

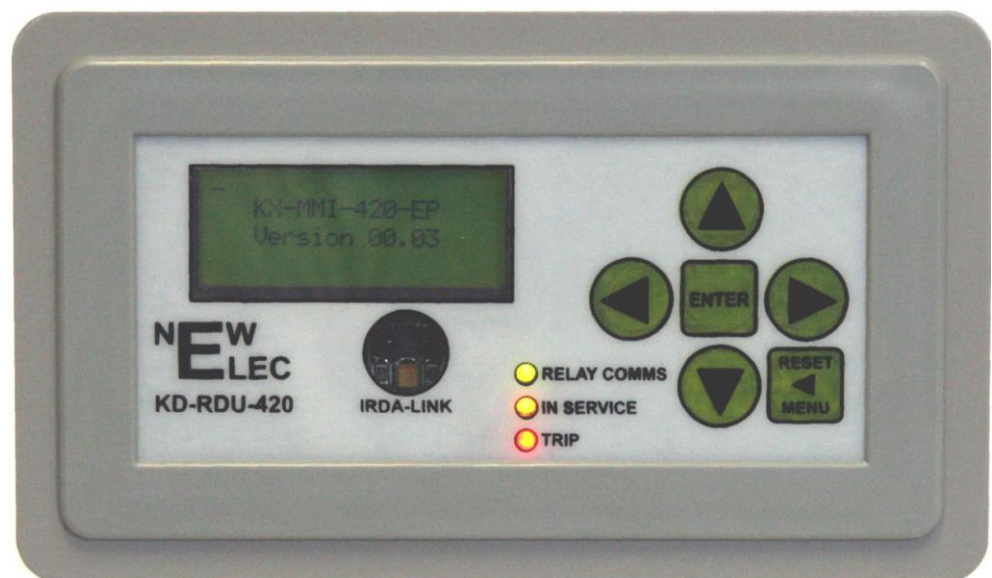


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## KD-Relay Man Machine Interface 4x20 Display Explosion Proof

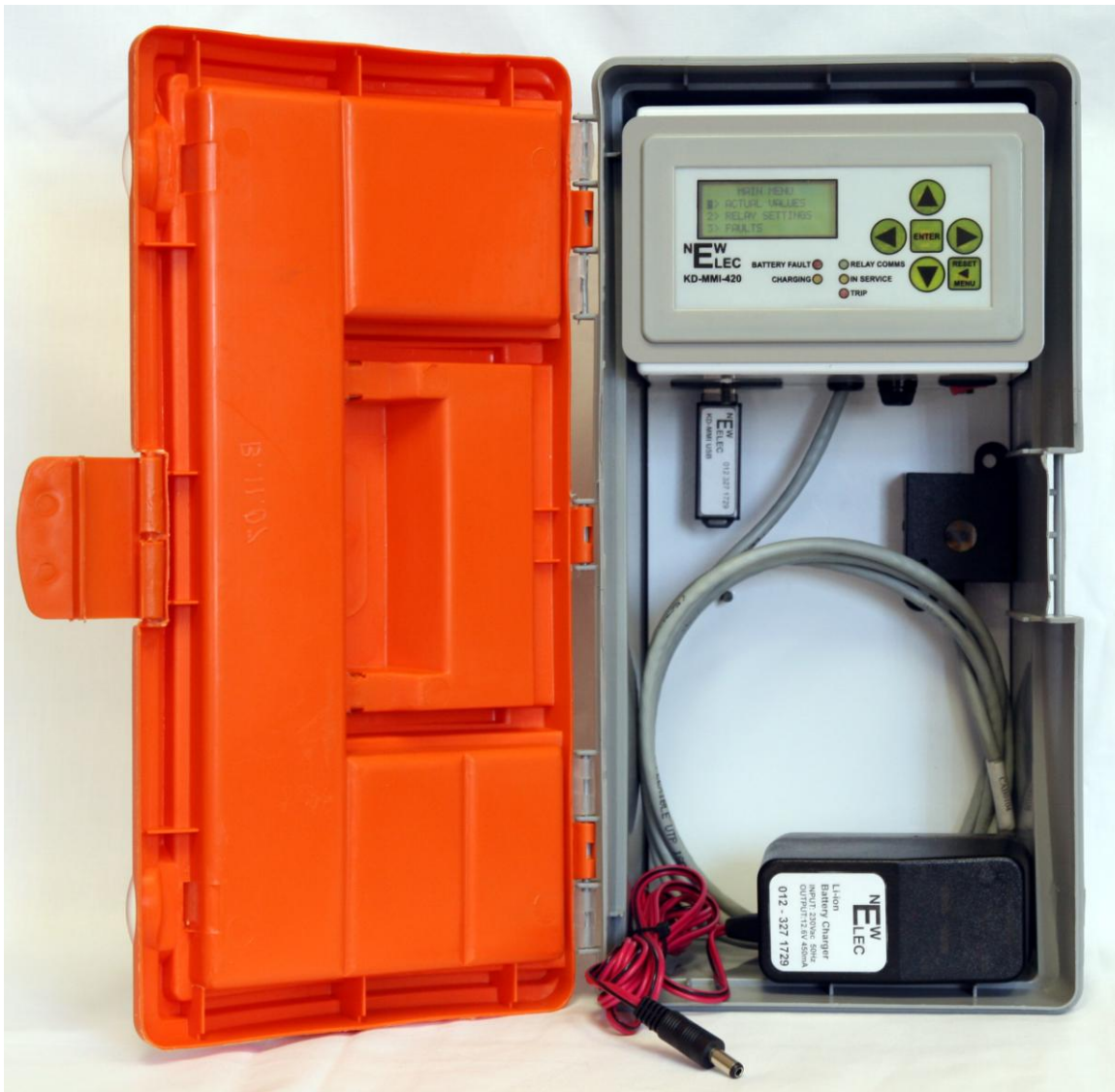
### User Manual

KD-MMI-420-EP  
Version 00.01  
11 May 2009



Revision History		
Date	Revision	Description

Approvals			
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# 1 Introduction

The KD-MMI-420-EP (KD-Relay Man Machine Interface 4x20 Character Display Explosion Proof) main purpose is to set up the KD-Relay without the use of a laptop.

