x-Messenger

Compact & Ingenious!

GSM/SMS/GPRS Micro PLC :

- Programmable
- Expandable
- Ethernet
- Data-logging
- Modbus master/slave
- Big-sized LCD
- MMS
- Voice
- Modbus RTU/ASCII/TCP protocol

Innovative Telemetry Solution!

Version：V 1.0

Easy Electronic Co., Ltd

Wide range of applications

Home security

Fluid Gauge

Data Centre

c d

Complete Telemetry Solution

x-Messenger- Expandable GSM/GPRS PLC

incorporates a wide range of CPUs, expansions, various accessories and software, specially designed for GSM/GPRS wireless systems being used for remote measurements, data logging, control, diagnostics and object via short text messages (SMS) or CLIP calls. Configurable messages sending from device with static (text) or dynamic (text and measured values) content are a convenient way of passing important information to the monitoring center, or directly to the defined phone numbers. SMS messages sending or Call-out can be triggered by change of binary input state, reaching alarm thresholds, marker state change, counters and clocks.

In particular, x-Messenger shall possess industrial design, practical set of I/O resources& easy to use configuration software tools. Multiple optional analog signals (0..10V DC) (0...20mA) ,(PT100) inputs built-in the module , make it possible to have direct connection of sensors, which lowers the cost of building system. Hence, it can directly work with humidity sensors, water level sensor, pressure transducers, flow sensors, smoke, gas, motion, shock and noise detectors, etc.

D a

Highlights at a glance

- Ø Integral GSM 850/900/1800/1900 modem
- Ø GPRS, SMS ,Email and CLIP support
- Ø Parameters in the program changing by means of SMS via cell phone
- Ø Autonomous login into GSM/GPRS network
- Ø Different I/O configurations available
  - 2DI/1DO, 4DI/2DO, 8DI/4DO
  - Analog inputs (DC0...10V,0/4..20mA,PT100)
  - Expandable up to 40DI/36DO,36AI/36DO
  - Expandable up to 16 PT100 inputs
- Ø RTC, Timers and Counters, High speed input
- Ø Event based transmission
- Ø Remote configuration via GPRS and user friendly eSmsConfig software
- Ø Firmware upgrade via serial port
- Ø Configurable filtration for digital inputs
- Ø Relay (10A) and Transistor output optional
- Ø Configurable output pulse width

Ideal solution for temperature, humidity control...

Food Warehouse

Laboratory

Food Manufacturing

x-Messenger GSM Controller sends alarm SMS to mobile phone or control centre on following conditions:
A: Temperature is over or lower than the user preset values
B: Humidity is higher or lower than the user present levels
C: Alarm inputs of detecting sensors (e.g. fan ventilation, storage sealing, lighting) are triggered

lighlights at a glance

- **Access protection by password**
- **Diagnostic LEDs**
- **DIN rail/Wall mounting**
- **Max. 64 different short messages and voice alarms**
- **Max. 70 Unicode Characters in one short message**
- **Time-based and event-based SMS, Call-IN, Call-Out, Ring, voice &MMS**
- **IO status ,alarming message includes counters, analog values can be directly sent to Users**
- **Retentive memory capability**

x-Messenger

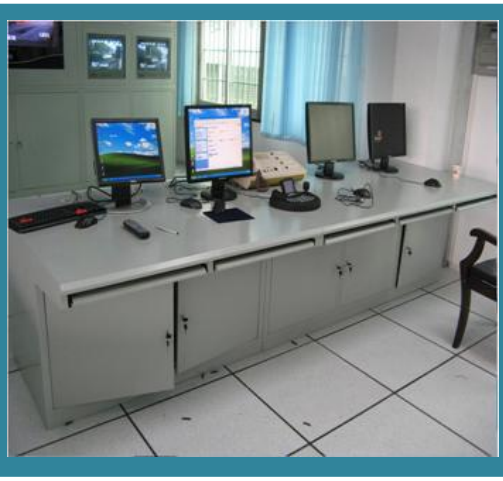
VS

Traditional radio modem based systems

The x-Messenger allows effective application of GPRS technology in the modern telemetry and telematics systems, as an attractive to the older, radio modem based systems:

- **without special permissions,**
- **without complicated antenna systems,**
- **without distance limitations,**
- **without network topology limitations,**
- **without huge investments,**
- **without long lasting implementation process,**
- **without problems.**

In infrastructure and industry...



eating/ventilation/air-conditioning

- Energy management
- Heating
- Cooling systems
- Ventilation systems
- Air-conditioning system
- HVAC & Refrigeration

Monitoring equipment

- Access controls
- Monitoring of drive controls
- Alarm systems
- Limit value checks
- Traffic light controllers
- Temperature monitoring

Machine controls

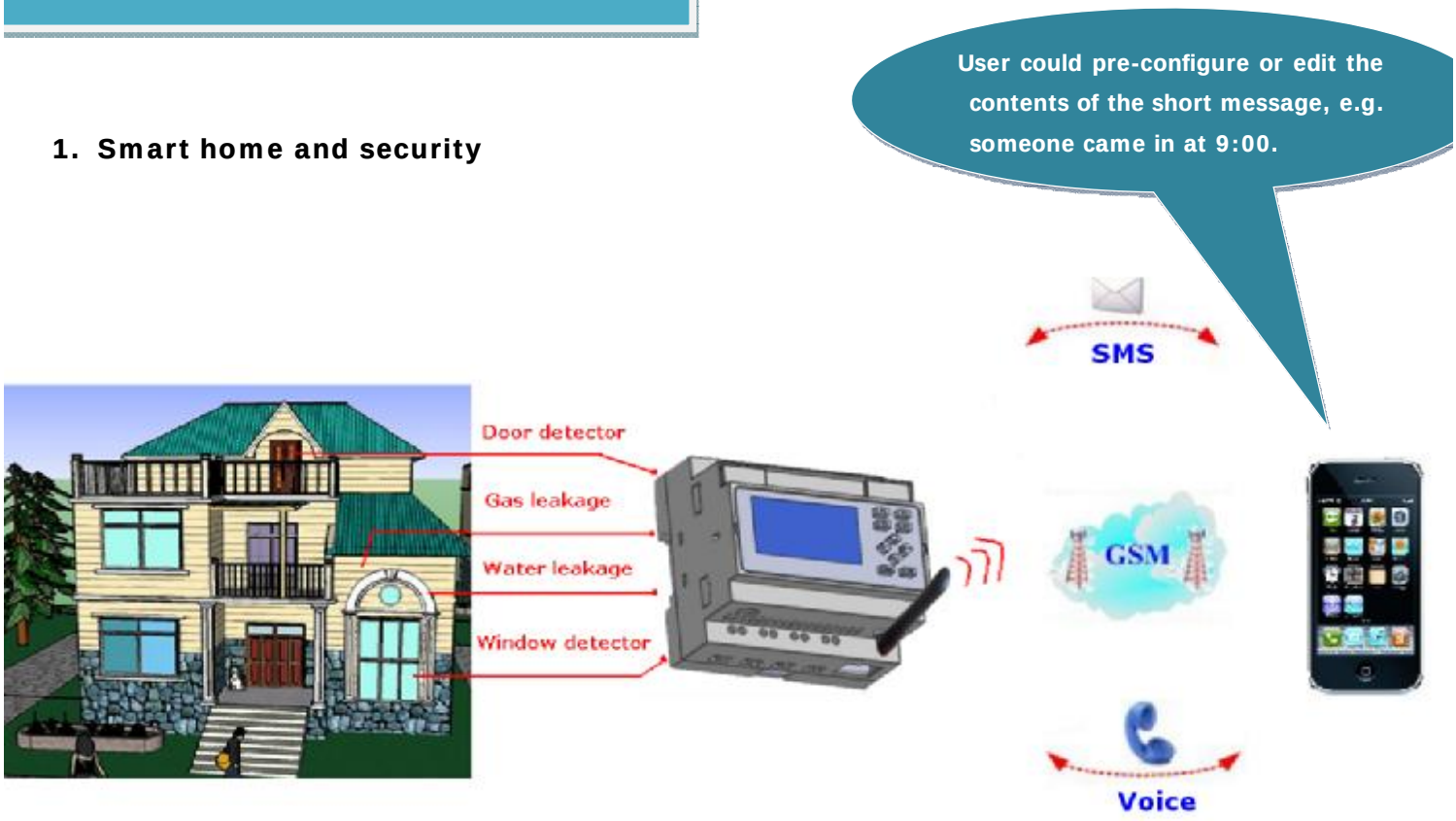
- Motors, pump and valve controls
- Air Compressors
- Extraction and filtering installations
- Sewage plants
- Sawing and planning machines
- Etching and cleaning equipment

Highlights at a glance

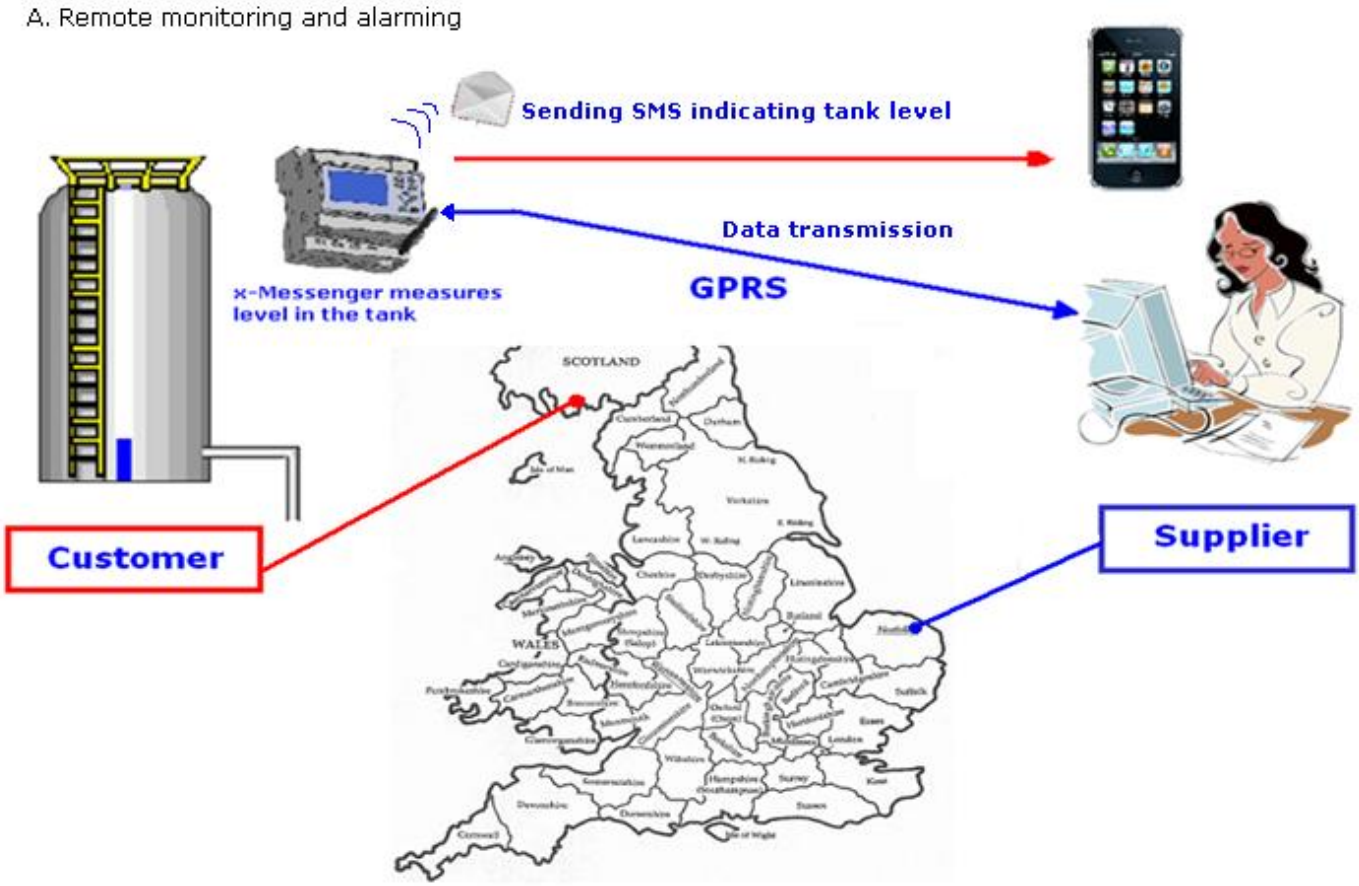
- Ø Default Real Time Clock (RTC)
- Ø Backup at Real Time Clock (RTC) at 25 °C:100 hours
- Ø 2 PWM channels(333Hz) optional
- Ø Pre-configured standard functions, e.g. on/ off-delays, pulse relay ,counters , Watchdog function, PI controller etc..
- Ø Logic functions-AND, OR, NOT, XOR.....
- Ø Standard configure soft& Customized soft(Function block diagram)
- Ø Data logging (SD card socket built-in/ optional accessory)
- Ø 4-lines, 16-character per line, backlight display& keypad optional
- Ø Standard Modbus RTU/ASCII/TCP communication protocol supported
- Ø It's optional for x-Messenger to act as slave or master in certain Modbus communication network
- Ø 1 RS232, 1USB&1RS485 ports available
- Ø Optional Ethernet Interface
- Ø Optional speaker built-in
- Ø 1 Socket of telephone crystal plug & 1 Audio output interface optional
- Ø Camera Interface optional

