



TIMING SOLUTIONS

Rubidium Series



RUB XV-I

IRIG-B Reader
Programmable GPI Inputs/Outputs



Option "I"
Version: 1.3
December 2, 2020





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A1 Revision History

No.	Date	Subject
0.n		Preliminary documents, changes without notice.
1.0	August 19, 2016	First released document.
1.1	May 10, 2019	Added date formats and TC_Link.
1.2	September 30, 2019	Changed address of Plura Europe GmbH.
1.3	December 2, 2020	Re-formatted in new design.

A2 Copyright

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For further information please contact your local dealer or:

Plura Europe GmbH
 Binger Weg 12
 D- 55437 Ockenheim
 Phone: +49 6725 918 006-70
 Fax: +49 6725 918 006-77
 E-Mail: info@plurainc.com
 Internet: <http://www.plurainc.com>

A3 General Remarks

This manual is a supplement to the "Functional Description & Specifications" of the XV appropriate module.

It describes those additional features which are made available assembling an additional board and flashing a special firmware with OPT75.



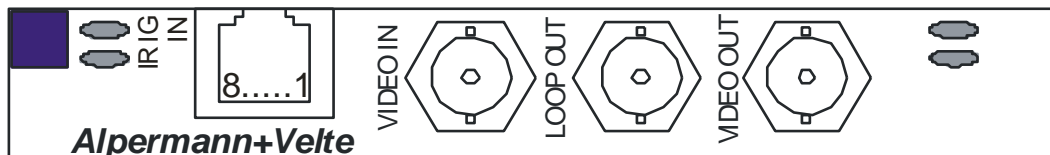
1 Hardware

1.1 Additional Board

Option "I" requires assembling an additional board.

The rear plate of the module receives a RJ45 jack additionally.

This board can be assembled for **RUB1** as well as for **RUB3** versions of **XV**.

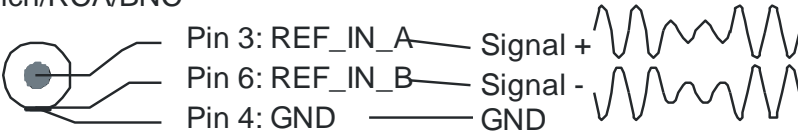


1.2 Connections

Pin assignments

IRIG IN RJ45 jack	1: GPI_1 2: GPI_2 3: IRIG_IN_A 6: IRIG_IN_B 4: GND 5: do not connect 7: GPI_3 8: GPI_4
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Signal descriptions

GND	Signal ground.
IRIG_IN_A IRIG_IN_B	<p>IRIG-B (Time Code) input.</p> <p>Unbalanced IRIG-B Cinch/RCA/BNC</p> <p>Balanced IRIG-B</p>  <p>Pin 3: REF_IN_A — Signal +</p> <p>Pin 6: REF_IN_B — Signal -</p> <p>Pin 4: GND — GND</p>
GPI_1 ... GPI_4	<p>General Purpose In/Out: inputs or outputs for digital signals according to application.</p> <p>Programmable functions.</p>



1.3 Specifications

IRIG-B Input

Supported Formats	IRIG-B: Amplitude modulated 1 kHz carrier signal, balanced. IRIG-B 123 or IRIG-B 127 according to IRIG STANDARD 200-04; AFNOR time code according to AFNOR NF S 87-500.
Connector	RJ45: Signals IRIG_IN_A/IRIG_IN_B
Input	Balanced or unbalanced signals Impedance: 680 Ω Mark Amplitude: 1 Vpp to 5 Vpp Space Amplitude: 0.5 Vpp to 2.5 Vpp Mark-to-Space Ratio: 2/1 to 6/1

GPI

GPI_1 ... GPI_4: Input specification	Input "Low": -2.0 to +1.0 V Input "High": +3.0 to +24.0 V Impedance: \approx 4.7 k Ω Frequency: 0 - 1 MHz
GPI_1 ... GPI_4: Output specification	Open Collector output of an NPN transistor at 4k7 pull-up resistor (5 VDC). Max. power dissipation: 200 mW. "High" state: 4.3 V (no load). "Low" state: output switched to GND. Max. collector current: 100 mA DC, fused by a 100 mA auto-recovery fuse. Collector-emitter saturation voltage: @100 mA: typ. 200 mV (\leq 600 mV), @10mA: typ. 90 mV (\leq 250 mV). Frequency: 0 - 150 kHz.