Communication is done with the use of an infrared cable

## 2 Charging The Battery

A 9Vdc to 12Vdc 500mAmp power supply can be used to charge the lithium-ion battery inside of the KD-MMI-420-EP.

If the battery charging fault LED flashes it means that the battery pack is too hot to charge.

If the battery charging LED is solidly on then the battery is charging. When the battery charging LED is flashing it means that the charging circuit has gone into trickle charging mode.

### 3 USB Stick

**!!! IMPORTANT !!!**

**Before inserting a USB stick.**

- **The USB stick needs to be formatted with a FAT32 system.**
- **Insert and remove USB stick only when KD-MMI-420-EP is powered down. If the KD-MMI-420-EP is busy with the USB stick and it is removed it could result in file corruption or USB stick corruption.**
- **A green flashing LED next to the USB stick means that the KD-MMI-420-EP is busy reading or writing data to the USB stick. DO NOT REMOVE USB STICK AT THAT STATE. Rather switch off the KD-MMI-420-EP.**

**Make sure that the file lengths are always 8 characters long. 12345678.SET.**

The USB stick can be formatted to FAT32 in the following manner.

- Insert the USB stick into the PC.
- After the PC has detected a USB stick close the window that windows opens after a stick has been detected. Make sure no application is using the USB stick.
- Open **“MY COMPUTER”** or **“EXPLORER”**.
- Right click on the USB stick drive.
- Left click on **”FORMAT”**.
- Under **“FILE SYSTEM”** select FAT32.
- Left click ok.
- After the USB stick has been formatted left click **“OK”** and remove USB disk.
- The USB disk will now be ready to use on the KD-MMI-420-EP.

The reason for this is that the USB driver still works with the old DOS system. And the memory stick needs a drive index.

Make sure that the USB-Drive is showing a green light before using the USB stick.

Even thou your USB stick can store lots of data on its drive. The KD-MMI-420-EP will only show 65535 file names due to limitations in the microcontroller.

Another feature that is not present is to rename a file or to delete a file due to limitations in the microcontroller.

Fault files xxx.FLT can be viewed with a spreadsheet application like Microsoft Excel or a word-processing dong document like Notepad.

Event files xxx.EVT can be viewed with a spreadsheet application like Microsoft Excel or a word-processing dong document like Notepad.

Setting files xxx.SET can be viewed with the help of the KD-Relay front-end.

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## 4 Connecting To The Relay

### **!!! IMPORTANT !!!**

**Make sure that the communication path between the IRDA devices is shorter than a meter. Also make sure that there is no solid debris between the two devices.**

There are three points where you can connect to the KD-Relay with the KD-MMI-420-EP.

- KD-I2C-FLED IRDA panel.
- KD-RDU-420 IRDA panel.
- KD-IRDA module.

Line up the KD-MMI-420-EP IRDA to one of the devices listed above.

When communications is establish. The comms LED will be on. If communication is broken the comms LED will then be turned off.

## 5 Other Indications

The “**IN SERVICE**” LED will only be on when current is present. If no current is present the LED will then be off.

The “**TRIP**” LED will indicate if there is a fault present on the KD-Relay. The “**RESET**” key can be pressed any were to reset the fault.

## 6 Going Through The Menus

### 6.1 Navigating

Navigating through the menus are easily done by the use of the direction buttons, enter key and reset key.

