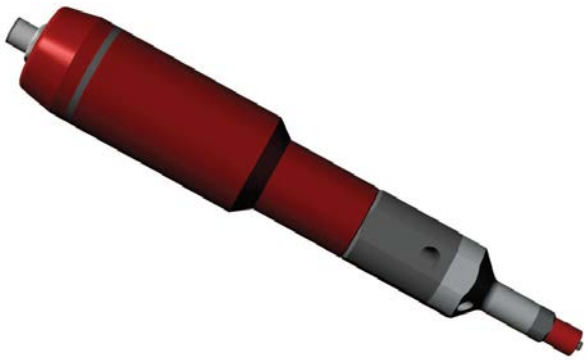
Short manual
INFINITI Stepper motor



GSM-28V24-R14

V02

1 INTRODUCTION

Dear ladies and gentlemen!

First of all, we would like to gratulate you for buying INFINITI products, allowing you to work with the latest technology. To be able to avoid malfunctions, some important criteria now follows for commissioning your INFINITI product and the servicing afterwards. Furthermore, we see it as our utmost duty to inform you about possible dangers in accordance with the operation of your new pump.

Therefore, please note, that this manual needs to be within the near of your service and other related personnel during, before and after operation of the pump.

We emphasise the need for reading this manual carefully and would like to point out, that important notices relating your security will follow within the next pages of this manual.
Understanding all notices and the technology related information allow you to operate your latest INFINITI product without endangering yourself and others.

We wish you success and all the best with your newest INFINITI Dosing product.

The INFINITI dosing team

1.1 Use compliance

Before operation, please carefully read the following

1. Please intensively study this manual before commissioning. Do get familiar with the operation manual before each start of the pump or every time when the operator changes.
2. Please note, that this manual is part of this particular pump even when being moved to another department or company.
3. The pump may only be used by healthy people
4. Do only use INFINITI spare parts. Damages caused by using other parts are not supported by the INFINITI warranty.
5. Should any of this manual not be clear or understandable, please do contact your distributor or write us under info@infiniti-dosing.com.

This pump is a self-priming endless dosing pump. Following materials may be used with it for metering or transferring:

- Adhesives and sealants with or without spheres
- Material resistant fluids and pastes
- Oils and lubricants
- Paints and lacquers

Do not use with cyanoacrylates, anaerobic glues or any explosion rated nor poisonous products. Please do contact your distributor for further information. We are not chemical specialists so please do check the pump material resistance of all wetted parts with your product supplier. Any improper use will produce the loss of the support of the INFINITI warranty.

Explicit compliance for the pumped material:
Depending on the application, the maximum temperature may not succeed 80°C. With the use of aggressive products, please do always contact your distributor and product supplier to get approval before operation and or commissioning.
Make sure, that the local legislation has been incorporated and all safety relevant demands are being kept.
Changes done by the user result in loss of warranty. All damage claims upon will be ignored.
All safety relevant technical issues lose the INFINITI warranty support.

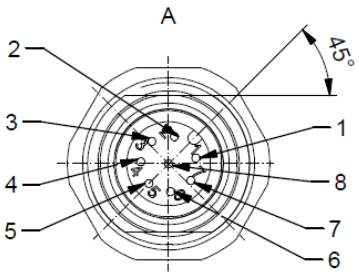
This sign shows a safety relevant message. Make sure all operator personnel and safety people take note or have been made aware.

1.2 Safety instructions

- Make sure, that you have taken care of the rules for accident prevention next to reading this manual.
- Do not disregard any caution sign; they give important notices to prevent accidents or injuries. Caution signs are an important part of the safety rules for accident prevention therefore need to be visible at l times.
- Before commissioning, please do check all screws and see if they are well tightened.
- Before starting to work with the pump, every worker needs to fully understand the application and its demands. Do not let the pump run without any supervision.
- Service and repairs may only be performed via trained personnel and the relevant tools.
- All needed accident prevention apparatus and fixtures must be installed before operation. Make sure they are in good condition at all times.
- Make sure that the pressure in the system has been neutralized while servicing the pump. Switch off the power.
- In case solvents are used, it may be needed to wear breathing protection masks. Please ask your safety staff.
- Never smell at openings after demounting the pump! 
- Take the needed precautions when working in an explosion proof zone! 
- Smoking is prohibited in the near of solvents and other inflammable products.
- Only work on the pump and the pump drive shaft when the power is off.
- Do not let the pump dry run.
- Make sure that the suction side connection is vacuum proof and that the connection of the pressure side is able to withstand the system pressure.
- Do not use demineralised water.

