ISCO MODEL 4700 SOFTWARE UPDATES

REVISION 2.06
Software Release Date: 12/02/10

Corrections: Software upgrade was required for new vender chipset. This bin file is backwards compatible with older hardware.

Enhancements: None
REVISION 2.04
Software Release Date: 06/29/09

Corrections:

1- Fixed a problem with the parameters stored in the flash memory block that was introduced in 4700 version 2.03. Units with the Chinese display (hardware revs B0 and B1) lost any contrast adjustments that were made if they are upgraded from previous versions to 2.03

2- Power fail sensor incorrectly issues an "AC Power Lost". The software shuts the evaporator fan off. An option has been added to control whether the evaporator (compartment) fan operates while the 4700 is in the "battery backup" state. This option defaults to "YES".

3- For samplers not equipped with the battery backup, this allows for the sampler to continue normal operation (with the evaporator fan continuing to run) in the event of an erroneous AC Power Lost signal although the customers will still occasionally see a "switched to AC power" message in the log. Customers with the battery backup option installed should be advised to select "NO" (do not run the evaporator fan during battery backed operation) for longest battery life. The option is accessed by entering the number 22287 and pressing the "enter" key from the main (PROGRAM CONFIGURE VIEW LOG" menu. This option is stored in flash and will be retained in the event of a hardware reset, or software reload.

Enhancements

1. Refer to the release notes for version 2.03 since version 2.03 was not available for updating units in the field with previous revisions.

2. Changed the refrigeration algorithm so that the use of the heaters is greatly reduced.

REVISION 2.03
Software Release Date: 03/23/09

Corrections:

1- Additional work was done on SPA1741 that allows for sample inputs from 4 sources. The changes allowed for the sampler to attempt sampling in subsequent bottles in a multiple bottles per sample even if no liquid is detected.

2- Fixed a problem where if the sampler had been programmed for rinses (more than 0) and then the liquid detector turned off, the sampler would not take samples.

3- Fixed problem where pump would only jump if line rinses programmed with Liquid detector off.

4- Made various changes to the Sample volume calibration.

5- Made "CALIBRATE VOLUME" the default option when the calibrate sample key is pressed instead of "DEFINE SAMPLE".

   a. Limited the calibration factor to the range of 0.5 to 1.5.

   b. In order to smooth the change to the calibration constant when calibrating low volume samples (less than 100 ml.), the software will try to adjust only "Part way" when the error is less than 5 ml. This should decrease overshoots due to random errors, but may require additional calibration runs.

   c. While collecting a calibration sample, increased the delay after the pump has collected the sample before the final purge begins. This was done to ensure that all of the liquid in the pump discharge tubing has a chance to drain into the bottle so that the calibration sample volume will be more consistent.

   d. As a result of the increased delay, adjustments were necessary to the pump volume offset and the discharge tubing offsets.

6- The calibration volume is the programmed sample volume unless the programmed volume is less than the minimum calibration volume. The minimum calibration volume was changed from 100 ml. to 50 ml.

7- The language selection menu was changed so that Chinese cannot be selected unless the hardware rev of the PCB is rev B0 or higher to prevent the selection of Chinese if no Chinese capable display is resent.

8- Fixed a problem with version 2.01 and 2.02 where the internal PCB heater would not come on with older (hardware rev A0 and A1) boards.

9- Changed the "Are you sure" menus so that NO is the default response.

Enhancements:

1- Added SPA 1849. SPA 1849 modifies the behavior of sampler when taking flow paced samples with time switched bottles. SPA is similar to SPA 1770. SPA 1770 disables the taking of the "override sample" that is normally immediately before the bottle switch if a sample has not been taken in the bottle. The new SPA 1849:

   a. Suppresses the override sample.

   b. Does not move to the next bottle at bottle switch time if no sample has been taken.

   c. Does not reset the flow volume pulse counter at bottle switch time regardless of whether a bottle switch actually occurs.

2- Changed the software so that a bottle size of up to 65,500 ml will be accepted with a "Are you sure" if the size is larger than the standard bottle size.

