



# SYNCHRO RETRANSMISSION UNIT KW903-SP

## NOTES FOR SALES ENGINEERS.

The KW903-SP connects to a gyro or electronic compass. It outputs standard marine synchro transmission of 1 revolution per degree. (360:1 or 360X) Applications include refitting a ship with a new gyro, whilst retaining all the existing repeaters.

## HEADING INPUT

The KW903 connects to stepper systems, and the "90X 400 Hz contactless synchro" found in several gyros. Since the KW903-SP needs very little power the gyro's own stepper amplifier retransmission system is not required. The unit will also accept rectified-unsmoothed DC as supplied from some obsolete gyros, so the case of transferring an old gyro from a scrap ship is catered for. Other gyros transmit NMEA 0183, and this is preferred as being more accurate than stepper.

Some basic gyros have a 1:1 synchro output. Fit a KW910 interface which will produce NMEA 0183 heading for this RTU and other instruments such as a new radar and ecdis. The KW910 can also produce Furuno or Yokogawa data, which may aid you in a competitive refit bid by simplifying the interfaces needed.

A very good alternative is to feed the gyro through a digital and tape heading repeater (KW991) then to the 903.

## BACK-UP NMEA INPUT.

You can feed in an NMEA 0183 heading from a second gyro, or magnetic compass. The advantages of a back-up means you can still use the autopilot.

## SYNCHRO OUTPUT.

The "standard" and most common output is nominally 115v (50/60 Hz) reference, 90v line to line maximum voltage. Synchros are not critical on their voltage. The KW903 has several transformer taps to allow selecting reduced voltage, and by this means "non standard" voltages are obtained. E.g. for Kurs 4, and Plath Navigat gyros. Anschutz repeaters require an external transformer adapter box.

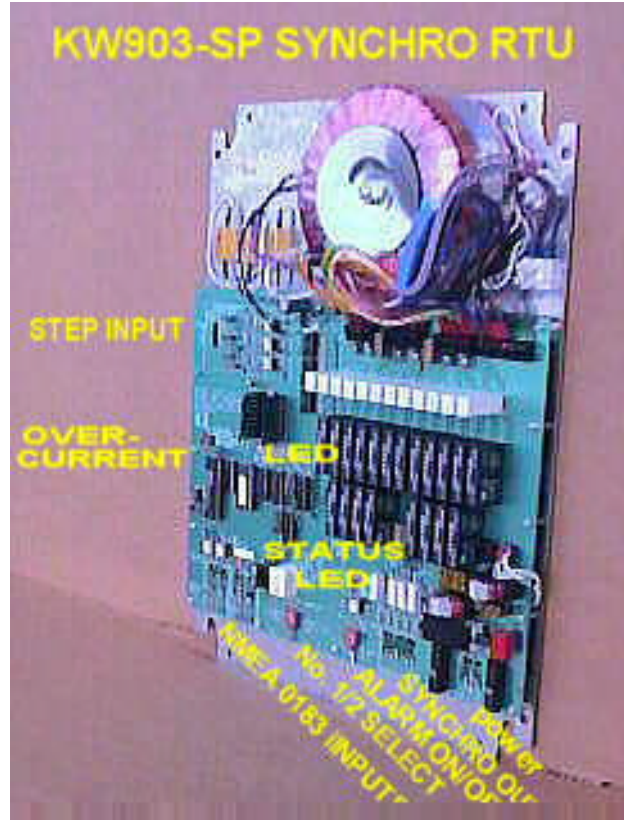
The KW903-SP output is generated by digital all-solid state techniques. The synchro output rotates through 24 states per revolution with a zero current switching technique, and software control of the rotation speed.

## SPECIAL CASE: YOKOGAWA.

Yokogawa gyros used a DC supply to the synchros, but they were still 115v/90v AC synchros, and the KW903 has happily been used with them! Check the synchro type first. A 24v illumination supply is required. (KW914?) Also note: the Yokogawa autopilot needed a proprietary data input, not synchro. This can be supplied by using a KW909 simple interface or KW991 heading repeater.

## SPECIAL CASE: KURS RUSSIAN GYRO

Most Kurs gyros have low power repeaters similar to Microtechnica and are no problem. There is a old Kurs gyro that has very high power, very large repeaters. These repeaters have caused high current to be fed back to the KW903-SP, leading to overheating. If you want to interface these gyros note that only 3 repeaters can be driven, and NOT the course recorder. Please tell us if you want to interface Kurs 4.





### SAFETY FEATURES

Whilst the KW903 has an on-board alarm buzzer for local use only it also has relay contacts which close in a fault condition. This alarm has to be cleared by an onboard toggle switch, so access to the KW903 is essential.

The KW903 can itself detect faults in the stepper or NMEA input, and also if the synchro output has been overloaded. We must recommend that you fit a remote alarm unit.

### CHECK OF EXISTING REPEATERS

When replacing an old and worn out gyro it has sometimes been found too late that there are also old and worn out repeaters. Just one stuck repeater can ruin the whole system. One particular make of autopilot has proved very unreliable. You should advise the owner that all repeaters should be mechanically checked, including the synchro brushes, especially the autopilot.

The KW903 setting to work instructions offer advice, but the warranty we give does not include for faulty repeaters. They are unlikely to damage the KW903. The system will just not work.

### KW903 HOUSING

The interface is a simple and reliable grey electrical housing with door for unattended operation. It generates some heat and should be fitted in a place with ventilation, NOT in a cupboard.

### SPECIFICATION

INPUT 1: Stepper 4 to 35 volt stepper. + or - steps. (fit ext resistor for higher voltage.)  
or 90x 400 Hz "contactless transmitter." (Like a synchro but with 6 terminals.)  
or NMEA 0183 gyro heading

INPUT 2: NMEA 0183 heading, magnetic or gyro or Cetrek data.

OUTPUT: Output for nominal 115v ref, 90v synchro, 110v ref, 55v signal  
50v ref, 68v signals and Anschutz 50/60v ref 20/24 v signals with adapter box.  
You should specify which on your order.  
Synchro output is removed if overload detected.  
Reference output 2 Amp.  
Phase output 0.7 Amps per phase. Electronically limited at 2 A.

ALARM RELAY: Held open when ok. Closes on power failure or alarm is disabled.  
Pulses when the KW903 detects gyro fault, or output overload.

CONTROLS: Input 1, Input 2 change-over switch. Alarm cancel/on/off switch  
Main on/off switch. Rotation rate and test select hex switch.

POWER: Nominal 110/220 v 50/60 Hz at 600 VA. Earth is essential.

HOUSING: Grey painted electrical cabinet with door for indoor bulkhead mounting.  
Size, 400 wide x 500 high x 150 mm



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