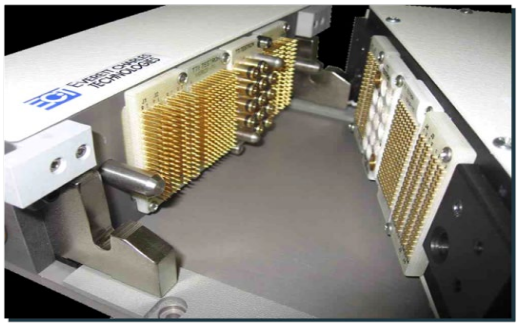
VG Mass Interconnect Technology

ECT Contact Products Group



ECT CONTACT PRODUCTS
EVERETT CHARLES TECHNOLOGIES
A Cohu Company

Agenda

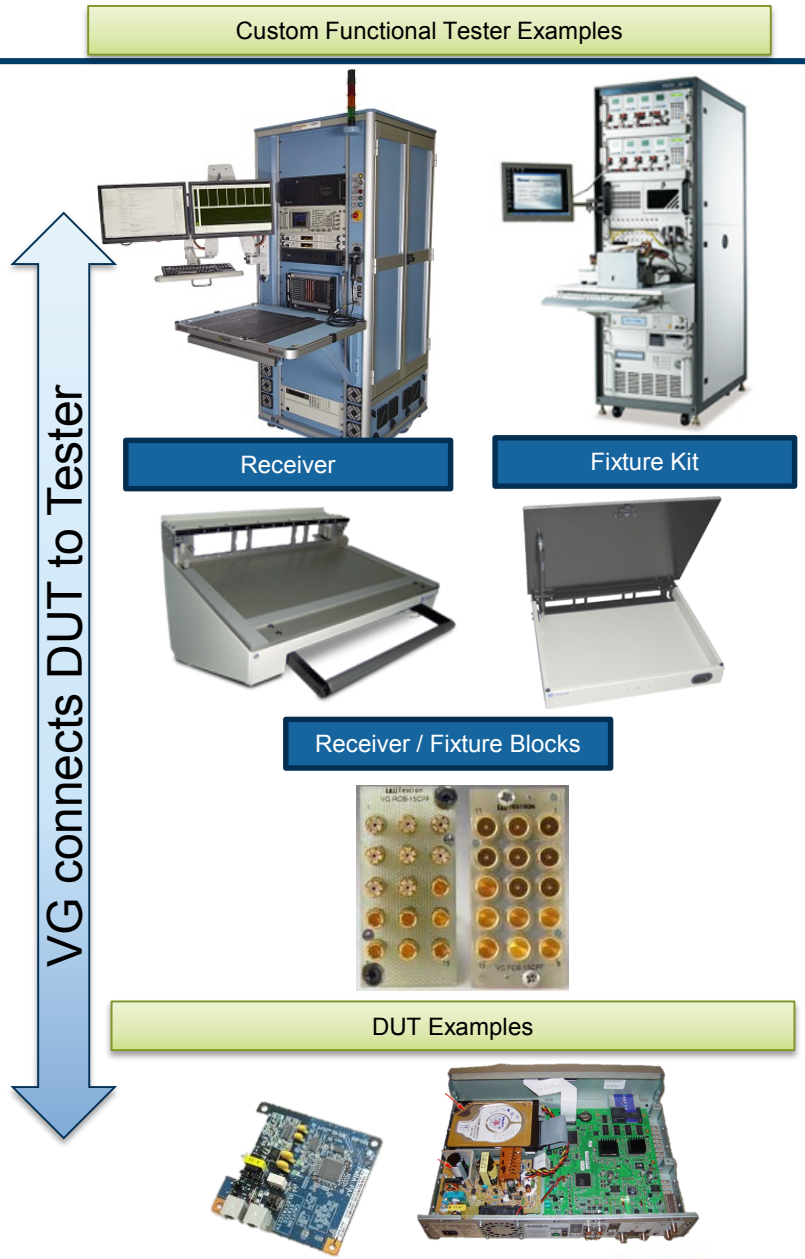
- VG Mass Interconnect history and introduction
- Test method comparison:
  - In-circuit Test (ICT) vs Functional Test (FCT)
- VG product line from ECT CPG
  - Sample part numbers
  - Receivers
  - Blocks