2. Short connection plan of the stepper and IMCL software

2.1 General



Kontaktbelegung:

1	weiß	5	grau
2	braun	6	rosa
3	grün	7	blau
4	gelb	8	rot

Seen from TOP

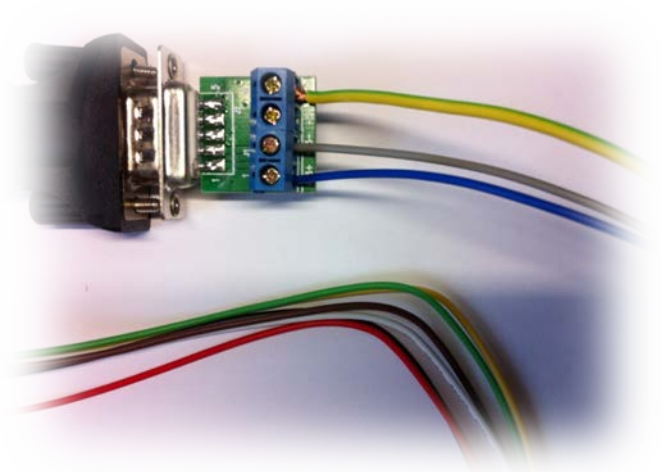
Pin Conec	Label	Description	PIN Board
6	GND/ Pink	GND	1
8	VDD / Red	VDD (+9V…+28V)	2
7	RS485+ / Blue	RS485 interface, diff. Signal (not inverting)	3
5	RS485- / Grey	RS485 interface, diff. Signal (inverting)	4
2	IN_0 Brown	Digital Input (+24V compatible)	
		Alternative Function 1: Step Input	5
		Alternative Function 2: Stop switch left	
1	IN_1 White	Digital Input (+24V compatible)	
		Alternative Function 1: Input Direction	**6**
		Alternative function 2: Stop switch right	**white**
4	OUT_0 / IN_2 Yellow	Open Drain Output with freewheeling diode (max. 100mA)	
		Alternative Function 1: Digital Input (+24V compatible)	7
		Alternative Function 2: Home switch	
3	OUT_1 / IN_3 Green	Open Drain Output with freewheeling diode (max. 100mA)	
		Alternative Function 1: digital Input (+24V compatible)	8
		Alternative Function 2: analogue Input	

2.2 Connections

2.2.1 USB / RS 485 converter

Version 1

The converter allows an easy communication with your PC.



To be able to use the RS485 converter, the driver has to be installed.

Driver: DIGITUS

DA-70157_driver_Win7 64Bit_20120809

DA-70157_driver_Win7 32Bit_20120809

Important notice: disconnect the converter during the pump operation. Do not connect the converter while starting your computer. Do not disconnect the converter during the pump operation. Do connect the Ground GND (see picture).

Version 2

To be able to use the RS485 converter, the driver has to be installed.

Driver: IDI

FTDI_USB_Treiber (mail)

Blue = GND - 0V (- 24V)

Brown = RS 485 A (RS 485 +)

Black = RS 485 B (RS 485 -)

Important notice: disconnect the converter during the pump operation. Do not connect the converter while starting your computer. Do not disconnect the converter during the pump operation. Do connect the Ground GND.

2.2.2 Stepper Motor (GSM)

The motor has been wired in the factory. **Please do use only EMC proof cables. It is wise to separate the power supply from the signals.**

All Inputs and Outputs pins 1 - 4 can be programmed via software.

