



GLOBALCOM
PAYMENT SOLUTIONS

DRAFT

BV1000CL

Contactless Unattended Reader

User Manual
Revision R01-13
P/N: MAEU010

INDEX

BV1000CL.....	1
INDEX	2
FIGURE INDEX	2
1 DECLARATION OF CONFORMITY	3
1.2 WARNINGS.....	5
1.3 BV1000CL ENVIRONMENT CONFORMITY.....	6
1.4 BV1000CL REAR INDICATIONS.....	6
2 SAFETY INFORMATIONS AND INSTRUCTIONS	7
2.1 GENERAL SAFETY INFORMATION	7
2.2 BASIC RULES	7
2.3 IMPORTANT SAFETY INSTRUCTIONS	7
3 WARRANTY CONDITIONS.....	8
4 VIEW AND ORDER CODES	9
4.1 OVERVIEW	10
4.2 PACKING LIST	11
5 TECHNICAL SPECIFICATIONS	12
5.1 BV1000CL TECHNICAL SPECIFICATIONS.....	12
5.2 BV1000CL SPECIFICATIONS.....	13
6 BV1000CL CONNECTORS VIEW.....	14
6.1 BV1000CL FRONT VIEW	14
6.2 BV1000CL BACK VIEW	15
7 CABLE.....	18
7.1 CAC0096 POWER CABLE	18
7.2 CAC0136 BV1000CL GBC SERIAL CABLE.....	18
7.3 CAC0138 CABLE BV1000R-BV1000CL	19
8 MECHANICAL DIMENSIONS.....	20
8.1 BV1000CL MECHANICAL DIMENSIONS	20
8.2 BV1000CL PANEL DRILLING	22
9 HOW TO CONTACT US	23

FIGURE INDEX

FIGURE 1 – Connector View of the BV1000CL.....	15
FIGURE 2 – Mechanical dimension of the BV1000CL.....	20
FIGURE 3 – BV1000CL Fixing Screws.....	21
FIGURE 4 - Panel drilling BV1000CL.....	22

1 DECLARATION OF CONFORMITY

Globalcom Engineering declares that the payment system BV1000CL, whose characteristics are described in this manual, is conform to all relevant essential requirements on radio equipment and telecommunications terminal equipment **RED Directive 2014/53/EU**, **EMC Directive 2014/30/EU** and **ROHS directive 2011/65/EU**.



The following standards and essential test suites published in the “Official Journal” of the European communities, have been used to demonstrate the conformity of the product:

ETSI EN 300-330-1 - Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz - Part 1: Technical characteristics and test methods.

ETSI EN 300-330-2 - Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz - Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive.

ETSI EN 301-489-1 - Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services - Part 1: Common technical requirements.

ETSI EN 301-489-3 - Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services - Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz.

EN60950-1 + A11 + A1 + A12+A2 – Information technology equipment – Safety – Part 1: General requirements

Compliance with these requirements shall be evidenced by the affixing of the CE on the product. The company responsible for placing the product on the market:

Globalcom Engineering S.p.A.
Via Volta 39 21010 Cardano Al Campo (VA) Italy

USA Radio Approval Federal Communications Commission (FCC)

PRODUCT NAME: *BV1000CL*

FCC ID: *2AKMTBV1000CL184A*

FCC Rules: Code of Federal Regulations (CFR) no.47 Part 15 - Radio Frequency Devices

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: 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 radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment causes 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 or more of the following measure:

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

Changes or modifications made to the equipment not expressly approved by Globalcom Engineering SPA may void the FCC authorization to operate this equipment.

CANADA Radio Approval (IC)

ISED Certification Number: **TO BE INSERTED**

Innovation, Science and Economic Development Canada ICES-003 Compliance Label:

CAN ICES-3 (A)/NMB-3(A)

Changes or modifications made to the equipment not expressly approved by Globalcom Engineering SPA may void the IC authorization to operate this equipment.

1.2 WARNINGS

This appliance is marked according to the European directive **2012/19/EU** on waste electrical and electronic equipment (**WEEE Directive**).



The symbol of crossed out wheeled bin on the product indicates that this WEEE must not be treated as unsorted municipal waste and must be collected separately.

To assure the correct disposal and recycle of this product contact your supplier.

The abandonment or inappropriate disposal of waste can cause harm to environment and harm to the human health.

By ensuring the correct disposal of this product you will help prevent negative consequences for the environment and human health, also you will contribute to the preservation of the natural resources. The device contains lithium manganese dioxide coin cells. The battery must be disposed at the appropriate collection point.

