



ICC190

ICC191

ICC192

ICC193

ICC194

MicroPC Card Cages

User Manual

Rev. 001 E

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P R E L I M I N A R Y

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Notation Conventions



Warning, ESD Sensitive Device!

This symbol draws your attention to the information related to electro static sensitivity of your product and its components. To keep product safety and operability it is necessary to handle it with care and follow the ESD safety directions.



Warning!

This sign marks warnings about hot surfaces. The surface of the heatsink and some components can get very hot during operation. Take due care when handling, avoid touching hot surfaces!



Caution: Electric Shock!

This symbol warns about danger of electrical shock (> 60 V) when touching products or parts of them. Failure to observe the indicated precautions and directions may expose your life to danger and may lead to damage to your product.



Warning!

Information marked by this symbol is essential for human and equipment safety. Read this information attentively, be watchful.



Note...

This symbol and title marks important information to be read attentively for your own benefit.

General Safety Precautions

This product was developed for fault-free operation. Its design provides conformance to all related safety requirements. However, the life of this product can be seriously shortened by improper handling and incorrect operation. That is why it is necessary to follow general safety and operational instructions below.



Warning!

All operations on this device must be carried out by sufficiently skilled personnel only.



Warning!

When handling this product, special care must be taken not to hit the heatsink (if installed) against another rigid object. Also, be careful not to drop the product, since this may cause damage to the heatsink, CPU or other sensitive components as well.

Please, keep in mind that any physical damage to this product is not covered under warranty.



Note:

This product is guaranteed to operate within the published temperature ranges and relevant conditions. However, prolonged operation near the maximum temperature is not recommended by Fastwel or by electronic chip manufacturers due to thermal stress related failure mechanisms. These mechanisms are common to all silicon devices, they can reduce the MTBF of the product by increasing the failure probability. Prolonged operation at the lower limits of the temperature ranges has no limitations.



Caution, Electric Shock!

Before installing this product into a system and before installing other devices on it, always ensure that your mains power is switched off.

Always disconnect external power supply cables during all handling and maintenance operations with this module to avoid serious danger of electrical shock.

Unpacking, Inspection and Handling

Please read the manual carefully before unpacking the module or mounting the device into your system. Keep in mind the following:



ESD Sensitive Device!

Electronic modules and their components are sensitive to static electricity. Even a non-perceptible by human being static discharge can be sufficient to destroy or degrade a component's operation! Therefore, all handling operations and inspections of this product must be performed with due care, in order to keep product integrity and operability:

- Preferably, unpack or pack this product only at EOS/ESD safe workplaces. Otherwise, it is important to be electrically discharged before touching the product. This can be done by touching a metal part of your system case with your hand or tool. It is particularly important to observe anti-static precautions when setting jumpers or replacing components.
- If the product contains batteries for RTC or memory back-up, ensure that the module is not placed on conductive surfaces, including anti-static mats or sponges. This can cause short-circuit and result in damage to the battery and other components.
- Store this product in its protective packaging while it is not used for operational purposes.

Unpacking

The product is carefully packed in an antistatic bag and in a carton box to protect it against possible damage and harmful influence during shipping. Unpack the product indoors only at a temperature not less than +15°C and relative humidity not more than 70%. Please note, that if the product was exposed to the temperatures below 0°C for a long time, it is necessary to keep it at normal conditions for at least 24 hours before unpacking. Do not keep the product close to a heat source.

Following ESD precautions, carefully take the product out of the shipping carton box. Proper handling of the product is critical to ensure correct operation and long-term reliability. When unpacking the product, and whenever handling it thereafter, be sure to hold the module preferably by the front panel, card edges or ejector handles. Avoid touching the components and connectors.

Retain all original packaging at least until the warranty period is over. You may need it for shipments or for storage of the product.

Initial Inspection

Although the product is carefully packaged, it is still possible that shipping damages may occur. Careful inspection of the shipping carton can reveal evidence of damage or rough handling. Should you notice that the package is damaged, please notify the shipping service and the manufacturer as soon as possible. Retain the damaged packing material for inspection.

