

AMV4000 Operators Manual

Orbital Welding and CNL operation

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Rev.342

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1 Standard operation

1.1 Introduction

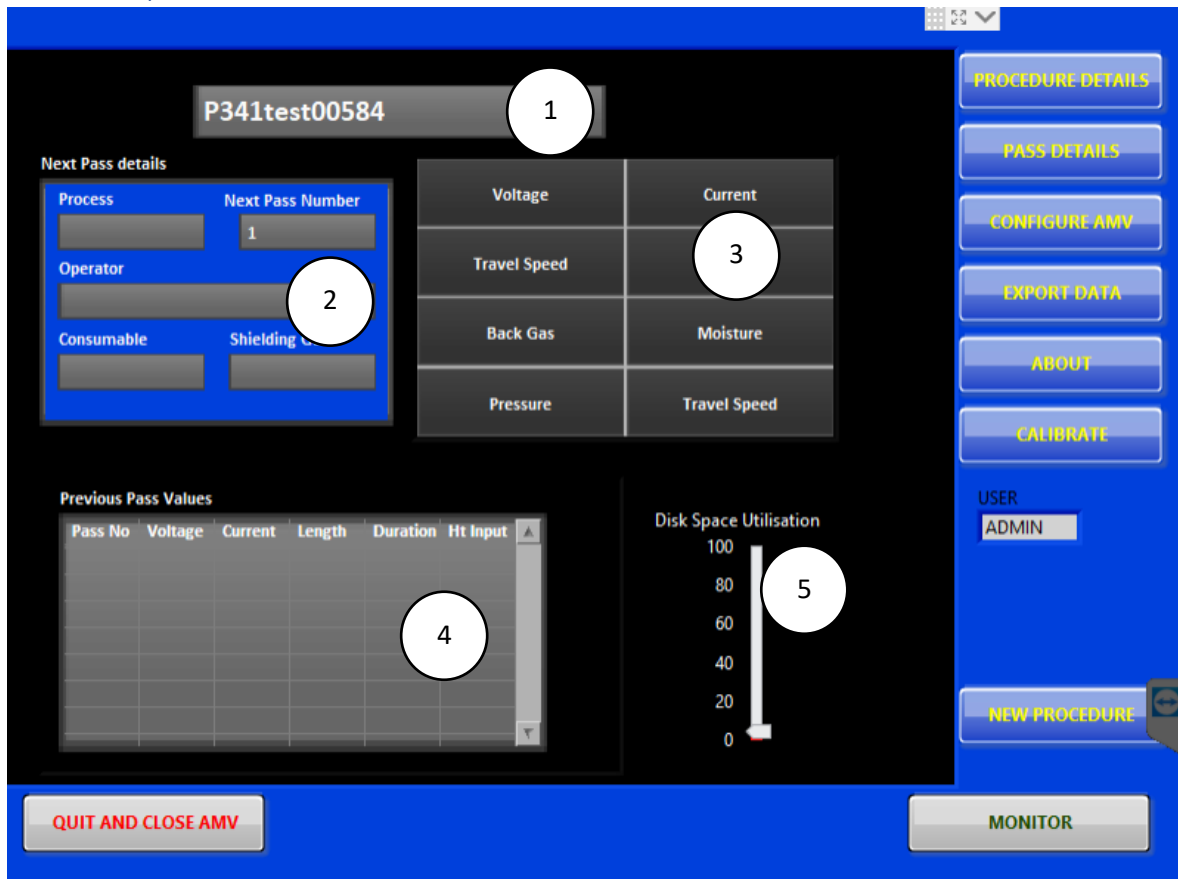
This manual covers the operation of the AMV4000. This manual is for the standard version of AMV4000 software. A more specialised version of software is available for orbital welding.

1.2 Connections

1.3 User Login

Only one level of user login is available on the AMV4000 Standard.

1.4 Setup screen



The main setup screen controls the AMV4000 configurations and monitoring defaults.

The main screen shows the overall procedure number (1), pass header details (2), channels monitored (3), previous pass summaries (4) and the remaining disk storage space (5).

The procedure number is generated sequentially. The first part of the automatic procedure number is the unit serial number and there is a unique sequential 5 digit counter. Each time a new procedure is started this number increments.

1.4.1 Procedure Details

To change the procedure information press PROCEDURE DETAILS, this replaces the main summary screen with the procedure values.

The screenshot shows a software interface with a dark blue background. On the left, there are several input fields: 'Procedure Name' with the value 'P341test00584', 'Project Number' with 'Project 1', 'Works Number' with 'WorksNo 1', 'Material 1' with 'Material 1', and 'Material 2' with 'Material 2'. On the right side, there is a vertical column of buttons: 'UPDATE' (highlighted in yellow), 'PASS DETAILS', 'CONFIGURE AMV', 'EXPORT DATA', 'ABOUT', 'CALIBRATE', 'USER' (with 'ADMIN' selected below it), and 'NEW PROCEDURE'. At the bottom, there are two buttons: 'QUIT AND CLOSE AMV' and 'MONITOR'.

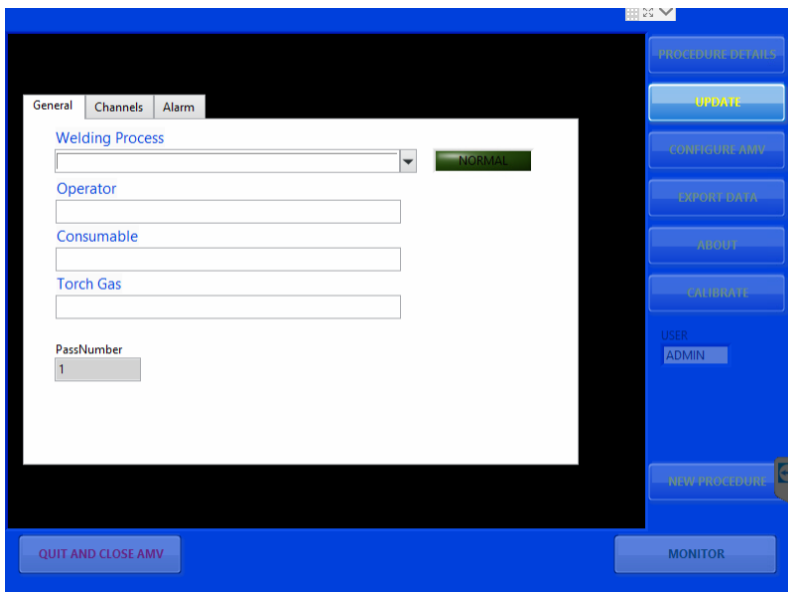
Clicking in the box brings up the keypad for data entry.



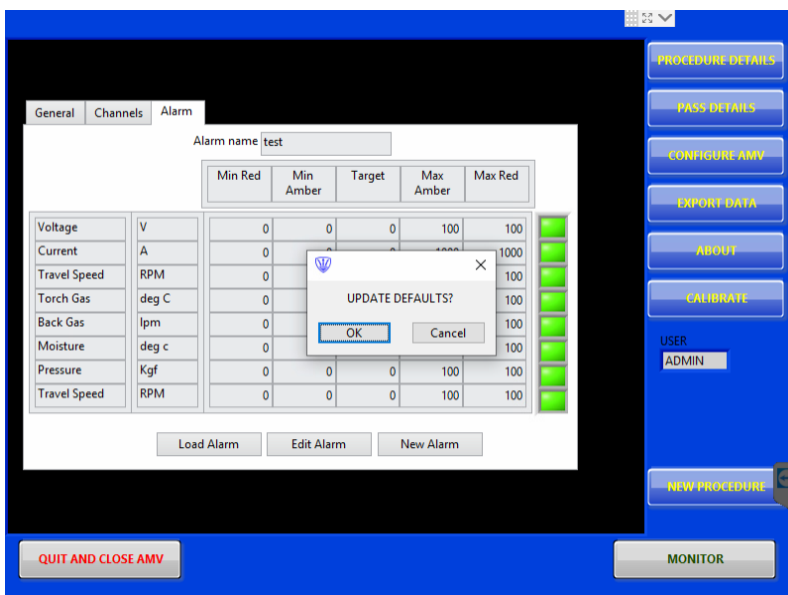
When the values have been entered press UPDATE to return to the summary screen.

1.4.2 Pass Details

To change the pass details; press PASS DETAILS and the pass values are now displayed instead of the summary.



When the values under each tab have been set press the UPDATE button on the righthand panel. At this point it is possible to record these values as the default set. Click OK to UPDATE DEFAULTS if these are the values you generally want to use.



The options are detailed below.

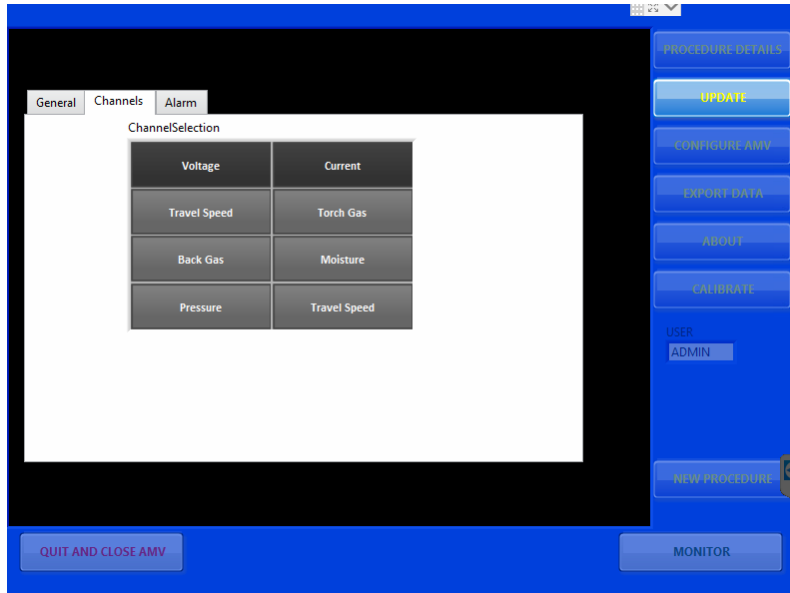
1.4.2.1 General

There are three tabs for the

Welding processes are a drop-down list of options. Operator, Consumable and Torch Gas are all text fields.

