XRC and XRC 2001 Controllers

PanelView 300
User’s Guide

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**Introduction**

The purpose of this manual is to provide general operating instructions for the PanelView 300 operator station. The PanelView 300 operator station consists of a black and white Liquid Crystal Display (LCD) with keypad which allows the operator to control robotic cell activities.

This manual covers PanelView 300 op-stations that are configured for single robot cells only. Only arc welding and general purpose material handling cells are detailed in this guide.

**Operator Station Functions**

The operator station screens provide access to all cell operating functions except for CYCLE START and EMERGENCY STOP. These two operations are initiated with mechanical push buttons located on the front of the op-station. The programming pendant can be locked out of operation from the operator station.

**Push Buttons**

**CYCLE START:** The green palm button, located on the front of the operator station, initiates a new cycle. On some op-stations, there are two Opto cycle start buttons on the side of the unit. Both Opto buttons must be pressed to initiate a cycle.

**WARNING!**

*The operation of the CYCLE START button is dependent on the structure of the Master job. Altering the Master job could result in injury to personnel or damage to the equipment.*

When the CYCLE START button is pressed into AUTO mode while the robot is outside Cube 24, the CYCLE START (IN#1) command is latched into the controller. Once the robot returns to the Home position, the CYCLE START command is executed. For a welding application, the positioner sweeps.

**EMERGENCY STOP (E-STOP):** Pressing an E-STOP button or interrupting a door interlock stops all system operation. Brakes are applied to the robot, and all servo power is removed from the system. The system E-STOP lights come on and all positioner motion is stopped.

The operator station E-STOP and the robot E-STOP are connected in series in the Emergency Stop circuit.

**Screens**

The first screen, or main menu (see Figure 1), appears immediately upon start-up. Use function keys F1 - F8 to access other screens. The ROBOT (F2) screen is used to turn on servo-power and start the robot job. The CYCLE MODE (F1) screen is typically used during production.

Other screens that are accessible from the main menu include: PART COUNT (F3), SYSTEM DIAGNOSTICS (F4), TIME + DATE (F5), and ALARM MESSAGES (F6). The CELL MAINTENANCE (F8) menu, is password protected so that only a supervisor or maintenance personnel has access to it.
Each screen has an ALARM box that is invisible until an alarm condition exists. Error messages can be viewed on the ALARM MESSAGE (F6) screen.

**WARNING!**

*Do not touch the op-station push buttons with sharp objects. Using anything other than fingers to actuate the push buttons can damage the interface screen.*

**Main Screen**

![Main Screen Diagram]

Figure 1  Main Screen – Arc Welding
The Main Screen provides access to 7 sub-menu screens using function keys. Figure 2 previews the accessible screens.

**Figure 2  Main Screen – Arc Welding**
Press F1 on the Main Screen to access the CYCLE MODE screen (see Figure 3 and Figure 4). The following paragraphs details the contents of both Cycle Mode (Arc Welding or General Purpose) screens. To return to the Main Menu, press F8 at anytime.

**Cycle Mode Screen – Arc Welding**

![Cycle Mode Screen – Arc Welding](image)

**ALARM:** The Alarm lamp is normally off and is invisible to the operator. Access Main Menu to resolve the alarm.

To resolve **ALARMS**:
1. Press F8 to access the Main Menu.
2. Press F6 to access the Alarm Message screen and identify the alarm.
3. See the Troubleshooting section to take action on the alarm.

**MODE SELECT:** The Mode Select button selects automatic or manual mode for the operation of the cell. After pressing F1, the simulated toggle switch changes between AUTO and MAN (MANUAL) on-screen to indicate the selected mode.

This command is connected to robot Input #37.

- **AUTO** (in automatic) - The robot will process the part after the positioner sweeps.
- **MANUAL** - The robot does not process the part after the positioner sweeps, but remains in the Home (Cube 24) position.

**OPERATING:** This indicator illuminates to notify the operator the job is currently executing.

**ROBOT HOME:** This indicator illuminates to notify the operator when the robot has reached Home (Cube 24) position.
**CYCLE START LATCHED (Arc Welding):** This indicator displays the current status of the cycle start function (LATCHED, or UNLATCHED). Press F2 to change between LATCHED and UNLATCH.

CYCLE START LATCHED indicates when the positioner CYCLE START command has been latched. It is not necessary to wait for the robot to finish welding and return to the Home position (Cube 24) before pressing the CYCLE START palm button. Pressing the CYCLE START palm button while the robot is still in motion locks the CYCLE START command into the controller. The CYCLE START LATCHED light comes on, indicating that the CYCLE START is latched. The positioner sweeps once the robot has finished the current job and returns to the Home position (Cube 24). Pressing CYCLE START LATCHED or violating the light curtains will unlatch the CYCLE START command from the controller.

