ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

**Artisan Technology Group**
(217) 352-9330 | sales@artisantg.com | artisantg.com

**Full-service, independent repair center**
with experienced engineers and technicians on staff.

**We buy your excess, underutilized, and idle equipment**
along with credit for buybacks and trade-ins.

**Custom engineering**
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

**Expert team | Trust guarantee | 100% satisfaction**

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

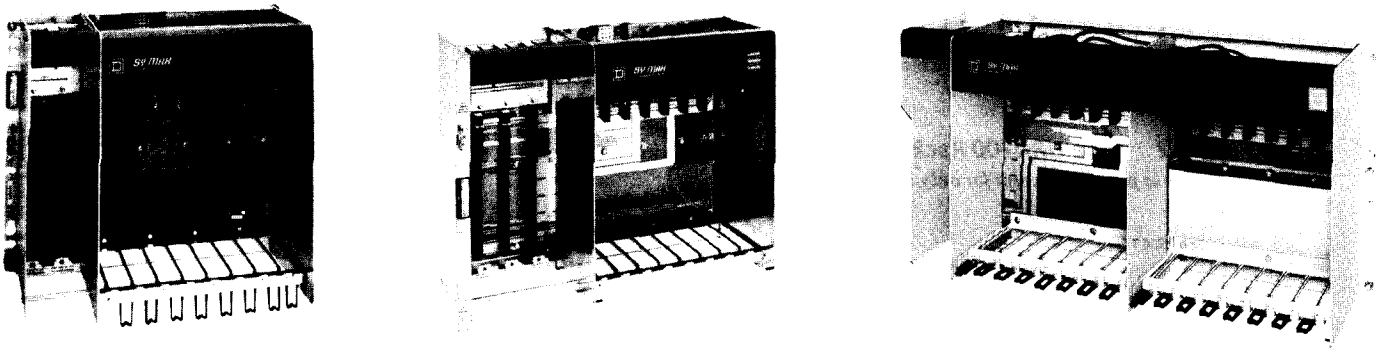
Find the *Schneider Electric / Square D 8030-PS-11* at our website: *Click HERE*

*Bulletin:* 30598-201-01C2
*Date:* October, 1990

# *Instruction Bulletin*

## SY/MAX®

## CLASS 8030 TYPE HRK100, 200 8 Function I/O Rack Assembly and TYPE HRK150 Register/Digital Rack Assembly



Note: Register racks may be painted black or plated (as pictured above) depending upon the series number.

*Figure 1 Type HRK100, 150, and 200 Rack Assemblies*

### DESCRIPTION

The Type HRK100, 150, and 200 Register Rack Assemblies provide the mounting slots for the Type HIM and HOM Eight (8) function digital I/O modules and Register modules. The table below shows the number and type of slots in each rack assembly.

| Rack Assembly | I/O module slots | Register module slots | CPU slots |
|---|---|---|---|
| HRK100 | 8 (64 I/O points) | 1 | 1 |
| HRK150 | 8 (64 I/O points) | 3 | 1 |
| HRK200 | 16 (128 I/O points) | 1 | 1 |

Additional features of the rack assemblies include:

- A power supply connector, on the top of the rack, provides power for the I/O and Register modules and the Model 300, 400, 600, or 650 processor.
- A ground terminal, on the left mounting bracket, ties the rack assembly to ground.
- A latching clamp, directly above the mounting slots, secures the modules in the slots.
- Nylon wire routing clips, on the bottom of the racks, route the input and output field wires to the proper I/O modules.
- A dead front cover is also provided to cover the I/O wiring.

SQUARE D COMPANY

*Dedicated to Growth • Committed to Quality*

© 1990 Square D Company

Supersedes 30598-201-01C1

Printed in U.S.A.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Each HRK rack has a Divider Plate to separate the Module slots from the Register and CPU slots (refer to Figure 2 and Figure 3). Each rack has one CPU slot directly to the left of the Divider Plate. The CPU slot can house a Model 300, 400, 600 or 650 processor or a Remote I/O Interface module.