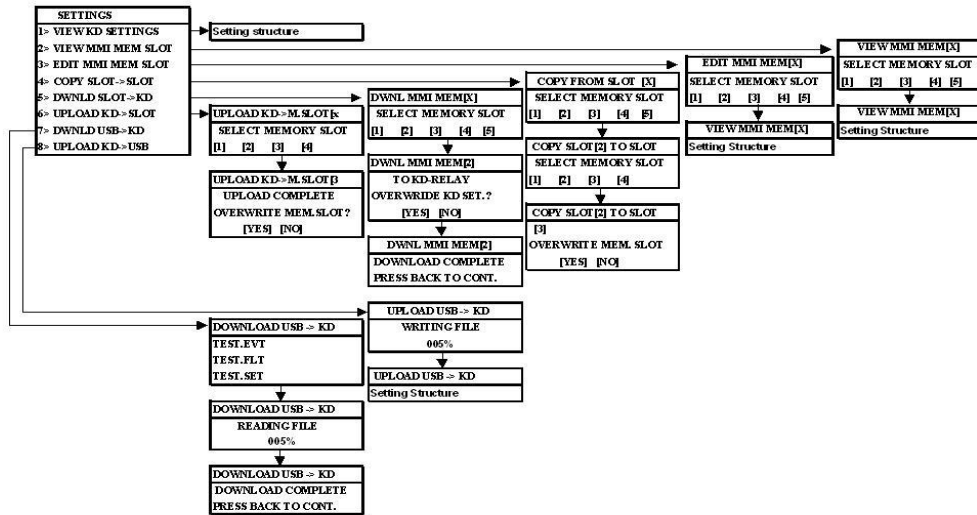
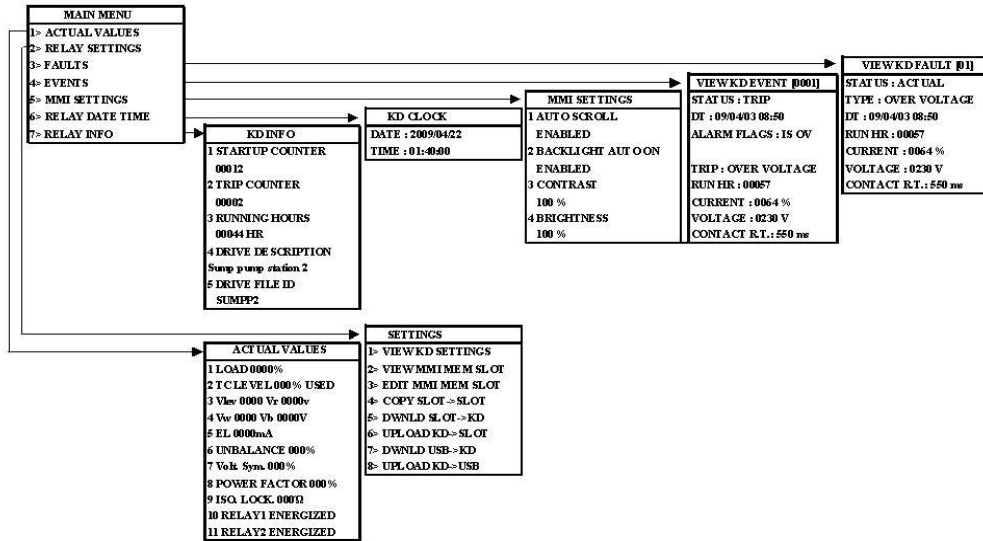
- UP button will scroll up in a menu. Or when in edit mode increases a value at the digit that the cursor is present.
- DOWN button will scroll down in a menu. Or when in edit mode decreases a value at the digit that the cursor is present.
- LEFT button will allow you to go left when editing a value in edit mode.
- RIGHT button will allow you to go right when editing a value in edit mode.
- ENTER will let you go into a submenu or confirm a change that you did in a value in edit mode.
- RESET/MENU will let you go one back in the menu structure or reset the value that you changed in edit mode.

The menu structure appears as follow:

<p style="text-align: center;"><b>MAIN MENU</b> <b><u>1</u>&gt; ACTUAL VALUES</b> <b>2&gt; RELAY SETTINGS</b> <b>3&gt; FAULTS</b></p>
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- Line 1 will always indicate where you are in the menu structure.
- A flashing cursor means that you can go into the selected menu structure, you are busy editing a value or making a selection.

## 6.2 Menu Layout



Setting Structure	28 EARTH LEAKAG TRIP	56 TABLE3 INPUT 1
1 TC CLASS SELECTED	ENABLED	ZERO CONSTANT
015 SEC	29 LOWPASS FILTER	57 TIMER1 TIME OUT
2 VOLTAGE SELECTED	ENABLED	00000 SEC
110 V	30 NO. LO CECOUT T.	58 TIMER1 STARTIN
3 WYM TRIP LEVEL	ENABLED	ZERO CONSTANT
050 %	31 FREQ QUENCY TRIP	59 TIMER1 RESET IN
4 UNBAL TRIP LEVEL	ENABLED	ZERO CONSTANT
020 %	32 AUTO TC RESET CAL	60 TIMER2 TIME OUT
5 UNBAL TRIP DELAY	ENABLED	00000 SEC
010 SEC	33 STARTS PER HOUR	61 TIMER2 STARTIN
6 U/C TRIP LEVEL	ENABLED	ZERO CONSTANT
063 %	34 VOLT PHASE REV.	62 TIMER2 RESET IN
7 U/C TRIP DELAY	ENABLED	ZERO CONSTANT
010 SEC	35 VECTORIAL STALL T	63 START MOTOR
8 EL TRIP LEVEL	ENABLED	00.00
00900 mA	36 TABLE1 MASE 0&1	64 STOP MOTOR
9 EL TRIP DELAY	000.0 000.0	00.00
00100 mSEC	37 TABLE1 MASE 2&3	65 REALY 2 INPUTSIG
10 EL CURVES ELECT	000.0 000.0	ZERO CONSTANT
INST	38 TABLE1 MASE 4&5	
11 STARTS PER HOUR	000.0 000.0	
006	39 TABLE1 MASE 6&7	
12 U/C STARTUP T DEL	000.0 000.0	
200 SEC	40 TABLE1 INPUT 3	
13 TC RESET LEVEL	ZERO CONSTANT	
070 %	41 TABLE1 INPUT 2	
14 CONSEC START LIM	ZERO CONSTANT	
003	42 TABLE1 INPUT 1	
15 RUNSTALL T LEVEL	ZERO CONSTANT	
00300 %	43 TABLE2 MASE 0&1	
16 RUNSTALL TIME	000.0 000.0	
001 SEC	44 TABLE2 MASE 2&3	
17 U/C TRIP	000.0 000.0	
ENABLED	45 TABLE2 MASE 4&5	
18 UNDER VOLT TRIP	000.0 000.0	
ENABLED	46 TABLE2 MASE 6&7	
19 OVER VOLT TRIP	000.0 000.0	
ENABLED	47 TABLE2 INPUT 3	
20 VOLT SYMT TRIP	ZERO CONSTANT	
ENABLED	48 TABLE2 INPUT 2	
21 FAILSAFE	ZERO CONSTANT	
ENABLED	49 TABLE2 INPUT 1	
22 UNBALANCE TRIP	ZERO CONSTANT	
ENABLED	50 TABLE3 MASE 0&1	
23 PHASE ROT TRIP	000.0 000.0	
ENABLED	51 TABLE3 MASE 2&3	
24 SHORT CIRC TRIP	000.0 000.0	
ENABLED	52 TABLE3 MASE 4&5	
25 SINGLE PHASE TRIP	000.0 000.0	
ENABLED	53 TABLE3 MASE 6&7	
26 RUNNING STALL T.	000.0 000.0	
ENABLED	54 TABLE3 INPUT 3	
27 U/C PHASE S. T.	ZERO CONSTANT	
ENABLED	55 TABLE3 INPUT 2	
	ZERO CONSTANT	