You have to install the **Software IMCL** which you can download

Under: http://www.infiniti-dosing.com/downloads-info.html

3. Software IMCL (Infiniti Motion Control Language)

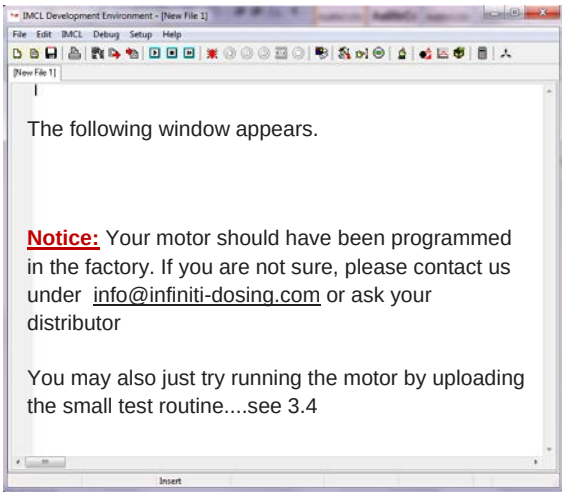
3.1 Load the IMCL software to a Windows based PC. Your may contact us under info@infiniti-dosing.com or you may download the IMCL under

http://www.infiniti-dosing.com/downloads-info.html

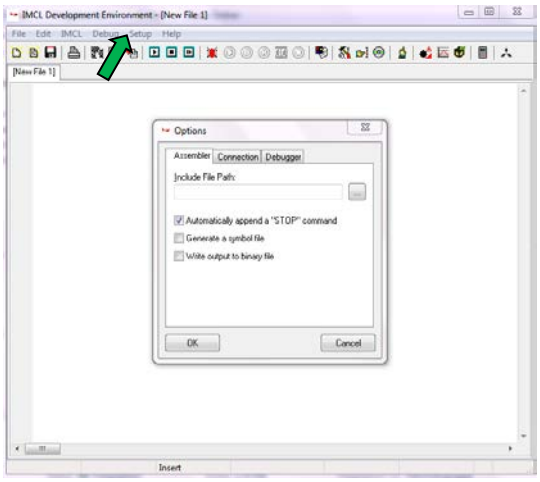
You should find this symbol in your download area. You may create a link to your desktop by clicking on the symbol with your right mouse button 'create Link'.

Your IMCL software is ready for use. Make sure you have installed and activated the driver for the USB/RS485 converter. (see also the extra manual)

3.2 Start your application. Double click on the IMCL Symbol:

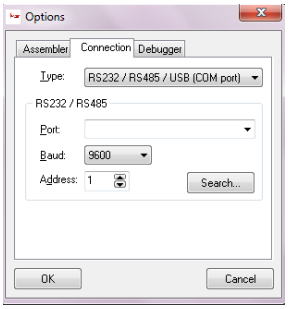


3.3 Find your motor GSM-28V24 or search



Click on

'SETUP' and 'Options'...the options window opens.
Click on 'Connection'



Chose your COM-Port and Type and press 'OK'. If no suggestion appears, you may 'Search' for a connection. (Notice: the USB/RS485 driver has to be installed and activated)

3.4 Simple test program (Start manually, see 3.5)

NOTICE: Please do test the program without stator or pump. Otherwise, you may risk a dry running which may destroy the rubber stator.

Copy and paste underneath lines into your IMCL after opening a new file:

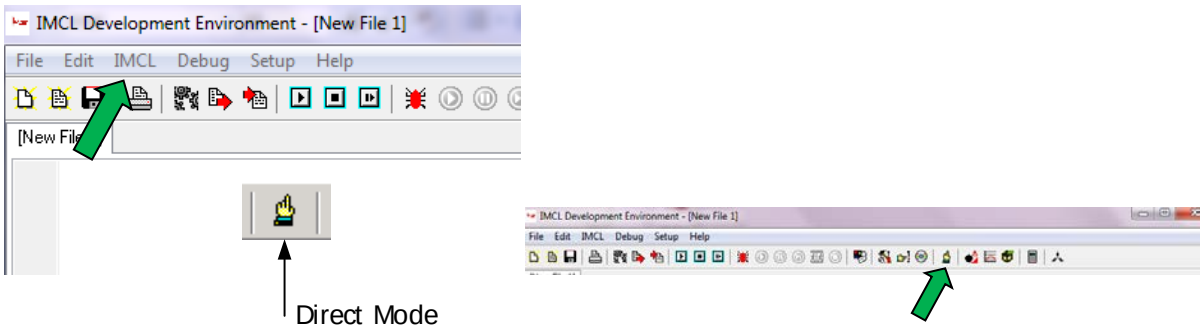
```
                ROL 0, 20000              //Rotate motor Links 0 with speed 20000
                WAIT TICKS, 0, 500
                MST 0
                ROR 0, 30000               //Rotate motor 0 rechts with speed 30000
                WAIT TICKS, 0, 500
                MST 0

                SAP 4, 0, 50000           //Set max. Velocity
                SAP 5, 0, 50000           //Set max. Acceleration
Loop:           MVP ABS, 0, 100000        //Move to Position 100000
                WAIT POS, 0, 0            //Wait until position reached
                MVP ABS, 0, -100000       //Move to Position -100000
                WAIT POS, 0, 0            //Wait until position reached
                JA Loop                   //Infinite Loop
```