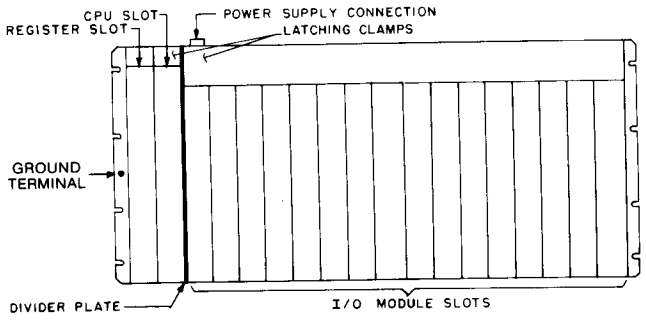



*Figure 2 Type HRK200 Rack Assembly*
*(HRK100 rack is identical except for only 8 I/O Module slots)*

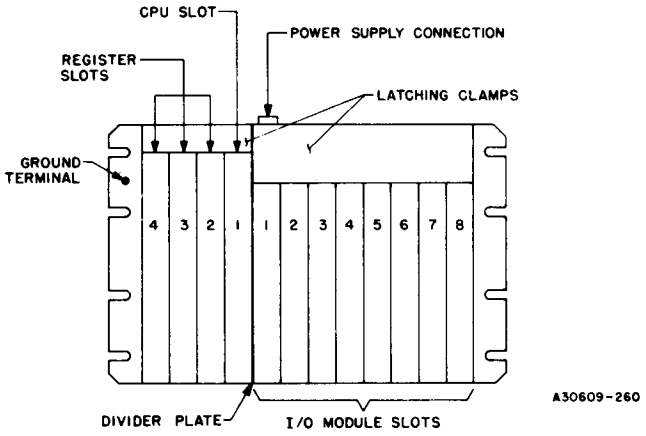



*Figure 3 Type HRK150 Rack Assembly*

The HRK100 and HRK200 racks also have a register slot to the left of the CPU slot. The HRK150 has 3 register slots to the left of the CPU slot. These slots can be used for any other register module as listed in the *Specifications* section under Module Compatibility.

## SPECIFICATIONS

I/O points per rack:
- HRK100:
  64 (8 eight function digital I/O modules) with register slot
- HRK150:
  64 (8 eight function digital I/O modules) with register slot
- HRK200:
  128 (16 eight function digital I/O modules) with register slot

Ambient Temperature .. 0 to 60°C

Humidity Rating ..... 5 - 95% (non-condensing)

Weight (unpackaged) .. HRK100: 16.9 lbs. / 7.6 kg.
HRK150: 21 lbs. / 9.4 kg.
HRK200: 26.2 lbs./ 11.8 kg.

Module compatibility:
- I/O slots:
  HIM101, 102, 131, 141, 151, 161, 191, 310
  HOM211, 221, 222, 231, 241, 251, 261, 271
- CPU slots:
  All SCP3XX, SCP4XX, SCP6XX processors
  CRM222, CRM232, EQ-5138-G2
- Register slots:
  RIMXXX, ROMXXX, DLMXXX, CRMXXX, EQ-5138-G1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

## RACK ASSEMBLY MOUNTING CONSIDERATIONS

HRK100 racks are designed for panel mounting but can be 19" rack mounted using the optional CBP113 Mounting Brackets.

HRK150 racks are designed for 19" rack mounting but can be panel mounted using the optional CBP113 Mounting Brackets.

HRK200 racks can only be panel mounted because they are wider than 19 inches.

Mounting Considerations for all HRKXXX racks:

- The rack assemblies (Figure 4) can be mounted above each other or side by side. A minimum clearance of four inches (101.6 mm) is required between racks mounted above each other. If a vertical duct is used between racks mounted side by side, appropriate spacing must be allowed.