After unpacking the product, you should inspect it for visible damage that could have occurred during shipping or unpacking. If damage is observed (usually in the form of bent component leads or loose socketed components), contact Fastwel's official distributor from which you have purchased the product for additional instructions. Depending on the severity of the damage, the product may even need to be returned to the factory for repair. **DO NOT** apply power to the product if it has visible damage. Doing so may cause further, possibly irreparable damage, as well as result in a fire or electric shock hazard.

If the product contains socketed components, they should be inspected to make sure they are seated fully in their sockets.

Handling

In performing all necessary installation and application operations, please follow only the instructions supplied by the present manual.

In order to keep Fastwel's warranty, you must not change or modify this product in any way, other than specifically approved by Faswel or described in this manual.

Technical characteristics of the systems in which this product is installed, such as operating temperature ranges and power supply parameters, should conform to the requirements stated by this document.

Retain all the original packaging, you will need it to pack the product for shipping in warranty cases or for safe storage. Please, pack the product for transportation in the way it was packed by the supplier.

When handling the product, please, remember that the module, its components and connectors require delicate care. Always keep in mind the ESD sensitivity of the product.

Three Year Warranty

Fastwel Co. Ltd. (Fastwel), warrants that its standard hardware products will be free from defects in materials and workmanship under normal use and service for the currently established warranty period. Fastwel's only responsibility under this warranty is, at its option, to replace or repair any defective component part of such products free of charge.

Fastwel neither assumes nor authorizes any other liability in connection with the sale, installation or use of its products. Fastwel shall have no liability for direct or consequential damages of any kind arising out of sale, delay in delivery, installation, or use of its products.

If a product should fail through Fastwel's fault during the warranty period, it will be repaired free of charge. For out of warranty repairs, the customer will be invoiced for repair charges at current standard labor and materials rates.

Warranty period for Fastwel products is 36 months since the date of purchase.

The warranty set forth above does not extend to and shall not apply to:

1. Products, including software, which have been repaired or altered by other than Fastwel personnel, unless Buyer has properly altered or repaired the products in accordance with procedures previously approved in writing by Fastwel.
2. Products, which have been subject to power supply reversal, misuse, neglect, accident, improper installation or storage.

Returning a product for repair

1. Apply to Fastwel company or to any of the Fastwel's official representatives for the Product Return Authorization.
2. Attach a failure inspection report with a product to be returned in the form, accepted by customer, with a description of the failure circumstances and symptoms.
3. Carefully package the product in the antistatic bag, in which the product had been supplied. Failure to package in antistatic material will VOID all warranties. Then package the product in a safe container for shipping.
4. The customer pays for shipping the product to Fastwel or to an official Fastwel representative or dealer.

1 Description

ICC19x series includes Micro PC card cages designed for different number of cards; it consists of the following products:

Product	Number of Slots	Wall Mounting	Horizontal Mounting
ICC190	4	+	
ICC191	8	+	
ICC192	12	+	
ICC193	3		+
ICC194	6	+	

The ICC19x card cages provide three-sides fixing of cards. Moreover, to further improve mechanical stability, an additional fixing plates can be used. The plates are supplied with each of the card cages.

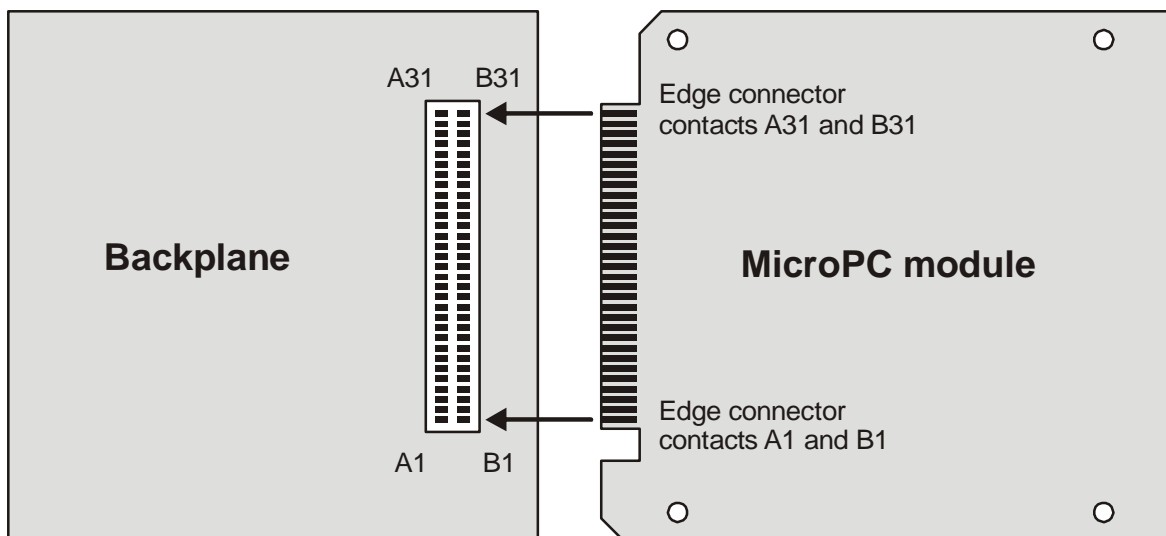
The passive backplane with ISA sockets is installed on the back side of the cage. The slots spacing is 22.86 mm (9/10 in). There are openings on the side walls for fastening of power supply unit or other accessories. Mounting a 51xx-series power supply unit on the side wall increases unit width by 50.8 mm (2 in).

