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Instruction Bulletin

Subject: SY/MAX®

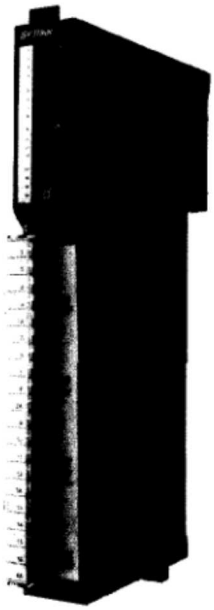
CLASS 8030 TYPES ROM221 AND ROM222 16 FUNCTION 120 VAC OUTPUT MODULES

DESCRIPTION

The ROM221 and ROM222 120 VAC Output Modules contain 16 optically isolated outputs, each capable of driving loads such as motor starters, solenoids, or pilot lights. The module may be inserted into any slot of a register rack (except slot 1) or the register slot of a digital rack.

Sixteen red LED indicators on the front of the module, labeled 1-16, illuminate when a command is issued to energize their respective outputs. In addition, 4 red LED indicators labeled FU1-FU4 (one per group of 4 outputs successively) illuminate if a blown fuse is detected.

The user can identify output devices with the provided marking label that fits over the wiring terminals on the front of the module.



SPECIFICATIONS

Outputs per module 16

Type and rated isolation between output terminal and logic . . . . . optical: 2500 V rms

Turn on time . . . . . 8 ms nominal

Turn off time . . . . . 8 ms nominal

Fuse . . . . . four, 5A buss MTH

Output LED operation . . . red LED illuminated when receiving "ON" signal from processor

Maximum current ratings:

Fuse LED operation . . . . . red LED illuminated when a blown fuse is detected (one for each group of four outputs)

Voltage and current characteristics:

Voltage range . . . . . 20-138 VAC, 50/60 Hz

Minimum load current . . . 6 mA

Maximum On state voltage drop across output . . . . . 2.0 V at 2 A load

Maximum Off state leakage current . . . . . 2.0 mA at 138 V, 50/60 Hz

TYPE AND SERIES	MAXIMUM CONTINUOUS CURRENT	MAXIMUM INRUSH (SURGE) CURRENT (Rated for one cycle at 60 Hz, non-repetitive)
ROM221, Series A and B	2 A per output, 4 A per 4 outputs, 16 A per module	30 A
ROM221 and ROM222*, Series C, C1, C2, C3, and C4	1.5 A per output, 4 A per 4 outputs, 16 A per module	3 A
ROM221, Series D1 and D2	2 A per output, 4 A per 4 outputs, 16 A per module	20 A (or 12 A for one cycle, repeatable once every 15 seconds)
ROM221, Series E1 and later	2 A per output, 4 A per 4 outputs, 16 A per module	25 A for 3 cycles @ 50/60 Hz, no more than once every 10 seconds

* There are no Series A, B, D1, D2, or E ROM222 modules

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Replaces 30598-283-01C2, dated 2/90

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Rated module current draw on SY/MAX power supply . . 850 mA per module at 75% duty cycle
950 mA per module at 100% duty cycle

Ambient temperature rating . . . . . 0-60°C

Humidity rating . . . . . 5-95% non-condensing

Weight (unpackaged) . . . . 2.95 lb/1.34 kg

Detachable terminal block. . . . . Class 8030 Type CBP116

Rack assemblies in which module may be used HRK100, HRK150, HRK200, RRK100, RRK200, RRK300, CRK210, CRK300, DRK210, DRK300, GRK110, GRK210

Compatibility with input modules RIM101

TYPICAL WIRING

⚠ DANGER

ELECTRICAL SHOCK OR BURN HAZARD

There is danger of electrical shock or burn when coming in contact with terminal strip or field wiring. Always turn off the power supplying this equipment before servicing this module.

Failure to observe this precaution will result in death, severe personal injury, or equipment damage.

Output devices are wired to the terminal block on the front of the module. Figure 1 illustrates the typical wiring for the Type ROM221 and ROM222 Output Modules.

Wiring terminals 1-4 share common terminal "1A." Wiring terminals 5-8 share common terminal "2A." Likewise, wiring terminals 9-12 and 13-16 share common terminals "3A" and "4A," respectively.

