setup (8 times)



Switch 1 – 4	CAN station 0 – 15
Switch 5 – 6	Baud rate 0 – 3
Switch 7	PS/2 – Master/Slave
Switch 8	CAN termination 150R

CAN bus setup

In this section it is explained how the CAN bus is correctly configured. For this purpose the following parameters must be set: station number and transmission rate.

CAN Bus station number

Each CAN bus station has its own station number (adjustable from 0 to 15). Under this station number the other bus elements can fetch data from the station and send data to it. It is possible to install up to 16 elements on one CAN bus system. Please note that each station number in the CAN bus system may be allocated only once!

SW 1	SW 2	SW 3	SW 4	Station
0	0	0	0	0
1	0	0	0	1
0	1	0	0	2
1	1	0	0	3
0	0	1	0	4
1	0	1	0	5
0	1	1	0	6
1	1	1	0	7
0	0	0	1	8
1	0	0	1	9
0	1	0	1	10
1	1	0	1	11
0	0	1	1	12
1	0	1	1	13
0	1	1	1	14
1	1	1	1	15

CAN Bus transmission rate

It is possible to set different transmission rates (baud rates) on the CAN bus. The greater the length of the bus line, the smaller the transmission rate must be selected.

SW 5	SW 6	Wert	Baud rate	maximal length
0	0	0	615 kBit / s	60 m
1	0	1	500 kBit / s	80 m
0	1	2	250 kBit / s	160 m
1	1	3	125 kBit / s	320 m

These values apply to the following cable: 120Ω, twisted Pair.

Note: For the CAN bus protocol counts: 1 kBit/s = 1 kBaud

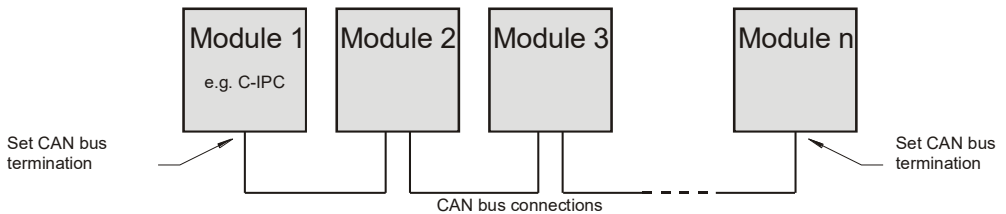
SW 7	Baud rate
0	PS/2 = SLAVE
1	PS/2 = MASTER

CAN bus PS/2-Master

Because the PS/2 signals are also transferred over the CAN bus, a PS/2-Master must be defined, which answers and controls queries from the CPU. There can be only one PS/2-Master assigned in the system. The selection is made by setting SW7.

CAN Bus termination

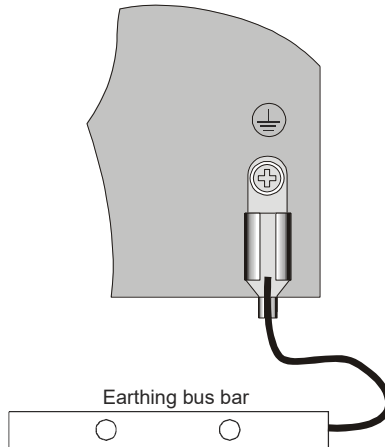
On both terminal devices in a CAN bus system the line must be terminated. This is necessary for preventing transmission errors occurring through reflections in the circuit.



In the terminal it is already built in a switchable charge termination. If the terminal is an end device, there is to set the SW8 on the DIP-SWITCH.

Grounding

Establish a connection to the earthing bus bar via the flat connection on the backside to ensure an error-free functionality of the display unit.



USB Interface Connection

The terminal has a USB interface connection that can be used to connect various USB devices (keyboard, mouse, storage media, hubs, etc.) in LASAL. Using a hub, several USB devices can be connected that are then fully functional in LASAL.

The following restriction applies for the BIOS setup:

The BIOS setup is only accessible if the keyboard is connected directly to the USB socket.
Using a USB hub can cause errors in the BIOS setup!

It should be noted that many of the USB devices on the market do not comply with USB specifications; this can lead to device malfunctions. It is also possible that these devices will not be detected at the USB port or function correctly. Therefore, it is recommended that every USB stick be tested before actual use.

La configuration du BIOS est accessible uniquement si le clavier est connecté directement à la prise USB. L'utilisation d'un concentrateur USB peut provoquer des erreurs dans la configuration du BIOS!

Il faut souligner que la plupart des périphériques USB sur le marché ne sont pas conformes aux spécifications USB, ce qui peut entraîner des dysfonctionnements de l'appareil. Il est également possible que ces dispositifs ne seront pas détectés par le port USB ou qu'ils ne fonctionnent pas correctement. Par conséquent, il est recommandé que chaque clé USB soit testée avant l'utilisation sur l'automate.

