

Technical Service Bulletin 040507 Millennium/Paragon Emergency PLC Bypass Procedure

This service bulletin applies to Comark DCX Millennium and DCX Paragon transmitters. This bulletin provides a procedure to bypass the PLC system controller found in these transmitters for the purpose of effecting repairs, upgrades, I/O module replacement, power cycling, program reloads, and in the event of a system control failure.

The procedure allows the PLC system controller to be effectively bypassed without interrupting transmission. However, some interlock protection circuits will not be monitored in this bypassed state. The transmitter should never be left unattended while operating in the modified state defined in this procedure. An advanced PLC bypass procedure with enhanced interlock protections may be found in Service Bulletin 040630.

Procedure 040507: DCX Millennium and DCX Paragon Emergency PLC Bypass Procedure

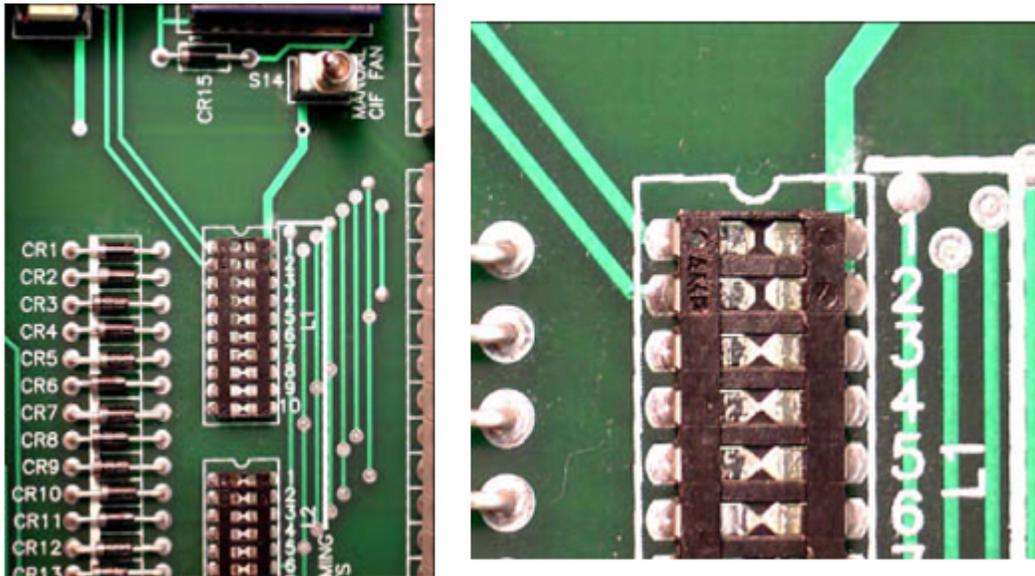
Applicability	DCX Millennium and DCX Paragon transmitters
Prerequisites	Fully read and understand this bulletin before attempting procedure.
Equipment Required	Side entry operating tool (Comark Part# 605236-01). SMA barrels to bypass exciter transfer and drive kill relays. Reference site-specific system programming and system manual for exciter cabinet, system controller, system I/O assembly drawings and schematics.
Comments	Never leave transmitter unattended while operating with the system controller bypassed per this procedure.

1. Place system controller in LOCAL mode.
2. Unplug RF switch actuator(s) to prevent unintentional movement by system I/O switches S1-S9, or by system controller upon return to service.

CAUTION: Switches S1-S7 (S8, S9 optional) in system I/O assembly (Plexiglas box) may be activated when system controller is in XMTR STOP mode or off line. Yellow LED (DS1) lights to indicate manual control.

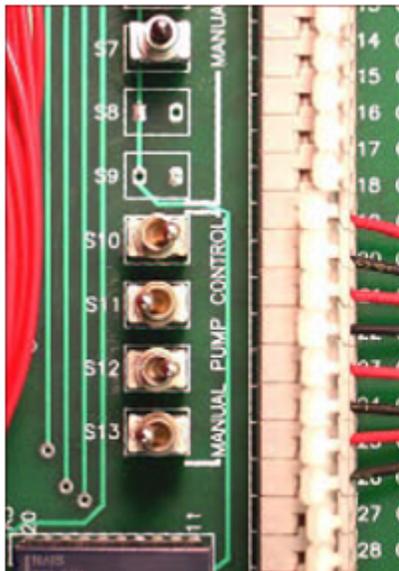
3. Verify programming shunts PGM L1-1 (cooling system 1) and PGM L1-2 (cooling system 2) are cut in system I/O assembly (Plexiglas box) to enable sump level protection for pumps when manually activating pumps with system I/O assembly toggle switches.

