

PSR extractor



[Switch to Master guide](#)

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Abstract

This document can be used as a guide to switch the Beauvechain ASR TA-10 radar from its current situation to a system controlled by the PCT791 unit made by Intersoft.

Keywords

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1.1	22/03/07	Added Step-by-step and CAM interface chapter	All
1.2	31/07/07	Changed Step-by-step guide	All
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1. General

This document is part of the TA10 upgrade packet made by Intersoft Electronics. It handles about the steps which have to be taken to switch from the current TA10 setup to a PCT791 controlled setup.

The current TA10 radar consists of an antenna group, transmitter, receiver, PSR extractor followed by a Combiner. The following picture gives a raw schematic overview of this radar.

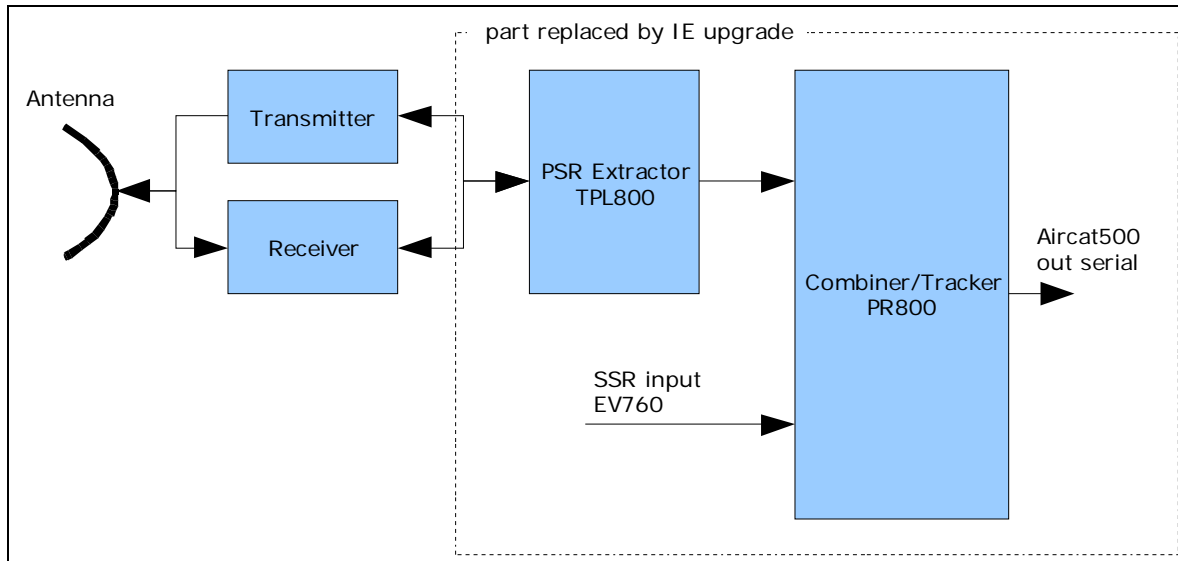


Figure 1-1: TA-10 block diagram

2. Switch to Master Guide

The PCT791 unit (PSR Controlled Timing Unit) interfaces between the radars current setup and the new installed extractor equipment. Below you can see a picture of the front panel.