1. Click the ***Assemble*** Icon to save the program to the board and IMCL
2. Then write the test program to your GSM 28V24 Module via the ***Download*** Icon.
3. Now click the ***Run*** Icon. The program should start your motor now
4. Press the ***Stop*** Icon to stop your motor

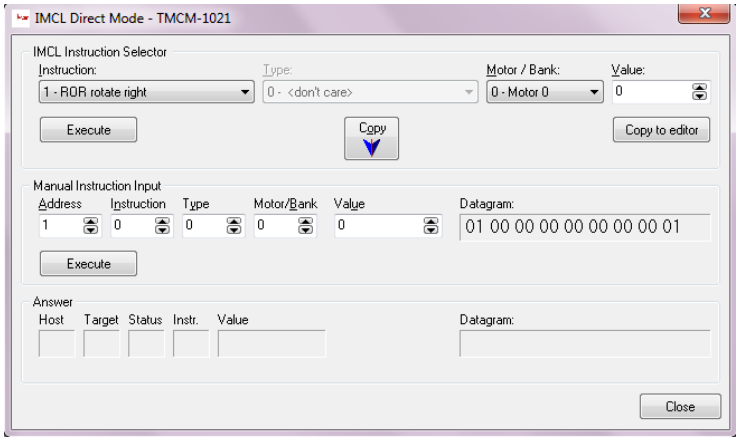
3.5 Manual start to fill or test your pump

NOTICE: Please do test the program without stator or pump. Otherwise, you may risk a dry running which may destroy the rubber stator.

Click on IMCL... followed by 'Direct Mode...'



If the software has found the GSM24V28 module, it will automatically connect. (Notice: the USB/RS485 driver has to be installed and activated, see 2.2.1 and following).



Notice:

To dispense, the motor has to run left (CCW) seen from the motor back!

3.5.1 Examples:

- ROL rotate left, motor 0, value 10000* signal -> Click *Execute*. The motor runs slowly until the next
- MST motor stop, motor 0 signal -> Click *Execute*. The motor stops and waits for a new

Notice: We supply stnadard a 1:13.73 ratio stepper motor GSM-28V24-R14.

GSM-28V24-R14: max. Value = 320000 = 115 UpM (Gearbox therefore rotor)

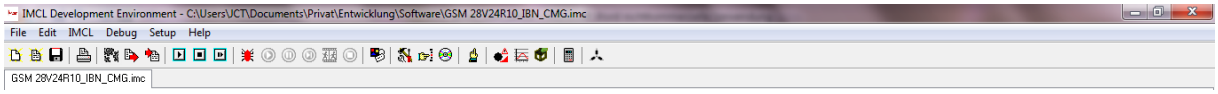
4. COMMISSIONING incl. Test program

4.1 Filling before commissioning

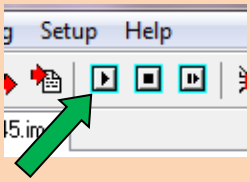
By activating PIN 2 (Brown wire Conec) you may start the pump. During the high +24V signal, the motor turns with underneath program (Note: GSM-28V24-R14 = 41739 to reach 15 rpm).

