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IRT Eurocard

Type DDC-3461

G.703 to ASI Network Interface Adapter

Designed and manufactured in Australia

IRT can be found on the Internet at:
http://www.irtelectronics.com

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Instruction Book

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This instruction book applies to units later than S/N 0305001.

Operational Safety:

WARNING

Operation of electronic equipment involves the use of voltages and currents that may be dangerous to human life. Note that under certain conditions dangerous potentials may exist in some circuits when power controls are in the **OFF** position. Maintenance personnel should observe all safety regulations.

Do not make any adjustments inside equipment with power **ON** unless proper precautions are observed. All internal adjustments should only be made by suitably qualified personnel. All operational adjustments are available externally without the need for removing covers or use of extender cards.

IRT Eurocard
Type DDC-3461
InseG.703 to ASI Interface Adapter

General Description

The DDC-3461 is part of a family of data transcoders for converting between the commonly used MPEG2 Transport Stream formats in the broadcast industry for video distribution.

The DDC-3461 accepts an input G.703 ASI encoded signal and converts it back to the original ASI transport stream.

The G.703 input data rate for the DDC-3461 must be fixed at the correct rate (44.736 Mb/s) to produce the correct ASI output.

The adapters find particular application in Telecom distribution systems using DS3 (44.736 Mb/s) encoding.

The DDC-3461 does not perform any signal correction or alter the format of the MPEG2 transport stream. It only decodes the G.703 input and monitors the signal for MPEG2 transport stream sync errors.

Standard features:

- Interfacing various MPEG2 TS formats.
- Block length indication and error detection.
- Interface to test equipment.
- Signal monitoring for remote alarm indications.

Technical Specifications

IRT Eurocard module
Type DDC-3461

Input:

Type	1 x G.703 @ 44.736 Mb/s.
Connector	BNC.

Outputs:

Type	1 x ASI-C 75Ω, 800 mVp-p
Connector	BNC.

Alarms:

	1 x general alarm – selectable sync error or input loss, & power loss. 1 set N/C contacts, 2 pin 0.1" IDC male connector.
Power Requirements	28 Vac CT (14-0-14) or ± 16 Vdc.
Power consumption	<5 VA.

Other:

Temperature range		0 - 50° C ambient
Mechanical		Suitable for mounting in IRT 19" rack chassis with input and output connections on the rear panel
Finish:	Front panel	Grey background, silk-screened black lettering & red IRT logo
	Rear assembly	Detachable silk-screened PCB with direct mount connectors to Eurocard and external signals
Dimensions		6 HP x 3 U x 220 mm IRT Eurocard
Supplied accessories		Rear connector assembly including matching connector for alarm output.
Optional accessories		TME-6 module extender card.

Technical Description

Converts unframed G.703 into ASI-C. This module complements the DDC-3480 ASI-C to G.703 converter to give the original encoded 44.736 Mb/s ASI stream. This module does not perform any processing (e.g. RS coding, interleaving, energy dispersion correction etc) but rather decodes the G.703 input and detects MPEG TS sync errors.

G.703 Input
The input G.703 signal, originally encoded by the DDC-3480 or similar device, is applied to the rear panel connector and passes to the input transformer and integrated line receiver, U3. This receiver chip provides automatic line equalisation and derives ± 1 and clock signals of the input G.703 signal for processing in the following stages. In order for line equalisation to take place, link LK2 must be installed.

Logic processing, reclocking and error detection.
The main logic processing, reclocking, error detection and operational interfacing are all performed by logic circuits within a custom programmed large scale logic array. The internal logic and functions of this IC are too complex to describe in detail and the following is intended as a guide to function only.

Data loss detection.
If the input level is insufficient for correct operation or if more than 180 1's occur in a row then data loss is deemed to have occurred.

Sync Error
After 2 consecutive TS syncs are missed a TS Sync Error is deemed to have occurred. The Sync error is reset only after 5 consecutive TS syncs have been detected. The SYNC Error LED lights when a Sync error has been detected and remains lit for approximately 300 ms after the Sync error has been reset.

188 TS Sync length indicator
If the number of bytes between TS syncs is 188 then the 188 LED lights. When either a loss of input or sync loss is detected, this LED is extinguished.

204 TS Sync length indicator
If the number of bytes between TS syncs is 204 then the 204 LED lights. When either a loss of input or sync loss is detected, this LED is extinguished.

Alarm relay
An alarm output is available on the rear assembly using a two pin connector.
The relay contact will short circuit the two pins on the rear assembly when the selected alarm condition occurs, selectable by link LK3 (see configuration section) or there is a loss of power to the module.

ASI Output

Processed data is parallel loaded to a parallel to serial converter, U2, before feeding a driver, U1, to give the original 44.736 Mb/s payload rate ASI signal on the rear connector.

Configuration

Links:

LK 2:	IN	Enable cable input equalisation.
	OUT	Disable cable input equalisation.
LK 3:	LEFT	Relay Alarm set to indicate on Loss of Signal.
	RIGHT	Relay Alarm set to indicate on Sync Error.

Installation

Pre-installation:

Handling:

This equipment may contain or be connected to static sensitive devices and proper static free handling precautions should be observed.

Where individual circuit cards are stored, they should be placed in antistatic bags. Proper antistatic procedures should be followed when inserting or removing cards from these bags.

Power:

AC mains supply: Ensure that operating voltage of unit and local supply voltage match and that correct rating fuse is installed for local supply.

DC supply: Ensure that the correct polarity is observed and that DC supply voltage is maintained within the operating range specified.

Earthing:

The earth path is dependent on the type of frame selected. In every case particular care should be taken to ensure that the frame is connected to earth for safety reasons. See frame manual for details.

Signal earth: For safety reasons a connection is made between signal earth and chassis earth. No attempt should be made to break this connection.

Installation in frame or chassis:

See details in separate manual for selected frame type.

Connections:

Signal connections:

G.703 input:
This BNC input is terminated in 75 Ohms. Input cable compensation is automatic for up to 450 feet of 75 Ohm coaxial cable (Belden 8281 equivalent). Input equalisation can be enabled or disabled by the addition or removal of link LK2.

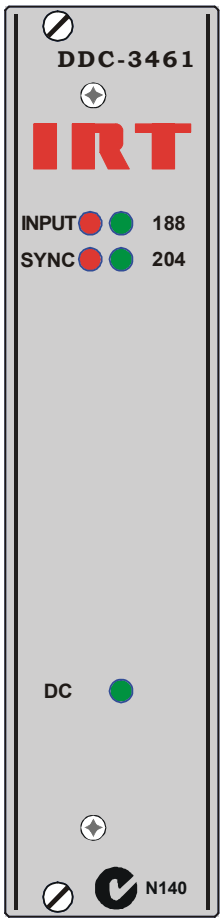
ASI output:
This BNC output has a 75 Ohms characteristic output impedance. Only high quality 75 Ohm coaxial cable (Belden 8281 or 1694A equivalent) should be used. No adjustments are required, but cable must be terminated in 75 Ohms at the connected load.

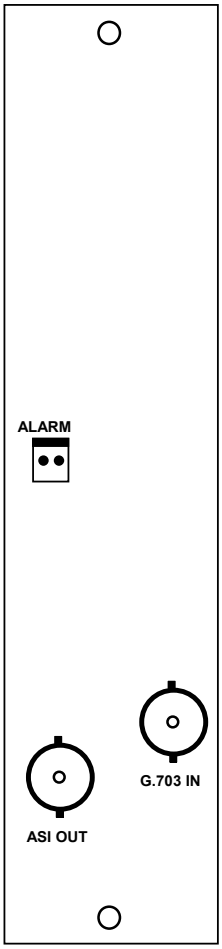
Alarm connections:

Alarm relay output.
Closed contacts represent either a Loss of Input signal or Loss of Sync, selectable by link LK3, or Loss of Power.

Front & rear panel connector diagrams

The following front panel and rear assembly drawings are not to scale and are intended to show connection order and approximate layout only.





Operation

There are no operational controls for this module. Setting up consists only of connecting the input and output. Once this is done the front panel indicators should react and the output should present the correct format signal.
Any change in signal will be indicated by the front panel LED's and or alarm output as outlined below.

Front indicators:

Input loss alarm:

This LED lights when there is a loss of input signal or coding errors occur on the input stream.

Sync loss alarm:
This LED lights for at least 300 ms when two or more MPEG-2 TS sync bytes are absent. The LED extinguishes when five or more correct SYNC bytes are detected.

188 byte indicator:
This LED lights when a valid MPEG-2 TS stream containing 188 bytes between sync bytes is detected.

204 byte indicator:
This LED lights when a valid MPEG-2 TS stream containing 204 bytes between sync bytes is detected.

Maintenance & storage

Maintenance:

No regular maintenance is required.

Care however should be taken to ensure that all connectors are kept clean and free from contamination of any kind. This is especially important in fibre optic equipment where cleanliness of optical connections is critical to performance.

Storage:

If the equipment is not to be used for an extended period, it is recommended the whole unit be placed in a sealed plastic bag to prevent dust contamination. In areas of high humidity a suitably sized bag of silica gel should be included to deter corrosion.

Where individual circuit cards are stored, they should be placed in antistatic bags. Proper antistatic procedures should be followed when inserting or removing cards from these bags.

Warranty & service

Equipment is covered by a limited warranty period of three years from date of first delivery unless contrary conditions apply under a particular contract of supply. For situations when "**No Fault Found**" for repairs, a minimum charge of 1 hour's labour, at IRT's current labour charge rate, will apply, whether the equipment is within the warranty period or not.

Equipment warranty is limited to faults attributable to defects in original design or manufacture. Warranty on components shall be extended by IRT only to the extent obtainable from the component supplier.

Equipment return:

Before arranging service, ensure that the fault is in the unit to be serviced and not in associated equipment. If possible, confirm this by substitution.

Before returning equipment contact should be made with IRT or your local agent to determine whether the equipment can be serviced in the field or should be returned for repair.

The equipment should be properly packed for return observing antistatic procedures.

The following information should accompany the unit to be returned:

1. A fault report should be included indicating the nature of the fault
2. The operating conditions under which the fault initially occurred.
3. Any additional information, which may be of assistance in fault location and remedy.
4. A contact name and telephone and fax numbers.
5. Details of payment method for items not covered by warranty.
6. Full return address.
7. For situations when "**No Fault Found**" for repairs, a minimum charge of 1 hour's labour will apply, whether the equipment is within the warranty period or not. Contact IRT for current hourly rate.

Please note that all freight charges are the responsibility of the customer.

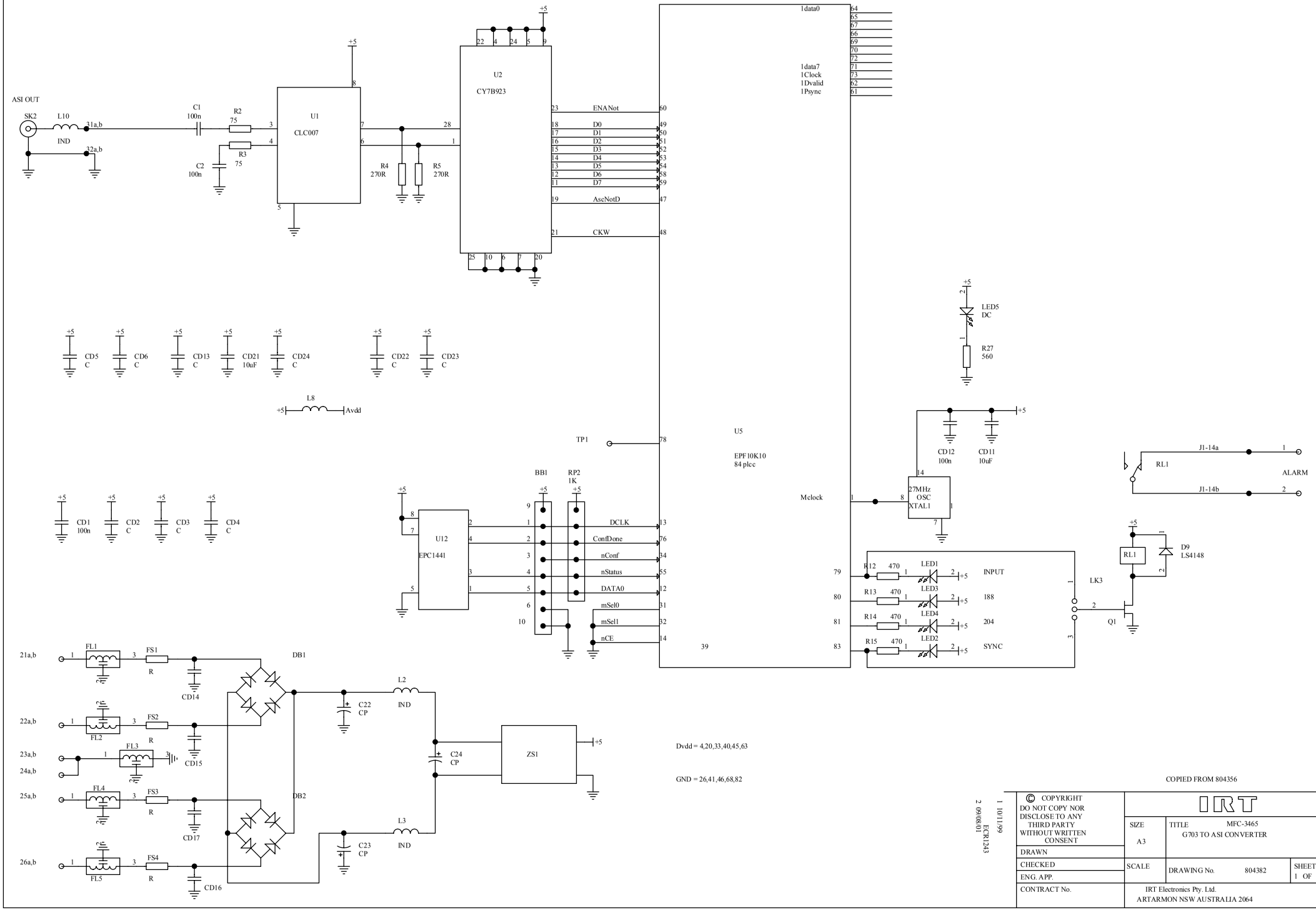
The equipment should be returned **to the agent who originally supplied the equipment or, where this is not possible**, to IRT direct as follows.

Equipment Service
IRT Electronics Pty Ltd
26 Hotham Parade
ARTARMON
N.S.W. 2064
AUSTRALIA

Phone: 61 2 9439 3744 Fax: 61 2 9439 7439
Email: service@irtelectronics.com

Drawing List Index

Drawing #	Sheet #	Description
804382	1	G.703 to ASI Converter Circuit Diagram (same as MFC-3465)
804382	2	G.703 to ASI Converter Circuit Diagram (same as MFC-3465)



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2 09/08/01
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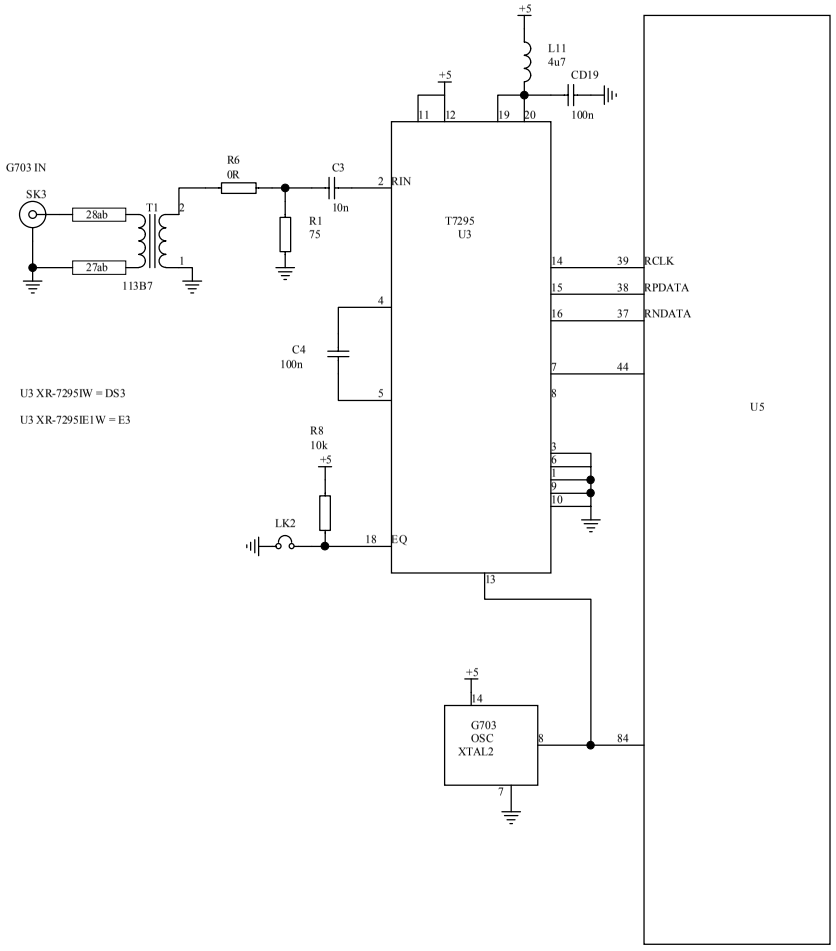
ENG. APP.			
CONTRACT No.	IRT Electronics Pty. Ltd. ARTARMON NSW AUSTRALIA 2064		



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G703 TO ASI CONVERTER

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SHEET 2 OF 2

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