VG History

- The VG Series Product Line was launched in 1990 using the GR2270 Receiver Platform
- Initially interface blocks were created for power and coaxial signal capability
- This reliable low cost solution quickly grew as it was a well recognized platform throughout the ATE industry
- VG is an abbreviation and stands for:
  - V – VXI (VME Xtensions or Instrumentation)
  - G – GPIB (General Purpose Instrument Bus / HPIB / IEEE-488)
- Everett Charles Technologies is the recognized a global leader in GR2270 Mass Interconnect Technology solutions for the functional test industry

Introduction to VG

- What is VG Mass Interconnect?
  - VG is a series of **modular fixture products** that allow **quick connection** of a DUT (device under test) to a custom test system. The modular architecture allow for some components to be **reused on multiple setups**.
    - The product line is divided between **Receivers** (Tester Side), and **Fixture Kits** (DUT side or ITA- Interchangeable Test Adaptors)
    - Mating interface blocks connect fixtures to receivers
    - There are various cables to connect receivers to tester
  - VG is commonly used in **Functional Test**
  - The product line supports various connections needed to communicate between a DUT and a test system



Introduction to VG

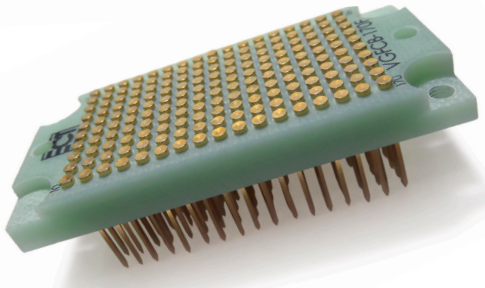
ECT CPG: VG Technology and Experience

- Receiver blocks contain a high **number of probes** and other interconnects such as RF and high current
- Mass interconnect products are **only as good as the conductive elements**, i.e. the spring probe. They are the most critical component in the system
- Our **core competency with over 50 years** experience in the design and manufacture of spring probes
- There is space in the market as **most providers lack our knowledge and manufacturing capability**
- The market requirements are **not new to CPG**. Many of the EPA-3 and other probes consumed by ECT FSG were in support of the VG line product

VG Series Mass Interconnect

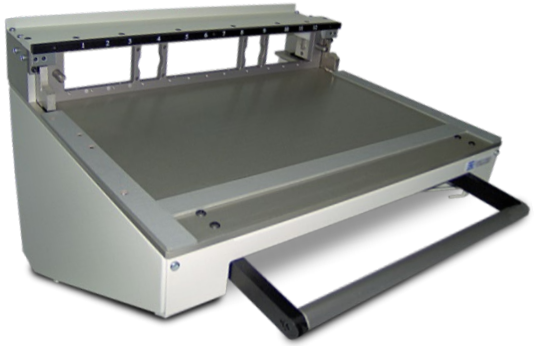
Benefits of ECT VG

- Whether being used in a bench top or rack mount configuration, the VG system is an excellent interconnect system for connecting to your test instrumentation and equipment
- Cost effective / quick delivery solution
- Compatible with test instrumentation and platforms
- Universal configurable test interface
- Parts are easy to customize and install in-house
- Most parts are stocked resulting in short lead times
- ECT CPG doesn't offer test fixture kits nor ITA hardware.



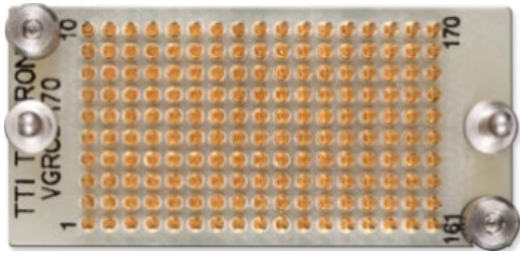
The VG Product Line from ECT

- Receivers: Desk Top or Rack Mount

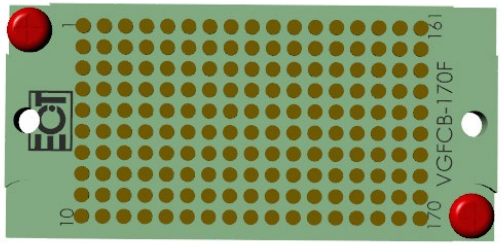


- Interface Blocks:

Receiver



Fixture

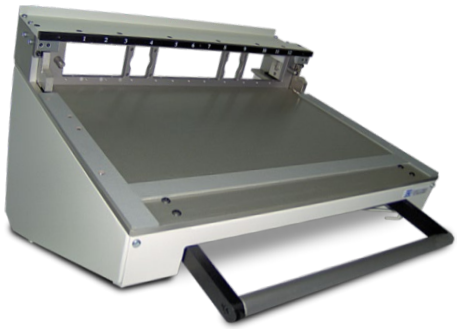


- Contact Pins: Power, Coax, Signal, Pneumatic
- Coax Cables

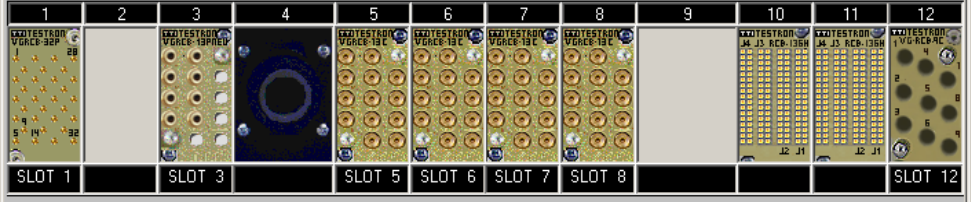
- Tools

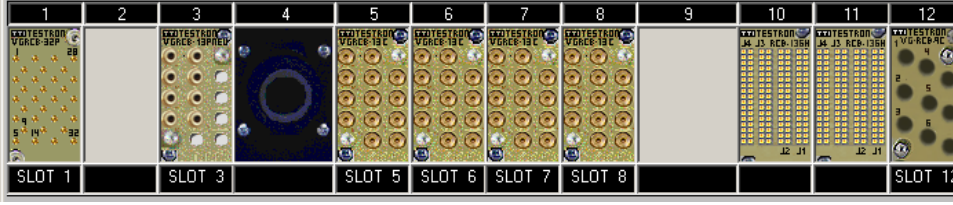
VG Product - Receivers

- There are several VG receiver types available.
  - The receiver allows the user to create a **universal configurable interface** and is compatible to currently available test instrumentation and platforms.
    - VGR4 – 4 blocks (no vacuum), Desktop Only
    - VGR12 – 12 Blocks, up to two vacuum ports, Desktop and Rack mount
    - VGR24 – 24 Blocks, up to four vacuum ports, Desktop and Rack mount
    - Whether in a **rack or on a benchtop**, the VG reciever allows test equipment to be **shared with mulitple products through** the use of individual test fixtures that interface with the receiver.



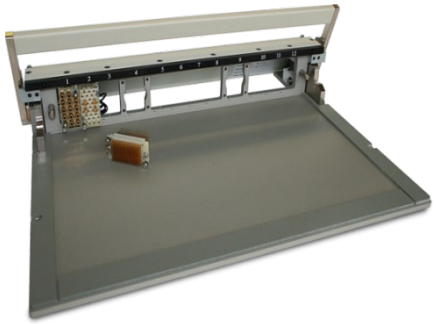
  - It‘s a **cost effective / quick delivery sytem** used by OEM and functional test integrators world-wide.



