



CCV InSync CCV InSync C

System Manual

let's make
payment
happen





Table of contents

1. Purpose	5
2. Scope of application	5
3. Terms and abbreviations	5
4. CE Declaration of Conformity	5
5. General	6
5.1. Safety Information	6
5.2. Important information for use	7
5.2.1. Important duties to cooperate	7
5.2.2. Cleaning	7
5.2.3. Warranty	8
5.3. System description	8
5.3.1. CCV InSync	8
5.3.2. CCV InSync C	8
5.4. Payment methods	9
5.5. User guidance	9
5.6. General technical information	9
5.6.1. Vending machine and/or cash register interfaces	9
5.6.2. Display	9
5.6.3. Receipt printer	10
5.6.4. IP/IK protection class	10
5.6.5. Status LEDs	10
5.6.6. Card slot for store card or SAM	10
5.6.7. Communication	11
5.6.8. Interfaces	11
5.6.9. Protocols	11
5.6.10. Software	12
5.7. Service	12
5.7.1. Integration into cash register or vending machine systems	12
5.7.2. Independent commissioning	12
5.7.3. Software update	12
5.7.4. Tools	13
5.7.5. Status query	14

5.7.6.	TMS target	14
5.7.7.	SIM card	15
5.7.8.	Terminal Security State	15
5.8.	Extensions	15
6.	Specifications / dimensions	16
6.1.	Figures and dimensions	16
6.2.	Installation space	17
6.3.	Installation information	17
6.4.	Interfaces	17
6.4.1.	Power supply	17
6.4.2.	POS (ZVT cash register interface)	18
6.4.3.	COM	19
6.4.4.	MDB	19
6.4.5.	LAN	19
6.4.6.	PWR/Executive (voltage supply)	19
6.4.7.	USB OTG	20
6.4.8.	USB host	20
6.4.9.	Digital I/O	21
6.4.10.	Internal circuit diagram and information on Digital I/O	21
6.4.11.	Service	22
6.4.12.	Modem (optional)	22
6.5.	Specifications	23
6.6.	Cash register protocols	25
6.6.1.	ZVT specification	25
6.6.2.	O.P.I.	25
6.6.3.	Executive (Protocol A)	25
6.6.4.	MDB	25
7.	Failure statistics, characteristic figures	25

1. Purpose

These specifications shall facilitate the integration of the self-service terminal CCV InSync into a vending machine

2. Scope of application

Customers, integrators, network operators, (CCV- EW, SA, PM)

3. Terms and abbreviations



BMP	Bitmap
DK	Deutsche Kreditwirtschaft (German Banking Industry Committee) (Previously ZKA; http://www.die-deutsche-kreditwirtschaft.de/)
EMC	Electromagnetic compatibility
EW	Development
Executive	Protocol A
CCV InSync	3in1 Terminal for installation into vending machines indoors and outdoors.
CCV InSync C	Contactless Terminal for installation into vending machines indoors and outdoors.
O.P.I.	Open Payment Initiative
PM	Product Management
SA	Sales
TKS	Terminal Configuration Server (server for terminal updates)
TMS	Terminal Management Server
TS3	Terminal Supervisor 3 (administration tool for use by integrator or service company)
WA	Vending machine
ZKA	Zentraler Kreditausschuss (Central Credit Committee, see DK)
ZVT	ZVT cash register interface
nWAKE	negative wakeup signal (bidirectionally (input & output): Every device connected to the MDB can low supply the line to activate other devices.
MDB	Multi Drop Bus

4. CE Declaration of Conformity

Please find CE Declaration Of Conformity at CCV download bar:
<https://www.ccv.eu/de/service-support/businesspartner/download-bar/>

5. General

5.1. Safety Information

- The system handbook should be studied before integrating the product into vending machines, as this contains important information regarding installation.
- Damage resulting from not following the guidelines or from incorrect operation will void the guarantee. No liability will be accepted for any consequential damage.
- No liability will be accepted for damage or injury resulting from incorrect operation or from failure to observe the safety guidelines.
- Integration of the product may only be carried out of qualified by electrical specialists (i.e. electrician), according to the relevant regulations (i.e. VDE, CE).
- If you have no specialist knowledge regarding the installation, do not carry this out yourself. Installation should only be carried out by a qualified specialist.
-  Never remove the power supply or the card-reader from terminal, whilst this is performing a payment or other active functions (i.e. display indication „please wait...“). Please contact your network provider if such a message appears for a longer period.
- Change the card-reader only if the power supply is disconnected.
- The terminal is certified for cashless payments in various countries, dependent on the network provider / acquirer. Operation outside of Germany is to be agreed in consultation with the relevant trade partner.
- Never try to open the terminal. Unauthorized opening leads to deletion of all secure data, activating the fraud function and setting the terminal out of order. This also voids the warranty.
- Never submerge the terminal in water, throw into fire or expose to high humidity. The device should be cleaned with a soft damp cloth. Do not use chemical cleaners.
- Repairs may only be performed by authorized agents of CCV.
- Do not expose the device to temperatures outside the approved limits.
- Keep sufficient distance to mobile phones and wireless devices because these may cause interference. This is not necessary for devices that are able to perform a contactless transaction (e.g. mobile with NFC interface).
- Please obtain regular information about available and/or necessary updates or product extensions (Hotline of your network operator).
- Following software updates, telephone installation changes, or other changes to the terminal the complete payment operation including closing should be tested.
- Damage to or removal of the identification labels and seals on the equipment will void your warranty.
-  One mounting screw of the terminal must be connected with the grounding of the local electrical system. The grounding must not be connected to a floating ground or a phase (see chapter Installation Instructions).