3- Added PUMPING REVERSE as an option for the output pins. This is to support the use of SPA booster pumps. This signal should go high anytime the pump pumps in reverse including the "run reverse" function started by pressing the one key. It should stay high as long as the pump runs in reverse and goes low immediately when the pump stops.

REVISION 2.02
Software Release Date: 09/22/08

Corrections:

For large composite bottles (>10500 ml), the distributor arm is not used. Instead, a short (8.25 inch) discharge tube dispenses the sample directly into the bottle. For all other configurations, the discharge tube is 20.0 inches long. The differential volume of about 20 ml was not accounted for in the volume delivery system. This volume is now compensated for.

Enhancements:

We are now using the displays from DCI capable of displaying Chinese characters. The contrast adjustment on the current shipment does not match that of the original build. A contrast adjustment has been added to optimize the display contrast. This value can be accessed by entering '2'+'6'+'6'+'8'+<Enter> while at the standby screen. The result is stored in Flash so it will be "remembered" in the absence of power.

REVISION 2.01
Software Release Date: 04/21/08

Corrections:

1- Occasional DISTRIBUTOR JAMMED errors have been occurring during the FINAL test. After investigation, the measurements of the slot widths (in terms of motor steps) are consistently higher than they were when the 4700 was released. The acceptable measurement range has been increased to accommodate this change.

2- The ambient temperature range where the refrigeration system or the heaters is allowed run has been expanded to +/- 12.0 °C around the target temperature. Previous versions were at +/- 6.0 °C. Some short-term freezing of the samples could be attributed to this issue at the defrost time (every four hours) if the ambient is close to the target temperature and the system has just finished cooling the compartment after completing a defrost. The bulk of the "sample freezing" issue was due to the positioning of the return air sensor, and has been addressed with a new sensor holder.

Enhancements:

1- PUMP ERROR replaces PUMP FAILURE in the output pin selection list. PUMP ERROR includes NO LIQUID and NO MORE LIQUID, as well as PUMP FAILURE when determining the state of the output pin. As before, the condition is updated each time a pumping operation is performed. In the case of NO LIQUID or NO MORE LIQUID, the next pumping operation is the post-sample purge for the same sample.

2- Korean SPA1758 now includes functionality to drive the pump motor at a slow speed (deliver a 1.00 liter sample in just over five minutes). The slow pump drive will automatically occur when pumping forward if the hardware version (A2 or B2) implies that the 60-hole pump disk has been installed.

3- When performing a FINAL test, the LIQUID DETECT test will now follow the OUTPUT PIN test. This will allow the operator to observe all tests requiring his attention before moving on to other tests that do not require his attention.

REVISION 2.00
Software Release Date: 01/25/08

Corrections: None

Enhancements:

1-   SPA entry can now be done using the keypad. Enter "47009<Enter>" at the MAIN MENU to access the SPA entry screen. If the SPA is free, no access code will be required to toggle it. Currently, only SPA 1709 is free.

2-   For hardware version B0 (not yet released) and newer, the LCD is capable of displaying Chinese. To access Chinese, enter "5264<Enter>" and select Chinese. For this display, the LCD contrast voltage is temperature compensated using the PCB temperature reading.

3-   SPA1758 is used to communicate via the serial port in a protocol defined by the Koreans. Communications are always done at 9600 baud, 8 bits, no parity, one stop bit.

4-   "SAMP00" = Take Sample command

5-   "SAMP10" = Sampler Status command

6-   SPA1760 adds the option to enter PAUSE and RESUME times in the program. Up to nine PAUSE / RESUMEs are available over a one week period. These times are repeated weekly.

7-   SPA1764 is intended to be used with SPA hardware to detect when the door is open. The output pins can be used to indicate the DOOR OPEN condition. Since the electronic hardware is checked every five seconds, it may take up to ten seconds to detect the DOOR OPEN condition.

8-   SPA1768 adds the option to AUTO RE-RUN the program. In addition, a MAXIMUM RUN TIME entry is available for TIME PACED programs (FLOW PACED programs have always had this option). The MAXIMUM RUN TIME allows for programs to complete prior to all bottles being filled. If a program does not use all the bottles, and AUTO RE-RUN has been selected, the next time the program runs, it will start at the next available bottle. If the program uses all the bottles, it will start the next program at bottle one.

