CCV

Manual

CCV IM30

English

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1 Introduction

CCV IM30 is a all-in-one self-service payment terminal designed to increase sales, implement flawless security and be impervious to environmental damage. In addition, the CCV IM30 can also be used in conjunction with a separate pole stand in an attended environment.

With integrated NFC, chip and magstripe cards, pin-on-glass, CCV IM30 supports both traditional and alternative payment methods.

CCV IM30 has a significant low energy consumption footprint thanks to the build-in proximity sensor that enables seamless switchover between different modes.

The Android OS connects to CCVStore, a global marketplace hosting advanced solutions for every kind of business.

Renowned for its great design, CCV IM30 is an intuitive and engaging device, uncompromising on delivering a seamless transaction experience.

2 Safety and Usage

- The manual 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.
- In case of the non-observance of the safety notices or incorrect use, no liability will be assumed for any damage that occurs.
- 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, 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.
- 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.

- If any cables become damaged, use a replacement.

- Do not insert unknown materials into any port on the terminal, this may cause serious damage to the device.

- The terminal is designed for outdoor use; however, during normal use, its surface should still be kept clear of dirt and possible liquid contaminants.

- While the terminal is designed to resist ingress of dust and liquids such as water hoses. Keep the back of the device away from dust and liquids as much as possible.

- Maintain a sufficient distance to other electrical devices - this can lead to malfunctions.

- Make sure the various cables connect to provide the appropriate voltages at the proper pins.

- If you want to reset or change your terminal please make sure that all transactions are transferred to your payment provider by an end of day closure.

- The terminal contains tamper-proofing features; these circuits will trigger if the device is disassembled, at which point it will have to be rearmed before the device is ready to resume operation.

- Check the integrity of the Terminal. Check if the Terminal shows damage and manipulation and the seal is unbroken. If you detect damage, tampering or a broken seal do not operate the Terminal. Contact your payment provider or CCV support at hotline@ccv.eu.

- Important! Please ensure that the terminal is connected, configured and tested so as to execute updates via remote maintenance server (TMS) and CCV Store. 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 service tools (Terminal Supervisor 3) 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.

- A periodically cleaning of the card reader prevents an early wear out and read errors. Depending on usage and environmental conditions following cleaning intervals must be kept:

Frequency of use	Environmental Conditions		
	Indoor	Outdoor normal Environment	Outdoor dirty / aggresive Environment
up to 5 times per month	quarterly	monthly	weekly
up to 5 times per week	quarterly	monthly	weekly
up to 5 times per day	quarterly	monthly	weekly
over 5 times per day	monthly	monthly	weekly
cleaning agent	cleaning card	cleaning card	special cleaning card

Recommended cleaning card for an optimal result is: 15330000H&S

- At the end of life, dispose of the terminal in an environmentally proper manner.

> **! Important**
>
> Please only use **SIM** cards that have a suitable cost model for the required **data volume**. The terminal is connected to the Network Service Provider (transactions), the TMS maintenance server (software updates) and the CCVStore (apps). Typical data sizes are: idle 40MB monthly, app 8MB, software update 20MB, Android OS update 500MB.
>
> The data consumption in **idle** state is approx. **40MB per month**.

3   Contents

The CCV IM30 is available in two variants (including and excluding modem).

Part number	Product name
91045-55	CCV IM30 (4G+BT+LAN+WIFI 2.4/5 GHz), incl. modem
91047-55	CCV IM30 (LAN+BT+WIFI 2.4/5GHz)

The following accessories are part of the CCV IM30 terminal delivery as standard.

| Name	Quantity
CCV IM30 terminal. Inclusive or exclusive modem, depending on the selected variant.	1
M4 nuts for assembly of mounting frame to the bolts of the vending machine.	4
M4 screws for assembly of the mounting frame to IM30	4

In addition to the CCV IM30 terminal, the following optionally orderable accessories are available.

| Part number	Name		Number
03443-55	Kiosk Mounting Frame, metal		1
03442-55	EVA Mounting Frame, for EVA SDM cut-out		1
03436-55	CCV IM30 Modem 4G		1
03439-55	CCV IM30 Modem Comp. cover		1
03441-55	Antenna Dome		1
03440-55	EK-CCV IM30 MDB Y- Cable Standard		1
03514-55	Connector Female for PWR incl. WAGO 734-128		1
03515-55	Connector Male for I/O Expander incl. WAGO 734-128		1
03501-55	Kabel IM30 POS to PC/Cash register magenta		1
03133-91	Power supply (cable + Adapter)	Poweradapter OPP for InSync/IM30	1
01272-42		Power supply + Cord OPP-C60	1

4 Product Description

4.1 Front view

1 LCD touchscreen

2 front facing camera

3 magnetic stripe card reader

4 smart card reader

5 code scanning camera

6 camera locator light

7 status LED and proximity sensor

**8** contactless card/device interface
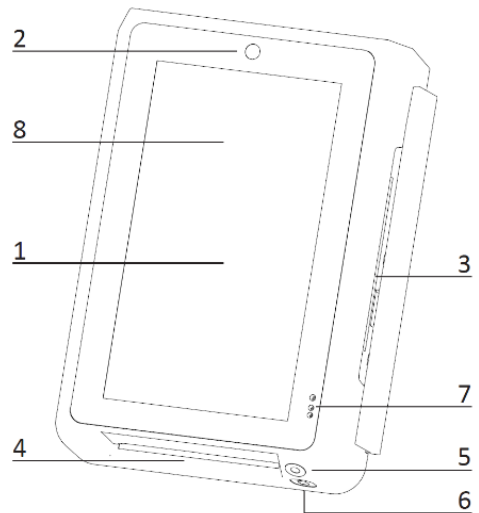
Components, interface, and port (front)

1 front facing camera

2 contactless card/device interface

3 LCD screen

4 smart card reader

5 magnetic stripe card reader

6 LED indicator (upper position)

7 proximity sensor (lower 2 positions)

8 code scanning camera

**9** camera locator light
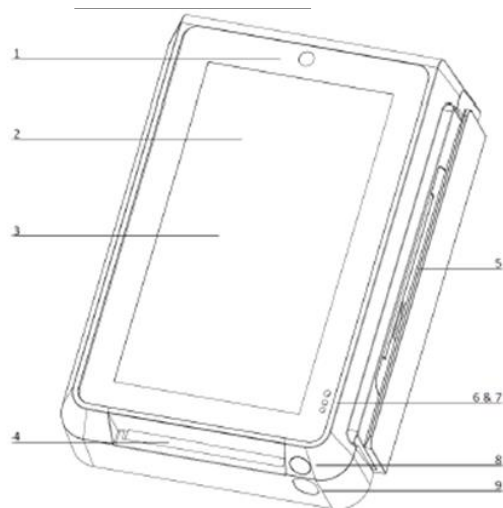
4.2   Back view

1 RS232-A (device, cash register)

2 RS232-B (host, external devices)

3 headphone jack (mic + speaker)

