



NewCode 4 to 20 mA Loop User Manual

Revision 1A
8 July 2015

NewElec (Pty) Ltd

Head Office
c/o Soutter & Maltzan Street
Pretoria-West
Gauteng
South-Africa

DRAFT



CONTENT

	Page
1. Abstract.....	3
2. Specifications.....	4
3. Parts.....	5
3.1 FPR0415 - NewCode 4 to 20mA unit.....	5
3.2 TBL0006 - TBUS.....	5
4. Wiring 4 to 20 mA Unit	6
4.1 Wired Self Powered	6
4.2 Wired Loop Powered	7
4.3 Connecting to the NewCode	7
5. Configuring NewCode 4 to 20 mA Unit	8
5.1 Input Configuration.....	9
5.2 Output Configuration	10

1. Abstract

NewCode 4 to 20 mA loop provides analogue 2 wire output and analogue input for the NewCode protection relay. This allows the NewCode to monitor and control analogue devices like control valves and position indication devices.

4 to 20 mA output control can be set to be a straight output or use a linear curve. The 4 to 20 mA input is read and passed to the NewCode. SCADA systems can access the 4 to 20 mA units output and inputs if the application requires so.

The manual "*NewCode user manual*" will provide a more detailed functional description. It is advisable to read through the "*NewCode user manual*" to be familiarized with the protection, functional and management features of the NewCode motor protect and control relay.

2. Specifications

General Data	Mounting Positions	<ul style="list-style-type: none"> ● Din rail
	Allowed Ambient Temperature	<ul style="list-style-type: none"> ● Operation : 0 °C to +60 °C
	Humidity	<ul style="list-style-type: none"> ● < 87%
Supply	Power Supply	<ul style="list-style-type: none"> ● 5 Vdc
	Consumption	<ul style="list-style-type: none"> ● 500 mA
Inputs	Minimum Supply Voltage	<ul style="list-style-type: none"> ● -40 Vdc
	Maximum Supply Voltage	<ul style="list-style-type: none"> ● +40 Vdc
	Input Current Maximum	<ul style="list-style-type: none"> ● 40 mA
	Excitation Voltage	<ul style="list-style-type: none"> ● +15 Vdc
	Excitation Current Maximum	<ul style="list-style-type: none"> ● 25 mA
	Accuracy	<ul style="list-style-type: none"> ● ±0.2 mA
Outputs	Minimum Supply Voltage	<ul style="list-style-type: none"> ● +12 Vdc
	Maximum Supply Voltage	<ul style="list-style-type: none"> ● + 40 Vdc
	Output Current	<ul style="list-style-type: none"> ● 1 to 20 mA
	Excitation Voltage	<ul style="list-style-type: none"> ● +15 Vdc
	Excitation Current Maximum	<ul style="list-style-type: none"> ● 25 mA
	Accuracy	<ul style="list-style-type: none"> ● ±0.2mA
NewCode	NewCode Firmware	<ul style="list-style-type: none"> ● Revision 3E is needed to work with the NewCode 4 to 20 mA
	Frontend Revision	<ul style="list-style-type: none"> ● Revision 2G is needed to configure the NewCode 3E 4 to 20 mA.

3. Parts

3.1 FPR0415 - NewCode 4 to 20mA unit

Base unit that connect to the NewCode via the TBUS.



3.2 TBL0006 - TBUS

Connected to the din rail and place.



