



## PI software history

PI 320-400-500			#
PI 320-400-500	10005401	2.04	
PI 350 MK1	10005402	1.01	
PI 350-500 MK2	10005405	2.17	
CWF	10020106	2.05	
Robot interface	10020113	1.04	
Plasma module	10005404	1.00	
Digital remote	10020109	1.03	

Date	PI 350 - 500 MK2 10005405
21-12-2016	<p><b>2.17</b></p> <ul style="list-style-type: none"> <li>New torch with UP/DOWN function is implemented.</li> </ul>
26-05-2016	<p><b>2.16</b></p> <ul style="list-style-type: none"> <li>Fixed an issue where the machine, in a mode other than TIG-DC, could lock up on factory reset.</li> </ul>
14-04-2016	<p><b>2.15</b></p> <ul style="list-style-type: none"> <li>Four stroke function #4 is implemented in order to simulate Rehm functionality. It works like starting on function #3 and ending on function #1.</li> <li>Four stroke function #5 is implemented due to wishes from Swedish customers. It works like starting on function #3 and ending on function #0.</li> </ul>
30-11-2015	<p><b>2.14</b></p> <ul style="list-style-type: none"> <li>Pre-gas is enabled in TIG-A-TACK and can be set.</li> <li>GAS error is detected in TIG-A-TACK mode.</li> <li>The RCI is updated immediately when new wire speed measurement is received from the active CWF.</li> <li>The actual current is sent to the RCI instead of an average current in the case where slow pulse is used and one of the periods is less than 250ms.</li> </ul>
18-09-2015	<p><b>2.13</b></p> <ul style="list-style-type: none"> <li>Gas flow value in IGC mode will no longer display as '0.0L' at high current settings</li> <li>Decreasing the gas flow setting to minimum, in IGC mode, will no longer cause the system to abandon IGC mode.</li> <li>Plasma gas flow limit is increased fro 7 to 9 standard liter per minute, as per costumer request.</li> <li>Errors with code E02-03, E02-05 will no longer occur when welding without any device connected to the CAN bus.</li> </ul>
22-06-2015	<p><b>2.12</b></p> <ul style="list-style-type: none"> <li>Release SW with support for activation of TIG-A-TACK from torch and support for the new test system.</li> </ul>

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25-03-2015	<p><b>2.11</b></p> <p><b>The machine must be reset to factory settings after software update.</b></p> <ul style="list-style-type: none"> <li>• The machine is prepared for the PI remote (PI remote is not released yet)</li> <li>• The default pre-gas setting is now 0.2s after doing a factory reset or reset of an individual program. This is done to make sure that we have a proper gas flow when the welding is started.</li> <li>• It is now possible to log welding current, welding voltage, gas flow (IGC kit required), and wire speed (if a CWF is used) via CAN.</li> <li>• It is now possible to calibrate the IGC kit. The calibration is initiated by selecting "GS.c" in the user menu, and the gas flow is calibrated at 10L/min and 20 L/min.</li> <li>• A short description of the errors has been added to each error stored in the error log file on SD card</li> <li>• It is now possible to store all program settings in a file on a SD card by selecting "P.SA" in the user menu. The stored program settings can be loaded from the file on the SD card at a later time by selecting "P.Ld" in the user menu.</li> </ul>
08-04-2014	<p><b>2.09</b></p> <ul style="list-style-type: none"> <li>• Version 2.08 did not has no gas purge function during swiching on the machine and when changing from MMA to TIG. This function is working again.</li> </ul>
13-03-2014	<p><b>2.08</b></p> <ul style="list-style-type: none"> <li>• - Added support for PI350DC-HPC (cellulosic version of PI350DC-HP)</li> <li>- Avoid trig start at boot</li> <li>- Implemented arc-lenght welding voltage (AVC)</li> <li>- Implemented Backup/Restore of programs only in Service Menu</li> <li>- Increased max slope-down times in PLASMA</li> <li>- Slope-down does not follow anymore current-reference</li> <li>- Enabled gas shield error detection also during purge operations</li> <li>- Show "Quick stop" error code on display with auto-recover</li> <li>- [BUGFIX] H2O pump glitch at startup with air-torches</li> <li>- [BUGFIX] CAN driver causing startup delay on some conditions</li> <li>- [BUGFIX] Corrected analog input in RC mode 1&amp;3 to scale on plasma maximum current</li> <li>- [BUGFIX] Plasma gas locks in postgas if shield-purge activated</li> <li>- [BUGFIX] Slow-Pulse period skip due to missed timer event</li> </ul>
02-02-2012	<p><b>2.06</b></p> <ul style="list-style-type: none"> <li>• Improved MMA-AC welding</li> <li>• Ignore GAS error on purge at process change MMA to TIG</li> <li>• Changed plasma postgas flow to full open (like purge)</li> </ul>
08-12-2011	<p><b>2.05</b></p> <ul style="list-style-type: none"> <li>• Problem with Arc detect signal. It could "forget" to give the Arc ON, or forget to turn of the Arc detect relay.</li> <li>• If there are to many inputs from the front panel (pushing a lot of buttons in a row), or from via the CAN-bus, the control box could forget the settings made by the user. x. slope, gas timer, current settings, can-bus activation etc..</li> </ul>