NOTE: After cutting shunt, insert a small screwdriver to spread out tabs and ensure that there is no continuity. Verification may be done using an ohmmeter to measure across the cut shunt.



Programming shunts on system I/O board

4. Locate toggle switches S10-S13 on system I/O assembly pc board. These four switches are used to force pumps on by routing +24VDC from system I/O power supply to relays in system I/O, which in turn switch 120VAC to pump starters.



Manual pump control toggle switches



Manual C/F fan toggle switch S14 in off position

5. Turn on appropriate toggle switches (right, towards outside edge) for cooling system pumps you wish to leave running. When upgrading software, transfer to main pumps first and select main toggle, as these are the default pumps on program boot up.

- a. S10 controls cooling system 1, pump A (Main)
- b. S11 controls cooling system 1, pump B (Standby)
- c. S12 controls cooling system 2, pump A (Main)
- d. S13 controls cooling system 2, pump B (Standby)

NOTE: On larger systems, the same switches apply to system I/O #2 cooling system 3 and 4 respectively. For example, S10 controls cooling system 3 pump A, and S11 controls cooling system 3 pump B. Programming shunts L1-1 (cool 3) and L1-2 (cool 4) also apply respectively.

CAUTION: Select appropriate switch for cooling pump currently online to avoid having both pumps on simultaneously in same cooling loop. Once manual switches are turned on and controller is operating, there is a possibility that a pump transfer may occur.

6. Turn on S14 in system I/O assembly (to the right) start CIF filter fans, where applicable.

CAUTION: Manual CIF fan switch 14 is only active when the system controller is in XMTR STOP mode or off line. Yellow LED (DS1) lights to indicate manual control.

7. Place HPA cabinet(s) in internal control. Verify HPA(s) are in RF mode.
8. Bypass drive kill (K2) relay with SMA barrel. This relay will relax to “drive killed” position when +24V system control power supply is deactivated later in procedure.
9. Force exciter(s) on according to model specific instructions below:

To force the exciter ON, switch on-line ADAPT to local mode with REM/LCL switch located at top of user interface module which will force the output on.

Switch off-line ADAPT to local (LCL) and RF Drive to off (down) so that its output remains deactivated when system controller goes off-line.

If exciter 2 is required, bypass exciter transfer relay with SMA barrel. This relay will relax to #1 position when +24V system control power supply is deactivated later in procedure.

NOTE: If an SMA barrel is not available, bypass K1 by moving the cable on the bottom port of K1 to the bottom outside port of K2 for example. Consult exciter RF Flow schematic in the site documentation for further details.



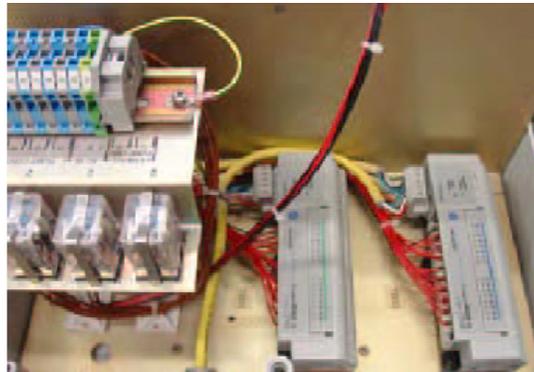
Side entry operating tool (Comark P/N 605236-01)



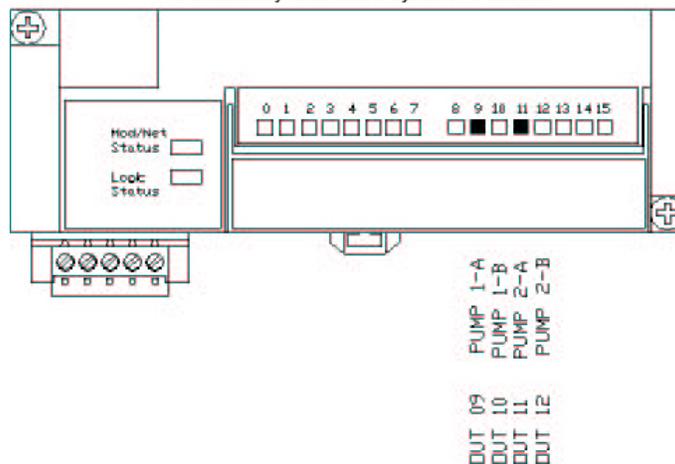
Proper use of tool (Comark P/N 605236-01)

Caution: Once exciters are forced on, they will drive any HPA(s) in internal control and all system interlocks will be ignored. Do not operate any RF system switches, as movement of waveguide switch(s) cannot be detected by exciter or HPA(s) in this state. Changing RF switch positions with RF applied may cause a dangerous VSWR trip. Flow rate in the water loads is also not being monitored at this time. Visually verify that adequate load flow exists at all times.

