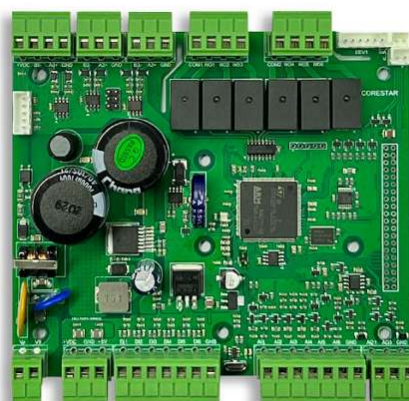# CORESTAR

User Manual

（Version V1.1）

UX1

Programmable Logic Controller

Introduction

UX1 is a RTOS (Real Time Operating System) based programmable logic controller which can be used in many applications in the air-conditioning, heating and refrigeration sectors and solution for HVAC/R sector. Since it is programmable with good flexibility, allowing specific solutions to be created on customers request by themselves. UX1 has 3 RS485 communication interface, one built-in uni-polar electronic expansion valve (EEV) driver, and supports CORESTAR's DSP series text screen and touch screen at the same time.

Features

- Wide voltage input（18~60Vdc/ 13~42Vac）

- Flexible and configurable inputs/outputs

- One build-in uni-polar EEV driver

- Totally 3 RS485 serial ports, easy for system integration

- Low-cost solution for HVAC/R

Can be used in:

- Precision air conditioning control system for computer room

- Building automation system

- Fresh air control system

- Refrigeration control system

- Automatic control system

ABSOLUTE MAXIMUM RATINGS:

NOTE: Stresses above/below these ratings may cause permanent damage.

Table 1

parameter	minimum	maximum	unit
Storage temperature	-40	85	°C
Operation temperature	-40	60	°C
DC working voltage	18	60	Vdc
AC working voltage	13	42	Vac
Display cable length	0.1	10	m
Serial communication length(AWG24 shielded cable)	0	500	m
+VDC output current	0	80	mA
+5Vdc output current	0	50	mA

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Dimensions with plastic cover (unit mm)

57

165

125

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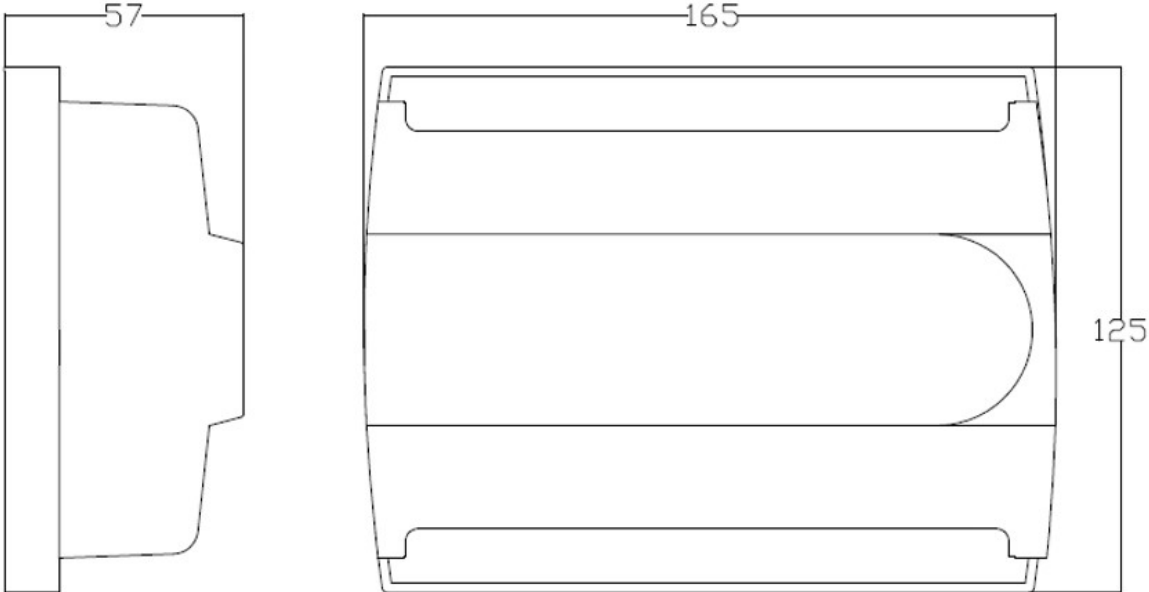
Dimensions without plastic cover (unit: mm)
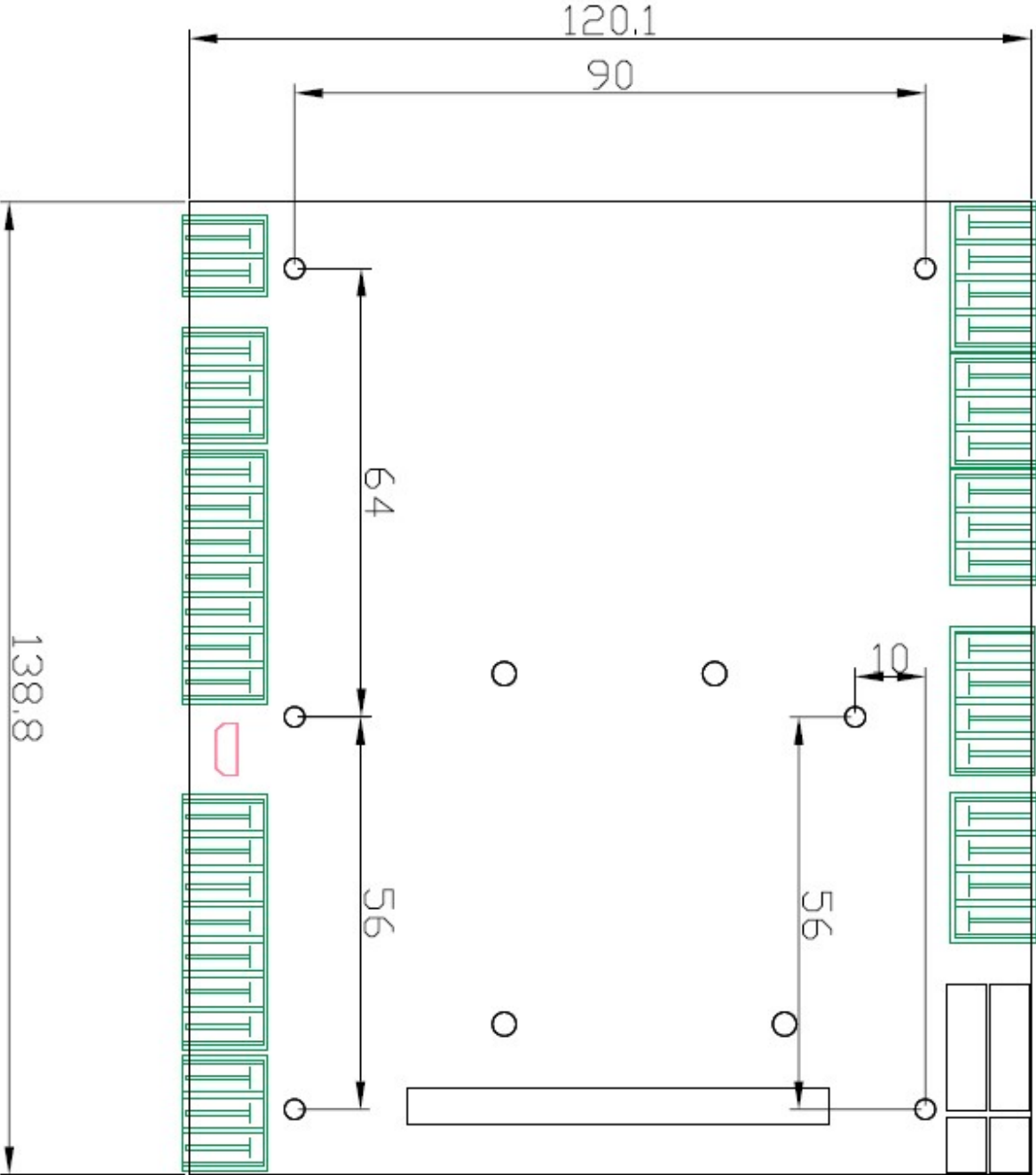
I/O characteristics