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	<ul style="list-style-type: none"> <li>The machine could give GAS error, if no gas was supplied was present at the time the machine was switched on. It could also give an H2O error if the water hoses were disconnected at the time the machine was switched on. These errors will show up now during welding only.</li> </ul>
03-10-2011	<p><b>2.04</b></p> <ul style="list-style-type: none"> <li>The software is prepared now for PI 350 PLASMA 100% with water connections for internal and external cooling.</li> <li>Synchron AC is possible when the TANDEM KIT is mounted in the machine.</li> <li>AC preheating is optimized in the lower current area.</li> <li>AC frequency is modified so it behaves more like Navigator. The welding performance has not been changed.</li> </ul>
01-04-2011	<p><b>2.02</b></p> <ul style="list-style-type: none"> <li>Error E03-14 will not appear anymore when AC preheat is adjusted lower than 8.</li> <li>The acoustic noise level in the AC arc has been reduced.</li> <li>Reduction of HF emission, due to new EU Norm. The HF spark is now pulsating and the LED on the HF PCB is blinking as a consequence of that.</li> <li>PI400-PLASMA gas purge test is now done with full gas flow, just like it was on the "old" PI400-Plasma.</li> </ul>
28-02-2011	<p><b>2.01</b></p> <ul style="list-style-type: none"> <li>New torch trigger method is implemented. 4T-REPEAT (mode 3) can be selected from the user menu. See instruction manual.</li> <li>Control of pulsation settings are now possible via robot interface.</li> </ul>
28-01-2011	<p><b>2.00</b></p> <p>10005402 is obsolete and taken over by this new software.</p> <p><b>All machines have 64 programs for each process: Panel Lock has now 3 modes:</b>  0= unlock  1= lock with exclusion of keypad "pilot Arc ON/OFF" as in actual PI-Plasma  2= all lock, including "Pilot Arc ON/OFF" NEW function requested by Claus Larsen for Robot Installation. <b>Program Lock has now 3 modes:</b>  0= unlock  1= parameters of P3 to P64 are locked  2= parameters of P1 to P64 are locked. NEW Function requested by Claus Larsen for Robot Installation. <b>TIG LIFT without torch trigger.</b></p> <p>In case of problems on the torch trigger or in case of using a torch without trigger it is possible to ignite the arc by touching the workpiece and lifting the torch. (inverter OFF to protect the electrode)  Enable this function by selecting "LIFT MODE" and then by keeping the keypad 2T/4T pressed for 3 seconds.  The led 2T/4T will blink to indicate the activation of new function.  Cooling unit will act as from the torch configuration used: air/water.  Because of missing trigger, the slope down will be skipped. <b>AC Frequency VS Welding current</b>  It is now possible to regulate the AC frequency also when the welding current is regulated from the 7-pole connector, as for Navigator.  By increasing the welding current, the machine will automatically reduce the AC frequency according to the curve indicated ON MANUAL.  At the same time the led "AC FREQ" will blink for 5 seconds to indicate the action of microprocessor.  The new frequency value will be stored in memory at turn off of machine. <b>GAS and H2O errors are</b></p>

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### ignored at turn ON of machine Voltmeter

By pressing "A" for few seconds the display will act as a voltmeter for the arc voltage.

MMA DC, TIG DC and PLASMA: the display shows the DC value of arc.

MMA AC, TIG AC: the display shows the DC value of NEGATIVE wave immediately before to reverse the polarity of wave

For sure this reading during AC weld can be not so interesting for end user because nobody has defined that means ARC voltage in AC:

Average??

Rectified average??

RMS??

DC- (energy transfer)??

DC+ (Cleaning)??

Then the displayed value in AC is ONLY for few experts who knows and perfectly understand the meaning of this reading. **AC frequency balance (duty, clean, penetration)**

Machine generates AC waves with a duty cycle varying from 20 to 80%

It is possible to force the parameter to 0% to keep the arc always in DC+ for deep cleaning actions on special applications.

