

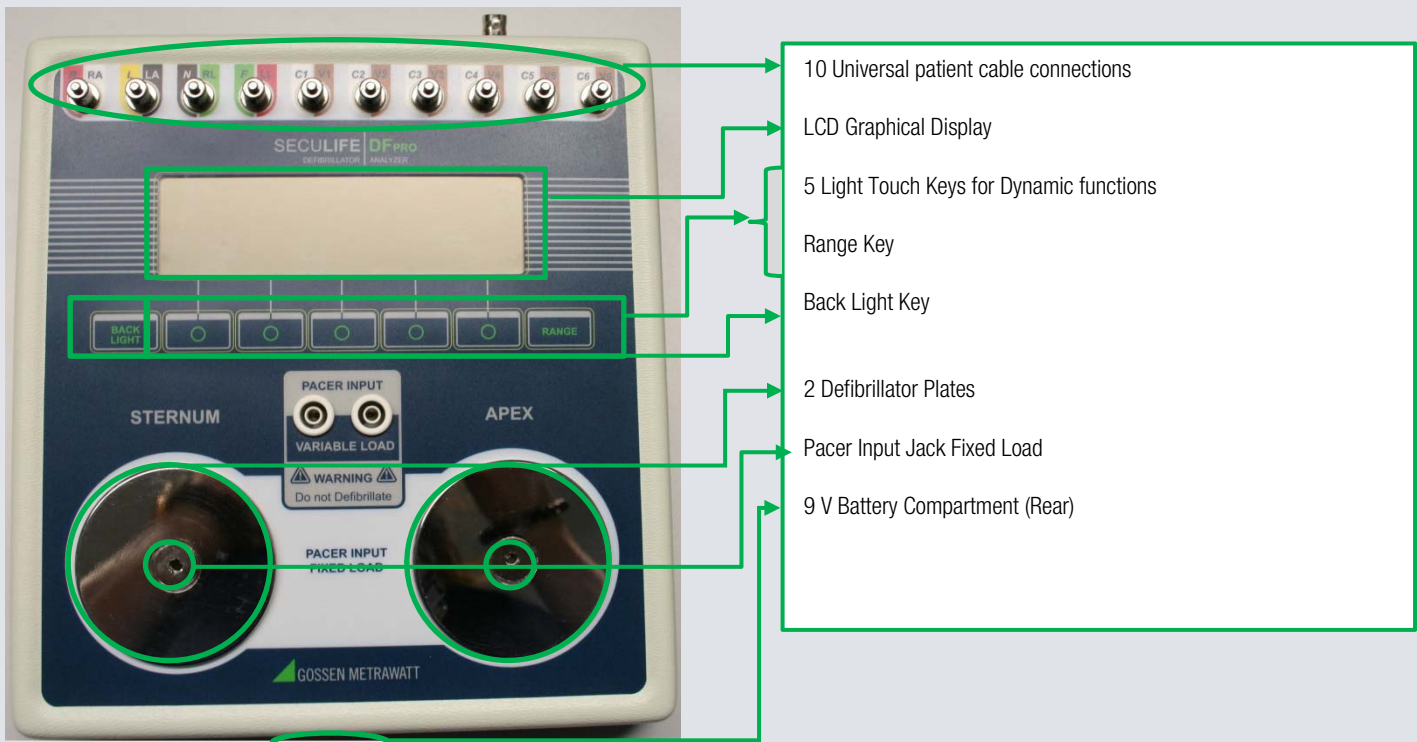
QUICK SETUP GUIDE

SECULIFE DF_{PRO}



SECULIFE DF_{PRO} is a microprocessor-based instrument that is used in the testing of defibrillators. It measures the energy output and provides information about the defibrillator pulse. It measures and displays pacer pulse information as well as performing refractory period, sensitivity and interference immunity testing. With the SECULIFE DF_{PRO} viewing and selecting the desired waveforms and test data becomes quick and intuitive.

SECULIFE DF_{PRO}



Connection of Defibrillator Tester – Energy Test

1.) Starting the SECULIFE DF_{PRO}

Switch on SECULIFE DF_{PRO} with the Start button (on the operating panel).

When starting SECULIFE DF_{PRO}, the MAIN SCREEN of the analyzer appears. It shows the current CONFIGURATION, the TEST results and the available FUNCTION KEYS. All defibrillator tests are conducted from the main screen.



2.) Selection of energy test. You can start the energy test by pressing the Joule button on the defibrillator display (in this case: 5 – 360 J).

HINT: the maximal energy may not exceed 1000 J!



3.) Starting the energy test

The energy test is started by pressing one of the red buttons on the paddles temporarily.

The paddles should be placed on the defibrillator panels of the SECULIFE DF_{PRO} provided for this purpose. It is not necessary to establish any other connection (e. g. via cable) between the defibrillator and SECULIFE DF_{PRO}.

Then, the energy is conducted through the defibrillator. As soon as the defibrillator issues a command to trigger shock, press both red buttons on the paddles for approximately 5 seconds and press the paddles firmly on the defibrillator panels of SECULIFE DF_{PRO} with both hands, as is done for resuscitation.

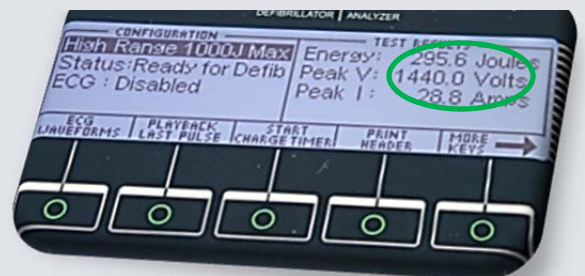


4.) Function test

The function of the defibrillator is checked by comparing target and actual values. The preset energy on the defibrillator (in this case 300 J) is compared with the energy displayed on the SECULIFE DF_{PRO} (in this case 295.6 J).



Detail: defibrillator display



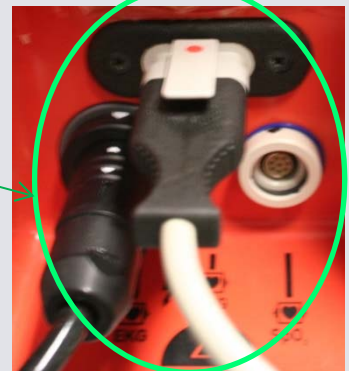
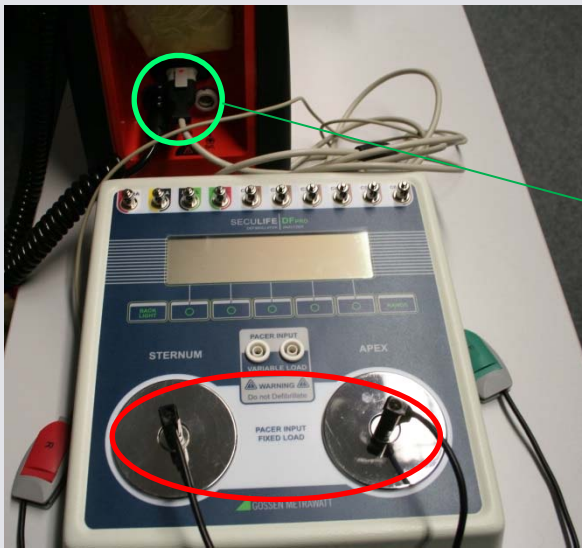
Detail: SECULIFE DF_{PRO} display

Connection of Defibrillator Tester – Heart Rhythm Analysis

1.) Settings for Heart Rhythm Analysis

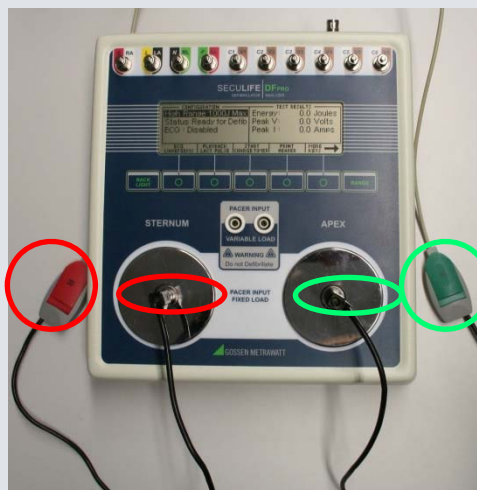
Place the paddle adapters on the SECULIFE DF_{PRO} at first and establish a connection between the defibrillator and the SECULIFE DF_{PRO} with the "Save Pads Connect Cable" (defibrillator standard equipment).

The "R plug (red)" must be inserted into the SECULIFE DF_{PRO} on the STERNUM side and the "F plug (green)" on the APEX side.



2.) Changing to "Auto Mode"

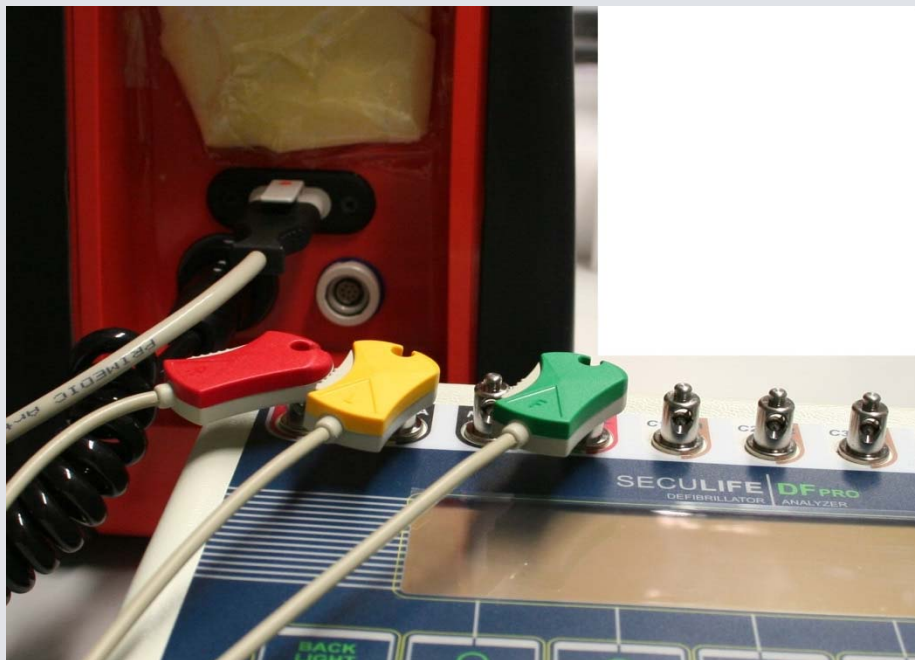
By changing the defibrillator from manual to auto mode, a test is performed to verify whether ventricular fibrillation exists and a shock must be triggered. In this case SECULIFE DF_{PRO} simulates a patient with selectable heart rates.



Connection of Defibrillator Tester – ECG Waveforms

1.) Connecting the electrode clips


The defibrillator is connected with the SECULIFE DF_{PRO} via the ECG patient cable including electrode clips. It is important that the clips are plugged in the proper patient interface (color coding).



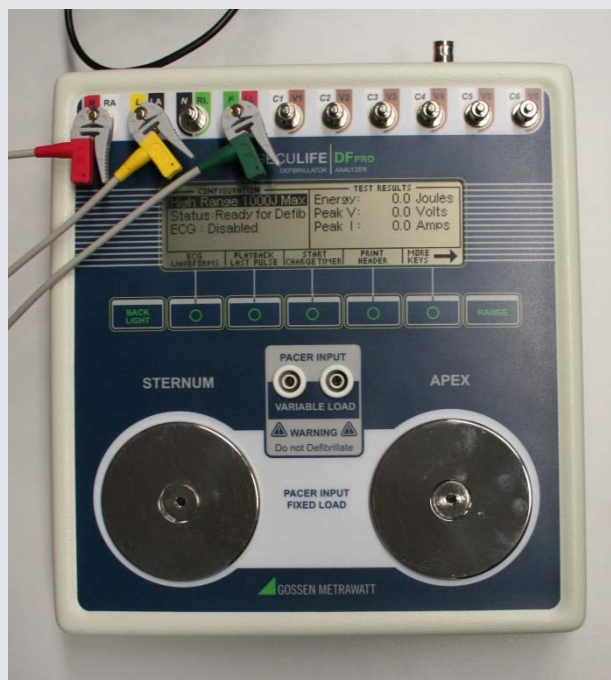
2.) Select correct settings

The defibrillator must be set to automatic mode (AUTO-Mode) during the test.

Afterwards, the SECULIFE DF_{PRO} can be set to the desired waveform and wave amplitude to be checked by pressing the key "ECG

Waveforms" on the main screen. The ECG group, waveform and amplitude can be selected with the  button.

Subsequently, the parameter is marked and the button "Choices" is pressed, which opens a dropdown menu. The settings are confirmed by pressing the ENTER button.



3.) Checking the ECG waveform and wave amplitude

The different ECG waveforms and amplitudes can be recorded and viewed at the defibrillator display.



Detail: defibrillator display




Detail: defibrillator display

Charge Time Test

The charging time of a Defibrillator is nothing more than a measurement of the time required for the defibrillator to charge. It is used to test the battery, charging circuit and capacitor.

The SECULIFE DF_{PRO} provides a simple way to start and stop the timer. It also records the results.

- 1) Turn on the SECULIFE DF_{PRO}.
- 2) The unit will come up in the **High Range Defibrillator** mode.
This range is used for normal adult testing.
- 3) Set the Defibrillator to its maximum power setting.
- 4) Press the  key.
- 5) While the Pre-Warning countdown is running, place the defibrillator paddles on the SECULIFE DF_{PRO} contact plates. The **APEX** is on the right and the **STERNUM** is on the left.
WARNING: Reversing the paddles will not cause any damage to the unit or error in the energy reading. However, it will invert the polarity of the oscilloscope output and the playback waveform.
- 6) Holding the paddles firmly in place, wait until the Pre-Warning Countdown equals zero and then immediately start charging the Defibrillator.
- 7) As soon as the DUT is fully charged, discharge it into the SECULIFE DF_{PRO}.
- 8) At the end of the process the results are continuously displayed in the test results section of the MAIN SCREEN. They will remain there until another test is performed, the range is changed or the power is turned off.

NOTE: The last line in the Test Results section of the screen will show "Chg Time: xxx.x sec"


CONFIGURATION	TEST RESULTS
High Range	Charge Timer Will Begin in 3.7 Joules
Status: Re: 4 Seconds	7.5 Volts
ECG : 30 E Or Press Cancel to Exit	1.4 Amps
Amp : 0.5 t...	381 mS
	CANCEL

CONFIGURATION	TEST RESULTS
High Range	Charge Timer Running 3.7 Joules
Status: Re: 8.3 Seconds	7.5 Volts
ECG : 30 E Defib When Charged	1.4 Amps
Amp : 0.5 t...	
	CANCEL

WARNING
Observe all precautions noted by the Defibrillator Manufacturer when using the Defibrillator.

Playback Last Pulse Screen



The SECULIFE DF_{PRO} can display a graphical representation of the last pulse. This screen may be accessed by pressing


the  key from the defibrillator analyzer MAIN SCREEN. The playback allows the user to view the defibrillator pulse in a time-expanded form. Samples are stored internally at 0.1 ms intervals. The PLAYBACK LAST PULSE SCREEN SHOWS these samples expanded by a time factor of 200.

In playback mode, the samples are shown on the display and sent out the ECG leads, defibrillator plates and the High Level output. The following is a sample of the waveform that is shown in the display:





1) The scale shown on the screen is automatically adjusted to provide the highest possible resolution.

The  key can be used to pause the screen at any point while a pulse is being played back. This key replaces the  key when a pulse is being played back.

The  key can be used to play (continue) the waveform if it has been paused.

This key replaced the  key.

2) The  key starts a playback of only the first 20 ms of the waveform.

The  key starts a playback of the entire 100 ms of the waveform

At any time, the  key or  key can be depressed to return to the MAIN SCREEN.

Cooperation with SECULIFE VL

With **SECULIFE VL** you can change the variable load of the DF+ with a slight twisting motion from 25Ω to 200 Ω and back in 25 Ohm steps.

This functional check is necessary, because defibrillators calculate the needed energy for each patient. There is no calculation needed thanks to the external resistance, because the **SECULIFE VL** takes the calculation in account.



How to connect

Following pictures are showing the step-by-step instruction:

Connection:

1. To change the variable load you need the **SECULIFE VL** for connection



2. Connect the two apex sockets (on **SECULIFE VL** labeled with "TO DF SERIES ANALYZETR") with the **SECULIFE VL** cables



3. Connect the two sternum sockets

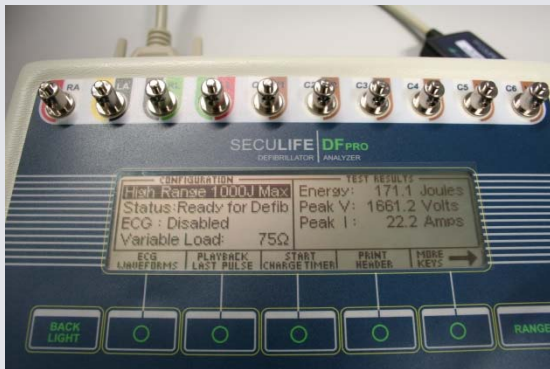


4. Connect the SECULIFE VL –Interface-Cable to the Printer port



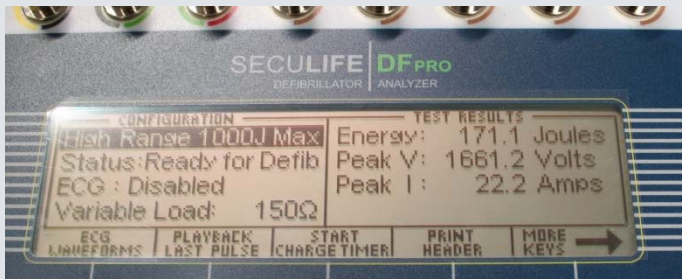
Change Variable Load:

You can set the required load at the rotary switch of the SECULIFE VL

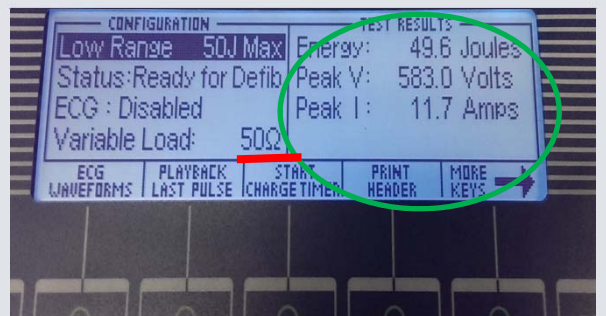
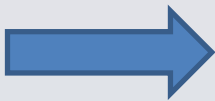
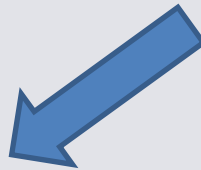


Display of the SECULIFE DFPro

Rotary switch of the SECULIFE VL



Energy Test with SECULIFE VL



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