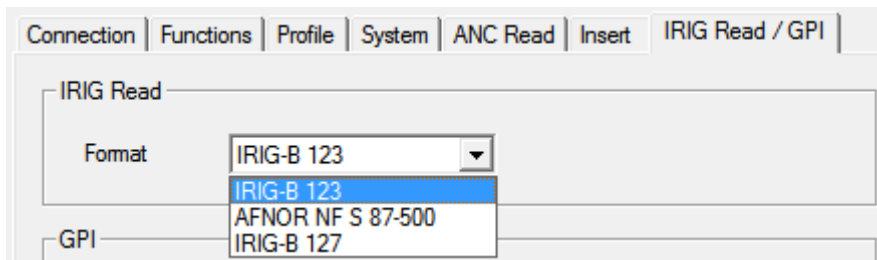
2 Functions

2.1 IRIG-B Reader

Option "I" adds IRIG-B reader functionality to the module:

- Read IRIG-B and visibly insert time and user data.

At the **IRIG Read / GPI** page of the configuration tool, three formats can be selected. Please select according to the format of the input signal.



Decoding a date makes the difference:

IRIG-B 123: This format according to IRIG STANDARD 200-04 does not include information about the current year. So, the year will be read out of the battery buffered real time clock of the module after power has turned on. It is possible to set the year manually utilizing the configuration tool. Turn of the year will be proceeded automatically. This format conveys "day of year". If the year is known, day and month can be calculated.

IRIG-B 127: This format according to IRIG STANDARD 200-04 includes year information (two digits 00 – 99, meaning 2000 – 2099). Together with the "day of year" information the date can be calculated.

AFNOR NF S 87-500: The format according to NF S 87-500 includes day, month, and year information. So, the date can be completely decoded.



2.2 IRIG-B Inserter

Option "I" enables to insert values from the IRIG-B reader visible to video. The module has to receive the following set-up at the **Insert** page:

"Source = IRIG-B"

"Format = IRIG-B"

The screenshot shows the configuration interface for the IRIG-B Inserter. The 'Insert' tab is selected. The 'Values' section includes fields for Pre Text, Source (set to (IRIG-B)), Format (set to (IRIG-B)), Delimiter (set to : (Colon)), Identifier (set to String), and Post Text. The 'Position' section includes Horizontal (set to 251) and Vertical (set to 50) coordinates, along with movement controls. The 'Character' section includes Font (set to 1: 15) and Color (set to Yellow). The 'Mask' section includes Mode (set to Solid), Border (unchecked), and Color (set to Blue).

Data will be displayed in the following format:

208 : 10 : 59 : 28 : 96

Day of
Year

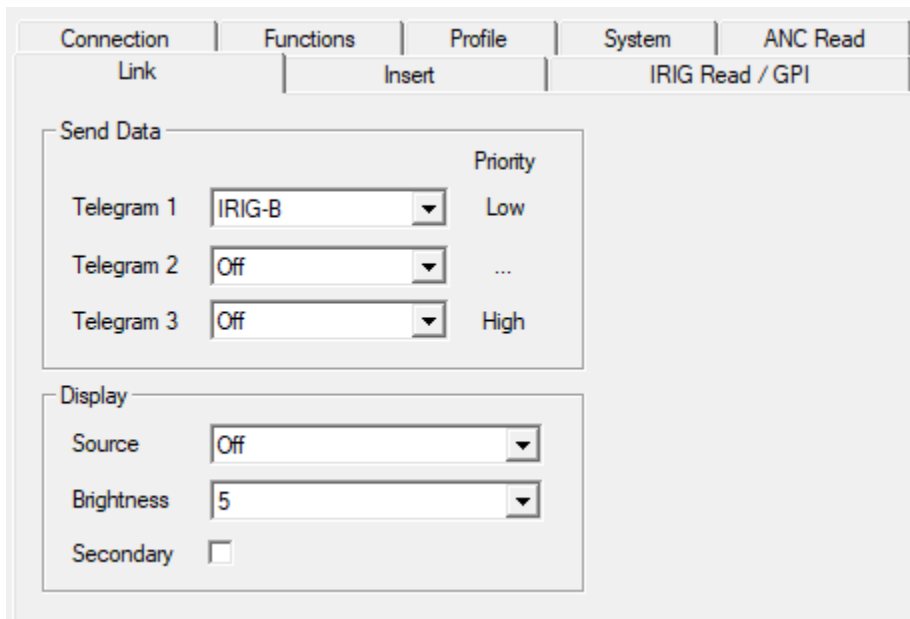
HH:MM:SS:1/100

It's also possible to use the "Date" formats like "Date, DD MM YYYY" to insert local date if provided by IRIG source.



2.3 TC_Link

IRIG-B data can be distributed to other video inserters over TC_Link. This allows to insert the same IRIG-B code to different video streams.



If another video module like XV receives IRIG-B data over TC_Link it will use it as its IRIG-B data source for the IRIG-B inserter.



2.4 Status Monitor

The function of the IRIG-B reader can be monitored in the "Status Monitor". On "System" page in "IRIG Reader" box it shows current time and (if an IRIG format with date was selected) current date.

Rubidium Status Monitor - Internet Explorer

http://192.168.0.29/MonitorX.htm?frame=0&module=4&count=4

Status Monitor

plura

Frame: Module:

Rubidium Status Monitor 2.16.33

System

XV

TC Generator

frame rate	25		
operating mode	start		
tc output active	yes	tv color field present	no
		color field correction	no
genlock mode	video		
pll lock current	yes		
pll lock after reset	yes		
freq divider, current	589840 (+16)		
freq divider, nominal	589824		
errors no sync	0		
errors sync disturbance	0		
time	10 : 56 : 34		
user	00 00 00 00		

IRIG Reader

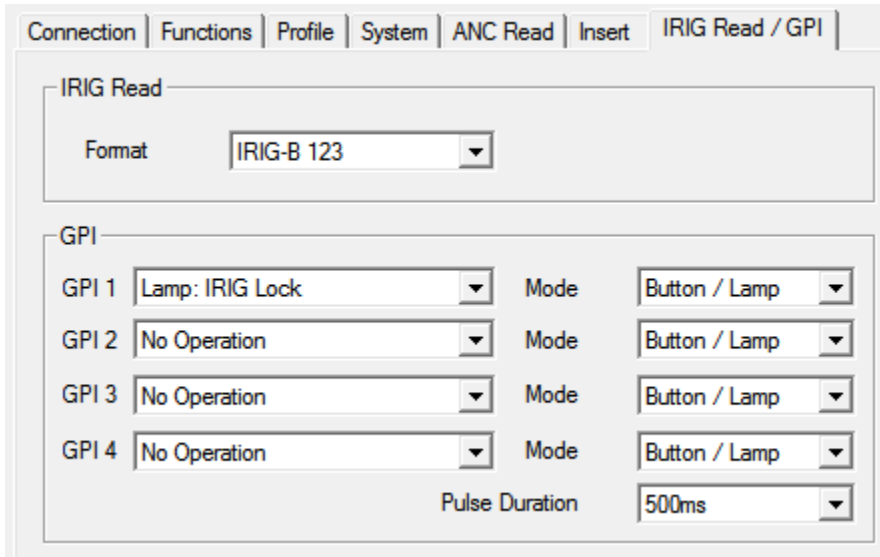
time	15 : 43 : 26
date	19.08.2016



2.5 GPI

Option "I" adds GPI functionality to the module. Set-up regarding GPI functions works same way as provided for XT modules.

- The configuration tool enables the **IRIG READ / GPI** function to assign functions to the **GPI** ports.



Name (in drop-down list)	Functional description
IRIG-B Lock	Input signal status. On: IRIG-B with valid data. Data of consecutive IRIG frames are consistent, for example there is no discontinuity of any time information. Slowly flashing: IRIG-B with valid data. The check of consistent data is still in progress or the check fails. Off: No IRIG-B with valid data. Either the signal has failed completely, or the cable has been disconnected, or the signal contains invalid data.

Please refer to "Functional Description & Specifications" manual of the XV module for details of configuration features.

Please refer to the document "RUB AT/DT/HT/XT Application: GPI Functions" for a description of the available functions. You can download it from:

<https://plurainc.com>





Contact Us



Corporate Offices:
Plura Broadcast, Inc.
Ph: +1-602-944-1044
Sales@plurainc.com



Plura Europe GmbH
Ph: +49-6725-918006-70
Sales@plurainc.com

GERMANY



Plura MEA
Ph: +971-50-715-9625
Sales@plurainc.com



Plura Asia
Ph: +82-10-6688-8826
Sales@plurainc.com

S. KOREA

