SHIMADZU
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Integration of Vieworks DR with Shimadzu

Prepared by: Ahmad Abdo
Regional Technical Support Engineer
Shimadzu Middle East & Africa

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1. Purpose

This document is written for instructing how to use generator service functions to integrate VXvue with the Shimadzu generator.

2. Basic Information

GS.SHIMADZU is a component for integrating with Shimadzu generator and communicating with the generator using RS-232c. It will be installed on the same PC of Vieworks.

VXvue is the software of Vieworks and can transmit the dose setting value and others to Shimadzu generator through this component in one-way only. However, the actual irradiated dose value (Post Dose Value) can be delivered from the Generator.

The component supports 1P (AEC) and 3P (mA/ms) modes, so refer to **'Restrictions and Features'** in this document for the detailed information. The dose table can be different depending on the generator models.

3. How to Setup

3.1 Terms

Terms	Description
GS.SHIMADZU	It is developed / provided as a component of VXvue and provides integrating with Shimadzu generator. GS stands for 'Generator Service'.
VXSetup	It is a component of VXvue that can set up integration with Shimadzu generator.

3.2 Using Condition

The following conditions should be met to use the **Shimadzu Generator Service**:

Object	Version	Description
VXvue	V1.0.0.86b19 and higher	
OS	Microsoft Windows 7 SP1 and higher	Refer to VXvue Operation Manual for the detailed information.
GS.SHIMADZU	V1.0.0.4	Shimadzu Generator Service
Shimazdu Generator model	UD150L-40E and RadSpeed FIT	

3.3 Restrictions and Features

To set and use the Shimadzu generator with VXvue normally, be sure to check the following restrictions:

Object	Function	Restrictions and Features
Selecting mode	Supports 1P (AEC) and 3P (mA/ms) modes	1. 1P : Controls kVp 2. 3P : Controls kVp, mA, ms
Setting GS (Dose value)	Setting and changing dose table Setting and changing default dose values	1. A folder where VXvue is installed. Can be set in: \GENERATOR\Protocol\GS.SHIMADZU\GS.SHIMADZU.xml 2. User can change the default dose value and dose table. 3. mAs table is not supported. 4. Do not change the values other than the default dose value and dose table.
Pre-defined APR	Setting Pre-defined APR in VXvue	This function is supported by Procedure Manager in VXvue. However, if an unsupported dose value is set according to the generator model, an error is indicated and the X-ray is not exposed.
Post Dose	Displaying dose value that actually exposed	Supporting dose value that actually exposed while shooting X-ray.
X-ray status	Displaying Ready/Shot status	Not supported
Displaying Warning/Error	Displaying contents of warning / error	1. If using a pre-defined APR, the contents display only when the value exceeds the range. 2. The warning and error occurred in generator are not supported.
Setting AEC	Available for setting AEC	Available for setting Field (L/R/C), Speed (High/Middle/Low), Density (-3 ~ 3) can be set. The center field cannot be set simultaneously with left or right field.
Selecting Bucky	Available for selecting Bucky	Available for selecting NO-BUCKY, BUCKY 1, BUCKY 2
Displaying DAP	Displaying DAP value integrated with the generator	Not supported

4. DR System

- We must start with installing the DR System and ensure that it's working fine and fully functional before proceeding in the integration with the Generator

4.1 DR Installation

Starting from Prerequisites, Installation to Calibration of the FPD's. Please refer to the "VIVIX Setup Operation Manual" for more information.

As for the below port Setup, It's mentioned in details as it's important step to establish the communication through the RS 232 Cable.

4.2 Setting a port on PC

1. Launch Device Manager by selecting one of the following two sequences.

   1 Control Panel → Systems and Security → Select System → Device

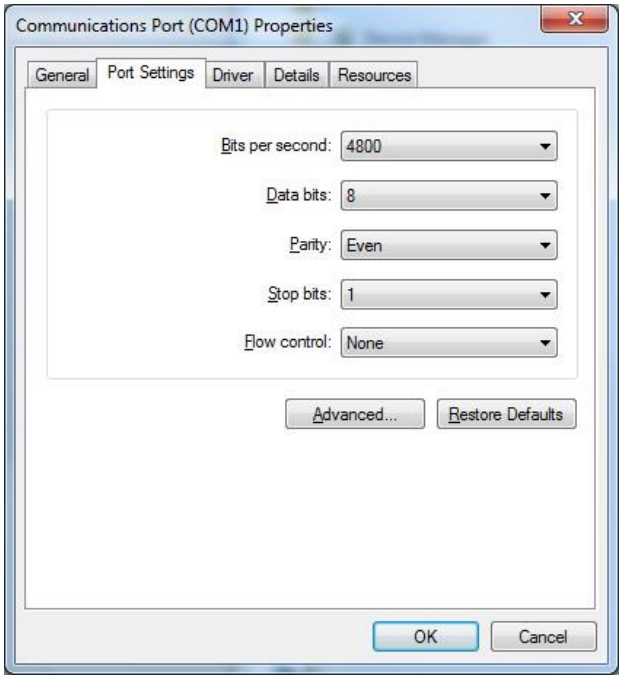
   Manager 2 Start → enter Device Manager in Search Programs and Files

   window.

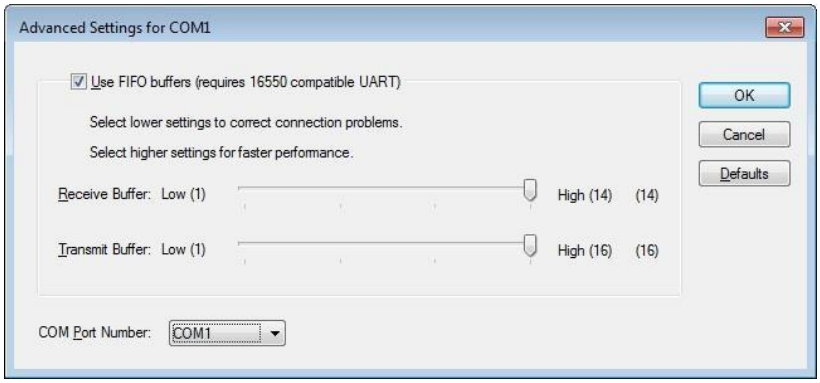
2. Select Ports (COM & LPT) from the menu on the Device Manager screen to display the Communications Port menu.

   Right-click a mouse and select Properties.

3. Click the Port Settings to set the value of each item as shown below and then click the Advanced tab.



4. Specify the COM Port Number you want to use and click the OK button.



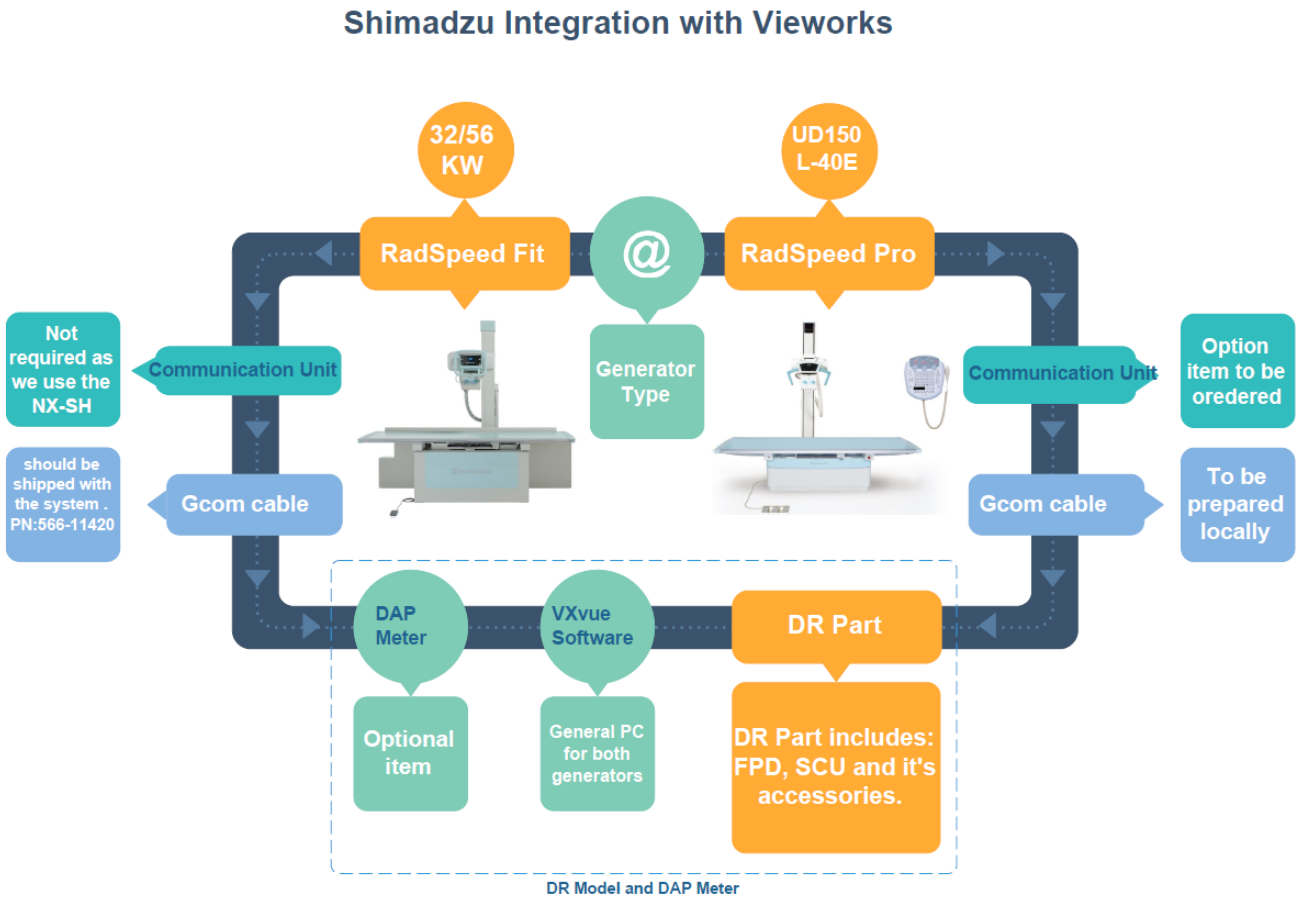
5. Generator Communications

5.1 Getting Started

There are 2 types of Generators are connected with Vieworks and tested as mentioned earlier:

1. **RadSpeed Pro system, UD150L-40E**
2. **RsdSpeed FIT system**

- The Next Scheme will describe the systems we have integrated with Vieworks and the options needed to have the generator communication established:

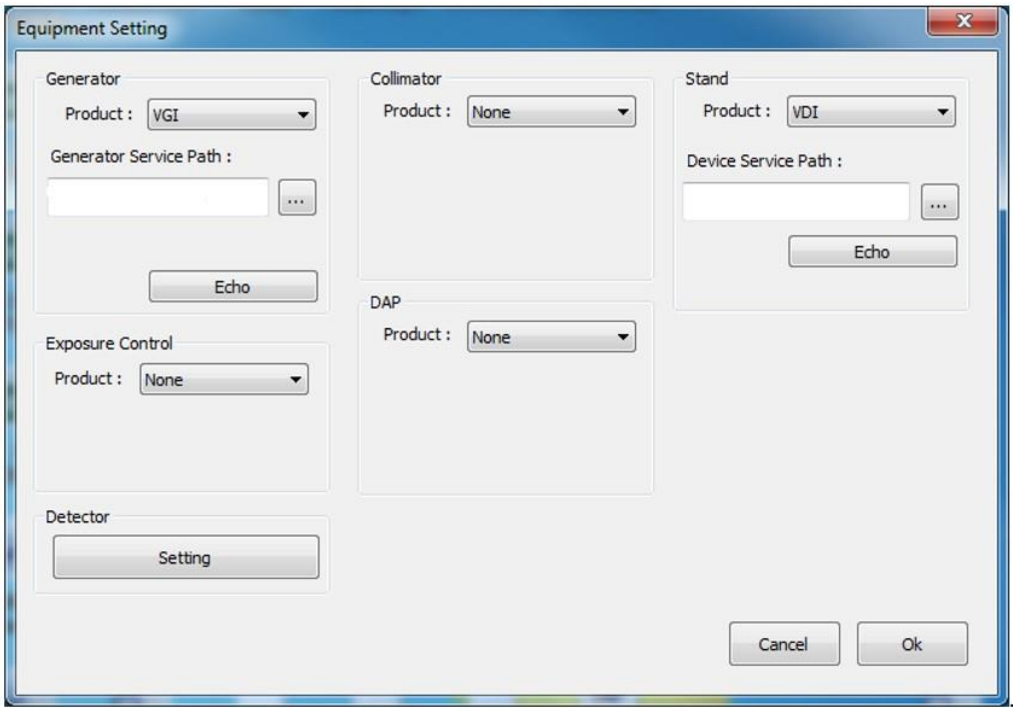


5.2 SHIMADZU Generator Installation

- ❖ Refer to SHIMADZU Installation Manual (M501-E362R) for setting the SHIMADZU generator.

5.3 Setting VXSetup

1. Execute VXSetup.
2. Choose VGI in Product options of the Generator menu.



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3. Specify the Generator Service Path as [The folder where VXvue is installed]\GENERATOR\Protocol\GS.SHIMADZU \GS.SHIMADZU.exe.

   (GS.SHIMADZU must be installed in advance.)

4. Click the Echo button to confirm that communication with SHIMADZU generator is normal.

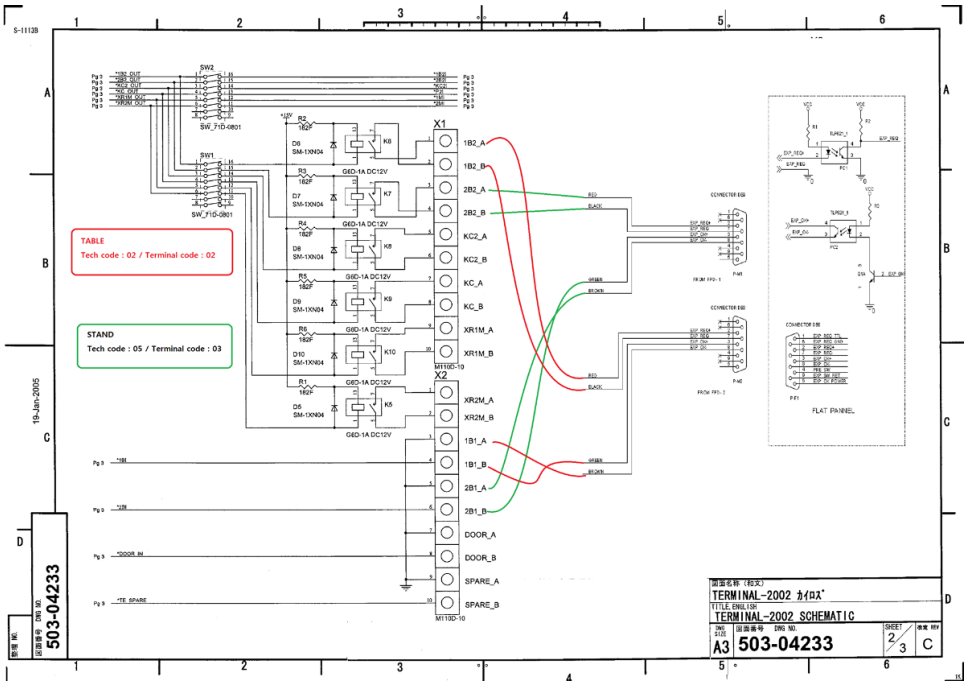
5.4 Generator Integration:

5.4.1 RadSpeed Pro system, UD150L-40E:

Please refer to the below description that is related to the connection between the SCU “System Control Unit” of Viewroks and the Terminal PCB inside the generator:

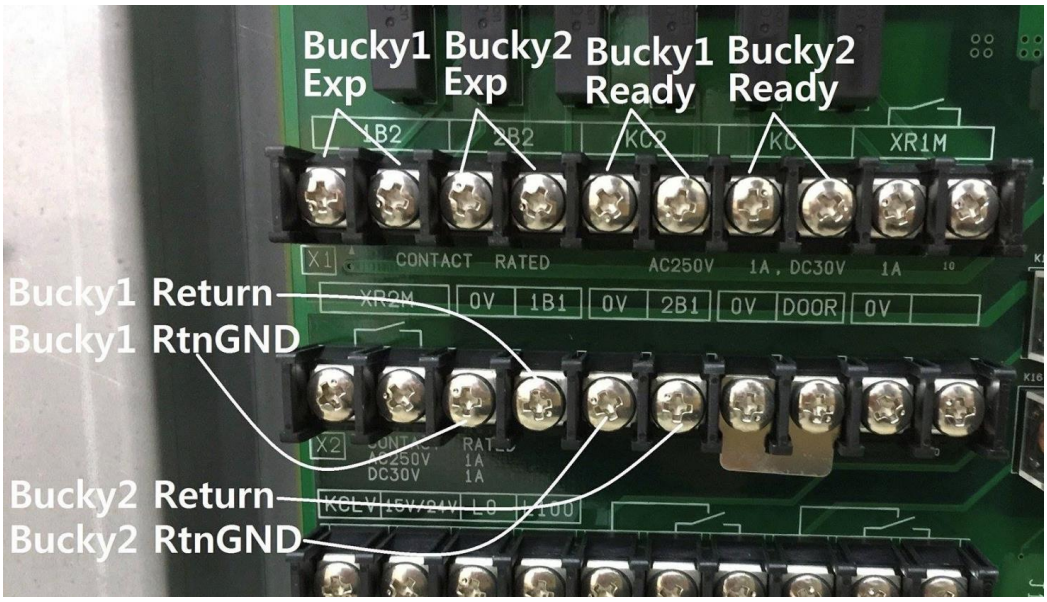
- Connecting EXP_REQ+_A to 1B2_Aand EXP_REQ-_A to 1B2_B
- Connecting EXP_OK+_A to 1B1_B and EXP_OK-_A to 1B1_A ‘0V’

❖ **The below Figure 1 will show the connection and the Technique Code that should be used for Stand and table:**



- Figure 1-

- **The below Picture is the actual Connection of the Terminal PCB and description:**



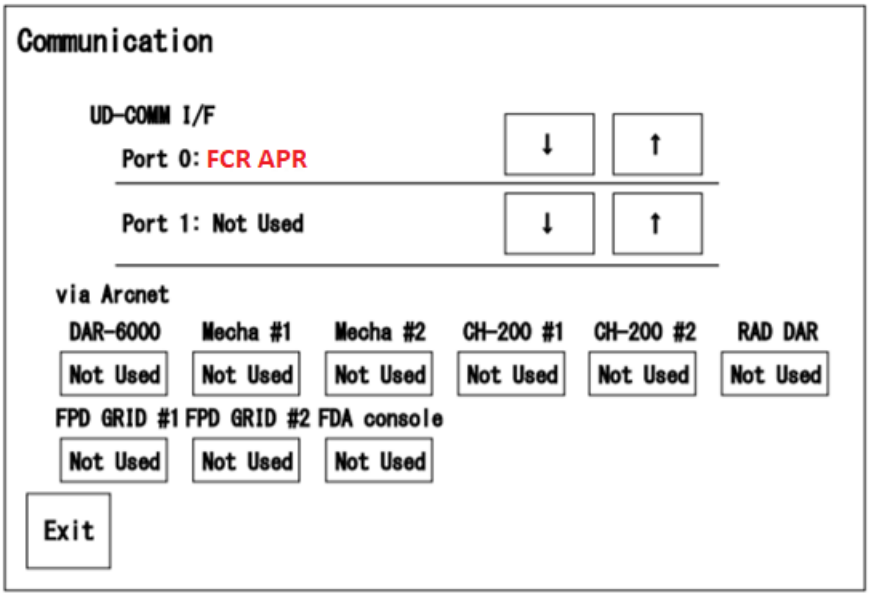
- Figure 2-

❖ Communication Setup:

From the Generator Console side, we must adjust the Communication Settings as Initial Setup by accessing the Communication from the Setup screen and adjust the UD-COM I/F as below:

Port 0 should be changed from "Not Used" to "FCR APR" as Figure 3.

The display changes as follows:



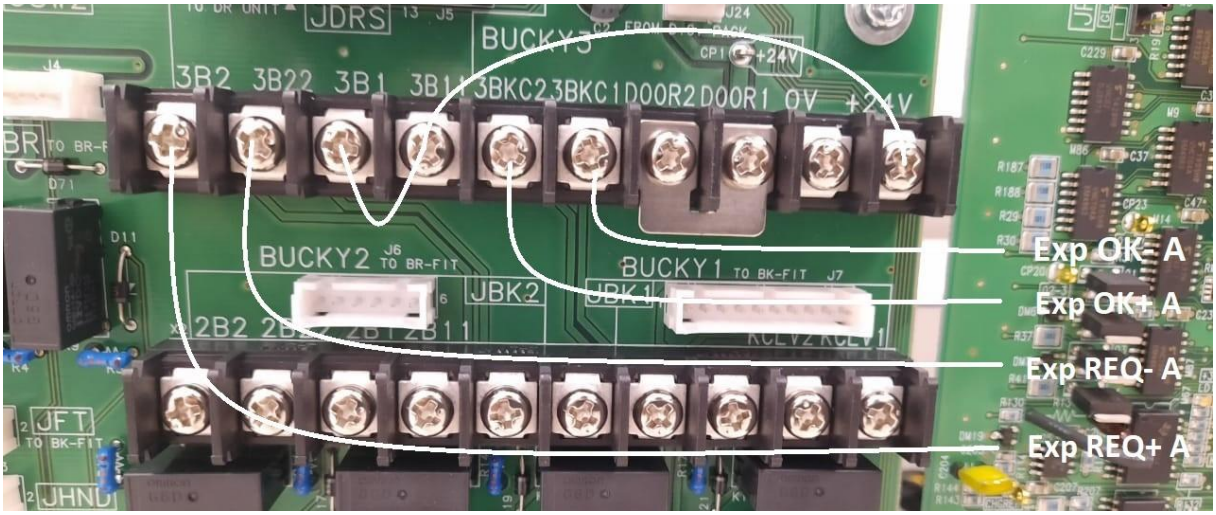
-Figure 3-

5.4.2 RsdSpeed FIT system

The connection related to RAD-FIT system as below:

- Connecting EXP_REQ+_A to 3B2 and EXP_REQ-_A to 3B22
- Connecting EXP_OK+_A to 3BKC2 and EXP_OK-_A to 3BKC1

❖ Figure 4 will show the actual connection of the Handshaking Cable from the “SCU” to the Generator:



-Figure 4-

❖ Communication Setup:

In Rad FIT system we only need to adjust SW2-7 on NEX-SH PCB to make it DR.

5.5 Collimator Integration:

- **R300** Collimator is not integrated yet with Vieworks software.
- **R20J** has no communication with the generator.

6. DAP Setup

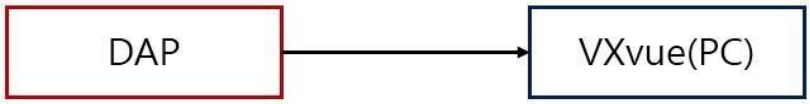
DAP (Dose Area Product) is the medical equipment for measuring the exact X-ray dose exposed per unit area. You can connect PC and **DAP** to read values from **VXvue**.

6.1 Indirect Integration

- The DAP meter will be connected to the generator and the Generator will be connected to VXvue (PC).
- The Indirect Integration with Shimadzu Generator is still not integrated yet.

6.2 Direct Integration

- It's Direct connection between the DAP meter and the PC as below:



- The DAP models that support direct integration with VXvue are as follows.
  - ❖ DIAMENTOR C2, DIAMENTOR E2 models from PTW
  - ❖ VacuDAP OEM, VacuDAP Standard (with Display Unit) models from VacuTec.
- We have used VacuDAP Standard (with Display Unit) and it's working fine.