Analogue inputs

Table 2

Channel number	6
Type	
A1	NTC (-50 ~ 90°C; R/T 10 kΩ ±1% @25°C), NTC HT (0~150°C)
	Digital input type: free contact
	0~10V from probes powered by controller
	PT1000
A2, A3, A4	NTC (-50 ~ 90°C; R/T 10 kΩ ±1% @25°C), NTC HT(0~150°C)
	Digital input type: free contact
	0~1V from probes powered by controller
	PT1000
A5	NTC (-50~90°C; R/T 10 kΩ ±1% @25°C), NTC HT(0~150°C)
	0~20 mA /4~20 mA from probes powered by controller
	PT1000
A6	NTC (-50~90°C; R/T 10 kΩ ±1% @ 25°C), NTC HT(0~150°C)
	0~5V from probes powered by controller
	PT1000
Time constant	0.5 s
precision	1%fs

Digital inputs

Table 3

Channel number	6+4（A1,A2,A3,A4）
Type	
DI1,DI2	Free contacts
	Fast digital inputs（max 500Hz）
DI3…..DI6	Free contacts
Time constant	0.5 s

Analogue outputs

Table 4

Channel number	2
Type	
AO1	0~10VDC
	0~10VDC
	PWM 0/10 V 100 Hz
AO3	PWM 0/10 V 2KHz
Max current	2mA
Precision	±3%
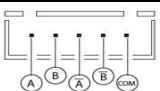
Digital outputs

Table 5

Channel number	6	
Relay type		
SPST	NO1.....NO6	AC 250V 5A
Electrical durability	100K cycles	
Mechanical durability	1000K cycles	
Certifications	VDE,UL,CQC	

Uni-polar valve outputs

Table 6

Number	1
Max. power for each valve	8W
Voltage	12Vdc
Type of control	Single- pole stepper motor
Port definition	

Voltage and Current input

frequency	50/60Hz
Max. input voltage	0.15V
Max. input current	25mA
Resolution	10bit
Precision	$\pm$5%

Note：
1. For mains power voltage monitoring，max support 400Vac，has to use special sensor of CORESTAR order code：ESR60
2. For mains power current monitoring，max support 50A， has to use special sensor of CORESTAR order code： ESR70

Application upgrade guideline

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Final user can upgrade application easily by micro-USB port on
UX1 board

Micro USB

Hardware resources：
1.   one computer with USB port
2.   Micro-USB cable（Android phone DATA cable）
3.   The latest application file (the name must be APP.ZIP and cannot
     be modified)

Upgrade steps：
Step 1：Connect cable to micro-USB port on UX1 board
Step 2：Connect the cable to the computer USB port, after 2~5 seconds, the USB disk icon will appear
Step 3：Double-click to open the USB disk, you can see 2 folders (UPGRADE and SYSTEM)
Step 4：Double click UPGRADE folder to enter
Step 5： Copy the APP.ZIP file to the UPGRADE folder and make sure the copy is complete
Step 6：Unplug the USB cable, power off and restart (when restarting, you will see the red and green lights flash alternately, after the upgrade is complete, only the green light will work in normal operation)
Step 7：upgrade complete