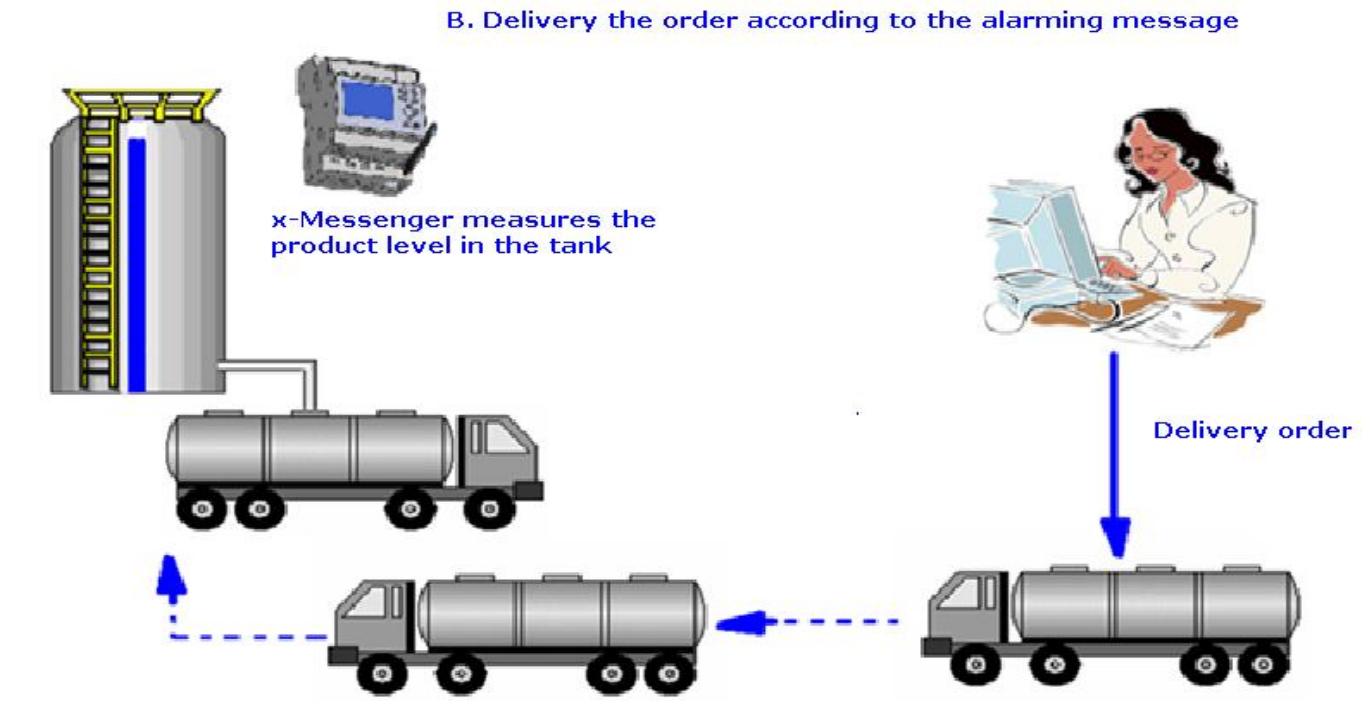
Application architecture

1. Smart home and security



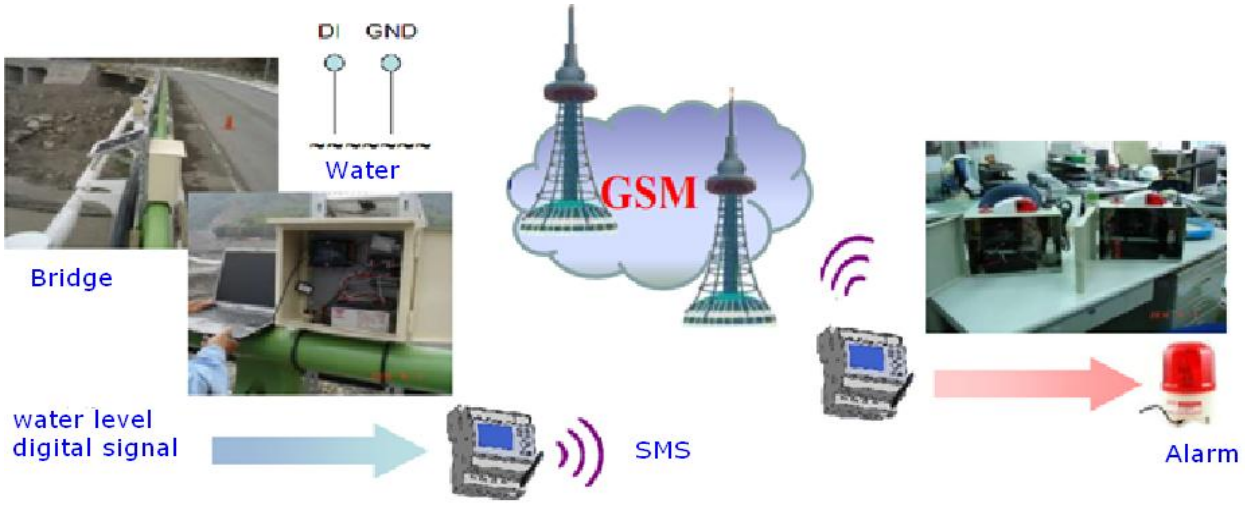
2.Remote monitoring of product level in a tank



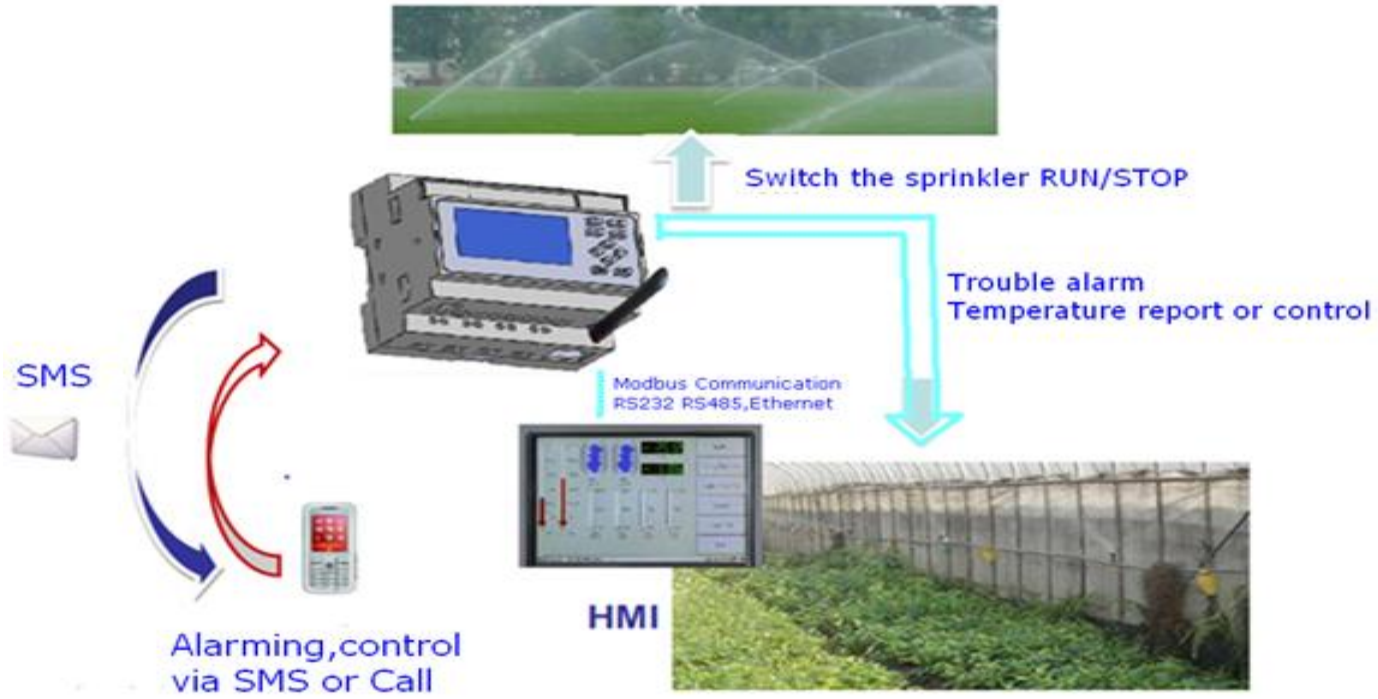


3. Vending/Gaming Machine Monitoring & Reporting System

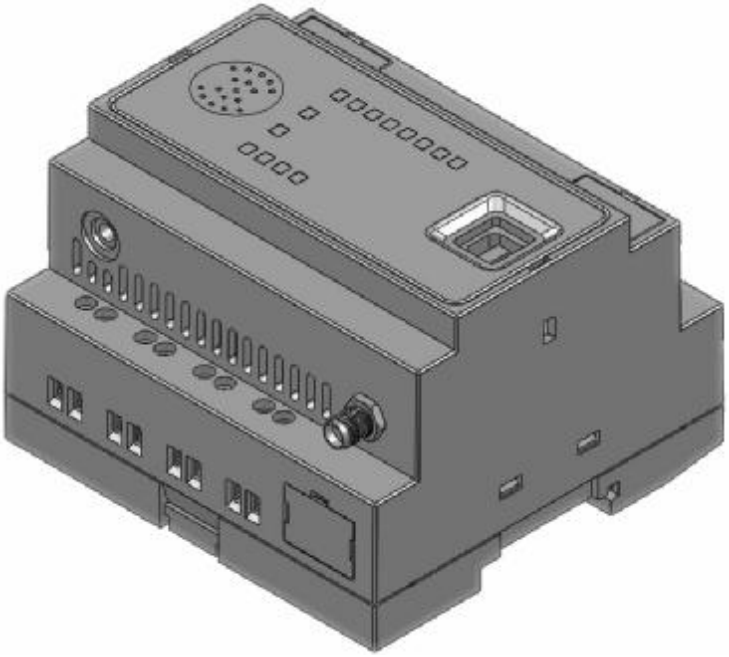
4. Bridge Alarm System



5. Farmland Sprinkler system

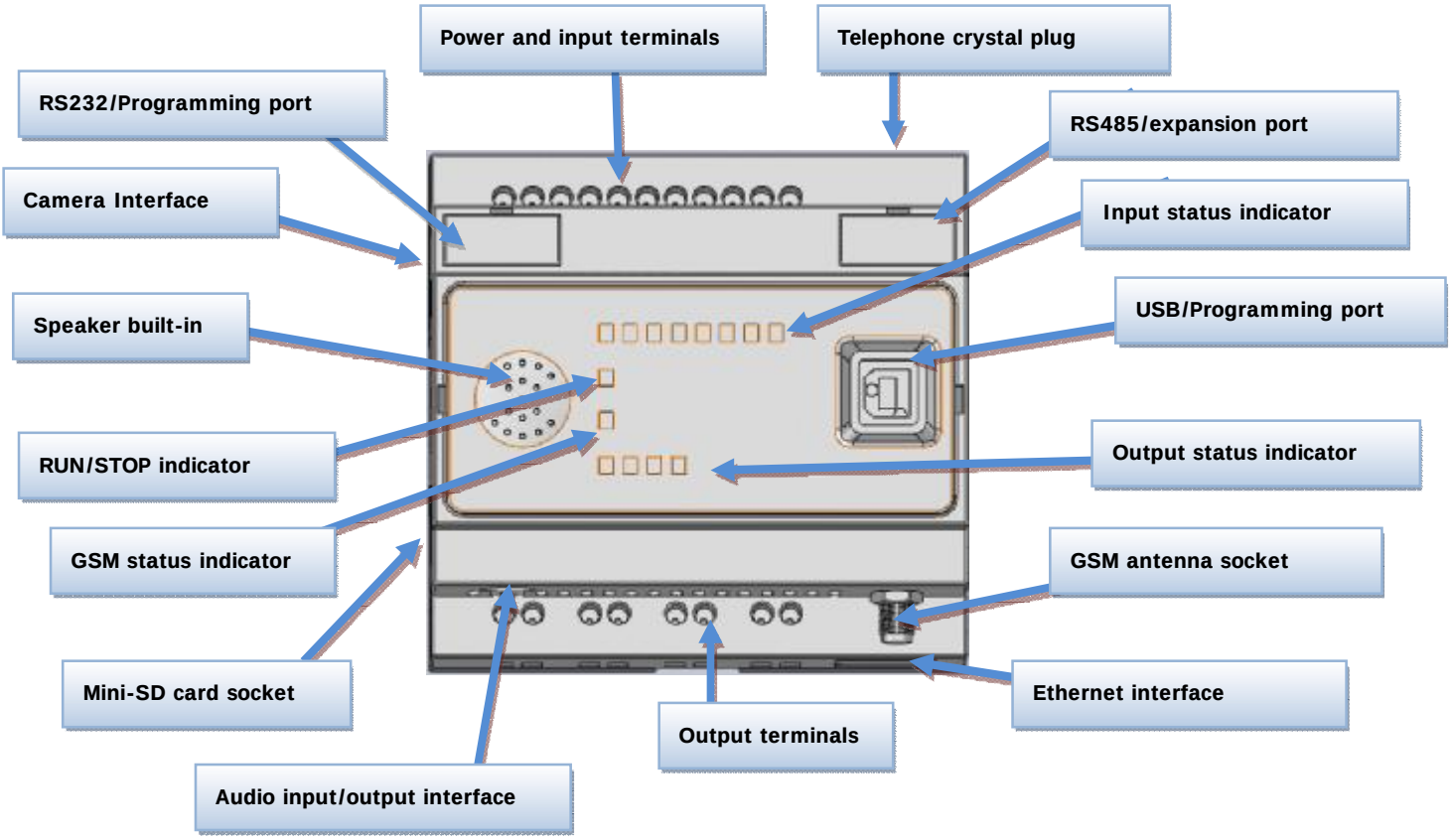


6.Heating control， Pump control，Valve control，Factory door...

