EVERTECH ELECTRONICS
Accessory Control Unit (ACU) Installation Guide

ET-100 ET-200 ET-300 ET-8C500
Accessory Control Unit
Installation Guide

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TABLE OF CONTENTS

EVERTECH ELECTRONICS
Accessory Control Unit (ACU) Installation Guide

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EVERTECH ELECTRONICS
Accessory Control Unit (ACU) Installation Guide

1. INTRODUCTION

The ET-100 Accessory Control Unit (ACU) controls motorized lens and pan/tilt units. Standard features include pan, tilt, and lens control and communication port. The other features on board are available from ET-200, ET-300 and 8C500 are as follow:

※ 6 output relays ※ Presets (ET-200, ET-300) ※ Alarm input points (ET-200)
※16 output points ※ Power supply for sensors ※ Power supply for Cameras

Figure 1 displays the location of the connectors, jumpers, switches and option board locations.

EVERTECH ELECTRONICS
Accessory Control Unit (ACU) Installation Guide

2. INSTALLATION PROCEDURE

   ※ Unpack the equipment

   ※ Mount the ACU

   ※ Open the front cover

2.1 Connecting RS-422 communications (daisy chain):

   a. To connect communication to the ET-100 from the computer or another ACU, run a **4**-conductor cable (**Bleden 8723** or equivalent) into the ACU through the inlet.
   Connect the wires to **T5** (**In Port**) at terminals **1(RX+), 2(RX-), 3(TX+), 4(TX-)** and **5(Isolated Ground)**.

   To connect the communication to another ACU, run another **4**-conductor cable and connect that cable's wires to the communication.
   Connector **T6** (**Out Port**) at terminals **6(RX+), 7(RX-), 8(TX+), 9(TX-)** and 10(Isolated Ground).   Typical communications wiring connection is illustrated in **Figure 2.**
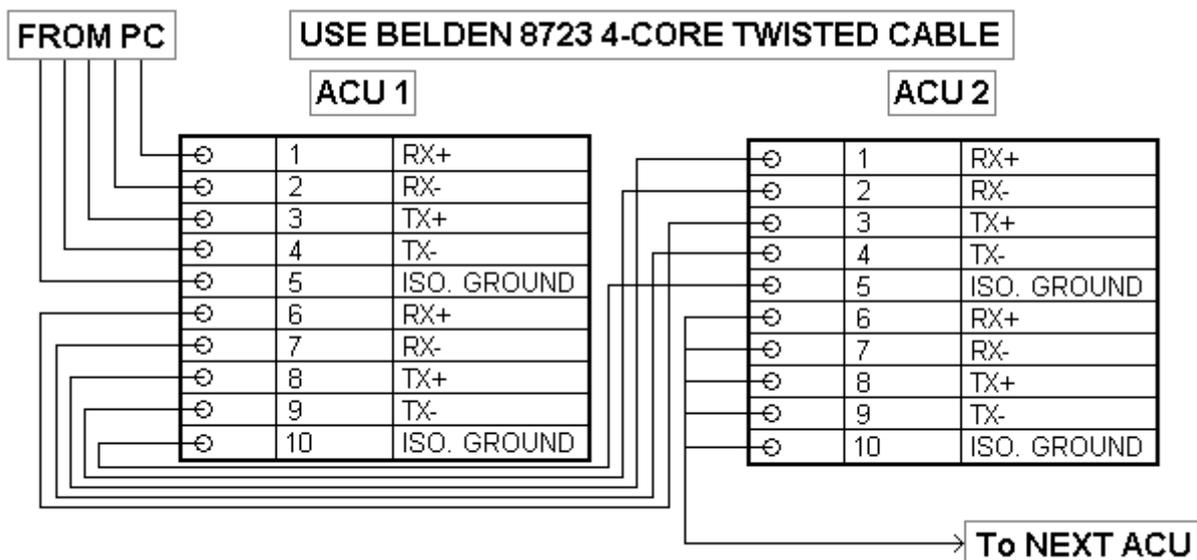
Figure 2.T5 T6 T7 Communication Terminal Block

