



ACP/ARP Converter

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1. General Description

1.1. Overview of Units Uses

The ACP/ARP Converter is used when the rotation of a Synchro must be monitored as a set of pulses or count the number of revolutions of a Synchro. The specific design monitors the Azimuth of a radar antenna. The unit is capable of providing open collector, open emitter, optically isolated, and RS422 or RS423 compatible outputs. The two signals provided are a zero crossing indicated by a positive or negative going pulse. The second signal is a positive or negative going pulse for change in angle of the Synchro. The unit is programmed to generate a pulse every X° of rotation on the Azimuth Change Pulse (ACP) output and a pulse once every revolution on the Azimuth Reference Pulse (ARP) output. The default configuration is 4096 pulses per revolution. For the default configuration the converter generates a pulse every 0.08789° which results in 4096 pulses per revolution.

1.2. Description of Each LED

1.2.1. ARP

The ARP led flashes once for each Azimuth Reference Pulse (ARP). The ARP led flashes each time the Synchro signal indicates the antenna is passing through zero degrees, in other words once per revolution of the radar antenna.

1.2.2. ACP

The ACP led flashes once for each Azimuth Change Pulse (ACP). The ACP pulse is output 4096 times from each revolution of the radar antenna. This is the standard configuration, but any number of pulses per revolution can be generated. The maximum number of pulses is currently 65536.

1.2.3. TXD

The TXD led is not used in this version of the ACP/ARP converter.

1.2.4. PWR

The unit has power applied and is operational if the PWR LED is lit.

2. Device Configuration Tables

2.1. Standard Jumper Settings

2.1.1. Synchro/Resolver Selection Jumpers

Jumpers JP7, JP8, JP9, JP12, JP13, and JP14 used to change input type from Synchro to Resolver.

2.1.1.1. Synchro Configuration

Factory use only.

2.1.1.2. Resolver Configuration

Factory use only.

2.1.2. Grounding Section Jumpers

2.1.2.1. Jumper JP4 and JP6

Jumper Block	Pin Number	Pin Number	Description
JP4	1	2	Provides connection between internal ground and chassis ground on DB25M connector.
	2	3	Provides connection between internal ground and signal ground on DB25M connector.
JP6	1	2	Provides connection between internal ground and chassis ground on DB37F connector.
	2	3	Provides connection between internal ground and signal ground on DB37F connector.

2.1.3. Factory Use Only Jumpers

Jumper JP2 is a jumper only usable by factory. This jumper must be pin 2 to 9.

Jumper JP10 is a jumper only usable by factory. This jumper must be open.

2.2. Connector Signal Pin Descriptions

2.2.1. Synchro Interface Signal Pins

Table 1 is a description of each pin on the Synchro Azimuth input connector. The connector on the unit is a DB25P (MALE) and mates with a DB25S (FEMALE) cable connector. The pins labeled Reserved are connected internally and are not used in this application. Therefore, these pins should not be connected to any external device. The Synchro inputs will accept frequencies from 0 to 2000Hz.

CAUTION: Connecting Synchro pins to voltages greater than 115VAC or connecting any pin which is Not Used or Reserved may damage the unit and void the warranty.

Table 1. – J2 Synchro Connector

Pin #	Voltage	Signal Name	Description
1	115AC	RL	Low side of the reference signal
2	115AC	RH	High side of the reference signal
3	90V ₁₋₁	S1	S1 lead of the three wire Synchro lines
4	90V ₁₋₁	S2	S2 lead of the three wire Synchro lines
5	90V ₁₋₁	S3	S3 lead of the three wire Synchro lines
6			Not Connected
7			Not Connected
8			Not Connected
9			Not Connected
10	Reserved		Do Not Connect
11	GND		Signal Ground
12	Reserved		Do Not Connect
13	Reserved		Do Not Connect
14			Not Connected
15			Not Connected
16			Not Connected
17			Not Connected
18			Not Connected
19			Not Connected
20			Not Connected
21			Not Connected
22			Not Connected
23	Reserved		Do Not Connect
24	Reserved		Do Not Connect
25			Not Connected

2.2.2. ACP/ARP Interface Signal Pins

Table 2 is a listing of all pins on ACP/ARP connector. The ACP/ARP connector on the unit is a DB37S (FEMALE) and mates with a DB37P (MALE) cable connector. The pins labeled Reserved are connected internally and are not used in this application. Therefore, these pins should not be connected to any external device.

Table 2. – J1 ACP/ARP Connector Signal Pins

Pin #	Signal	Output Type	Pulse Type	Voltage	Notes
1	Reserved				Do Not Connect
2	Reserved				Do Not Connect
3	Reserved				Do Not Connect
4	Reserved				Do Not Connect
5	Reserved				Do Not Connect
6	Reserved				Do Not Connect
7	Reserved				Do Not Connect
8	Reserved				Do Not Connect
9	Reserved				Do Not Connect
10	Reserved				Do Not Connect
11	Reserved				Do Not Connect
12	Reserved				Do Not Connect
13	Reserved				Do Not Connect
14	Reserved				Do Not Connect
15	Reserved				Do Not Connect
16	Reserved				Do Not Connect
17	ARP+	RS422/RS423	Negative	TTL	
18	ACP+	RS422/RS423	Negative	TTL	
19	Reserved				Do Not Connect
20	ARP	Open Emitter	Positive	0 to +9V	Cannot be used with pin 2
21	ACP	Open Emitter	Positive	0 to +9V	Cannot be used with pin 3
22	Reserved				Do Not Connect
23	Reserved				Do Not Connect
24	Reserved				Do Not Connect
25	Reserved				Do Not Connect
26	Reserved				Do Not Connect
27	Reserved				Do Not Connect
28	Reserved				Do Not Connect
29	Reserved				Do Not Connect
30	Reserved				Do Not Connect
31	Reserved				Do Not Connect
32	Reserved				Do Not Connect
33	Reserved				Do Not Connect
34	Reserved				Do Not Connect
35	ARP-	RS422/RS423	Positive	TTL	
36	ACP-	RS422/RS423	Positive	TTL	
37	GND				Signal Ground

2.3. Power Connector

Table 3 is a listing of all pins on the POWER connector. The power connector on the unit is a MS3114E8-3P (MALE) and mates with a MS3116E8-3S (FEMALE) cable connector. The power supplied can be from single phase or two phase source. The single phase should be applied so Pin A is the line voltage and Pin B as a neutral and Pin C is an Earth Ground. The two phase source should connect to Pin A and Pin B with Pin C connected to an Earth Ground. The internal power supply requires that the AC voltage between Pins A and B be between 100 – 240 VAC.

Table 3. – J3 AC Power Connector

Pin #	Voltage	Frequency	Description
A	240 – 100VAC	60/50 Hz	Line
B	240 – 100VAC	60/50 Hz	Line
C	0V	NA	Frame Ground

3. Drawings and Mounting Information

This section contains a drawing of the box and a pattern for mounting holes of the box.