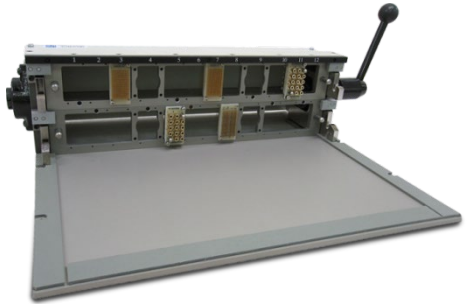


VG Mass Interconnect Receivers

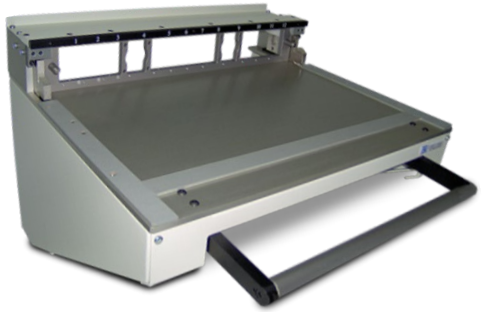
VGR4 – 4 Blocks –
(680 Max Contacts)



VGR12 – 12 Blocks,
(2040 Max Contacts)



VGR24 – 24 Blocks,
(4080 Max Contacts)



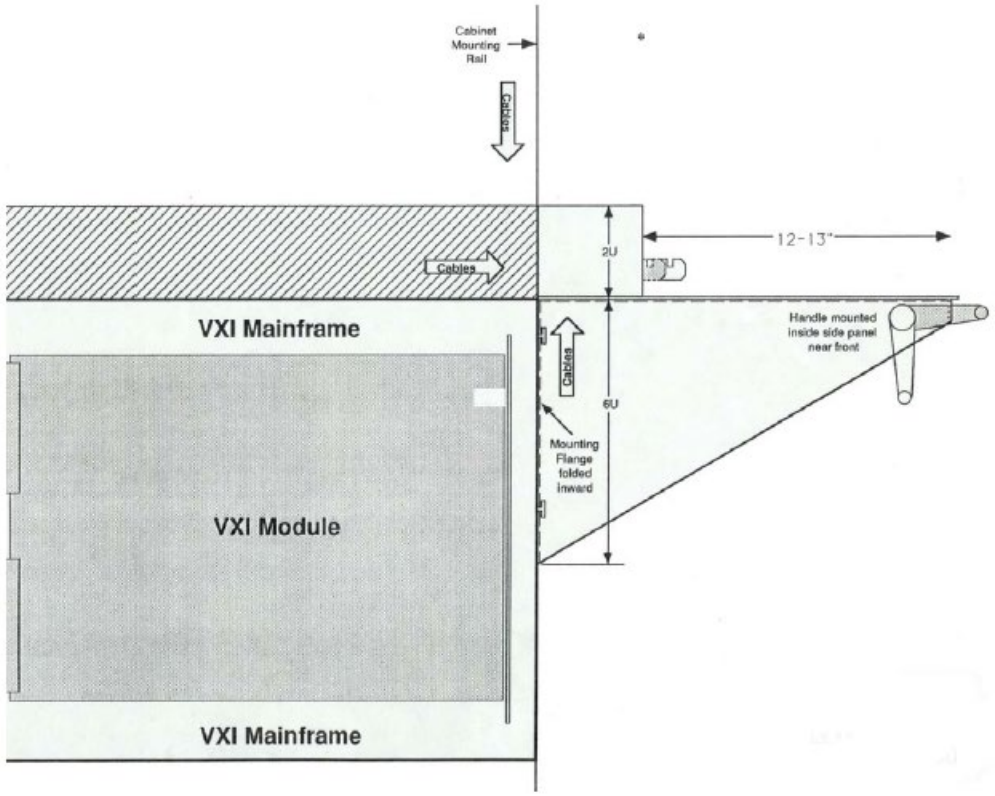
VGR12-RM1 – 12 Blocks, up to 2 Vacuum Ports, Mountable on 19” Rack System
(2040 Max Contacts)

VGR24-RM1 – 24 Blocks, up to 4 Vacuum Ports, Mountable on 19” Rack System
(4080 Max Contacts)

VG Rack Mount Receivers

- Rack mount receivers easily mate up with standard 19” racks. Block wiring is easily attached through standard connections on Signal, Power, and Coax interface blocks.

- Wires are protected by routing them behind and underneath. This keeps them out of the way and ensures safety during daily operations. The cover can easily be removed for modifications to the receiver or instrumentation.