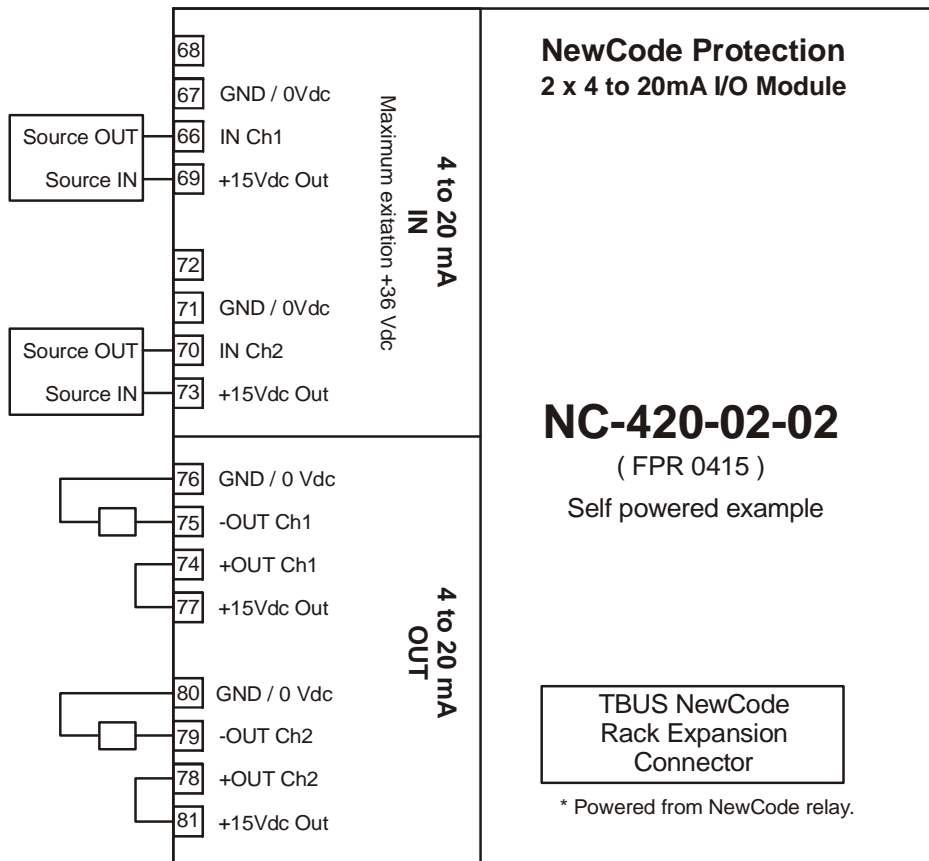
4. Wiring 4 to 20 mA Unit

Both inputs and outputs of the NewCode 4 to 20mA unit can be configured as self-powered or loop powered.

Input and output channels can be mixed for self or loop powered.