*NOTE:* CYCLE START will only latch in AUTO mode.

**CYCLE SELECT (General Purpose):** The Cycle Select toggle switch selects between continuous and single cycle job mode. Press F2, to toggle between CONT and ONE.

- **CONT** (continuous) - The job selected will run continuously until interrupted by operator or alarm/error.
- **ONE** - The job selected will run once and then stop. If ONE is selected while a job is in progress, the job will be completed.

**HOME:** This indicator notifies the operator when the robot has reached Home (Cube 24) position.

**JOB EXEC:** This indicator notifies the operator that the job is currently executing.

**Robot Screen**

The robot screen (see Figure 5) provides for operator control of critical robot functions using momentary touch switches.

![Robot Screen Diagram]

*Figure 5  Robot Screen*

Access the ROBOT screen by pressing F1 on the Main Screen. The following paragraphs detail the contents of both Cycle Mode screens. To return to the Main Menu press F8 at anytime.
**ALARM:** The Alarm lamp is normally off and is invisible to the operator. Access the Main Menu to resolve the alarm.

To resolve **ALARMS**:

- Press F8 to access the Main Menu.
- Press F6 to access the Alarm Message screen and identify the alarm.
- See the Troubleshooting section to take action on the alarm.

**F1 – TURN REMOTE OFF/ON:** The REMOTE ON command disables the programming pendant to give control of the cell to the operator station. When F1 is pressed, the status indicator changes between OFF on ON.

**F2 – TURN SERVOS OFF/ON:** The SERVO command turns servo power ON and OFF. When the controller is in TEACH mode, the servos will only turn on when the enable switch on the programming pendant is depressed. With the controller in PLAY, the safety gate must be shut to turn servos on. Once F2 is pressed, the status indicator changes between OFF on ON.

**F3 – TEACH/PLAY MODE SELECT:** The Robot Mode command selects PLAY or TEACH mode for the robot. Once F3 is pressed, the status indicator changes between PLAY or TEACH on-screen to indicate the selected mode.

**NOTE:** Changing modes from PLAY to TEACH, during playback, will cause the program to cease execution (similar to HOLD); to resume operation, press PLAY and then START.

**F4 – CALL MASTER JOB:** The CALL MASTER JOB command calls up the job that has been registered as the master. The curser will be located on the first line of the job (top). However, the job will not begin execution until the start button is pressed. If the button press was successful, the status indicator will change from blank to TOP MJ. To prevent crashes, CALL MASTER JOB will not work if a robot is in a work cube or the positioner is not at side A or B.

**F5 – ROBOT JOB START/HOLD:** The ROBOT JOB START command will begin executing the current job at the line the curser is located on. Once F5 is pressed, the text inside the command indicator changes from ROBOT JOB START to ROBOT JOB HOLD, and the small status indicator changes between NO RUN and RUN. The HOLD command stops the operation of the job until another start signal is sent.

**Part Count Screen**

The Part Count screen (see Figure 6) displays the number of parts processed. Signals received from the controller dictate increases in part count increments. The pulse output command needs to be programmed at the end of the weld job, or handling cycle.

**NOTE:** Use PULSE OT#(55) to increment the part count.

![Figure 6 Part Count Screen](image-url)
**Diagnostics Screen**

The system diagnostics screen (see Figure 7) provides real-time data about critical safety features during cell operation. Use the indicators on this screen to diagnose the safety features listed.

![Diagnostics Screen](image)

**Figure 7  System Diagnostics Screen – Arc Welding**

**ALARM:** The Alarm lamp is normally off and is invisible to the operator. Access the Main Menu to resolve the alarm.

To resolve **ALARMS**:
1. Press F8 to access the Main Menu.
2. Press F6 to access the Alarm Message screen and identify the alarm.
3. See the Troubleshooting section to take action on the alarm.

**OP AT SIDE A and OP AT SIDE B:** These indicators show where the operator is (in relationship to the positioner), and is not included on the General Purpose screen. The System Diagnostics screen for General Purpose and Arc Welding applications are the same except for the OP AT SIDE A and OP AT SIDE B indicator.

**Time/Date Screen**

The Time/Date screen (see Figure 8) lists the current time and date that is programmed into the controller.

![Time/Date Screen](image)

**Figure 8  Time/Date Screen**

**Alarm Message Screen**

The Alarm Message screen (see Figure 9) helps the operator troubleshoot alarms/errors. The screen displays minor alarms/errors messages that can be resolved using the Troubleshooting section of this manual. Most of the minor alarm messages explain why a key press did not function.