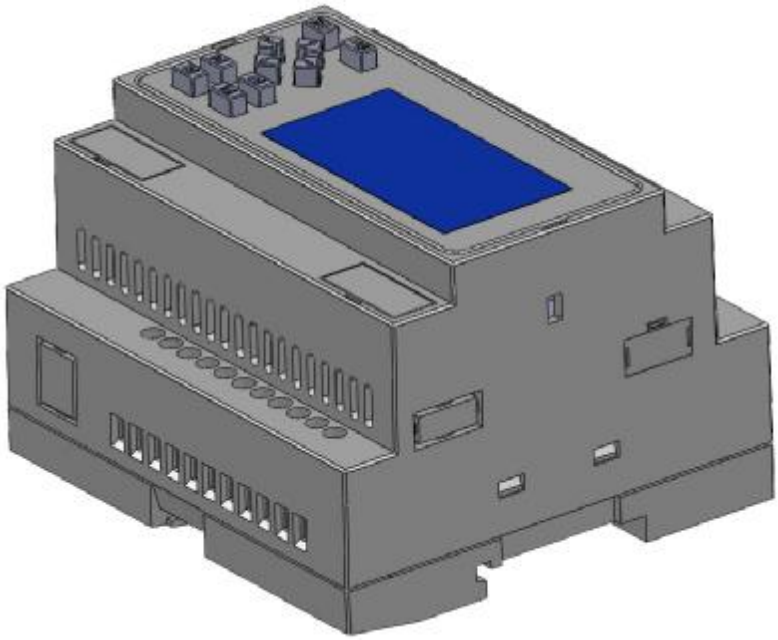


- Ethernet interface optional
- Voice alarming optional
- Modbus RTU/ASCII/TCP supported
- Diagnostic LEDs (module status, GSM status, IO status)
- B-type USB programming port

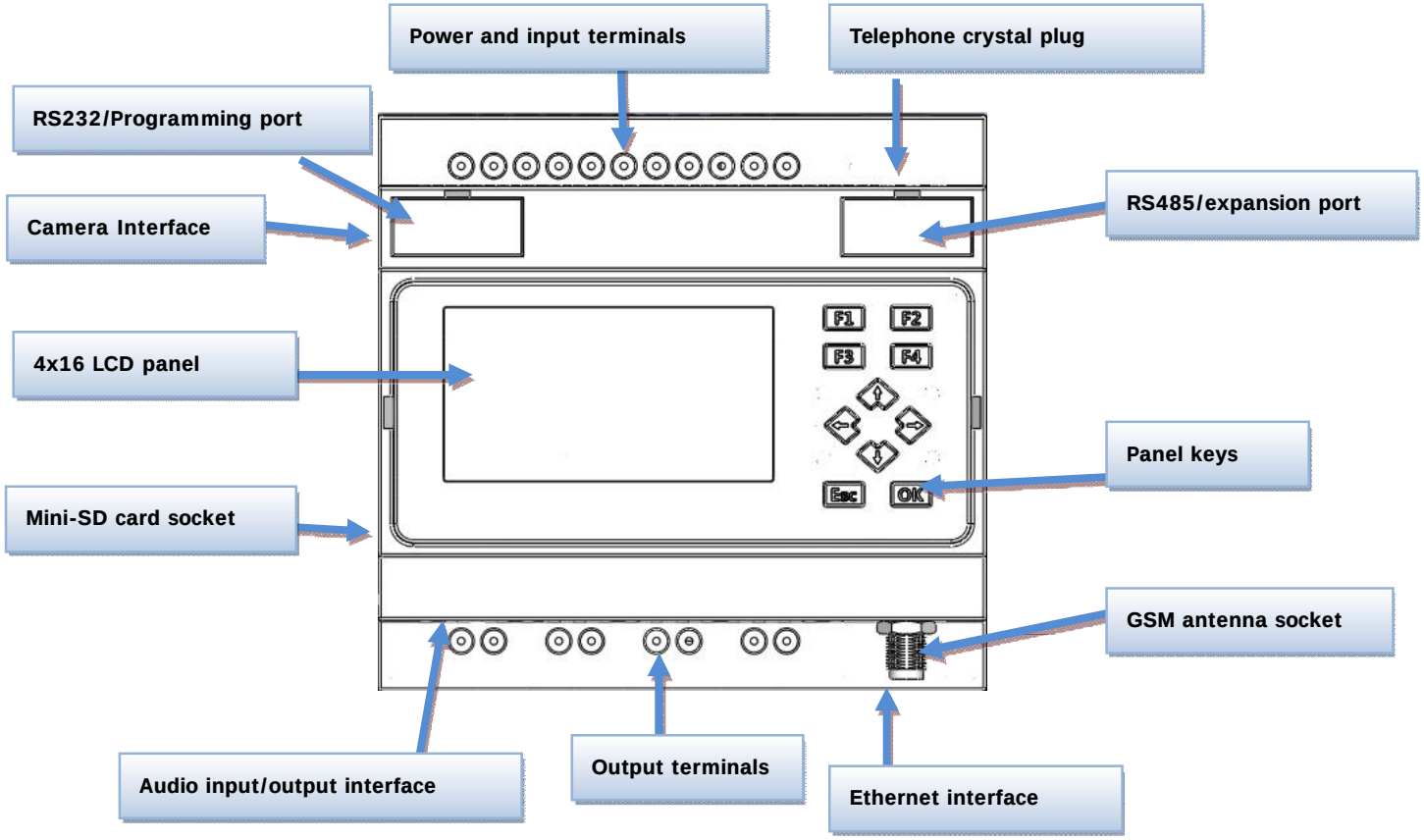
Physical structure layout



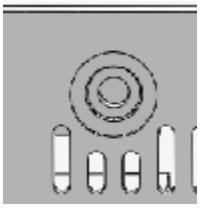
- LCD operate panel optional
- Up to 4 lines x16 characters can be displayed in maximum; IO status;, GSM signal strength, Run/stop status; Parameters of blocks etc.
- Up to 10 function key or Edit key.
- Data logger



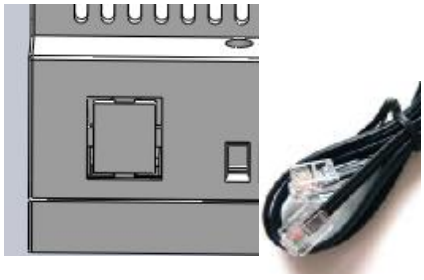
Physical structure layout



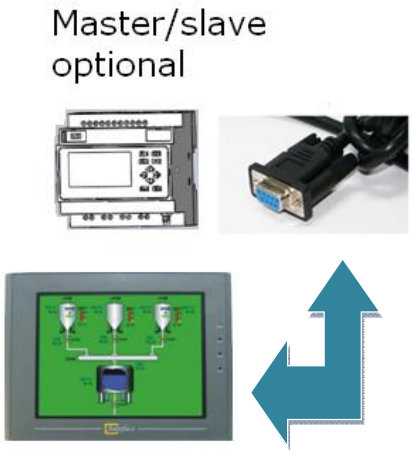
Audio input/output interface- Be used to connect with microphones, headset or external speaker.



Wired phone crystal plug.

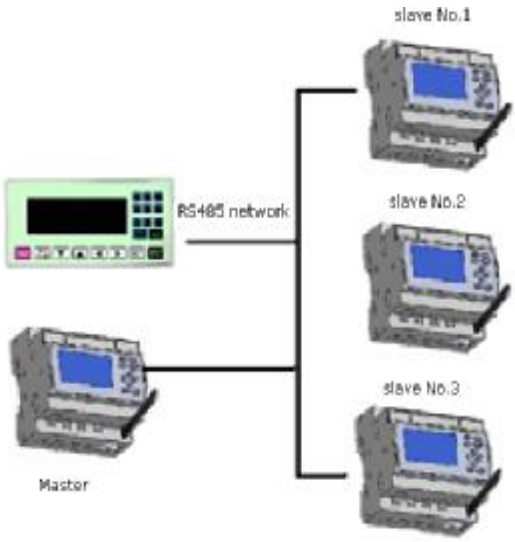


Multiple communication interfaces and powerful communication capability



1.RS232 interface

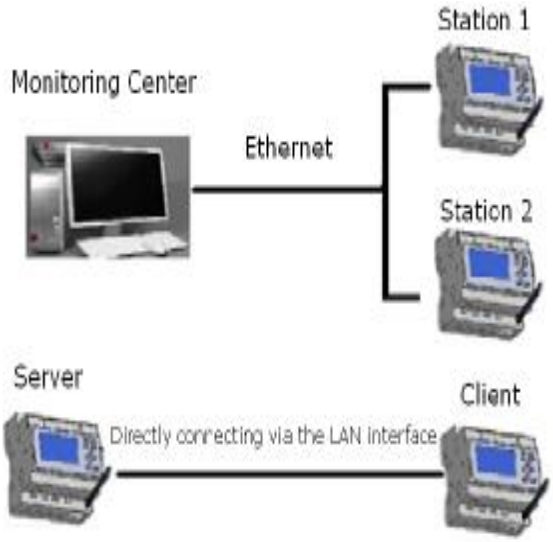
Communication between x-Messenger and other devices can be established via the ELC-RS232 cable which has photoelectric isolation. It's optional to act as either slave or master in Modbus network.

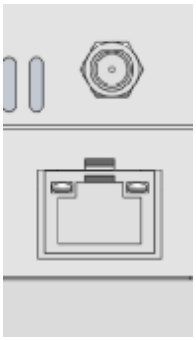


2. RS485 interface

It's easy to build up RS485 networks between x-Messenger and other devices/x-Messenger via the EXM-E-RS485 module which has photoelectric isolation.

The RS485 port also can be used as expansion port if any expansion modules required.





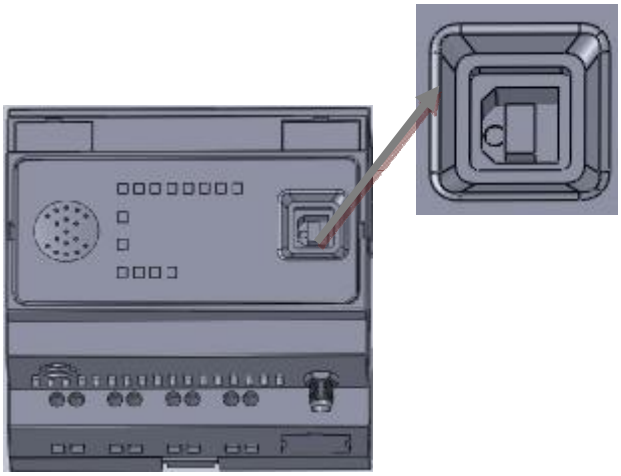
3. Ethernet interface

If CPU with the Ethernet interface built-in would be selected, then it will enable you to access to the Ethernet network, which makes it possible to Download/Upload program or perform real-time monitoring via Ethernet.

4: USB port

One built-in B-type USB/programming port shall be available if the CPU with LED indicator cover selected.

The connection between x-Messenger and PC or other devices can be done via EXM-USB cable.