1. Click ***Assemble*** to save the program.
2. Write to the GSM-28V24 module the ***Download*** Icon.
3. Press the ***Run*** Icon. The program starts after a digital input +24V.

see also 3.4




```
//Test program for GSM 28V24R14  Infiniti Dosing
// SGP = set global parameter
// STGP = store global parameter
// SAP = set axis parameter
// MVP = move to position
// ABS = Absolute
// WAIT = wait with furter program execution
// POS = postion

//General configuration, DO NOT CHANGE!

      SGP 77, 0, 1     // auto mode
      SGP 65, 0, 0     // RS 485 baud rate  9600
      STGP 65, 0
      SGP 66, 0, 1     // module address
      STGP 66, 0
      SGP 76, 0, 1     // host address
      STGP 76, 0
      SAP 6, 0, 100    // set current   255 = 100 %
      SAP 140, 0, 6    // 12800 resolution = 1 round for motor body (6=64microstep, resolution=200x64=12800)
      SAP 7, 0, 10     //  standby current  0 = 0%
      SAP 210, 0, 6400 // prescaler for the encoder
      SAP 214, 0, 10   // power down delay
      WAIT TICKS, 0, 0

Lbl22:  GIO 0, 0          // set pin 5 ( input = 0), GIO get input 0 = no. 5 PIN
        JC NZ, Lbl41      // not zero = 1 (24V), jump conditional, if 1 move to lb141
        JC ZE, STOP       // jump conditional, if zero, move to stop ( at the bottom)
        JA Lbl22

//Change dispensing speed for geared motor
Lbl41:  ROL 0, 41739  // 41739 = 15 rpm
        GIO 0, 0          // set pin 5 ( input = 0), GIO get input 0 = no. 5 PIN
        JC ZE, STOP       // jump conditional, if zero then STOP
        JA Lbl41

STOP:   MST 0      // motor stop      (WAIT for next signal)
        JA Lbl22
```



Always press 1x ***RUN*** Icon to start the program before a 24V signal

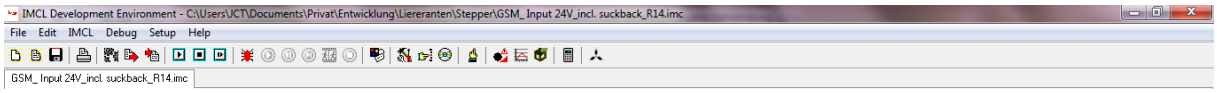
4.2 Dispensing

Open the appropriate file (standard supply with delivery). After a start signal of min. 5 ms (PIN 2 Conec connector) the geared stepper motor runs until all microsteps have been reached. Afterwards, the suckback will be automatically performed (here 1 revolution forwards + 45° suckback).

4.2.1 The following program may only be used with the GSM-28V24-R14.

1. Click ***Assemble*** to save the program.
2. Write to the GSM-28V24 module the ***Download*** Icon.
3. Press the ***Run*** Icon. The program starts after a digital input +24V.