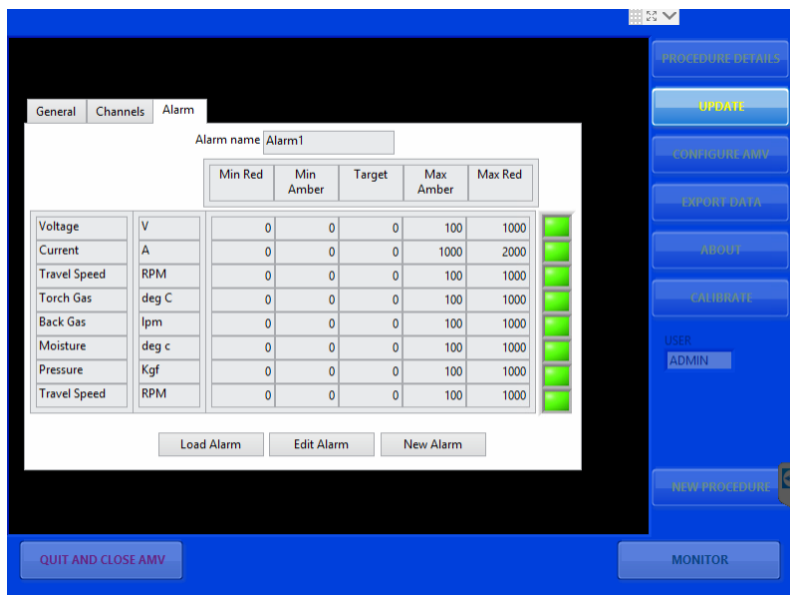
When ready press UPDATE and then decide if these values are to be the default setting.

1.4.3 Channels



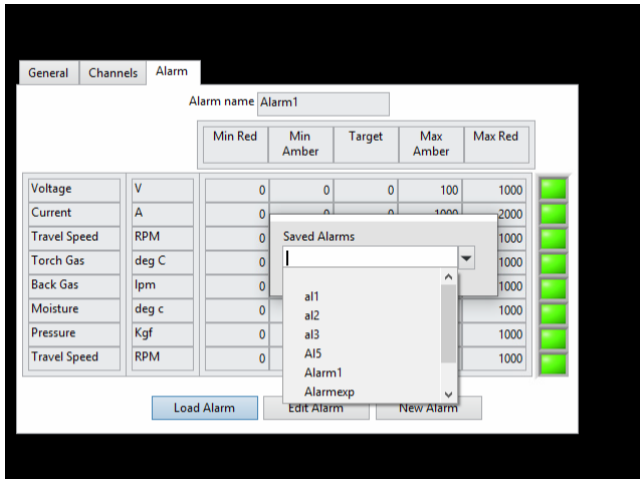
Select the channels to monitor – dark values are ON. In the above Voltage and Current are ON all the other channels are OFF. On the monitoring screen (Section 5) – the channels recorded are clear the ones not recorded are greyed out.

1.4.3.1 Alarm

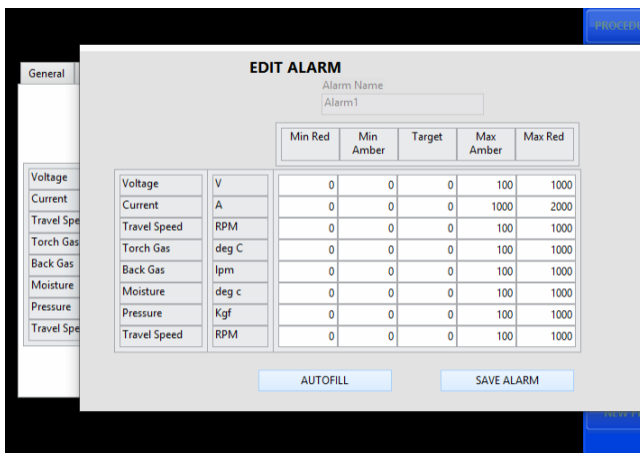


This screen sets the alarm levels for the AMV4000.

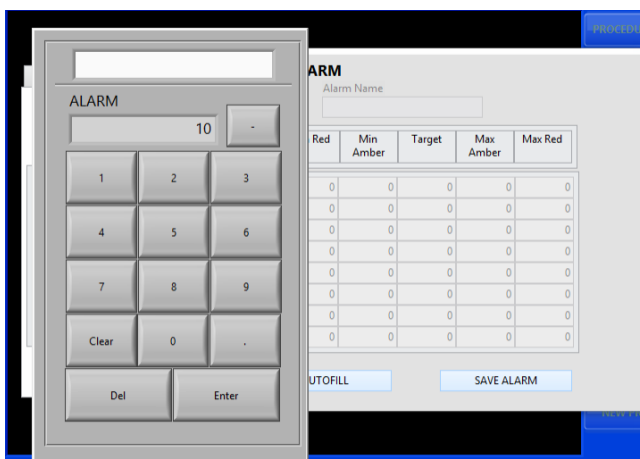
Use the Load Alarms button to choose from saved alarms. Press the down button and select the alarm name. Once selected the alarm values are loaded.



The Edit Alarm button allows the current alarm values to be changed.



Select a box and the numeric keypad is used to enter the value.



The Autofill option takes the target value adds 10% for max amber and 20% for max red values and subtracts 10% for min amber and 20% for min red. These values can be altered later.

Press SAVE ALARM when happy with the values.

New Alarm brings up a new alarm page.



The main difference between the Edit Alarm and New alarm option is that the alarm name must be changed for a New alarm, but it cannot be changed when Editing the Alarm.

1.4.4 Configure AMV

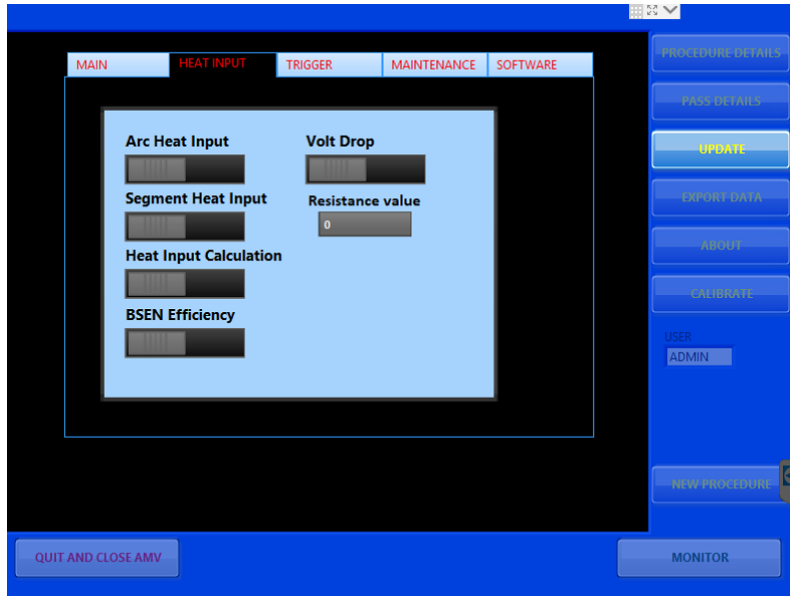
To change the main setting of the AMV press CONFIGURE AMV.



1.4.4.1 MAIN tab

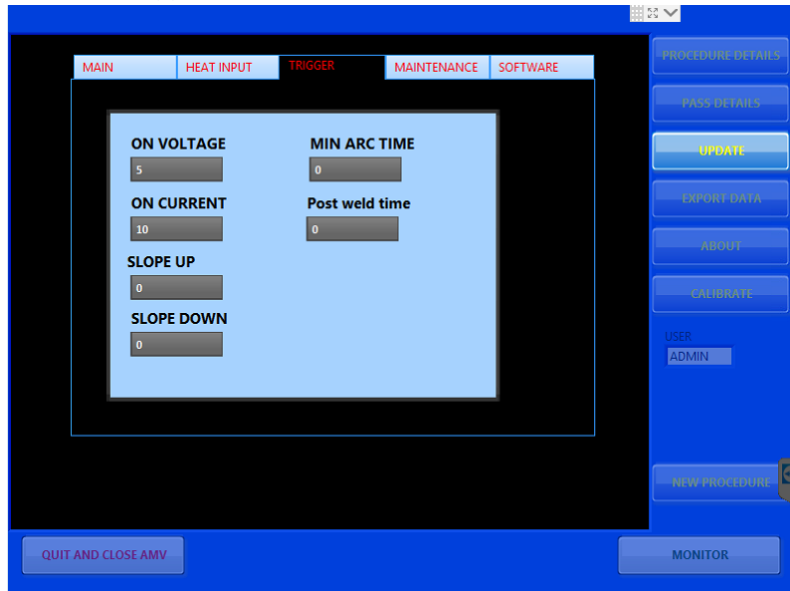
- Store Transient – (is set on as default for AMV4000) this stores the binary welding data
- WFS Pulse – not used here, see calibration
- PICO Temp – not implemented
- Automatic pass up – not implemented
- Multi-Power Source – option for monitoring multiple powers sources feeding 1 welding arc. Optional software.
- Travel speed – not used here, see calibration