9-   SPA1769 enables the option to SWITCH ON TIME for TIME PACED programs.

10-   SPA1770 disables the taking of TIME OVERRIDE samples.   TIME OVERRIDE samples are taken at the switch time for FLOW PACED, TIME SWITCHED programs if no samples have already been taken into the current bottle.

11-   Program settings are now available via the serial port. After logging in, type "SETTINGS<Enter>" to retrieve the settings report. The settings report complements the results report released previously. If both the settings and results reports are desired, type "REPORT<Enter>".

REVISION 1.13

Software Release Date: 11/06/07

Corrections:

1- Fixed "Display lockup Problem".   When the 4700 is shut off, some of the tasks are halted, then restarted. This ensures that they begin at a known location. If one of these tasks has the display resource when it is "killed", the resource will never again become available. This will cause the 4700 display to be blank, and the keypad may become non-responsive. This software ensures that the resource is never held by a "killed" task.

Enhancements: None

REVISION 1.12
Software Release Date: 08/14/07

Corrections:

1- A bug was introduced in version 1.11 for composite bottle configurations that require distributor movement (bottle volume <= 10,500 ml). The distributor would move to the mechanical stop position instead of over the composite bottle opening. This bug has been fixed.

Enhancements:

1- For two bottle configurations, the standard bottle size has been increased from 9400 ml to 10,000 ml. The "ARE YOU SURE?" message is displayed for bottle volume entries larger than the standard bottle volume.

REVISION 1.11
Software Release Date: 07/17/07

Corrections:

1- If the sampler is shut off or power is removed while running a loaded battery test, the load was not removed. This condition will quickly drain the internal battery. This possibility has been removed.

2- The distribution type will no longer change when going to TIME pacing unless the prior distribution type was TIME SWITCHED.

3- The default distributor calibration should be set automatically from the factory.

Enhancements:

1- We will soon have two different four-bottle configurations. A bottle volume less than 15 liters will cause the distributor to locate above the bottle opening centered in the bottle. A bottle volume greater than or equal to 15 liters will imply the use of the square bottles located with the SPA bottle locator. Hitting the mouths of these bottles requires a shorter distributor arm and the new set of distributor locating positions.

2- A DELAY BEFORE SAMPLE output option is now available. If selected, the user will be asked to enter the desired delay between 1 and 99 seconds. This delay will occur prior to moving the distributor arm.

3- The number of composite samples is now stored separately from the number of samples-per-bottle. This change will be noticed when changing bottle configurations to and from a composite configuration.

4- The input voltage threshold used on the final test has been changed from 12.3 – 12.7 V to 12.3 – 13.0 V. This change will accommodate the 100 W supplies scheduled to arrive in August 2007. The 100 W supplies will come in set to 12.75 V. Current 60 W supplies are set to 12.50 V.

5- A sampling RESULTS report similar to that on 6712s is now available. Access the report using a program similar to Hyperterminal and a serial cable. Log into the 4700 by pressing '?' keys until the banner string is returned. (Serial settings include baud rates from 9600 to 38400, no parity, 8 data bits, and no hardware control.) Then enter "RESULTS <enter> ". The RESULTS report includes data for the most recently run program only.

6- SPA1741 is now available. If enabled, this spa will drive one of the TAKING SAMPLE outputs when a sample is taken in the output's corresponding bottle. For example, if a sample is being taken in bottle 2, and output 2 is set to TAKING SAMPLE, output 2 and only output 2 will be driven high for the duration of the sample. Without this spa, all outputs set for TAKING SAMPLE will be driven high each time a sample is taken. For multiple bottles-per-sample programs, the sampling routine has been modified to include the entire single sample routine (pre-sample purge, sample, post-sample purge) for each bottle programmed. By including the entire sampling program, the outputs will be able to control a set of valves designed to provide a sample source from up to four separate pressurized line sources. SPA1741 will drive the outputs as described only for samplers with two or four bottles.

7- Version 1.11 will include the following languages: Turkish, Swedish, Spanish, Portuguese, Polish, Japanese, Italian, German, French, Danish, and Czech. Any text not translated (including new strings) will be displayed in English.