## 6.2.1 MAIN MENU

MAIN MENU is the root of your menu structure. Only three lines of selections can display at all times.

The MAIN MENU layout looks as follow:

<p style="text-align: center;"><b>MAIN MENU</b></p> <p><b>1&gt; ACTUAL VALUES</b></p> <p><b>2&gt; RELAY SETTINGS</b></p> <p><b>3&gt; FAULTS</b></p> <p><b>4&gt; EVENTS</b></p> <p><b>5&gt; MMI SETTINGS</b></p> <p><b>6&gt; RELAY DATE TIME</b></p> <p><b>7&gt; RELAY INFO</b></p>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

From here you can go into the following options:

- ACTUAL VALUES will display all the changing info like current and voltage level.
- RELAY SETTINGS will allow reading, changing, uploading and downloading of the KD-Relay settings.
- FAULTS will allow you to view and save the 60 faults on the KD-Relay.
- EVENTS will allow you to view and save the 2000 events on the KD-Relay.
- MMI SETTINGS will allow you to change the appearance and features of the MMI.
- RELAY DATE TIME will allow you to view the clock on the KD-Relay as well to adjust it.
- RELAY INFO will allow you to view and change statistical data and user data of the KD-Relay.

After letting the cursor flash on the selection that you want. If you want to enter the selection press the ENTER key.

## 6.2.2 ACTUAL VALUES

Actual values will show values that are constantly changing and show what the KD-Relay current status is.

Actual values menu structure will look as follow:

<p><b>ACTUAL VALUES</b> <b>1 LOAD 0000%</b> <b>2 TC LEVEL 000% USED</b> <b>3 Vlev 0000 Vr 0000v</b> <b>4 Vw 0000 Vb 0000V</b> <b>5 EL 0000mA</b> <b>6 UNBALANCE 000%</b> <b>7 Volt. Sym. 000%</b> <b>8 POWER FACTOR 000%</b> <b>9 ISO. LOCK. 000Ω</b> <b>10 RELAY1 ENERGIZED</b> <b>11 RELAY2 ENERGIZED</b></p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

### 6.2.3 RELAY SETTINGS

Here you can save and load settings of the KD-Relay to different mediums.

**!!! IMPORTANT !!!**

**Memory slot number 5 will always have the last setting that was uploaded or downloaded to the KD-Relay. Upon connection with the KD-Relay the MMI will automatically upload settings to slot number 5.**

The menu structure of the settings menu look as follow:

- |                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p style="text-align: center;"><b>SETTINGS</b></p> <ul style="list-style-type: none"><li><b>1&gt; VIEW KD SETTINGS</b></li><li><b>2&gt; VIEW MMI MEM SLOT</b></li><li><b>3&gt; EDIT MMI MEM SLOT</b></li><li><b>4&gt; COPY SLOT-&gt;SLOT</b></li><li><b>5&gt; DWNLD SLOT-&gt;KD</b></li><li><b>6&gt; UPLOAD KD-&gt;SLOT</b></li><li><b>7&gt; DWNLD USB-&gt;KD</b></li><li><b>8&gt; UPLOAD KD-&gt;USB</b></li></ul> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 6.2.3.1 VIEW KD SETTINGS

Here you can view the KD-Relay settings. The values cannot be edited in this menu. You can hold down the up and down key to scroll faster through the settings.

The menu structure will appear as follow:

<b>VIEW KD SETTINGS</b>
<b>1 TC CLASS SELECTED</b>
<b>015 SEC</b>
<b>2 VOLTAGE SELECTED</b>
<b>110 V</b>
<b>3 VSYM. TRIP LEVEL</b>
<b>058 %</b>
<b>4 UNBAL TRIP LEVEL</b>
<b>020 %</b>
<b>5 UNBAL TRIP DELAY</b>
<b>010 SEC</b>
<b>6 U/C TRIP LEVEL</b>
<b>063%</b>
<b>7 U/C TRIP DELAY</b>
<b>010 SEC</b>
<b>8 EL TRIP LEVEL</b>
<b>00900 mA</b>
<b>9 EL TRIP DELAY</b>
<b>00100 mSEC</b>
<b>10 EL CURVE SELECT</b>
<b>INST</b>
<b>11 STARTS PER HOUR</b>
<b>006</b>
<b>12 U/C STARTUP T.DEL</b>
<b>200 SEC</b>
<b>13 TC RESET LEVEL</b>
<b>070 %</b>
<b>14 CONSEC START LIM.</b>
<b>003</b>
<b>15 RUN STALL T. LEVEL</b>
<b>00300 %</b>
<b>16 RUN STAL H. TIME</b>
<b>001 SEC</b>
<b>17 U/C TRIP</b>
<b>ENABLED</b>
<b>18 UNDER VOLT TRIP</b>
<b>ENABLED</b>
<b>19 OVER VOLT TRIP</b>
<b>ENABLED</b>