4 LAN port (10/100 Mbit)

5 digital I/O (power, 6pin WAGO connector)

6 executive/ MDB-H port (MDB Master)

7 connector for external 4G antenna

8 SAM/SIM card module

9 USB type A port (host)

10 USB type C port (OTG)

11 service button

12 reset button

13 HDMI port

14 MDB Standard port (MDB slave)

15 MDB status LED
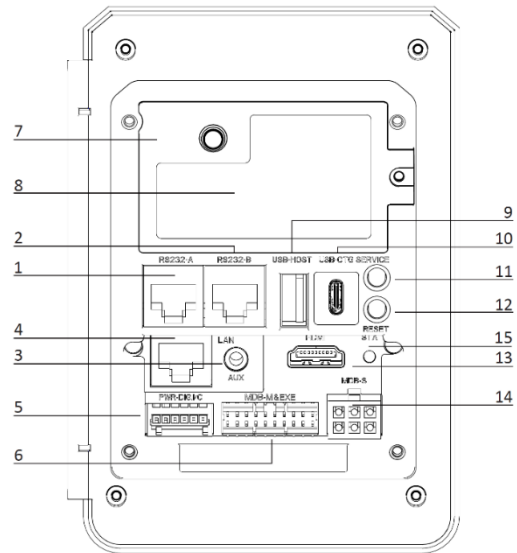

4.3   Contactless card reader

The CCV IM30 has a contactless card reader with an RF antenna located on its front face. The read area is the **upper half of the touchscreen**. Use contactless card from a distance of 0 to 4 cm. For best results, place the card as close to the screen as possible and centre it within the area marked in the right figure.
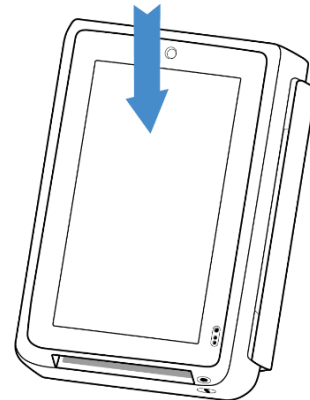
4.4   Status LED and proximity detector

CCV IM30 has a RGB status indicator LED above the proximity detector. The operation of the LED is software controlled. It can display a light in red, green or blue.

The CCV IM30 has an optical proximity detector located near the lower right side of its front face. The proximity sensor detects objects at close distance to sensor (range of 0cm to 8cm). It is meant to perform function such as providing a wakeup signal to the rest of the device when a user is detected or calibrating backlight intensity to fit the brightness of a given environment.
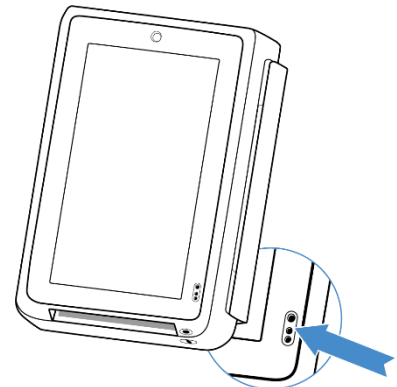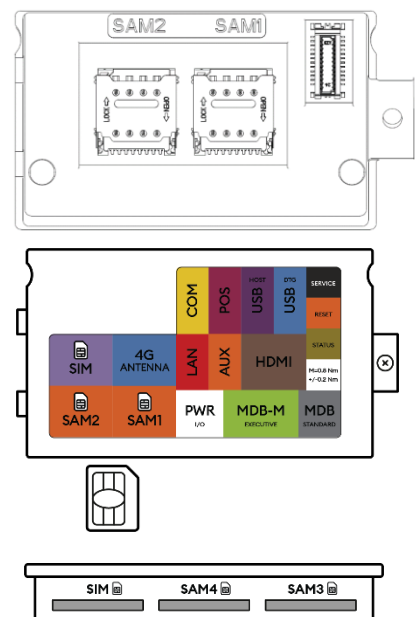
> **❗ Important**
>
> The **protective film** attached at delivery can cause unwanted triggering of the **proximity sensor** if it is not removed. This would prevent the screen saver, which may damage the display.

4.5   SAM/ SIM

Unscrew the SAM card module and then remove it by prying at the notch set to its side. On the main body of the CCV IM30, there are 2 micro-SIM sized SAM card slots. Open the mount and insert the card into the slot with the clipped corner of the card to the upper right, then lock the mount with the card inside.

On the SAM card module there is a micro-SIM sized card slot. Insert the SIM card with the clipped corner facing inwards and to the left.

To the right, there are two slots for two additional SAM cards (see illustration: centre: SAM4, right: SAM3).

> ⓘ **Important**
>
> Please only use **SIM** cards that have a suitable cost model for the required **data volume**. The terminal is connected to the Network Service Provider (transactions), the TMS maintenance server (software updates) and the CCVStore (apps). Typical data sizes are: idle 40MB monthly, app 8MB, software update 20MB, Android OS update 500MB.

4.6 Buttons

The terminal does have two buttons on the back.
One for service and one to reset the terminal.
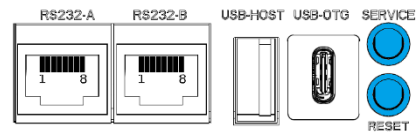
Service button
CCV internal use only.

Reset button
Hardware reset: Terminal shuts down completely and restarts.

4.7 MDB status LED

The terminal does have a MDB status LED on the back which shows status in active state.

Description	State
Idle state, ready to use	green
Out of order	red
Make your choice and/or present your card for payment or revalue.	yellow flashing
Transaction in progress	yellow
Transaction successful, vend in progress or revalue aproved	green flashing
Transaction denied follow display indication	red flashing
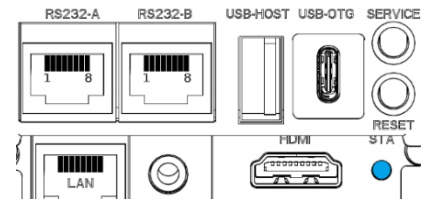
5   Installation

The CCV IM30 is designed to be mounted on vertical surfaces by means of a mounting plate. Depending on the size of the cut-out on the front of the vending machine, installations can be made using a special mounting plate. Two variations are described below.