Shielding

The wiring of CAN bus and S-DVI should be made as shielded wires. Furthermore twisted pair wires should be used for the CAN bus. The assembled S-DVI cable is available in different lengths at SIGMATEK.

The shielding for the CAN cable must be connected over a large surface and with low resistance directly before the terminal (earth clamp) or connected to earth over a blade terminal. The shielding for the S-DVI cable is connected to earth over the DSUB (prerequisite: a blade terminal on the back of the terminal must be connected to the earth bus).

ESD protection

USB devices (keyboard, mouse...) are typically not wired with shielded lines. With ESD surges, these devices are disrupted and possibly no longer function.

Before any device is connected or disconnected from the terminal, the potential should be dissipated over the earth bus (touch control box or earth bus) so that electrostatic loads (through clothing or shoes) can be drained.

Available S-DVI cable

Length	Order number
0,3m	05-950-003
2,0m	05-950-020
3,0m	05-950-030
5,0m	05-950-050
10,0m	05-950-100
15,0m	05-950-150

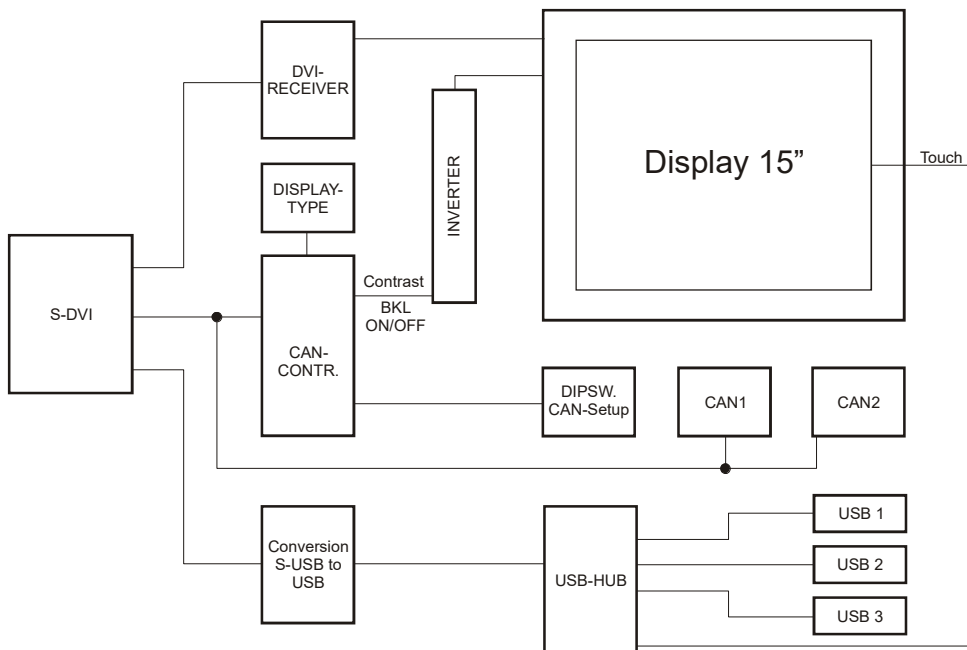
TIP:

Connecting the S-DVI cable under voltage can damage the S-DVI interface; it is not hot-plug capable.

Conseil:

Raccordement du câble S-DVI sous tension peut endommager l'interface S-DVI, l'interface ne supporte pas connexion à la volée.

Block diagram



Cleaning the Touch Screen

CAUTION!

Before cleaning the touch screen, the terminal must first be turned off to avoid unintentionally triggering commands or functions!

ATTENTION!

Avant de nettoyer l'écran tactile, le terminal doit d'abord être éteint afin d'éviter un déclenchement involontaire des commandes!

The terminal's touch screen can only be cleaned with a soft, damp cloth. To dampen the cloth, a screen cleaning solution such as anti static foam, water with a mild detergent or alcohol should be used. The cleaning solution should be sprayed onto the cloth and not directly on the terminal. The cleaning solution should not be allowed to reach the terminal electronics, for example, through the ventilation slots.

No erosive cleaning solutions, chemicals, abrasive cleansers or hard objects that can scratch or damage the touch screen may be used.

If the terminal comes in contact with toxic or erosive chemicals, carefully clean the terminal immediately to prevent acid damage.

To ensure the optimal function of the terminal, the terminal should be cleaned regularly!

To extend the lifespan of the touch screen as much as possible, using the fingers to operate the terminal is recommended.

Pour garantir le fonctionnement optimal du terminal, le terminal doit être nettoyé régulièrement!

Pour prolonger la durée de vie de l'écran tactile on recommande d'utiliser les doigts pour l'opérer.