It is possible to force the parameter to 100% to keep the arc always in DC- but using the benefits of a START DC+ for cleaning the material on special applications. **Calibration of maximum current for PILOT ARC (20Amps)** from the box of PI

This calibration is not necessary because the current control is quite precise. Anyway, in case of needs it is possible to calibrate that current following the same way used for PI. **Reset of mains alarms**

After the alarms are disappeared (Hi/low mains), the machines keeps the errors for extra 5 seconds on display then clears the alarm.

5 seconds are intended to give the possibility to see what happens in case of short alarms. **PI400 MMA**

The new Sw, when detecting a PI500 with dedicated PLD, will acts as a PI400 MMA (ask HBO for more details) **Error LOGs and SD card**

The machine provides the LOG of errors: LOGs can be inspected via box or can be "exported" on a dedicated file on SD CARD **How-to display logs in service menu:**

- Enter service menu;
- Select "LOG" and press (A);
- The displayed "L.xx" is the latest recorded log;
- Select the log record "L.xx" to display by using the knob;
- The record error is displayed when (MMA) keypad is pressed (the format is "E.xx-yy");
- Exit in three ways:
  - o Press (A)+(Program) keys to clear logs and return to service menu;
  - o Press (A)+(Camel) keys to save logs without clear on SD-Card and return to service menu;
  - o Press (A) to return to service menu without clear logs. **Notes for saving logs on SD card:**

- Logs are saved on the root directory of SD card with progressive names "PI\_LOGxx.TXT"

where XX is a progressive number from 00 to 99 without overwriting existing LOG files;

- Each file contains also other information like the machine model and other settings. **Notes**

### for MMA machines:

- Use (TIG LIFT) key instead (MMA) key to display errors;
- Use (Hot Start) key instead (Program) key to clear logs;
- Use (External Ref) key instead (Camel) key to save logs.
- Use (Standard Cut) key instead (MMA) key to display errors;
- Use (Grid Cut) key instead (Program) key to clear logs;
- Use (Gas Purge) key instead (Camel) key to save logs.

### Notes for ZETA machines:

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Date	PI 350 10005402
21-07-2010	<b>A1-1.01</b> <ul style="list-style-type: none"><li>• Support for 8 pol remote control in MMA machines. Fan has now "soft start".</li></ul>
30-03-2010	<b>A0-1.00</b> <ul style="list-style-type: none"><li>• First version of software for PI 350. Same functions as C3-2.03 for PI 320-400-500.</li></ul>

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Date	Robot interface til PI 350 10020113
27-06-2012	<b>A4-1.04</b>  Release with improvements for compatibility with SIGMA machines Implemented AIN refresh rate limiter at 50Hz when JMP6 in position 2-3 (reduced traffic data on the CAN BUS to avoid bus overload on Sigma) Device-timeout extended to 10sec (when enabled in device options) to permit the boot of Sigma SW (that requires several seconds at Turn On of machine).
10-11-2010	<b>A3-1.03</b>  <ul style="list-style-type: none"><li>• The problem when starting the Robot interface is solved.</li></ul>
06-09-2010	<b>A2-1.02</b>  <ul style="list-style-type: none"><li>• First version of software for Robot interface.</li></ul>

Date	Plasma modul for PI 350 10005404
5-07-2013	<b>A1</b>  <ul style="list-style-type: none"><li>• Unable to detect missing plasma gas at flow below 1.5 litres pr. minut.</li></ul>