* VGR24-RM1 ADDS AN ADDITIONAL 2U TO THE HEIGHT (1U=1.75")

VG Blocks – Available Block Types

Blocks are available in the following product groups:

USB / HDMI / RJ45
For High Speed Buss Pass thru Connections OTS Cabling

Coaxial
For high frequency applications with up to 26Ghz

High Current
For high current applications up to 150Amps

Electrical Signal
Offers highest density with up to 170 Connections up to 5Amps

Combination Blocks
Combining multiple connection types Coax, Signal, Power in one block

Pneumatic Lines
Used for pneumatic activated cylinder, probes or side access units

Vacuum Ports
Vacuum supply for vacuum actuated Fixtures available on the VGR-12 and VGR-24

VG Block Part Numbering System

Each Connection requires a Receiver side block and a Fixture side block. Recognizable by the part description (example):

VGRCB-170F-H

- **R - Receiver**
  F - Fixture
- **CB-Contact Block**
- **170-Pin Count**
- **C-Coaxial**
  P-Power
  S-Signal
  F-Floating
  H-Square post
  R- Round post

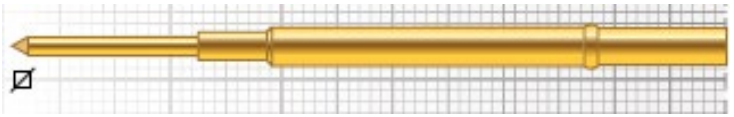
Receiver Side:
Male contacts (typically spring probes) are mounted into the receiver side to prevent damage that may occur when moving fixtures to and from the test system and storage areas. Alignment features are also on the receiver side.

Fixture Side:
The fixture side houses the female contact (typically a rigid pad) and is the less complex side of the interface. Hence, the fixture side is lower cost.

VG Blocks - Terminal Wiring Options

Square & Round Tails: Receiver and Fixture Blocks

- Square tails are for wire-wrap applications and denoted by “- H” in the part number.

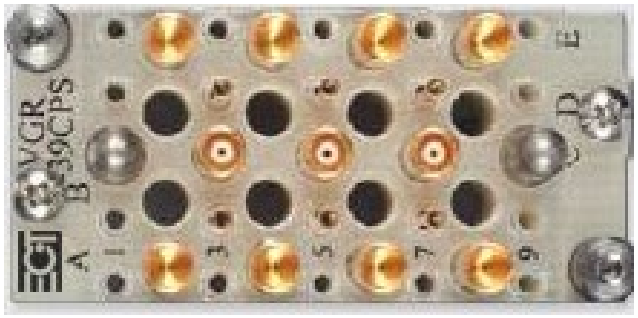


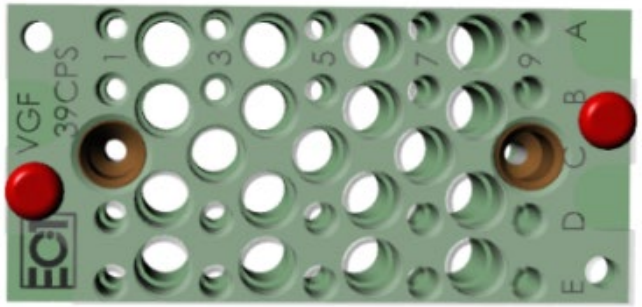
  - All square tail blocks come with pin / post edges aligned so either can be used for connector applications, but the square tails remain the solution for wire-wrap.

- Round tails are provided for plug on connector applications and denoted by “- R” in the part number.

VG Enhanced Alignment - Floating Alignment Blocks

- Block alignment issues can occur with ‘CP’ style blocks and contacts.
- The VGR/VGFCB-xxCPF series of blocks address the pre-alignment of blocks and contacts prior to full engagement.
- Floating blocks employ an alignment mechanism as well as using a free floating design on the receiver side to complete alignment of blocks and contacts prior to full engagement.

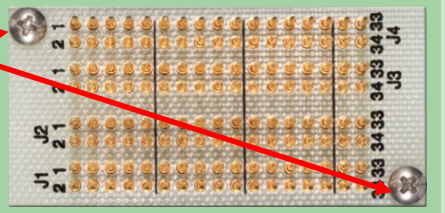




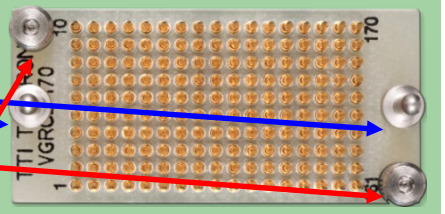
Floating Blocks and Signal Block Termination Options:

Mounting options:

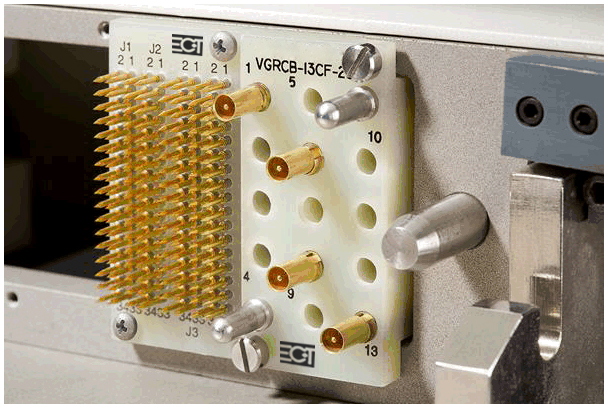
Fixed



Floating:
- Guidepins
- Floating screws



- Most new blocks encountered will be floating blocks because of the improved alignment they offer



- Receiver blocks have the float pins, so it's important to understand the customers' receiver configuration to ensure proper operation

- Floating receiver blocks must mate to floating fixture blocks

Reference Slides

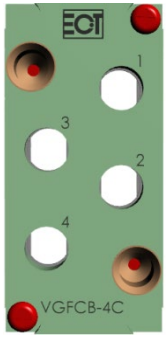
VG Coaxial Blocks

VGRCB-4C / VGFCB-4C: 4 HF contacts with frequency range of up to 18Ghz Backside has a SMA connector for easy termination

Contacts must be ordered seperate

Receiver Contacts
A32433

Fixture Contacts
A32434

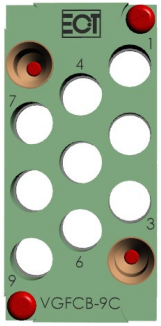


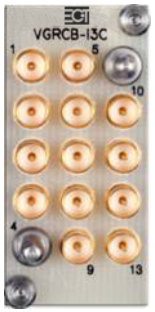
VGRCB-9C / VGFCB-9C: Same as above just with 9 HF contacts. Range of up to 18Ghz Backside has a SMA connector for easy termination

Contacts must be ordered seperate

Receiver Contacts
A35764

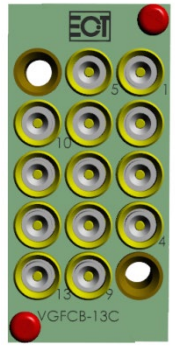
Fixture Contacts
A32434



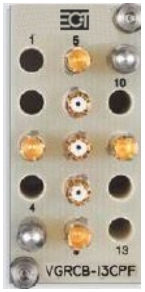


VGRCB-13C / VGFCB-13C: 13 HF contacts with a reduced max frequency range of up to 3.7Ghz Backside has a SMA connector for easy termination

HF Contacts are included



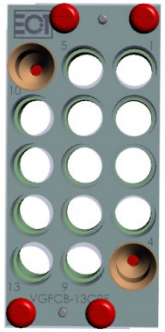
VG Mixed Signal Blocks



VGRCB-13CPF / VGFCB-13CPF: Coax and Power The block has 13 holes which can be populated with either HF or Power contacts. Giving the customer more flexibility on mixed signal. Contacts must be ordered seperate

Receiver Contacts
Coax: CR-CA50RG174-36 (PN 637)
Power: CR-610116102

Fixture Contacts
Coax: CF-CA50RG174-36 (PN 623)
Power: CF-610115102 10AWG
Power: CF-610115103 12AWG

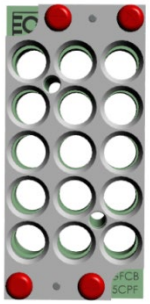


VGRCB-15CPF / VGFCB-15CPF: Coax and Power Same as above just with 15 holes to populate contacts freely.

Contacts must be ordered seperate

Receiver Contacts
Coax: CR-CA50RG174-36 (PN 637)
Power: CR-610116102

Fixture Contacts
Coax: CF-CA50RG174-36 (PN 623)
Power: CF-610115102 10AWG
Power: CF-610115103 12AWG



VGRCB-22CPF / VGFCB-22CPF: Coax and Power Same as above just with 22 holes to populate contacts freely

Contacts must be ordered seperate

Receiver Contacts
Mini Coax Contact: 610104114
Coax: CR-CA50RG174-36 (PN 643) Mini
Power: CR-610116112

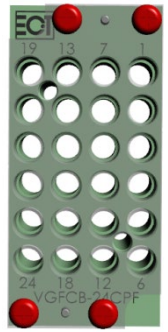
Fixture Contacts
Mini Coax Contact: 610103115
Coax: CF-CA50RG174-36 (PN 632}
Mini Power: CF-0883011-02

VG Mixed Signal Blocks

VGRCB-24CPF / VGFCB-24CPF: Coax and Power The block has 24 holes which can be populated with either HF or Power contacts. Giving the customer more flexibility on mixed signal. Contacts must be ordered seperate

Receiver Contacts
Mini Coax Contact: 610104114
Coax: CR-CA50RG174-36 (PN 643) Mini
Power: CR-610116112

Fixture Contacts
Mini Coax Contact: 610103115
Coax: CF-CA50RG174-36 (PN 632}
Mini Power: CF-0883011-02

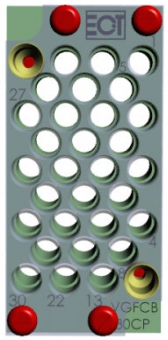


VGRCB-30CPF / VGFCB-30CPF: Coax and Power Same as before just with 30 holes to populate contacts freely.

Contacts must be ordered seperate

Receiver Contacts
Mini Coax Contact: 610104114
Coax: CR-CA50RG174-36 (PN 643) Mini
Power: CR-610116112

Fixture Contacts
Mini Coax Contact: 610103115
Coax: CF-CA50RG174-36 (PN 632}
Mini Power: CF-0883011-02

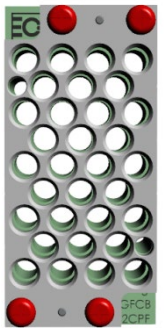


VGRCB-32CPF / VGFCB-32CPF: Coax and Power Same as before just with 32 holes to populate contacts freely

Contacts must be ordered seperate

Receiver Contacts
Mini Coax Contact: 610104114
Coax: CR-CA50RG174-36 (PN 643) Mini
Power: CR-610116112

Fixture Contacts
Mini Coax Contact: 610103115
Coax: CF-CA50RG174-36 (PN 632}
Mini Power: CF-0883011-02

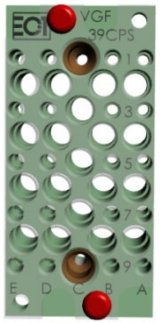


VG – Combined Blocks – Power Block – Pneumatic Block

VGRCB-39CPS / VGFCB-39CPS: Coax, Power and Signal Block which combines Coaxial, Power and Signal lines for maximum flexibility for the customer. 15 Holes can be populated with Coax or Power contacts. An additional 20 Holes are available for Signals. Contacts must be ordered seperate

Receiver Contacts
Mini Coax Contact: 610104114
Coax: CR-CA50RG174-36 (PN 643) Mini
Power: CR-610116112
Signal: 610110101

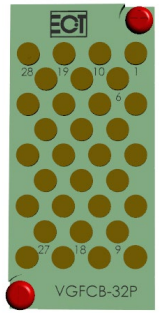
Fixture Contacts
Mini Coax Contact: 610103115
Coax: CF-CA50RG174-36 (PN 632}
Mini Power: CF-0883011-02
Signal: 610110108



VGRCB-32P / VGFCB-32P: Power 32 Contacts for Power Signals 25 Amps and Can be populated freely.