- 20 VOLT SYMT TRIP  
ENABLED**
- 21 FAIL SAFE  
ENABLED**
- 22 UNBALANCE TRIP  
ENABLED**
- 23 PHASE ROT. TRIP  
ENABLED**
- 24 SHORT CIRC. TRIP  
ENABLED**
- 25 SINGLE PHASE TRIP  
ENABLED**
- 26 RUNNING STALL T.  
ENABLED**
- 27 U/C PHASE S. T.  
ENABLED**
- 28 EARTH LEAKAG TRIP  
ENABLED**
- 29 LOW PASS FILTER  
ENABLED**
- 30 ISO. LOCKOUT T.  
ENABLED**
- 31 FREQUENCY TRIP  
ENABLED**
- 32 AUTO TC RESET CAL  
ENABLED**
- 33 STARTS PER HOUR  
ENABLED**
- 34 VOLT PHASE REV.  
ENABLED**
- 35 VECTORIAL STALL T  
ENABLED**
- 36 TABLE 1 MASK 0&1  
000:0 000:0**
- 37 TABLE 1 MASK 2&3  
000:0 000:0**
- 38 TABLE 1 MASK 4&5  
000:0 000:0**
- 39 TABLE 1 MASK 6&7  
000:0 000:0**
- 40 TABLE 1 INPUT 3  
ZERO CONSTAND**
- 41 TABLE 1 INPUT 2  
ZERO CONSTAND**
- 42 TABLE 1 INPUT 1  
ZERO CONSTAND**

**43 TABLE 2 MASK 0&1**  
**000:0 000:0**  
**44 TABLE 2 MASK 2&3**  
**000:0 000:0**  
**45 TABLE 2 MASK 4&5**  
**000:0 000:0**  
**46 TABLE 2 MASK 6&7**  
**000:0 000:0**  
**47 TABLE 2 INPUT 3**  
**ZERO CONSTAND**  
**48 TABLE 2 INPUT 2**  
**ZERO CONSTAND**  
**49 TABLE 2 INPUT 1**  
**ZERO CONSTAND**  
**50 TABLE 3 MASK 0&1**  
**000:0 000:0**  
**51 TABLE 3 MASK 2&3**  
**000:0 000:0**  
**52 TABLE 3 MASK 4&5**  
**000:0 000:0**  
**53 TABLE 3 MASK 6&7**  
**000:0 000:0**  
**54 TABLE 3 INPUT 3**  
**ZERO CONSTAND**  
**55 TABLE 3 INPUT 2**  
**ZERO CONSTAND**  
**56 TABLE 3 INPUT 1**  
**ZERO CONSTAND**  
**57 TIMER 1 TIME OUT**  
**00000 SEC**  
**58 TIMER 1 START IN**  
**ZERO CONSTAND**  
**59 TIMER 1 RESET IN**  
**ZERO CONSTAND**  
**60 TIMER 2 TIME OUT**  
**00000 SEC**  
**61 TIMER 2 START IN**  
**ZERO CONSTAND**  
**62 TIMER 2 RESET IN**  
**ZERO CONSTAND**  
**63 START MOTOR**  
**00:00**  
**64 STOP MOTOR**  
**00:00**  
**65 REALY 2 INPUT SIG**  
**ZERO CONSTAND**

### 6.2.3.2 VIEW MMI MEM SLOT

Here you can view the KD-MMI-420-EP memory slots that have been saved from the KD-Relay. There are 5 memory slots that you can choose to view. The values cannot be edited in this menu.

First you need to select a memory slot. This can be done that the cursor is flashing over the slot that you want to select.

Pressing the right and left keys will let you jump between the memory slots to select.

This screen will look as follow:

<b>VIEW MMI MEM[X]</b>
<b>SELECT MEMORY SLOT</b>
<b>[1] [2] [3] [4] [5]</b>

After you pressed enter and selected a slot the following screen will appear below. The settings sequence will be the same as chapter 6.2.3.1 screen except that the values you are seeing is stored in the MMI.

You can also hold down the up and down key to scroll faster through the settings.

The menu structure will appear as follow:

<b>VIEW MMI MEM[2]</b>
<b>1 TC CLASS SELECTED</b>
<b>015 SEC</b>
<b>2 VOLTAGE SELECTED</b>

### 6.2.3.3 EDIT MMI MEM SLOT

Here you can edit the memory slot. After editing the memory slot you can select to download the edited slot to the KD-Relay.

You can only edit slot 1 to 4. 5 is reserved at the last settings that was uploaded or downloaded to the KD-Relay.

Before editing a slot you need to select which slot to edit.