The following three figures summarise the main dimensions of the CCV IM30 terminal.
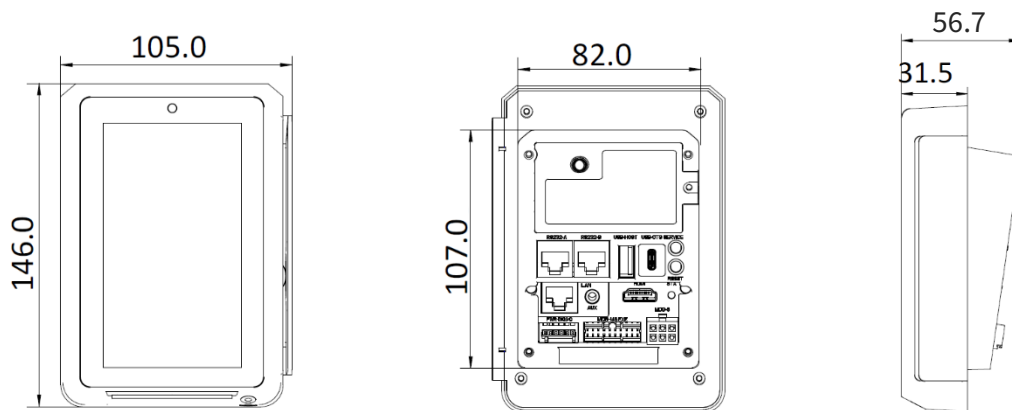
5.1   Installation preparations

Install the payment device in a location/position so that the end-user can safely enter a secure PIN-code while blocking external views with hand or body. Also take the following conditions into consideration:

- Positions the terminal between 80 cm and 120 cm from the ground. Only deviate from this specification if secure entry of the PIN is not possible.
- PIN-entry cannot be visible from a nearby elevated surface, through mirrors or cameras or any other way.
- The product has a virtual PIN-pad, which means the touch-screen is used for PIN-entry and other interactions. Take this into account in the positioning of the product.
- If necessary, an additional privacy shield may be required to provide secure PIN-entry.
- Make sure the product is installed following the environmental conditions specified. See Technical Specifications of the product for the allowed temperature and humidity conditions.
- Avoid installation where the product is subject to shocks and vibration, direct sunlight, dust, water or condensation or excessive electromagnetic interference.

5.2 Installation based on the Standard cut-out („Kiosk cut-out")

For installations based on the standard cut-out with the dimensions W x H (mm): 82.40 +0.10/-0.00 x 120.40 +0.10/-0.00 the Kiosk frame can be used for mounting the terminal. This has the CCV part number 03443-55.
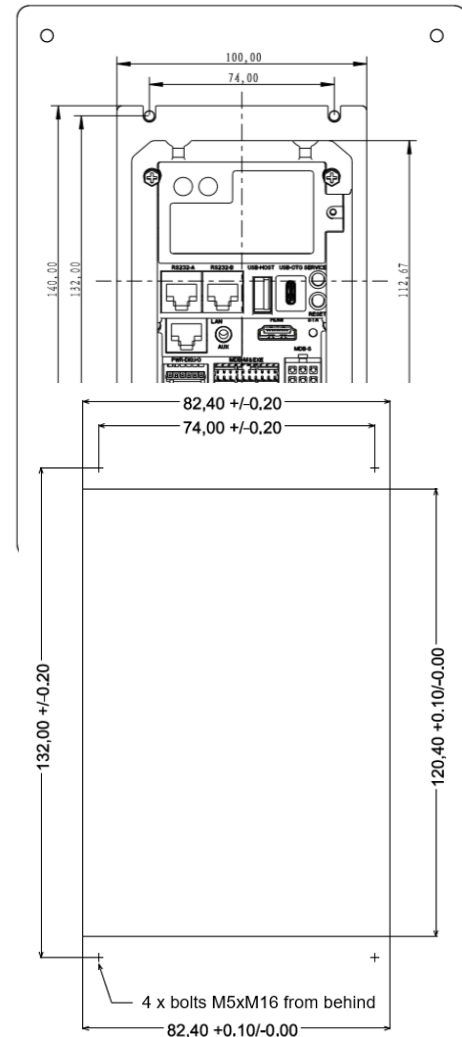
The illustration on the right shows the terminal rear view including positioning of the holes for mounting the terminal.

> ! **Important**
>
> Also with this form of terminal mounting, the 4xM4 screws on the back of the terminal must be done with a force torque of 0,8 Nm ±0,2 Nm.

The following illustration shows the standard cut-out with the dimensions W x H (mm): 82.40 +0.10/-0.00 x 120.40 +0.10/-0.00 including positioning of the holes for mounting the terminal.

## 5.3   Installation based on the EVA SDM cut-out

The dimensions correspond to those of a standard door module (SDM) as defined by the European Vending Association (EVA). In this case, the supplied EVA mounting frame (CCV part number 03442-55) is used to mount the terminal.

The M4 bolts should protrude from the back of the mounting plate so that the mounting frame can be inserted.

