

# USER MANUAL

## RADFET READER PRO

**RADFET READER PRO** is a handheld, battery operated instrument for measuring of the output voltage of the RADFETs manufactured by Varadis.

### FEATURES

- Instant RADFET output voltage readout
- Battery operated
- Compatible with Varadis RADFETs VT01/VT02 and previous RADFET types



Varadis

[www.varadis.com](http://www.varadis.com)

## TABLE OF CONTENTS

---

---

TABLE OF CONTENTS .....	2
INTRODUCTION .....	3
INSTRUMENT DESCRIPTION .....	4
PACKAGE CONTENTS .....	4
RADFET READOUT DETAILS .....	5
READER PARTS .....	6
PERFORMING THE MEASUREMENT .....	8

## INTRODUCTION

---

RADFET Reader PRO is a handheld, battery operated instrument designed for measuring the output voltage of the RADFETs manufactured by Varadis.

RADFET parts compatible with the reader are:

- VT01 – plastic part in a SOT-23-6 package,
- VT02 – ceramic part in a DIP-8 package,
- TY1001 – ceramic part in a DIP-14 package (currently available as a non-standard product).

This document describes the instrument and its operation.

If any additional information is needed, please contact the manufacturer, Varadis:

E-mail: [sales@varadis.com](mailto:sales@varadis.com)

Address:

Varadis  
Tyndall National Institute  
Lee Maltings Complex  
Prospect Row  
Cork  
Ireland  
T12R5C

# INSTRUMENT DESCRIPTION

---

## PACKAGE CONTENTS

---

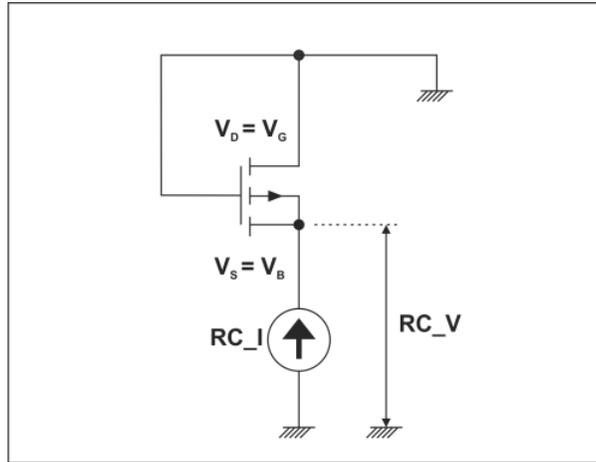
The instrument is shipped in the package, the contents of which are listed in Table 1.

No	Item Description	Qty
1	RADFET Reader PRO	1
2	1.5V AA Battery	2
3	User Manual	1
4	Case	1

**Table 1:** List of package contents.

## RADFET READOUT DETAILS

The instrument uses RADFET readout circuit shown in Figure 1.



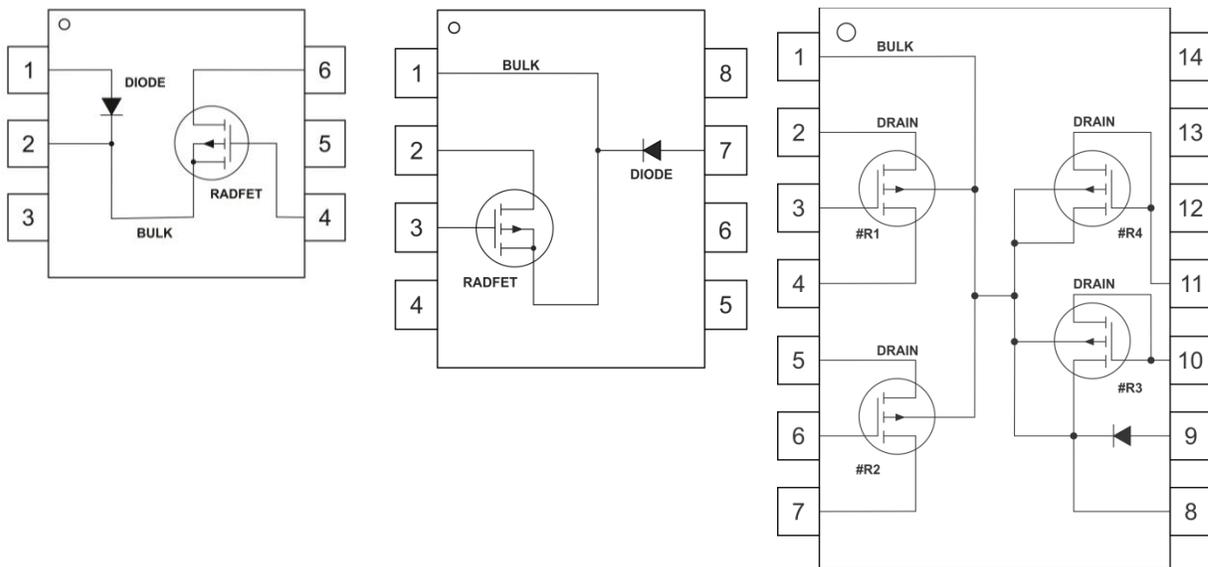
**Figure 1:** Reader circuit configuration.

RADFET Source and Bulk are tied together ( $V_S=V_B$ ); Gate and Drain are tied to the ground ( $V_G=V_D=0V$ ). The readout current  $RC\_I$  is forced at Source/Bulk and the output voltage  $RC\_V$  (also known as threshold voltage) measured at Source/Bulk and, upon instruction, displayed.

The readout current for the RADFET Reader PRO is set at  $10\ \mu A$ . This current can be adjusted to a different value in a  $5 - 65\ \mu A$  range; please contact the manufacturer for details.

Maximum voltage that can be measured by the instrument is  $25V$ .

The instrument can measure voltages of four individual transistors (#R1, #R2, #R3, and #R4) of 14-pin ceramic RADFET part (TY1001), one transistor of plastic part (VT01) and ceramic part (VT02). Pinouts of VT01, VT02 and TY1001 are shown in Figure 2; for full datasheets please visit: [www.varadis.com](http://www.varadis.com).



**Figure 2:** Pinout of VT01, VT02, and TY1001 (from left to right).

## READER PARTS

Reader parts are shown in Figure 3. Parts ①-⑧ are on the front panel, and part ⑨ is on the back.

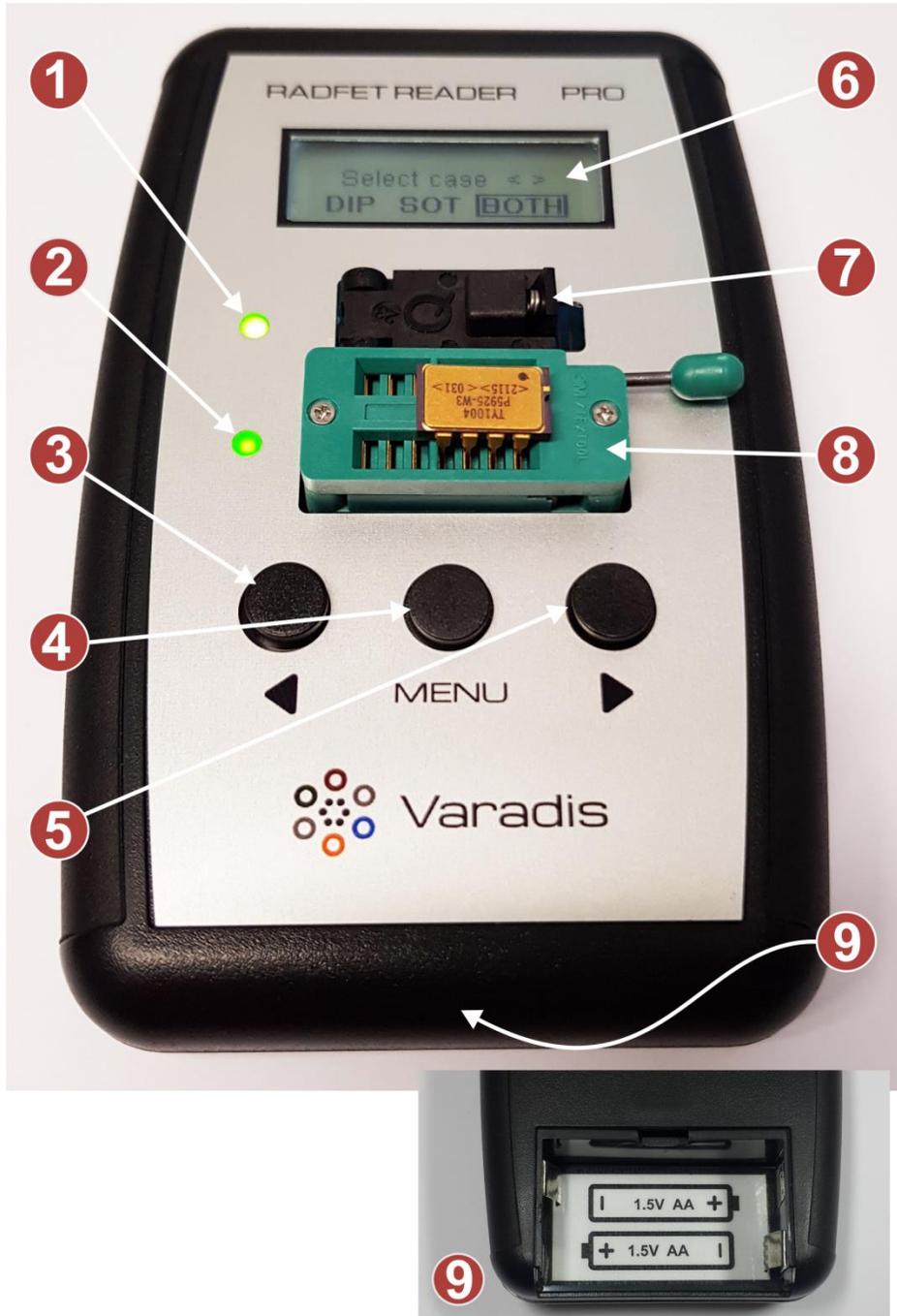


Figure 3: Reader parts.

Description of reader parts:

- ① LED indicating SOT-23-6 device (plastic part VT01) is under test
- ② LED indicating DIP-14 device (ceramic part VT02 / TY1001) is under test
- ③ Push button (control: LEFT)
- ④ Push button (control: MENU)
- ⑤ Push button (control: RIGHT)
- ⑥ LCD screen
- ⑦ Socket for SOT-23-6 device (plastic part VT01)
- ⑧ ZIF-14 socket for DIP-14 device (ceramic part VT02 / TY1001)
- ⑨ Battery compartment

## PERFORMING THE MEASUREMENT

After inserting two 1.5V AA batteries (instrument back ⑨), follow the steps below to perform the measurement.

**[1] Switch ON the instrument by holding the MENU button for approximately 2 seconds.**

The following message appears on the LCD screen:

Insert RADFET  
and press MENU

**[2] Insert the device(s) in the corresponding socket(s).**

When inserting the device(s) for measurement, make sure that the devices are positioned correctly, otherwise the measurement will not be valid. Pin 1 of the SOT device should be on the top left side of the SOT socket, and pin 1 of the DIP-14/DIP-8 device should be on the top right side of the ZIF-14 socket; see Figure 4 (left).



**Figure 4:** Device positioning – sockets open (left), sockets closed (right). Arrows indicate Pin 1.

After the devices are inserted, clamp the lid of the SOT socket and put the handle of the ZIF socket in horizontal position; see Figure 4 (right).

**[3] Press MENU button to start the measurement selection.**

The following screen appears:

Select case < >  
**DIP** SOT BOTH

By pressing the LEFT button **3** or RIGHT button **5**, select one of the three options:

- Measure DIP device RADFETs (DIP LED is on):

```
Select case < >
DIP SOT BOTH
```

- Measure SOT-23-6 device RADFETs (SOT LED is on):

```
Select case < >
DIP SOT BOTH
```

- Measure both devices (both DIP and SOT LEDs are on):

```
Select case < >
DIP SOT BOTH
```

**[4] Press MENU button to start the measurement.**

LED(s) will flash during the measurement, the following screen appears:

```
Reading in progress
please wait
```

When the measurement is finished, the following screen appears:

```
Reading done,
results available < >
```

The reading is done, and the results are available.

**[5] Press any button to display the results.**

Toggle between readings by pressing RIGHT button **5** or LEFT button **3**. In the top-left corner of the screen the individual RADFET is indicated, and the voltage value is shown below, as follows.

- DIP1 represents the voltage of #R1 on TY1001/VT02 part:

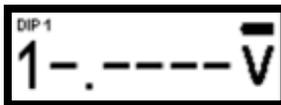


(Example:  $V_{\#R1} = 12.3456 \text{ V}$ )

- DIP2 represents the voltage of #R2 on TY1001 part:

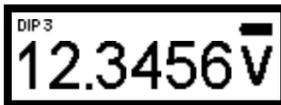


If VT02 part is inserted, the following screen will appear:

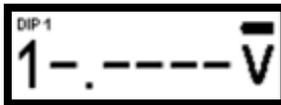


This indicates that no measurement is taken in this case. Move to the next position.

- DIP3 represents the voltage of #R3 on TY1001 part:

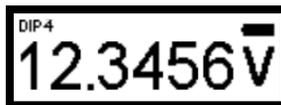


If VT02 part is inserted, the following screen will appear:

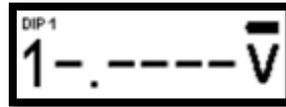


This indicates that no measurement is taken in this case. Move to the next position.

- DIP4 represents the voltage of #R4 on TY1001 part:



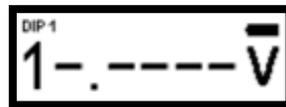
If VT02 part is inserted, the following screen will appear:



- SOT1 represents the voltage of the RADFET on VT01 part:



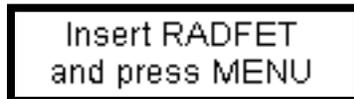
If the RADFET voltage is above 25V (voltage limit), the instrument will display the following message:



The measurement procedure can be repeated with the same device or different devices, by pressing MENU button 4.

### Powering off the instrument:

To power off the instrument, hold the menu button 4 for approximately 3 seconds when at the following manu location:



After a led indication (3x blink), the following screen appears:



The instrument is switched off. To power on the instrument and start new measurement, go to step [1].

### Battery status:

There is a battery status indicator in the top right corner of the screen. Once the indicator shows an empty battery (☐), it is highly recommended to replace the batteries.

**Important remarks:**

- During measurement please do not touch the exposed radfet pins (with hands or any conductive material), as this can disturb and invalidate the measurement.
- Do not use the instrument in high humidity environments, this might cause false readings.
- When replacing the batteries, please use appropriate battery type (see Table 1), any other type/size batteries might cause wrong readings or permanent damage to the instrument.