1.4.4.2 Heat Input



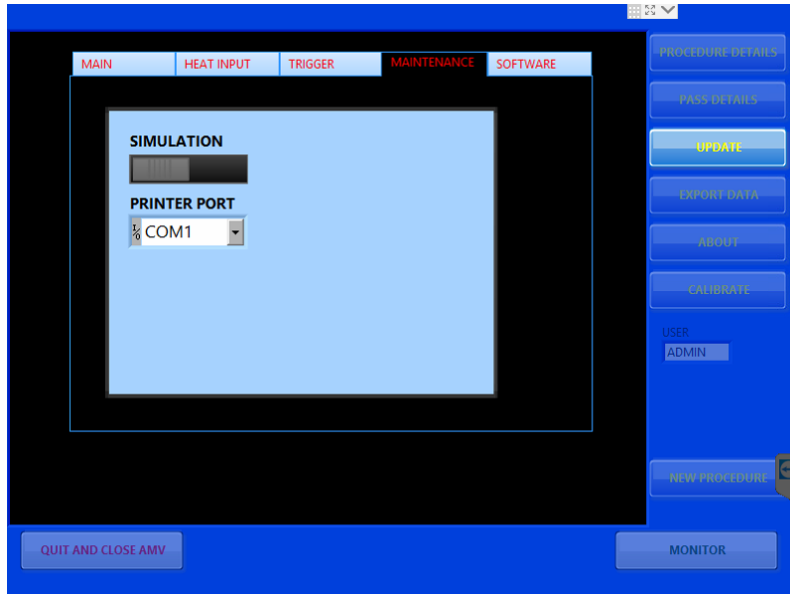
- Arc Heat Input – not implemented
- Volt drop – not implemented (Resistance value is used with this function)
- Segment Heat input – not implemented
- Heat input calculation – AMV4000 records both instantaneous and average values of heat input calculation
- BSEN Efficiency – not implemented

1.4.4.3 Trigger



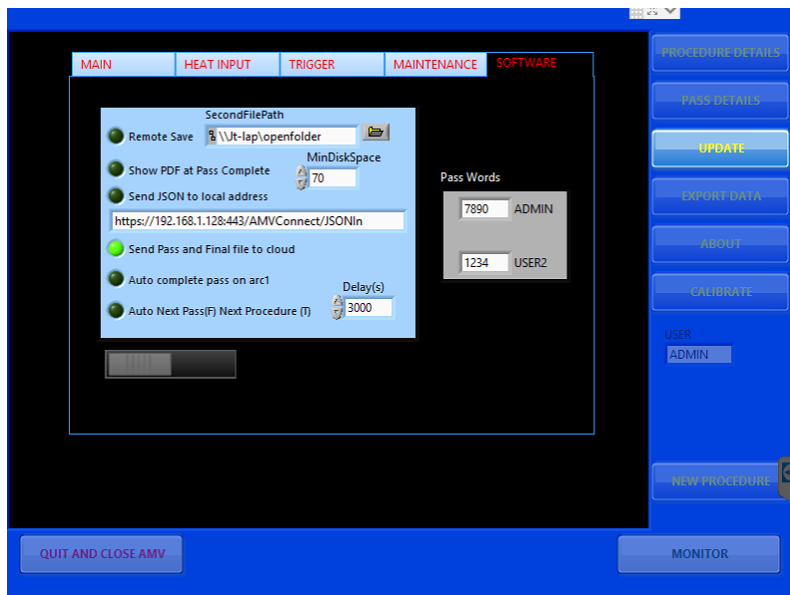
- ON VOLTAGE and ON CURRENT set the values that are needed to determine a weld is being run..
- SLOPE UP DOWN – not implemented
- SLOPE DOWN – not implemented
- MIN ARC TIME – not implemented
- POST WELD TIME – time taken to record post weld events like post weld gas flow

1.4.4.4 MAINTENANCE



- SIMULATION – whether to use electronic simulation for the welding arc. (Diagnostics only)
- Printer Port, is a till style printer is fitted the print port it is attached to.

1.4.4.5 SOFTWARE



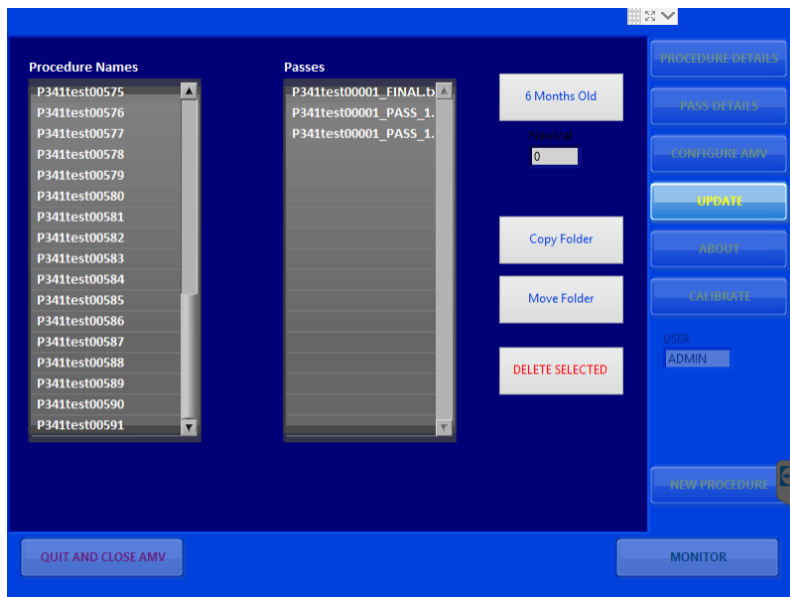
This section controls how the AMV reacts to the weld completing and how to store the recoded values.

- Remote save – save the text files generated to a shared folder in the local network. This is also the folder used when files are copied using EXPORT DATA option.
- Show PDF at pass complete – the AMV generates a PDF file of the pass values, if this needs to be inspected at the time turn this feature on. It will slow down the Pass Complete function though.
- Send JSON file to local address – this sends a summary file in JSON format to the network address indicated.

- Send pass complete and procedure complete files to cloud – turn on to send the files to secure Azure base cloud storage and retrieval.
- AutoComplete on Pass 1 – automatically the AMV4000 will do a pass complete if the arc completes. The summary screen is show for the time loaded into Delay in seconds. Then the AMV4000 goes to the monitoring screen.
- AutoComplete Next Pass(T) Next Procedure (F) – After completing the Pass Complete procedure the AMV4000 either starts a new Pass or New Procedure after the times set in the Delay window has completed.

1.4.5 Export Data

Data files can be moved or copied from the AMV4000 using the EXPORT DATA option.



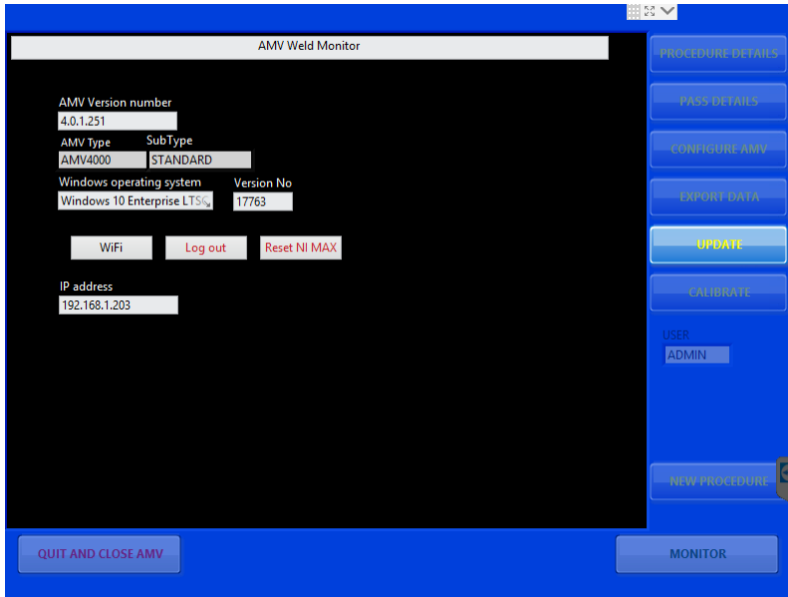
Select the procedure in from the list of files available, then either move or copy the files to the destination set in the [SOFTWARE](#) tab in AMV Configuration.

If the files are to be moved to the USB drive D:/ the Remote save destination must be set to D:/

It is possible to limit the list of procedures to those older than 6 months.

Press UPDATE to return.

1.4.6 About screen

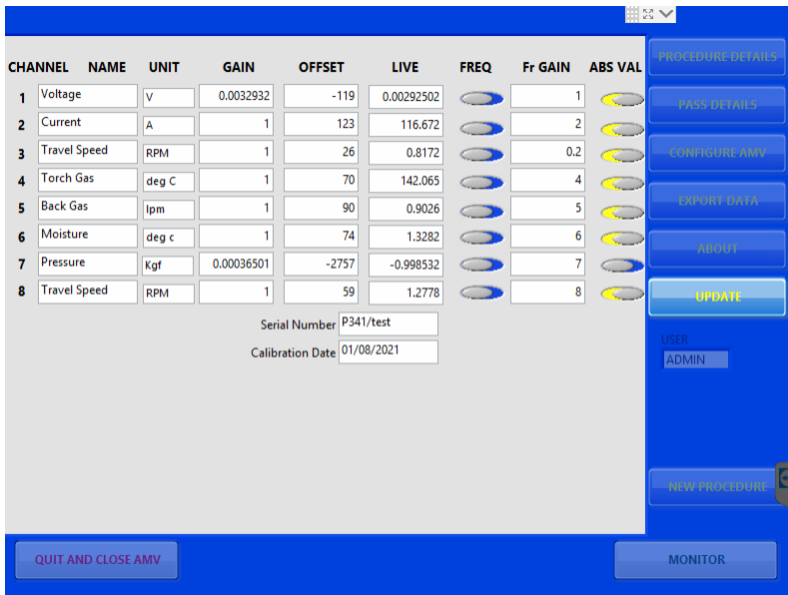


The options on the About screen are:

- WiFi – sets up WiFi connection
- Log out- allows access to the Win10 environment
- Reset NiMax - if the Ni library is corrupted it can be reset by pressing this option

The about screen also shows the AMV ip address.