The illustration on the right shows the terminal rear view including positioning of the holes for mounting the terminal.
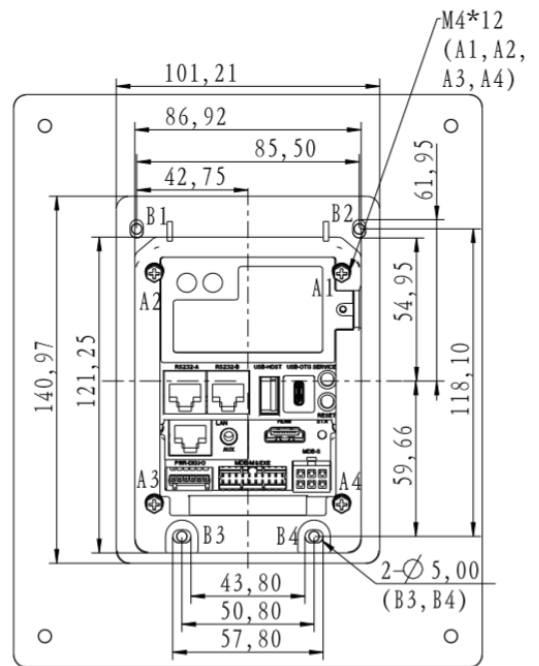
The following figures illustrate the positioning of the holes for mounting and the method of mounting.
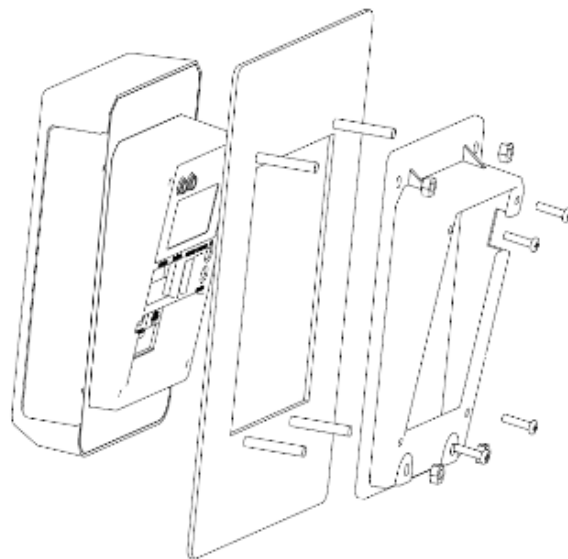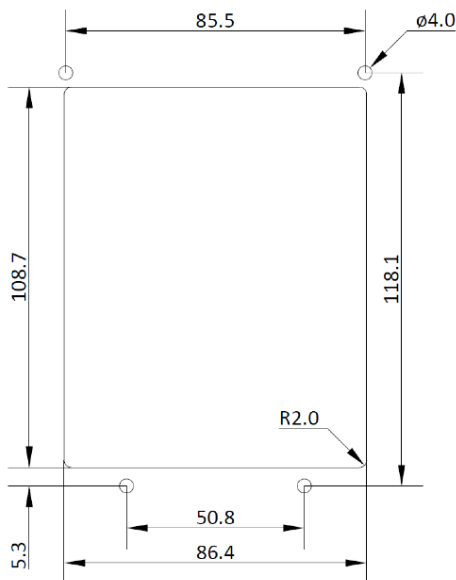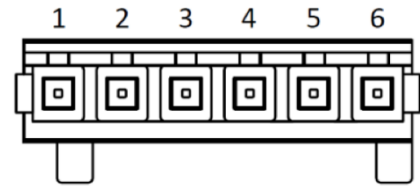

> **ⓘ Important**
> Mounting the 4xM4 screws has to be done with a force torque of 0,8 Nm ±0,2 Nm..

6   Connectors

6.1   Power/ Digital IO

The terminal can be powered by PWR-DIG I/O connector (6pin WAGO, plug 733-106). This connector also enables a digital IO port.

| PWR-DIG I/O (WAGO 6pin)	Pin
DIGI_IN3	1
DIGI_IN2	2
DIGI_IN1	3
DIGI_OUT1	4
GND	5
PWR	6

Pin 6: This PIN can be used as PWR_In (power supply for IM30 if not supplied via MDB), or as PWR_Out (for example power for digital -IO board) if IM30 is powered via another pin (e.g. supply via MDB Standard connector). The following accessories are available for this purpose.

Part number	Name		Number
03133-91	Power supply (cable + Adapter)	Poweradapter OPP for InSync/IM30	1
01272-42		Power supply + Cord OPP-C60	1

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.

Adapter cable WAGO 4pin to WAGO 6pin, 100mm
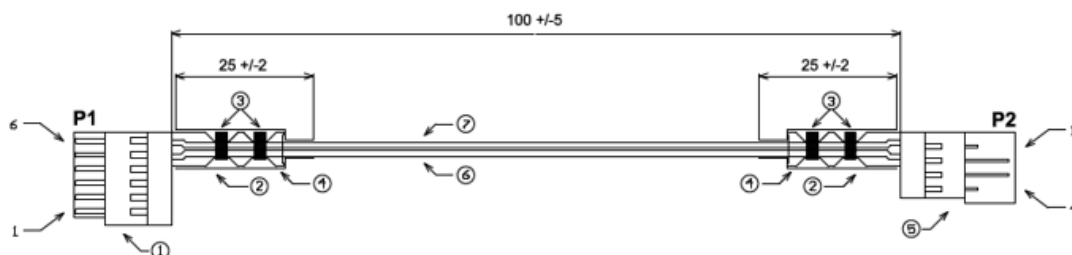
Legend for the illustration above (all dimensions in [mm])

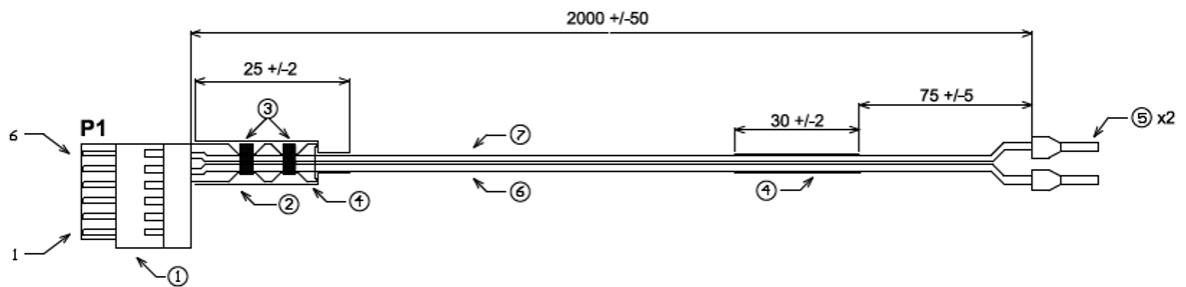| NO	DESCRIPTION
⑧	
⑦	Isolated wire 0.5qmm, PVC red, diameter max. 2.2mm
⑥	Isolated wire 0.5qmm, PVC black, diameter max. 2.2mm
⑤	Male connector with CAGE-CLAMP, WAGO 733-204
④	Shrink tube, black
③	Cable retainer 2.5 mm width
②	Strain-relief, WAGO 734-127
①	Female connector with CAGE-CLAMP, WAGO 733-106

Wiring

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

For a safe 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.