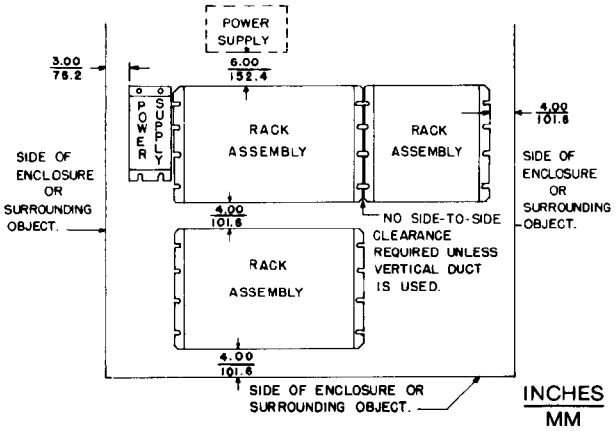



*Figure 4 Rack Assembly Mounting Configurations*

- A minimum four inch clearance is required between the rack and surrounding objects or the sides of an enclosure. SY/MAX® power supplies may be mounted vertically directly adjacent to the rack assembly or horizontally above the rack. If mounted above the rack, a minimum clearance of *six inches* is required between the power supply and the top edge of the rack.

- There should be a minimum six inch (152.4 mm) clearance between the rack and any electro-mechanical device. When mounting electro-mechanical devices above the rack, a barrier should be installed between the two sections to prevent debris from falling onto the rack.

- Racks must be mounted to allow for adequate heat dissipation. If conditions produce temperature "hot spots" higher than the allowed range, a fan must be installed to circulate the air so that the ambient temperature around the rack is 60°C or less.

- The power supply must be mounted within available cable distance from the rack assembly. The power supply cable connector labeled "PR1," "PR2," or "RACK" is attached to the rack assembly. See Power Supply Instruction Bulletin (30598-159) for cable usage and lengths.

- Care must be taken to provide for unobstructed insertion and removal of modules from a rack located in an enclosure.

- The following register modules extend beyond the front edge of the rack and require additional clearance as indicated in the table below.

| Device | Additional Clearance Required |
|---|---|
| Model 600 or 650 Processor | 3.0 inches |
| with key inserted | 4.0 inches |
| with cable attached | 5.0 inches |
| Model 700 Processor | 3.0 inches |
| with key inserted | 4.0 inches |
| with cable attached | 5.0 inches |
| RIM331 | 3.0 inches |
| ROM441 | 3.0 inches |
| MicroCell | 3.0 inches |
| with cable attached | 5.0 inches |
| MiniCell | 3.5 inches |
| with keyboard cable or Comms port cable attached | 5.0 inches |

- To minimize coupling of electrical noise, all AC power wires should be kept isolated from 1) DC signal wiring, 2) rack to rack communication cable, and 3) SY/MAX power supply cables. AC and DC signal wires should not be combined in the same wire troughs or bundled together in parallel runs. Right angle crossovers should be used for wires crossing each other.

- To maintain stored program and register information for modules that require battery backup, the cable from the power supply **must** remain connected to the rack.

- 10-24 UNC mounting screws should be used to panel mount or rack mount the rack assembly.

- Unused Register slots should be covered with a CBP106 register slot cover plate (one per slot).

- Unused I/O slots should be covered with a CBP107 I/O slot cover plate (one per slot).

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

## GROUNDING REQUIREMENTS

Tie the register rack assembly ground terminal (located on the left mounting plate) to a building column or grounding electrode that is determined to be a "true earth" ground by means of wire equal in size to the incoming power wires (#14 gauge minimum).

**WARNING**

**Safety ground is not connected through the power supply wires. Rack assemblies must have a separate safety ground connection. Failure to do so may endanger life, cause unpredictable operation in the presence of electrical noise, or cause premature failure of modules.**