BV1000CL is compliance with the **Directive 2011/65/EU** of the European Parliament of the Council of 8 June 2011 on the restriction of certain hazardous substances in electrical and electronic equipment (also known as **RoHS Recast** or **RoHS2**).

Specifically, BV1000CL do not contain the substances listed in the table below in concentration greater than listed maximum value.

Substance	Maximum Limit (ppm)
Lead (Pb)	1000
Cadmium (Cd)	100
Mercury (Hg)	1000
Hexavalent Chromium (Cr6+)	1000
Poly Brominated Biphenyls (PBB)	1000
Poly Brominated Diphenyl ethers (PBDE)	1000

1.3 BV1000CL ENVIRONMENT CONFORMITY

Climatic and Vibration tests:

CEI EN 60068-2-1 - Environmental Testing Part 2-1: Tests: - Test A: Cold

CEI EN 60068-2-2 - Environmental Testing Part 2-2: Tests: - Test B: Dry heat

CEI EN 60068-2-14 - Environmental Testing Part 2-14: Tests: - Test N: Change of temperature

CEI EN 60068-2-30 - Environmental Testing Part 2-30: Tests: - Test Db: Damp heat, cyclic (12h + 12h cycle)

CEI EN 60068-2-78 - Environmental Testing Part 2-78: Tests: - Test Cab: Damp heat, steady state

CEI EN 60068-2-6 - Environmental Testing Part 2-6: Tests: - Test Fc: Vibration (sinusoidal)

Salt Mist test:

CEI EN 60068-2-11 - Environmental Testing Part 2-11: Tests: - Test Ka: Salt mist

External Mechanical Impact test (IK10) and Drop test:

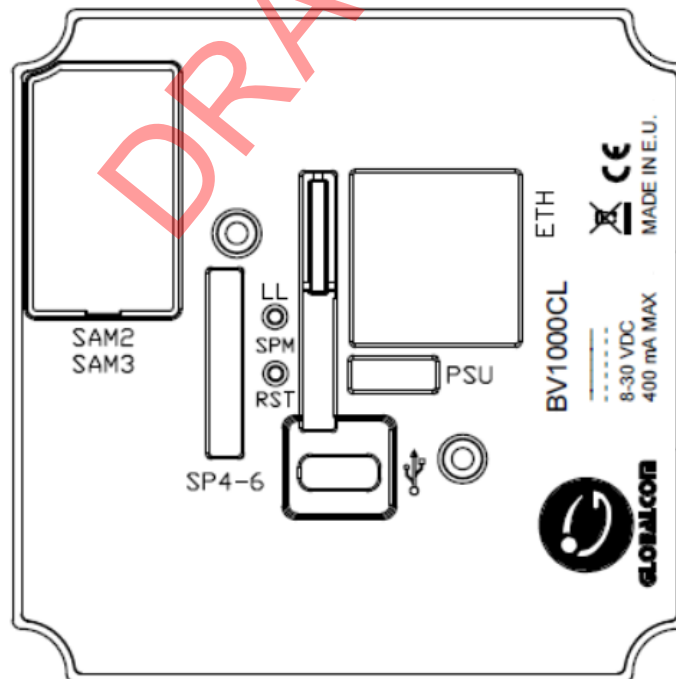
CEI EN 62262 - Degrees of protection by enclosures for equipments against external mechanical impact (IK10)

CEI EN 60068-2-31 - Environmental Testing Part 2-31: Tests: Test Eh: Hammer test

Verification of Internal Protection Code (IP65):

EN 60529+A1+A2 - Degrees of protection provided by enclosures (IP65)

1.4 BV1000CL REAR INDICATIONS



2 SAFETY INFORMATIONS AND INSTRUCTIONS

BV1000CL is conform to the standard EN60950-1+A11+A1+A12+A2 Electrical Safety of Data Processing Equipment including Electrical Office Equipment.

2.1 GENERAL SAFETY INFORMATION

BV1000CL has been designed and manufactured to meet international safety standard but, like any electrical apparatus, due care must still be taken.

- Read and understand the instructions before using the equipment
- Not remove any screws to enter into area for non operators
- Not allow liquid to spill into the internal cabinet side
- Not allow anything to rest on the power cord or telecomm cords and ensure a properly routing of all the cable to prevent damage or accidental contact
- Not continue to operate with the equipment if you are in doubt about its normal working or if the equipment has been damaged.

2.2 BASIC RULES

- 1) The responsibility of the safety for the sockets in the power circuits is of the customer
- 2) Verify that the power supply cable and the sockets are in good conditions
- 3) Don't work in dangerous conditions when alone
- 4) If possible, connect and disconnect the signal cable at power off to avoid risk of shock caused by possible contact of two equipment at different electrical potential.
- 5) The client must install a lightning protection if the zone is subject to thunderstorm or overvoltage.