<b>EDIT MMI MEM[X]</b> <b>SELECT MEMORY SLOT</b> [1] [2] [3] [4]
------------------------------------------------------------------------

After enter is pressed the setting structure will be displayed. The settings menu looks the same as in chapter 6.2.3.1.

<b>EDIT MMI MEM[2]</b> <b>1 TC CLASS SELECTED</b> <b>015 SEC</b> <b>2 VOLTAGE SELECTED</b>
-----------------------------------------------------------------------------------------------------

Scroll up and down to the setting that you want to edit. When the cursor is next to the setting that you want to edit press enter.

You will see that the cursor will start flashing on the setting that you want to edit. Press up and down to change the value.

You can also increment or decrement the value faster by changing the position on the value by pressing right and left.

After editing the value you can press enter. The cursor will stop blinking and the value will be updated in memory. If you made a mistake and did not want to edit the value and the cursor is still blinking you can press reset to reset the value.

**!!! IMPORTANT !!!**

**After enter key is pressed the value will be changed.**

**U/C TRIP LEVEL can't be adjusted.**

### 6.2.3.4 COPY SLOT->SLOT

Here you can copy a slot in memory from one slot to the other.

First you must select the slot that you want to copy from.

The screen will look as follow:

<b>COPY FROM SLOT [X]</b> <b>SELECT MEMORY SLOT</b> [1] [2] [3] [4] [5]
-------------------------------------------------------------------------------

After selecting the memory slot that you want to copy from you must select the slot that you want to copy too. You will see that you can only select memory slot 1 to 4. Memory slot 5 is reserved for last settings of the KD-Relay.

<b>COPY SLOT[2] TO SLOT</b> <b>SELECT MEMORY SLOT</b> [1] [2] [3] [4]
-----------------------------------------------------------------------------

After selecting the memory slot that you want to copy too. The KD-MMI-420-EP will ask you to confirm your decision.

<b>COPY SLOT[2] TO SLOT</b> [3] <b>OVERWRITE MEM. SLOT</b> [YES] [NO]
--------------------------------------------------------------------------------

After pressing the “ENTER” key on “YES” memory slot 3 will be updated with values from memory slot 2.

If “NO” is pressed then the memory slot will not be updated.

### 6.2.3.5 DWNLD SLOT->KD

Here you select a memory slot that you want to download to the KD-Relay.

First you have to select a memory slot that you want to download to the KD-Relay.

```
DWNL MMI MEM[X]
SELECT MEMORY SLOT
[1]  [2]  [3]  [4]  [5]
```

After making your selection the KD-MMI-420-EP will prompt if you are sure that you want to overwrite the KD-Relay settings.

```
DWNL MMI MEM[2]
TO KD-RELAY
OVERWRITE KD SET.?
[YES]  [NO]
```

After selecting “YES” the selected memory slot will be downloaded to the KD-Relay.

The settings will be confirmed that it was downloaded.

```
DWNL MMI MEM[2]
DOWNLOAD COMPLETE
PRESS MENU TO CONT.
```

Your KD-Relay is now updated with the new settings.

### 6.2.3.6 UPLOAD KD->SLOT

You can upload the settings from the KD-Relay into the KD-MMI-420-EP memory slot.

The KD-MMI-420-EP will first prompt you to the location that you want to upload the settings too.

```
UPLOAD KD->M.SLOT[x
SELECT MEMORY SLOT
[1] [2] [3] [4]
```

You can select memory slot 1 to 4. After selecting a slot the KD-MMI-420-EP will upload the settings.

The KD-MMI-420-EP will then ask conformation that you do want to overwrite the slot.

```
UPLOAD KD->M.SLOT[3
UPLOAD COMPLETE
OVERWRITE MEM.SLOT?
[YES] [NO]
```

### 6.2.3.7 DWNLD USB->KD

**!!! IMPORTANT !!!**

**Make sure that USB stick is present before going into USB functions.  
Please make sure that all files needed for the KD-Relay is 8 characters long  
excluding the extension eg. 12345678.SET.**

**If writing or reading from a file fails. Toggle power of the KD-MMI-420-EP**

**If trying to read a file. Make sure that it is a valid KD-Relay setting file.**

The KD-MMI-420-EP will show you a list of file contained on the USB stick.

<b>DOWNLOAD USB -&gt; KD</b> <b>TEST.EVT</b> <b>TEST.FLT</b> <b>TEST.SET</b>
---------------------------------------------------------------------------------------

.EVT are event files that have been read from the KD-Relay.  
.FLT are fault records that have been read from the KD-Relay.  
.SET are setting files that have been read from the KD-Relay.

After selecting a correct setting file the KD-MMI-420-EP will start reading the file.

<b>DOWNLOAD USB -&gt; KD</b> <b>READING FILE</b> <b>000%</b>
--------------------------------------------------------------------

After the file has been successfully read the KD-MMI-420-EP will start downloading the file to the KD-Relay. After completion of downloading the settings to KD-Relay the following screen will appear.

<b>DOWNLOAD USB -&gt; KD</b> <b>DOWNLOAD COMPLETE</b> <b>PRESS MENU TO CONT.</b>
----------------------------------------------------------------------------------------

### 6.2.3.8 UPLOAD KD->USB

Here you can upload the KD-Relay settings to the USB stick.

The file name will be the Drive ID description. If no drive ID description is present then the KD-Relay serial number will be used as a file name.

<p><b>UPLOAD USB -&gt; KD WRITING FILE 000%</b></p>
-------------------------------------------------------------

After writing to the file the KD-MMI-420-EP will then show you the settings that have been written to the file.