Receiver Probes ordered separately
HC93B – High Current Probe

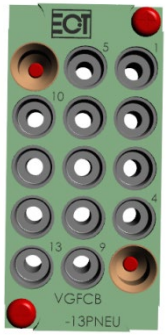
Fixture replacement contacts:
A10206



VGRCB-13PNEU / VGFCB-13PNEU: Pneumatic Block Provides a connection for up to 13 Pneumatic Lines with a 4mm air hose.

Receiver air fitting contact A32431
O-Ring A34432

Fixture air fitting contact A32432

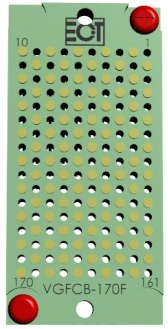


VG Signal Blocks

VGRCB- 85H / VGFCB- 85H: Used as lower density signal block. Essentially a VG-170 Block with only every other position populated to make 85 contacts.

Receiver
Replaceable Probes: EPA-2B40
Replaceable Receptacles: SPR-2W-2

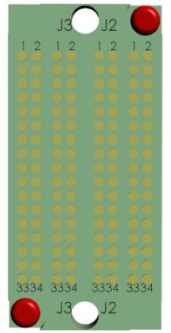
Fixture
Square Contacts: SIP-90-2
Round Contacts: A12962

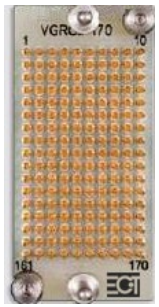


VGRCB-136 / VGFCB-136: Thanks to the missing contact rows, the Block allows to connect a ribbon cable connetor to be connected directly to the back of the VG-136 Block.

Receiver
Replaceable Probes: EPA-2B40
Replaceable Receptacles: SPR-2W-2

Fixture
Square Contacts: SIP-90-2
Round Contacts: A12962



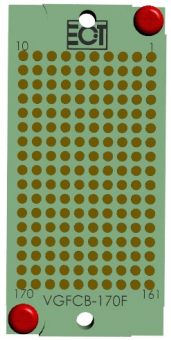


VGRCB-170 / VGFCB-170: Highest Density Signal Block available from ECT.

Receiver
Replaceable Probes: EPA-2B40
Replaceable Receptacles: SPR-2W-2

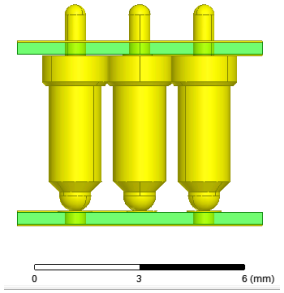
Fixture
Square Contacts: SIP-90-2
Round Contacts: A12962

17 pin Crimp to BergCon Clips – A32075
17 Pin BergCon Housings – A32076



VG High Speed Data Block: VGRCB-76D & VGFCB-76D

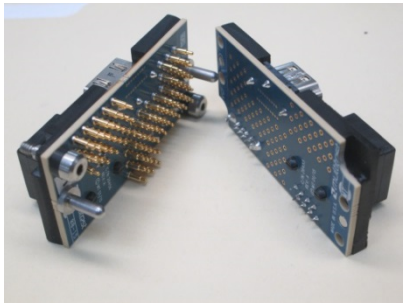
The **VG High Speed blocks** were developed to be a pass-through from Fixture (ITA) to Receiver utilizing the VG Mass Interconnect Interface system. By utilizing a printed circuit board we were able to provide **outstanding signal integrity** for the high speed data that is carried on the USB 2.0, RJ45 and HDMI cables.



Using Probe to Pad Connectivity for minimal signal loss and repeatable, reliable contact

Compatible and Adaptable with OTS Hardware:

- Allows the use of OTS Cables that simply plug into each side of the VG-HSD Block respectfully.
- OTS Hubs can expand from single connection to multiple
- OTS Adapters allow for Micro and Mini and other special connectors



Key Features

- USB 2.0 Connection
- RJ45 Connection
- HDMI Connection
- Utilizes probe technology for signal transfer
- CP-059-019 replaceable spring probe
- Utilizes VG floating alignment design
- Works in any VG Mass Interconnect Receiver or Fixture

VG Mass Interconnect Products from ECT

Thank you