2.3 IMPORTANT SAFETY INSTRUCTIONS

At the receipt of the equipment is strongly advised to check them to see that there is no evidence of tampering.

3 WARRANTY CONDITIONS

Globalcom Engineering warrants its products for a period of twelve months from the date of delivery.

The warranty covers only defects in materials, defects in manufacturing and doesn't cover damages caused to the device by wrong or improper use, from accidental causes or from natural use.

In addition, the warranty is not applicable in the following cases:

1. The model or the serial number of the device has been altered, erased, removed or made unreadable.
2. The device has been repaired by unauthorized personnel.
3. The device has been damaged by external causes such as lightning, water, fire, connection to wrong power supply voltages or sudden overvoltage in the electric system caused by negligence in the use of the device (not observation of the instructions of use) or by reasons not attributable to manufacturing defects.
4. The device has been modified to be used in a country different from the countries for which has been designed or, where applicable, homologated; or has been damaged by those modifications.
5. The warranty doesn't cover wearing parts such as batteries, cables, connectors, external parts or plastic supports that don't show manufacturing defects.
6. The warranty doesn't include periodic checks, software updates, settings and maintenance operations.

The warranty doesn't provide a spare device to substitute the damaged device during the period of time necessary for the device repair.

Shipping costs of the damaged devices is charged to the customer.

The damaged device\devices must be returned with the RMA (Return Authorization number) form filled and a note indicating the damage or the problem found on the device\devices.

Please contact Globalcom Engineering distribution to obtain a RMA form.

After the end of warranty period, for any repair or assistance operation, will be applied the current rates for the change of parts, for the labor cost and for the shipping cost.



4 VIEW AND ORDER CODES



PRODUCT CODE	
ORDER CODE	DESCRIPTION
1ASA184H02	BV1000CL Compact Unattended Contactless Reader Ethernet Interface

DRAFT V01

4.1 OVERVIEW

BV1000CL is a low power unattended Contactless Reader for transaction in parking, buses, vending machines or ticketing kiosks.

BV1000CL can be used alone or with BV1000R contact reader.

BV1000CL is compliant with EMVco Contactless Specification.

BV1000CL is available with the following interfaces:

- Serial Port
- USB OTG
- Ethernet
- GPRS (dongle on cable)

BV1000CL is available with the following Protocols interface:

- Retailer Protocol
- Mux Protocol

DRAFT V01

4.2 PACKING LIST

Following are reported the packing lists for each orderable code:

1ASA184H02		
QTY	CODE	DESCRIPTION
1	1ASA184H02	BV1000CL Compact Unattended Contactless Reader Ethernet Interface with Globalcom Italian Keys
1	CAC0096	Cable BV1000R Power L=50cm

Cables not included:

	CAC0113	Cable BV1000R Loop For Power On
	CAC0138	CABLE BV1000R-BV1000CL L=30cm

DRAFT V01

5 TECHNICAL SPECIFICATIONS

5.1 BV100CL TECHNICAL SPECIFICATIONS

ARCHITECTURE:	Dual ARM Processor 32 bit
MEMORY:	512K internal flash ,8MByte NOR FLASH, 4MByte PSRAM, 8+4MB dataflash
LEDS	4 green leds for contactless transaction status 1 RGB led for device status
BUZZER	Magnetic buzzer
CONTACTLESS DRIVER:	CLRC663
SAM READER:	2 SAM module connectors
COMMUNICATION:	4 RS-232 serial ports, 1 USB 2.0 OTG, 1 Ethernet 10/100MB.
POWER SUPPLY:	DC from 8V to 30V
POWER CONSUMPTION:	4W Max
BATTERY BACK-UP:	Primary Lithium
SIZE:	84,4 x 84,4 x 21 mm (WxHxD)
CUT AREA:	40 x 40 mm (WxH)
WEIGHT:	100 grams
OPERATING TEMPERATURE:	-25°C ÷ +70°C
STORAGE TEMPERATURE:	-30°C ÷ +80°C
ENVIRONMENT:	Humidity 5-95% not condensing
ENVIRONMENTAL SEALING:	IP65
SHOCK RESISTANCE:	IK10
OPERATING SYSTEM:	FreeRTOS
DEVELOPMENT ENVIRONMENT:	SDK Eclipse GCC GDB
SECURITY:	Security box for system keys Sign and authentication of the loaded applications Life cycles of the device
ENCRYPTING:	AES 128, TDES
BOOTING TIME:	700 mS
HOUSING:	Tecno-Polymer
PROTECTIONS:	Tamper evident, resistant, responsive
CONFORMITY:	CE, FCC, UL, ROHS, EMV Cless L1, TQM, PCI 4.1

5.2 BV1000CL SPECIFICATIONS

Processors: BV1000CL has two processors. One is a secure processor, high performance, low power consumption, compliant with the main security standards.