## MOUNTING DIMENSIONS

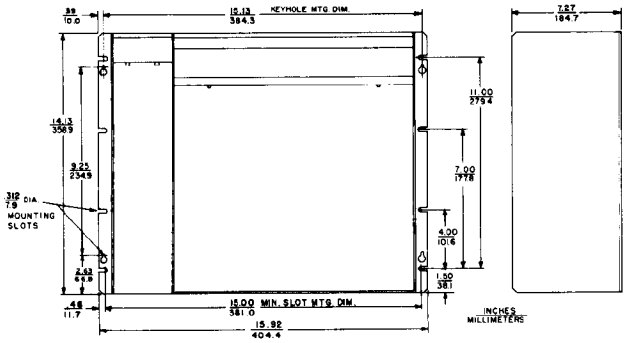



*Figure 5 Type HRK100 Rack Assembly Mounting Dimensions*

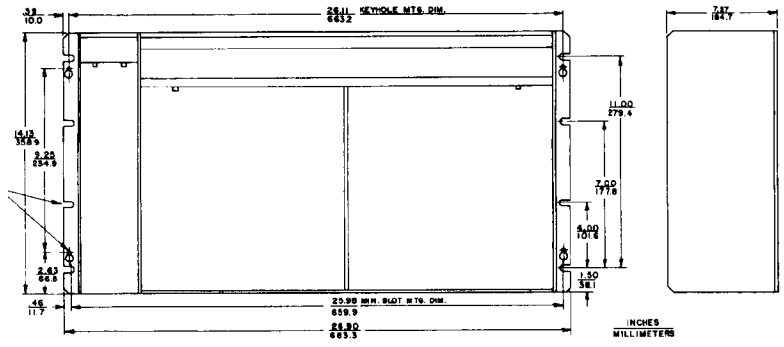
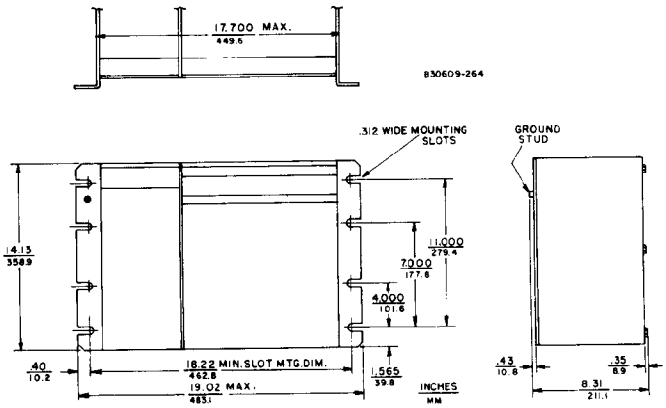
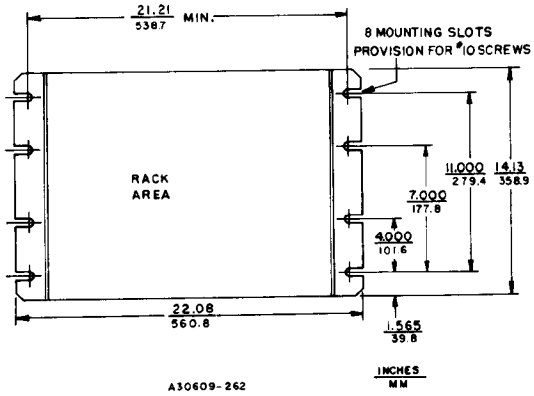


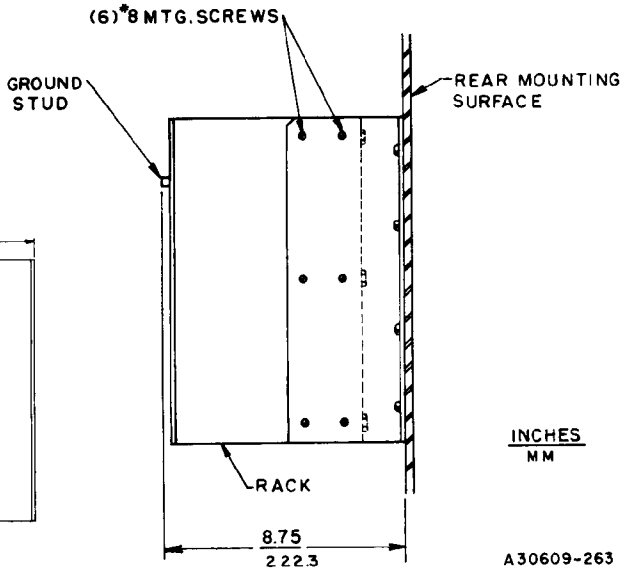

*Figure 6 Type HRK200 Rack Assembly Mounting Dimensions*




HRK-150 Rack Assembly Rack Mounting Dimensions




HRK-150 Rack Assembly Panel Mounting Dimensions




HRK-150 Rack Panel Mount Bracket Illustration

*Figure 7 Type HRK150 Rack Assembly Dimensions*

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

## OPTIONAL MOUNTING BRACKETS

HRK100 racks are designed for panel mounting but can be 19" rack mounted using the optional CBP113 Mounting Brackets.