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Date	PI 320-400-500 10005401
30-05-2012	<p><b>C4-2.04</b></p> <ul style="list-style-type: none"> <li>• Optimized inversion current levels for SyncAC</li> <li>• Corrected behaviour for Process and Program messages from robot-interface</li> </ul>
30-03-2010	<p><b>C3-2.03</b></p> <ul style="list-style-type: none"> <li>• Gas regulation is now synergic. It is allso synergic during post gas.</li> <li>• IGC is enebled as standard.</li> <li>• It is now possible to calibrate both minimum and maksimum current in the service menu.</li> </ul>
08-02-2010	<p><b>C2-2.02</b></p> <p>Improved welding performance in MMA AC when using electrode type MIGA RR160 7024.</p>
16-04-2009	<p><b>C1-2.01</b></p> <p><b>When this software version is stored, all PROGRAMS MUST be reset.</b></p> <p>Reset procedure: Switch on the machine while holding down the Camel+Program keypads simultaneously, or carry out F.SE in the service menu.</p> <ul style="list-style-type: none"> <li>• There are now 64 program spaces in each welding process.</li> <li>• The TIG-A-TACK function is implemented.</li> <li>• MIGANET protocol for new CAN bus interface is implemented.</li> <li>• Spot welding time can now be set up to 600 seconds.</li> </ul>
09-06-2008	<p><b>B1-1.02</b></p> <ul style="list-style-type: none"> <li>• Support for PI 400 PLASMA</li> <li>• It is now possible to reset an error on the CWF from PI machine</li> </ul>
21-01-2008	<p><b>B0-1.01</b></p> <ul style="list-style-type: none"> <li>• Support for CAN communication</li> <li>• Support for Remote Panels</li> <li>• Support for CWF</li> <li>• Support for PI320 configuration</li> <li>• Support for PLASMA configuration</li> <li>• D.O.C. is moved to user menu</li> <li>• 4T options parameters moved to usermenu</li> <li>• Panel lock is implemented (PA.L);</li> <li>• Program lock is possible from (PG.L.) P3 to P10 in all programs</li> <li>• Timeout in secondary parameter menu has been changed to 60 sec before jumping back.</li> <li>• Possibility of choosing 3 different taste-/slope-down functions (Mode 4T) in usermenu is implemented</li> <li>• Possibility of choosing 2 different retyping functions (Mode 2T) in usermenu is implemented</li> <li>• Reverse polarity in MMA AC mode is now possible by adjusting the AC frequency to 0HZ. This method can be used instead of reversing the welding cables.</li> </ul>

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	<ul style="list-style-type: none"><li>• Cooling error is now shown with blinking 'H2O'</li><li>• Gas error is now shown with blinking 'GAS'</li><li>• Gas purge 'GA.P.' is changed to 'GAS'</li><li>• Possibility of choosing 4 different Remote Control functions (r.c.o.) in usermenu is implemented</li><li>• Minimum welding current is now 5 Amps.</li><li>• Minimum TIG START current can now be adjusted to 1%.</li><li>• Welding timer is now adjusted in steps of 10 msec.</li><li>• DC Pulse frequency has been increased to 523 Hz.</li><li>• Electrode preheat only in DC+</li><li>• Frequency limit for AC (250A,150Hz)-(450A,50Hz)</li><li>• Correct read-out of AC current</li></ul>
	<p><b>xx-1.0</b></p> <ul style="list-style-type: none"><li>• Release of software</li></ul>



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Date	<b>CWF</b> <b>10020106</b>
30-11-2015	<b>2.05</b> <ul style="list-style-type: none"> <li>• It is possible to inch both forward and backward from the RCI with the wire hold signal set.</li> <li>• The actual wire speed is sent out every 10ms if the CWF is active.</li> </ul>
13-03-2014	<b>2.04</b> <ul style="list-style-type: none"> <li>• - [BUGFIX] Workaround for MigaOpen ID negotiation (delay based on ID)</li> <li>• - [BUGFIX] Unable to select pulse times when not selected and machine pulse is active</li> <li>• - Increased potmeter check time for stabilization</li> <li>• - Updated MigaNet CWF protocol for RCI2 support</li> <li>• - Created new wire hold MO object (temporary stop wire in run status)</li> <li>• - Wire hold by robot-interface signaled by RUN-FWD/REV led blinking</li> </ul>
24-06-2010	<b>A4-2.02</b> <ul style="list-style-type: none"> <li>• New trigger mode possibility for external regulation with potmeter on CWF.</li> </ul>
02-11-2009	<b>A3-2.01</b> <ul style="list-style-type: none"> <li>• Bug fixing and code optimized for robot interface.</li> </ul>
06-04-2009	<b>A2-2.00</b> <ul style="list-style-type: none"> <li>• Supports update via SD/CAN (SW is stored under folder: "MIGA_SW\PI)</li> <li>• Possibility of Program &amp; Panel Lock is implemented.</li> <li>• MIGANET protocol for new CAN bus interface is implemented.</li> <li>• Support for Remote Panel is implemented.</li> <li>• Support for torch with external potentiometer</li> <li>• Runtime enable/disable of pulsation</li> <li>• Runtime program change in stand-alone mode</li> <li>• Disable synchronization of pulse when not selected by machine</li> <li>• User menu is now identical with the one in PI5xx machines</li> <li>• Program clear (CLR) menu safe activation (S+OFF) and display sequence</li> </ul>
23-04-2008	<b>A1-1.00</b> <ul style="list-style-type: none"> <li>• Release of software</li> </ul>