GMC USER PROGRAMS

Two user defined programs can be stored in GMC's memory, An event (input activation) can start the execution of a program, the first program can also start automatically on device power on. The programs are loaded to the GMC from RS232 port.

1. INSTRUCTION DESCRIPTION.

The programs are text files composed from the instructions described below.

```
      GSM FUNCTIONS
TXT ABCD EFG JKL        Define ABCD EFG JKL as next SMS to send (until new definition)
SMS 1234567890          send SMS with defined to 1234567890
SMR 1234567890          send SMS with defined text and report to 1234567890.
TEL 1234567890          Do a telephone call to 1234567890.

JCE AAA                 Jump to address AAA on call error
JSE AAA                 Jump to address AAA on sms error

      OUTPUT FUNCTIONS
ON  X                   Set port X on  (ON command must followed by 2 spaces)
OFF X                   Set port X off.
PLS X DDDD              Pulse of DDDD(P) tenths of second duration to port X.

      JUMP AND CALL FUNCTIONS
=AAA                    Define address AAA.
JMP AAA                 Jump to address AAA.
CAL AAA                 Call subroutine at address AAA.
RET                     Return from subroutine.
CNT Y 999               Set counter Y to 999(P) (Y = 1,2)
DEC Y AAA               Dec counter Y, if not zero jump to address AAA

      PORT CHECK CONDITIONAL JUMPS FUNCTIONS
IHI X AAA               If input X is high jump to address AAA.
ILO X AAA               If input X is low jump to address AAA.
PHI X AAA               If port X is high jump to address AAA.
PLO X AAA               If port X is low jump to address AAA.
THI X TTTT AAA          If temperature X is more than TTTT(P) jump to address AAA.
TLO X TTTT AAA          If temperature X is less than TTTT(P) jump to address AAA.
VHI X VVVV AAA          If Voltage X is more than VVVV(P) jump to address AAA.
VLO X VVVV AAA          If Voltage X is less than VVVV(P) jump to address AAA.

      OTHER FUNCTIONS
DAR G                   Disarm group G   (G=A,B,C,D)
ARM G                   Arm group G
DEL DDDD                delay DDDD(P) tenths of second (up to 999,9 secs = 16mins)
END                     End of program


X     = Port number  1..13
AAA   = Address, number from 001 to 999
DDDD  = Duration in tenths of second, up to 999,9 secs = 16mins
TTTT  = Temperature a number from -500 (-50.0 c)  to +900 (+90.0 c)
VVVV  = Voltage in analog input from 000 to 1024

IHI and ILO are checking the timer of the input, so the take account of the response
time we have set for that input.
PHI and PLO are checking the logic level of the port (input or output).
```

2. TEST AND DEBUG.

The technician can list and run the loaded program(s) giving commands from the PC keyboard:

B1 List program 1
B2 List program 2
N0 Stop program
N1 Run program 1
N2 Run program 2

GMC responds with a '>' after the first character of the two key command, prompting us to key-in the second character.

N3 Disable program run listing.
N4 Enable program run listing.

When we test a program with N1 or N2 the echo of GSM modul communication stops and the program run is listed on PC. We can enable and disable program listing in real operation with N3 and N4 commands.

3. EVENT OR AT POWER-ON ACTIVATION OF A PROGRAM.

The parameter #30 defines the way events can start the execution of a program. This is an 8 digit parameter every digit can be 0 or 1 the first 4 digits of the parameter defines if an event belonging to group A,B,C and D will start the execution of program 1. The last 4 digits do the same for program 2.
For example:

#30*1000 0010# Program1 will start execution when an event belonging to group A will occur. Program2 will start execution with an event of group C.

If both digits for group D are '1' then the program1 will start automatically at power on of the device. For example:

#30*1001 0011# Program1 will start execution automatically at power on, if the program end its operation then program1 can be started with an event of group A and program1 can be started with an event of group C. In this case (both digits for group D are '1') an event of group D will not start the execution of any program.

Only one program can run at a time. Request to start a program when some program is already running is ignored.

4. PROGRAM SYNTAX EXAMPLES.

Example 1

```
$
$

#74* #

TXT ALARM1
SMS 6979912370
SMS 6979912372
TXT NO BATTERY
SMS 6979912370
END
<

#75* #

CNT 2 250
=100
CNT 1 08
ON  9
=101
ON  7
DEL 20
OFF 9
ON  7
TLO 4 +240 101
OFF 7
DEC 2 100
END
<
```

Program1 is stored using parameter #74* and Program2 with #75*. 2048 bytes of memory is available for program storage so we can have two programs with 1024 bytes each or only program1 with 2048 bytes.
Examples of syntax we have on Example 1 and Example 2.

The $$ characters orders GMC to start receiving instructions #74* # and #75* # instructions (load program 1 and program 2) must followed by an emty line.

The END and < must be at the end of every program.

The @ must be at the final end and shows the end of file.

Only program1 can be auto-starting.

Example 2

```
$
$

#74* #

=101
OFF  7
OFF  8
OFF  9
=102
ILO 1 120
ILO 2 125
ILO 3 130
JMP 102
=120
ON  7
JMP 201
=125
ON  8
JMP 201
=130
ON  9
=201
CNT 1 20
=202
ON  10
DEL 10
OFF 10
DEL 10
DEC 1 202
JMP 101
END
<

@
```