HRK150 racks are designed for 19" rack mounting but can be panel mounted using the optional CBP113 Mounting Brackets.

HRK200 racks can only be panel mounted because they are wider than 19 inches.

To install 19-inch mounting brackets, simply align brackets with mounting holes on side of the rack and secure with supplied #8 mounting screws. See Figure 8.

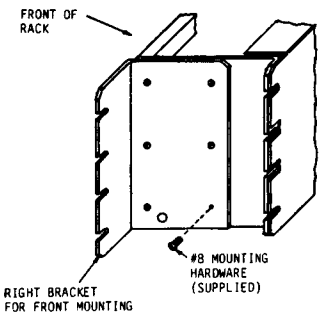



*Figure 8 19-inch Mounting Bracket Installation*

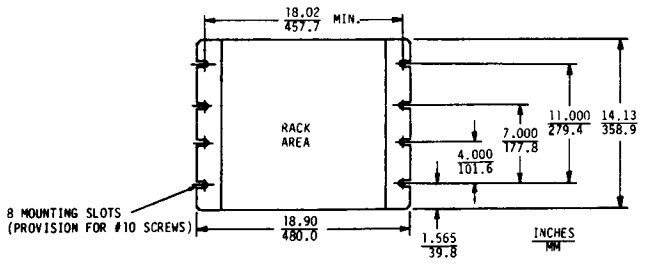



*Figure 9 19-inch Rack Mounting Dimensions*

## MODULE KEYING

Each connector in a register rack assembly may be keyed with keying pins to accept only one type of module. The keying pins are inserted manually with a keying pin insertion tool (Figure 12). This keying pin is provided with a "Keying Pin Kit" Class 8030 Type CBP104.

**CAUTION**

**When inserting or removing the keying pins, use care to avoid touching the contact fingers within the connector. Improper insertion/removal may damage the connector.**

Register and Digital modules and their respective keying pin locations for the rack assembly connectors are listed in Figure 11 and Figure 12.

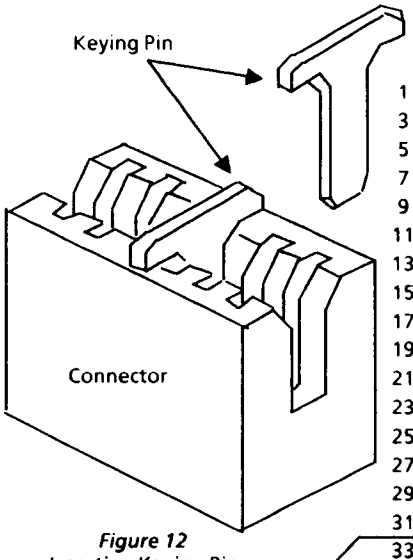



*Figure 12 Inserting Keying Pin*




*Figure 13 Module Rack Connector*

*Figure 10 Module Keying*

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

| Type | Digital Module Description | Keying Pin Location Between Positions:* |
|---|---|---|
| HIM101 | 120V AC/DC Input Module | 14 and 16 |
| HIM131 | 6-24V AC/DC Input Module | 8 and 10 |
| HIM141 | 48V AC/DC Input Module | 10 and 12 |
| HIM151 | TTL Input Module | 12 and 14 |
| HIM161 | 240V AC/DC Input Module | 16 and 18 |
| HOM211 | 12-50V AC Output Module | 18 and 20 |
| HOM221 | 120V AC Output Module | 20 and 22 |
| *HOM231* | *240V AC Output Module* | *22 and 24* |
| HOM241 | 9-55V DC Output Module | 24 and 26 |
| HOM251 | 60-160V DC Output Module | 26 and 28 |
| HOM261 | TTL Output Module | 28 and 30 |
| HOM271 | Reed Relay (Form A) Output Module | 30 and 32 |