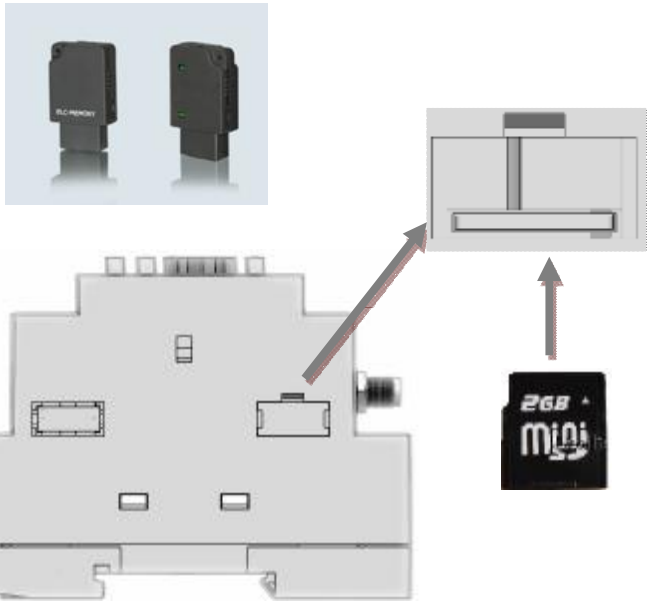


5. Mini-SD card socket

Here are 2 options for data-logging:

A. Optional accessory named as ELC-MEMORY can be applied if the CPU without built-in SD card socket selected.

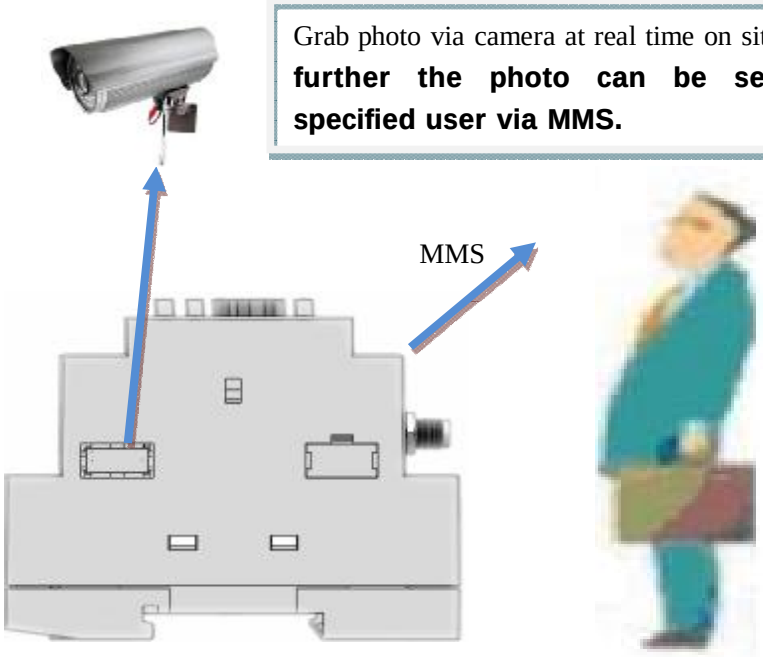
B. If the CPU integrating mini-SD card socket selected, then all the registers (like IO status, analog vales, M, AM, AF etc) can be directly saved in the SD card in ″.txt″ format .



6. Camera interface

x-Messenger offers an optional camera interface, used to connect camera to grab the photo at real time on site. and further the photo can be sent to specified user via MMS.

Grab photo via camera at real time on site, **and further the photo can be sent to specified user via MMS.**



PRS Communication

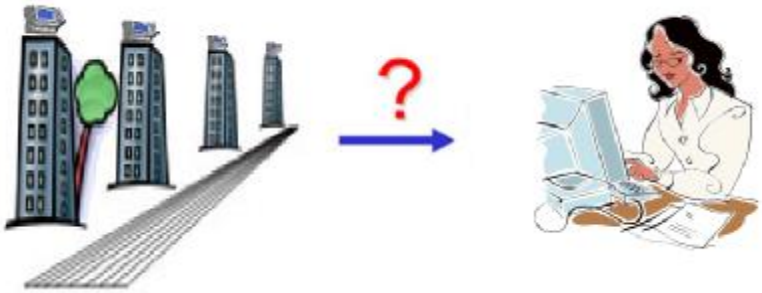
GPRS

Much convenience definitely can be expected from it, e.g. wireless download/upload program, remote monitoring.

GPRS Function - BENEFITS

Fast access to the information

- On-line supervision without establish connection
- Possibility of inspection at any time of any object in distance
- Immediate messaging on important changes ,events alarms
- Monitoring and control capabilities with mobile devices.
- Remote object data accessible via Internet



Safety of devices, installations and systems

- quick alarming on threats and failures
- preventing failures before they happen
- remote diagnostics of distant objects
- access security
- supervision of warning lights operation

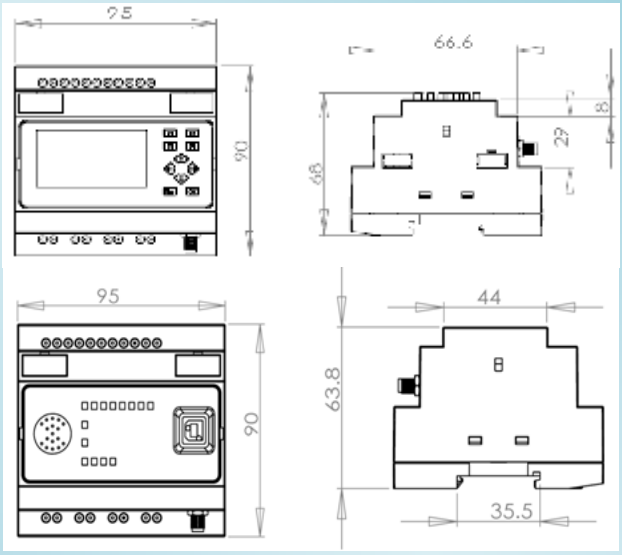
Cost savings

- decreasing the number of failures, loss reduction and shortening of repair time
- reduction of trips to distant sites
- better security of devices and installations
- more effective diagnostics
- optimization of logistic actions

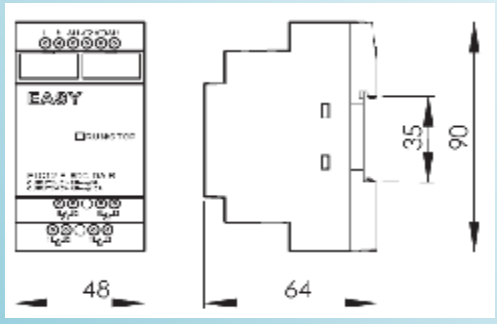
Dimensions and Installation

Dimensions :

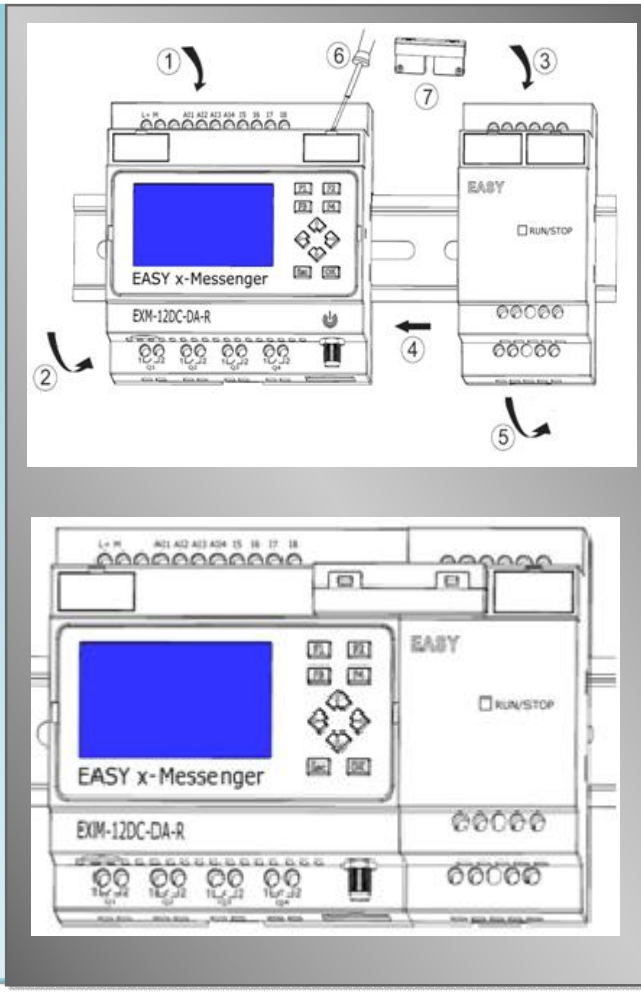
CPU:



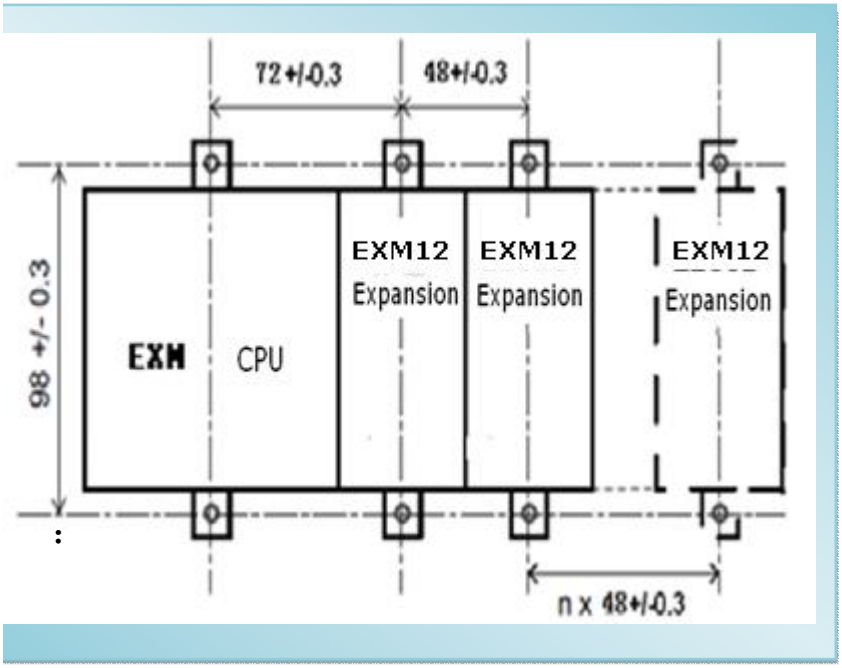
Extensions &communication module for EXM-12

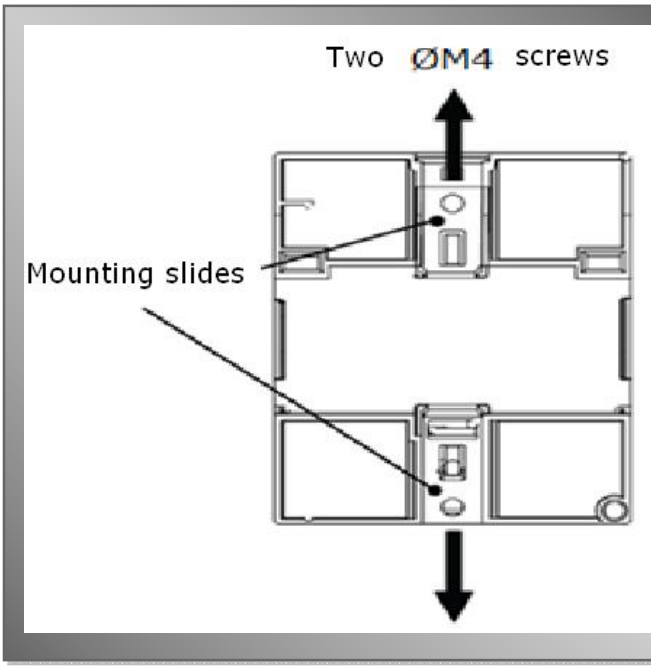


35mm DIN Rail Installation:



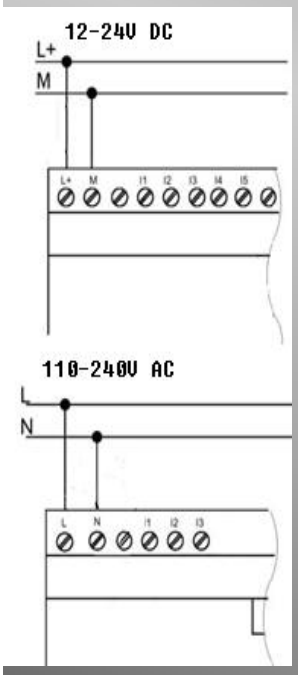
Wall mounting:



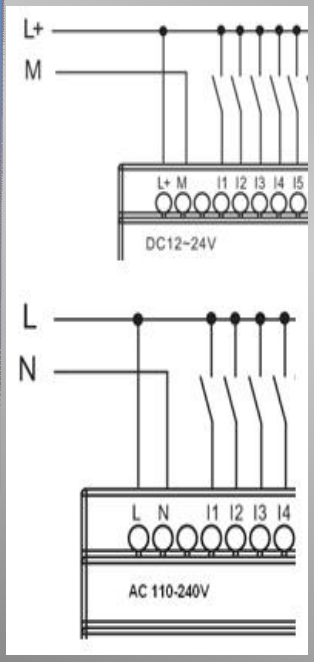


Power, Input, output wiring

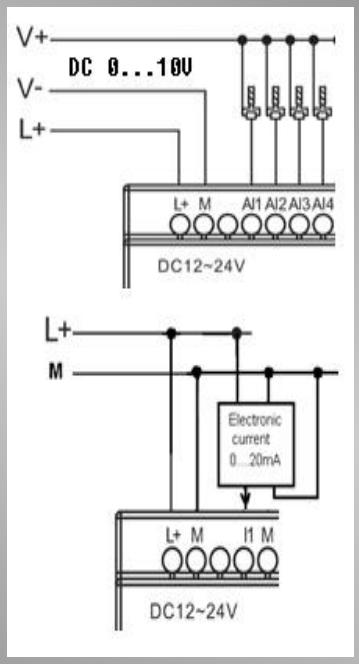
Power supply:



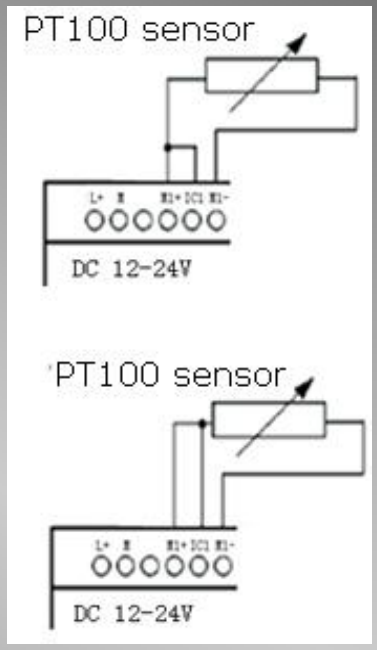
Input: digital



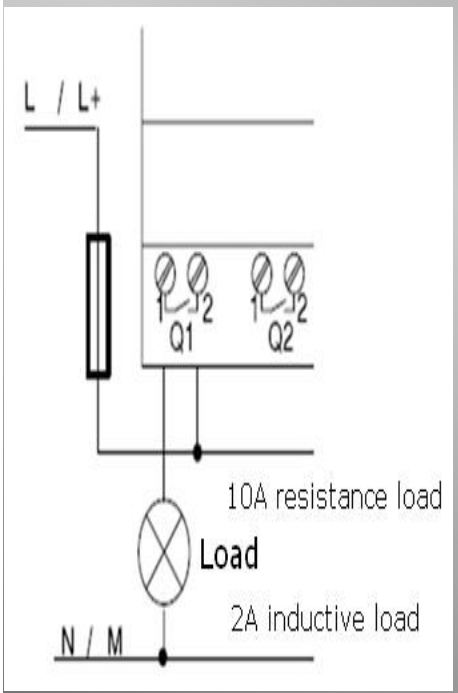
DC 0...10V/0/4...20mA



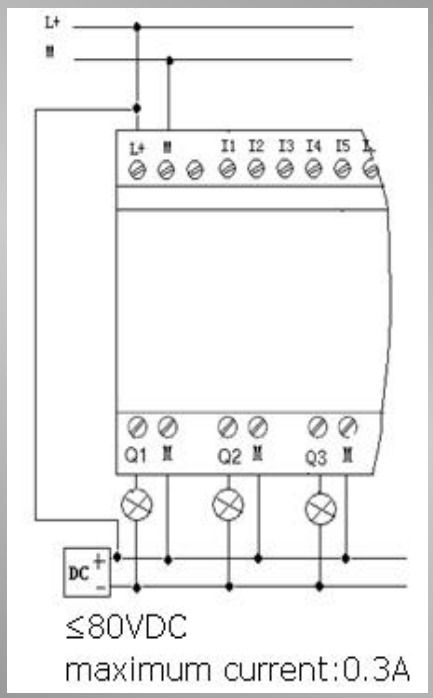
PT100 2-wire and 3-wire



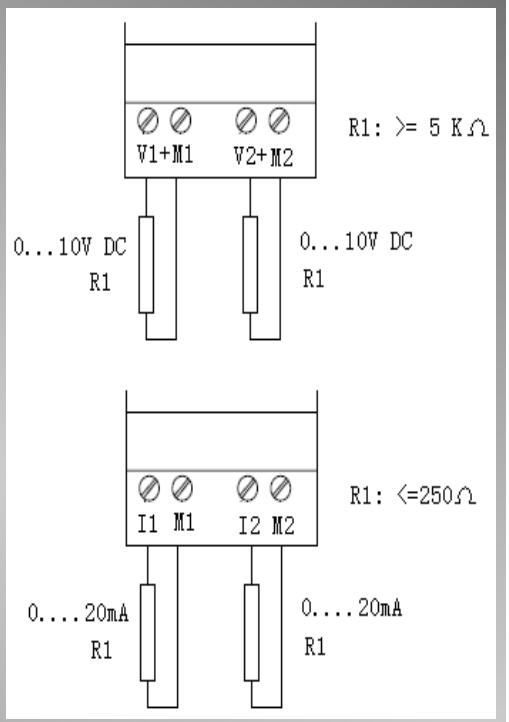
Output: Relay output



Transistor (PNP)



DC 0...10V /0...20mA



-Messenger Configuration/Programming software:

eSmsConfig

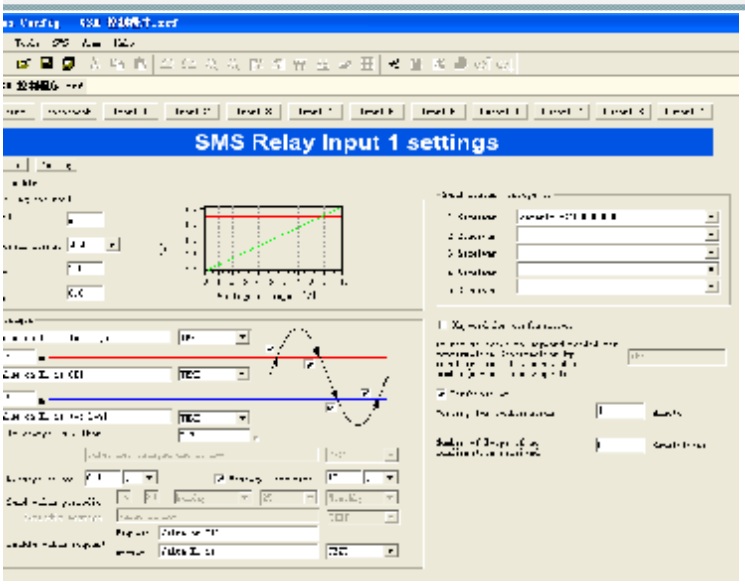
wo modes available: A. Standard mode B. Customized mode

Who will use the standard mode?

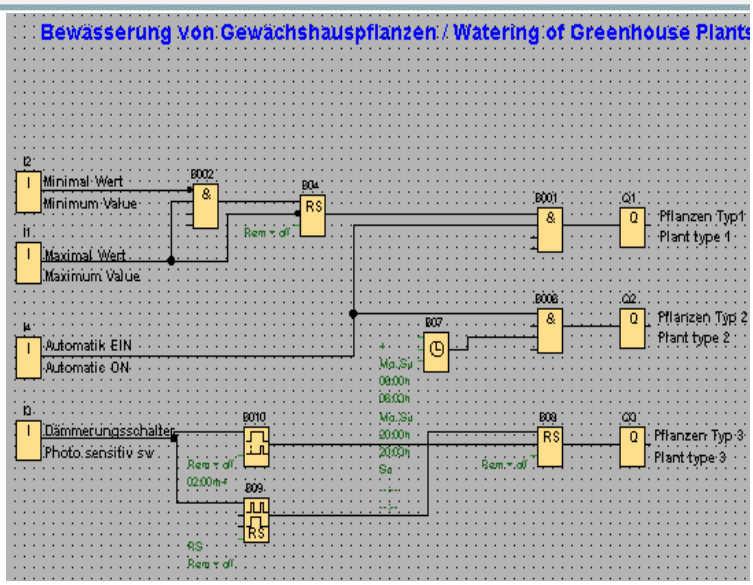
sers who are not familiar with PLC programming, and furthermore merely simple control or no multiple logic would be requir
r their applications.

Who will use the customized mode?

sers who are familiar with the logic boxes of Boolean algebra, and moreover complex control, logic, timer, counter, analog ma
c would be needed for their systems.

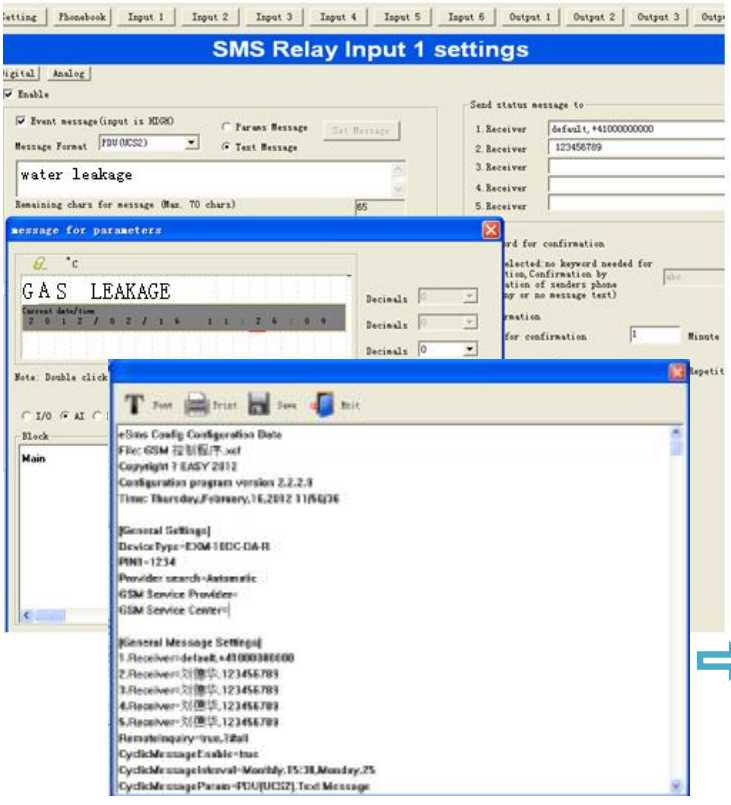


A. standard mode(Configuration)

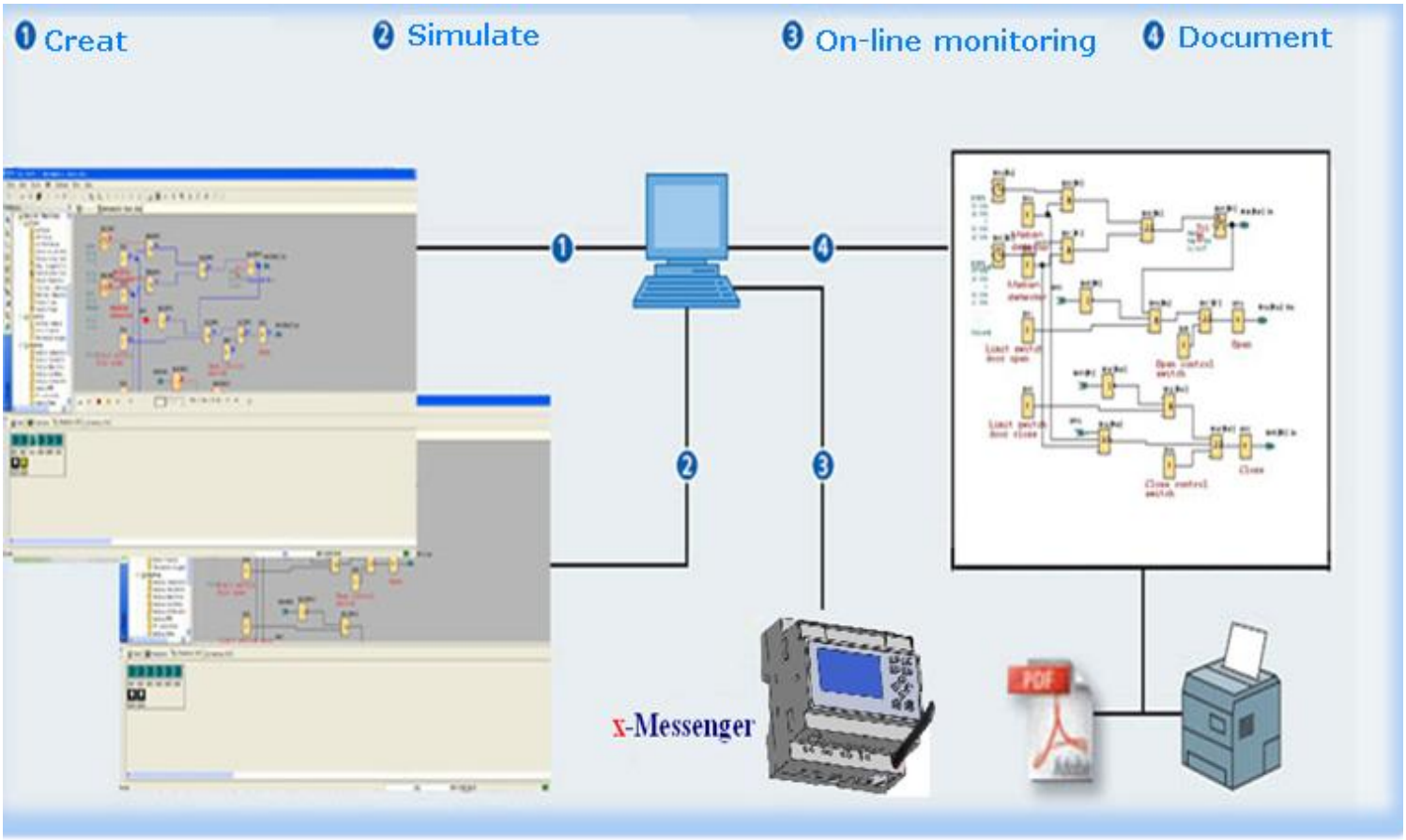


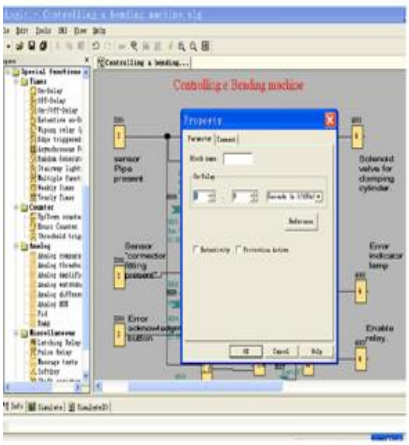
B. Customized mode(Function block diagram）

Up to 50 telephone numbers can be saved in the phonebook

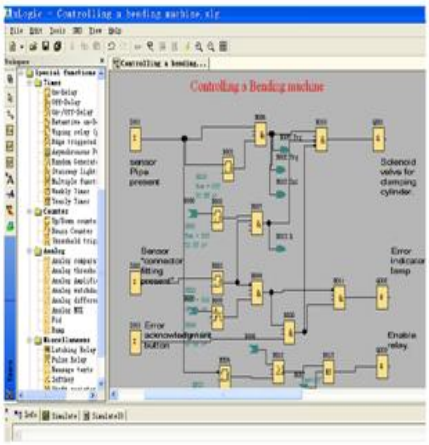


- IO status, various parameter values and alarming messages can be acquired by user via SMS. All the SMS messages can be pre-configured or edited in the software.
- All the configuration information can be saved and printed with eSmsconfig.

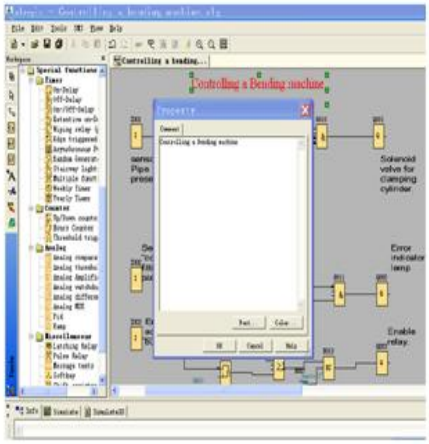




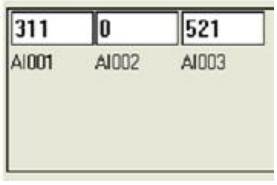
Using the dialog boxes, function block parameter setup and modification is a quick and easy task to complete.



Link function blocks to complete your program. Set up as many as 512 function blocks in one circuit program.

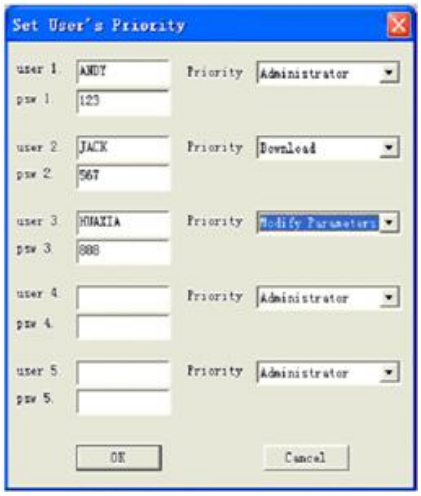


Use the "label tool" to write a comment, instruction or help note on the x-Messenger circuit program screen.



Vivid off-line simulation information

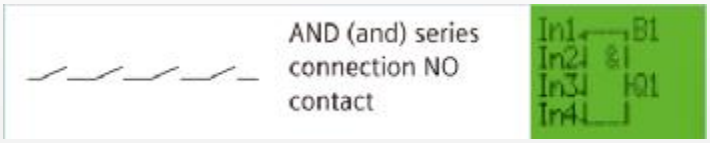
Program priority manger function

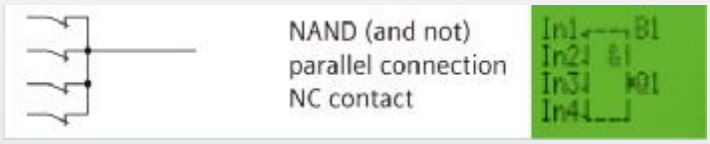


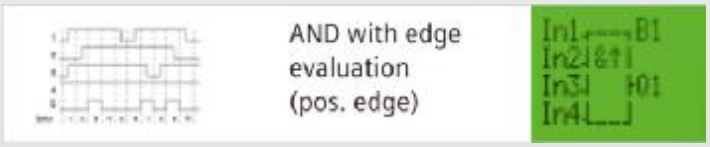
x-Messenger Function:

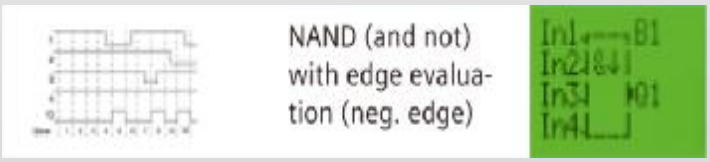
- Eight basic functions
- Two SMS blocks
- Thirty-six special functions

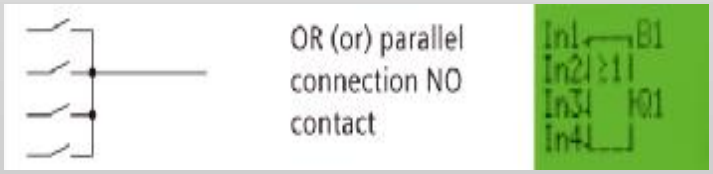
Eight basic functions

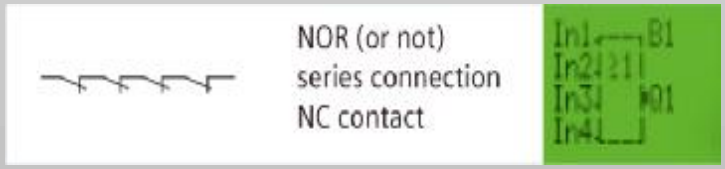


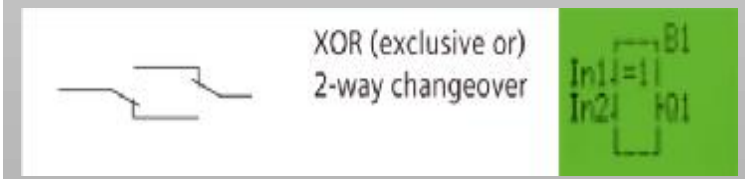


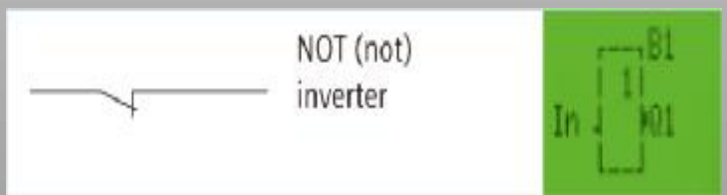






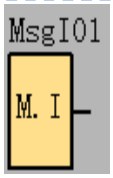


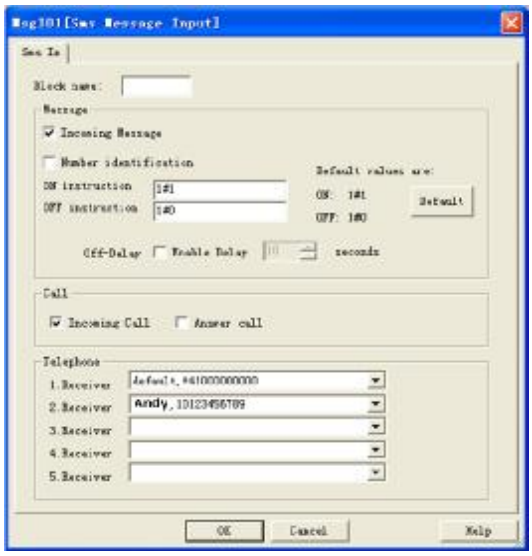




SMS message input:

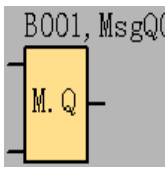
Customer can set the control SMS or Call-In in the dialog box。

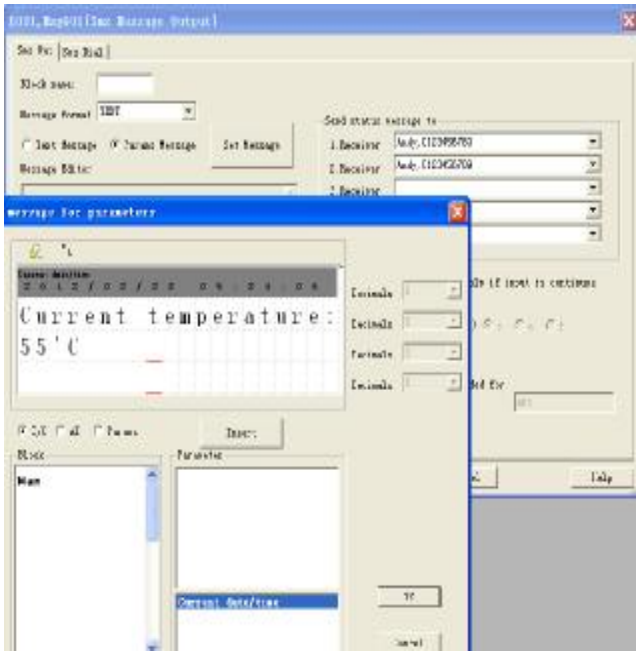




SMS message output:

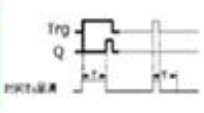
Message output content can be configured in the dialog box. The IO status, parameters of blocks also can be inserted as short message content.