At the bottom of the screen is the controller alarm/messages indicator. Controller alarms/errors, which can be viewed at the pendant, can be researched using the manipulator manual. After the problem is resolved, press F1 on operator station or CANCEL on the programming pendant to clear the alarm at the controller.
The maintenance screen (see Figure 10 and Figure 11), for Arc Welding or General Purpose, provides access to other screens for part number selection, check mode, part count, password setup, and cycle time.

Access to the maintenance screen is permitted only with a password unless password security is disabled. The security level of the password will dictate what screens can be viewed from that point forward. These security parameters are established during setup to prevent unwanted access to certain screens.
The Maintenance Screen provides access to 6 sub-menu screens. Figure 12 previews the accessible screens.
Part Select Screen

The PART SELECT screen (see Figure 13) provides the operator a list of production parts to choose from. The jobs to process these production parts are stored in the controller and linked to the part name that is displayed in the selection box.

To select a part, use the UP and DOWN arrow keys to highlight the preferred part, and press F1. Once that part is selected, only the job for that part will run until another part is selected.

The name of the part can be changed from Part 1, Part 2, etc. to any customer specific name up to 16 characters. To change the name of a part, contact Motoman customer service.

Once the part number is selected, a group of controller inputs will turn on, representing a binary number of the part selected.

**NOTE:** Use CALL JOB: name IF IG # (8) =12 to run the job that will process part 12 when this job is selected at the op-station.

**ALARM:** The Alarm lamp is normally off and is invisible to the operator. Access the Main Menu to resolve the alarm.

To resolve **ALARMS:**
1. Press F8 to access the Main Menu.
2. Press F6 to access the Alarm Message screen and identify the alarm.
3. See the Troubleshooting section to take action on the alarm.

Part Count Screen

The Part Count screen (see Figure 14) displays the number of parts processed. Signals received from the controller dictate increases in part count increments. The pulse output command needs to be programmed at the end of the weld job, or handling cycle. Press F1 to reset the part count to zero.

**NOTE:** Use PULSE OT#(55) to increment the part count.
Check Mode Screen – Arc Welding

The Check Mode screen (see Figure 15) is used to run a job with or without an arc. Press F1 to choose between WELD and CHECK. The simulated toggle switch changes between WELD to CHECK on screen to indicate the selected mode.

![Figure 15 Check Mode Screen – Arc Welding](image)

**WELD:** The Weld option enables the torch arc during a job execution.

**CHECK:** The Check option gives the operator the ability to run a job and verify accuracy without actually welding.

**ALARM:** The Alarm lamp is normally off and is invisible to the operator. Access the Main Menu to resolve the alarm.

To resolve ALARMS:
1. Press F8 to access the Main Menu.
2. Press F6 to access the Alarm Message screen and identify the alarm.
3. See the Troubleshooting section to take action on the alarm.

Gripper Screen – General Purpose

The Gripper screen (see Figure 16) is used to monitor and control the gripper(s) activity. The operator can open and close the gripper(s), using function keys, for set up. The gripper screen also shows part detection as the part is located for pick-up.

![Figure 16 Gripper Screen – General Purpose](image)

**ALARM:** The Alarm lamp is normally off and is invisible to the operator. To resolve alarms, press F8 to access the Main Menu, then press F6 to access the Alarm Message screen and identify the alarm. See the Troubleshooting section to take action on the alarm.
**CYCLE TIME SCREEN**

The Cycle Time screen (see Figure 17) displays the time taken by the robot to complete the job or specific task. The timer is controlled by a Cycle Timer Enable output from the controller.

![Figure 17 Cycle Time Screen](image)

**NOTE:** Use DOUT #(56) ON to start the timer.

When the output is turned off, the timer will stop and display the elapsed time. When the output is turned on, the time value will reset to zero, and the timer will start again.

These output commands can be placed anywhere in the jobs to time the weld cycle, the load cycle, or any other sequence.

**ALARM:** The Alarm lamp is normally off and is invisible to the operator. Access the Main Menu to resolve the alarm.

To resolve ALARMS:
1. Press F8 to access the Main Menu.
2. Press F6 to access the Alarm Message screen and identify the alarm.
3. See the Troubleshooting section to take action on the alarm.

**Password Screen**

The Passwords screen (see Figure 18) is used to set up, change, and disable all password functions.

![Figure 18 Password Screen](image)

**Security Mode:** Pressing F1 turns the security functions on the operator station on or off. The text inside the indicator changes between DISABLED/ENABLED to reflect the current Security Mode.

**DISABLED:** If the Disabled indicator is active, the operator has complete access to the operator station without the use of passwords.