10. The system controller is bypassed and not needed to stay on air. Remove power from system controller by flipping the fuse disconnect F2 at right rear of exciter cabinet. PLC assembly may now safely be serviced.
11. After PLC is serviced and ready to be powered back up, verify that RF switches are unplugged, and observe which pumps are currently on-line.
12. Power up system controller. Consult "Operation" window to verify that system controller is calling for pump(s) currently on-line. If not, transfer to on-line pumps to avoid having two pumps simultaneously running in same cooling loop. An alternative method to determine which pump is being commanded by system control is to read the output status in the Allen Bradley system I/O block. Pump 1-A is output 09, Pump 1-B is output 10, Pump 2-A is output 11 and Pump 2-B is output 12.



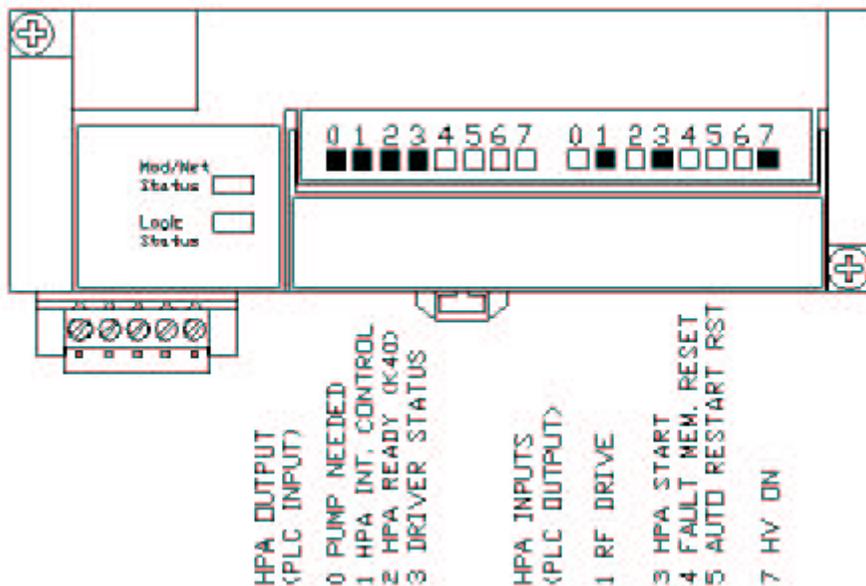
Allen Bradley Millennium System I/O Blocks



TB11 Allen Bradley System I/O Outputs (Pumps 1-A and 2-A shown on)

CAUTION: While controller is operating with manual switches still turned on, there is a possibility that a pump transfer (fault) may occur and force both pumps in same cooling loop to run simultaneously. The manual toggle switches will be turned off once the controller is in full control of the entire system. This overlap is a precautionary step to stay on air without interruption.

13. Select RF pattern that matches current RF system configuration. Pattern number should light up immediately to confirm controller recognizes pattern. If pressed button starts flashing, system controller does not see all RF switches and/or relays in their requested positions. If controller recognizes a pattern other than the one requested, requested pattern will flash for 20 seconds and controller will revert to recognized pattern. If no pattern is recognized, pattern selected LED will flash red. If this happens, verify positions of all RF switches and relays in accordance with specific system programming sheets(s) and system interconnect drawing(s).
14. Verify or select "XMTR ON" button on system controller
15. Verify that on-line exciter is selected in the "Operation" window. Transfer exciter is needed by pressing system controller buttons: **Select >Exciter >Transfer >Enter.**
16. Perform a system fault reset by pressing system controller button: **Select >System Faults >Reset >Enter.** Ensure that pumps or exciter did not transfer. Transfer back if needed.
17. Verify HPA(s) I/O blocks have RF Drive command (OUT 01). HPA I/O blocks are located at top, rear of HPA control cabinet.



Allen Bradley Millennium HPA I/O Block

18. Place HPA cabinet(s) in external mode. I/O Input 01 LED will extinguish when HPA is in external mode.

19. Turn off manual pump control toggle switches (left, towards wall).
20. Turn off manual CIF toggle switch (left, towards wall)
21. Remove all exciter jumpers.
22. Reconnect AC to RF system switches.
23. PLC is now back on-line and fully in control.
24. Procedure complete.

Here at Comark, we are constantly striving to improve the satisfaction of both our new and existing customers. Please do not hesitate to contact Comark Customer Service with any questions you may have concerning the contents of this service bulletin.

Comark Communications
104 Feeding Hills Road
Southwick, MA 01077 U.S.A.
(800) 345-9295
<http://www.comarktv.com>