see also 3.4



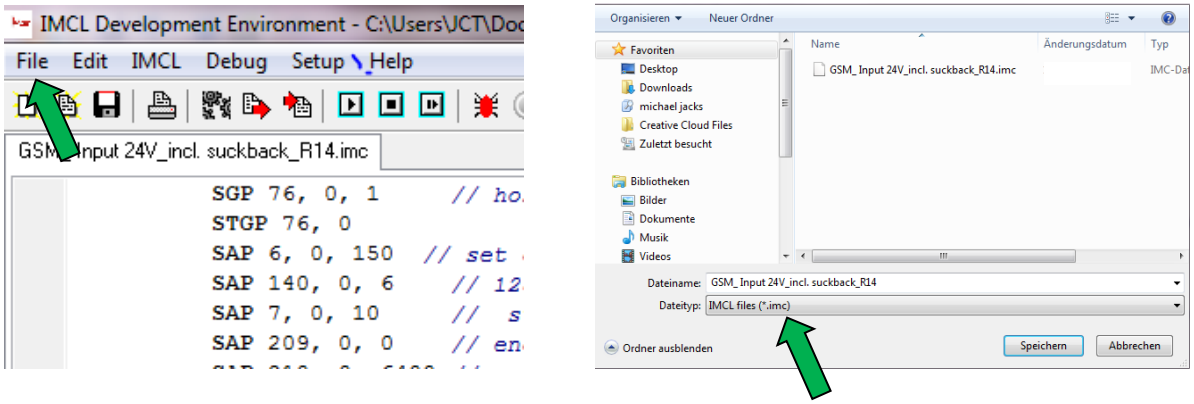

```
//IMCL disassembly at 4-9-2014 9:54:51    INFINITI DOSING

SGP 77, 0, 1     // auto mode
SGP 65, 0, 0     // RS 485 baud rate  9600
STGP 65, 0
SGP 66, 0, 1     // module address
STGP 66, 0
SGP 76, 0, 1     // host address
STGP 76, 0
SAP 6, 0, 100  // set current   255 = 100 %
SAP 140, 0, 6    // 12800 resolution = 1 round for motor body (6=64microstep, resolution=200x64=12800)
SAP 7, 0, 10     //  standby current  0 = 0%
SAP 209, 0, 0    // encoder position
SAP 210, 0, 6400 // prescaler for the encoder
SAP 214, 0, 10   // power down delay
WAIT TICKS, 0, 0

Lb121:   GIO 0, 0          // set pin 5 ( input = 0), GIO get input 0 = no. 5 PIN
         JC NZ, Lbl41      // not zero = 1 (24V), jump conditional, if 1 move to lb141
         JC ZE, STOP       // jump conditional, if zero, move to stop ( at the bottom)
         JA Lbl41          // jump always lb141

Lbl41:   SAP 1, 0, 0
         SAP 4, 0, 300000 // 1500 rpm = 320000 / 12800 x 60 sec (= max SPEED = 115 rpm of pump)
         SAP 5, 0, 150000*10  // 320000 / 320000*5 = acc=dec=0.1 sec  (START and STOP RAMP)
         MVP REL, 0, -175744  // move to left relative position 12800*13.73= 175744 = 1 round (ROUNDS FORWARD
                                 DISPENSE)
         WAIT POS, 0, 0       // wait position 0 means when 0 = stop is reached
         WAIT TICKS, 0, 20    //  (0.2 sec WAIT TIME after DISPENSE END, 0 = 0 sec)
         SAP 1, 0, 0          // Set the current position of motor as 0
         SAP 4, 0, 139130     // output speed = 50 rpm   (SPEED SUCKBACK)
         SAP 5, 0, 150000*4   // acceleration = dec    0.25 sec   (START and STOP RAMP)
         MVP REL, 0, 21968    // rotate right position -175744/8 = 45 degree  (ROUNDS BACKWARDS SUCKBACK)
         WAIT POS, 0, 0       // wait position 0 means when 0 = stop is reached
         WAIT TICKS, 0, 100   //  (WAIT TIME after SUCKBACK END 100 = 1 sec)
         JA Lb121

STOP:    MST 0       // motor stop       (WAIT for next signal)
         JA Lb121
```

Notice:

After programming, disconnect the USB/RS485 before starting the motor. Do not disconnect during the operation. Do not start the computer while connected.

4.3 Save a program

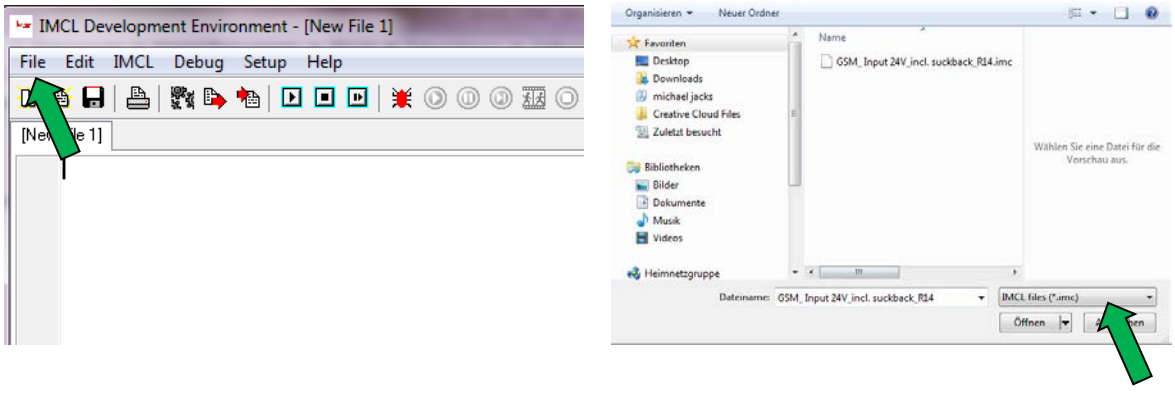
Choose 'File' and 'Save' or 'Save as' um to secure the file or changed file to your PC.