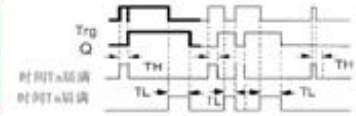


6 Special function blocks

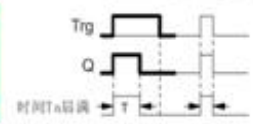
On-delay



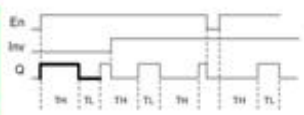
On/off delay



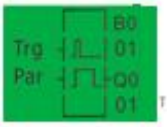
Wiping relay (pulse output)

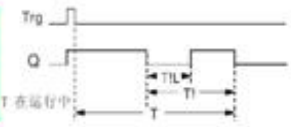


Asynchronous Pulse Generator

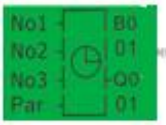


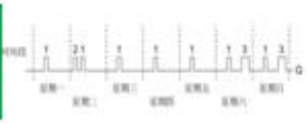
Stairway lighting switch



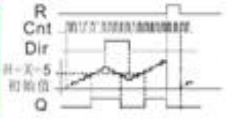


Weekly timer

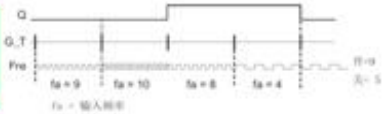




Up/down counter

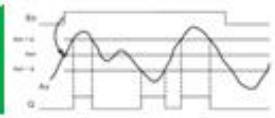


Frequency threshold trigger

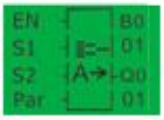


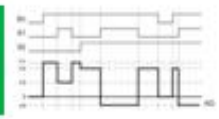
Analog threshold trigger

Analog watchdog

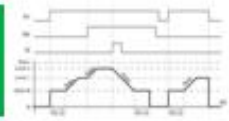


Analog MUX





Analog ramp

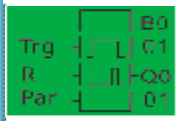


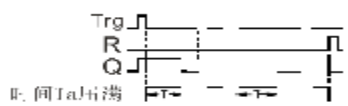
PWM

Message text

Analog amplifier

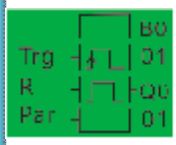
Off-delay

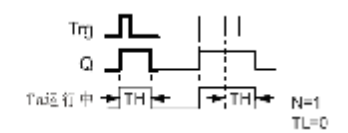




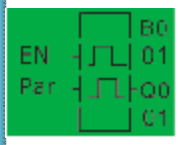
Retentive on-delay

Edge triggered wiping relay

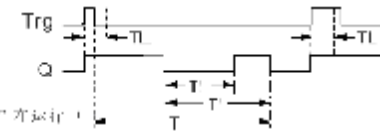




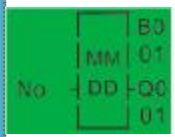
Radom Generator



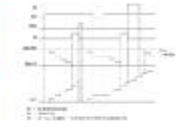
Multiple function switch



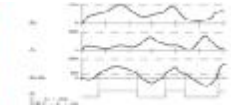
Yearly timer



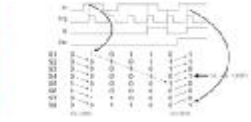
Hours counter



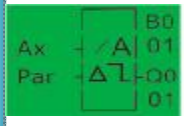
Analog comparator

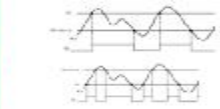


Shift register

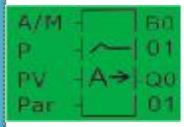


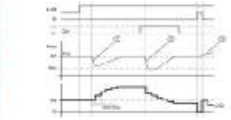
Analog differential trigger



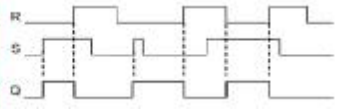


PI controller

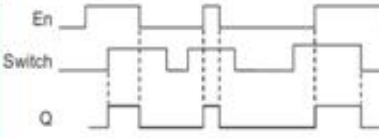




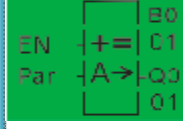
Latching relay



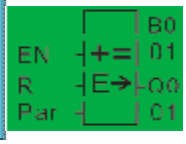
Softkey



Analog Math

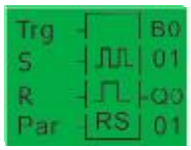


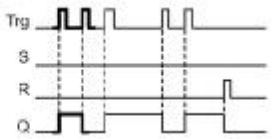
Analog math error detection



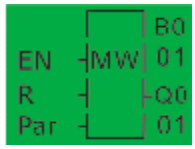
36 Special functions blocks

Pulse relay

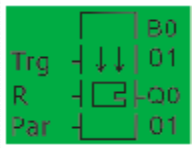




Modbus write

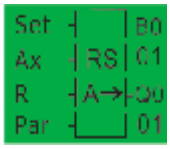


Memory write

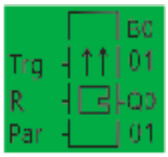


Modbus read

Data Latching relay



Memory read



Optional accessory and expansion modules

There are 3 types programming cables available:

1. ELC-RS232
2. ELC-USB
3. EXM-USB-B

Program copier: CPU program duplicator

Data-logger: Data logging device with a mini-SD card

ELC-CB-A: Connector between x-Messenger CPU and relevant expansion

ELC-CB-B: 3-Meter length connection cable between x-Messenger CPU and relevant expansion

To cater for diverse market demands, various extension modules would be supplied along with x-Messenger CPUs as follows:

ELC12-E-8AC-R, ELC12-E-AI-I
ELC12-E-8DC-DA-R, ELC12-E-8DC-DI
ELC12-E-8DC-DA-TN, ELC12-E-8AC-DI
ELC12-E-8DC-DA-TP, ELC12-E-AQ-I
ELC12-E-PT100, ELC12-E-AQ-V
EXM-E-RS485

Technical specifications

CPU Model	EXM-8AC-R	EXM-8AC-R-V	EXM-8AC-R-N
Power	AC 110-240V		
Input	6 digital		
Analog input	No		
Permissible range with signal "0" with signal "1" Input current	85 ... 265 V AC Max.40 V AC 0.03 mA Max. 79 V AC, 0.08 mA		
Output	2 relays		
Continuous current	10 A with resistive load;2 A with inductive load		
Short-circuit protection	External fuse required		
Switching frequency	2 Hz with resistive load; 0.5 Hz with inductive load		
RTC（real time clock）	Yes		
LCD panel	optional		
PWM output	No		
High speed input	No		
SMS	Yes		
Voice alarming	No	*Speaker built-in or telephone voice alarming*	*No*
GPRS	Yes		
Camera interface	No	No	No
Ethernet interface	No	*No*	*Yes*
Data logger	ELC-MEMORY optional ;No SD card socket		
Communication port	1 B type USB(optional), 1 RS232, 1 RS485(expansion port)		
Communication protocol	Modbus RTU/ASCII	*Modbus RTU/ASCII*	*Modbus RTU/ASCII/TCP*
Expansion	Yes	Yes	Yes
Alarming mode	SMS, Ring	*SMS, Ring, Speaker/Telephone voice*	
Output control	SMS , Call-In, program logic control		
25℃ RTC backup time	100 hours		
Ambient temperature	-20 ^{O}C to + 55 ^{O}C (LCD display /refresh reaction speed shall be slow at -20 ^{O}C , response time :3s)		
Storage temperature	– 40 ^{O}C to+ 70 ^{O}C		
Degree of protection	IP20		
Certification	CE		
Mounting	On 35 mm standard mounting rail, 4 MW, or wall-mounting		
Dimensions	W x H x D (95*90*68 mm)		
Telephone crystal plug	No	No	No
E-mail	Yes	Yes	Yes

CPU model	EXM-12DC-D-R	EXM-12DC-D-R-V	EXM-12DC-D-R-N
Power	DC 12--24V		
Input	8 digital		
Analog input	No		
Permissible range with signal "0" with signal "1" Input current	10.8 V ... 28.8 V DC Max. 3 V DC,1mA Max. 8 V DC,1.5 mA		
Output	4 relays		
Continuous current	10 A with resistive load;2 A with inductive load		
Short-circuit protection	External fuse required		
Switching frequency	2 Hz with resistive load; 0.5 Hz with inductive load		
RTC（real time clock）	Yes		
LCD panel	optional		
PWM output	No		
High speed input	I7,I8 (60KHZ)		
SMS	Yes		
Voice alarming	no	Speaker built-in or telephone voice alarming	No
GPRS	Yes		
Camera interface	No		
Ethernet interface	No	No	Yes
Data logger	ELC-MEMORY optional ;No SD card socket		
Communication port	1 B type USB(optional), 1 RS232, 1 RS485(expansion port)		
Communication protocol	Modbus RTU/ASCII	Modbus RTU/ASCII	Modbus RTU/ASCII/TCP
Expansion	Yes	Yes	Yes
Alarming mode	SMS, Ring	SMS, Ring, Speaker/Telephone voice	
Output control	SMS , Call-In, program logic control		
25℃ RTC backup time	100 hours		
Ambient temperature	-20 ^{O}C to + 55 ^{O}C (LCD display /refresh reaction speed shall be slow at -20 ^{O}C , response time :3s)		
Storage temperature	– 40 ^{O}C to+ 70 ^{O}C		
Degree of protection	IP20		
Certification	CE		
Mounting	On 35 mm standard mounting rail, 4 MW, or wall-mounting		
Dimensions	W x H x D (95*90*68 mm)		
Telephone crystal plug	no	no	no
E-mail	Yes	Yes	Yes

CPU model	EXM-12DC-DA-R	EXM-12DC-DA-R-V	EXM-12DC-DA-R-N
Power	DC 12--24V		
Input	4 digital/ 4 analog +4 digital		
Analog input	4 analog(0…10V)		
Permissible range with signal "0" with signal "1" Input current	10.8 V ... 28.8 V DC Max. 3 V DC,1mA Max.8 V DC,1.5 mA		
Output	4 relays		
Continuous current	10 A with resistive load;2 A with inductive load		
Short-circuit protection	External fuse required		
Switching frequency	2 Hz with resistive load; 0.5 Hz with inductive load		
RTC（real time clock）	Yes		
LCD panel	optional		
PWM output	No		
High speed input	I7,I8 (60KHZ)		
SMS	Yes		
Voice alarming	no	Speaker built-in or telephone voice alarming	No
GPRS	Yes		
Camera interface	No		
Ethernet interface	No	No	Yes
Data logger	ELC-MEMORY optional ;No SD card socket		
Communication port	1 B type USB(optional), 1 RS232, 1 RS485(expansion port)		
Communication protocol	Modbus RTU/ASCII	Modbus RTU/ASCII	Modbus RTU/ASCII/TCP
Expansion	Yes	Yes	Yes
Alarming mode	SMS, Ring	SMS, Ring, Speaker/Telephone voice	
Output control	SMS , Call-In, program logic control		
25℃ RTC backup time	100 hours		
Ambient temperature	-20 ^{O}C to + 55 ^{O}C (LCD display /refresh reaction speed shall be slow at -20 ^{O}C , response time :3s)		
Storage temperature	– 40 ^{O}C to+ 70 ^{O}C		
Degree of protection	IP20		
Certification	CE		
Mounting	On 35 mm standard mounting rail, 4 MW, or wall-mounting		
Dimensions	W x H x D (95*90*68 mm)		
Telephone crystal plug	no	no	no
E-mail	Yes	Yes	Yes

CPU model	EXM-12DC-D-TN	EXM-12DC-D-TN-V	EXM-12DC-D-TN-N
Power	DC 12--24V		
Input	8 digital		
Analog input	No		
Permissible range with signal "0" with signal "1" Input current	10.8 V ... 28.8 V DC Max. 3 V DC,1mA Max.8 V DC,1.5 mA		
Output	4 transistors(PNP)		
Continuous current	0.3A		
Short-circuit protection	External fuse required		
Switching frequency	10Hz		
RTC（real time clock）	Yes		
LCD panel	optional		
PWM output	333HZ(Q3,Q4)		
High speed input	I7,I8 (60KHZ)		
SMS	Yes		
Voice alarming	no	Speaker built-in or telephone voice alarming	No
GPRS	Yes		
Camera interface	No		
Ethernet interface	No	No	Yes
Data logger	ELC-MEMORY optional ;No SD card socket		
Communication port	1 B type USB(optional), 1 RS232, 1 RS485(expansion port)		
Communication protocol	Modbus RTU/ASCII	Modbus RTU/ASCII	Modbus RTU/ASCII/TCP
Expansion	Yes		
Alarming mode	SMS, Ring	SMS, Ring, Speaker/Telephone voice	
Output control	SMS , Call-In, program logic control		
25℃ RTC backup time	100 hours		
Ambient temperature	-20 ºC to + 55 ºC (LCD display /refresh reaction speed shall be slow at -20 ºC , response time :3s)		
Storage temperature	– 40 ºC to+ 70 ºC		
Degree of protection	IP20		
Certification	CE		
Mounting	On 35 mm standard mounting rail, 4 MW, or wall-mounting		
Dimensions	W x H x D (95*90*68 mm)		
Telephone crystal plug	no	no	no
E-mail	Yes	Yes	Yes

CPU model	EXM-12DC-DA-TN	EXM-12DC-DA-TN-V	EXM-12DC-DA-TN-N
Power	DC 12--24V		
Input	4 digital/4 analog+4 digital		
Analog input	4 analog (0…10V)		
Permissible range with signal "0" with signal "1" Input current	10.8 V ... 28.8 V DC Max. 3 V DC,1mA Max.8 V DC,1.5 mA		
Output	4 transistors(PNP)		
Continuous current	0.3A		
Short-circuit protection	External fuse required		
Switching frequency	10Hz		
RTC（real time clock）	Yes		
LCD panel	optional		
PWM output	333HZ(Q3,Q4)		
High speed input	I7,I8 (60KHZ)		
SMS	Yes		
Voice alarming	no	Speaker built-in or telephone voice alarming	No
GPRS	Yes		
Camera interface	No	No	No
Ethernet interface	No	No	Yes
Data logger	ELC-MEMORY optional ;No SD card socket		
Communication port	1 B type USB(optional), 1 RS232, 1 RS485(expansion port)		
Communication protocol	Modbus RTU/ASCII	Modbus RTU/ASCII	Modbus RTU/ASCII/TCP
Expansion	Yes	Yes	Yes
Alarming mode	SMS, Ring	SMS, Ring, Speaker/Telephone voice	
Output control	SMS , Call-In, program logic control		
25℃ RTC backup time	100 hours		
Ambient temperature	-20 ^{O}C to + 55 ^{O}C (LCD display /refresh reaction speed shall be slow at -20 ^{O}C , response time :3s)		
Storage temperature	– 40 ^{O}C to+ 70 ^{O}C		
Degree of protection	IP20		
Certification	CE		
Mounting	On 35 mm standard mounting rail, 4 MW, or wall-mounting		
Dimensions	W x H x D (95*90*68 mm)		
Telephone crystal plug	no	no	no
E-mail	Yes	Yes	Yes