REVISION 1.10
Software Release Date: 04/10/07

Corrections: This fixes The DISTRUBUTOR JAMMED error the "fix" required is to control the /sleep pin on the 3977SLP stepper driver chip. The chip appears to fall asleep even though the /sleep pin is held high preventing (supposedly) the chip from falling asleep. By controlling the pin (essentially waking the chip each time moving the distributor is required and putting it asleep when the distributor is not in use). The software change is needed to ensure that enough time elapses after the chip is awaken before a step is requested.

Enhancements: The acceptable loaded battery voltage has been decreased from 2.50 V to 2.40 V.

REVISION 1.09
Software Release Date: 03/30/07

Corrections:

1-   In version 1.08, if a defrost time occurred (every four hours starting at midnight) while a cooldown test was running, the compressor would shut off and invalidate the test. This bug has been fixed.

2-   During the cooldown test, an error condition happens if the evaporator temperature does not fall below 0.0°C in the first five minutes. This condition has been extended to the first seven minutes.

3-   Distributor errors: The distributor system gets to a point where the stepper motor does not run – causing a DISTRIBUTOR JAMMED error. Some changes have been made to address possible causes:

   a. The distributor code is now reset each time a distributor request is made.

   b. Stack space for each task has been increased by one-third to ensure ample room for the tasks to accomplish their mission.

   c. Other changes ensure proper functioning if the OFF key is pressed while the distributor is moving, and if power is removed while the distributor is moving.

Enhancements:

1-   Two new output options have been added.
   a. The first, POWERED UP, will be high when the 4700 has power supplied to it.

   b. The second, BOTTLE FULL, will become high if a composite program using a bottle larger than 10,500 ml purges liquid from the sample bottle. Sample volumes larger than 60 ml and a post-sample purge larger than 100 counts are also required. A BOTTLE FULL will not happen until after the first five samples have been taken to allow the sampler to determine "normal" operating conditions. A BOTTLE FULL exit of a running program will occur only if an output has the BOTTLE FULL selection. The BOTTLE FULL output will be high until a key is pressed exiting the BOTTLE FULL screen.

2-   For the CONFIGURE, RUN DIAGNOSTICS, REFRIG TEMPERATURE selection, the compressor status and compartment heater status will now alternate with the return air and evaporator temperature screen.

3-   Defrost cycles will not last more than 18 minutes regardless of the evaporator sensor temperature reading.

4-   Czeck, Danish, and Polish languages have been added to the English, French, German, Italian, Japanese, Swedish, and Turkish that we had in version 1.08.

REVISION 1.08
Software Release Date: 01/29/07

Corrections: Add foreign language text for Turkish, Swedish, Japanese, Italian, German and French.

Enhancements:

   1-   The refrigerator temperature set point is not fixed-it adjusts based on the average of the last cycle.

2-   Calculation of the duty cycle for the compressor is now available. The number displayed is the percentage of time, during the most recent four hours, that the compressor was running.
         Access this value by:
             a)Entering "29253"<Enter> while at the standby screen. (Displayed only)
             b)Entering "T50"<Enter> while in the TEST menu. (Displayed and sent out the serial port)

3-   SPA 1709 allows for nonstandard bottle configuration distributor positioning. If SPA 1709 is enabled, a setup procedure is available (accessed by entering "BOTTLES" = "**2688537**<Enter>" at standby) that will allow up to 24 distributor positions for a non-standard bottle configuration. These positions can be anywhere the distributor can travel to. They are entered as a number between 50 (bottle 1, standard configuration) and 2350 (bottle 24, standard configuration). If the non-standard configuration contains the same number of bottles as a standard configuration, the non-standard set will be used while the SPA is activated.

4-   The CALIBRATE and GRAB functions while at the GO TO BOTTLE xx screen in the CONFIGURE, RUN DIAGNOSTICS, TEST DISTRIBUTOR menu have been hidden. To activate these keys, enter "TABLE" = "**82253**<Enter>" at standby. To deactivate, repeat the activate procedure.

5-   Added TAKING SAMPLE and PUMPING FORWARD output options.

6-   For production final assembly test, added evaporator temperature reading to COOL test data. Also added test exit modes designed to catch failed evaporator sensors, and misplaced evaporator and return-air sensors.