2 Installation

Position the cage so that the open side looks up, the power supply unit (if installed) is on the right, and the backplane at the bottom.

Ensure the correct orientation of the card to be inserted, slide the card down along the guides into an ISA socket on the backplane applying moderate pressure on the upper edge of the card.

Correct orientation of a MicroPC module:



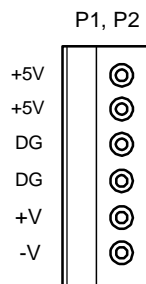
Attention!

Incorrect orientation (with 180° rotation) leads to serious damage to the module!

3 Power Connectors

ICC190...ICC192, and ICC194 cages have two power connectors (P1 and P2) with latches. One of them is used to connect a 51xx-series power supply unit; another one serves as a power output for external devices. The figure below illustrates their contacts designation.

ICC193 cage has one power connector with WAGO clip contacts.



DG = digital ground; +V = +12V; -V = -12V.

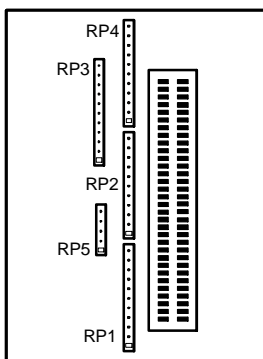
4 Line Terminators

The 12-slot ICC192 cage backplane includes a number of passive components.

IOW, IOR, SMEMW, and SMEMR signals are pulled to GND through serially connected 470 Ω resistor and 56 pF capacitor.

To reduce signal bounce in long lines it is possible to install 4.7 ... 10 k Ω SIP resistor arrays RP1 ... RP5.

SIP Resistor Array	Signals
RP1	D0 ... D7
RP2	A12 ... A19
RP3	A4 ... A11
RP4	A0 ... A3
RP5	IOW, IOR, MEMW, MEMR. Termination to +5V only.



Using resistive networks in SIP packages with different internal circuitry, it is possible to terminate signal lines in one of the following ways:

- To +5V: first RP_x SIP package pin to the first socket contact. SIP array: BOURNS 460610-101-472 or similar.
- To ground: first RP_x SIP package pin to the last socket contact. SIP array: BOURNS 460610-101-472 or similar.
- To ground and to +5V simultaneously: use BOURNS 460610-104-472 SIP resistor array or similar.

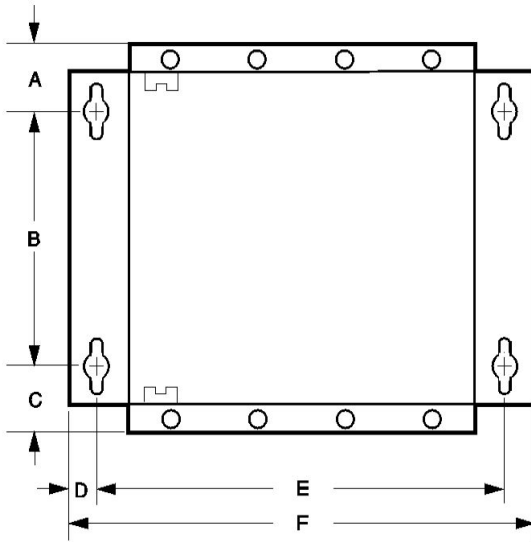
5 Connectors' Pinouts

ISA connector, rows A and B:

#	Signal	#	Signal
A1	IOCHK*	B1	GND
A2	D7	B2	RESET
A3	D6	B3	+5V
A4	D5	B4	IRQ2
A5	D4	B5	-5V
A6	D3	B6	DRQ2
A7	D2	B7	-12V
A8	D1	B8	Reserved
A9	D0	B9	+12V
A10	IOCHRDY	B10	GND
A11	AEN	B11	MEMW*
A12	A19	B12	MEMR*
A13	A18	B13	IOW*
A14	A17	B14	IOR*
A15	A16	B15	DACK3*
A16	A15	B16	DRQ3
A17	A14	B17	DACK1*
A18	A13	B18	DRQ1
A19	A12	B19	DACK0*
A20	A11	B20	CLOCK
A21	A10	B21	IRQ7
A22	A9	B22	IRQ6
A23	A8	B23	IRQ5
A24	A7	B24	IRQ4
A25	A6	B25	IRQ3
A26	A5	B26	DACK2*
A27	A4	B27	TC
A28	A3	B28	ALE
A29	A2	B29	+5V
A30	A1	B30	OSC
A31	A0	B31	GND

6 Dimensions

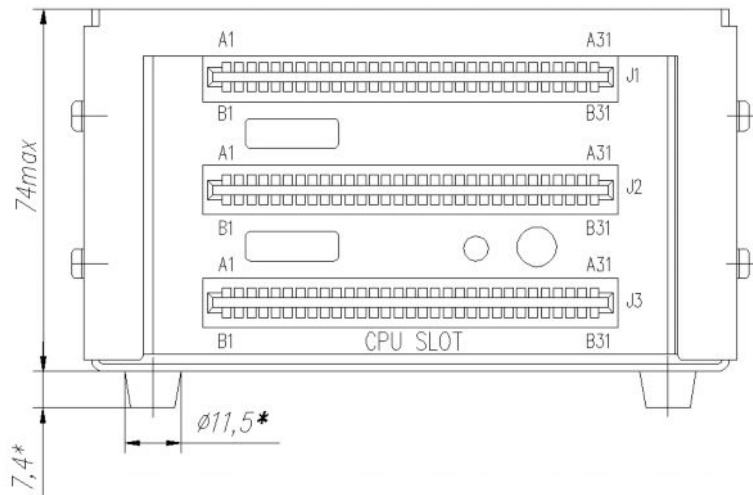
6.1 ICC190, ICC191, ICC192, ICC194



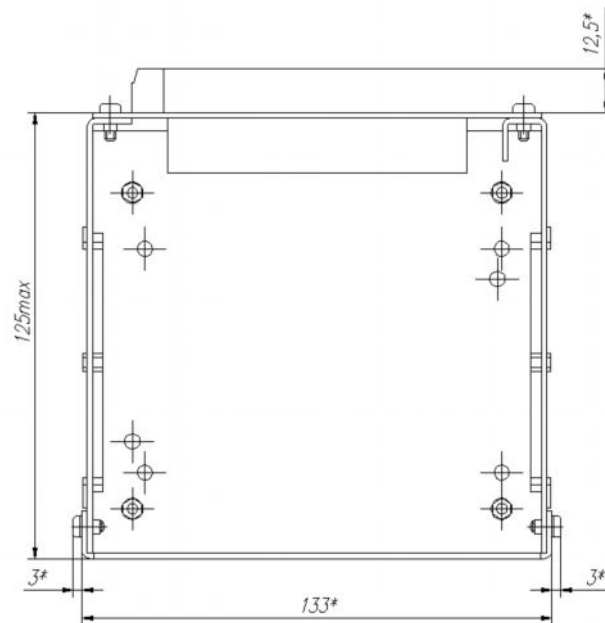
A =	31.11 mm	(1.225 in)
B =	86.36 mm	(3.400 in)
C =	31.11 mm	(1.225 in)
D =	8.38 mm	(0.330 in)
E =	ICC190: 143.89 mm	(5.665 in)
	ICC194: 189.61 mm	(7.465 in)
	ICC191: 235.33 mm	(9.265 in)
	ICC192: 326.70 mm	(12.86 in)
F =	ICC190: 160.65 mm	(6.325 in)
	ICC194: 206.37 mm	(8.125 in)
	ICC191: 252.09 mm	(9.925 in)
	ICC192: 343.50 mm	(13.50 in)