**ENABLED:** If the Enabled indicator is active, the operator must use a password to access the MAINTENANCE screen, and its menu selection.
The USER selection field is used to change operator names. Different operator names are used with passwords to limit access to certain screens. The operator name SUPERVISOR has access to all screens and has the ability to turn off all security functions. The MAINTENANCE operator name allows access to any screen except for the password screen. Pressing F2 changes the operator name.

**Choose and Operator:** Motoman provides default passwords (see Table 1) for each of the two operator names.

### Table 1 Operator Station Passwords

<table>
<thead>
<tr>
<th>Operator Name</th>
<th>Password</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor</td>
<td>1111</td>
</tr>
<tr>
<td>Maintenance</td>
<td>2222</td>
</tr>
</tbody>
</table>

**NOTE:** The system can register up to 16 operators. Contact Motoman for the software needed to add more operator names.

**Change a Password:** To change a password that is allocated to an operator name, proceed as follows:

1. Press the operator button (F2) until the correct name is displayed.
2. Press F3.
3. Type “new password” into the keypad that appears on screen.
4. Press the ENTER key.
5. Press the F4 to VERIFY password.
6. Retype the new password onto the keypad that appears on screen.
7. Press the ENTER key to finish the password change.

### Troubleshooting

All screens have an ALARM indicator in the right, top corner. When this indicator begins to flash, there is an alarm condition.

To resolve **ALARMS**:

1. Press F8 to access the Main Menu.
2. Press F6 to access the Alarm Message screen and identify the alarm.
3. See the Troubleshooting section, Table 2 (Arc Welding) and Table 3 (General Purpose), for error message identification and action procedures.
### Error Messages – Arc Welding

**Table 2  Error Messages – Arc Welding**

<table>
<thead>
<tr>
<th>Error Description</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shock Sensor Tripped</td>
<td>Reset torch alignment</td>
</tr>
<tr>
<td><strong>This button only works in the Remote Mode</strong></td>
<td>Switch Controller to Remote mode and continue</td>
</tr>
<tr>
<td>Light Curtain Interrupted During Sweep</td>
<td>Light curtain interrupted. Get in TEACH mode and complete sweep job before restart</td>
</tr>
<tr>
<td><strong>XRC Alarm - View at pendant</strong></td>
<td>View pendant message, fix and clear (F1)</td>
</tr>
<tr>
<td><strong>Switch to PLAY mode for Servo ON</strong></td>
<td>Switch Controller to PLAY for servo on</td>
</tr>
<tr>
<td><strong>Close Safety Gate for Servo ON</strong></td>
<td>Close cell door, press servo on again</td>
</tr>
<tr>
<td><strong>Move Robot out of Work Cubes to CALL MJ</strong></td>
<td>Move robot out of work cubes before pressing Call Master Job button</td>
</tr>
<tr>
<td><strong>Teach Locked at Pendant</strong></td>
<td>Pendant has command, turn off pendant teach lock</td>
</tr>
<tr>
<td><strong>Programming Pendant E-STOP</strong></td>
<td>Reset E-STOP</td>
</tr>
<tr>
<td><strong>Playback Box E-STOP</strong></td>
<td>Reset E-STOP</td>
</tr>
<tr>
<td><strong>External E-Stop</strong></td>
<td>Reset E-STOP</td>
</tr>
<tr>
<td><strong>Move Positioner to Side A or B</strong></td>
<td>Move the positioner to side A or B before pressing the Call Master Job button</td>
</tr>
</tbody>
</table>

### Error Messages – General Purpose

**Table 3  Error Messages – General Purpose**

<table>
<thead>
<tr>
<th>Error Description</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shock Sensor Tripped</td>
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<tr>
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<td>Switch Controller to Remote mode and continue</td>
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<td><strong>Close Safety Gate for Servo ON</strong></td>
<td>Close cell door, press servo on again</td>
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<tr>
<td><strong>Move Robot out of Work Cubes to CALL MJ</strong></td>
<td>Move robot out of work cubes before pressing Call Master Job button</td>
</tr>
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<td><strong>Teach Locked at Pendant</strong></td>
<td>Pendant has command, turn off pendant teach lock</td>
</tr>
<tr>
<td><strong>Programming Pendant E-STOP</strong></td>
<td>Reset E-STOP</td>
</tr>
<tr>
<td><strong>Playback Box E-STOP</strong></td>
<td>Reset E-STOP</td>
</tr>
<tr>
<td><strong>External E-Stop</strong></td>
<td>Reset E-STOP</td>
</tr>
<tr>
<td><strong>Error – ALARM NOT DEFINED IN LOGIC</strong></td>
<td>Restart controller and continue</td>
</tr>
</tbody>
</table>