



## Radar transponders



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## **Table of Contents**

1 Introduction .....	3
1.1 Phase-locked oscillators and synthesizers .....	<b>Error! Bookmark not defined.</b>
1.2 Source design approaches .....	<b>Error! Bookmark not defined.</b>
1.3 New product development .....	<b>Error! Bookmark not defined.</b>
1.4 Product line description .....	3
1.5 phase locked oscillators.....	<b>Error! Bookmark not defined.</b>
2 PLO Specifications .....	3
3 PLO-CRO-xxxx-EXT series .....	5
4 PLO-CRO-xxxx-TCXO series .....	<b>Error! Bookmark not defined.</b>
5 PLO-CRO-xx.x-OCXO series .....	<b>Error! Bookmark not defined.</b>
6 PLO-CRO-xxxx.x-XO series .....	<b>Error! Bookmark not defined.</b>

# **1 Introduction**

WORK Microwave offers a wide selection of high-performance radar transponders. This includes single- or double pulse transponders in various frequency bands with programmable pulse widths and fixed response time for military applications. WORK's highly experienced team of engineers, technicians and assembly people bring today's cutting edge technologies to all of our radar transponder products.

## **1.1 Product line description**

In addition to our standard products, WORK offers its customers an extensive custom design capability. Requirements for custom designs can usually be met with minor engineering changes, while others might require extensive design work. We offer custom design radar transponders from 5 to 10 GHz with the use of our internally designed PLL oscillators with customer programmable transmit- and receive frequencies.

## **1.2 Pulse width programming**

The pulse width of our transponders is fixed. The pulse gap is programmable from 3.0us to 9.0us in 100ns steps. The receiver accepts pulse gap jitter of 0.15us and rejects pulse gap jitter of more than 0.3us.

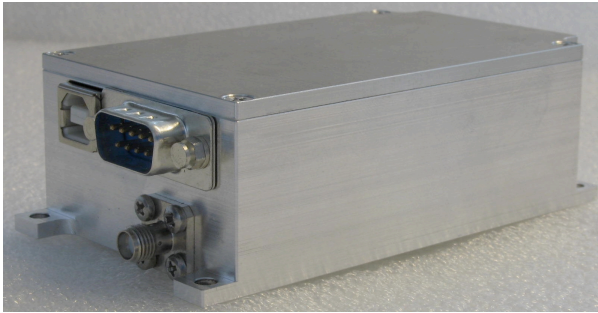
## **1.3 Frequency programming**

The transmit and receive frequencies are programmable independently in 1MHz steps. There is no restriction for frequency programming, so one can use even equal receive and transmit frequencies.

## **1.4 Receiver attenuation programming**

The receiver attenuation is programmable from 0 to 31dB in 1dB steps.

## 2 Radar Transponder Specifications



Model number	type	Frequency range	outline	description
XPOND-06G	Radar transponder	5.4~5.9GHz, 1MHz steps	101.6 x 57.0 x 29.7 mm <sup>3</sup>	C-Band Radar transponder
XPOND-10G	Radar transponder	10.1~10.9GHz, 1MHz steps	101.6 x 57.0 x 29.7 mm <sup>3</sup>	X-Band Radar transponder

# 3 XPOND-06G series

## Features

- High receiver sensitivity level
- > 4W output level
- low spurious and harmonics
- low power consumption <2.2W
- transmit and receive frequency user programmable
- single or double pulse
- pulse gap programmable
- fixed response time of 2us

<b>Transponder Type:</b>		<b>XPOND-06G</b>		
<b>RF Input and Output Frequency:</b>		5400 ... 5900 MHz (1MHz steps)		
<b>Phase Noise:</b>	100 Hz	-45	-48	
	1 kHz	-73	-75	
	10 kHz	-75	-78	
	100 kHz	-78	-80	
	1 MHz	-110	-112	
		max. values in dBc/Hz	typ. values in dBc/Hz	
<b>Spurious Outputs:</b>	0...6.5GHz:	< -60 dBc		
	$\Delta f > 6.5GHz$ :	< -65 dBc		
	Output harmonics:	< -30 dBc		
<b>Output level:</b>	Connector:	>4W SMA (female)		
<b>Receive Input:</b>	Functional:	-40dBm ... +46dBm @ <4000pps, 0.5us pulse width		
	Damage Level:	>+50dBm @ <4000pps, 0.5us pulse width		
	Connector:	SMA (female)		
<b>Input Attenuation:</b>	0...31dB in 1db steps			
<b>Video pulse output:</b>	Analogue signal 0... 3.3V into high impedance load, Ri approx. 200 $\Omega$			
<b>Video pulse and power connector:</b>	9 Pin Sub-D			
<b>Pulse width:</b>	0.5us			
<b>Pulse coding:</b>	3.0 ... 9.0us in 0.1us increments			
<b>Programming connector:</b>	USB type B			
<b>Temperature Range:</b>	0 °C ... 60 °C operating, -30 °C ... 80 °C storage			
<b>Relative Humidity:</b>	< 95 % non condensing			
<b>Power Input:</b>	22...28V			
<b>Power Consumption:</b>	Max: 2.2 W, <95mA @ 22V			
<b>Power and control connector:</b>	Solder point (through hole 1mm)			
<b>Dimension and Weight:</b>	101.6 x 57.0 x 29.7 mm <sup>3</sup> (WxHxD), approx. 280g			

Specifications are subject to change

# 4 XPOND-10G series

## Features

- High receiver sensitivity level
- > 2W output level
- low spurious and harmonics
- low power consumption <3.0W
- transmit and receive frequency user programmable
- single or double pulse
- pulse gap programmable
- fixed response time of 2us

Transponder Type:	XPOND-06G		
RF Input and Output Frequency:	10100 ... 10900 MHz (1MHz steps)		
Phase Noise:			
100 Hz	-40	-42	
1 kHz	-68	-70	
10 kHz	-70	-72	
100 kHz	-73	-75	
1 MHz	-105	-107	
	max. values in dBc/Hz	typ. values in dBc/Hz	
Spurious Outputs:	0...11GHz: < -60 dBc Δf > 11GHz: < -65 dBc Output harmonics: < -30 dBc		
Output level:	>2W SMA (female)		
Receive Input:	Functional: -40dBm ... +46dBm @ <4000pps, 0.5us pulse width Damage Level: >+50dBm @ <4000pps, 0.5us pulse width Connector: SMA (female)		
Input Attenuation:	0...31dB in 1db steps		
Video pulse output:	Analogue signal 0... 3.3V into high impedance load, Ri approx. 200Ω		
Video pulse and power connector:	9 Pin Sub-D		
Pulse width:	0.5us		
Pulse coding:	3.0 ... 9.0us in 0.1us increments		
Programming connector:	USB type B		
Temperature Range:	0 °C ... 60 °C operating, -30 °C ... 80 °C storage		
Relative Humidity:	< 95 % non condensing		
Power Input:	22...28V		
Power Consumption:	Max: 2.2 W, <95mA @ 22V		
Power and control connector:	Solder point (through hole 1mm)		
Dimension and Weight:	101.6 x 57.0 x 29.7 mm <sup>3</sup> (WxHxD), approx. 280g		

Specifications are subject to change