CPU model	EXM-12DC-DAI-R	EXM-12DC-DAI-R-V	EXM-12DC-DAI-TN
Power	DC 12--24V		
Input	2 digital/2 analog+2 analog+4 digital		
Analog input	2 analog (0…10V)+ 2 analog (0/4…20 mA)		
Permissible range with signal "0" with signal "1" Input current	10.8 V ... 28.8 V DC Max. 3 V DC,1mA Max.8 V DC,1.5 mA		
Output	4 Relay		4 transistors(PNP)
Continuous current	10 A with resistive load; 2 A with inductive load		0.3 A
Short-circuit protection	External fuse required		
Switching frequency	2 Hz with resistive load; 0.5 Hz with inductive load		10 HZ
RTC（real time clock）	Yes		Yes
LCD panel	optional		
PWM output	No		333HZ(Q3,Q4)
High speed input	I7,I8 (60KHZ)		
SMS	Yes		
Voice alarming	no	Speaker built-in or telephone voice alarming	no
GPRS	Yes		
Camera interface	No	No	No
Ethernet interface	No	No	No
Data logger	ELC-MEMORY optional ;No SD card socket		
Communication port	1 B type USB(optional), 1 RS232, 1 RS485(expansion port)		
Communication protocol	Modbus RTU/ASCII	Modbus RTU/ASCII	Modbus RTU/ASCII
Expansion	Yes	Yes	Yes
Alarming mode	SMS, Ring	SMS, Ring, Speaker/Telephone voice	SMS, Ring
Output control	SMS , Call-In, program logic control		
25℃ RTC backup time	100 hours		
Ambient temperature	-20 ^{O}C to + 55 ^{O}C (LCD display /refresh reaction speed shall be slow at -20 ^{O}C , response time :3s)		
Storage temperature	– 40 ^{O}C to+ 70 ^{O}C		
Degree of protection	IP20		
Certification	CE		
Mounting	On 35 mm standard mounting rail, 4 MW, or wall-mounting		
Dimensions	W x H x D (95*90*68 mm)		
Telephone crystal plug	no	no	no
E-mail	Yes	Yes	Yes

CPU model	EXM-12DC-DA-R-CVN	EXM-12DC-DAI-TN-V
Power	DC 12--24V	
Input	4 digital/4 analog+4 digital	2 digital/2 analog+2 analog +4 digital
Analog input	4 analog (0...10V)	2 analog (0...10V)+ 2 analog (0/4...20 mA)
Permissible range with signal "0" with signal "1" Input current	10.8 V ... 28.8 V DC Max. 3 V DC,1mA Max.8 V DC,1.5 mA	
Output	4 Relay	4 transistors(PNP)
Continuous current	10 A with resistive load; 2 A with inductive load	0.3 A
Short-circuit protection	External fuse required	
Switching frequency	2 Hz with resistive load; 0.5 Hz with inductive load	10 HZ
RTC（real time clock）	Yes	Yes
LCD panel	optional	
PWM output	No	333HZ(Q3,Q4)
High speed input	I7,I8 (60KHZ)	
SMS	Yes	
Voice alarming	Speaker built-in or telephone voice alarming	
GPRS	Yes	
Camera interface	Yes	No
Ethernet interface	Yes	No
Data logger	SD card socket built-in	ELC-MEMORY optional ;No SD card socket
Communication port	1 B type USB(optional), 1 RS232, 1 RS485(expansion port)	
Communication protocol	Modbus RTU/ASCII/TCP	Modbus RTU/ASCII
Expansion	Yes	
Alarming mode	SMS, Ring, Speaker/Telephone voice	
Output control	SMS , Call-In, program logic control	
25℃ RTC backup time	100 hours	
Ambient temperature	-20 ^{O}C to + 55 ^{O}C (LCD display /refresh reaction speed shall be slow at -20 ^{O}C , response time :3s)	
Storage temperature	– 40 ^{O}C to+ 70 ^{O}C	
Degree of protection	IP20	
Certification	CE	
Mounting	On 35 mm standard mounting rail, 4 MW, or wall-mounting	
Dimensions	W x H x D (95*90*68 mm)	
Telephone crystal plug	No	
E-mail	Yes	

CPU model	EXM-6DC-PT100-R	EXM-8DC-PT100-R	
Power	DC 12--24V		
Input	3 PT100	2 PT100 + 2 digital	
Analog input	3 PT100 (Range:-50 °C --200 °C)	2 PT100 (Range:-50 °C --200 °C)	
Permissible range with signal "0" with signal "1" Input current		10.8 V ... 28.8 V DC Max. 3 V DC,1mA Max.8 V DC,1.5 mA	
Output	3 Relay	4 Relay	
Continuous current	10 A with resistive load;2 A with inductive load		
Short-circuit protection	External fuse required		
Switching frequency	2 Hz with resistive load; 0.5 Hz with inductive load		
RTC（real time clock）	Yes		
LCD panel	optional		
PWM output	No		
High speed input	No		
SMS	Yes		
Voice alarming	No		
GPRS	Yes		
Camera interface	No		
Ethernet interface	No		
Data logger	ELC-MEMORY optional ;No SD card socket		
Communication port	1 B type USB(optional), 1 RS232, 1 RS485(expansion port)		
Communication protocol	Modbus RTU/ASCII		
Expansion	No	No	
Alarming mode	SMS, Ring		
Output control	SMS , Call-In, program logic control		
25℃ RTC backup time	100 hours		
Ambient temperature	-20 °C to + 55 °C (LCD display /refresh reaction speed shall be slow at -20 °C , response time :3s)		
Storage temperature	– 40 °C to+ 70 °C		
Degree of protection	IP20		
Certification	CE		
Mounting	On 35 mm standard mounting rail, 4 MW, or wall-mounting		
Dimensions	W x H x D (95*90*68 mm)		
Telephone crystal plug	no	no	
E-mail	Yes	Yes	

CPU model	EXM-3DC-D-R	EXM-6DC-D-R	EXM-2DC-PT100-R
Power	DC 12--24V		
Input	2 Digital	4 Digital	1 Analog
Analog input	No	No	1 PT100 (Range:-50 ^{O}C --200 ^{O}C)
Permissible range with signal "0" with signal "1" Input current	10.8 V ... 28.8 V DC Max. 3 V DC,1mA Max.8 V DC,1.5 mA		
Output	1 Relay	2 Relay	1 Relay
Continuous current	10 A with resistive load;2 A with inductive load		
Short-circuit protection	External fuse required		
Switching frequency	2 Hz with resistive load; 0.5 Hz with inductive load		
RTC（real time clock）	Yes		
LCD panel	optional		
PWM output	No		
High speed input	No		
SMS	Yes		
Voice alarming	No		
GPRS	No		
Camera interface	No		
Ethernet interface	No		
Data logger	ELC-MEMORY optional ;No SD card socket		
Communication port	1 B type USB(optional), 1 RS232		
Communication protocol	Modbus RTU/ASCII		
Expansion	No	No	No
Alarming mode	SMS, Ring		
Output control	SMS , Call-In, program logic control		
25℃ RTC backup time	100 hours		
Ambient temperature	-20 ^{O}C to + 55 ^{O}C (LCD display /refresh reaction speed shall be slow at -20 ^{O}C , response time :3s)		
Storage temperature	– 40 ^{O}C to+ 70 ^{O}C		
Degree of protection	IP20		
Certification	CE		
Mounting	On 35 mm standard mounting rail, 4 MW, or wall-mounting		
Dimensions	W x H x D (95*90*68 mm)		
Telephone crystal plug	no	no	no
E-mail	No	No	No

Extension model	ELC12-E-8AC-R	ELC12-E-8DC-DA-R	ELC12-E-8DC-DA-TN	ELC12-E-8DC-DA-TP
Inputs	4 digital	4 digital	4 digital	4 digital
of which can be used in analog mode	none	4 (0 to 10V)	4 (0 to 10V)	4 (0 to 10V)
Input/supply voltage	110-240V AC	12-24V DC	12-24V DC	12-24V DC
Permissible range with signal "0" with signal "1" Input current	85 ... 265 V AC 100 ... 253 V DC max. 40 V AC 0.03 mA min. 79 V AC, 0.08 mA	10.8 V ... 28.8 V DC max. 3 V DC,1mA min. 8 V DC,1.5 mA	10.8 V ... 28.8 V DC max. 3 V DC, 1mA min. 8 V DC,1.5 mA	10.8 V ... 28.8 V DC max. 3 V DC, 1mA min. 8 V DC,1.5 mA
Outputs	4 relays	4 relays	4 transistors(PNP)	4 transistors(NPN)
Continuous current	10 A with resistive load; 2 A with inductive load	10 A with resistive load; 2 A with inductive load	0.3 A	0.3 A
Short-circuit protection	External fuse required			
Switching frequency	2 Hz with resistive load; 0.5 Hz with inductive load	2 Hz with resistive load; 0.5 Hz with inductive load	2 Hz	2 Hz
Connection cables	2 x 1.5 mm^2 or 1 x 2.5 mm^2			
Ambient temperature	-20 ^{O}C to + 55 ^{O}C			
Storage temperature	– 40 ^{O}C to + 70 ^{O}C			
Degree of protection	IP20			
Certification	CE			
Mounting	On 35 mm standard mounting rail, 4 MW, or wall-mounting			
Dimensions	(W X H X D) 48 x 90 x 64 mm			

Extension model	ELC12-E-PT100	ELC12-E-AI-I	ELC12-E-AQ-V	ELC12-E-AQ-I
Inputs	2 PT100	4 Analog	None	None
of which can be used in analog mode	2 PT100 (Range: -50 ^{O}C --200 ^{O}C)	4 (0 /4...20mA)	None	None
Input/supply voltage	12-24V DC	12-24V DC	15-24V DC	12-24V DC
Outputs	None	None	2 (DC 0...10V)	2(0/4...20mA)
Short-circuit protection	External fuse required			
Connection cables	2 x 1.5 mm^2 or 1 x 2.5 mm^2			
Ambient temperature	-20 ^{O}C to + 55 ^{O}C			
Storage temperature	– 40 ^{O}C to + 70 ^{O}C			
Degree of protection	IP20			
Certification	CE			
Mounting	On 35 mm standard mounting rail, 4 MW, or wall-mounting			
Dimensions	(W X H X D) 48 x 90 x 64 mm			

Extension model	ELC12-E-8AC-DI	ELC12-E-8DC-DI	EXM-E-RS485
Inputs	8 digital	8 digital	
of which can be used in analog mode	none	none	none
Input/supply voltage	110-240V AC	12-24V DC	12-24V DC
Permissible range with signal "0" with signal "1" Input current	85 ... 265 V AC 100 ... 253 V DC max. 40 V AC 0.03 mA min. 79 V AC, 0.08 mA	10.8 V ... 28.8 V DC max. 3 V DC, 1mA min. 8 V DC,1.5 mA	Isolated 485 converter, used to bring out the terminals of RS485 port built-in EXM-12 series CPU for connection with third party devices.
Outputs	none	none	
Continuous current			
Short-circuit protection	External fuse required	External fuse required	External fuse required
Switching frequency	none	none	
Connection cables	2 x 1.5 mm^2 or 1 x 2.5 mm^2		
Ambient temperature	-20 ^{O}C to + 55 ^{O}C (LCD display /refresh reaction speed shall be slow at -20 ^{O}C , response time :3s)		
Storage temperature	– 40 ^{O}C to + 70 ^{O}C		
Degree of protection	IP20		
Certification	CE		
Mounting	On 35 mm standard mounting rail, 4 MW, or wall-mounting		
Dimensions	(W X H X D) 48 x 90 x 64 mm		

Accessories	
ELC-CB-B	Extended connection cable between x-Messenger CPU &Extension modules, 3-meter standard length
Program Copier (ELC-Copier)	Program Copier can be used for mass program production from CPU to CPU.
Data-logger (ELC-MEMORY)	Data-logger is a data logging devices with a mini-SD card for x-Messenger's 12-points CPUs, specific production or process data(such as I/O status, analog values, register values etc)can be saved in SD card of Data-logger to either read it with a PC or evaluate it from the SD card at the work station. It's good for data analysis. SD card capacity up to 2GB.
ELC-RS232	RS232 communication cable between PC and x-Messenger CPUs
ELC-USB	USB communication cable between PC and x-Messenger CPUs
EXM-USB-B	USB communication cable between PC and x-Messenger CPUs with B-type USB port