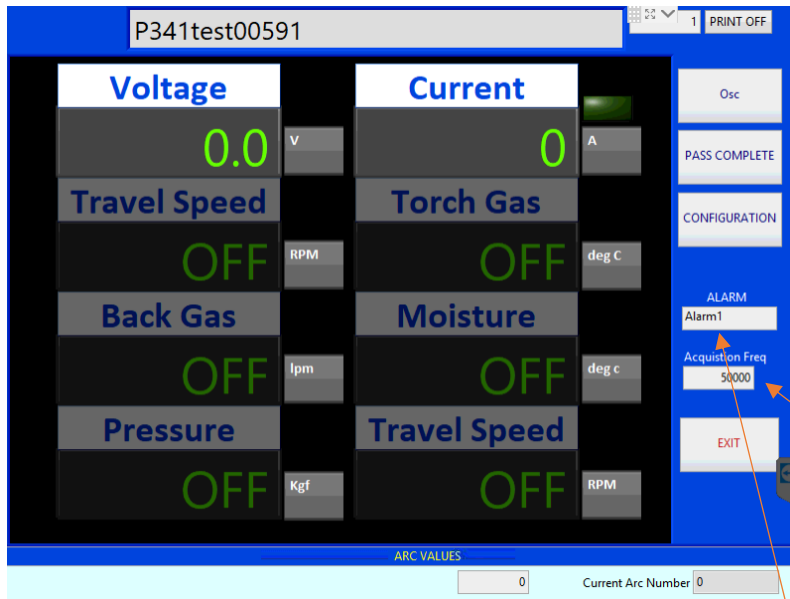
1.4.7 Calibrate



Refer to the calibration document XXXXXXX.

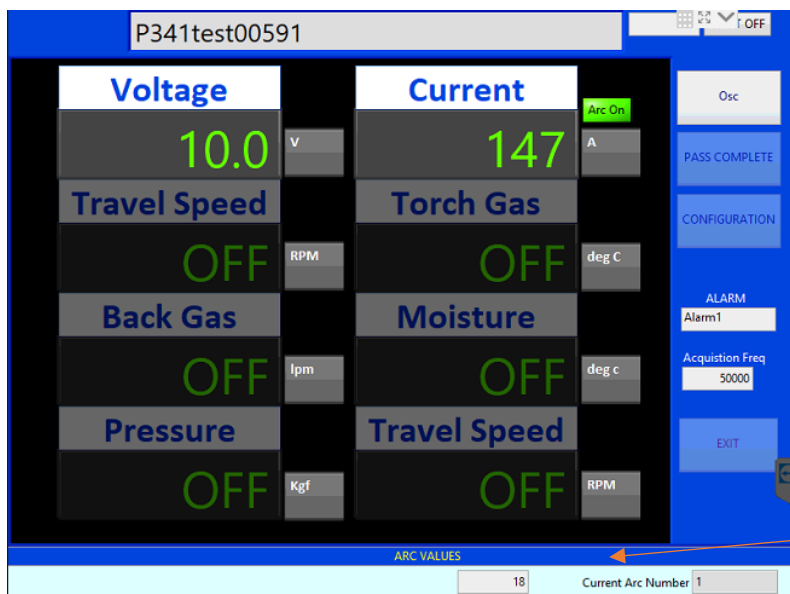
1.5 Monitoring screen

From the configure screen press MONITOR



The above screen will monitor just voltage and current, using Alarm1 and will record at 50 kHz. The monitoring frequency is determined by the number of channels selected.

Channels selected	Monitor frequency
2	50 kHz
3-4	25 kHz
5	20 kHz
6	15 kHz
7-8	10 kHz

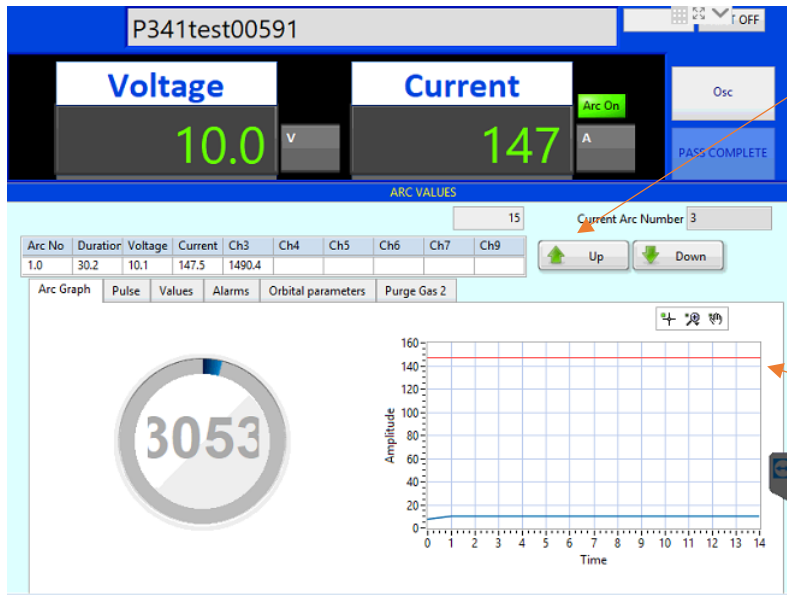


When voltage and current are higher than the Arc On and Volt On set in [Trigger](#) the AMV starts recording.

Arc time increments and arc number is increased

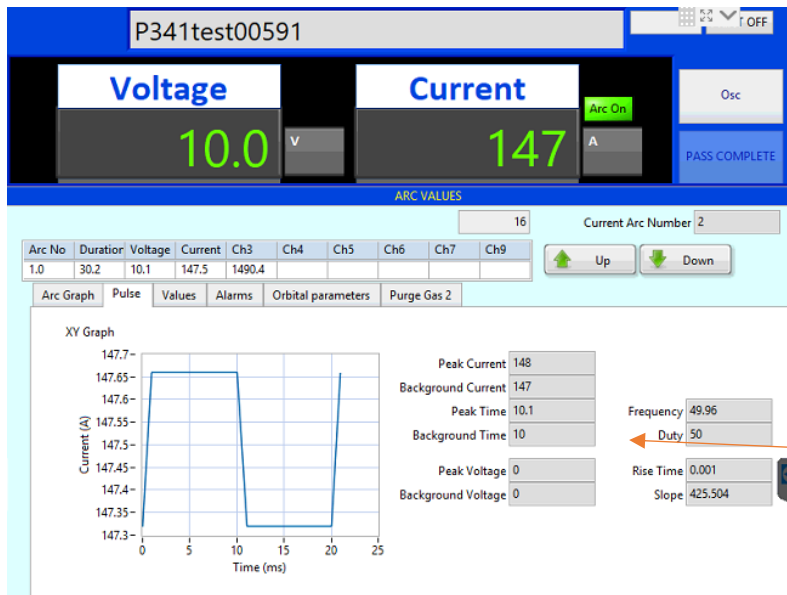
Click on the ARC VALUES tab to show more details

1.5.1 Arc Details



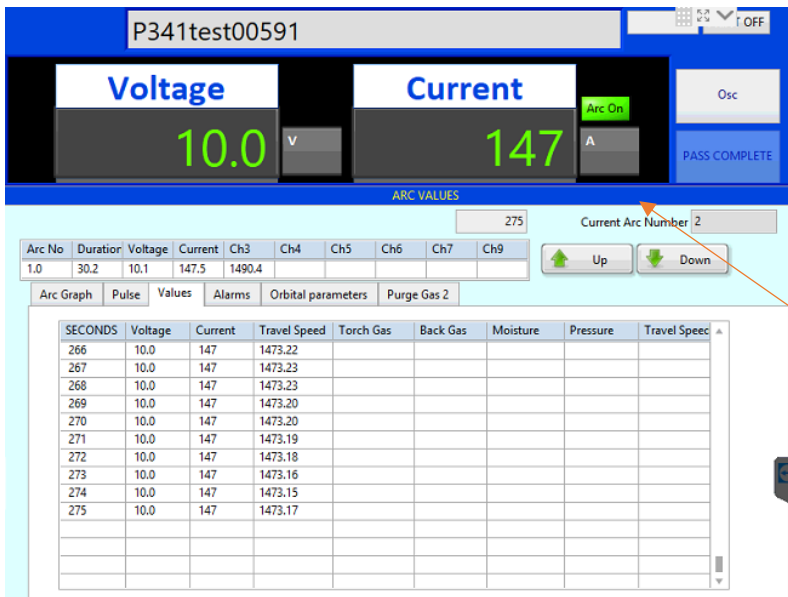
Arc summaries can be viewed.

The arc trace is shown here.