Adapter cable two wires to 6pin, 2000mm

Legend for the illustration above (all dimensions in [mm])   Wiring

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 mm², color turquoise (DIN 46228) two items
④	Shrink tube, black
③	Cable retainer 2.5 mm width
②	Strain-relief, WAGO 734-127
①	Female connector with CAGE-CLAMP, WAGO 733-106

P1	
1	
2	
3	
4	
5	black – GNK
6	red - Power

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

HITFET - BTS3800SL
Smart low side power switch

<div align="right">

BTS3800SL

</div>

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

6.2 Cable feeding to prevent condensate dripping into device

⚠️ **CAUTION:** In order to protect the device from water entry, the cables must be attached in such a way, that liquids (i.e., condensation) cannot flow down the cable into the device:
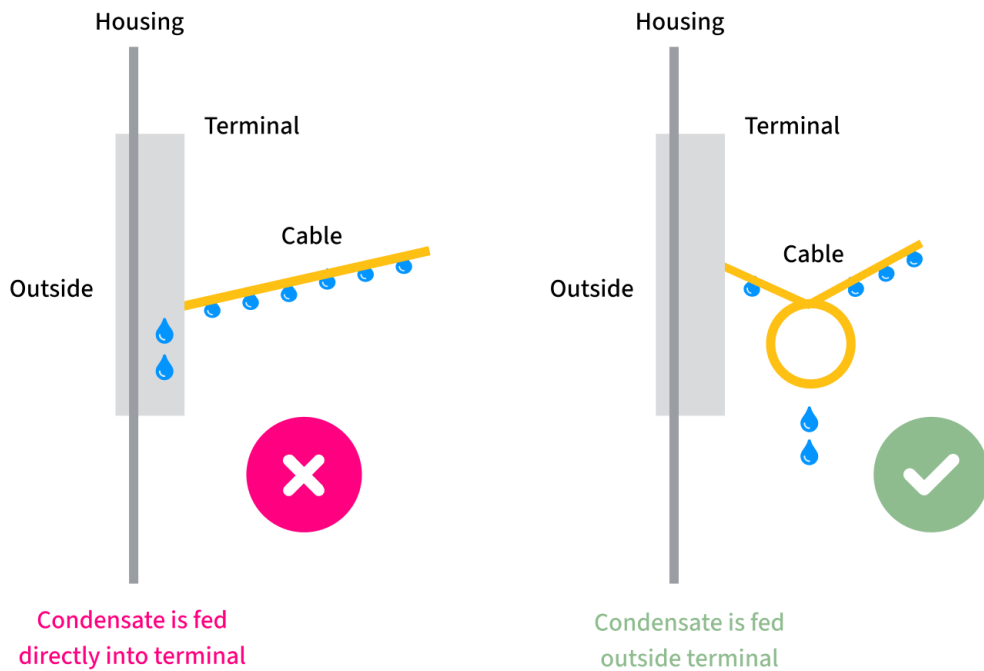
The occurrence of condensation moisture can be limited by avoiding rapid temperature and humidity condition changes or by avoiding direct flow of cold air onto the device.

# 6.3   Use in environments with heavy condensation conditions

The IM30 is designed for use in humid environments, however, usage in heavy condensing environments can potentially reduce lifetime of the terminal.

To prevent from this, we designed two additional protection measures:

1   **Passive protection (metal cover of the IM30):**
- Reduces differential temperatures between the inside and outside of the vending machine.
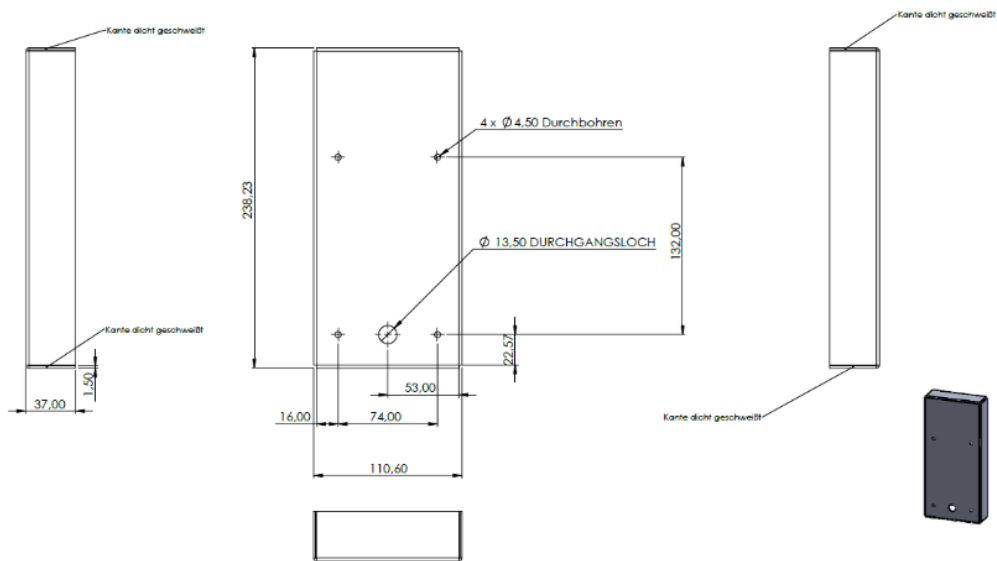- reduces rapid temperature changes

Picture of passive protection Metal shield:
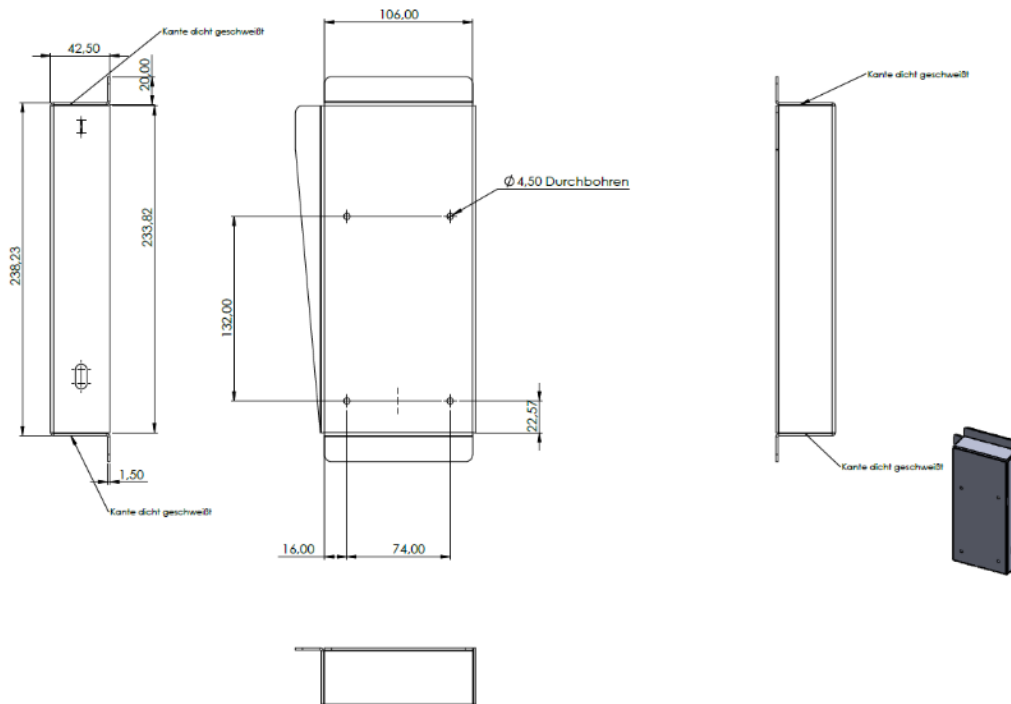
2   **Active protection (metal cover of the IM30 plus dehumidifier):**
- Reduces differential temperatures between the inside and outside of the vending machine.
- reduces rapid temperature changes
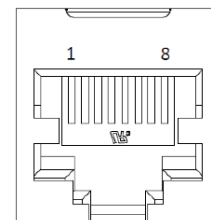- significant reduction of relative humidity.