EVERTECH ELECTRONICS
Accessory Control Unit (ACU) Installation Guide

2.2 Connecting a pan/tilt without presets:

    a.   Run a **7**-conductor cable into the ACU through the inlet.

    b.   Connect one end of the cable's wires to **T1** using the terminals listed in **Table 1**.

    c.   Connect the other end of this cable to the pan/tilt unit, refer to the installation instructions comes along with the equipment.

    d.   Connect the pan/ tilt's ground to **T1** pin **7** (**GND**)

	Terminal 1
PIN	Pan/Tilt Function
1	Pan Left
2	Pan Common
3	Pan Right
4	Tilt Up
5	Tilt Common
6	Tilt down
7	Ground

Table 1. Pan/Tilt Wiring

	Terminal 1
PIN	Pan/Tilt Function
1	Pan Left
2	Pan Common
3	Pan Right
4	Tilt Up
5	Tilt Common
6	Tilt down
7	Ground

	Terminal 2
1	+V REF.
2	IND.COMMON
3	PAN IND.
4	TILT IND.

Table 2. Presets Pan/Tilt Wiring

2.3 Connecting a pan/tilt with presets (ET-200, ET-300)

    a.   Run an **11**-conductor cable into the cabinet through the inlet.

    b.   Connect one end of the cable's wires to **T1** and **T2** using the terminals listed in **Table 2**.

    c.   Connect the other end of the cable to the pan/ tilt connect or using that equipment's installation instruction.

    d.   Connect the pan/ tilt's ground to terminal **T1'**s ground.

2.4 Controlling an inverted pan/tilt:

If the pan/tilt is mounted inverted, remove jumper **JP1 (Figure 1**) to upside position.

EVERTECH ELECTRONICS
Accessory Control Unit (ACU) Installation Guide

2.5 Connecting a lens without presets:

    a. Run a **4**-conductor cable into the ACU through the inlet.

    b. Connect one end of the cable's wires to **T3** using the terminals listed in **Table 3.**

    c. Connect the other end of the cable to the lens connector using that equipment's installation instruction.

PIN	Terminal 3
1	Zoom
2	Lens Common
3	Focus
4	Iris

Table 3. Lens Control Wiring

PIN	Terminal 3
1	Zoom
2	Lens Common
3	Focus
4	Iris
5	+V Ref.
6	Ind. Common
7	Zoom Pot
8	Focus Pot

Table 4. Presets Lens Control Wiring

2.6 Connecting a lens with presets:(ET-200 ET-300)

    a. Run an **8**-conductor cable into the ACU through the inlet.

    b. Connect one end of the cable's wires to **T3** using the terminals listed in **Table 4.**

    c. Connect the other end of the cable to the lens connector using that equipment's installation instruction.

2.7 Connect power to ACU. Refer Table 5 for connection:

Terminals 8								Terminals 9		
1	2	3	4	5	6	7	8	1	2	3
16VAC	GND	16VAC	16VAC	GND	16VAC	24VAC	24VAC	CAM+	CAM-	GND

2.8 Addressing the ACU:

Each **ACU** must be addressed uniquely. The address switches **(Figure 1)** are group of **7** switches. (**SW2**) Table **6** describes the address of each one of the seven switches.

Address	1	2	4	8	16	32	64	128
OFF								
ON								
Switch	A0	A1	A2	A3	A4	A5	A6	A7

Table 6. ACU Addressing

For example:
   If you want to set the address of the ACU to 39.   What you have to do is to turn switch 0, 1, 2, and switch 5 to "ON" position.

   The default camera input number in the Matrix Switching Control was started from Camera 1 to Camera 64, but the address setting inside the ACU was Binary code, started with address 0, so it is important to make sure the ACU address was match with the Camera number in the Matrix Switching Control System.

For example:
   Before you set the address of the ACU in the System, you should know the Input Camera number inside the Matrix Switching Control. If the address of the Matrix Switching Control was 54, you should set the Binary address of the ACU to 53 to match for communication and control.
   When use in the Mega System, you should input the ACU hardware address while you inputting the camera data.

2.9 Auto pan/scan jumper (JP4):

   If the pan/tilt unit installed has an auto pan/scan wire, connect the wire into the terminal **T1 (pin 8),** and set the jumper **(JP4)** to "**ON"** on the main board. Then you can use the **(R6 key)** in the control keyboard to start/stop auto pan.