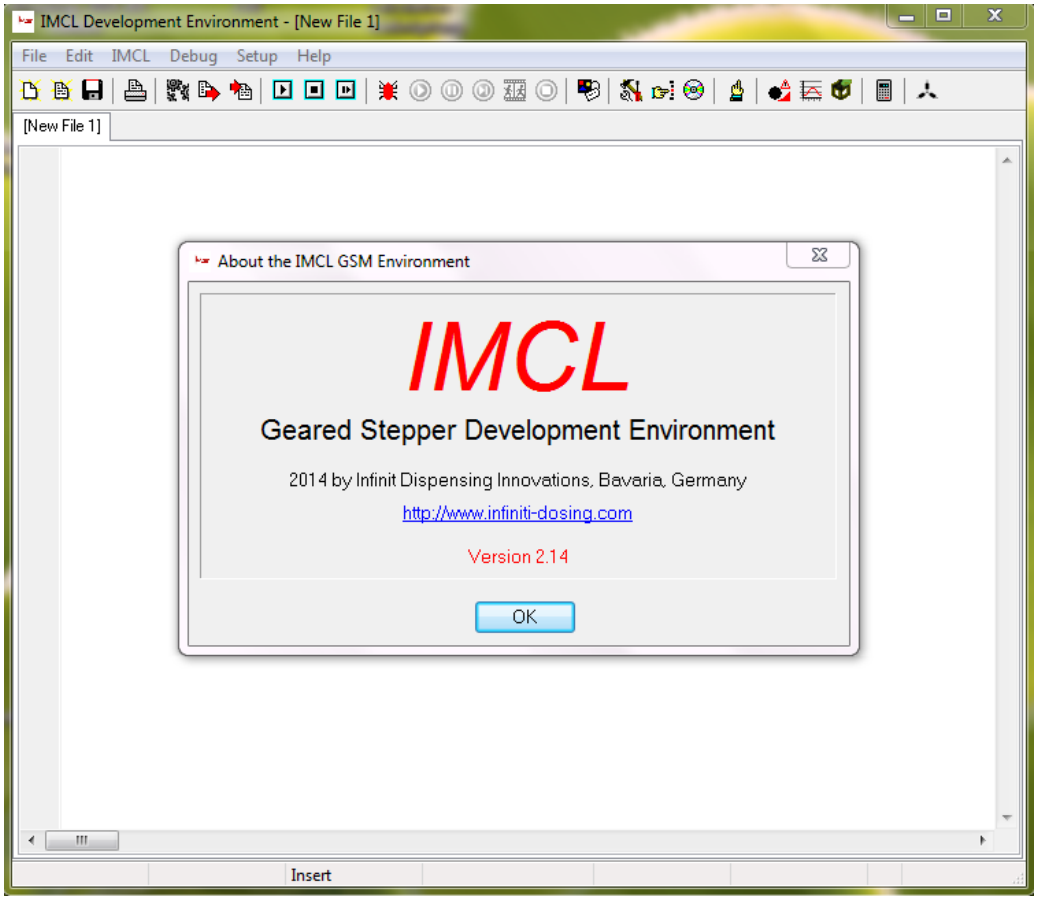
An *.imc-File will be automatically created after saving.

4.4 Open a program

Choose 'File' and 'Open' to load an *.imc-file into the IMCL.



Only search for *.imc-files.


IMCL Development Environment - [New File 1]
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[New File 1]
About the IMCL GSM Environment
IMCL
Geared Stepper Development Environment
2014 by Infinit Dispensing Innovations, Bavaria, Germany
http://www.infiniti-dosing.com
Version 2.14
OK
Insert