Main peripherals of the secure processor are a Memory Protection Unit (MPU), an advanced crypto multiplier for cryptography and authentication, a true random number generator, dedicated hardware for protection against SPA/DPA attacks and sensors to warranty the environment protection.

The second processor is a high-performance ARM Cortex™-M4 32-bit RISC core operating at a frequency up to 168 MHz with memory protection unit (MPU) which enhances application security.

Contactless Chip Driver: it's CLRC663 chip from NXP.

The CLRC663 is a highly integrated transceiver IC for contactless communication at 13.56 MHz.

This transceiver IC uses an outstanding modulation and demodulation concept completely integrated for different kinds of contactless communication methods and protocols at 13.56 MHz. CLRC663 is connected to cortex M4 processor on a Serial Peripheral Interface (SPI).

RS232 interfaces: the terminal has 4 serial interfaces RS232 connected on Minibridge connectors.

USB OTG Interface: this port is an USB On the Go connected to a microUSB connector.

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6 BV1000CL CONNECTORS VIEW

6.1 BV1000CL FRONT VIEW



Four green leds follow the rule of EMVco, together with the buzzer, to monitor the transaction status.

The following table specify the RGB LED sequence for a normal transaction, from card insert, through product selection and vend to card withdrawal.

INDICATOR	STATE	DESCRIPTION
GREEN	STATIC	Ready For Use, Idle State
RED	STATIC	Out Of Order
YELLOW	FLASHING	Please Make Selection
YELLOW	STATIC	Processing Transaction, Please Wait
GREEN	FLASHING	Paid Remove Card
RED	FLASHING	Error, Remove Card – No Payment Made

Notes:

The yellow led indicator is optional so if the reader uses only the red and the green leds, the sequence remains the same but with the yellow led states removed.

6.2 BV1000CL BACK VIEW

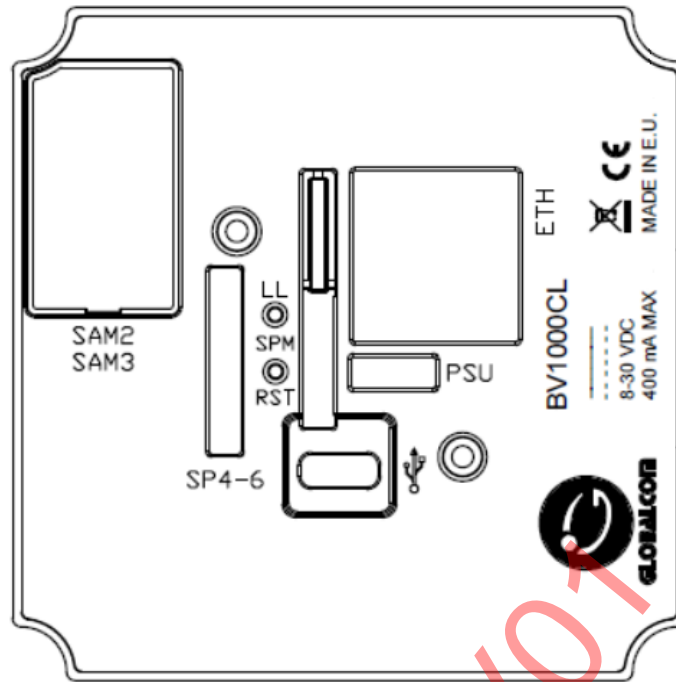


FIGURE 1 – Connector View of the BV1000CL

PSU: Power supply Connector (+VD.C.)