   If the pan/tilt unit installed without the auto pan/scan wire, the system will automatic study the current loop of the pan/tilt unit, when you press the **(R6 key),** the pan/tilt unit will start auto pan/scan.

EVERTECH ELECTRONICS
Accessory Control Unit (ACU) Installation Guide

3. Connecting alarm sensor into ET-200:

Your ET-200 brings along a 16-supervised input Alarm board, on top of the main PCB of your remote pan/tilt controller. You can configure individual alarm inputs for Normal Open (NO) or Normal Closed (NC) operation by ET-6416 system software.

A d.c.12V 250mA (T1) power supply is equipped for alarm sensors connected to the unit. 16-status displays LED are located on top of the board to monitor alarm status.

The board initiates and maintains an alarm status (**red LED**) when an alarm point detects an alarm condition. A reset condition is initiates when the circuit senses that the alarm condition has been cleared.

When this happens, a signal is supplied to your system control **PC**, turning on the alarm map and printing alarm massages.

   a. Run a **4**-conductor cable for each alarm sensor. **2**-conductors cable for each door contact. Connect cable's wire into input terminals T2-T4, power cable into T1.
   b. Connect the cable's wires as **Table 7.**
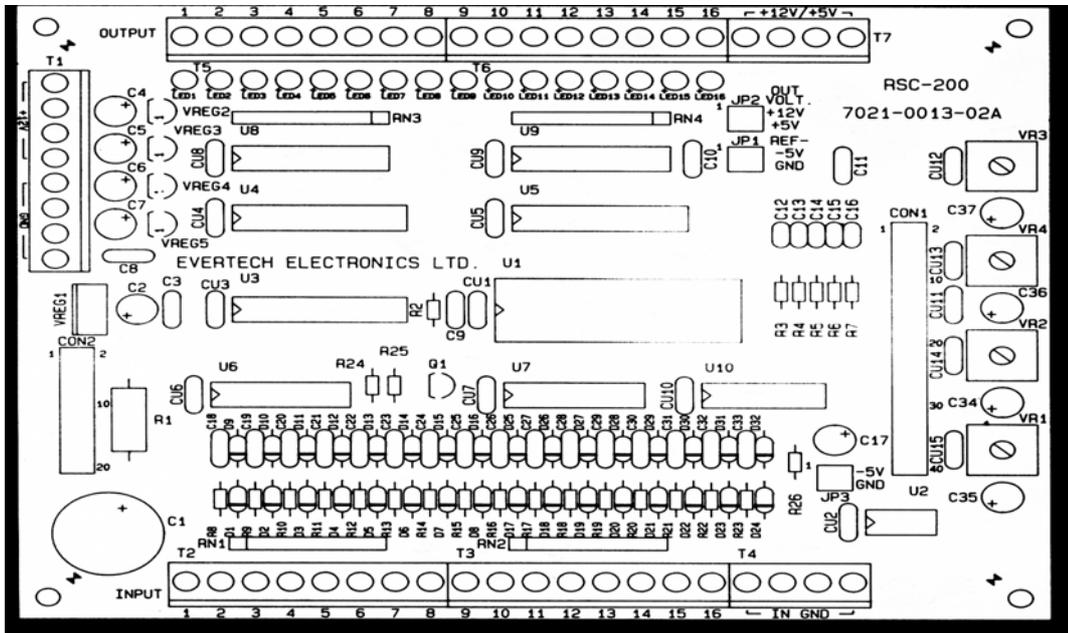
   When we shipped your Accessory Control Unit, there was two type of resistor 3.9K and 24K each 16 pieces, when you install the ACU, you can connect up to 16 alarm devices to the ACU using the following step:

EVERTECH ELECTRONICS
Accessory Control Unit (ACU) Installation Guide

1. To connect an alarm device to one of the ACU input points, wire the alarm device to the selected alarm input as show in Table 8.