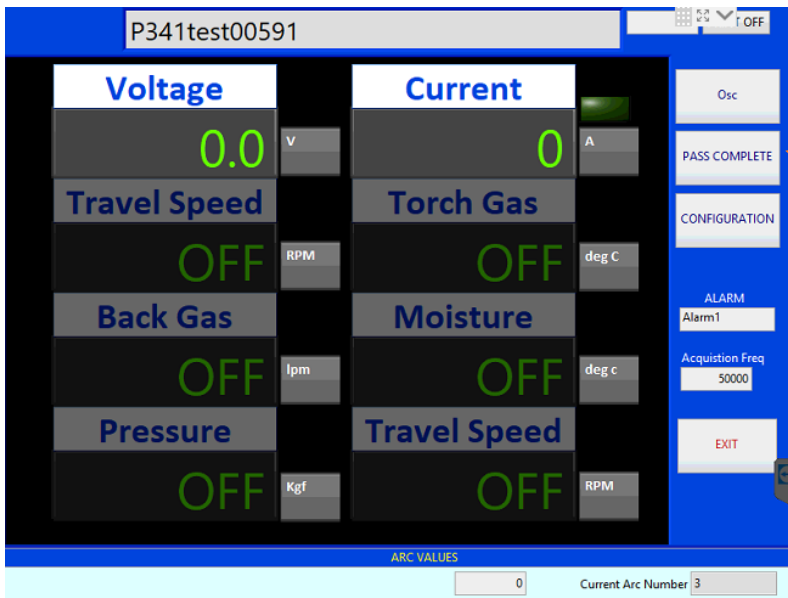
Arc summaries can be viewed.

If the current is pulsed, the values are displayed.



The Values tab shows the average values every second of the weld.

To close the summary values, click on ARC VALUES to move the bar down.



When the pass is complete press PASS COMPLETE.

1.6 Pass Complete

Enter the pass weld length (mm) to calculate heat input. Values for heat input based on average values and instantaneous power.

To see procedure values, press Procedure Complete (actually says PASS COMPLETE – needs to be changed).

1.7 Procedure Complete

Pass No	Duration	Pass Len	Avg Hea	Inst Hea	Voltage	Current	Travel Sp	Torch G	Back Ga
1	544.6	0.0	0.000	0.000	10.0	147	1474.19		

Press NEW PROCEDURE to return to the configuration screen.

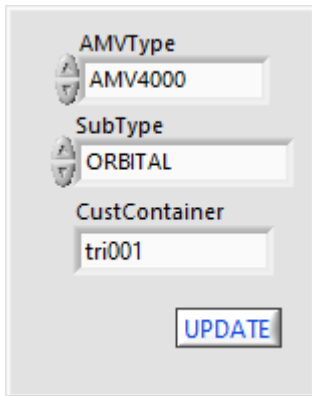
2 Orbital operation

2.1 Introduction

The orbital welding mode is a setup tailored to monitoring singles pass orbital welds in particular.

2.2 Configuration

Run the AMV config module (C:\Program Files (x86)\AMV_Monitor\AMVConfig.exe)



Set the option as shown with CustContainer set to the AMV serial number.

Click UPDATE to set values

Start the AMV4000 programme.

2.3 Name changes

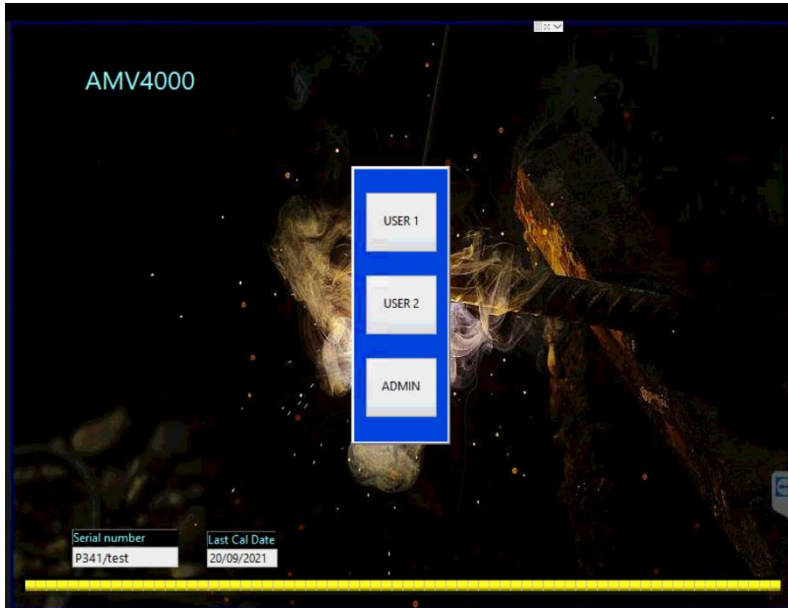
The standard AMV4000 names are changed when the orbital setting is selected.

STANDARD SETTING	ORBITAL SETTING
PROCEDURE	SEQUENCE
PASS	CAN

2.4 User login

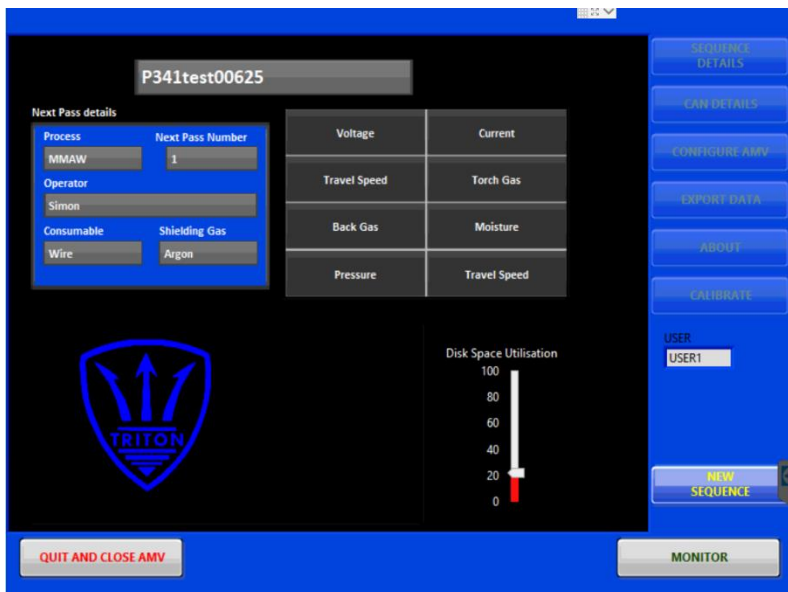
There are 3 users available on the Orbital programme.

When the AMV4000 boots the 3 options are shown



2.4.1 USER 1

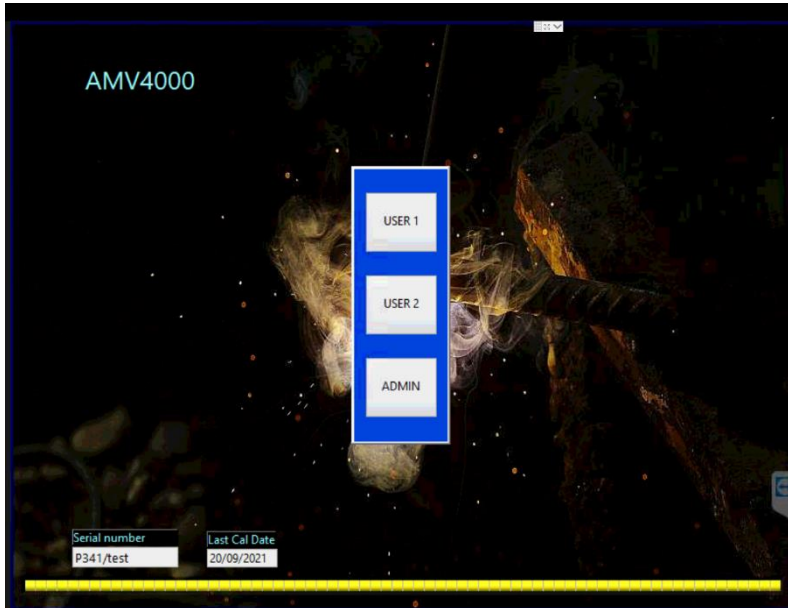
The USER 1 is restricted with most option unavailable. USER 1 can only run the AMV4000 using a pre-determined setup.



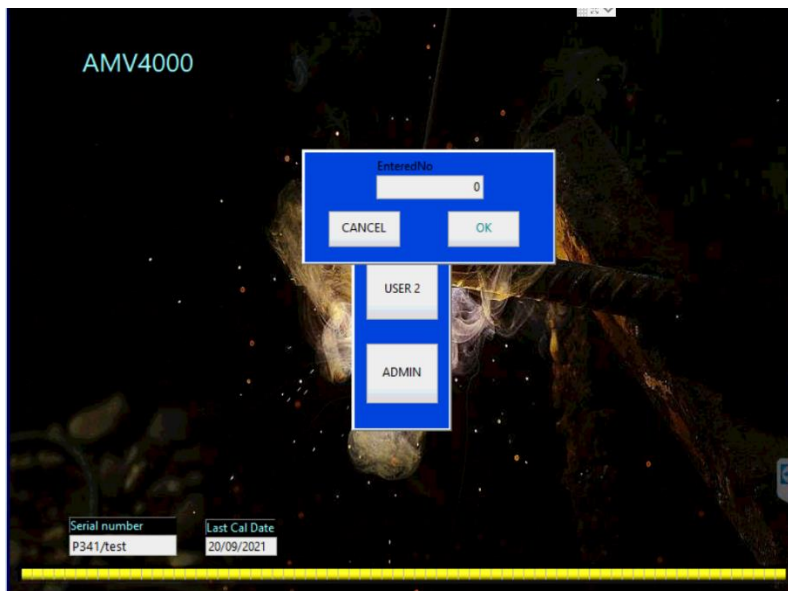
Most of the options are greyed out. From the main screen USER 1 can only start a new sequence, quit and close the AMV or start monitoring the weld.