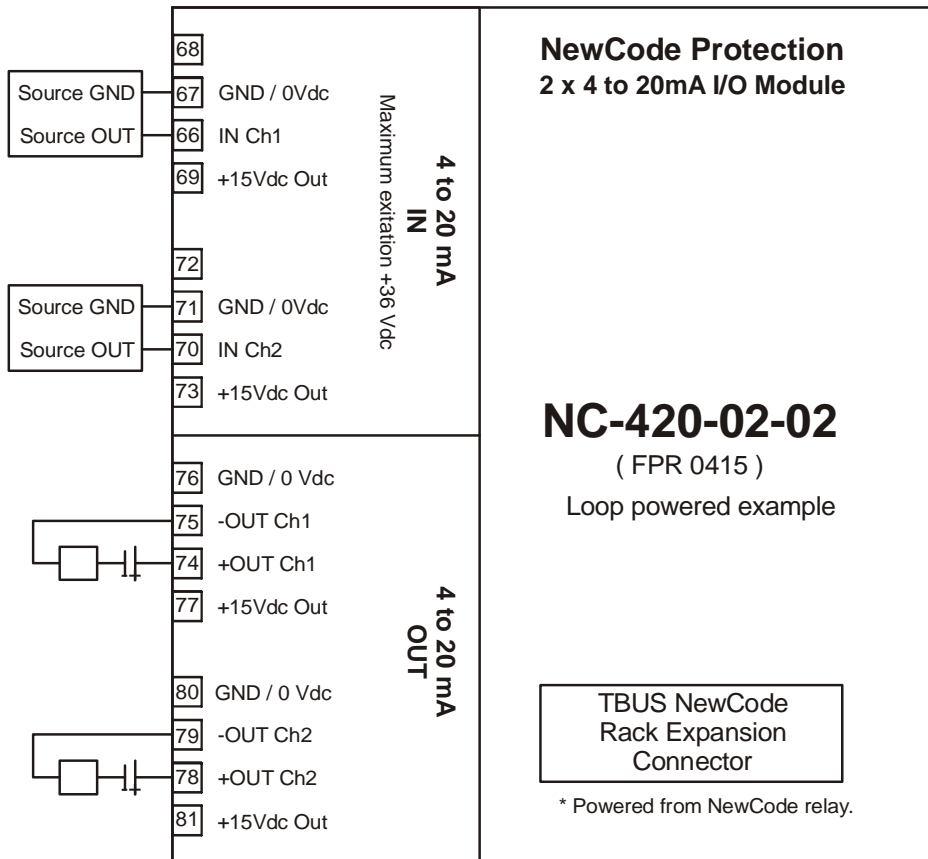
4.1 Wired Self Powered

Configuration is for input and output loops that do not have their own excitation supply.



4.2 Wired Loop Powered

Configuration allows using external excitation source instead of the NewCode 4 to 20 mA sources.



4.3 Connecting to the NewCode

Following procedure should be used to connect the NewCode 4 to 20 mA unit to the NewCode motor protection relay.

1. Connect the TBUS onto the din rail.
2. Snap NewCode motor protection relay onto the din rail.
3. Snap on NewCode 4 to 20 mA unit.

5. Configuring NewCode 4 to 20 mA Unit

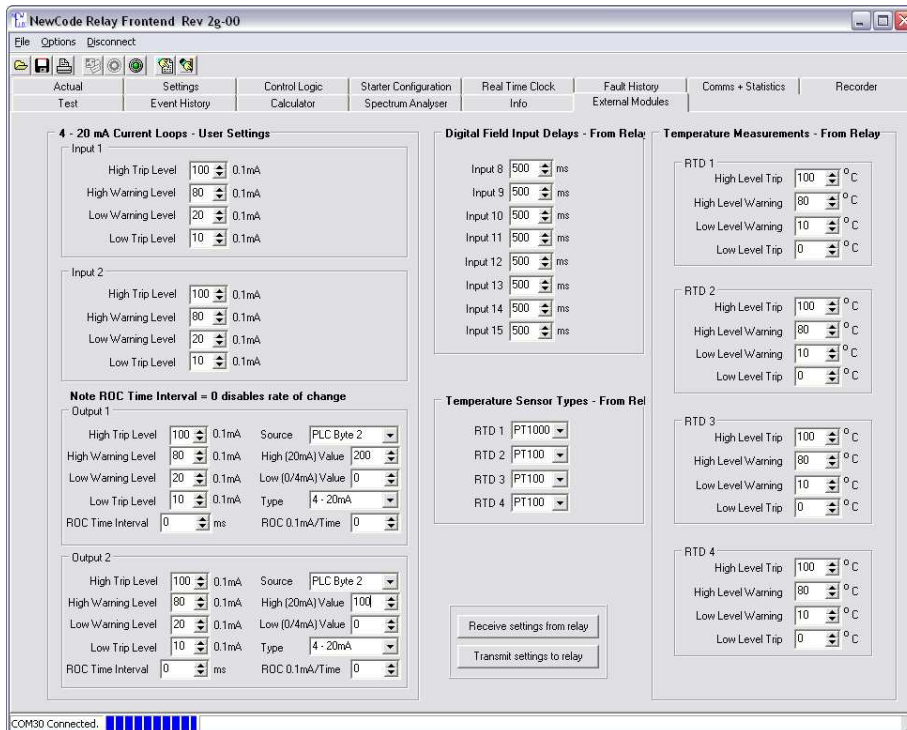
Configuration of the NewCode 4 to 20 mA unit is done via the NewCode motor protection relay. The NewCode motor protection relay retains the setting for the NewCode 4 to 20 mA unit.

On power up the NewCode motor protection relay transfer the settings to the 4 to 20 mA unit. After the configuration is done the NewCode 4 to 20 mA keeps the NewCode motor protection relay up to date with values from the inputs, and the NewCode motor protection relay sends the output values.



*NewCode motor protection relay needs to be revision 3E and up.
Frontend needs to be revision 2G and up.*

The configuration for the 4 to 20 mA can be found under the “External Modules” tab.