<p><b>UPLOAD USB -&gt; KD 1 TC CLASS SELECTED 015 SEC 2 VOLTAGE SELECTED</b></p>
----------------------------------------------------------------------------------------------

## 6.2.4 FAULTS

Here you can view the 60 fault records of the KD-Relay.

When entering the FAULTS the KD-MMI-420-EP will upload the faults from the KD-Relay. The faults are then stored into the internal memory. If no KD-Relay is present then you can view the last faults that are stored inside of the KD-MMI-420-EP.

<p><b>VIEW KD FAULT [xx] UPLOADING KD FAULTS 000%</b></p>
-------------------------------------------------------------------

After uploading or reading from KD-MMI-420-EP memory. The KD-MMI-420-EP will then try to write to the USB stick.

<p><b>VIEW KD FAULT [xx] WRITING FILE 000%</b></p>
------------------------------------------------------------

If it was successfully written or not the KD-MMI-420-EP will then show you the faults that was located in the KD-Relay as follow:

<p><b>VIEW KD FAULT [01] STATUS : ACTUAL TYPE : OVER VOLTAGE DT : 09/04/03 08:50 RUN HR : 00057 CURRENT : 0064 % VOLTAGE : 0230 V CONTACT R.T.: 550 ms</b></p>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

The screen description is as follow:

- STATUS will indicate if it was a simulated or actual trip.
- TYPE is the type of trip that occurred.
- DT date and time. The date is in the following format. YY/MM/DD HH:MM
- RUN HR how long the motor has been running in total when the trip occurred.
- CURRENT the level of the current at that point in time.
- VOLTAGE the voltage level at that point in time.
- CONTACT R.T. the time it took for the breaker to clear the fault when the trip occurred.

You can press “**LEFT**” and “**RIGHT**” keys to scan through the 60 faults.

If the file has been written to successfully you can plug in the USB stick into a PC and view the fault file (xxx.FLT) with the aid of a spreadsheet like Microsoft Excel or with the use of a word processor like Microsoft word.

If the file has not been written to successfully try powering down the unit. Power up and break the link between the KD-Relay and KD-MMI-420-EP. The KD-MMI-420-EP will prompt you to view the faults last saved to memory in the KD-MMI-420-EP. The KD-MMI-420-EP will try save the faults to the USB stick again. Please see trouble shooting if you are still having difficulties.

## 6.2.5 EVENTS

Here you can view the 2000 events of the KD-Relay.

When entering the EVENTS the KD-MMI-420-EP will upload the events from the KD-Relay. The events are then stored into the internal memory. If no KD-Relay is present then you can view the last events that are stored inside of the KD-MMI-420-EP.

<p><b>VIEW KD EVENT [xxxx] UPLOADING KD EVENTS 000%</b></p>
---------------------------------------------------------------------

After uploading or reading from KD-MMI-420-EP memory. The KD-MMI-420-EP will then try to write to the USB stick.

<p><b>VIEW KD EVENT [xxxx] WRITING FILE 000%</b></p>
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If it was successfully written or not the KD-MMI-420-EP will then show you the event that was located in the KD-Relay as follow:

<p><b>VIEW KD EVENT [0001] STATUS : TRIP DT : 09/04/03 08:50 ALARM FLAGS : IS OV UB TRIP : OVER VOLTAGE RUN HR : 00057 CURRENT : 0064 % VOLTAGE : 0230 V CONTACT R.T.: 550 ms</b></p>
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The screen description is as follow:

- STATUS will indicate what type of event occurred.
- DT date and time. The date is in the following format. YY/MM/DD HH:MM
- ALARM FLAGS is alarms flags that have happen during the event.
- TRIP is the type of trip that occurred.
- RUN HR how long the motor has been running in total when the trip occurred.
- CURRENT the level of the current at that point in time.
- VOLTAGE the voltage level at that point in time.
- CONTACT R.T. the time it took for the breaker to clear the fault when the trip occurred.

You can press “**LEFT**” and “**RIGHT**” keys to scan through the 2000 events.

If the file has been written to successfully you can plug in the USB stick into a PC and view the event file (xxx.EVT) with the aid of a spreadsheet like Microsoft Excel or with the use of a word processor like Microsoft word.

If the file has not been written to successfully try powering down the unit. Power up and break the link between the KD-Relay and KD-MMI-420-EP. The KD-MMI-420-EP will prompt you to view the events last saved to memory in the KD-MMI-420-EP. The KD-MMI-420-EP will try save the events to the USB stick again. Please see trouble shooting if you are still having difficulties.

## 6.2.6 MMI SETTINGS

Here you can change the settings of the KD-MMI-420-EP so that the KD-MMI-420-EP can act or look differently.

<p><b>MMI SETTINGS</b></p> <p><b>1 AUTO SCROLL</b> <b>ENABLED</b></p> <p><b>2 BACKLIGHT AUTO ON</b> <b>ENABLED</b></p> <p><b>3 CONTRAST</b> <b>100%</b></p> <p><b>4 BRIGHTNESS</b> <b>100%</b></p>
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- AUTO SCROLL is when there is no key activity in 5 minutes time the KD-MMI-420-EP will then start to auto scroll through the actual values. ACTUAL VALUES will be scrolled then at 10 second interval.
- BACKLIGHT AUTO ON is when no key activity is present the backlight will be turned off in 5 minutes. When a key is pressed again the backlight will come on.
- CONTRAST brightness of the text.
- BRIGHTNESS is the intensity level of the backlight.