*Figure 11 Digital Module Keying Pin Locations*

| Type | Register Module Description | Keying Pin Location Between Positions:* |
|---|---|---|
| AXS211 | Access Interface Module | 46 and 48 |
| CRM115 | Bus Expander Driver | 88 and 90 |
| CRM116 | Bus Expander Terminator | None * |
| CRM210, 211, 214, 230 | Local Interface | 92 and 94 |
| CRM 220, 222, 232 | Remote Interface | None* |
| CRM310 | Fiber Optic Interface | 76 and 78 |
| CRM 510, 511, 540, 570, 580 | Network Interface | 14 and 16 |
| CRM560, 565 | Remote Network Interface | 14 and 16 |
| CRM601 | Dual Interface Converter | 10 and 12 |
| CRM720 | Speech Module | 22 and 24 |
| DLM110, 120 | D-LOG Data Controller | 32 and 34 |

* Connectors are also keyed between positions 4 and 6 for all modules except Model 500 and 700 processors, CRM232 and Bubble Memory.

*Figure 12 Register Module Keying Pin Locations*

| Type | Register Module Description | Keying Pin Location Between Positions:* |
|---|---|---|
| EQ-5138-G1<br>EQ-5138-G2 | Parallel Digital Driver<br>Parallel Digital Receiver | 28 and 30<br>28 and 30 |
| RIM101 | 16 Function Input | 40 and 42 |
| RIM121 | 4-Function Analog Input | 82 and 84 |
| RIM123 | High Speed Analog Input | 66 and 68 |
| RIM125 | Standard High Density In. | 56 and 58 |
| RIM126 | Analog/TC Input, 8 Function Isolated | 68 and 70 |
| RIM127 | RTD Input | 70 and 72 |
| RIM131 | High Speed Counter Input | 12 and 14 |
| RIM144 | BCD Multiplex Input | 84 and 86 |
| RIM331 | 32 Function 24 VDC Input | 16 and 18 |
| RIM361 | 16 Function Input | 42 and 44 |
| *ROM121* | *Standard Analog Out* | *90 and 92* |
| ROM122 | 4 Point Isol./Analog Output | 20 and 22 |
| ROM131 | Stepper Motor Output | 8 and 10 |
| ROM141 | BCD Multiplex Output | 80 and 82 |
| ROM221 | 16 Function Output | 54 and 56 |
| ROM271 | 16 Point Relay Output | 60 and 62 |
| ROM431 | 16 Function Output | 52 and 54 |
| ROM441 | 32 Function 24 VDC Output | 18 and 20 |
| SCP311 through 344 | Model 300 Processors | None* |
| SCP401, 423, 424, 444 | Model 400 Processors | 46 and 48 |
| SCP521 through 544 | Model 500 Processors | 64 and 66 |
| SCP631, 632 | Model 600 Processors | 48 and 50 |
| SCP654, 655 | Model 650 Processors | 58 and 60 |
| SCP721 through 724 | Model 700 Processors | 44 and 46 |
| SMM710, 720, 721 | Model 700 Bubble or RAM Memory | 36 and 38 |
| MCM701, 702, 713 | MicroCell Controller Bubble or RAM Memory | 36 and 38 |

* Connectors are also keyed between positions 4 and 6 for all modules except Model 500 and 700 processors, CRM232 and Bubble Memory.

*Figure 12 (cont.) Register Module Keying Pin Locations* *Locations*

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

## MODULE INSTALLATION

Prior to inserting modules into the register rack, the rack connectors may be keyed to accept only certain modules. See "Module Keying".

Power should be removed from the register rack before installing or removing modules in the rack assembly.

**NOTE:** When a module occupying two slots is to be mounted in a register slot, the plastic module guide (located on the top of the rack assembly) between the two slots being used must be removed. This module guide can be pried off with a screwdriver.

To mount modules in a Rack, release the module latching clamp by pivoting it upward (see Figure 13). Next, insert the modules into the rack assembly and secure them by tightening the fastening screw at the base of each module. After the modules are fastened to the rack assembly, pivot the latching clamp back down over the modules. When a module is inserted into its slot, the screw on the bottom of the module must be tightened to the rack to ensure proper operation and grounding.