5.1 Input Configuration

Input 1			
High Trip Level	100	0.1mA	
High Warning Level	80	0.1mA	
Low Warning Level	20	0.1mA	
Low Trip Level	10	0.1mA	

Input 2			
High Trip Level	100	0.1mA	
High Warning Level	80	0.1mA	
Low Warning Level	20	0.1mA	
Low Trip Level	10	0.1mA	

- High trip level
 - Will trip the NewCode motor protection relay when the 4 to 20 mA input is above this level.
 - Can be set from 0 to 255.
 - Value is 0.1 of a mA. 40 will equal 4.0 mA.
- High warning level
 - NewCode motor protection will set the warning flag high when the 4 to 20 mA input level is above the level.
 - Can be set from 0 to 255.
 - Value is 0.1 of a mA. 40 will equal 4.0 mA.
- Low warning level
 - NewCode motor protection will set the warning flag high when the 4 to 20 mA input level is below the level.
 - Can be set from 0 to 255.
 - Value is 0.1 of a mA. 40 will equal 4.0 mA.
- Low trip level
 - Will trip the NewCode motor protection relay when the 4 to 20 mA input is below this level.
 - Can be set from 0 to 255.
 - Value is 0.1 of a mA. 40 will equal 4.0 mA.

5.2 Output Configuration

Note ROC Time Interval = 0 disables rate of change

Output 1

High Trip Level	100	0.1mA	Source	PLC Byte 2
High Warning Level	80	0.1mA	High (20mA)	PLC Byte 2
Low Warning Level	20	0.1mA	Low (0/4mA)	PLC Byte 3
Low Trip Level	10	0.1mA	Type	I Level
ROC Time Interval	0	ms	ROC 0.1mA	I Red
				I White
				I Blue
				I Unbalance
				V Ph Max

Output 2

High Trip Level	100	0.1mA	Source	PLC Byte 2
High Warning Level	80	0.1mA	High (20mA) Value	100
Low Warning Level	20	0.1mA	Low (0/4mA) Value	0
Low Trip Level	10	0.1mA	Type	4 - 20mA
ROC Time Interval	0	ms	ROC 0.1mA/Time	0

- High trip level
 - Will trip the NewCode motor protection relay when the 4 to 20 mA output is above this level.
 - Can be set from 0 to 255.
 - Value is 0.1 of a mA. 40 will equal 4.0 mA.
- High warning level
 - NewCode motor protection will set the warning flag high when the 4 to 20 mA output level is above the level.
 - Can be set from 0 to 255.
 - Value is 0.1 of a mA. 40 will equal 4.0 mA.
- Low warning level
 - NewCode motor protection will set the warning flag high when the 4 to 20 mA output level is below the level.
 - Can be set from 0 to 255.
 - Value is 0.1 of a mA. 40 will equal 4.0 mA.
- Low trip level
 - Will trip the NewCode motor protection relay when the 4 to 20 mA output is below this level.
 - Can be set from 0 to 255.
 - Value is 0.1 of a mA. 40 will equal 4.0 mA.

- Source is the analogue input signal that will be used to output to the 4 to 20 mA unit.
 - PT100 and PT1000 value is offset with 30.
 - 0 Degree C value will be 30.
- Type, mode that the 4 to 20mA is setup in.
 - 0 to 20mA (Current unit still outputs 1mA).
 - 4 to 20 mA.
 - Bypass.
 - Bypass ignores the High and Low value for the linear output.
 - Value in is passed directly to the output.
- High (20mA) Value.
 - Will be the upper limit of the linear curve.
 - A lower value then the Low (0/4mA) Value will give you an inverse curve.
- Low (0/4mA) Value.
 - Will be the upper limit of the linear curve.
 - A higher value then the High (20mA) Value will give you an inverse curve.
- ROC Time Interval
 - Range 0 to 10000 ms at an incremental of 50ms.
 - Setting this value to 0 will disable the rate of change.
 - Time interval of when the next increment or decrement will happen at ROC 0.1mA/Time.
- ROC 0.1mA/Time
 - Range 0 to 99 of 0.1mA.
 - Setting this value to 0 will disable the rate of change.
 - Amount of 0.1mA the output signal needs increment or decrement at the next ROC Time Interval.