## 6.2.7 RELAY DATE TIME

Here you can view and change the KD-Relay date and time.

<p><b>KD CLOCK</b> <b>DATE : 2009/04/22</b> <b>TIME : 01:40:00</b></p>
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To change the date and time. Just take the cursor to the date or time. Press the “**ENTER**” key. The cursor will then flash. Adjust the date or time and press the “**ENTER**” key to change the time.

## 6.2.8 RELAY INFO

Will show the information about the KD-Relay. You can also change the KD-Relay info here.

<b>KD INFO</b>
<b>1 STARTUP COUNTER</b> 000102
<b>2 TRIP COUNTER</b> 00002
<b>3 RUNNING HOURS</b> 00044 HR
<b>4 DRIVE DESCRIPTION</b> Sump pump station 2
<b>5 DRIVE FILE ID</b> SUMPP2

- **STARTUP COUNTER** Amount of times the KD-Relay was switched on.
- **TRIP COUNTER** Amount of times the drive tripped.
- **RUNNING HOURS** Accumulating running hours that the drive has been running for.
- **DRIVE DESCRIPTION** Short description about the drive.
- **DRIVE FILE ID** A unique identifier for the drive when the drives info will be saved to the USB stick.

You can change the info by placing the cursor next to the field that you want to edit. Press the “**UP**” or “**DOWN**” key in order to change the value. After your happy with the new value. Press the “**ENTER**” key. The value will then be updated in the KD-Relay.

## 7 Auto Fault

When you connect the KD-MMI-420-EP to a KD-Relay. The fault will automatically be downloaded to the KD-MMI-420-EP and you will be taken to the fault menu.

Or while you are connected to the KD-Relay and a fault occurred then you would also be taken to the fault menu automatically.

When you press the “**RESET**” key the KD-MMI-420-EP will then reset the KD-Relay if possible from a fault.

## 8 Trouble Shooting

- KD-MMI-420-EP is stuck on the welcome screen.
  - It could be that the USB drive is not functioning properly.
- “COMMS” Green LED does not come on.
  - Make sure the green light is on at both IRDA boxes.
  - Make sure that there is a clear path between the IRDA devices.
  - Make sure that the distance is shorter than a meter.
- KD-MMI-420-EP is struggling to read the files:
  - Make sure the filename being read is not longer than 8 characters.
  - Make sure that the USB is formatted in a FAT32 format.
  - Cycle KD-MMI-420-EP power and try again.
  - Make sure that the green LED is on next to the USB-stick.
  - If still failing it could mean that the USB stick is not working properly.
- Fault while writing events/faults to file. Don't want to upload events/faults again.
  - If the events have been uploaded to the KD-MMI-420-EP successful.
  - Break connection between the KD-Relay and the KD-MMI-420-EP.
  - Go into events again.
  - Say yes to load the last events loaded from a KD-Relay.
  - The writing procedure will start again and the file will be saved to the last FILED ID loaded from a KD-Relay.
- Want to save the drive to a different file name.
  - Due to limited space on the micro a fully functional DOS OS system could not be placed in the micro to give you the facility to delete, rename and create files.
  - Future devices will be looked at to give these features.
- Not seeing all the files.
  - The KD-MMI-420-EP is limited in the amount of files you can see on the USB drive. This is due to code limitation.
  - Only 65535 files can be viewed in total.
  - Future devices will be looked at to improve this limitation.
- Screen not reading clearly.
  - Adjust the brightness in the MMI SETTINGS menu.
- USB stick files are not reading on the PC or the USB stick is not showing any files.
  - The USB stick could have got corrupted when removing the USB stick while the KD-MMI-420-EP was still busy with the drive.
  - Format the USB stick to FAT32. Always insert or remove USB stick when KD-MMI-420-EP is powered down.
- Long time it takes to upload the events.
  - Due to the amount of events and the board rate that we interface to the KD-Relay it takes long to receive the data.
  - Future devices will be looked at to improve the rate of data exchange.

- How do I open the event or fault file in a spreadsheet or word-processing application?
  - Find the file ID or serial number you are looking for on the USB stick.
  - Right click on the file.
  - Go down to “Open With”.
  - Select “Choose Program”
  - Select your favorite spreadsheet or word-processing application.
  - Click “OK”.
  - Windows will remember the last application that you used to open the file.
  - You can still open the file with a different application the same way.
- Can I view the file in LINUX?
  - Yes you can view the file in a LINUX text editor or spreadsheet application.
- Will a LINUX format work on the USB stick?
  - As long as the USB stick is formatted with a FAT32 structure the KD-MMI-420-EP USB driver will pick up the USB drive.
- Can I plug out the USB stick at any time?
  - No. Turn off the KD-MMI-420-EP before inserting or removing the USB stick. This could lead to damage to the file system of the USB stick.
  - If corruption did occurred to the USB stick then format the USB stick.

## 9 Specifications

<b>DESCRIPTION</b>	<b>MIN</b>	<b>MAX</b>	<b>UNIT</b>
Supply Voltage	9	12	Vdc
Charging Current Consumption. (Depends how far the batteries have been depleted)	50	500	mAmps
Battery Running Hours	12	14	Hour
Charging Hours	1		Hour

## 10 Dimensions

Need a sample enclosure.

## 11 Ordering Information

KD-MMI-420-EP (FPR0220)

You can contact the sales team the following ways:

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