Picture of active protection Metal shield:

6.4　RS232-A (cash register)

RJ45 8-poles, high speed interface (default 115.2 kbps/ switchable up to 921.6 kbps), shielded, hardware handshake, max. cable length 100 cm.

signal	pin
POWER_IN	1
RX	2
TX	3
MDB_WAKE	4
RTS	5
CTS	6
GND	7
GND	8

6.5   RS232-B COM

RJ45 8-poles, high speed interface (default 115.2 kbps/ switchable up to 921.6 kbps), shielded, hardware handshake, max. cable length 100 cm, software controlled supply voltage output to also supply **external components** besides communication.
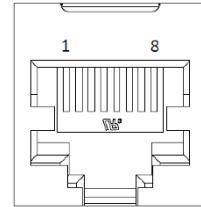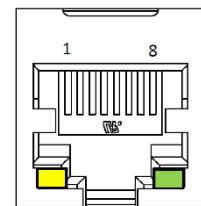
signal	pin
POWER_OUT	1
RX	2
TX	3
MDB_WAKEUP	4
RTS	5
CTS	6
GND	7
GND	8

6.6   Ethernet

Ethernet is a common network protocol for local area network. The CCV IM30 has an Ethernet 10/100 Base-T port.

signal	pin
TX+	1
TX-	2
RX+	3
NC	4
NC	5
RX-	6
NC	7
NC	8

6.7 MDB-Standard (MDB slave)

Multidrop Bus (MDB) is a communication protocol commonly used in the vending machines. The CCV IM30 has a MDB Standard port that can communicate to a vending machine controller as well as accept an input voltage of 9V to 42V. MDB-H and MDB Standard to provide two separated MDB connectors with two separated communication ports. MDB level 1,2 and 3 are supported.

signal	pin
MDB PWR IN	1
MDB PWR GND	2
MDB-WakeUp	3
MDB-Master Receive	4
MDB-Master Transmit	5
MDB-Com Common	6
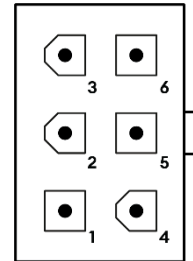
6.8 MDB-H/ Executive/ I/Os (MDB Master)

The CCV IM30 has a special 20-pin connector (Amphenol 69168) that functions as both MDB-H port and executive port, and is also available for I/O's and switched voltage.

Signal	Pin	Application
MDB_PWR_IN	1	MDB
GND	2	MDB
V_OUT (unswitched)	3	I/O and switched voltage
GND	4	I/O and switched voltage
MDB_MASTER_RX	5	MDB
MDB_MASTER_TX	6	MDB
GND	7	MDB
GND	8	MDB
EXE_MASTER_RX+	9	EXE / power input
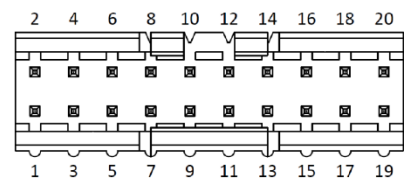
EXE_MASTER_TX+	10	EXE / power input
GND	11	EXE / power input
GND	12	EXE / power input
DIGI_IN4_H	13	I/O and switched voltage
DIGI_OUT2_H	14	I/O and switched voltage
DIGI_IN4_L	15	I/O and switched voltage
DIGI_OUT2_L	16	I/O and switched voltage
MDB_WAKEUP	17	MDB
V_OUT# (switched)	18	I/O and switched voltage
EXE_PWR_L	19	EXE / power input
EXE_PWR_N	20	EXE / power input

6.8.1   MDB-Master

This function is currently not yet supported.

6.8.2   Executive

The Executive protocol (also known as BDV 001 protocol) is a communication protocol used in the vending machines.

This function is currently not yet supported.

6.8.3   I/Os

The I/Os can be addressed by an Android app and used, for example, to activate a function on a control unit.

In the case of galvanically separated I/Os on the CON-20: DigOut2 and DigIn4 (2 pins each from the CON20 are required). See also the following diagrams.

Internal circuit diagram of the galvanically separated I/Os (DigOut2 and Digin4):
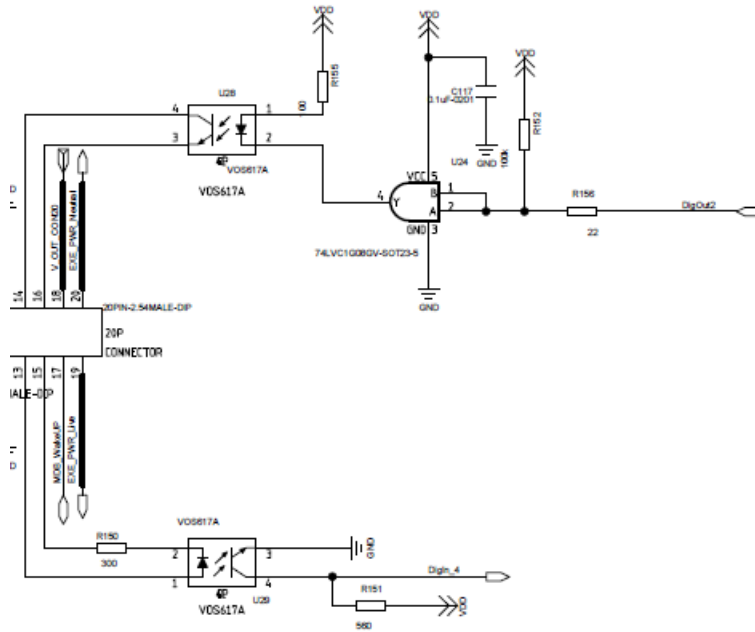
Internal circuit diagram of the switched output voltage.

