YAMATAKE

International Business Department
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Date: October 6, 2004
To: Those listed
Issued by: C. C. Chang - International Business Department
Subject: **AUR350C** Advanced UV Relay with Built-In Microcomputer

Purpose: To announce the international sales release of the **AUR350C** advanced UV relay with a built-in microcomputer, which is used with the **AUD300** advanced UV sensor.

Background: The **AUD300** advanced UV sensor and the **AUR300C** advanced UV relay have been popular with users, especially in the automotive market. The **AUR300C** is a new model replacing the **R4075C** and **R4332A** Protectoglo.

Since there are many automotive market users who use the **R4332B,** which has a tube diagnostic circuit, the new **AUR350C** was developed with a built-in microcomputer and an improved UV tube diagnostic function. Moreover, monitoring and maintenance support functions and a communication function have been added.

The **AUR350C** is introduced to promote our flame safeguard business and our combined sales with other products such as the **EST** Series Smart Terminals.

Features:

1 Dynamic self-checking and UV tube diagnosis

- Dynamic self-checking of tube and amplifier circuit using the relay-driven shutter unit
- Tube diagnosis by checking the shutter ON/OFF status when K2 is OFF

2 Built-in microcomputer

- Data storage, plus the ability to read out maintenance data via the Smart Loader or RS-485 communication

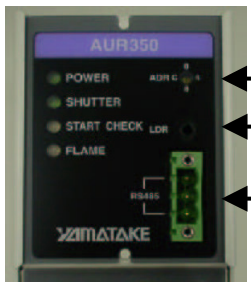
Maintenance data:

Data item	Description
Event history	Times for 8 events, plus integrated operation time and number of burner ON times at event occurrence (only for the selected event type)
Number of occurrences of each event	Total number of event occurrences (0 to 255 times)
Integrated operation time	Integrated power ON time for the **AUR350C** (0 to 99999 hours)
Integrated burner ON time	Integrated simultaneous ON time for K1 and K2 (0 to 99999 hours)
Integrated number of burner ON times	Number of burner ON times (0 to 99999 times)
Operation time	Power ON time for the **AUR350C** (0 to 99999 hours; for measurement)
Burner ON time	Simultaneous ON time for K1 and K2 (0 to 99999 hours; for measurement)
Number of burner ON times	Number of burner ON times (0 to 99999 hours; for measurement)
AUR memo	Any character string up to 60 characters (two-byte characters) can be stored.
Flame voltage	AVR (1s), AVR (1min), MAX, MIN (during K2 ON)
Shutter operation cycle	AVR (1min), MAX, MIN (during K2 ON)
Operation of each relay	Feedback for K1, K2, K3
Operation status	Event status, operation status (burner OFF, IG trial, burner ON, false flame)

- Trend monitoring for flame voltage and shutter operation
- Selectable event types (refer to page 4)
- Playback data (shutter operation and flame voltage) for 10 seconds before the event occurred
- Maintenance request by maintenance data count up

3 Communication function

- Easy connection to a PC by connecting the dedicated cable to the loader jack
- Easy connection to **EST** Series Smart Terminals via RS-485 communication



4 LED indicators

- Different LED colors depending on the flame voltage level
- Maintenance request indication available

Precautions in instrumentation:

1 Event reset

The default setting for **AUD350C** event operation is the same as for the UV alarm of the **R4332B**. However, their reset procedures differ.

R4332B:

UV alarm is reset by input to external contacts.

AUR350C:

There are no reset input terminals. Event is reset upon any of the following conditions:

Re-start input:	K1 relay is ON.
Power reset:	Power reset to the **AUR350C**.
Reset switch:	S3 switch on the **AUR350C** display panel is turned on.
Communication:	Resetting is done through RS-485 or the Smart Loader

2 EV (K3) relay output

The following EV relay operations are selectable.

Selection	Name	K3 relay operation	Note
1	Synchronized with K1	Operates in the same way as K1	Can be used for monitoring the operation status
2	Synchronized with K2	Operates in the same way as K2	
3	At event ocurrence	ON when an event occurs	Like the **R4332B** UV alarm
4	Flame voltage upper limit	ON when the flame voltage exceeds the upper limit value	Can be used for flame voltage management
5	Flame voltage lower limit	ON when the flame voltage drops below the lower limit value	
6	Inspection frequency 1	ON when inspection frequency 1 is set	Available for burner maintenance
7	Inspection frequency 2	ON when inspection frequency 2 is set	
8	Inspection frequency 3	ON when inspection frequency 3 is set	
9	Inspection frequency 4	ON when inspection frequency 4 is set	
10	Communication command	ON when writing to communication address 3900w via RS-485	—

Do not use K3 output as a burner stop trigger.

3 Event type setting

Event history (8 event times) is stored in nonvolatile memory.

Selection	Name	Relay operation	Cause of failure
1	False flame	K1 relay cannot turn on at start check because K2 relay is already ON when the start switch is turned on.	● False flame ● K2 contact welding
2	K2 relay OFF (shutter closed)	Shutter is already closed when K2 is turned off.	● UV tube is self-discharging ● Stray light is reaching the tube by passing around the shutter ● Shutter failure
3	Slow shutter closing time during burner ON	Slow shutter closing time while K1 and K2 are ON.	● Partial self-discharge of the UV tube ● Incorrect shutter operation ● Stray light
4	F-G short-circuit	F-G lines are shorted.	● F-G short-circuit
5	Low flame voltage	Flame voltage is lower than the setting.	● Burner dirt ● UV tube aging ● Combustion condition change
6	K2 relay OFF (shutter open)	Shutter is already open when K2 is turned off.	(It cannot be determined whether the cause is flame failure or operation stop.)
7	Internal error 1	(Do not select.)	—
8	Internal error 2		

4 AUR memo function

Any character string up to 60 characters (two-byte characters) can be stored in the **AUR350C** nonvolatile memory. Memos of maintenance date or other data can be made.

AUR350C/R4332B comparison:

Model No.		**AUR350C** Advanced UV relay	**R4332B** Protectoglo	**AUR350C** Advantage
Dimensions		261 × 60 × 104 (1 channel)	290 × 138 × 115 (2 channels)	○
Mass		1.2kg	4.0kg (including 2 amplifiers)	○
Mounting		Screw mounting	Screw mounting	=
Mounting direction		Vertical or horizontal with terminal upward	Vertical mounting only	=
LED indicators		4 LEDs POWER, SHUTTER, START CHECK, and FLAME	1 LED Common to power and shutter status	◎
Built-in micro-computer	Data management	● Maintenance data ● Playback data	—	◎
	Communication	● RS-485 (CPL), up to 15 units connectable ● PC loader jack	—	◎
Dynamic self-checking		Available	Available	=
Tube diagnosis		Available	Available	=
Flame signal		0 to 5V	0 to 100mA	◎
Power consumption		Approx. 10W	Approx. 19W	◎
Channel structure		1 channel (amplifier contained)	2 channels (separate amplifier required for each)	○

Key: = Equivalent ○ Better ◎ Far Superior