2.4.2 USER 2

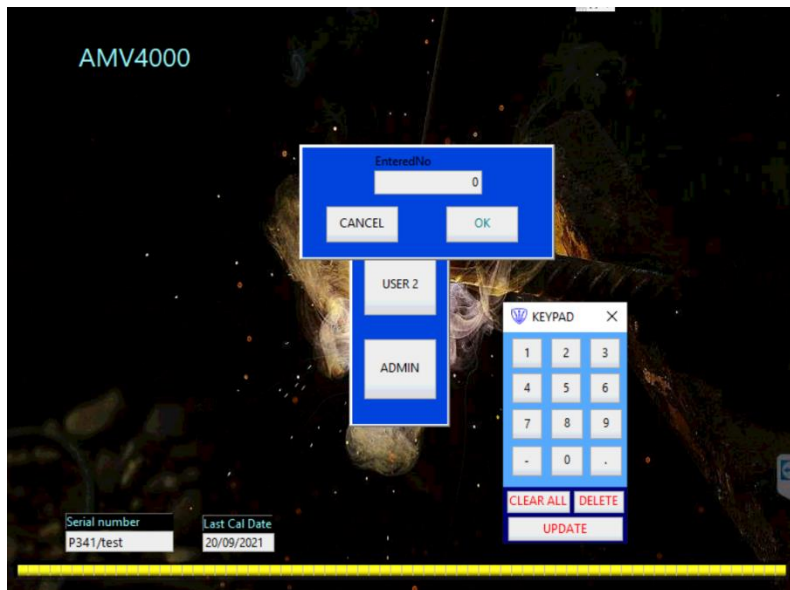
The standard passcode for USER 2 is 1234



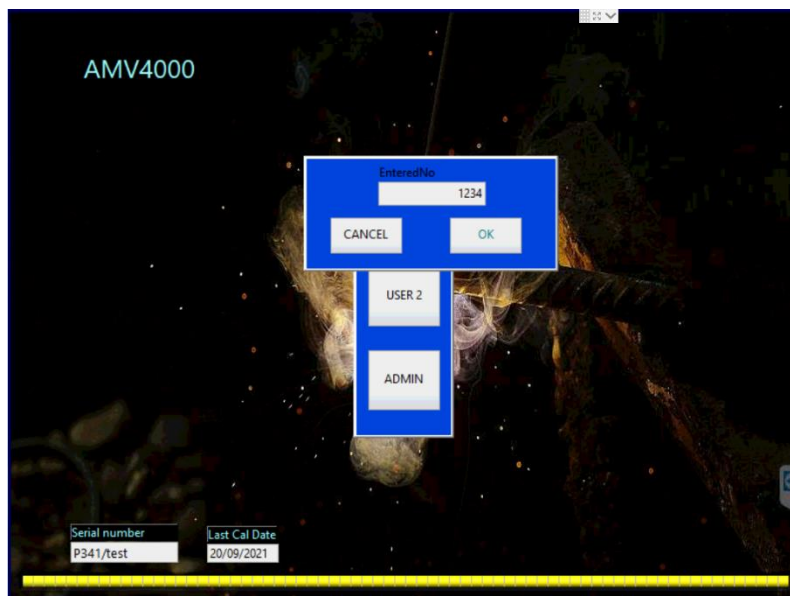
From the start screen press USER 2 this brings up the passcode screen



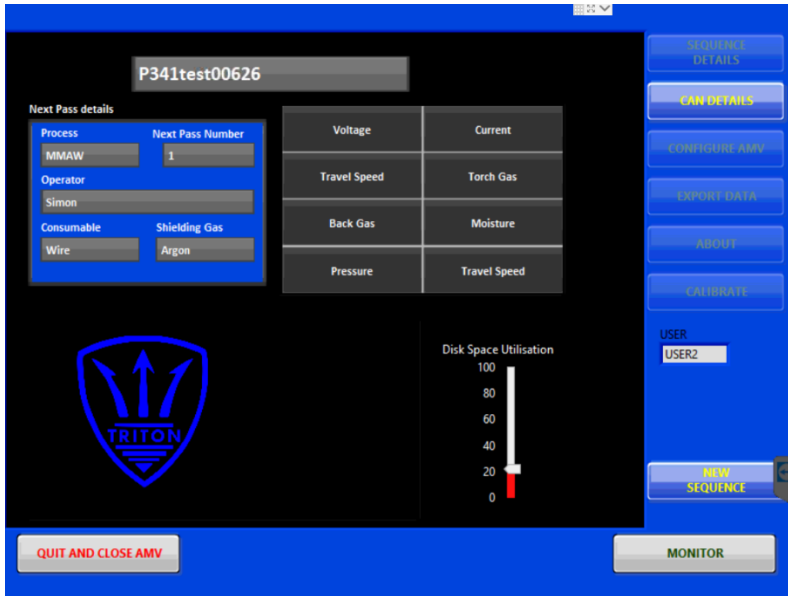
Press in the EnteredNo box to bring up the keypad



Enter the code and then the UPDATE button



Press OK

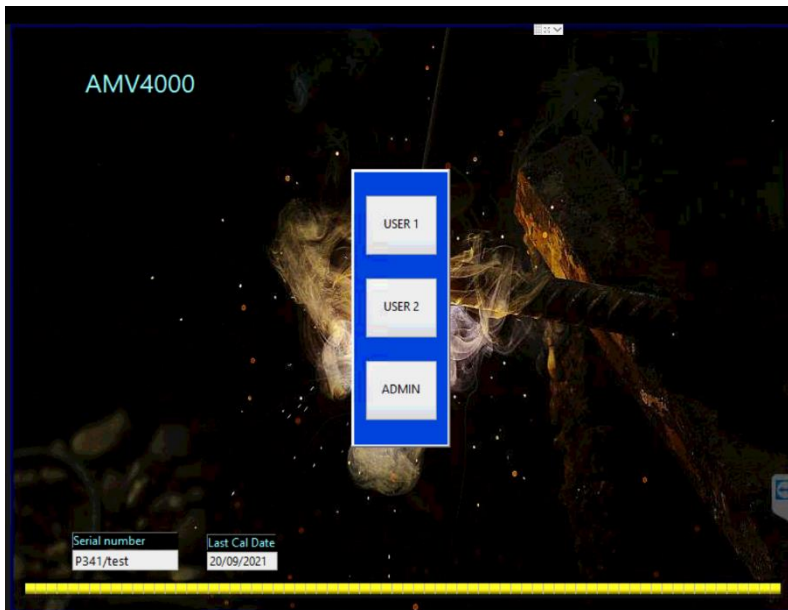


In addition to the options available for USER 1 - USER 2 can also select CAN DETAILS.

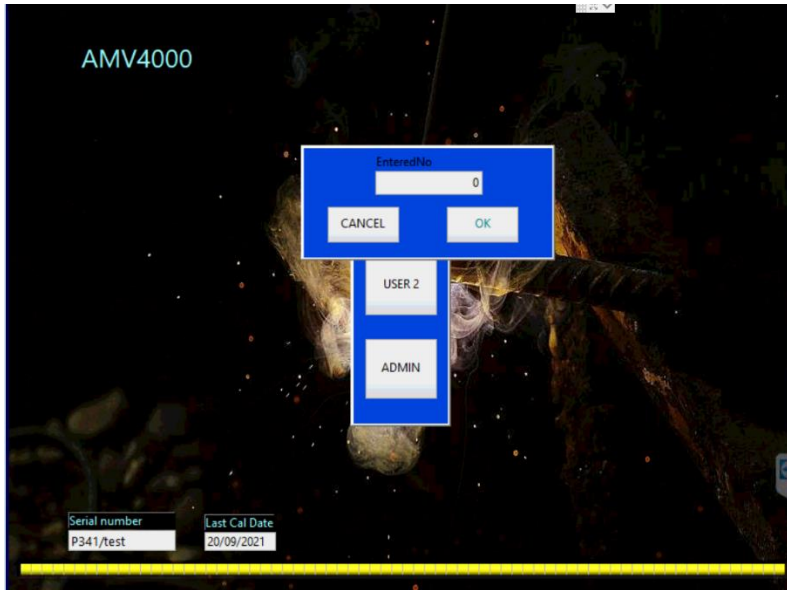
CAN DETAILS are the same as [PASS DETAILS](#) in the STANDARD SECTION.