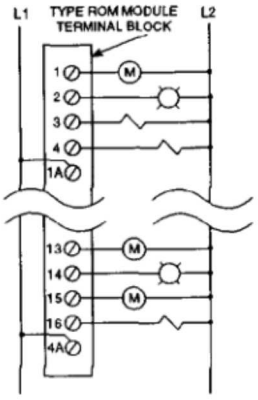
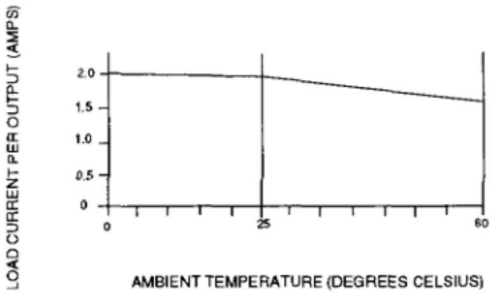


Figure 1: Typical Wiring

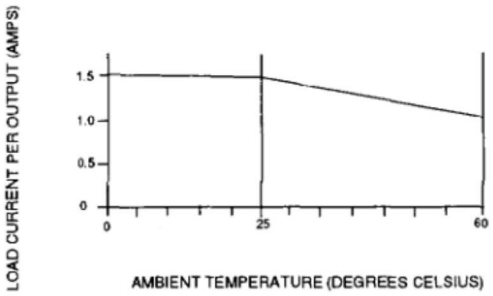
APPLICATION CONSIDERATIONS

- *The Types ROM221 and ROM222 Output Modules* are register modules designed to reside in any register slot of a SY/MAX rack assembly.
- The Types ROM221 and ROM222 Output Modules have one common terminal for each set of four outputs (four common terminals per module).
- Each terminal accommodates two #14 gauge wires.
- The Types ROM221 and ROM222 Output Modules have internal transient noise suppression. Therefore, outputs may be wired in series or in parallel with hard contact switches to control an inductive load (such as a *motor starter or a solenoid*).
- Although the Types ROM221 and ROM222 Output Modules have a voltage range of 20-138 volts, if they are used below 90 VAC, the blown fuse indicators may not operate.
- Maximum current per output is a function of operating temperature and the total number of outputs that are "ON" at a given moment. The following charts show the maximum load current per output at ambient temperatures of 0-60°C for 4, 8, and 16 outputs.

1. One output "ON" per group of four

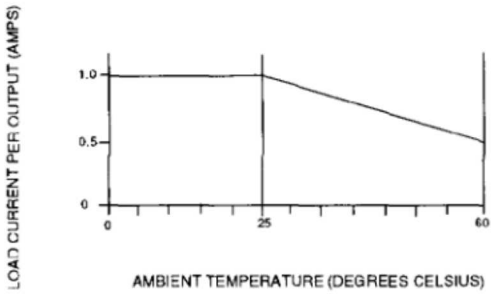


2. Two outputs "ON" per group of four*



*Outputs 1, 4, 5, 8, 9, 12, 13, and 16

3. All sixteen outputs "ON"



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- Be sure the maximum leakage current (given in the specifications on page 1) will not turn on the load. Contact Square D for application assistance.
- Depending on the size and routing of wiring to the terminals, it may be necessary to remove an adjacent terminal strip before removing an I/O module.
- When the Type ROM221 or ROM222 Output Module is in the same rack as the processor, the only processors that allow the outputs to be forced "ON" and "OFF" are the Models 300, 400, and 600. The Model 500 and 700 processors do not support the forcing function. Instead, they rely on the forcing capability in the Local Interface Module. Therefore, when the output module is mounted in a remote rack, the outputs may be forced "ON" and "OFF" by any processor.
- When using the DISPLAY mode of the Class 8010 Type SPR2XX and SPR3XX CRT programmers or SY/MATE*, all contacts and coils associated with register slot mounted digital I/O modules will be shown with the prefix (R) in front of the address. These (R) designated contacts and coils are associated with actual inputs and outputs and should not be confused with contacts and coils associated with internal relays.

  **Note:When using SYM323 Series B and SYM324 Series A or later, all contacts and coils associated with digital I/O modules will be shown with the prefix (I) in front of the address if it is an input, or (O) if it is an output or contact of an external output.*

- The output circuits are fused one fuse per group of four outputs: FU1 for outputs 1-4, FU2 for outputs 5-8, etc. Each fuse is rated at 5 A.

  Because the rating of each individual output is 2 A maximum and the fuse is rated at 5 A, the current rating of an individual output can be exceeded without blowing a fuse. This condition may damage the output module, the load device driven by the output, or both.