ERNI P/N 284696 or 101403240001 (3 poles)

PIN1	+VIN
PIN2	GND
PIN3	Protective Ground

SPM: Serial Port

ERNI P/N: 284699 or 100503240001 (8 poles)

PIN1	TX1 Transmit data output RS232
PIN2	RX1 Receive data input RS232
PIN3	GND
PIN4	RTS Request To Send signal RS232 input
PIN5	CTS Clear To Send signal RS232 output
PIN6	NCP Card present signal, active low (open collector)
PIN7	TEN Terminal enable, 1 = BV1000CL active
PIN8	NPU Bidirectional signal output/input active low

SP4-6: Serial Ports**ERNI P/N: 294920 or 101503240001 (12 Poles)**

PIN1	RX4 Receive data input RS232
PIN2	TX4 Transmit data output RS232
PIN3	GND
PIN4	TXA0 Transmit data output RS232
PIN5	RXA0 Receive data input RS232
PIN6	+3V3IP IN
PIN7	OUTE
PIN8	TX6 Transmit data output RS232
PIN9	MAN 1=MAN Active
PIN10	RX6 Receive data input RS232
PIN11	+5V
PIN12	GND

microUSB Connector

PIN1	VBUS USB
PIN2	DM
PIN3	DP
PIN4	ID
PIN5	GND

ETH: LAN Ethernet 10/100MB RJ45

Green Led	Indicate the network link OFF = link off ON = link on
Yellow Led	Indicate the flow of data Blink = data flowing

LL: LED LINK

Off	Contactless reader not powered
-----	--------------------------------

After the power on of the device the led indicates the status of the communications in the following way:

One Flash:	Contactless reader powered, contactless reader violated
Two Flashes:	Contactless reader powered, BV1000R connected
On	Contactless reader powered, communication with the peripherals absent

Each series of flashes is separated with a second of led powered off.

If one or two of the communications are missing the led will skip the related flashes.



RST : RESET PUSHBUTTON

Press to reset the device

SAM2 SAM3: Dual SAM Connector (Inside the Module)

SAM2 Connector Top (Insertion on top)

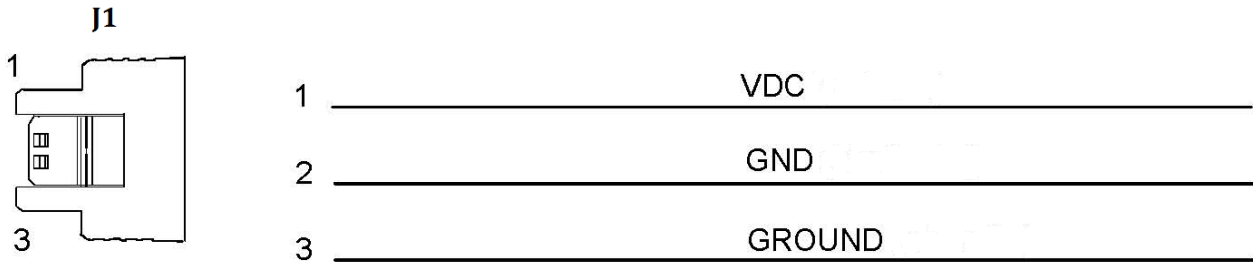
SAM3 Connector Bottom (Insertion on bottom)

DRAFT V01

7 CABLE

Following some examples of cables:

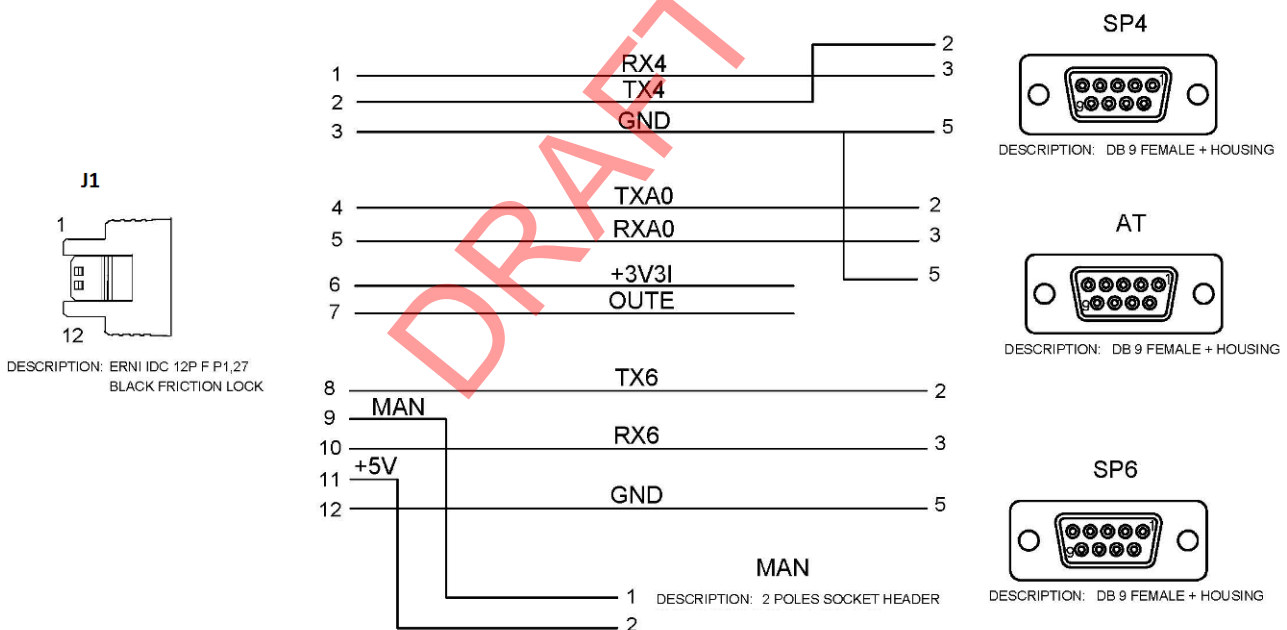
7.1 CAC0096 POWER CABLE



J1	Connector female ERNI IDC 3 Poles Black Friction Lock (P/N: 101603240001)
Cable	Discrete Wire AWG 24, Length = 50cm

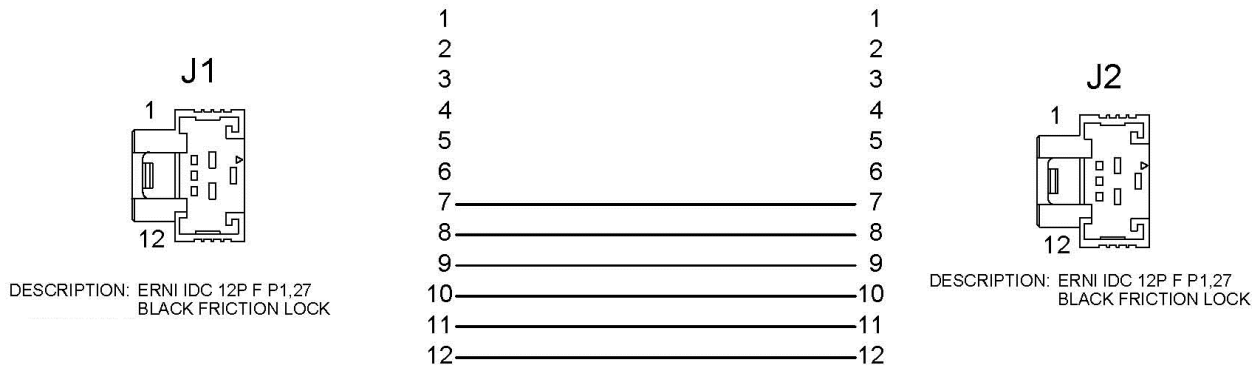
The pin 3 "GROUND" must be used for the grounding of the device.

7.2 CAC0136 BV1000CL GBC SERIAL CABLE



J1	Connector female ERNI IDC 12 Poles Black Friction Lock (P/N: 101903240001)
SP4	Connector SUB-D 9 Poles Female
AT	Connector SUB-D 9 Poles Female
SP6	Connector SUB-D 9 Poles Female
MAN	2 Poles Socket Header Connector
Cable	Discrete Wire AWG 26, Length = 30cm

7.3 CAC0138 CABLE BV1000R-BV1000CL



J1	Connector female ERNI IDC 12 Poles Black Friction Lock (P/N: 101903240001)
J2	Connector female ERNI IDC 12 Poles Black Friction Lock (P/N: 101903240001)
Cable	FLAT Wire AWG 26, Length = 30cm