> Note **Install the 3.9K-ohm and 24K-ohm resistors near the alarm device rather than at the ACU alarm input terminals. Table 8**
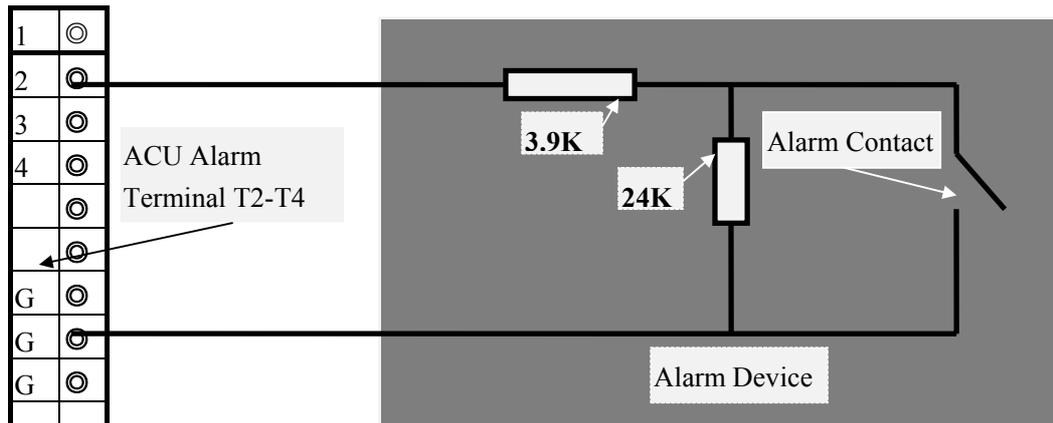
> **Important Note** Terminals without Alarm input device, please install the 3.9K-ohm and 24K-ohm resistors on the terminals inside the ACU.

2. Now, repeat step 1 for each additional alarm device that's going to be connected to this unit. Once this is done, you're ready to test the unit in the system's environment. However, before you do this, there is something you should be aware of when you initially apply power to your system.

3. Remove jumper 2 at JP1 to start alarm input status test, if all 16 alarm- input devices are in normal condition no LED indicator should lit. If any one of the alarm LED is constantly lit, that means the alarm device is in alarm condition, if any one of the LED indicator is flashing, that means your input device is in trouble, watch the flashing LED if it flashes fast (0.5Hz) that means the related circuit is in Open circuit condition. If it flashes slow (1Hz) that means the related circuit is in Short circuit condition. Check the cable and connection if LED flashing red.

ALARM INDICATOR (LED) STATUS DISPLAY

STATUS	ALARM INDICATION (LED)
NORMAL	LED EXTINCT
ALARM	LED LIT
TROUBLE (OPEN CIRCUIT)	LED FLASHED FAST (0.5Hz)
TROUBLE (SHORT CIRCUIT)	LED FLASHED SLOW (1Hz)

A trouble alarm may occur once you're power up the ACU. When your system detects this type of alarm, it means that an alarm input has been shorted, opened or tampered with. In MAGA system, a flashing alarm icon on the alarm detail map notifies you that a trouble alarm has occurred.

If a trouble alarm is reported, check the wiring at the suspect alarm point. It must be wired or terminated as Table 8.

3.1 Connecting Output Device

Use in a system environment, the ET-200. 8C-500 provides one to 16 Open collector output contacts. (Contact Rating = 50V 500mA)

Initiated manually from your control keyboard or through a system program, commands are routed to your Open Collector output contact.
These contacts provide switching of an alarm sounder, control relay on/off, alarm light and other low-power control devices. Each ET-200, 8C500 provides full Open Collector control requiring only a pair of wires from each output point to the control device.

In MAGA system, a control output icon on the alarm detail map notifies you the status of the alarm output are normal or activated.

Connect an output device to the ET-200, 8C500 output points T5-T7, run a two wire cable from control device connect it to the selected output as show in Table 9.

1 ◎				ROLLER SHUTTER
2 ◎	DC12V out	Control Relay	Coil	CONTROL
V ◎				
TERMINAL T5-7				

TABLE 9
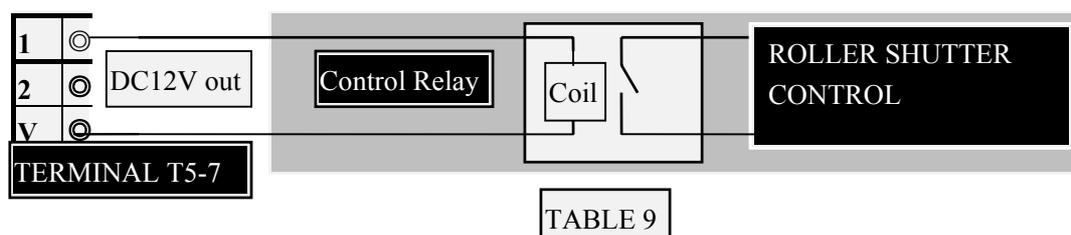
EVERTECH ELECTRONICS
Accessory Control Unit (ACU) Installation Guide

3.2 Preliminary Test

Once all of your input and output device have been installed and power has been applied to it. Individual ET-100, ET-200, ET-300 and 8C500 units may be easily tested from the system control PC. To test these panels, all you have to do is manual click the icon on the Alarm Detail Map and set some alarms and see if they're reported to the control PC. If they are, then your alarm input and out control are functioning in a normal manner.

Refer to your Mega System Operation Manual, to complete all the software input for all ACU's alarm input and programmable output, after you complete the software input you can start test all Pan/tilt, Lens Control and other relay output control function within your system. Before you so this, don't forget to poll your system, so that it will know that your ET-100, ET-200, ET-300 and 8C500 are installed.

Alarm input and output control may also be triggered at the ET-200 and 8C500 alarm terminal. To do this, follow these instructions:

1. Check all the input and output cable inside the unit.
2. Check the D.C. 12V supply for the Alarm Sensor.
3. Activate alarm by placing a wire, (to short) across the alarm input terminal.
4. Check the alarm (LED) indicator and output control device.   (No output)
5. Activate alarm by removing (Disconnect) the wire from the alarm input terminal.
6. Check the alarm (LED) indicator and output control device. (No output)
7. Check with system PC and see if they're reported alarm input trouble in the system PC and also check the display and message print out.
8. Activate alarm sensor by open door or walk into the cover area, check the alarm (LED) indicator and output control device to check the software output, check with system P.C. for alarm detail map display, message and print out.
9. Check the output voltage of each output point.
10. Check with system P.C. response of all the output icon, location, output and message print out when alarm activated.
11. Function test all the ET-100, ET-200 ET-300 and 8C500 within your system, to check the location of alarm device icon on the alarm detail map, alarm display, text display, alarm print out and output response while in alarm condition.
12. To update your system record after completion all ACU test.

EVERTECH ELECTRONICS
Accessory Control Unit (ACU) Installation Guide

4. TROUBLESHOOTING INSTRUCTION

You may identify a failure while you are conducting an installation or maintenance test. The observed symptoms may point to the ACU; however, you have to be sure that the your problem is caused by the ACU and not another system component. That's the purpose of this section -- to determine if the ACU is operational. The troubleshooting chart appearing on the following pages should help you isolate the problem so that you can repair the ACU or return it to service as quickly as possible.

If the troubleshooting process described below doesn't fix the problem, call EVERTECH Electronics or your local distributor and request assistance for technical support.

The troubleshooting section consists of two parts; preliminary checks and Troubleshooting Chart. Preliminary checks will help you determine.

- ❐ The nature of the problem and
- ❐ whether the problem is in the ACU or in another part of the system.

When the problem is confusing or the actual symptom is not clear, use the preliminary checks.

The Troubleshooting Chart provides probable causes based on the symptom of the problem. Look for the symptom noted on the Trouble Chart that most closely resembles the symptom you have observed. Read the probable causes and perform the recommended action.

When the troubleshooting chart does not list the symptom, perform the preliminary checks.

> **PRELIMINARY CHECKS**
> **1. To test the function of other ACU's in the system to determine if the system communication and/or control are operational.**
> **2. Perform the ACU's preliminary tests.**
> **3. Perform the communication cable verification check.**

1.   To test the function of other ACU's in the system to determine if the system communications and/ or control is operational.

Test Result	Recommended Action
Test Fails	▪ Check Power Supply fuses. ▪ Check the ACU for correct jumper and switch setting. ▪ Check and verify the communication signal from the system PC to the ACU.
Test Passes	▪ Proceed to the next step.

EVERTECH ELECTRONICS
Accessory Control Unit (ACU) Installation Guide

2. Perform the ACU's preliminary tests.

Test Result	Recommended Action
Test Fails	▪ Refer to Troubleshooting Chart
Test Passes	▪ Proceed to the next step.

3. Perform the communication cable verification check.

Test Result	Recommended Action
Test Fails	▪ Check the RS-422 Network Card inside the computer, the problem may be in this unit.
Test Passes	▪ Proceed to the Troubleshooting Chart.

EVERTECH ELECTRONICS
Accessory Control Unit (ACU) Installation Guide

TROUBLESHOOTING CHART

	Symptom	Probable Cause	Recommended Action
1.1	No Power LED	No Power to ACU	Check Power Source.
		Fuse Blown	Replace the Fuse. Verify possible causes, such as wiring, power output.
		LED burned out	Verify by Multi AVO-Tester Replace the LED.
1.2	Pan/ Tilt does not operate	No Power	Check power LED. Perform step 1.1 in this chart.
		Incorrect voltage strapped for the Pan/ Tile unit.	Refer to table 1 and to the procedure of Par.2.2 Cheater.
		Incorrect wiring or poor connector contact	Check wiring for accuracy and check connector for loose pins and contact.
		Motor burned out or physically binding	Test motor and check for binding.
		Improper addressing	Verify that the ACU is connected and check address setting.
		Preset limits have not been correctly set. Pan/ Tilt is being restricted by limits.	Clear limits.
		Incorrect RS-422 communication wiring or poor connector contact.	Verify communication port and check wiring and cable connector for loosed pin or bad contact.
1.3	Communication LED do not flash	Incorrect RS-422 connection	Verify wiring and correct as needed.
		LED burned out	Check and replace as needed.
1.4	Lens does not operate	Incorrect lens wiring or ground wire not connected.	Verify wiring connection correct as needed.
		Incorrect voltage for the lens	Check voltage for lens.
1.5	Erratic operation of the Pan/ Tilt LED's ON	Noisy or shorted RS-422 communication line	Verify the communication line.
		Reference voltage adjustment needed.	Check voltage from transformer and regulator.
1.6	Auto pan does not operate when R6 is pressed.	Auto pan pin of the Pan/ Tilt unit broken or poor connection.	Verify wiring and continuity.
1.7	Preset auto pan does not operate	Pan/ Tilt unit doesn't have preset option.	Verify Pan/ Tilt model.

EVERTECH ELECTRONICS
Accessory Control Unit (ACU) Installation Guide

	when R6 is pressed or preset auto pan stops panning.	Preset position limits are not set or they're set too close.	Check and set limits for desired auto pan range.
		Noisy or RS-422 communication problem.	Check and verify RS-422 communication.
1.8	Home does not operate correctly but preset limits can be set.	Pan/ Tilt cable not wire properly.	Check cable wire connection.
		Camera Was mounted backwards on the Pan/ Tilt and Pan/ Tilt wiring had been modified to compensate.	Correct camera mounting and wiring connection.

5. LIMITED WARRANTY

EVERTECH Electronics warrants each ACU model to be free from defects in material and workmanship for the period of one (1) year from that of purchase.

This warranty shall not apply to any product or parts, which have been misuse, modification, neglect, accident, lightning, electrical transients, miswiring or abnormal condition of operation. In the event of a failure of a product covered by this warranty, Evertech Electronics will at its own option, either repair or replace the product when returned to Evertech Electronics. Upon physical examination of equipment at the factory, Evertech Electronics shall be the sole and the final judge of propriety of qualification for warranty services. This warranty does not cover transportation costs.

6. SHIPPING INSTRUCTION

If this equipment must be returned to the factory, follow these instructions.
- ❒ Call EVERTECH Electronics and ask for a return number.
- ❒ Describe the problem and circumstances under which the problem occurs.
- ❒ The original purchase date and estimated length of time that the unit has actively been used.