  To replace a blown fuse, use the following procedure.

  1. Turn the processor keyswitch to "HALT" or "DISABLE OUTPUTS."
  2. Remove power from the terminal block, and then remove the terminal block from the module.
  3. Depending on the series designation of the ROM221 or ROM222, replace the fuse by one of the following two methods:
     a. Pre-Series E1: Turn the fuse holder one quarter turn counter-clockwise with a small blade screwdriver. Remove and replace the blown fuse. Then reinstall the fuse holder.
     b. Series E1 and later: Remove fuse cover plate, replace blown fuse, and replace the fuse cover plate.
  4. Connect the terminal block to the module, and then reapply power to it.
  5. Turn the processor keyswitch back to "RUN."

MODULE KEYING

Register slot connectors, whether in a digital or register rack assembly, have factory-installed keying pins between pins 4 and 6 of the connectors. They ensure that only register modules can be plugged into register slots.

Each register slot connector may be keyed to prevent insertion of other module types. A keying pin kit, Class 8030 Type CBP104, is available for this purpose. The correct position of the keying pin for the Type ROM221 and ROM222 Output Modules is between pins 54 and 56 (see Figure 2). Insert the keying pin into the appropriate slot in the rack connector using the keying pin insertion tool provided with the kit. See Figure 3.

Note: Keying may be the same or different for other output module types.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD

To prevent possible equipment damage, use care to avoid touching the contact fingers within the connector when inserting or removing the keying pins. Improper insertion or removal may damage the connector.

Failure to observe this precaution can result in equipment damage.

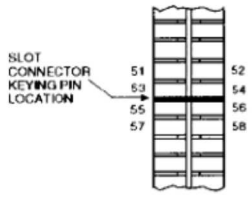


Figure 2: Module keying

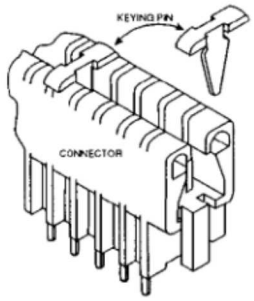


Figure 3: Keying pin insertion

INSTALLATION IN RACK ASSEMBLY

The Types ROM221 and ROM222 modules may be installed in a register slot of a Class 8030 Type CRK, DRK, GRK, HRK, or RRK rack assembly. The module receives 5 VDC power and ground from the edge connector at the back of the rack.

Remove power from the rack assembly before installing or removing the output module from the rack.

After removing power, insert the module into the register slot until it is firmly seated against the stud (the middle post above the socket in that slot). Be sure to tighten the captive screw to ensure that the module is secured. To remove the module, loosen the captive screw and pull the module out of the slot using the finger tab on the top of the module.

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REGISTER USAGE FOR RACK ADDRESSING

Each Type ROM221 or ROM222 Output Module will occupy a single register in the system. When located in a register slot to the right of a Model 500 or 700 processor, the ROM221 or ROM222 must be assigned four registers even though only the first of the four is used. The remaining three registers cannot be used.

When mounted in the same rack as a Model 300 processor, a minimum of one register must be assigned to each ROM221 or ROM222 Output Module. When the Model 300 processor is mounted in an RRK200 register rack, slot 9 may not be used for any digital I/O modules. Slot 9 cannot be addressed by the Model 300 and therefore may be used to power any register module that requires only power and does not require registers, such as the D-LOG or SY/NET modules.

Slots 17 and 18 of an RRK300 (lower rightmost slots) are non-addressable by any SY/MAX processor; therefore, the Types ROM221 and ROM222 modules cannot be used in these slots.

SIMPLIFIED SCHEMATIC

Figure 4 illustrates one of the 16 circuits within the Types ROM221 and ROM222 Output Modules. The terminal marked "1A" is common to output terminals 1-4.

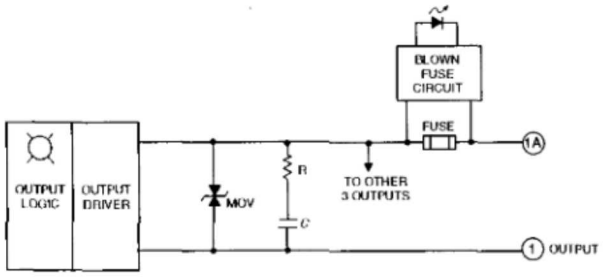


Figure 4: Simplified schematic of one output circuit

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