

■ Introduction

This document discusses points to consider in regard to preventive maintenance of UTAdvanced series (Digital Indicating Controllers (UT), Program Controllers (UP), and Digital Indicator with Alarms (UM)) sold by Yokogawa Electric. The discussion made herein assumes that these controllers are used under typical environmental conditions. For details on installation environments, refer to the specifications document for each product.

■ Models under Discussion

The models under discussion are standard models in the UTAdvanced (UT/UP/UM) series.

■ Typical Installation Environment

Ambient temperature: -10 to 50°C, or -10 to 40°C when there is close side-by-side mounting

For the CC-Link option, 0 to 50°C, or 0 to 40°C for side-by-side close mounting)

Ambient humidity: 20 to 90% RH (non-condensing)

Other conditions: Avoid using UTAdvanced series in environments where they may be exposed to any of the following: Mechanical shock, vibration, corrosive gas, water, flammable objects, intense radiational heat, intense ultraviolet rays, and electromagnetic fields.

■ Items Subject to Preventive Maintenance

Component	Service Life (Note)	Method of maintenance
Aluminum electrolytic capacitor	10 years (Nominal)	Pick-up repair (Unit-by-unit blanket replacement)
Nonvolatile memory (FRAM)	10 years (Data retention period)	Pick-up repair (Unit-by-unit blanket replacement)
Display (LCD)	There is no regulation of a life. The luminance and contrast degradation are caused due to aged deterioration. However, the control function is not affected.	Pick-up repair (Unit-by-unit blanket replacement)
Alarm output relay	100,000 make-break operations with resistive load	Pick-up repair (Unit-by-unit blanket replacement)
Control output relay	100,000 make-break operations with resistive load	Pick-up repair (Unit-by-unit blanket replacement)

Note: The service lives shown in the table are rule-of-thumb values. It may be shorter depending on the environment. It is advisable that unit-by-unit blanket replacement be implemented in a planned manner even during the item's service life.

■ Repair Considerations

This section discusses points for consideration in regard to repairs (parts replacement) that involve soldering work. Recent controllers employ a method of double-sided mounting of parts on printed circuit boards, in response to the spread of surface-mounted components and the market demand for miniaturization. Thus these controllers use a considerable number of such components.

From the viewpoint of the production process however, Yokogawa aims to manufacture products of uniform quality by means of, for example, automatic soldering. In addition, the patterns on printed circuit boards have been made increasingly finer and denser in order to meet the demand for miniaturization. This trend toward miniaturization requires highly skilled soldering techniques when a particular component alone has to be replaced. As a result, it has become more and more difficult to use conventional methods of parts replacement.

Under these circumstances, Yokogawa recommends that products that have been used for a prolonged period be subjected to unit-by-unit blanket replacement, in order to maintain the level of reliability at which the product in question was initially manufactured. Yokogawa understands that the content of maintenance depends on the time and the budget allowed by the customer for maintenance purposes, or on the importance of the loop under consideration. However, having said that, Yokogawa still requests that customers take maintenance requirements based on the above-discussed points into consideration, and to understand the importance of unit-by-unit blanket replacement.