Register slots that are not used should be covered with Class 8030 Type CBP106 Register Rack Slot Cover Plates and I/O slots should be covered with the Class 8030 Type CBP107 I/O Slot Cover Plate.

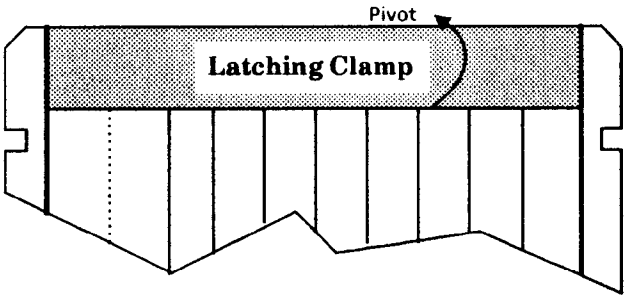



*Figure 13 Latching Clamp Operation*

Nylon wire routing clips are provided to help route the input and output field wires to the proper I/O module. After the rack assembly has been mounted, install the routing clips by inserting them in the holes at the bottom front edge of the rack (refer to Figure 14). Depending on the wire routing to the I/O modules, the clips may be installed to the right or left of each I/O slot.

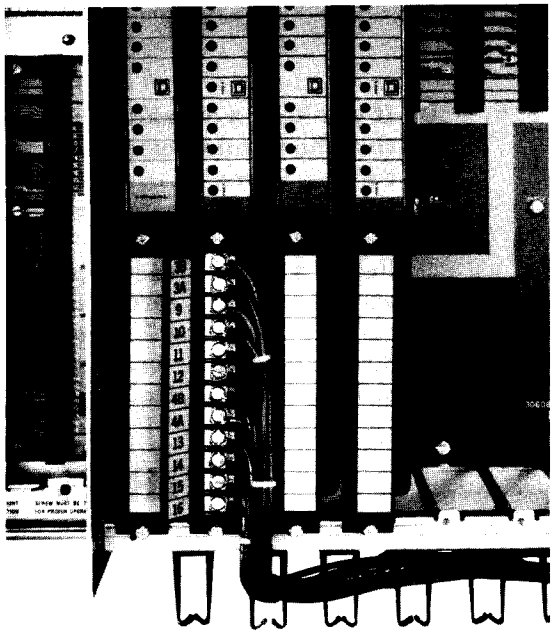


*Figure 14 Routing Clips*

A dead front cover (Figure 15) is provided with each rack assembly. Two mounting pegs are located on the lower front of the I/O section in the assembly. The type HIM and HOM I/O modules also provide a ridge for this cover. The grooved edge of the dead front cover is placed under the mounting pegs of the rack assembly. By snapping the top edge over the mounting ridge of the I/O module, the dead front cover is secured into place.

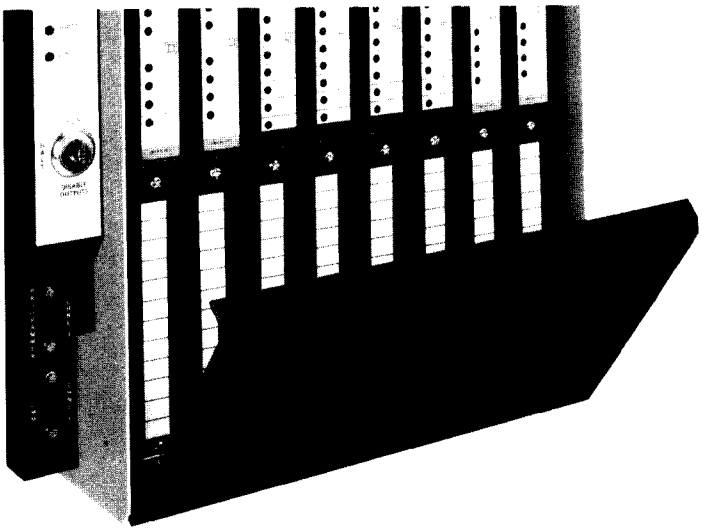


*Figure 15 Dead Front Cover*

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

**Artisan Technology Group** is an independent supplier of quality pre-owned equipment

## Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

## We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

## Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP