ZIEGLER PRO -V
Programmable Transducer

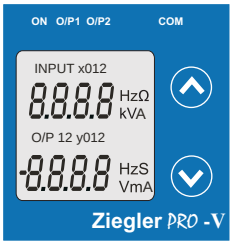
Installation & Operating Instructions

Section Contents

15030988_Rev.A - 10/11

1. Introduction

The Ziegler PRO -V is a panel mounted 43.5X 65.5mm Transducer.
The Ziegler PRO -V is used to measure and convert AC Voltage input into an proportional DC current or voltage output signal. Output signal generated is proportional to the True RMS(upto 15th Harmonic) of the input Voltage.
Input Voltage and Output Voltage/Current is displayed on LCD and indicated by LED's.



Ziegler PRO -V can be configured and programmed at site for the following :
PT Primary ,PT Secondary,
Input parameters (i.e start, end and elbow value of Input) and Output parameters(i.e as Voltage or as Current and start, end and elbow value of outputs).

The front panel has two push buttons through which the user may scroll through the output screens and configure the product.

1.1 LED Indication

LED	LED OPERATING CONDITION	LED OPERATING STATUS
ON	Aux. Supply healthy condition	Green LED continuous ON
O/P 1	Output1 voltage	Green LED continuous ON
	Output1 Current	Red LED continuous ON
O/P 2	Output2 voltage	Green LED continuous ON
	Output2 Current	Red LED continuous ON

Table 1: Measured parameters

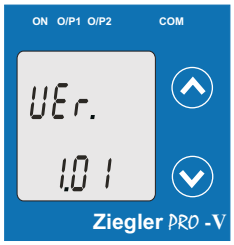
Measured parameters	Unit of Measurement
Voltage	Volt

2. Input and Output screens

In normal operation the user is presented with display test screen followed by version screen to one of the output screen. These screens may be scrolled through one at a time by pressing the "^ Up key" or "v Down key".

Screen 1 : Display Test

Screen 2 : Version Screen



Screen 3 : Voltage Input and Output 1 as Voltage

Screen 4 : Voltage Input and Output 1 as Current

Screen 5 : Voltage Input and Output 2 as Voltage

Screen 6 : Voltage Input and Output 2 as Current

3. Programming

Programming of transducer can be done in three ways :

1) Programming Via Front LCD & two keys.

2) Programming Via optional RS485(MODBUS) communication port.

3.1 Programming via Front LCD & Two keys

The following sections comprise step by step procedures for configuring the Ziegler PRO - V for individual user requirements.

To access the set-up screens press and hold the " Down" and " Up" keys simultaneously for 5 seconds. This will take the User into the Password Protection Entry Stage .

3.1.1. Password Protection

3.1.1.1 Password Verification

Password protection can be enabled to prevent unauthorised access to set-up screens, by default password protection is not enabled.

Password protection is enabled by selecting a four digit number other than 0000, setting a password of 0000 disables the password protection.

Enter Password, prompt for first digit.
(*Denotes that digit will be flashing).

Pressing the " Down" key will scroll the value of the first digit from 0 through to 9, the value will wrap from 9 round to 0.

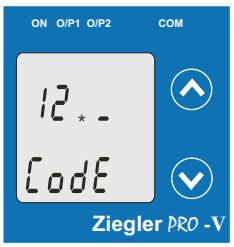
Pressing the " Up" key will advance the operation to the next digit and set the first digit.

In the special case where the Password is "0000" pressing the " Up" key when prompted for the first digit will advance to the "Password Set/Confirmed" screen.

Enter Password, first digit entered, prompt for second digit.
(*Denotes that digit will be flashing).

Pressing the " Down" key will scroll the value of the second digit from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the " Up" key will advance the operation to the next digit and set the second digit.



Enter Password, second digit entered, prompt for third digit.
(*Denotes that digit will be flashing).

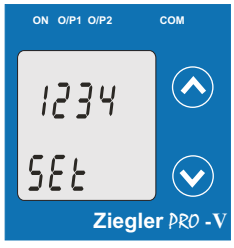
Pressing the " Down" key will scroll the value of the third digit from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the " Up" key will advance the operation to the next digit and set the third digit.

Enter Password, third digit entered, prompt for fourth digit.
(*Denotes that digit will be flashing).

Pressing the " Down" key will scroll the value of the fourth digit from 0 through to 9, the value will wrap from 9 round to 0.

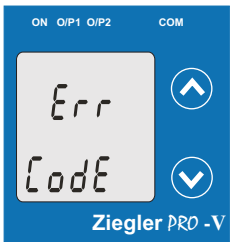
Pressing the " Up" key will advance the operation to the "Password Set/Confirmed" and set the fourth digit.



Password Set/Confirmed.

Pressing " Down" key will enter to the "New / change Password" entry stage.(section 3.1.1.2)

Pressing the " Up" key will advance to the Potential Transformer parameter selection(section 3.1.2).



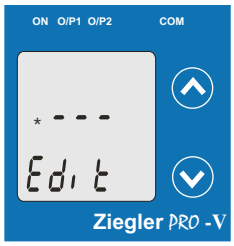
Password Incorrect.

This screen is displayed when the unit has not accepted the Password entered.

Pressing the " Down" key will re-enter to the "Enter Password" entry stage.

Pressing the " Up" key will exit the setup menu.

3.1.1.2 New/ChangePassword

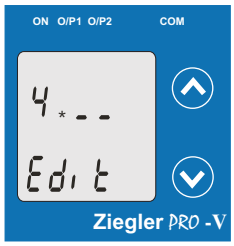


New / Change Password

(*Denotes that digit will be flashing).

Pressing the " Down" key will scroll the value of the first digit from 0 through to 9, the value will wrap from 9 round to 0.

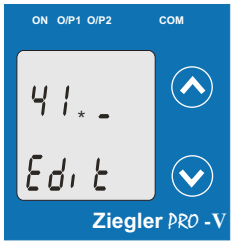
Pressing the " Up" key will advance the operation to the next digit and set the first digit, in this case to "4"



Enter New / Change Password, first digit entered, prompting for second digit. (*Denotes that digit will be flashing).

Pressing the " Down" key will scroll the value of the second digit from 0 through to 9, the value will wrap from 9 round to 0.

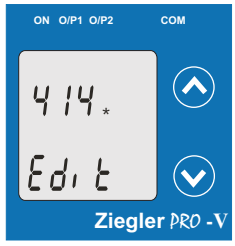
Pressing the " Up" key will advance the operation to the next digit and set the second digit, in this case to "1"



Enter New / Change Password, second digit entered, prompting for third digit. (*Denotes that digit will be flashing).

Pressing the " Down" key will scroll the value of the third digit from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the " Up" key will advance the operation to the next digit and set the third digit, in this case to "4"



Enter New / Change Password, third digit entered, prompting for fourth digit. (* denotes that digit will be flashing).

Pressing the " Down" key will scroll the value of the fourth digit from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the " Up" key will advance the operation to the "New Password Confirmed" and set the fourth digit, in this case to "1".

New/changed Password confirmed.

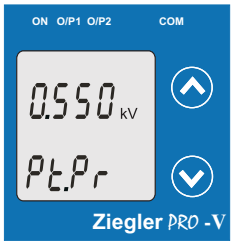
Pressing the " Down" key will re-enter to the "New/Change Password" entry stage.

Pressing the " Up" key will confirm New Password and advance to the Potential Transformer parameter selection(section3.1.2).

3.1.2. Potential Transformer parameter selection

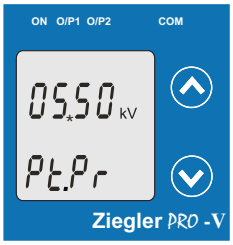
3.1.2.1 Potential Transformer primary value

This screen allows the user to set the PT Primary value between 57V to 400kV.



Pressing the " Down" key will enter the "New/Change PT Primary value edit" mode.

Pressing "Up" key will confirm the present value as PT Primary and advance to the PT secondary selection (section 3.1.2.2).

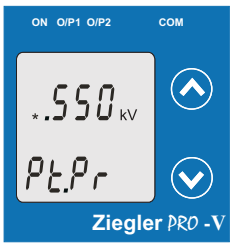


New / Change PT Primary value

(*Denotes that decimal point will be flashing).

Pressing the "Down" key will scroll the decimal point to the next position.

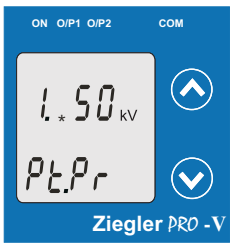
Pressing the "Up" key will confirm the decimal point position and advance the operation to set the first digit.



(*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the first digit from 0 through to 9, the value will wrap from 9 round to 0.

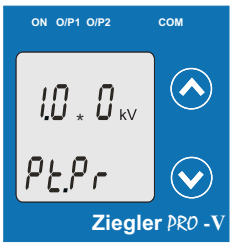
Pressing the "Up" key will advance the operation to the next digit and set the first digit, in this case to "1".



Enter New / Change PT Primary value, first digit entered, prompting for second digit .
(*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the second digit from 0 through to 9, the value will wrap from 9 round to 0.

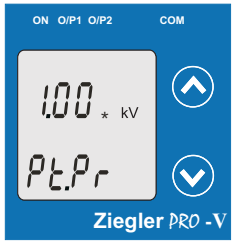
Pressing the "Up" key will advance the operation to the next digit and set the second digit, in this case to "0".



Enter New / Change PT Primary value, second digit entered, prompting for third digit.
(*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the third digit from 0 through to 9, the value will wrap from 9 round to 0.

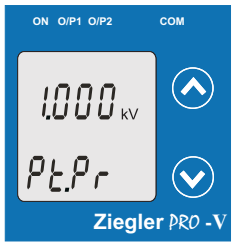
Pressing the "Up" key will advance the operation to the next digit and set the third digit, in this case to "0".



Enter New / Change PT Primary value, third digit entered, prompting for fourth digit.
(*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the fourth digit from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the "Up" key will advance the operation to the "New / Changed PT Primary value" and set the fourth digit, in this case to "0".



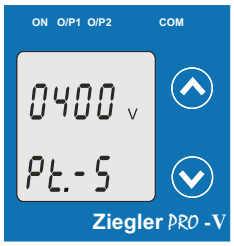
New/changed PT Primary value confirmed.

Pressing the "Down" key will re-enter to the "New / Change PT Primary value"edit mode.

Pressing the "Up" key will confirm New PT Primary value and advance to the PT secondary selection (section 3.1.2.2).

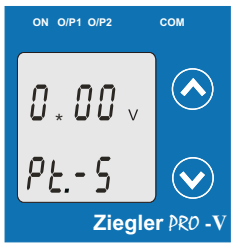
3.1.2.2 Potential Transformer secondary value

This screen allows the user to set the PT Secondary value up to 500V.



Pressing the " Down" key will enter the "New/Change PT Secondary value edit" mode.

Pressing the "Up" key will confirm the present value as PT Secondary and advance to the Communication parameter Selection (section 3.1.3).

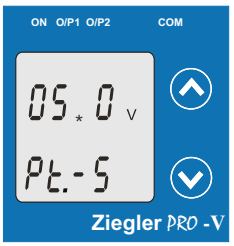


New / Change PT Secondary value

(*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the Second digit from 0 through to 9, the value will wrap from 9 round to 0.

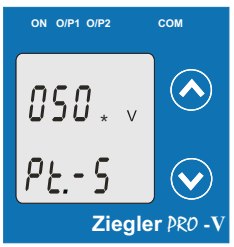
Pressing the "Up" key will advance the operation to the next digit and set the second digit, in this case to "5"



Enter New / Change PT Secondary value, second digit entered, prompting for third digit.
(*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the third digit from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the "Up" key will advance the operation to the next digit and set the third digit, in this case to "0".



Enter New / Change PT Secondary value, third digit entered, prompting for fourth digit.
(*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the fourth digit from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the "Up" key will advance the operation to the next digit and set the fourth digit, in this case to "0".

New/changed PT Secondary value confirmed.

Pressing the "Down" key will re-enter to the "New / Change PT Secondary value"edit mode.

Pressing the "Up" key will confirm New PT Secondary value and advance to the Communication parameter Selection(section 3.1.3).

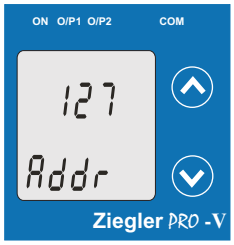
3.1.3. Communication Parameter Selection :

3.1.3.1 Address Setting

This screen applies to the RS 485 output only.

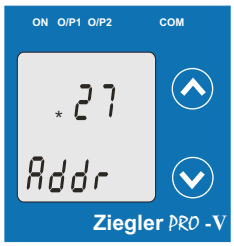
This screen allows the user to set RS485 parameter for instruments

The range of allowable address is 1 to 247 .



Pressing "▼ Down" key will advance to the "New/Change address value edit" mode.

Pressing the "▲ Up" key will confirm the present value as Address and advance to Baud Rate selection (section3.1.3.2) .

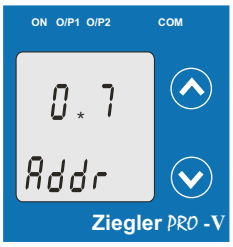


New/changed Address value

(*Denotes that digit will be flashing).

Pressing the "▼ Down" key will scroll the value of the second digit from 0 through to 2, the value will wrap from 2 round to 0.

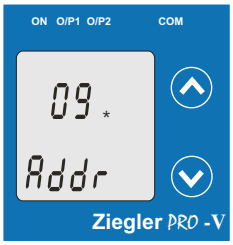
Pressing the "▲ Up" key will advance the operation to the next digit and set the second digit, in this case to "0".



Enter New / Change Address value, second digit entered, prompting for third digit. (*Denotes that digit will be flashing).

Pressing the "▼ Down" key will scroll the value of the third digit from 0 through to 9, the value will wrap from 9 round to 0.

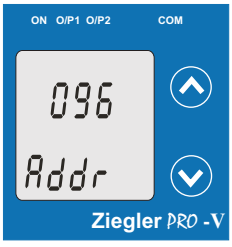
Pressing the "▲ Up" key will advance the operation to the next digit and set the third digit, in this case to "9".



Enter New / Change Address value, third digit entered, prompting for fourth digit. (* denotes that digit will be flashing).

Pressing the "▼ Down" key will scroll the value of the fourth digit from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the "▲ Up" key will advance the operation to the "New / Changed Address value confirmed" and set the fourth digit, in this case to "6".

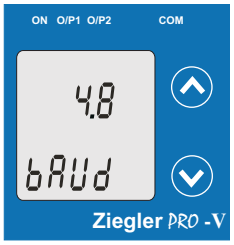


New/changed Address value confirmed.

Pressing the "▼ Down" key will re-enter to the "New / Change Address value edit" mode.

Pressing the "▲ Up" key will confirm New Address value and advance to Baud Rate selection (section3.1.3.2) .

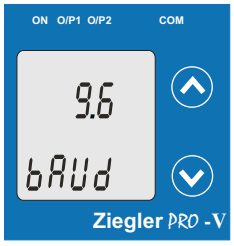
3.1.3.2 RS 485 Baud Rate



This screen allows the user to set Baud Rate of RS 485 port.
The values displayed on screen are in kbaud ..

Pressing the "▼ Down" key will enter the "Baud Rate edit" mode and scroll the value through 2.4, 4.8, 9.6 , 19.2 and back to 2.4(values are flashing).

Pressing "▲ Up" key will confirm the present value as Baud rate and advance to the Parity Selection(section 3.1.3.3).



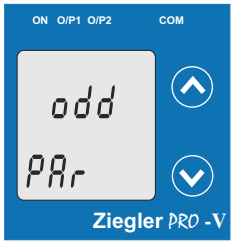
RS 485 Baud Rate confirmation

Pressing "▼ Down" key will be re-enter into the. "Baud Rate Edit" mode

Pressing the "▲ Up" key will confirm the Baud rate value and advance to the Parity Selection (section 3.1.3.3).

3.1.3.3 RS 485 Parity Selection :

This screen allows the user to set Parity & number of stop bits of RS 485 port.



Pressing the "▼ Down" key will enter the "Parity & stop bit edit" mode and scroll the value through

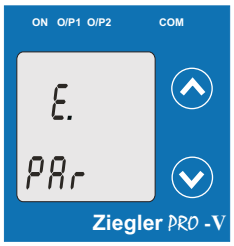
odd : odd parity with one stop bit

no. 1S : no parity with one stop bit

no. 2S : no parity with two stop bit

E : even parity with one stop bit

Pressing "▲ Up" key accepts the present value and advance to the Output Type selection(section 3.1.4).



RS 485 Parity confirmation

Pressing "▼ Down" key will be re-enter into Parity Edit mode.

Pressing the "▲ Up" key will set the value and advance to the Output Type selection(section 3.1.4).

3.1.4. Output Type Selection

3.1.4.1 Output 1 Type selection

This screen allows the user to set the output 1 type as Voltage or Current.

Pressing the " ⌄ Down" key will enter the "output 1type edit" mode and scroll between voltage and current.

Pressing "⌃Up" key will confirm the present type for Output 1 and advance to the Output 2 type selection(section 3.1.4.2).

Output 1 Type confirmation

Pressing "⌄ Down" key will re-enter into Output 1 type Edit mode.

Pressing the " ⌃Up" key will set the type and advance to the Output 2 type selection(section 3.1.4.2).

3.1.4.2 Output 2 Type Selection

This screen allows the user to set the output 2 type as Voltage or Current.

Pressing the " ⌄ Down" key will enter the "output 2 type edit" mode and scroll between voltage and current.

Pressing "⌃Up" key accepts the present type for Output 2 and advance to the Input Parameter selection(section 3.1.5).

Output 2 Type confirmation

Pressing "⌄ Down" key will re-enter into Output 2 type Edit mode.

Pressing the " ⌃Up" key will set the type and advance to the Input Parameter selection(section 3.1.5).

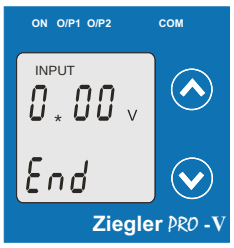
3.1.5. Input parameter selection

3.1.5.1 End value of Input

This screen allows the user to set the End value of Input.
End value of Input can be set up to 150% of set PT secondary value.

Pressing the " ⌄ Down" key will enter the "New/Change End value of Input edit" mode.

Pressing "⌃Up" key will confirm the present value as End value of Input and advance to the Start value of Input selection(section 3.1.5.2).

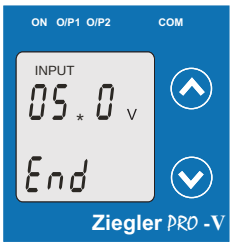


New / Change End value of Input

(*Denotes that digit will be flashing).

Pressing the "⌄ Down" key will scroll the value of the second digit from 0 through to 9, the value will wrap from 9 round to 0.

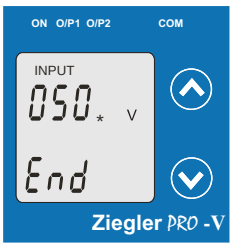
Pressing the "⌃Up" key will advance the operation to the next digit and set the second digit, in this case to "5".



Enter New / Change End value of Input, second digit entered, prompting for third digit. (*Denotes that digit will be flashing).

Pressing the "⌄ Down" key will scroll the value of the second digit from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the "⌃Up" key will advance the operation to the next digit and set the third digit, in this case to "0".



Enter New /Change End value of Input, third digit entered, prompting for fourth digit. (*Denotes that digit will be flashing).

Pressing the "⌄ Down" key will scroll the value of the fourth digit from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the "⌃Up" key will advance the operation to the next digit and set the fourth digit, in this case to "0".

New/changed End value of Input confirmed.

Pressing the "⌄ Down" key will re-enter to the "New / Change End value of Input edit" mode.

Pressing the "⌃Up" key will confirm New End value of Input and advance to the Start value of Input selection(section 3.1.5.2).

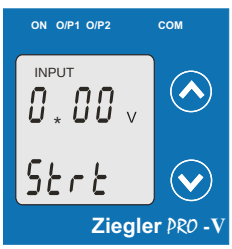
3.1.5.2 Start value of Input

This screen allows the user to set the Start value of Input.

Start value of Input can be set up to 80% of End value of Input.

Pressing the " ⌄ Down" key will enter the "New/Change Start value of Input edit" mode.

Pressing "⌃Up" key will confirm the present value as Start value of Input and advance to the Elbow function selection (section 3.1.5.3)



New / Change Start value of Input

(*Denotes that digit will be flashing).

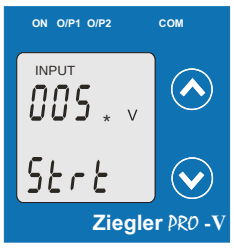
Pressing the "⌄ Down" key will scroll the value of the second digit from 0 through to 9, the value will wrap from 9 round to 0 depending on set value of End vale of Input.

Pressing the "⌃Up" key will advance the operation to the next digit and set the second digit, in this case to "0".

Enter New / Change Start value of Input, second digit entered, prompting for third digit. (*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the third digit from 0 through to 9, the value will wrap from 9 round to 0 depending on set value of End vale of Input.

Pressing the "Up" key will advance the operation to the next digit and set the third digit, in this case to "5".



Enter New / Change Start value of Input, third digit entered, prompting for fourth digit. (* denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the fourth digit from 0 through to 9, the value will wrap from 9 round to 0 depending on set value of End vale of Input.

Pressing the "Up" key will advance the operation to the "New / Changed Start value of Input" and set the fourth digit, in this case to "0".

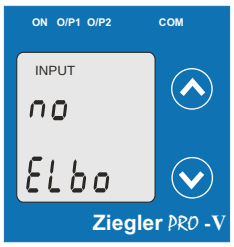
New/changed Start value of Input confirmed.

Pressing the "Down" key will re-enter to the "New / Change Start value of Input edit" mode.

Pressing the "Up" key will confirm New Start value of Input and advance to the Elbow function selection (section 3.1.5.3).

3.1.5.3 Elbow Function selection

This screen allows the user to enable or disable Elbow function of input.



Pressing the "Down" key will enter the "Selection of Elbow function of Input edit" mode and scroll the value between yes and no.

YES : Elbow function is enabled.

NO : Elbow function is disabled.

Pressing "Up" key will accept the displayed condition and advance to the Elbow value of Input selection(section 3.1.5.4) or Output parameter selection(section 3.1.6).

Elbow Function of Input confirmation

Pressing "Down" key will re-enter into Elbow function of Input Edit mode.

Pressing "Up" key will confirm the displayed condition and advance to the Elbow value of Input selection(section 3.1.5.4) or Output parameter selection(section 3.1.6).

3.1.5.4 Elbow value of Input

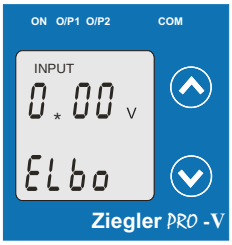
This screen appears only when Elbow function is enabled.

This screen allows the user to set the Elbow value of the Input.

The Elbow value of Input can be set beetween1.5% to 98.5% of Set End value of Input.

Pressing the "Down" key will enter the "New/Change Elbow value of the Input edit" mode.

Pressing "Up" key will confirm the present value as Elbow value of the Input and advance to the Output parameter selection(section 3.1.6).



New / Change Elbow value of the Input

(*Denotes that digit will be flashing).

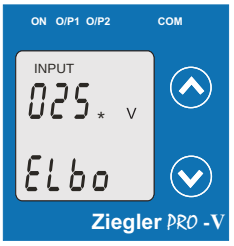
Pressing the "Down" key will scroll the value of the second digit from 0 through to 7, the value will wrap from 7 round to 0 depending on set value of End value of Input.

Pressing the "Up" key will advance the operation to the next digit and set the first digit, in this case to "4".

Enter New / Change Elbow value of the Input, second digit entered, prompting for third digit. (*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the third digit from 0 through to 9, the value will wrap from 9 round to 0 depending on set value of End value of Input.

Pressing the "Up" key will advance the operation to the next digit and set the third digit, in this case to "1".



Enter New / Change Elbow value of the Input, third digit entered, prompting for fourth digit. (* denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the fourth digit from 0 through to 9, the value will wrap from 9 round to 0 depending on set value of End value of Input..

Pressing the "Up" key will advance the operation to the "New / Changed Elbow value of the Input" and set the fourth digit, in this case to "0".

New/changed Elbow value of the Input confirmed.

Pressing the "Down" key will re-enter to the "New / Change Elbow value of the Input".

Pressing the "Up" key will confirm New Elbow value of the Input and advance to the Output parameter selection(section 3.1.6).

3.1.6 Output parameter selection

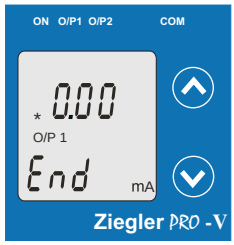
3.1.6.1 Output 1 parameter selection

3.1.6.1.1 End value of output 1

This screen allows the user to set the End value of Output 1(,considerd as DC Current).
The End value of Current Output can be set up to 20mA.

Pressing the " Down" key will enter the "New/Change End value of the Output 1 edit" mode.

Pressing "Up" key will confirm the present value as End value of the Output 1 and advance to the Start value of Output 1(section 3.1.6.1.2).

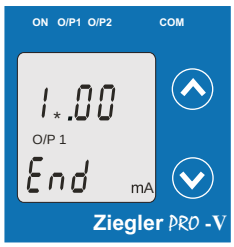


New / Change End value of the Output 1

(*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the first digit from 0 through to 2, the value will wrap from 2 round to 0.

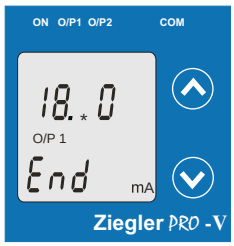
Pressing the "Up" key will advance the operation to the next digit and set the first digit, in this case to "1".



Enter New / Change End value of the Output 1, first digit entered, prompting for second digit. (*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the second digit from 0 through to 9, the value will wrap from 9 round to 0, if first digit is set to 1.

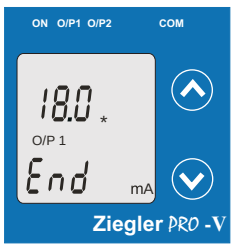
Pressing the "Up" key will advance the operation to the next digit and set the second digit, in this case to "8".



Enter New / Change End value of the Output 1, second digit entered, prompting for third digit. (*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the third digit from 0 through to 9, the value will wrap from 9 round to 0.

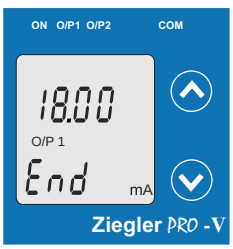
Pressing the "Up" key will advance the operation to the next digit and set the third digit, in this case to "0".



Enter New / Change End value of the Output 1, third digit entered, prompting for fourth digit. (* denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the fourth digit from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the "Up" key will advance the operation to the "New / Changed End value of the Output 1" and set the fourth digit, in this case to "0".



New/changed End value of the Output 1 confirmed.

Pressing the "Down" key will re-enter to the "New / Change End value of the Output 1 edit" mode.

Pressing the "Up" key will confirm New End value of the Output 1 and advance to the Start value of Output 1(section 3.1.6.1.2).

3.1.6.1.2 Start value of output 1

This screen allows the user to set the Start value of Output 1(,considerd as DC Current).

Start value of Output can be set up to 20% of set End value of Output.

Pressing the " Down" key will enter the " New/Change Start value of the Output 1 edit" mode.

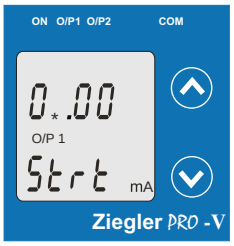
Pressing "Up" key will confirm the present value as Start value of the Output 1 and advance to the selection of Elbow value of Output(section 3.1.6.1.3) or Output 2 parameter selection(section 3.1.6.2)

New / Change Start value of the Output 1

(*Denotes that digit will be flashing).

Pressing the "Down" key will not affect the first digit It always remains 0.

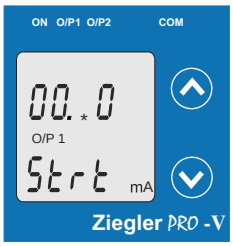
Pressing the "Up" key will advance the operation to the next digit and set the first digit, in this case to "0".



Enter New / Change Start value of the Output 1, first digit entered, prompting for second digit. (*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the second digit from 0 through to 4, the value will wrap from 4 round to 0 depending on the set End value of Output.

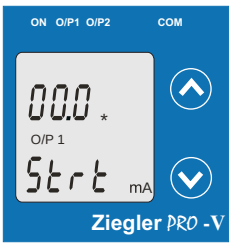
Pressing the "Up" key will advance the operation to the next digit and set the second digit, in this case to "0".



Enter New / Change Start value of the Output 1, second digit entered, prompting for third digit. (*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the third digit from 0 through to 9, the value will wrap from 9 round to 0 depending on the set End value of Output.

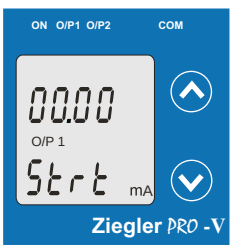
Pressing the "Up" key will advance the operation to the next digit and set the third digit, in this case to "0".



Enter New / Change Start value of the Output 1, third digit entered, prompting for fourth digit. (* denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the fourth digit from 0 through to 9, the value will wrap from 9 round to 0 depending on the set End value of Output.

Pressing the "Up" key will advance the operation to the "New / Changed Start value of the Output 1" and set the fourth digit, in this case to "0".



New/changed Start value of the Output 1 confirmed.

Pressing the "Down" key will re-enter to the "New / Change Start value of the Output 1".

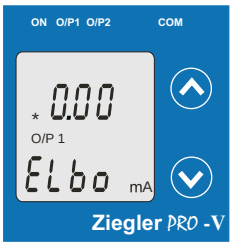
Pressing the "Up" key will confirm New Start value of the Output 1 and advance to the selection of Elbow value of Output(section 3.1.6.1.3) or Output 2 parameter selection(section 3.1.6.2)

3.1.6.1.3 Elbow value of output 1

This screen appears only when Elbow function is enabled.
This screen allows the user to set the Elbow value of Output 1(,considerd as DC Current).
The Elbow value can be set any value between set Start value of Output and End value of Output.

Pressing the " Down" key will enter the " New/Change Elbow value of the Output 1edit" mode.

Pressing "Up" key will set the present value as Elbow value of the Output 1 and advance to the Output 2 parameter selection(section 3.1.6.2).

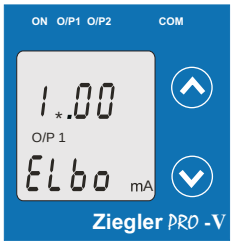


New / Change Elbow value of the Output 1

(*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the first digit from 0 through to 2, the value will wrap from 2 round to 0 depending on the set End value of Output.

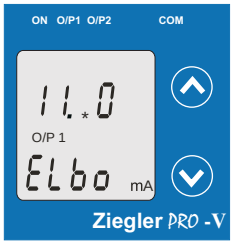
Pressing the "Up" key will advance the operation to the next digit and set the first digit, in this case to "1".



Enter New / Change Elbow value of the Output 1, first digit entered, prompting for second digit. (*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the second digit from 0 through to 9, the value will wrap from 9 round to 0depending on the set End value of Output.

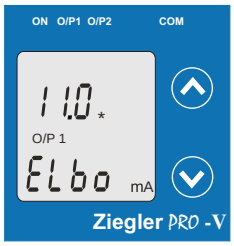
Pressing the "Up" key will advance the operation to the next digit and set the second digit, in this case to "1".



Enter New / Change Elbow value of the Output 1, second digit entered, prompting for third digit. (*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the third digit from 0 through to 9, the value will wrap from 9 round to 0 depending on the set End value of Output.

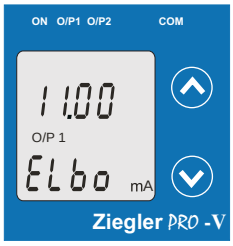
Pressing the "Up" key will advance the operation to the next digit and set the third digit, in this case to "0".



Enter New / Change Elbow value of the Output 1, third digit entered, prompting for fourth digit. (* denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the fourth digit from 0 through to 9, the value will wrap from 9 round to 0 depending on the set End value of Output.

Pressing the "Up" key will advance the operation to the "New / Changed Elbow value of the Output 1" and set the fourth digit, in this case to "0".



New/changed Elbow value of the Output 1 confirmed.

Pressing the "Down" key will re-enter to the "New / Change Elbow value of the Output 1".

Pressing the "Up" key will confirm New Elbow value of the Output 1 and advance to the Output 2 parameter selection(section 3.1.6.2).

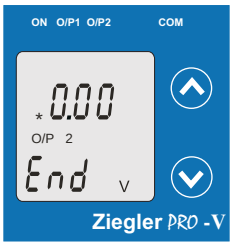
3.1.6.2 Output 2 parameter selection

3.1.6.2.1 End value of output 2

This screen allows the user to set the End value of Output 2(,considerd as DC Voltage).
The End value of Voltage Output can be set up to 10V.

Pressing the " Down" key will enter the "New/Change End value of the Output 2 edit" mode.

Pressing "Up" key will set the present value as End value of the Output 2 and advance to the Start value of Output selection(section3.1.6.2.2).

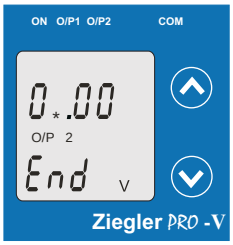


New / Change End value of the Output 1

(*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the first digit from 0 through to 1, the value will wrap from 1 round to 0.

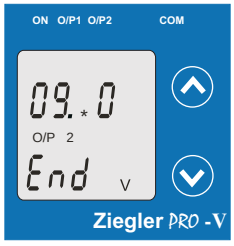
Pressing the "Up" key will advance the operation to the next digit and set the first digit, in this case to "0".



Enter New / Change End value of the Output 2, first digit entered, prompting for second digit. (*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the second digit from 0 through to 9, the value will wrap from 9 round to 0, if first digit is set to 0.

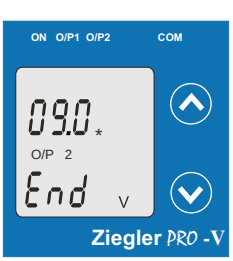
Pressing the "Up" key will advance the operation to the next digit and set the second digit, in this case to "9".



Enter New / Change End value of the Output 2, second digit entered, prompting third digit. (*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the third digit from 0 through to 9, the value will wrap from 9 round to 0.

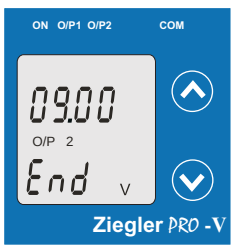
Pressing the "Up" key will advance the operation to the next digit and set the third digit, in this case to "0".



Enter New / Change End value of the Output 2, third digit entered, prompting for fourth digit. (* denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the fourth digit from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the "Up" key will advance the operation to the "New / Changed End value of the Output 2" and set the fourth digit, in this case to "0".



New/changed End value of the Output 2 confirmed.

Pressing the "Down" key will re-enter to the "New / Change End value of the Output 2".

Pressing the "Up" key will confirm New End value of the Output 2 and advance to the Start value of Output selection (section3.1.6.2.2).

3.1.6.2.2 Start value of output 2

This screen allows the user to set the Start value of Output 2(,considerd as DC Voltage).
Start value of Output can be set up to 20% of set End value of Output.

Pressing the " Down" key will enter the "New/Change Start value of the Output 2 edit" mode.

Pressing "Up" key will confirm the present value as Start value of the Output 2 and advance to the Elbow value of Output selection(section 3.1.6.2.3) or exit setup menu.

New / Change Start value of the Output 2

(*Denotes that digit will be flashing).

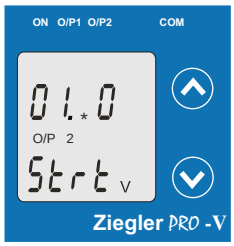
Pressing the "Down" key will not affect the value of first digit, it is always 0.

Pressing the "Up" key will advance the operation to the next digit and set the first digit, in every case to "0".

Enter New / Change Start value of the Output 2, first digit entered, prompting for second digit. (*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the second digit from 0 through to 9, the value will wrap from 9 round to 0,if first digit is 0.

Pressing the "Up" key will advance the operation to the next digit and set the second digit, in this case to "1".



Enter New / Change Start value of the Output 2, second digit entered, prompting for third digit. (*Denotes that digit will be flashing).

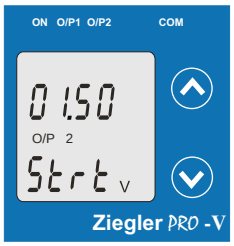
Pressing the "Down" key will scroll the value of the third digit from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the "Up" key will advance the operation to the next digit and set the third digit, in this case to "0".

Enter New / Change Start value of the Output 2, third digit entered, prompting for fourth digit. (* denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the fourth digit from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the "Up" key will advance the operation to the "New / Changed Elbow value of the Output 2" and set the fourth digit, in this case to "0".



New/changed Start value of the Output 2 confirmed.

Pressing the "Down" key will re-enter to the "New / Change Start value of the Output 2".

Pressing the "Up" key will confirm New Start value of the Output 2 and advance to the Elbow value of Output selection (section 3.1.6.2.3) or exit setup menu.

3.1.6.2.3 Elbow value of output 2

This screen appears only when Elbow function is enabled.
This screen allows the user to set the Elbow value of Output 2(,considerd as DC Voltage).
The Elbow value can be set any value between set Start value of Output and End value of Output.

Pressing the " Down" key will enter the "New/Change Elbow value of the Output 2 edit" mode.

Pressing "Up" key will confirm the present value as Elbow value of the Output 2 and exit setup menu.

New / Change Elbow value of the Output 2

(*Denotes that digit will be flashing).

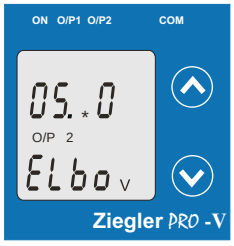
Pressing the "Down" key will scroll the value of the first digit from 0 through to 1, the value will wrap from 1 round to 0 depending the set End value of Output.

Pressing the "Up" key will advance the operation to the next digit and set the first digit, in this case to "0".

Enter New / Change Elbow value of the Output 2, first digit entered, prompting for second digit. (*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the second digit from 0 through to 9, the value will wrap from 9 round to 0 depending the set End value of Output.

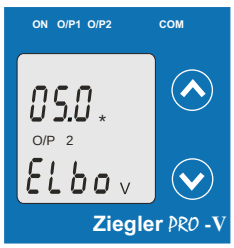
Pressing the "Up" key will advance the operation to the next digit and set the second digit, in this case to "5".



Enter New / Change Elbow value of the Output 2, second digit entered, prompting for third digit. (*Denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the third digit from 0 through to 9, the value will wrap from 9 round to 0 depending the set End value of Output.

Pressing the "Up" key will advance the operation to the next digit and set the third digit, in this case to "0".



Enter New / Change Elbow value of the Output 2, third digit entered, prompting for fourth digit. (* denotes that digit will be flashing).

Pressing the "Down" key will scroll the value of the fourth digit from 0 through to 9, the value will wrap from 9 round to 0 depending the set End value of Output.

Pressing the "Up" key will advance the operation to the "New / Changed Elbow value of the Output 2" and set the fourth digit, in this case to "0".

New/changed Elbow value of the Output 2 confirmed.

Pressing the "Down" key will re-enter to the "New / Change Elbow value of the Output 2".

Pressing the "Up" key will confirm New Elbow value of the Output 2 and exit setup menu.

3.2 Programming of Transducer through Modbus(optional)

For programming of transducer, steps to be followed are

Step 1 : DIP Switch setting:
DIP Switches should configure for desired Output type as per given in section 3.3

Step 2 : programming

For setting Output from Current to Voltage write value “1”.
For setting Output from Voltage to Current write value “2”.
(Refer section 4.2 and table 3 parameters no. 16 & 18 for details).

The power supply must be applied to Ziegler PRO - V before it can be programmed.

3.3 DIP Switch Setting for Output

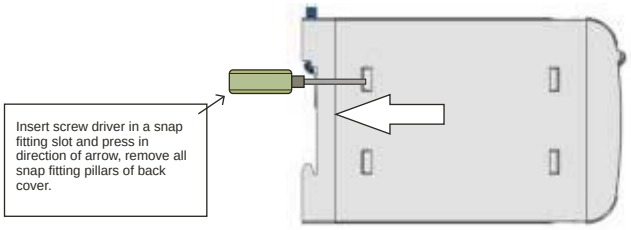
To configure Ziegler PRO -V Output, programming method to be adapted along with mechanical switch setting (DIP switch setting on PCB).

Type of output (current or voltage signal) has to be set by DIP switch.

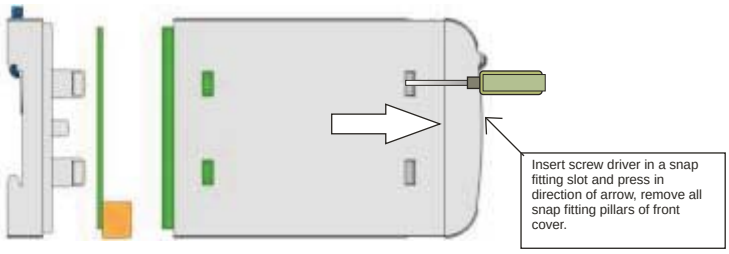
1) To change O/P switches from Current to Voltage or vice versa, ensure that transducer should be Electrically dead and all connection wires should be disconnected.

2) Terminal screw should be tighten.

3) Remove the Back cover of transducer by using screw driver.



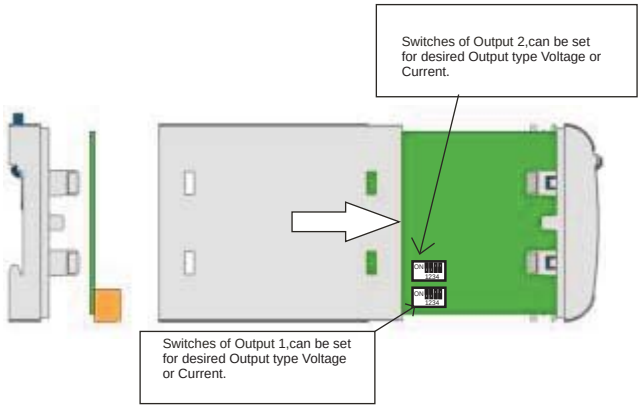
4) Remove the front cover and take the Output card out.



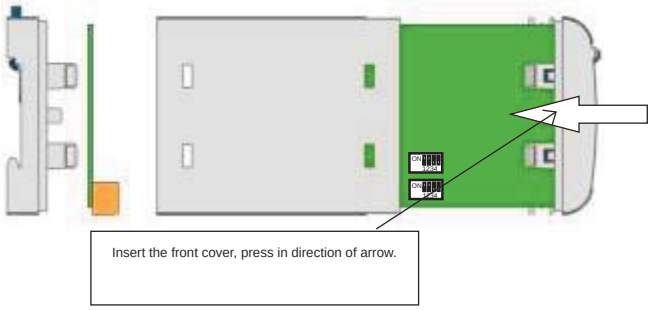
5) Configure the switches for Voltage or Current as shown below.

DIP Switch Setting	Type of Output Signal
ON 1234	load-independent current
ON 1234	load-independent voltage

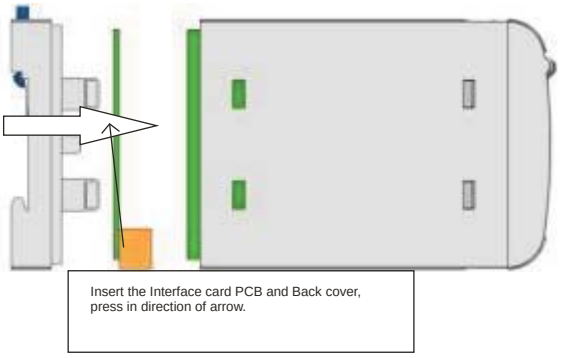
NOTE:
Black portion in above diagram indicate switch position.



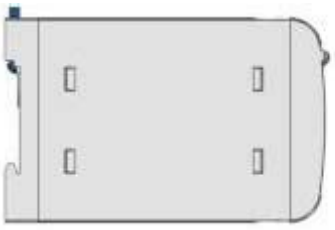
6) After changing the switches for desired Output, Insert the front cover.



7) After inserting the front cover insert the Interface card PCB and back cover..



8) After inserting the Back cover transducer, can be used for required application..



4. RS 485 (ModBus)

Ziegler PRO -V supports MODBUS (RS485) RTU protocol(2-wire).

Connection should be made using twisted pair shielded cable. All "A" and "B" connections are daisy chained together. The screens should also be connected to the "Gnd" terminal. To avoid the possibility of loop currents, an Earth connection should be made at one point on the network.Loop (ring) topology does not require any termination load. Line topology may or may not require terminating loads depending on the type and length of cable used. The impedance of the termination load should match the impedance of the cable and be at both ends of the line. The cable should be terminated at each end with a 120 ohm (1/4 Watt min.) resistor.

RS 485 network supports maximum length of 1.2km. Including the Master, a maximum of 32 instruments can be connected in RS485 network. The permissible address range for Ziegler PRO -V is between 1 and 247 for 32 instruments. Broadcast Mode (address 0) is not allowed.

The maximum latency time of an Ziegler PRO -V is 200ms i.e. this is the amount of time that can pass before the first response character is output.

After sending any query through software (of the Master) , it must allow 200 ms of time to elapse before assuming that the Ziegler PRO -V is not going to respond. If slave does not respond within 200 ms, Master can ignore the previous query and can issue fresh query to the slave.

The each byte in RTU mode has following format:

	8-bit binary, hexadecimal 0-9, A-F 2 hexadecimal characters contained in each 8-bit field of the message
Format of Data Bytes	4 bytes (32 bits) per parameter. Floating point format (to IEEE 754) Most significant byte first (Alternative least significant byte first)
Error Checking Bytes	2 byte Cyclical Redundancy Check (CRC)
Byte format	1 start bit, 8 data bits, least significant bit sent first 1 bit for even/odd parity 1 stop bit if parity is used; 1 or 2 bits if no parity

Communication Baud Rate is user selectable from the front panel between 2400, 4800, 9600, 19200 bps.

Function code :

03	Read Holding Registers	Read content of read /write location (4X)
04	Read input Registers	Read content of read only location (3X)
16	Presets Multiple Registers	Set the content of read / write locations (4X)

Exception Cases : An exception code will be generated when Ziegler PRO -V receives ModBus query with valid parity & error check but which contains some other error (e.g. Attempt to set floating point variable to an invalid value) The response generated will be "Function code" ORed with HEX (80H).
The exception codes are listed below

01	Illegal function	The function code is not supported by Ziegler PRO -V
02	Illegal Data Address	Attempt to access an invalid address or an attempt to read or write part of a floating point value
03	Illegal Data Value	Attempt to set a floating point variable to an invalid value

4.1 Accessing 3 X register for reading measured values:

Two consecutive 16 bit registers represent one parameter. Refer table 2 for the addresses of 3X registers (Parameters measured by the instruments).
Each parameter is held in the 3X registers. Modbus Code 04 is used to access all parameters.

Example :
To read parameter ,
Voltage : Start address= 00 (Hex) Number of registers = 02

Note : Number of registers = Number of parameters x 2

Each Query for reading the data must be restricted to 20 parameters or less. Exceeding the 20 parameter limit will cause a ModBus exception code to be returned.

Query :

01 (Hex)	04 (Hex)	00 (Hex)	00(Hex)	00 (Hex)	02(Hex)	91 (Hex)	CA (Hex)
Device Address	Function Code	Start Address High	Start Address Low	Number of Registers Hi	Number of Registers Lo	CRC Low	CRC High

Start Address High : Most significant 8 bits of starting address of the parameter requested.
Start Address low :Least significant 8 bits of starting address of the parameter requested.
Number of register Hi : Most significant 8 bits of Number of registers requested.
Number of register Lo : Least significant 8 bits of Number of registers requested.
(Note : Two consecutive 16 bit register represent one parameter.)

Response: Current (5.0V)

01 (Hex)	04 (Hex)	04 (Hex)	40 (Hex)	A0 (Hex)	00 (Hex)	00 (Hex)	EE (Hex)	66 (Hex)
Device Address	Function Code	Byte Count	Data Register1 High Byte	Data Register1 Low Byte	Data Register2 High Byte	Data Register2 Low Byte	CRC Low	CRC High

Byte Count : Total number of data bytes received.
Data register 1 High Byte : Most significant 8 bits of Data register 1 of the parameter requested.
Data register 1 Low Byte : Least significant 8 bits of Data register 1 of the parameter requested.
Data register 2 High Byte : Most significant 8 bits of Data register 2 of the parameter requested.
Data register 2 Low Byte : Least significant 8 bits of Data register 2 of the parameter requested.
(Note : Two consecutive 16 bit register represent one parameter.)

Table 2 : 3 X register addresses (measured parameters)

Address (Register)	Parameter No.	Parameter	Modbus Start Address Hex	
			High Byte	Low Byte
30001	1	Voltage	00	00

4.2 Accessing 4 X register for Reading & Writing :

Each setting is held in the 4X registers .ModBus code 03 is used to read the current setting and code 16 is used to write/change the setting. Refer Table 3 for 4 X Register addresses.

Example : Reading Device address
Device address : Start address= 0E (Hex) Number of registers = 02
Note :Number of registers = Number of Parameters x 2

Query :

Device Address	01 (Hex)
Function Code	03 (Hex)
Start Address High	00 (Hex)
Start Address Low	0E(Hex)
Number of Registers Hi	00 (Hex)
Number of Registers Lo	02 (Hex)
CRC Low	A5 (Hex)
CRC High	C8 (Hex)

Start Address High : Most significant 8 bits of starting address of the parameter requested.
Start Address low :Least significant 8 bits of starting address of the parameter requested.
Number of register Hi : Most significant 8 bits of Number of registers requested.
Number of register Lo : Least significant 8 bits of Number of registers requested.
(Note : Two consecutive 16 bit register represent one parameter.)

Response: Device address (1)

Device Address	01 (Hex)
Function Code	03 (Hex)
Byte Count	04 (Hex)
Data Register1 High Byte	3F (Hex)
Data Register1Low Byte	80 (Hex)
Data Register2 High Byte	00 (Hex)
Data Register2 Low Byte	00(Hex)
CRC Low	F7 (Hex)
CRC High	CF (Hex)

Byte Count : Total number of data bytes received.
Data register 1 High Byte : Most significant 8 bits of Data register 1 of the parameter requested.
Data register 1 Low Byte : Least significant 8 bits of Data register 1 of the parameter requested.
Data register 2 High Byte : Most significant 8 bits of Data register 2 of the parameter requested.
Data register 2 Low Byte : Least significant 8 bits of Data register 2 of the parameter requested.
(Note : Two consecutive 16 bit register represent one parameter.)

Example : Writing Device address

Device address : Start address= 0E (Hex) Number of registers = 02

Query:(Change Device address to 2)

Device Address	01 (Hex)
Function Code	10 (Hex)
Starting Address Hi	00 (Hex)
Starting Address Lo	0E (Hex)
Number of Registers Hi	00 (Hex)
Number of Registers Lo	02(Hex)
Byte Count	04 (Hex)
Data Register-1High Byte	40 (Hex)
Data Register-1 Low Byte	00(Hex)
Data Register-2 High Byte	00(Hex)
Data Register-2 Low Byte	00(Hex)
CRC Low	67 (Hex)
CRC High	E3 (Hex)

Byte Count : Total number of data bytes received.
Data register 1 High Byte : Most significant 8 bits of Data register 1 of the parameter requested.
Data register 1 Low Byte : Least significant 8 bits of Data register 1 of the parameter requested.
Data register 2 High Byte : Most significant 8 bits of Data register 2 of the parameter requested.
Data register 2 Low Byte : Least significant 8 bits of Data register 2 of the parameter requested.
(Note : Two consecutive 16 bit register represent one parameter.)

Response:

Device Address	01 (Hex)
Function Code	10 (Hex)
Start Address High	00 (Hex)
Start Address Low	0E(Hex)
Number of Registers Hi	00 (Hex)
Number of Registers Lo	02(Hex)
CRC Low	20 (Hex)
CRC High	0B (Hex)

Start Address High : Most significant 8 bits of starting address of the parameter requested.
Start Address low :Least significant 8 bits of starting address of the parameter requested.
Number of register Hi : Most significant 8 bits of Number of registers requested.
Number of register Lo : Least significant 8 bits of Number of registers requested.
(Note : Two consecutive 16 bit register represent one parameter.)

Table 3 : 4 X register addresses

Address (Register)	Parameter No.	Parameter	Read / Write	Modbus Start Address Hex	
				High Byte	Low Byte
40001	1	-	-	-	-
40003	2	Mode selection	R/Wp	00	02
40005	3	-	-	-	-
40007	4	P.T.Primary	R/Wp	00	06
40009	5	P.T.Secondary	R/Wp	00	08
40011	6	-	-	-	-
40013	7	-	-	-	-
40015	8	Device address	R/Wp	00	0E
40017	9	RS 485 Setup	R/Wp	00	10
40019	10	Password	R/Wp	00	12
40021	11	-	-	-	-
40023	12	-	-	-	-
40025	13	-	-	-	-
40027	14	Sim_Output A	Wp	00	1A
40029	15	Sim_Output B	Wp	00	1C
40031	16	Analog O/P Type 1	R/Wp	00	1E
40033	17	-	-	-	-
40035	18	Analog O/P Type 2	R/Wp	00	22
40037	19	-	-	-	-
40039	20	-	-	-	-

Explanation for 4 X register :

Address	Parameter	Description
—	—	—
40003	Mode Selection	This is used to select the Mode of operation. Normal mode = 1. Simulation mode = 2.
—	—	—
40007	PT Pimary	This address allows the user to read and write the PT Primary value. The maximum stable value is 400kV.
40009	PT Secondary	This address allows the user to read and write the PT secondary value
—	—	—
—	—	—
40015	Device Adress	This address is used to set the Device Address between 1 to 247.
40017	RS 485 Setup	This address is used to set the Baud rate, Parity, No of Stop bits.
40019	Password	This address is used to set & reset the password. Valid Range of Password can be set is 0000 - 9999 .
—	—	—
—	—	—
—	—	—
40027	Sim_Output A	This address is used to set the simulation Output A to 10% of Output by writing 1000 and 100% of Output by writing 10000 .
40029	Sim_Output B	This address is used to set the simulation Output B to 10% of Output by writing 1000 and 100% of Output by writing 10000 .
40031	Analog O/P Type 1	This address is used to set the Analog O/P Type 1 as Voltage/Current. Voltage = 1. Current = 2.
—	—	—
40035	Analog O/P Type 2	This address is used to set the Analog O/P Type 2 as Voltage/Current. Voltage = 1. Current = 2.
—	—	—
—	—	—

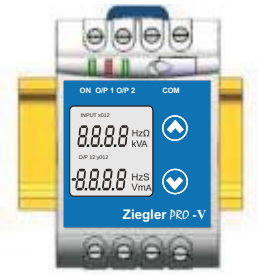
Table 4 : RS 485 Set-up Code

Baud Rate	Parity	Stop Bit	Decimal value
19200	NONE	01	12
19200	NONE	02	13
19200	EVEN	01	14
19200	ODD	01	15
9600	NONE	01	08
9600	NONE	02	09
9600	EVEN	01	10
9600	ODD	01	11
4800	NONE	01	04
4800	NONE	02	05
4800	EVEN	01	06
4800	ODD	01	07
2400	NONE	01	00
2400	NONE	02	01
2400	EVEN	01	02
2400	ODD	01	03

Note :
Codes not listed in the table above may give rise to unpredictable results including loss of communication. Exercise caution when attempting to change mode via direct Modbus writes.

5. Installation

The Ziegler PRO - V can be mounted either on a top-hat rail or directly on to a wall or a mounting plate.



As the front of the enclosure conforms to IP 40 it is protected from water spray from all directions, additional protection to the panel may be obtained by the use of an optional panel gasket. The terminals of the product should be protected from liquids.

The Ziegler PRO - V should be mounted in a reasonably stable ambient temperature and where the operating temperature is within the range -10 to 55°C . Vibration should be kept to a minimum and the product should not be mounted where it will be subjected to excessive direct sunlight.

Caution

1. **In the interest of safety and functionality this product must be installed by a qualified engineer, abiding by any local regulations.**
2. **Voltages dangerous to human life are present at some of the terminal connections of this unit. Ensure that all supplies are de-energised before attempting any connection or disconnection.**
3. **These products do not have internal fuses therefore external fuses must be used to ensure safety under fault conditions.**

5.1 EMC Installation Requirements

This product has been designed to meet the certification of the EU directives when installed to a good code of practice for EMC in industrial environments, e.g.

1. Screened output and low signal input leads or have provision for fitting RF suppression components, such as ferrite absorbers, line filters etc., in the event that RF fields cause problems.

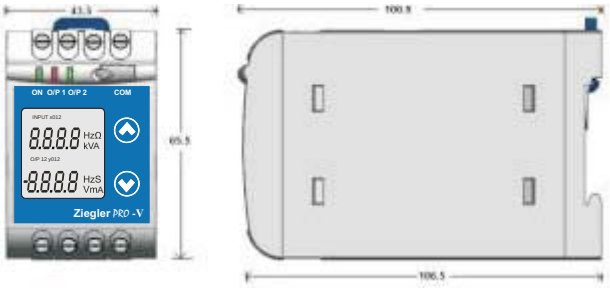
Note: It is good practice to install sensitive electronic instruments that are performing critical functions, in EMC enclosures that protect against electrical interference which could cause a disturbance in function.

2. Avoid routing leads alongside cables and products that are, or could be, a source of interference.

3. To protect the product against permanent damage, surge transients must be limited to 2kV pk. It is good EMC practice to suppress differential surges to 2kV at the source. The unit has been designed to automatically recover in the event of a high level of transients. In extreme circumstances it may be necessary to temporarily disconnect the auxiliary supply for a period of greater than 5 seconds to restore correct operation.
The Current inputs of these products are designed for connection in to systems via Current Transformers only, where one side is grounded.

4. ESD precautions must be taken at all times when handling this product.

5.2 Case Dimension and Panel Cut Out



5.3 Wiring

Input connections are made directly to screw-type terminals with indirect wire pressure. Choice of cable should meet local regulations. Terminal for both Current and Voltage inputs will accept up to 2x 2.5mm² or 1x6mm² cables.

5.4 Auxiliary Supply

Ziegler PRO - V should ideally be powered from a dedicated supply, however it may be powered from the signal source, provided the source remains within the limits of the chosen auxiliary voltage.

5.5 Fusing

It is recommended that all voltage lines are fitted with 1 amp HRC fuses.

5.6 Earth/Ground Connections

For safety reasons, CT secondary connections should be grounded in accordance with local regulations.

6. Specification :

Input:

Nominal input Voltage X2 (AC RMS) (PT Secondary range)	57V ≤ X2 ≤ 500 V
PT Primary range	57V to 400 kV
Nominal Frequency Fn	50 or 60 Hz
Nominal input Voltage burden	< 0.2 VA at U_N
Overload Capacity:	1.2 * X2 continuously, 2*X2 for 1 second, repeated 10 times at 10 minute intervals But maximum 300V with power supply powered from measuring input.

Auxiliary:

AC/DC Auxiliary Supply	60V…….300 VAC-DC ± 5%
AC/DC Auxiliary Supply frequency range	45 to 65 Hz
Auxiliary Supply consumption	≤ 8VA for one output ≤ 10VA for two output

Measuring Output Y(Single or Optional Dual):

Output type	Load independent DC Voltage or DC Current (Onsite selectable through DIP switches & Programming.)
Load independent DC output	0…20mA / 4…20mA OR 0…10V.
Output burden with DC current output Signal	0 ≤ R ≤ 15V/Y2
Output burden with DC voltage output Signal	Y2/(2 mA) ≤ R ≤ ∞
Current limit under overload R=0	≤ 1.25 * Y2 with current output ≤ 60 mA with Voltage output
Voltage limit under R=∞	< 1.25 * Y2 with voltage output ≤ 30 V with current output
Residual Ripple in Output signal	≤ 1% pk-pk
Response Time	300 ms.

Accuracy:(Acc. to IEC 60688)

Reference Value	Output end Value Y2 (Voltage or Current)
Basic Accuracy	0.2*C
Factor C (The Highest value applies)	

Linear characteristics:

$$C = \frac{1 - \frac{Y0}{Y2}}{1 - \frac{X0}{X2}} \text{ or } C=1$$

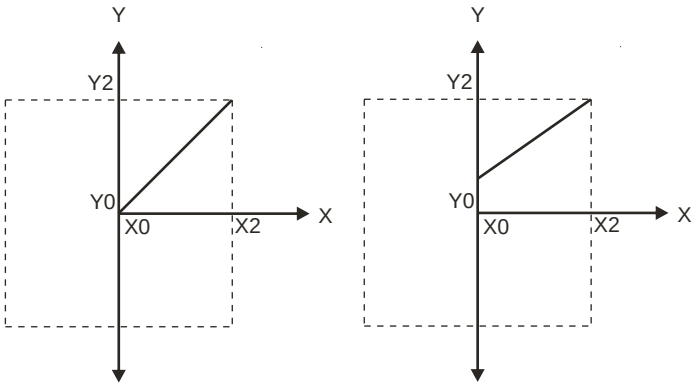
Bent characteristics:

$$C = \frac{Y1 - Y0}{X1 - X0} \cdot \frac{X2}{Y2} \text{ or } C=1$$

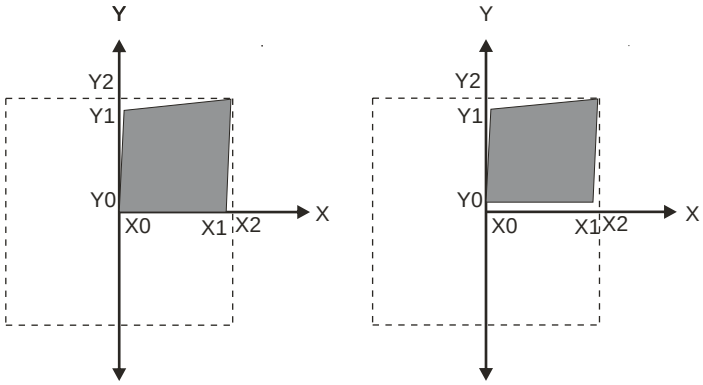
$$C = \frac{1 - \frac{Y1}{Y2}}{1 - \frac{X1}{X2}} \text{ or } C=1$$

Output characteristics:

1) Example of setting with Linear characteristics:



2) Example of setting with Bent characteristics:



X0 = Start value of input — Y0 = Start value of output

X1 = Elbow value of input — Y1 = Elbow value of output

X2 = End value of input — Y2 = End value of output

R_N = Rated value of output burden — U_N/I_N = Nominal input voltage/current

Reference conditions for Accuracy :

Ambient temperature	23°C +/- 1°C
Pre-conditioning	30 min acc. to IEC EN - 60688
Input Variable	Rated Voltage / Rated Current
Input waveform	Sinusoidal, Form Factor 1.1107
Input signal frequency	50....60Hz
Auxiliary supply voltage	Rated Value ±1%
Auxiliary supply frequency	Rated Value ±1%
Output Load	Rn = 7.5 V / Y2 ± 1%With DC current output signal. Rn = Y2 / 1 mA ± 1% With DC Voltage output signal.
Miscellaneous	Acc. to IEC EN - 60688
Additional Error : Temperature influence	± 0.2% /10°C
Influence of Variations:	As per IEC EN-60688 standard.
Output stability	< 30min

Safety:

Protection Class Protection	II (Protection Isolated, EN 61010) IP 40, housing acording to EN 60 529 IP 20,terminal according to EN 60 529
Pollution degree	2
Installation Category	III
Insulation Voltage	50Hz,1min. (EN 61 010-1) 5500V, Input versus outer surface 3700V, Input versus all other circuits 3700V, Auxiliary supply versus outer surface and output 490V, Output versus output versus each other versus outer surface.

Installation Data:

Mechanical Housing	Lexan 940 (polycarbonate) Flammability Class V-0 acc. To UL 94, self extinguishing, non dripping, free of halogen
Mounting position	Rail mounting / wall mounting
Weight	Approx. 0.4kg

Connection Terminal:

Connection Element	Conventional Screw type terminal with indirect wire pressure
Permissible cross section of the connection lead	≤ 4.0 mm single wire or 2 x 2.5 mm Fine wire

.Environmental:

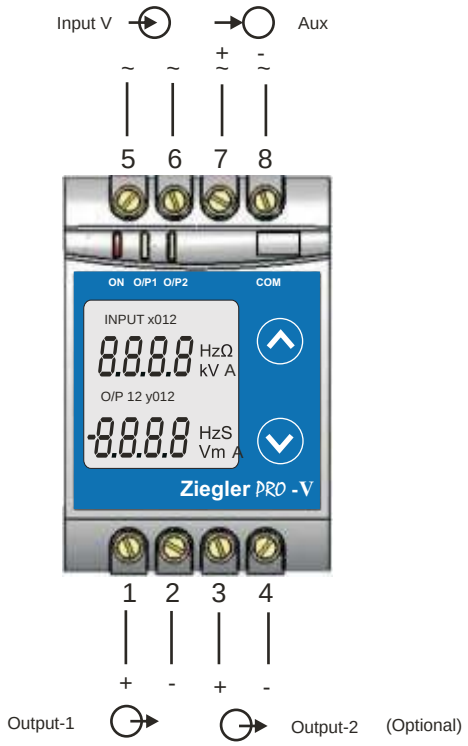
Nominal range of use	0 °C...23 °C... 45 °C(usage Group II)
Storage temperature	-40 °C to 70 °C
Relative humidity of annual mean	≤ 75%
Altitude	2000m max

Ambient tests:

EN 60 068-2-6	Vibration
Acceleration	± 2 g
Frequency range	10....150...10Hz,
Rate of frequency sweep	1 octave/minute
Number of cycles	10, in each of the three axes
EN 60 068-2-7	Shock
Acceleration	3 x 50g 3 shocks in each direction
EN 60 068-2-1/-2/-3	Cold, Dry, Damp heat
IEC 1000-4-2/-3/-4/-5/-6 EN 55 011	Electromagnetic compatibility.

7. Connection Diagram

Connection	Terminal details	
Measuring input	~ ~	5 6
Auxilliary Power supply	~ , + ~ , -	7 8
Measuring output - 1	+ -	1 2
Measuring output - 2	+ -	3 4



NOTES

Ziegler
Redefine Innovative Metering
made in Germany

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