6.2 ICC193

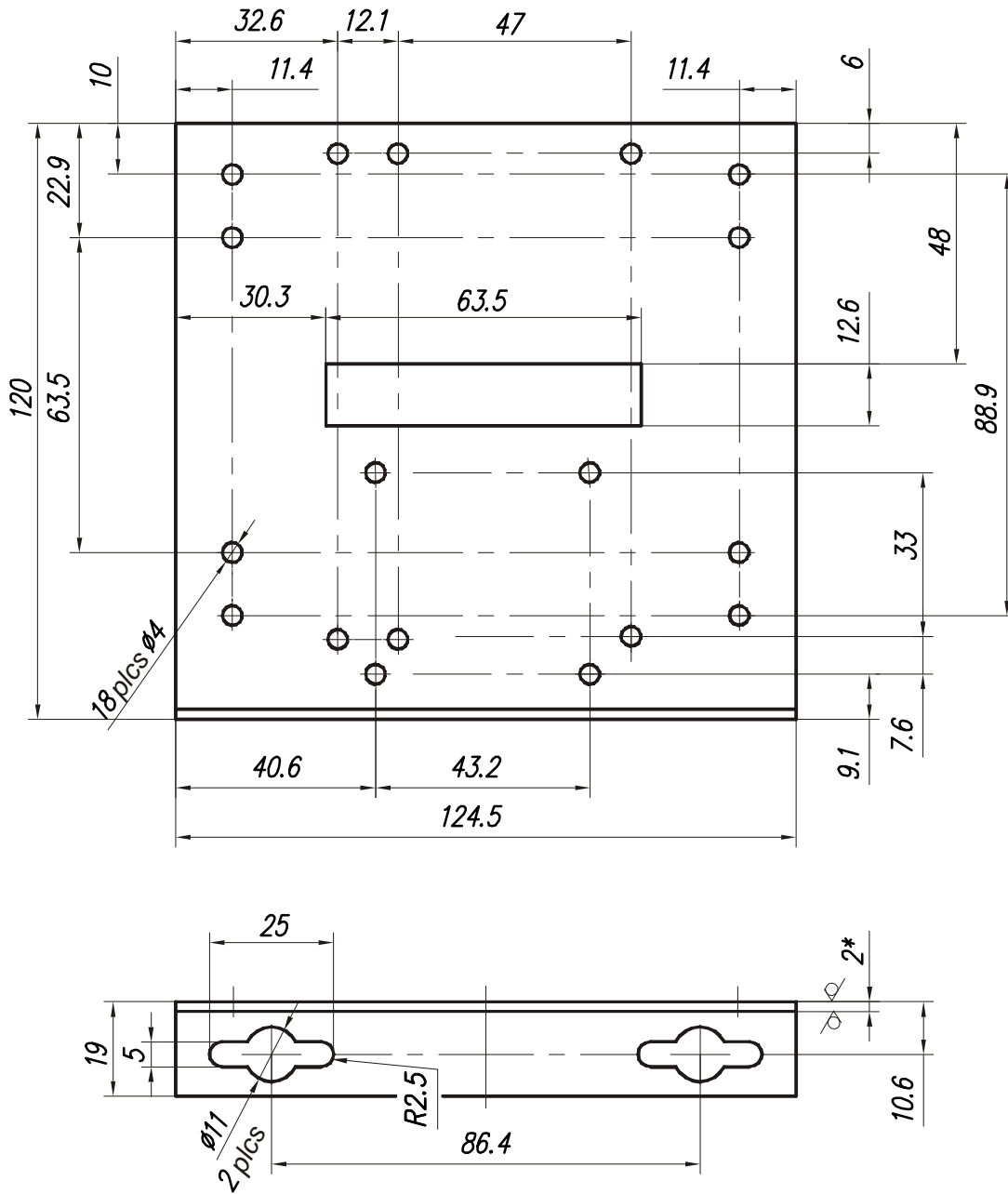
Front view:



Top view:



6.3 Side Walls: Openings



Note:
Another wall has mirror layout.