5.2. Important information for use

5.2.1. Important duties to cooperate



- The installation instructions as described in the system manual must be followed, particularly in view of mechanical, electrical and operational guidelines (ESD-electrical grounding).
- Check the integrity of the CCV InSync. Check if the CCV InSync shows damage and manipulation and the seal is unbroken. If you detect damage, tampering or a broken seal do not operate the CCV InSync. Contact the support at proffline@de.ccv.eu.
- Important! Please ensure that the terminal is connected, configured and tested so as to execute updates via remote maintenance server TMS. Please also ensure possibility that updates can be initiated via the vending machine interface or the network-provider. In installation lacking a network connection where remote maintenance is not possible, it must be ensured that the integrator carries out on-site updates using Terminal Supervisor 3 or USB and that additional costs will occur.
- It must be ensured that software tools (Terminal Supervisor 3, Updatempp, etc.) are regularly updated. The current versions are available from the CCV download server. (<https://download.ccv-deutschland.de>)
- CCV points out that regular operational and security relevant updates could be required. Not carrying out these updates can lead to loss of approval and/or malfunction. CCV notifies of necessary updates in an appropriate time of period via release-notes. The provision of updates during the guarantee period is free. CCV is not liable for malfunctions or damage caused by lack of maintenance updates or maintenance errors due to the customer.
- CCV supports you during the initial installation of the product into vending- or other machine, and recommends a joint check of your vending-machine/terminal integration on-site prior to piloting, so that typical problems can be eliminated in advance. Please contact your reseller or CCV directly for details of this.
- Following expiry of the warranty period it is possible to purchase software-updates or a part of a previously contracted software maintenance contract. Necessary updates are documented in the release-notes. Software-updates are generally only available for a fee. Further details are available in consultation with your sales partner.

5.2.2. Cleaning

Clean the housing of the terminal with a moist cloth or an anti-static cloth. Do not use chemical cleaning agents. Never use cleaner's benzine, paint thinner or other solvents, otherwise the housing could deform and discolour. Clean the card reader regularly with a cleaning card to prevent reading errors. The cleaning intervals depend on the frequency of use and the individual environmental conditions. Do not use chemical cleaning agents.

Use the intervals stated below as a guideline:

- Indoor devices: 1 x per week
- Outdoor devices: 1 x per day

5.2.3. Warranty

Caution: Never try to repair a terminal. Opening the terminal voids the warranty claim. The device will become unusable and must be replaced.

In case of damages, please contact your service provider.

5.3. System description

The CCV InSync Terminal is a customized payment system for vending machines, power charging towers, self-service systems and kiosk terminals where it is used as a compact and full-featured terminal. The device with its compact design for integration requires a smaller installation cut and significantly less installation space as previous devices but offers the same functionality.

The CCV InSync Terminal consists of a high-quality colour display, contactless, chip and magnet strip reader, LED displays, three proximity sensors and a Bluetooth Low Energy module. Apart from the integrated LAN connection other communication connections such as LTE or GPRS can be realised. The device does not need to be removed for that purpose.

Furthermore, no further components (apart from maybe a receipt printer) are required on the vending machine. The integration effort into a self-service system is minimum.

The stylish CCV InSync Terminal with its bicoloured front, a high-resolution graphic TFT display and small installation dimensions is based on an advanced hardware platform fulfilling highest quality standards and offering a high level of security due to its construction. It is resistant to vandalism, weather-resistant and can be used in a large temperature range. The CCV InSync Terminal is thus suitable for both indoor and outdoor use. It requires the same installation space and the same fixing points as the CCV COR series. Therefore, it can be easily installed everywhere by the integrators.

Due to its advanced hardware platform with extensive memory space, the terminals offer not only multiple opportunities for use but it can always be updated by a software upgrade on site and expanded with new functions and applications.

The smart software update concept offers maximum operation safety. Established service concepts (such as Terminal Supervisor 3 and Terminal Management System TMS) have been adopted into this terminal as well. Therefore, it offers maximum security of investment.

5.3.1. CCV InSync

3-in-1 Terminal:

- EMV chip contacted
- EMV chip contactless
- Magstripe

5.3.2. CCV InSync C

Contactless only Terminal:

- No EMV chip contacted (ICC slot is closed by front housing)
- EMV chip contactless
- No Magstripe (MSR slot is closed by front housing)

5.4. Payment methods

With the CCV InSync Terminal and depending on the network operation, the following payment methods can be carried out:

- girocard, girocard contactless
- Mastercard, Mastercard contactless
- VISA, VISA contactless
- American Express, American Express contactless
- Maestro, Maestro contactless
- V PAY, V PAY contactless
- Apple Pay, Google Pay, Samsung Pay
- SEPA ELV (direct debit system)
- Other credit cards (e.g. diners, JCB, UnionPay)
- Station and fuel cards
- Various customer-specific cards, can be extended via card profiles
- GeldKarte
- girogo

5.5. User guidance

Users of the CCV InSync find it easy to use the terminal – thanks to the intuitive menu navigation and the texts on the big graphic display. The CCV InSync can be managed conveniently via the TS3, available free of charge.

The terminal can be installed as an unattended self-service system terminal without PIN entry.

5.6. General technical information

5.6.1. Vending machine and/or cash register interfaces

The cash register connection is realised via a LAN, MDB, Executive or RS-232 interface.

- LAN: Ethernet 10Base-T and 100Base-T, full duplex.
- RS232 interface: a maximum transfer speed of up to 115,200 Baud and hardware handshake are possible.
- MDB (Multi Drop Bus): 9600 Baud interface format for vending machines.
- Executive (Protocol A): Interface format for vending machines, comes in later version

The O.P.I. protocol is additionally available for product and ticket vending machines.

The MDB interface is available for the hardware and software. It supports version 4.2.

The terminal can be connected via the RS232 interface via different transfer speeds (19200, 38400 and 115,200 Baud) to the vending machine or POS.

5.6.2. Display

2.4" TFT colour display with 320*240 pixels (QVGA), graphics with adjustable, high contrast and big viewing angle. It offers a uniform good display, even at low temperatures and sunlight.

5.6.3. Receipt printer

The receipt for payment is output on the printer integrated in the vending machine. It is controlled via the vending machine control.

The vending machine receives the data as completed receipt from the CCV InSync or as data message with all relevant data to create an individual receipt layout (sequence depend on the cash register protocol).

5.6.4. IP/IK protection class

The IP/ IK protection classes for the CCV InSync are listed below.

Front	Back
InSync IP44 / IK08 InSync C IP65 / IK 08	IP32 IP32

5.6.5. Status LEDs

On the back of the CCV InSync, there are two LEDs “PWR” (Power) and “SYS” (System) which have the following meaning:

Status	PWR (green)	SYS (red, controllable)
Booting	permanently lit	permanently lit
Terminal ready, waits for login	permanently lit	2x flashing slowly, 2x flashing quickly
Terminal ready, login successful	permanently lit	off
Start-up blocked	permanently lit	1x flashing slowly, 2x flashing quickly
Initialisation blocked / diagnosis blocked	permanently lit	1x flashing slowly, 3x flashing quickly
Fraud triggered	permanently lit	flashing quickly
Not identifiable / other error	permanently lit	flashing slowly

5.6.6. Card slot for store card or SAM

The CCV InSync supports a store card or SAM (format ID-000). The slot is on the back. The store card is changed as followed:

- Carry out a closeout to submit all GeldKarte transactions
- Switch off the device by disconnecting it from the supply voltage
- Replace the store card
- Restart the terminal

5.6.7. Communication

The terminal is connected via an integrated LAN interface for online payment transactions and for service purposes. Alternatively, it is possible to integrate an external LTE/GPRS modem via the serial interface.

The terminals support the following types of communication to the network operator host:

- LAN
- Further protocols on request

5.6.8. Interfaces

For a versatile use, the terminal offers a number of usable interfaces.

The devices provide the following interfaces to connect external hardware:

- 2 RS-232 interfaces:
 1. POS: Connection of terminal and vending machine or cash register.
 2. COM: Connection of terminal to external communication hardware such as modems
- MDB (Multi Drop Bus): prepares for connection of vending machines with MDB protocol.
- Executive (Protocol A): Connection of terminal and vending machine or cash register.
- LAN interface: Ethernet, 10/100MBit, Auto MDIX.
Communication protocol TCP/IP (other possible on request) e.g. for service PC or host connection.
- USB OTG: (High Speed 480MBit/s and Full Speed 12MBit/s) for host and device connection (e.g. updates and configuration). USB Micro-B.
- USB host: (Full Speed 12MBit/s for connection of e.g. USB-2/3/4G modems or other connections). USB Type A.
- I/O: digital inputs/outputs
- Service: Connection for diagnostic purposes

Note: Further information about the interfaces and their connector attribution are listed in the chapter 6 of this specification.

5.6.9. Protocols

The following protocols are serially available:

- a) interface protocols
 - ZVT cash register protocol
 - Executive (Protocol A) comes in later version
 - MDB (Multiple Drop Bus)
 - O.P.I.
 - Protocol for Terminal Supervisor 3 and TMS
 - TCP/IP
- b) Host protocols
 - POSeidon
 - CCV Pay

5.6.10. Software

The CCV InSync Terminal uses a Linux operating system with our company's SECpos EVO software.

5.7. Service

5.7.1. Integration into cash register or vending machine systems

As support for the adaptation or integration to or into the cash register, a development toolkit with the following components is available:

ZVT:

- Detailed documentation of the ZVT protocol (download via <https://www.terminalhersteller.de>).

MDB:

- Detailed documentation of the MDB protocol (download via https://www.ccv.eu/wp-content/uploads/2018/05/mdb_interface_specification.pdf)

Protocol A (Executive):

- The protocol is known under the name Executive and was developed in the 1980s by Mars Electronics International.

5.7.2. Independent commissioning

The terminals are supplied with a basic configuration. Due to the configuration created on agreement with the network operator, the terminal can be commissioned automatically by entering the terminal ID.

For specific connections (e.g. LAN with VPN), the required setting can also be made manually.

Note: The degree of the independent commissioning depends on the predetermined basic configuration of the network operator.

5.7.3. Software update

The terminals offer a complete, reliable software download without requiring a technician on site. Via the Terminal Management System (TMS), automatic software updates can be carried out.

This makes it very easy to expand devices already installed with new functions/applications and keep the entire inventory always on the same unified, latest version.

Updating the software can be done via one of the following procedures:

- **TMS:** Conveniently via online connection via TMS. The host can determine the automatic selection of the terminal on the TMS per TKM command at any time. It is not necessary for the retailer to carry out any steps in the procedure.
- **TS3:** With the free service software Terminal Supervisor 3 (TS3) via the service interface of the device – connected directly per LAN or USB to a PC or notebook. Please observe that the data transfer can be interrupted in a USB connection. The data transfer can be continued after restarting the CCV InSync. An update via LAN is recommended.

- **Updatempp**: In contrast to TS3 no graphical user interface. Works with scripts through the ECR cash register.



Please observe that the terminal must not be disconnected from the power supply while updating the software. Otherwise, the update might be activated only in part and the device must be sent to CCV.

5.7.4. Tools

For Maintenance and service the following tools and options are available:

1. TS3

- **Single access to one terminal** (direct connection)
- Local access via LAN or USB
- Remote access via remote control if the terminal has access to IP and port
- For details please see TS3 manual
- TMS maintenance call can be triggered via remote control

2. Updatempp

- **Single access to one terminal**
- Local access via LAN or USB
- Remote access with scripts running on ECR cash register
- In contrast to TS3 no graphical user interface. Works with scripts through the ECR cash register.

3. TMS

- **Central, automated maintenance system for the entire field inventory**
- **Attention! Terminal software** at least **02.0057.xx.xx or higher is required.** Current software versions automatically and cyclically contact the TMS (so-called “heartbeatcall”). Older software versions must be updated accordingly to a current version – this means that there is a cyclical (standard setting every 7 days) heartbeatcall to the TMS.
- **Attention!** For maintainability, the cash register must regularly send status queries (status polls) to the terminal. This is the only way for the terminal to briefly receive master rights and to establish a connection to the maintenance system.
- Works in separate clients
- Simple and intuitive operation via browser
- Features: software updates, configuration changes, reading logs, loading keys and managing the terminal inventory
- For details please see TMS manual

4. ECR cash register

- ZVT, O.P.I. and MDB

- Limited options for transporting changes via the ECR cash register interface
- TMS maintenance call can be triggered via the cash register interface
- **Attention!** For maintainability, the cash register must regularly send status queries (status polls) to the terminal. This is the only way for the terminal to briefly receive master rights and to establish a connection to the maintenance system.
- For details please see CCV specification of supported commands

5. Terminal menu

- Limited options for changing settings via the terminal menu
- Rights & rolls – cashier, manager and technician
- TMS maintenance call can be triggered by menu (Reboot -->press “Info“ button when „menu“ is displayed at the bottom left -->enter PIN -->Service -->maintenance call
- For details please see menu tree

6. Network operator

- Configuration of the terminal using configuration diagnosis and EMV diagnostics (controls the behaviour of the terminal such as possible payment methods)
- 4 digit host version number is transferred to network operation during initialization and controls the subsequent processes such as extended diagnosis and EMV diagnosis

We recommend setting software updates or configuration changes via a TMS job. Its easy and effective. The processing takes place via the automated heartbeat call, so that no extra trigger is required for the maintenance call.

5.7.5. Status query

Please ensure on the part of the cash register that a status poll is carried out regularly. This is the only way for the terminal to briefly receive master rights and to establish a connection to the maintenance system.

5.7.6. TMS target



Attention! For the maintainability of the terminal, it is also **essential** to ensure that the **TMS target can be reached** (firewall, VPN...). The TMS target is:

- IP 80.72.137.22
- Port 1260 (without TLS encryption)/ 1270 (with TLS encryption)

Is this not the case, no updates can be carried out remotely via the TMS and laborious and expensive on-site operation may be required. **If the TMS maintenance system cannot be reached, CCV assumes no liability for any costs incurred.**

5.7.7. SIM card

If the data connection is established via a corresponding cellular network using a SIM card, it must be ensured that a suitable cost model is selected. SIM cards with a small MB volume are not suitable here, as approx. 25MB data are transferred during a software update.

5.7.8. Terminal Security State

The 4 digit hexa-decimal TSS is displayed via the TS3 in the display of the CCV InSync during booting. The first two digits of the terminal security state identify the concerned component; the last two digits represent the state of this component.

For a terminal ready to operate, the TSS displays 0X0000. This figure lists the individual components and their states. The table below lists the states and the actions the technician needs to carry out.

Terminal Security State	Action
0x0000 → Terminal ready to operate	No action required
0x0111 → Frauds present in terminal	Terminal must be replaced
0x0112 → No key present in the terminal	Terminal must be replaced
0x0114 → Terminal blocked	Terminal must be replaced

5.8. Extensions

The advanced hardware platform of the terminal offers several extension opportunities and thus new possibilities of use.

The optional extensions which can be offered include:

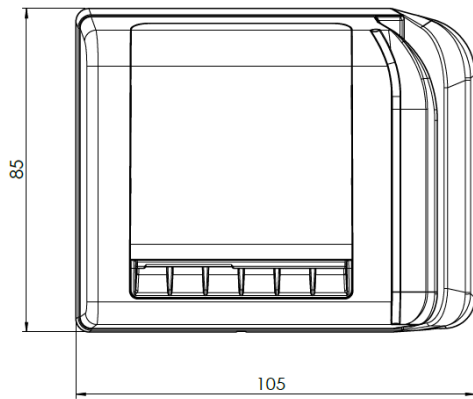
- New payment methods
- Customer cards (magnet strip)
- Customer cards (chip or contactless)
- Bonus card applications
- Contactless applications
- BLE communication

Just contact us so that we can review the implementation of your planned project.

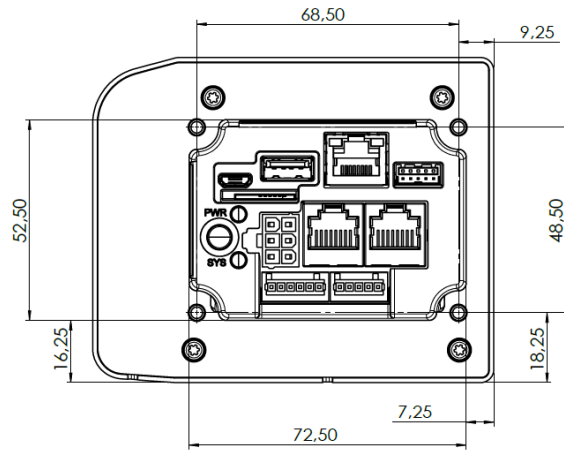
6. Specifications / dimensions

6.1. Figures and dimensions

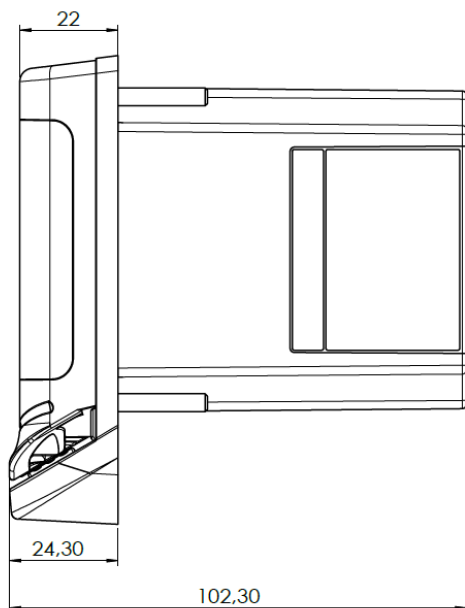
front view



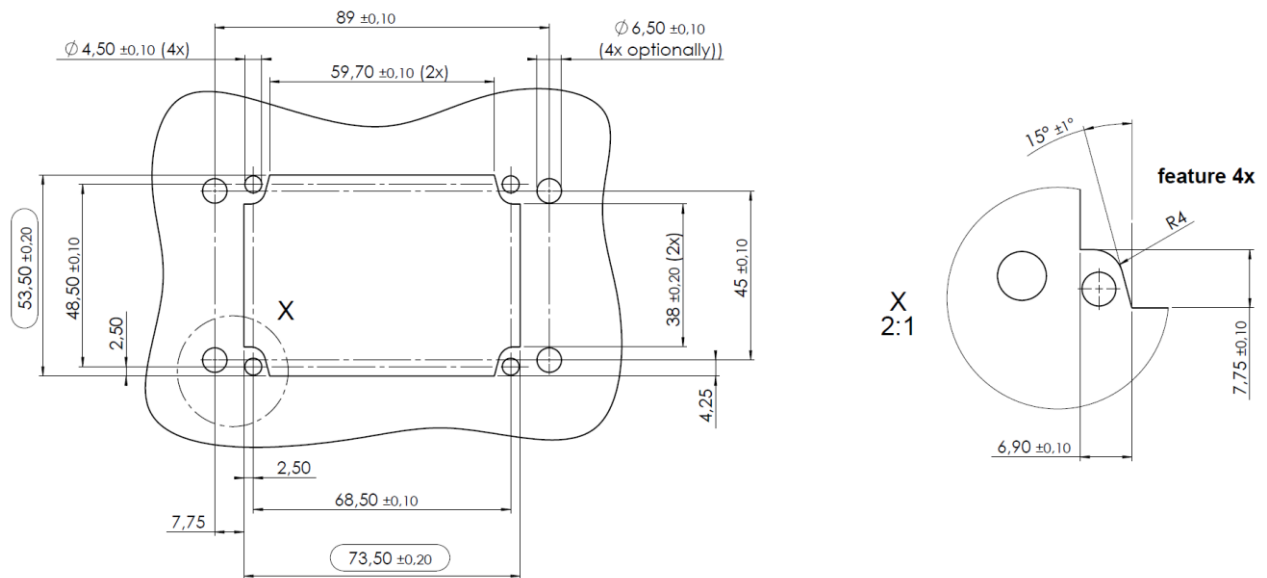
rear view



side view



6.2. Installation space



6.3. Installation information

Complete front tightness (IP-65) can only be reached when the terminal is installed correctly. For this purpose, the terminals must be screwed in on the four fixing point with the specific tightening torque (screw connection to the vending machine front panel):

- **0.8 Nm +/- 0.2 Nm**
- The nuts must be secured with locking varnish.
- The terminals must be earthed via a fixing screw (cross-section of the earth connection min. 2.5 mm²)

6.4. Interfaces

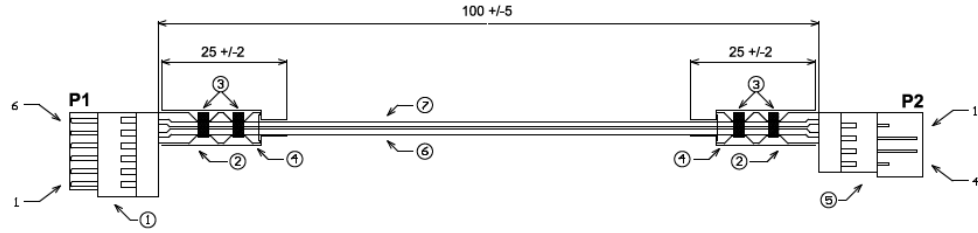
Note

The interfaces listed below do not feature short-circuit strength!

6.4.1. Power supply

The power supply is carried out by a 6pin WAGO plug.

For a test environment you can use the power supply (with 4pin WAGO plug) und adapter cable (4pin to 6pin plug). You can order this set with part number 03202-91.



WIRING

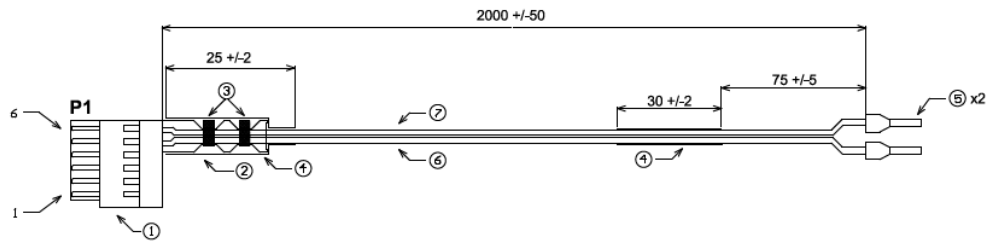
P1		P2
1		
2		
3		4
4		3
5	black - GND	2
6	red - Power	1

all dimensions are in [mm]

NO	DESCRIPTION
8	
7	Isolated wire 0.5qmm, PVC red, diameter max. 2.2mm
6	Isolated wire 0.5qmm, PVC black, diameter max. 2.2mm
5	Male connector with CAGE-CLAMP, WAGO 733-204
4	Shrink tube, black
3	Cable retractor 2.5 mm width
2	Strain-relief, WAGO 734-127
1	Female connector with CAGE-CLAMP, WAGO 733-106

Adapter cable WAGO 4pin to WAGO 6pin, 100mm

For a productive environment you have to use the terminal with a central power supply of your machine. You can order a cable for that operation with part number 03492-91.



WIRING

P1	
1	
2	
3	
4	
5	black - GND
6	red - Power

all dimensions are in [mm]

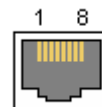
NO	DESCRIPTION
8	
7	Isolated wire 0.5qmm, PVC red, diameter max. 2.2mm
6	Isolated wire 0.5qmm, PVC black, diameter max. 2.2mm
5	Wire end ferrule, 0.34 qmm, color turquoise (DIN 46228) two items
4	Shrink tube, black
3	Cable retractor 2.5 mm width
2	Strain-relief, WAGO 734-127
1	Female connector with CAGE-CLAMP, WAGO 733-106

adapter cable two wires to 6pin, 2000mm

6.4.2. POS (ZVT cash register interface)

RJ45 8-pin, shielded;

Pin	Signal
1	V _{In} (Power-Input; 7VDC to 45VDC)
2	Signal GND
3	TXD (Out)

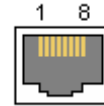


4	RXD (In)
5	RTS (In)
6	CTS (Out)
7	MDB_WAKE
8	Power GND

6.4.3. COM

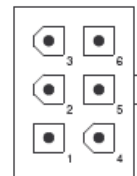
RJ45 8-pin, shielded

Pin	Signal
1	V _{Out} (switched; 7VDC to 45VDC)
2	RXD (In)
3	TXD (Out)
4	MDB_WAKE
5	CTS (Out)
6	RTS (In)
7	Signal GDN
8	Power GND



6.4.4. MDB

Pin	Signal
1	MDB PWR IN
2	MDB PWR GND
3	MDB-WakeUp
4	MDB-Master Receive
5	MDB-Master Transmit
6	MDB-Com Common

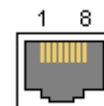


6.4.5. LAN

Voltage supply for the CCV InSync must not be fed via LAN.

RJ45 8-pin, CAT5

Pin	Signal
1	TX+
2	TX-
3	RX+
4	
5	
6	RX-
7	
8	

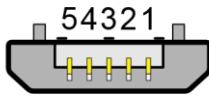


6.4.6. PWR/Executive (voltage supply)

Pin	Signal
1	EXE-Master Rx
2	EXE-Master Rx
3	EXE-Master Tx
4	EXE-Master Tx
5	EXE-PWR Neutral
6	EXE-PWR Live

6.4.7. USB OTG

USB 2.0 OTG (Host/Device) (High Speed 480MBit/s and Full Speed 12MBit/s):
Micro-USB-B; straight connector.



Micro-B

Pin	Name	Colour	Signal
1	VCC	red	+5VDC
2	D-	white	Data -
3	D+	green	Data +
4	ID	none	To differentiate between Micro A and B connectors: - Type A: Earth (OTG works as host) - Type B: not connected (OTG device works as periphery)
5	GND	black	Earth

To switch the OTG mode of the CCV InSync to host, a specific OTG cable is required.

Use OTG port as device:

- OTG port without cable
- Device cable, not connected to PC
- Device cable, connected to PC

Use OTG port as host:

- OTG cable without host device
- OTG cable with USB stick
- OTG cable with self-powered USB hub

6.4.8. USB host

USB 2.0 Host (Full Speed 12Mbit/s):

USB-A; straight connector (e.g. for connection of a 2/3/4G modem or USB memory sticks)

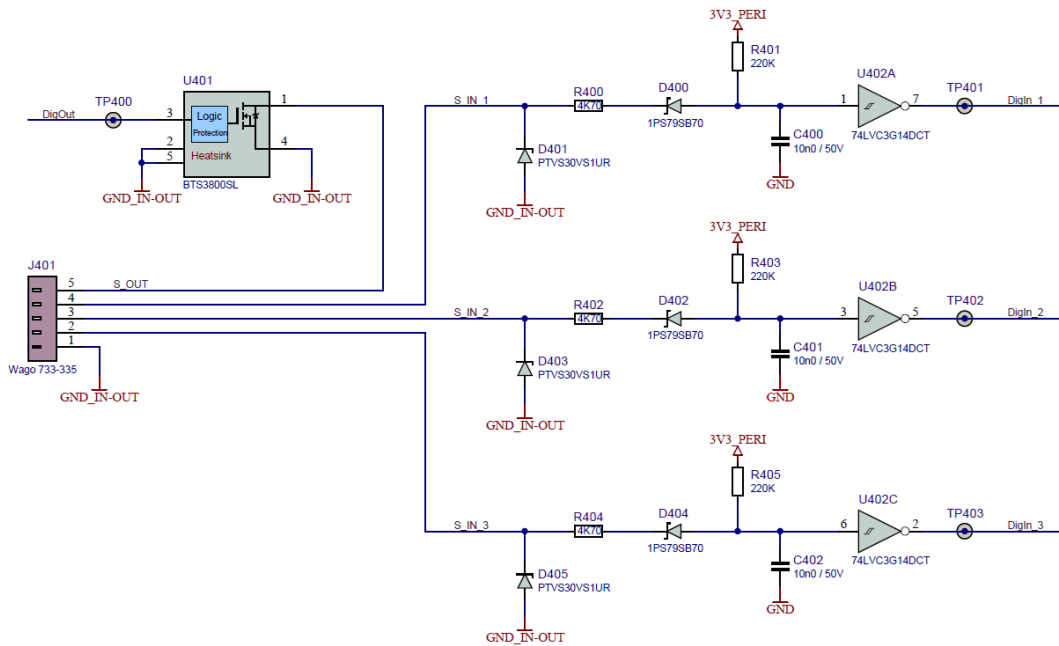
Pin	Name	Signal
1	VCC	+5VDC
2	D-	Data -
3	D+	Data +
4	ID	Earth

6.4.9. Digital I/O

Digital I/O provides additional inputs/outputs.

Pin	Signal
1	GND In-Out
2	DigIn 3
3	DigIn 2
4	DigIn 1
5	DigOut

6.4.10. Internal circuit diagram and information on Digital I/O



A component „HITFET-BTS3800SL“ was used for the digital I/O ports. Please take the according information from the datasheet below.



H1FET - BTS3800SL
Smart low side power switch

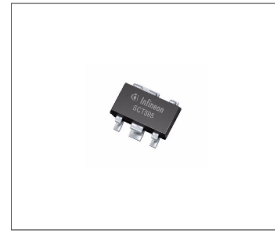
BTS3800SL



1 Overview

Features

- Short circuit and over load protection
- Thermal shutdown with latch behavior
- ESD protection
- Over voltage protection
- Logic level input suitable for 5V and 3.3V
- Small footprint automotive power package
- Green Product (RoHS compliant)
- AEC Qualified



PG-SCT595

Description

The BTS3800SL is a single channel Low Side power switch with embedded protective functions in PG-SCT595 package. The device is monolithically integrated with a N channel power MOSFET and additional protection functions.

The BTS3800SL is especially designed as a protected relay driver in automotive and industrial applications.

Table 1 Product Summary

Drain voltage ¹⁾	V_{DS}	41 V
Maximum Input Voltage	V_{IN}	5.5 V
Maximum On resistance at 150°C and 5V input voltage	$R_{DS(ON)}$	1.6 Ω
Typical On-State resistance at 25°C and 5V input voltage	$R_{DS(ON)}$	0.8 Ω
Nominal load current	$I_{D(nom)}$	350 mA
Minimum Current threshold level	$I_{D(OVL)}$	0.75 A
Single Clamping Energy	E_{AS}	65 mJ

1) Active clamped

Type	Package	Marking
BTS3800SL	PG-SCT595	38

Datasheet

3

Rev. 1.1, 2011-04-30

6.4.11. Service

The interface can be used for service functions.

6.4.12. Modem (optional)

A 2/4G modem for the serial port will be optionally available. The settings for mobile standards can be viewed via the TS3 and changed, if required. Please ask your contact about availability of the modems.



Information about APN

The current location is described by the Location Area Identity (LAI = MCC + MNC + LAC), where the Mobile Country Code (MCC) corresponds to the national prefix. The national prefix can be used to differentiate between national and international locations.

When international roaming is activated, the national prefix is not evaluated.

6.5. Specifications

Processor	32-bit Cortex-A7 528 MHz Operation system: Embedded Linux
Memory	512 MB RAM 4 GB Flash
Display	2.4" TFT colour display 320 x 240 Pixel
Keypad	3 illuminated proximity sensors
Ambient conditions	Operation: -20°C or up to +70°C Storage: -30°C up to +75°C Humidity 10% - 90% without condensation The electronic is lacquered in critical areas to protect against condensation.
Interfaces	Hardware interfaces Two RS-232 interfaces: <ul style="list-style-type: none"> • POS: Connection to the vending machine or the cash register, alternatively modem • COM MDB: Cash register interface with Multi Drop Bus Executive: Cash register interface with Protocol A LAN interface: Ethernet, 10Base-T and 100Base-T (auto detect and manual selection) communication protocol TCP/IP (more available on request) e.g. for host or service PC. Two USB interfaces: <ul style="list-style-type: none"> • USB host: USB-A • USB OTG: USB-Micro-B Protocols: <ul style="list-style-type: none"> • Interface protocols • ZVT cash register protocol • O.P.I. • protocol for terminal supervisor and TMS • MDB –Multi Drop Bus • Executive (Protocol A) • TCP/IP • Host protocols • Poseidon • CCV Pay Further protocols on request.

Internal reader for store cards	Basic equipment = 1 SAM, format ID-000, T=0 and T=1, 3V and 5V cards, synchronous and asynchronous cards, 107 kBaud at 10 MHz, compatible to ISO 7816
Voltage supply	Terminal: 9-45 V (protection against voltage reversal) Power consumption: ~200mA at 12 V Standby: Power consumption: ~6 mA at 12 V Note: The main adapter available for testing purposes (starter kit) is only suitable for testing purposes in the laboratory and must not be used in production.
Buffer battery	Integrated lithium ion battery for buffering SRAM and clock. Service life: up to 8 years when stored at around 25°C and voltage supply in at least 50 % of that time.
Dimensions	Front panel: 84 x 105 x 24.3 mm ± 0.1 mm Interior: 53 x 73 x 78 mm ± 0.1 mm EVA cut-out: 61 x 73 mm ± 0.2 mm
Weight	310g ± 5%

Remarks about the lithium battery

To secure data and the clock function and for the safety circuit, the terminals are equipped with a lithium battery. This battery cannot be replaced without opening the housing. The service life of the battery is approx. 8 years, when the device is supplied with mains voltage in around 50% of this period. The ambient conditions for storage and operation as described in this system manual must be observed for this purpose. Only the manufacturer CCV GmbH may replace the battery.

Please observe that lithium batteries must not be discarded with general waste but disposed of properly.

Make sure that lithium batteries are not damaged. Under certain circumstances, they can react strongly with water or air.

Calculation example for the battery life:

Total capacity	1000 mAh
Consumption self-drain (10 years at -40°C ... +30°C):	100 mAh
Consumption storage period: 2 years	262 mAh
Option 1: Consumption operation with 0% external supply: 4 years	524 mAh
Option 2: Consumption operation with 50% external supply: 8 years	524 mAh
Option 3: Consumption operation with 62.5% external supply: 10 years	524 mAh
Minimum reserve	114 mAh

6.6. Cash register protocols

6.6.1. ZVT specification

The specification provided for download on our website www.zvt-kassenschnittstelle.de are used as the basis for an implementation of the ZVT cash register protocol. CCV does not guarantee the completeness of the ZVT specifications.

6.6.2. O.P.I.

As a basis for the implementation of the O.P.I. interface, the specification „PA77S001 – CCV O.P.I. Interface“ is used. We will provide it on request.

6.6.3. Executive (Protocol A)

Executive (Protocol A) is supported in a future version.

6.6.4. MDB

MDB has been implemented based on the specification “MDB / ICP version 4.2”.

7. Failure statistics, characteristic figures

Product	Characteristic figure failure statistics
CCV InSync	500,000h, the CCV InSync has no mechanical operation interface
Chip card reader	500,000 insertion cycles
Magnet strip reader	500,000 insertion cycles