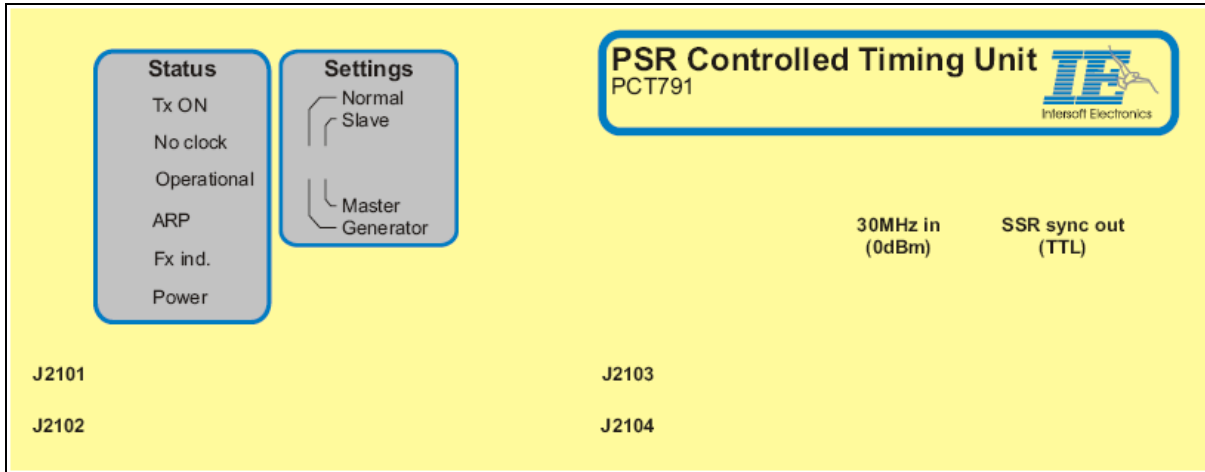


Figure 2-1: PCT791791

2.1 Settings

2.1.1 Master - Slave

This unit can work in 2 different operational modes: Master and Slave (changed by dip switch on front panel)

In Slave mode you can simply connect the PCT791 unit with a four fifty wire flatcable to the radar interconnection panel. The controlled timing unit is now slaved on the signals generated by the TPL800. This mode is used to evaluate the system while the radar is staying fully operational.

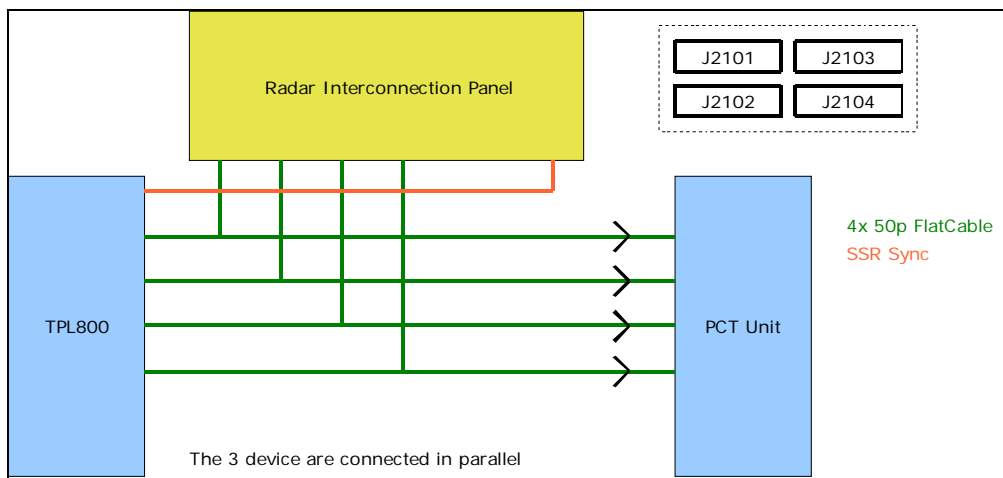


Figure 2-2: Block diagram Slave mode

In Master mode you have to disconnect the TPL800 of the interconnection panel and connect the PCT791 unit. Now the PCT791 unit will control the radar sync signals (SL, MOD, SSR sync, Extrasync, PEFR, PEMR,...), STC, beam switching. The STC and Beam switching are in Flash memory which content can be changed by the radar technicians (see CAM manual IE-PSR-Extractor-UM-vxx.pdf).

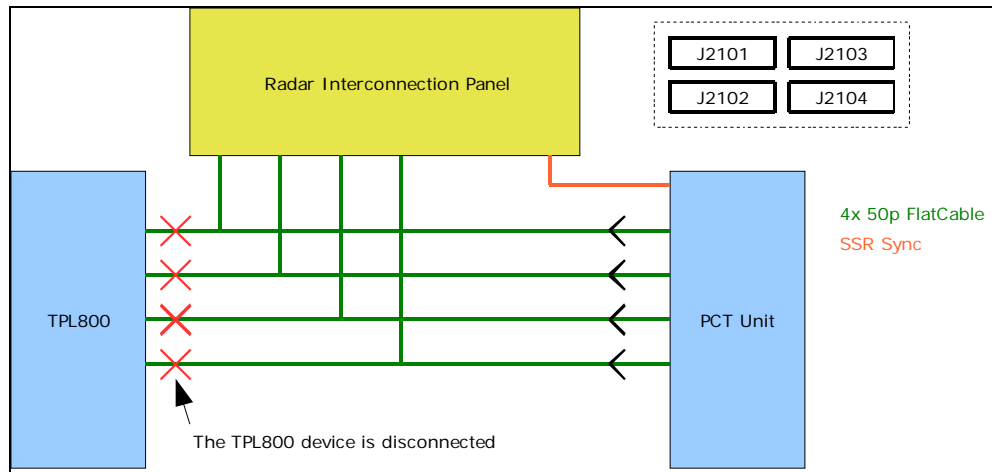


Figure 2-3: Block diagram master mode

2.1.2 Generator/Normal

For normal operation the system must be on Normal mode. If you change to Generator mode, the PCT791 unit will also generate ACP/ARP signals! This is useful to simulate a radar with a PCT791 unit under test. Before setting a PCT791 unit to Generator mode be sure that there is no radar connection

2.2 Status indicators

Note that these indications below are also reported to the CAM software (currently not all yet implemented).

2.2.1 Tx On (red)

The led lights up when the timing signals are generated. This setting is under software control.

2.2.2 No clock (red)

If an external clock source is selected (see CAM software) and this signal is not correct (too weak, not activ...) the LED lights up.

2.2.3 Operational (green)

This led lights up when the radar is in normal mode and there's no flash programming active.

2.2.4 ARP (green)

Lights up when a north crossing of the antenna is detected.

2.2.5 Fx ind. (red)

This led is always on. Has no meaning for the moment.

2.2.6 Power (green)

Lights up when the system power is present.

2.3 Clock sources

The PCT791 unit can work with three clock sources:

- External 30MHz source : coax on front panel, 50 Ohm, 0dBm
- External 15MHz source: on flatcable
- Internal 15MHz source (normal used)

2.4 Step-by-step

2.4.1 Slave to Master configuration

Follow the steps below:

- Shutdown the Extractor/Tracker functions with the CAM interface.
- Switch off the radar transmitter (PR & SR)
- Switch off the TPL800 (Power supply TPL A + TPL B off)
- Power off the PCT791 unit (power cable out)
- Switch the settings dipswitch on the PCT791 unit front panel to master, normal.
- Disable the receiver automatic gain (Front Rx AGC OFF)
- Disconnect the Flatcables on the TPL800 side (only PCT791 unit connected to Interconnection panel)
- Power on the PCT791 unit
- Disconnect the STC high beam signal cable on J2140 and connect it to J2143 on the interconnection panel. Modification as in beauvechain may be needed.
- Disconnect the SSR sync cable on the interconnection panel and connect it to the SSR sync output on the PCT791 unit front panel.
- Start the Extractor function with the CAM interface (live mode). The PCT791 tab should be enabled (see section 2.5.1 PCT791 tab)
- Set the transmitter setting in the CAM to OFF, verify it on the PCT791 unit front panel.
- If all seems normal you can switch the transmitter setting in the CAM interface to ON.
- Switch On the radar transmitter (TPL800 remains off)
- Start the tracker function

The switch to Master mode is completed.

2.4.2 Master to slave configuration

Follow the steps below:

- Set the transmitter setting in the CAM to OFF
- Shutdown the Extractor/Tracker functions with the CAM interface.
- Switch off the radar transmitter (TPL800 is still off, if not, switch off)
- Power off the PCT791 unit
- Enable again the receiver automatic gain control. RR800 SM; MF 800 S/T: AGC ON.
- Switch the settings dipswitches on the PCT791 front panel to normal, slave.
- Connect the flatcables again on the TLP800 (now the PCT791 unit, TPL800 and the interconnection panel are all connected in parallel). Cable 1, 2, 3, 4 on TPL A.
- Remove the SSR sync from the PCT791 unit front panel and connect it again on the interconnection panel. (P2124, black cable)
- Disconnect the STC high beam signal cable on J2143 and connect it to J2140 on the interconnection panel.
- Power on the PCT791 unit
- Power on the TPL800
- Power on the radar transmitter.
- Start the extractor and tracker function by using the CAM interface.

The switch to Slave mode is completed.

2.5 CAM interface

2.5.1 PCT791 tab

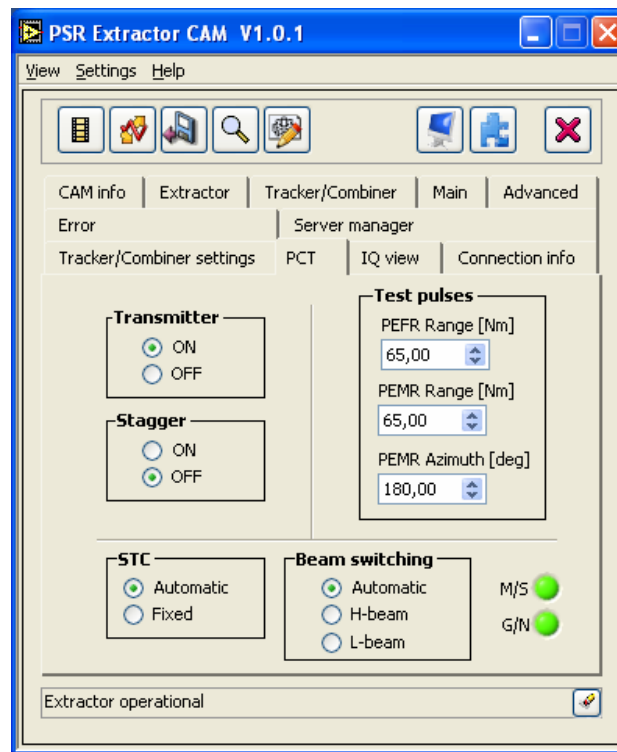


Figure 2-4: PCT791 tab

Commands available in the CAM for the PCT791 tab are the following:

- Transmitter: you can switch the timing generation of the PCT791 unit On/Off with this control.
- Stagger: turn the stagger On or Off
- STC: you can select the automatic STC generation or fixed. When the automatic mode is selected the content of the flash in the PCT791 unit will be used as STC. If you select the fixed mode, the values given in the setting window are used (see picture below). You can find these settings in the menu under Settings → STC fixed attenuation settings

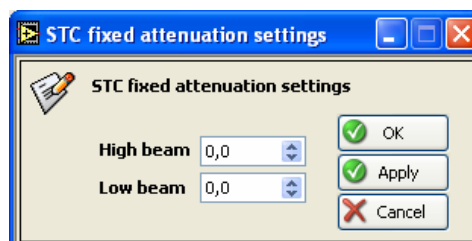


Figure 2-5: STC fixed attenuation settings

- Test pulses:
 - PERF Range: this value controls at what range the fixed test pulse is placed. The fixed test pulse will appear for all azimuths.
 - PEMR Range: this value controls at what range the moving test pulse is placed.
 - PEMR Azimuth: this value chooses at what azimuth the moving test pulse is generated. The test pulse will start at the value given and lasts for 15ACP's.
 - Beam switching: you can choose between 3 modes
 - Automatic: the content in the flash of the PCT791 unit will be used for beam switching.
 - H-beam: the high beam is selected. The content of the flash is overridden.
 - L-beam: the low beam is selected. The content of the flash is overridden.