DRAFT V01

8 MECHANICAL DIMENSIONS

8.1 BV1000CL MECHANICAL DIMENSIONS

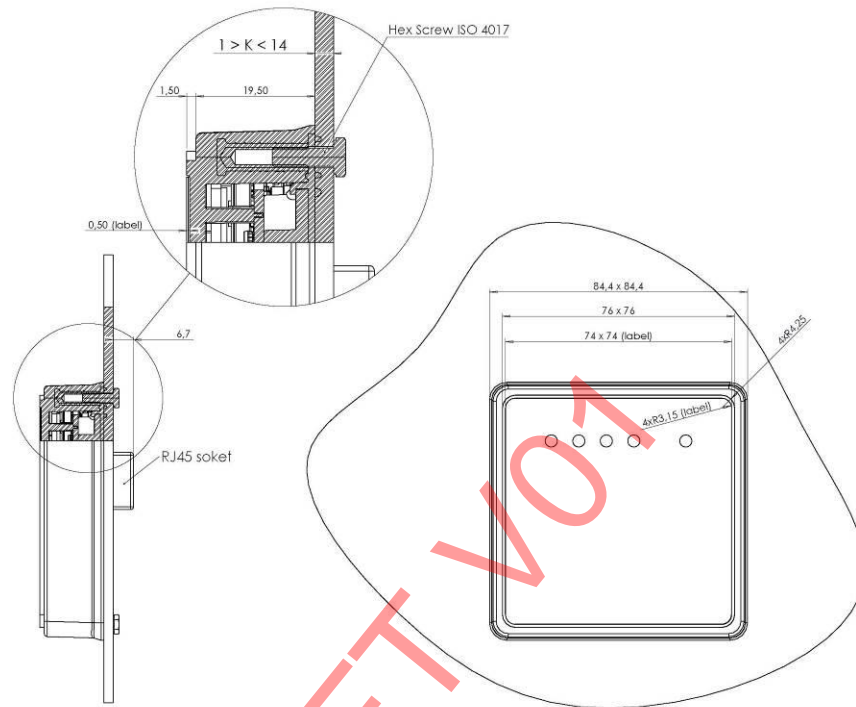


FIGURE 2 – Mechanical dimension of the BV1000CL

Note: Advised front label thickness 0,25mm. (0.5mm plastic frame).

Panel Thickness "K"	Hex Screw ISO 4017
1	M3x8
2	M3x8
3	M3x10
4	M3x10
5	M3x12
6	M3x12
7	M3x12 (M3x16)
8	M3x16
9	M3x16
10	M3x16
11	M3x16 (M3x20)
12	M3x20
13	M3x20
14	M3x20

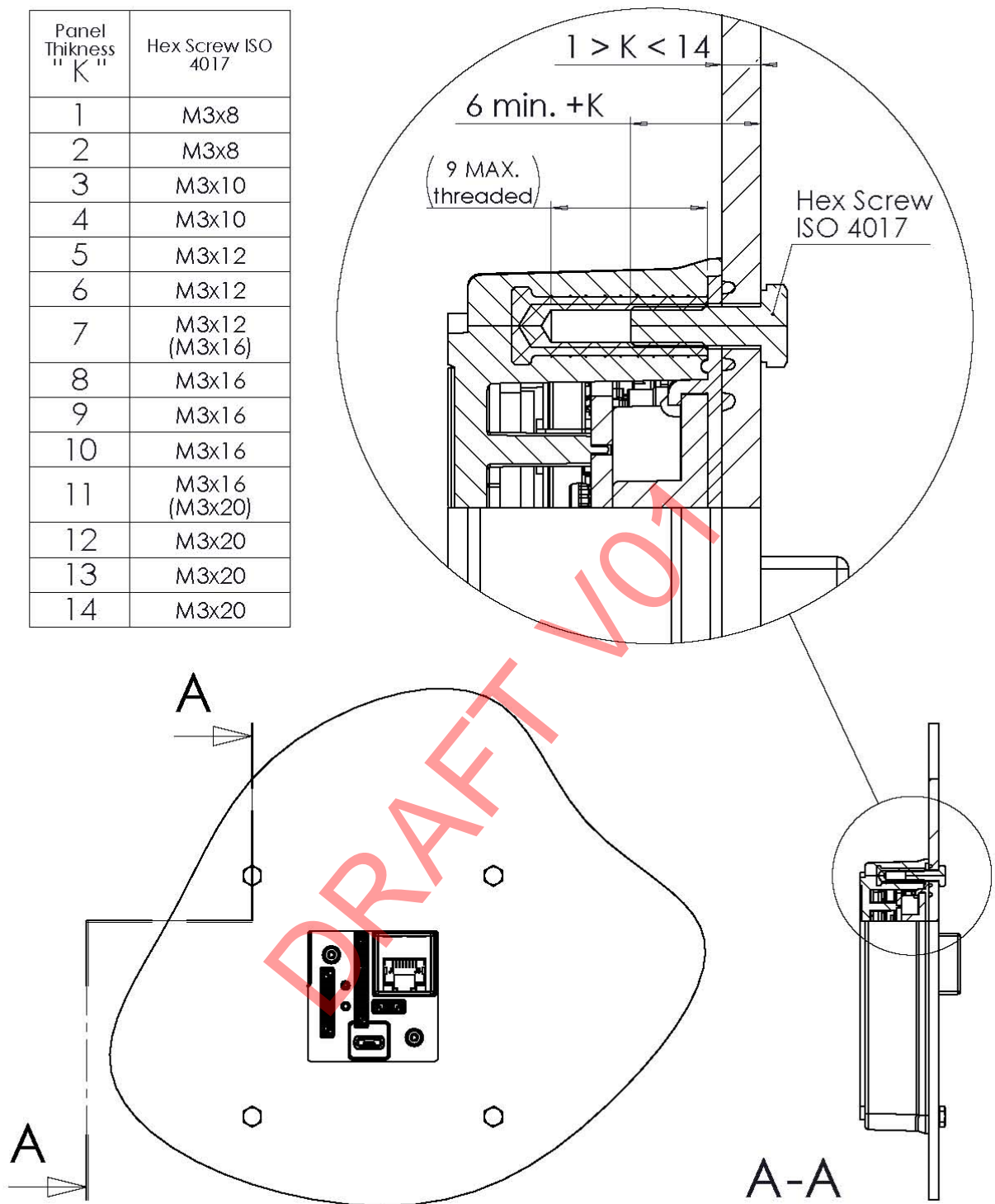


FIGURE 3 – BV1000CL Fixing Screws.

Note: Maximum fixing torque :1,7Nm.

8.2 BV1000CL PANEL DRILLING

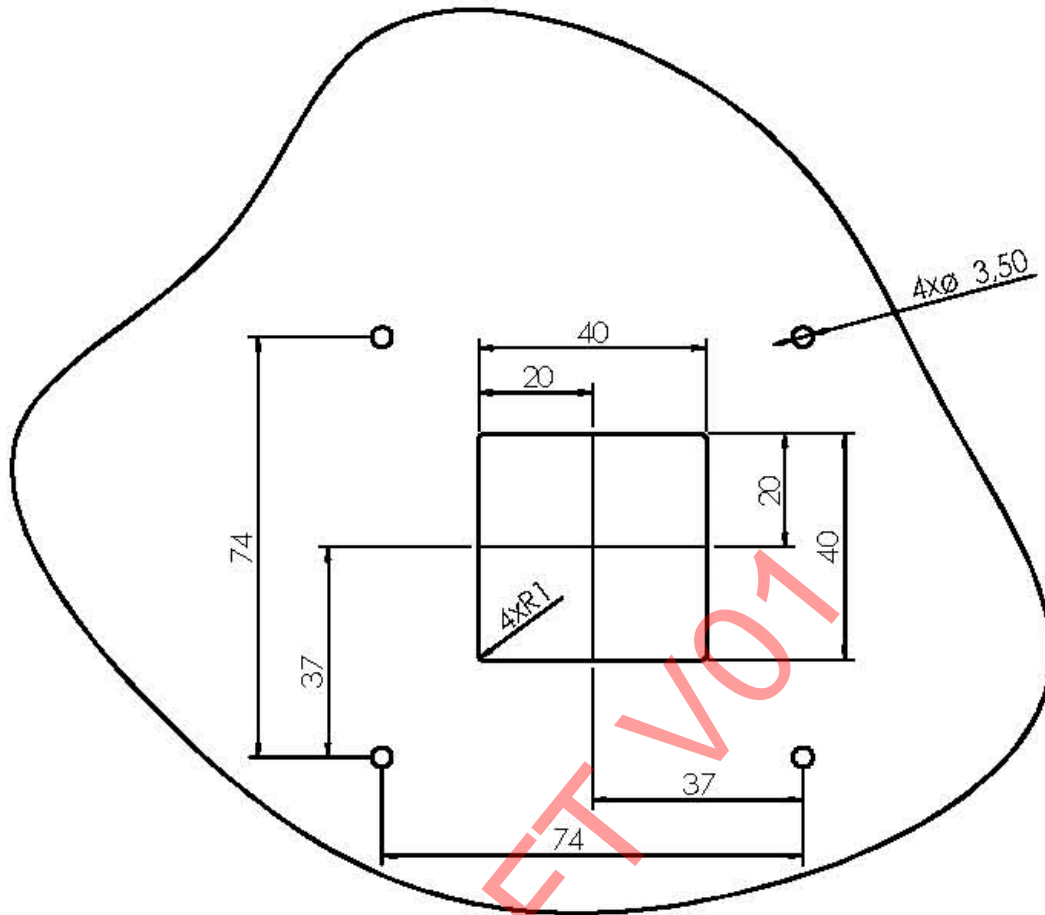


FIGURE 4 - Panel drilling BV1000CL

9 HOW TO CONTACT US

Dear customer thank you for the choice of our products.

To satisfy any your requirements you can contact us at the following address:



Globalcom Engineering S.p.A.

Via Volta 39 - 21010 Cardano Al Campo (Varese)
Italy

Tel. +39 0331 904454

Fax +39 0331 901835

Internet: www.globalcom-eng.com

e-mail: info@globalcom-eng.com

DRAFT 201

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