This switched voltage output at CON-20 (switched by EN_PWR_CON20) has the similar wiring as the voltage output at RS232B pin6 (switched by EN_PWR_COM).
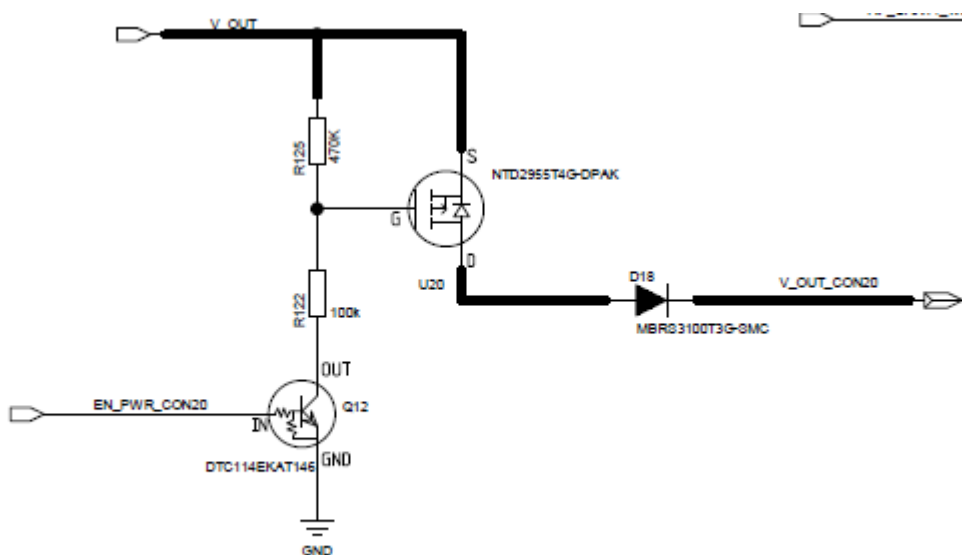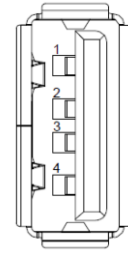
6.9   USB

The CCV IM30 has an USB Host port available for service access, it can accept 5V input to power the device.

USB-Host (type A)
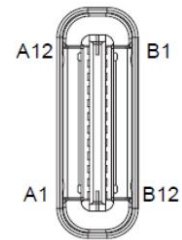
For connecting external devices.

signal	pin
VIN	1
D-	2
D+	3
GND	4

USB-OTG (type C)

For manufacturer-specific tools.

signal	signal
A1 GND	B1 GND
A2 NC	B2 NC
A3 NC	B3 NC
A4 VBUS	B4 VBUS
A5 USB_ID	B5 USB_ID
A6 D+	B6 D+
A7 D-	B7 D-
A8 NC	B8 NC
A9 VBUS	B9 VBUS
A10 NC	B10 NC
A11 NC	B11 NC
A12 GND	B12 GND

6.10   AUX

The auxiliary jack is a term for a variety of analogue port usually made to transfer audio data. The CCV IM30 has a 3.5 mm auxiliary jack that can output an audio signal through external device and accept the input of a microphone.

CTIA Standard PIN assignment	
L	Left audio signal
R	Right audio signal
GND	Chassis ground
AUX	Additional signal, e.g. microphone

6.11   HDMI

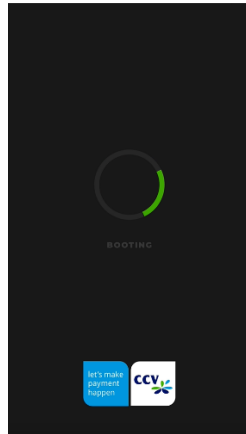The HDMI output can be used to display on an external display.

6.12   POS

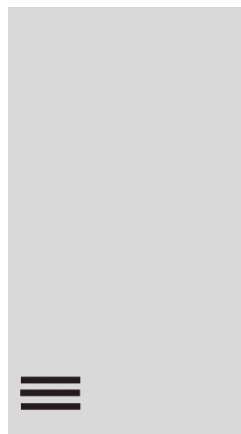POS can be used for ZVT serial connection.

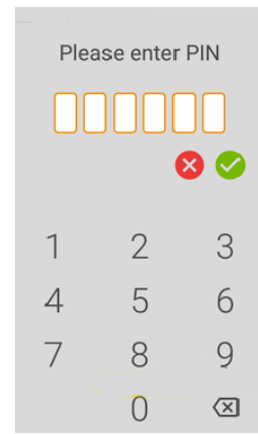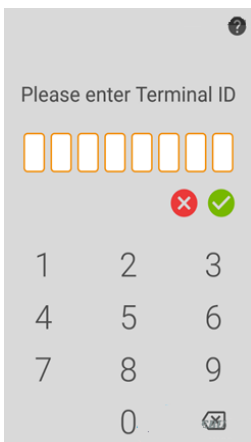# 7 Start-up with Service App

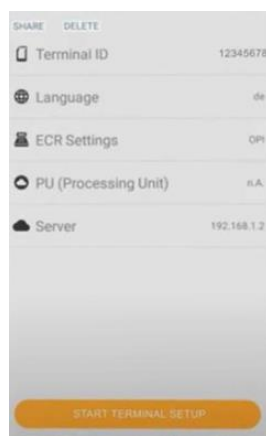

1. Start Welcome.

2. Booting.

3. Start-up Service App. Pressing the menu button starts the Service App.
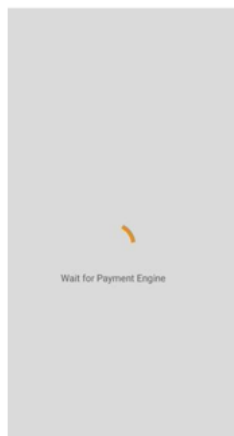

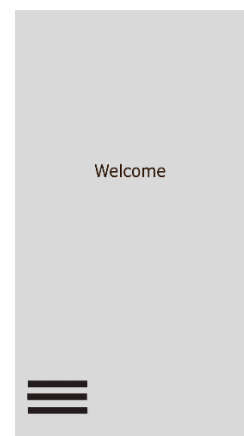4. Enter Service App PIN.

5. Enter TID. This process is repeated, i.e. the TIID is entered twice.
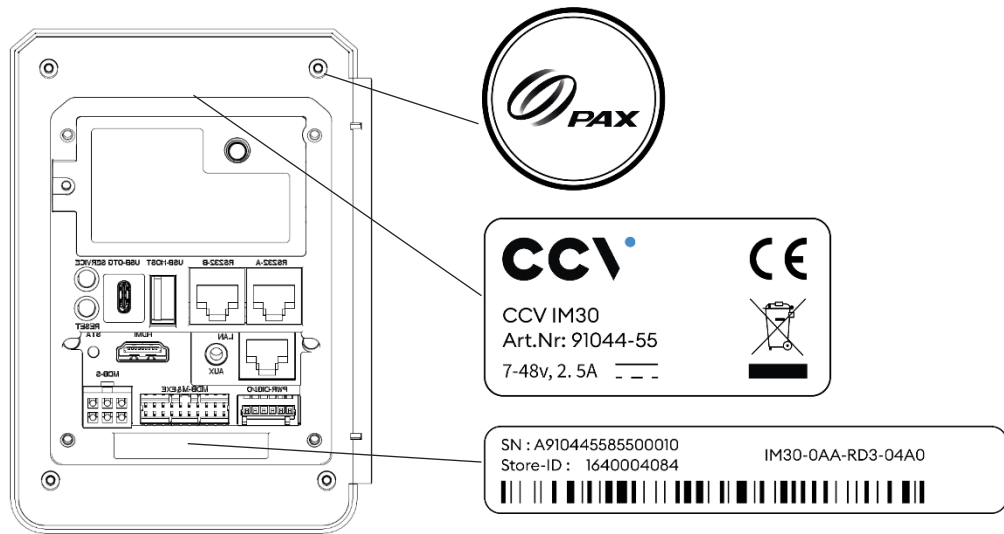

6. „Start Terminal Setup"

7. Wait for payment engine.

8. Start-up finished – Exit.

8   Labels and seals

9   FCC Compliance Statement

The device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

WARNING

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate ratio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION

Any changes or modifications not expressly approved by the manufacturer could void the user´s authority to operate this equipment.

RADIATION EXPOSURE

This device complies with FCC radiation exposure limits for general environments.

External Antenna

WCDMA Band V – 2.3 dBi
WCDMA Band II – 2.3 dBi
WCDMA Band IV – 2.3 dBi
LTE Band   2 – 3.4 dBi
LTE Band   4 – 3.4 dBI
LTE Band   5 – 3.4 dBI
LTE Band 12 – 3.4 dBI
LTE Band 13 – 3.4 dBI
LTE Band 17 – 3.4 dBI
LTE Band 66 – 3.4 dBI
LTE Band 71 – 3.4 dBI

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distances 20 cm between the radiator include antenna & your body.

10   CE Declaration of Conformity

Hereby declares CCV Germany GmbH the accordance of the radio equipment CCV IM30 to the directive 2014/53/EU.

The complete texts of the EU declarations of conformity are available on following internet address:
https://www.ccv.eu/en/support/documentation/

11   Datasheet

Product	CCV IM30	
Part Number:	03385-55	03397-55
Configuration Options		
LAN	X	X
Bluetooth	X	X
WiFi	X	X
RF Modem	X	-
Power supply		
Supply Voltage	7 - 48 VDC via main power connector 7V - 48V DC via MDB Standard 7V - 48V DC via RS232 19V - 30V AC via Executive and optional MEI cable	
Power Consumption**	Full Operation: < 650 mA peak without active 4G modem Power Save Mode: typ. 6mA in without active 4G modem Max. power 700mA@12V	Full Operation: < 500 mA peak Power Save Mode: typ. 5mA
Wake-Up	Hands-free via integrated Proximity sensor, <8cm Magnetic stripe card swipe | Contact Card insertion Wake-up line via MDB, RS232 and the 20pin Telemetry connector	
Processing Power		
µController	Quad-core Cortex-A53, 1.2GHz	
OS	PayDroid Powered by Android 7.1	
Memory	2GB LPDDR3, 8GB Flash	
Interfaces		
RS232	2x RS232, RJ45	
USB	USB Host, USB Type A | USB OTG, USB Type C	
LAN	LAN, 100MBit, RJ45	
WLAN	2.4/5GHz WiFi integrated	2.4/5GHz WiFi integrated

RF Modem	4G integrated | global roaming capable	Optional 4G modem field integration ready
MDB	MDB Standard | MDB-H, via 20pin Telemetry connector	
Executive	Executive Master, via 20pin Telemetry connector, MEI and BDV compliant	
Video	1x HDMI	
Audio	integrated loudspeaker | 1x AUX, 3,5mm TRRS audio jack for loudspeaker and microphone	
Digital I/Os	1x Output | switched GND, max. 350mA driver capability 3x Input | switched GND, max.0.5mA, <0.5VDC @ LOW state 1x potential free Output | 1x potential free Input | 2x S/W controllable power outputs	
SAM sockets	2x on-board 3FF sockets 2 x 3FF sockets via 4G RF modem	2x on-board 3FF sockets

User Interfaces		
Status LEDs	1 RGB status LED on reverse side | 1 RGB heartbeat LED	
Display	5 inches TFT color touchscreen | 720 x 1280 pixels, IPS | Brightness > 600 nits | Anti-glare surface | Great readability under sunlight conditions	
Contactless Card	13.56MHz, ISO 14443, NFC	
Contact Card	ISO 7816	
Magnetic Stripe	Tracks 1-3, ISO 7813	
Bluetooth	Integrated BLE 5.0	
QR Scanner	0.3 MP, Reads 1D&2D codes, LED illuminated	
Camera	2.0 MP	

Environmental Conditions & Certifications	
Operating Temperature Range	-20° to +70°C | (-4°F - 158°F)
Storage Temperature Range	-30 to +70°C | (-22°F - 158°F)
Operating Humidity Range	5% … 95% RH | non condensing
Shock	IK08
Vibration	Compliant to IEC 60068-2-6
Ingress Protection Class	IP 55

Flammability rating	V2 according to UL94,IEC 60695-11-10, -20
UV stability	F1 compliant to UL746C
Scratch Resistance	7H Display Mohs hardness
Casing Material & Color	Polycarbonate S-2000 Pantone black c
Mechanics	
Dimension	W x H x D (mm): 105mm x 146mm x 31,5mm at machine front W x H x D (mm): 82.2mm x 107.2mm x 25.2mm within machine
Front Plane Cut-out	W x H (mm) 82.2 x 107.2, de-facto industry standard and W x H (mm) 86.4 x 108.7, EVA EPS 2.1 compliant
Weight	481 g ± 5%, including 4G RF modem, without cables and mounting material 454 g ± 5%, without cables and mounting material
Certifications & Compliances	
Payments & Security	PCI PTS 5.x EMVCo Contact L1&L2 | EMVCo Contactless L1 & L2 MasterCard payPass | Visa payWave | American ExpressPay | Discover D-PAS
Regulatory	CE, UL, FCC, RoHS
Closed Loop Technologies***	Mifare® | FeliCa® serial number only | HID iClass® serial number only

* Only available until all certifications have been granted

** All power consumption values based on 12V DC supply

*** serial number only, full technology support via corresponding S/W update, potentially additional specific SAMs might be required

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