2.4.3 ADMIN

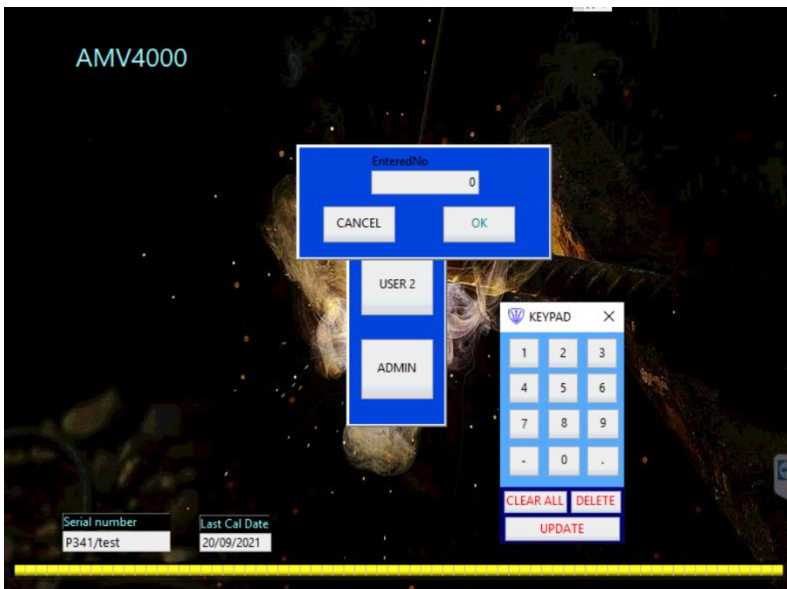
The standard passcode for ADMIN is 7890



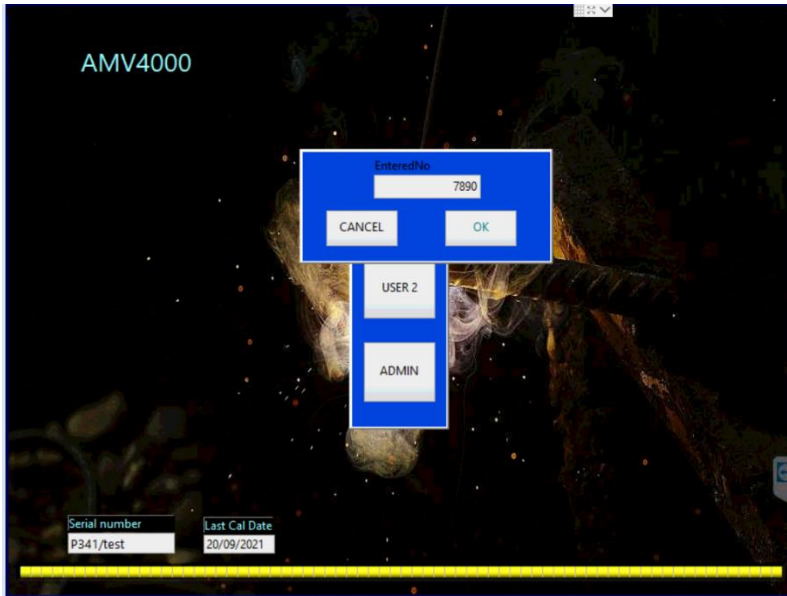
From the start screen press ADMIN this brings up the passcode screen



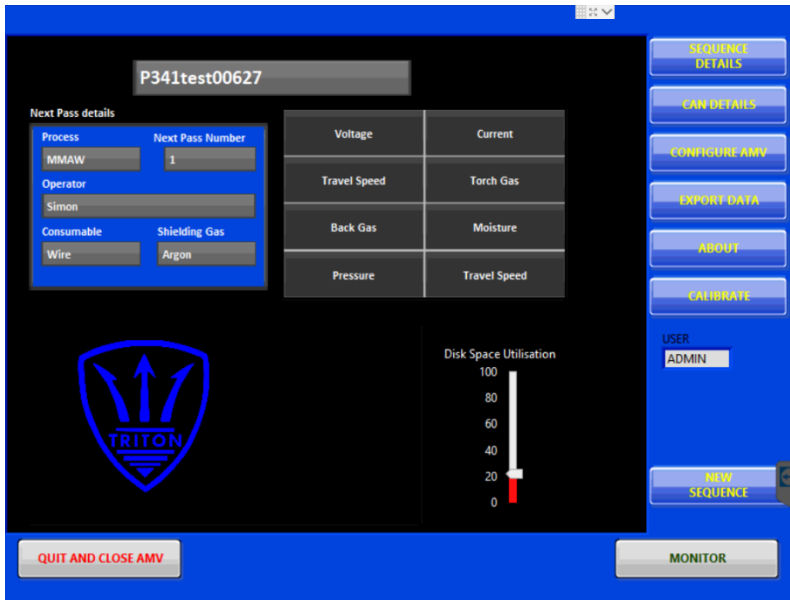
Press in the EnteredNo box to bring up the keypad



Enter the code and then the UPDATE button



Press OK



All options are available for the ADMIN user.

2.5 Specific setting for CAN monitoring

Log into the AMV 4000 as an [ADMIN](#) user.

Use the following settings:

2.5.1 CAN Detail setting



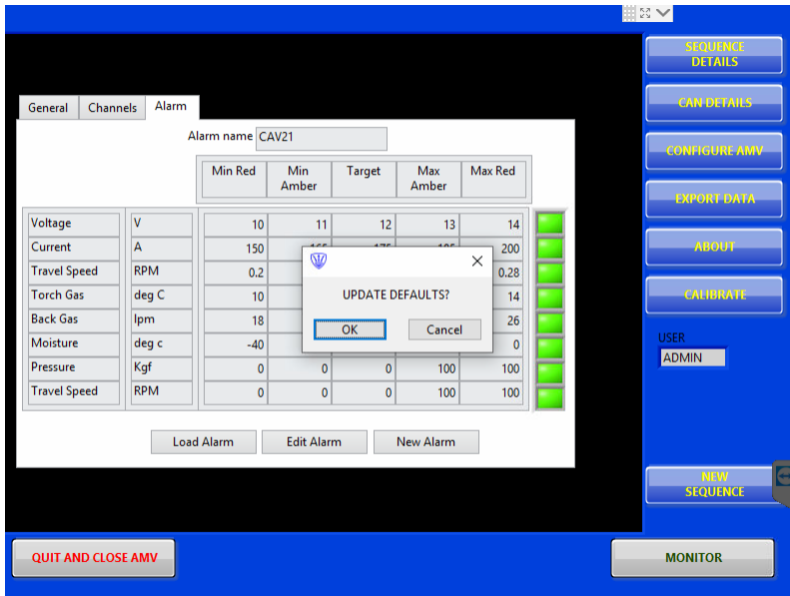
Process should be GTAW Pulse and the SLOW PULSE illuminated.



All channels selected

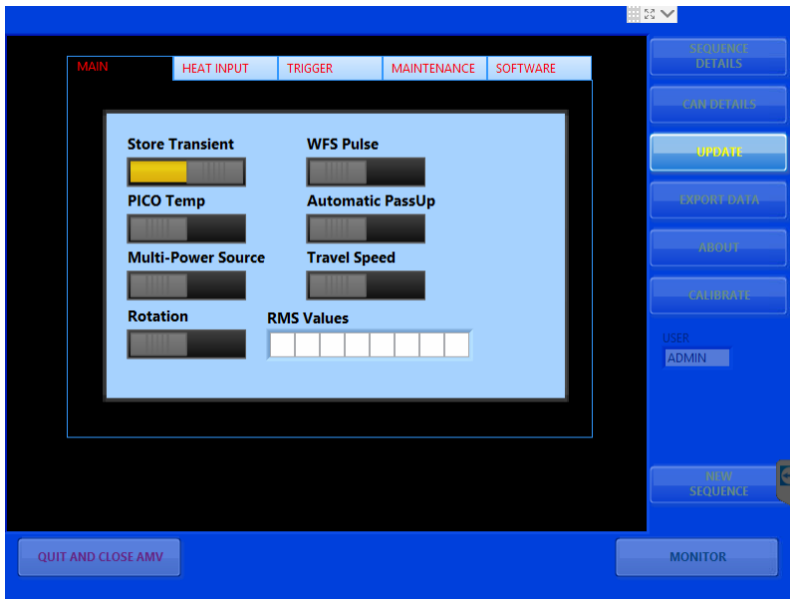


Select or create the necessary alarm. Then press UPDATE

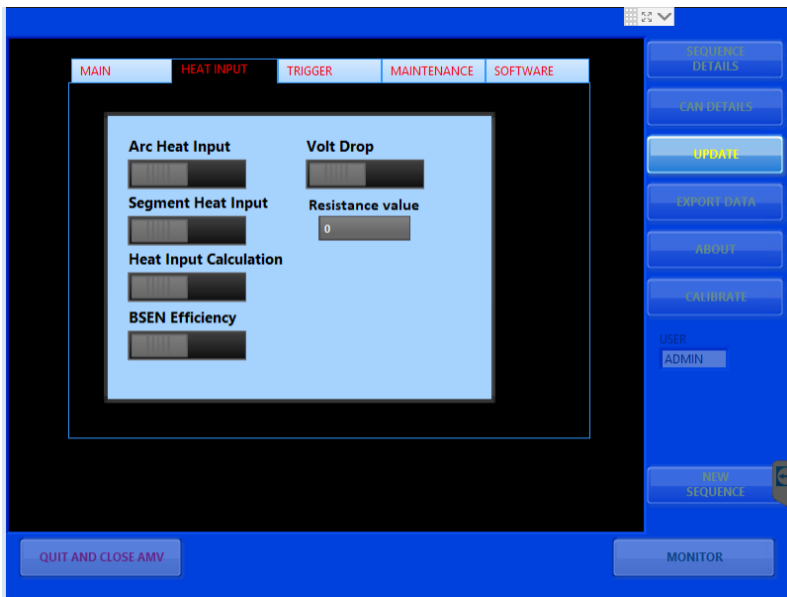


Select UPDATE DEFAULTS to ensure the settings are saved.

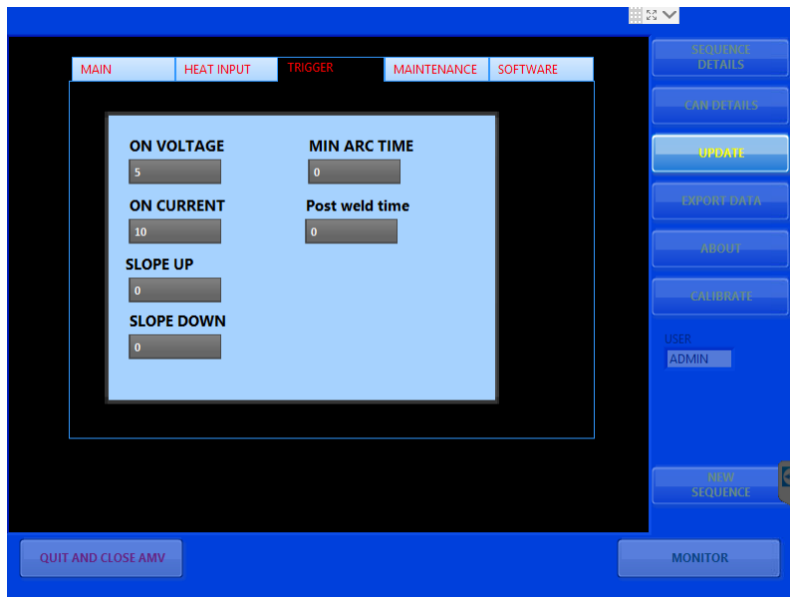
2.5.2 CONFIGURE AMV



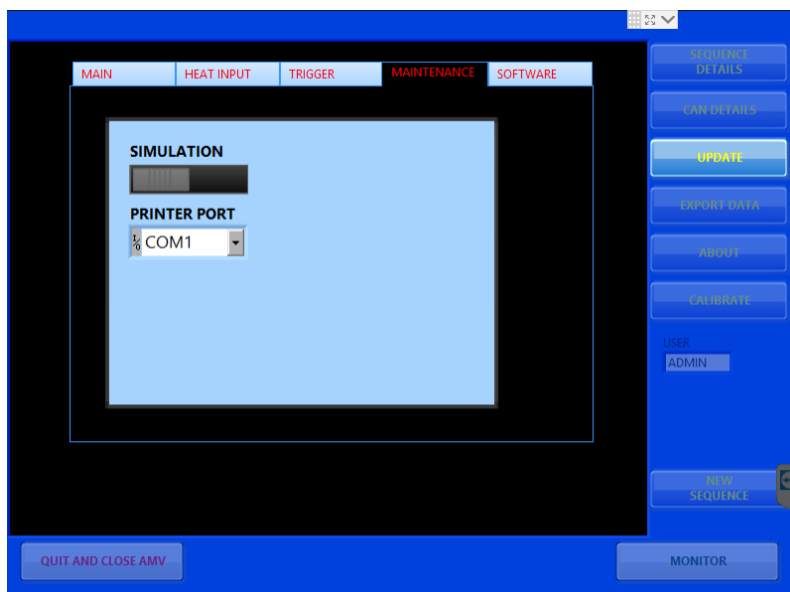
Make sure the Store Transient value is set.



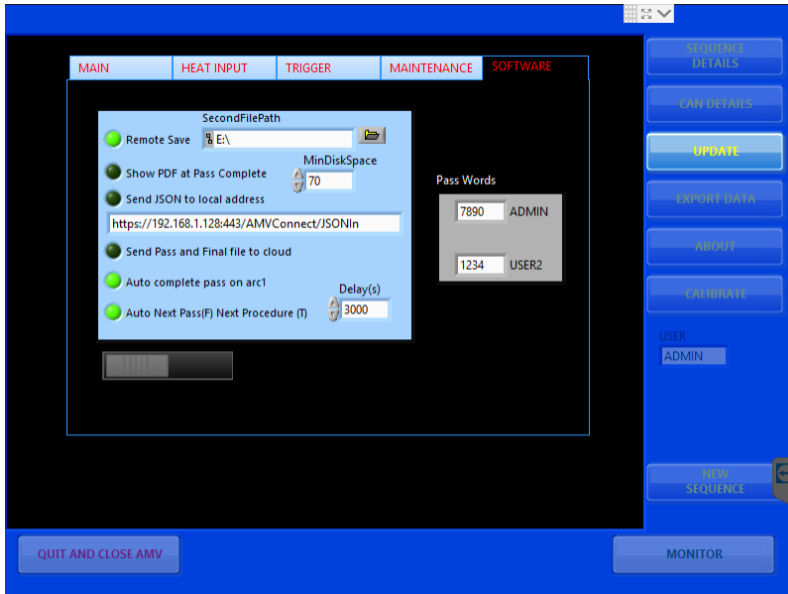
Heat Input settings should all be off



ON VOLTAGE set to 5; ON CURRENT set to 10. All others set to 0



Simulation should be off and COM1 for the printer port.



Remote save on. The filepath set to the remote save path.

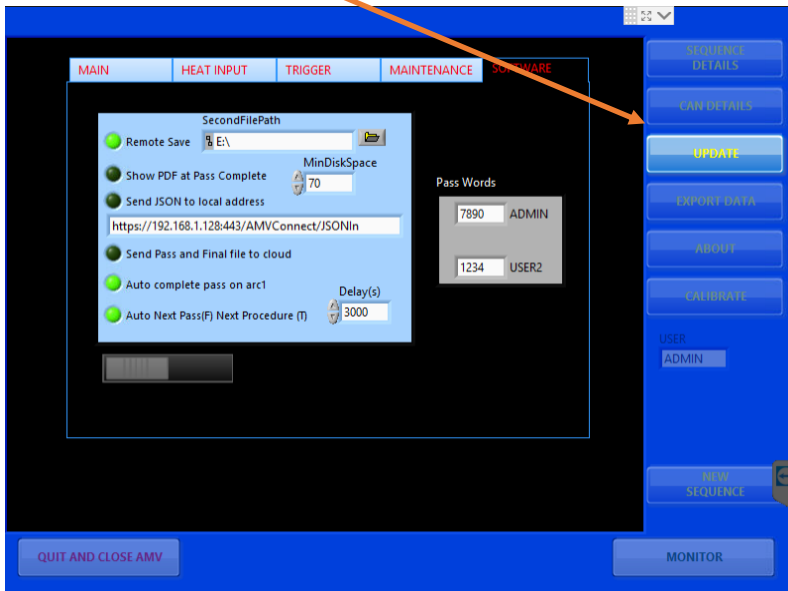
Auto complete pass on arc1 needs to be set – this ensures a can complete is performed after the first arc.

Auto Next Pass(F) Next Procedure(T) – this means a new sequence is started after each can.

Delay is set to 3000 seconds – the AMV will pause for 3000 seconds before a new sequence is started.

Passwords can be changed here for ADMIN and USER 2.

When ready press UPDATE



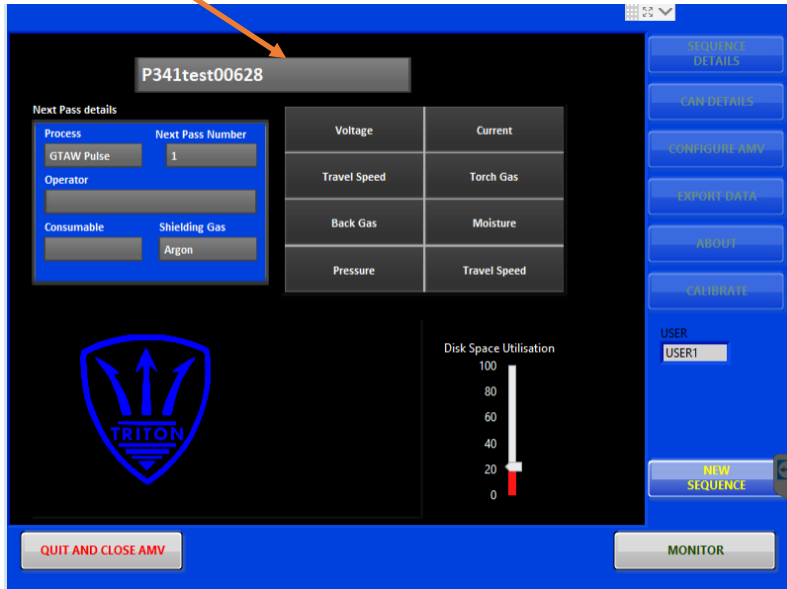
OK to reboot message.

2.5.3 RUN AMV

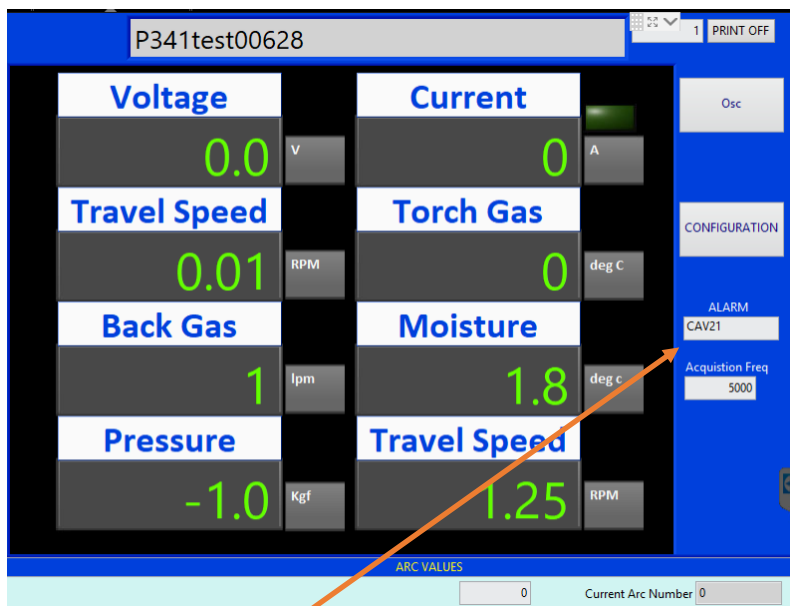
When the AMV is configured press QUIT AND CLOSE AMV then choose reboot.

When the AMV has rebooted select USER1 and the screen should show this screen.

Sequence number is automatically set.



Press MONITOR to bring up the monitoring screen



Make sure the ALARM indicated is the correct one.

The AMV will now automatically record a single arc weld, store the data and then update the SEQUENCE NUMBER.

3 Electrical data

3.1 Power input

Power input	18V 3A centre positive connection
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3.2 Sensor Electrical connections

To connect a sensor to the AMV4000 wire a Lemo 5 way (pt no FGG-0B-305-CLAD52Z). The pins on the connector are:

