

Adaptor board for STD-601

ADP-A-STD601, ADP-B-STD601



Operation Guide

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CONTENTS

GENERAL DESCRIPTION & FEATURES	3
General description	3
Features.....	3
INTRODUCTION.....	4
BOARD LAYOUT.....	4
Board A Dip switch and pin identification	4
Board B Dip switch and pin identification.....	4
SETTING PROCEEDURE	5
Band	5
RF Power	5
Bit rate	5
Channel setting	6
INTERFACE	10
DIMENSIONS.....	10
CIRCUIT DIAGRAM	11
Board A	11
Board B	12
CDP-TX-02E-R, CDP-RX-02E-R COMPATIBILITY	13
Introduction	13
Preparation.....	13
Comparison between STD-601/adaptor board and CDP module... ..	14
RSSI acquisition.....	14
CAUTIONS & WARNINGS.....	15
REVISION HISTORY	16

GENERAL DESCRIPTION & FEATURES

General description

The ADP-A-STD601 (“A”) and ADP-B-STD601 (“B”) are adaptor boards that allow user to mount the STD-601 module and perform communication tests easily while using dip switches to set STD-601 RF bit rate, power and frequency band. By incorporating an onboard CPU to perform the module settings, user does not need to develop setting program and only needs to apply user data to the terminals.

The other advantage is the board’s compatibility with the existing CDP-TX-02E-R and CDP-RX-02E-R footprint which allows current users of these modules to perform quick test with the STD-601 without modification to their PCB.

Features

- Onboard dip switches to conveniently set STD-601 band, RF power, channel and bit rate
- No need to make setting program
- Useable with STD-601 400 MHz and 434 MHz *
- Convert STD-601 pin layout to CDP-TX-02E-R and CDP-RX-02E-R
- Board size matches those of CDP-TX-02E-R and CDP-RX-02E-R
- CDP-02 module users can make communication test with STD-601 easily**.

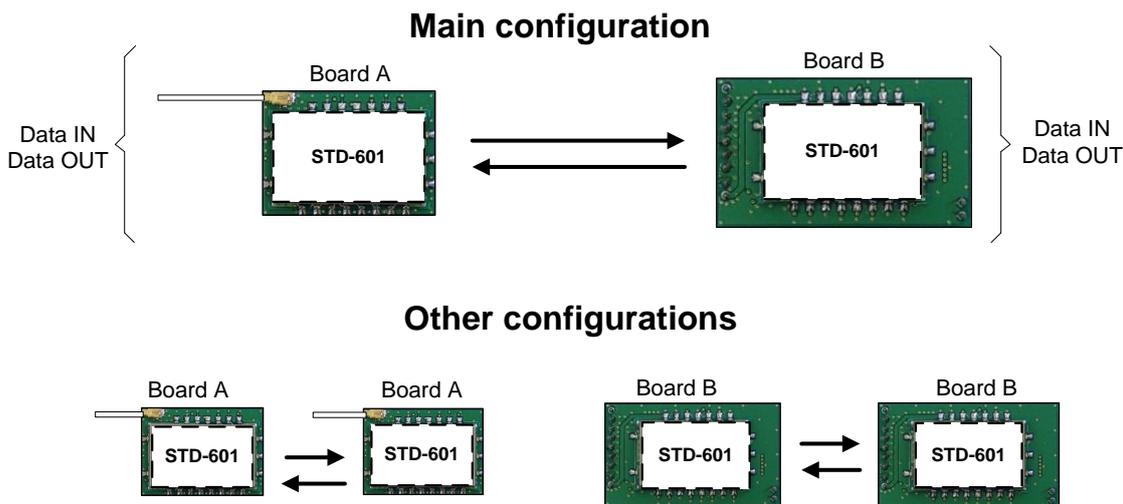
* Both boards include STD-601 400 MHz module by default. For use with STD-601 434 MHz module please specify when ordering.

** For CDP-02 users wishing to make test with STD-601 with adaptor board, please refer to p13 – “*CDP-TX-02E-R, CDP-RX-02E-R COMPATIBILITY*”

INTRODUCTION

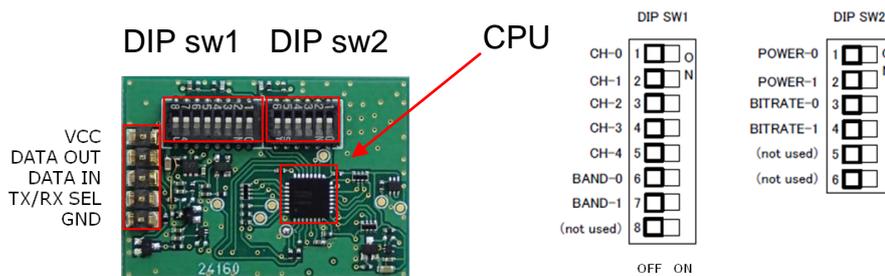
The STD-601 is a transceiver module which consists of 2 versions, STD-601 (434 MHz) and STD-601 (400 MHz). These adaptor boards are compatible with both versions and are able to provide full transceiver operation.

By mounting the STD-601 on the boards, user only needs to set the STD-601 parameters using the dip switches to perform communication tests. A setting program does not need to be developed to set the STD-601.

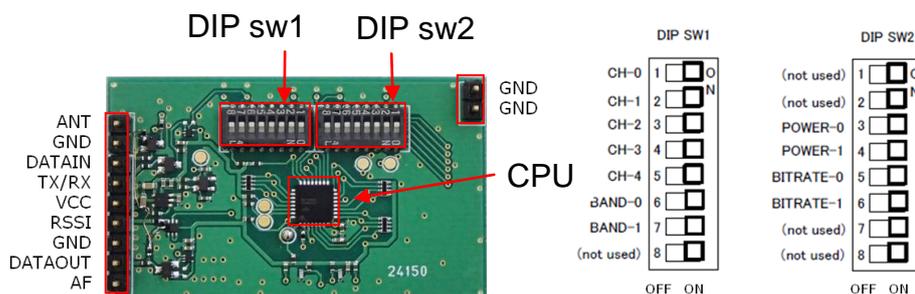


BOARD LAYOUT

Board A Dip switch and pin identification



Board B Dip switch and pin identification



SETTING PROCEEDURE

Band

The STD-601 400 MHz covers 4 frequency bands. The dip switch setting is as below:

Board A and B (DIP SW 1)

Band (MHz)	BAND-1	BAND-0
429	ON	ON
447	ON	OFF
458	OFF	ON
434	OFF	OFF

- The STD-601 434 MHz covers only 434 MHz frequency band which is highlighted. If settings for the other bands are applied while using this module, the module *will not function*. Therefore the switches should remain on this setting. This also applies to RF power and bit rate settings.

RF Power

The STD-601 400 MHz covers 4 power settings. The dip switch setting is as below:

Board A and B (DIP SW 2)

Power (mW)	Power-1	Power-0
50	ON	ON
25	ON	OFF
1	OFF	ON
10	OFF	OFF

Bit rate

The STD-601 400 MHz covers 4 bit rate settings. The dip switch setting is as below:

Board A and B (DIP SW 2)

Bit rate (bps)	Bit rate-1	Bitrate-0
19200	ON	ON
2400	ON	OFF
9600	OFF	ON
4800	OFF	OFF

Channel setting

The CH-0 to CH-4 switches set the channel for the selected band. Refer to the frequency and channel table below:

Channel table 434 MHz

Frequency (MHz)	Board A and B (DIP SW1)				
	CH-4	CH-3	CH-2	CH-1	CH-0
433.875	ON	ON	ON	ON	ON
433.925	ON	ON	ON	ON	OFF
433.975	ON	ON	ON	OFF	ON
434.025	ON	ON	ON	OFF	OFF
434.075	ON	ON	OFF	ON	ON
434.125	ON	ON	OFF	ON	OFF
434.175	ON	ON	OFF	OFF	ON
434.225	ON	ON	OFF	OFF	OFF
434.275	ON	OFF	ON	ON	ON
434.325	ON	OFF	ON	ON	OFF
434.375	ON	OFF	ON	OFF	ON
434.425	ON	OFF	ON	OFF	OFF
434.475	ON	OFF	OFF	ON	ON
434.525	ON	OFF	OFF	ON	OFF
434.575	ON	OFF	OFF	OFF	ON
434.625	ON	OFF	OFF	OFF	OFF
433.900	OFF	ON	ON	ON	ON
433.950	OFF	ON	ON	ON	OFF
434.000	OFF	ON	ON	OFF	ON
434.050	OFF	ON	ON	OFF	OFF
434.100	OFF	ON	OFF	ON	ON
434.150	OFF	ON	OFF	ON	OFF
434.200	OFF	ON	OFF	OFF	ON
434.250	OFF	ON	OFF	OFF	OFF
434.300	OFF	OFF	ON	ON	ON
434.350	OFF	OFF	ON	ON	OFF
434.400	OFF	OFF	ON	OFF	ON
434.450	OFF	OFF	ON	OFF	OFF
434.500	OFF	OFF	OFF	ON	ON
434.550	OFF	OFF	OFF	ON	OFF
434.600	OFF	OFF	OFF	OFF	ON
434.650*	OFF	OFF	OFF	OFF	OFF

*default channel

Channel table 429 MHz

Frequency (MHz)	Board A and B (DIP SW1)				
	CH-4	CH-3	CH-2	CH-1	CH-0
429.3125	ON	ON	ON	ON	ON
429.3250	ON	ON	ON	ON	OFF
429.3375	ON	ON	ON	OFF	ON
429.3500	ON	ON	ON	OFF	OFF
429.3625	ON	ON	OFF	ON	ON
429.3750	ON	ON	OFF	ON	OFF
429.3875	ON	ON	OFF	OFF	ON
429.4000	ON	ON	OFF	OFF	OFF
429.4125	ON	OFF	ON	ON	ON
429.4250	ON	OFF	ON	ON	OFF
429.4375	ON	OFF	ON	OFF	ON
429.4500	ON	OFF	ON	OFF	OFF
429.4625	ON	OFF	OFF	ON	ON
429.4750	ON	OFF	OFF	ON	OFF
429.4875	ON	OFF	OFF	OFF	ON
429.5000	ON	OFF	OFF	OFF	OFF
429.5125	OFF	ON	ON	ON	ON
429.5250	OFF	ON	ON	ON	OFF
429.5375	OFF	ON	ON	OFF	ON
429.5500	OFF	ON	ON	OFF	OFF
429.5625	OFF	ON	OFF	ON	ON
429.5750	OFF	ON	OFF	ON	OFF
429.5875	OFF	ON	OFF	OFF	ON
429.6000	OFF	ON	OFF	OFF	OFF
429.6125	OFF	OFF	ON	ON	ON
429.6250	OFF	OFF	ON	ON	OFF
429.6375	OFF	OFF	ON	OFF	ON
429.6500	OFF	OFF	ON	OFF	OFF
429.6625	OFF	OFF	OFF	ON	ON
429.6750	OFF	OFF	OFF	ON	OFF
429.6875	OFF	OFF	OFF	OFF	ON
429.7000	OFF	OFF	OFF	OFF	OFF

Channel table 458 MHz

Frequency (MHz)	Board A and B (DIP SW1)				
	CH-4	CH-3	CH-2	CH-1	CH-0
458.5125	ON	ON	ON	ON	ON
458.5250	ON	ON	ON	ON	OFF
458.5375	ON	ON	ON	OFF	ON
458.5500	ON	ON	ON	OFF	OFF
458.5625	ON	ON	OFF	ON	ON
458.5750	ON	ON	OFF	ON	OFF
458.5875	ON	ON	OFF	OFF	ON
458.6000	ON	ON	OFF	OFF	OFF
458.6125	ON	OFF	ON	ON	ON
458.6250	ON	OFF	ON	ON	OFF
458.6375	ON	OFF	ON	OFF	ON
458.6500	ON	OFF	ON	OFF	OFF
458.6625	ON	OFF	OFF	ON	ON
458.6750	ON	OFF	OFF	ON	OFF
458.6875	ON	OFF	OFF	OFF	ON
458.7000	ON	OFF	OFF	OFF	OFF
458.7125	OFF	ON	ON	ON	ON
458.7250	OFF	ON	ON	ON	OFF
458.7375	OFF	ON	ON	OFF	ON
458.7500	OFF	ON	ON	OFF	OFF
458.7625	OFF	ON	OFF	ON	ON
458.7750	OFF	ON	OFF	ON	OFF
458.7875	OFF	ON	OFF	OFF	ON
458.8000	OFF	ON	OFF	OFF	OFF
458.8125	OFF	OFF	ON	ON	ON
458.8250	OFF	OFF	ON	ON	OFF
458.8375	OFF	OFF	ON	OFF	ON
458.8500	OFF	OFF	ON	OFF	OFF
458.8625	OFF	OFF	OFF	ON	ON
458.8750	OFF	OFF	OFF	ON	OFF
458.8875	OFF	OFF	OFF	OFF	ON
458.9000	OFF	OFF	OFF	OFF	OFF

Channel table 447 MHz

Frequency (MHz)	Board A and B (DIP SW1)				
	CH-4	CH-3	CH-2	CH-1	CH-0
447.5875	ON	ON	ON	ON	ON
447.6000	ON	ON	ON	ON	OFF
447.6125	ON	ON	ON	OFF	ON
447.6250	ON	ON	ON	OFF	OFF
447.6375	ON	ON	OFF	ON	ON
447.6500	ON	ON	OFF	ON	OFF
447.6625	ON	ON	OFF	OFF	ON
447.6750	ON	ON	OFF	OFF	OFF
447.6875	ON	OFF	ON	ON	ON
447.7000	ON	OFF	ON	ON	OFF
447.7125	ON	OFF	ON	OFF	ON
447.7250	ON	OFF	ON	OFF	OFF
447.7375	ON	OFF	OFF	ON	ON
447.7500	ON	OFF	OFF	ON	OFF
447.7625	ON	OFF	OFF	OFF	ON
447.7750	ON	OFF	OFF	OFF	OFF
447.7875	OFF	ON	ON	ON	ON
447.8000	OFF	ON	ON	ON	OFF
447.8125	OFF	ON	ON	OFF	ON
447.8250	OFF	ON	ON	OFF	OFF
447.8375	OFF	ON	OFF	ON	ON
447.8500	OFF	ON	OFF	ON	OFF
447.8625	OFF	ON	OFF	OFF	ON
447.8750	OFF	ON	OFF	OFF	OFF
447.8875	OFF	OFF	ON	ON	ON
447.9000	OFF	OFF	ON	ON	OFF
447.9125	OFF	OFF	ON	OFF	ON
447.9250	OFF	OFF	ON	OFF	OFF
447.9375	OFF	OFF	OFF	ON	ON
447.9500	OFF	OFF	OFF	ON	OFF
447.9625	OFF	OFF	OFF	OFF	ON
447.9750	OFF	OFF	OFF	OFF	OFF

INTERFACE

Interface	Board A	Board B
ANT	RF IN/OUT (Connector)	RF IN/OUT (PIN)
GND	GND	GND
VCC	3 – 12 V	3 – 12 V
DATA IN ^{*1}	H = Vcc, L = GND	H = Vcc, L = GND
DATA OUT ^{*1}	H = Vcc, L = GND	H = Vcc, L = GND
TX/RX SEL	OPEN=TX, GND=RX	OPEN=RX, GND=TX
RSSI ^{*2}	NA	Received signal strength indicator
AF	NA	Demodulated signal output

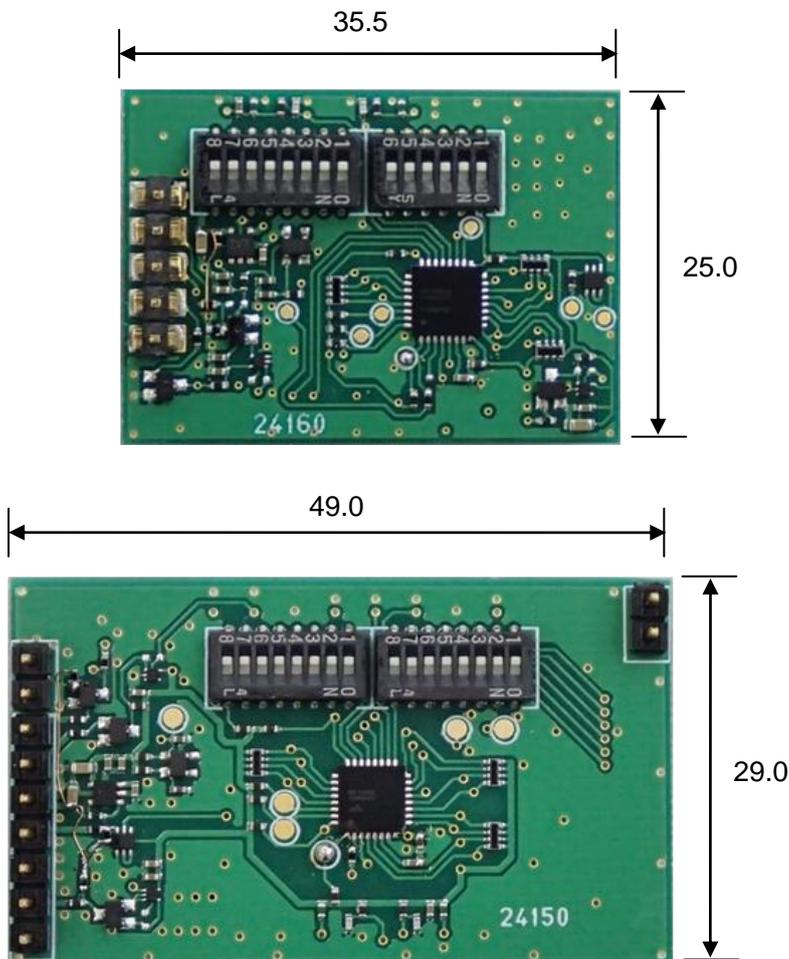
Refer to STD-601 operation guide

*1

- a) 2400bps, 4800bps, 9600bps, 19200bps selectable (STD-601 400 MHz)
- b) 4800bps, 9600bps selectable (STD-601 434 MHz)

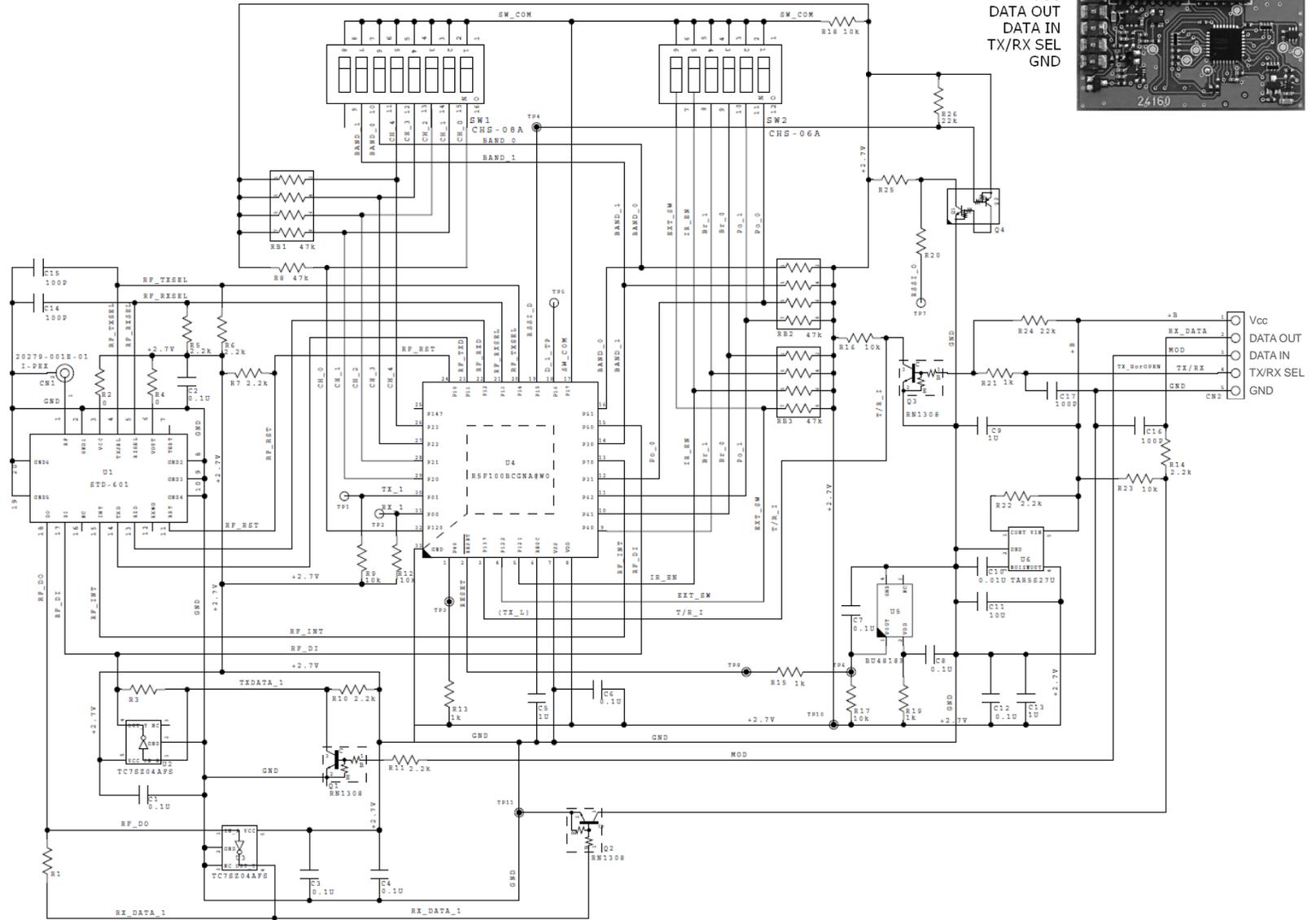
*2 RSSI H/L indicator: Hi when received signal is higher than -90dBm.
NA - not applicable

DIMENSIONS



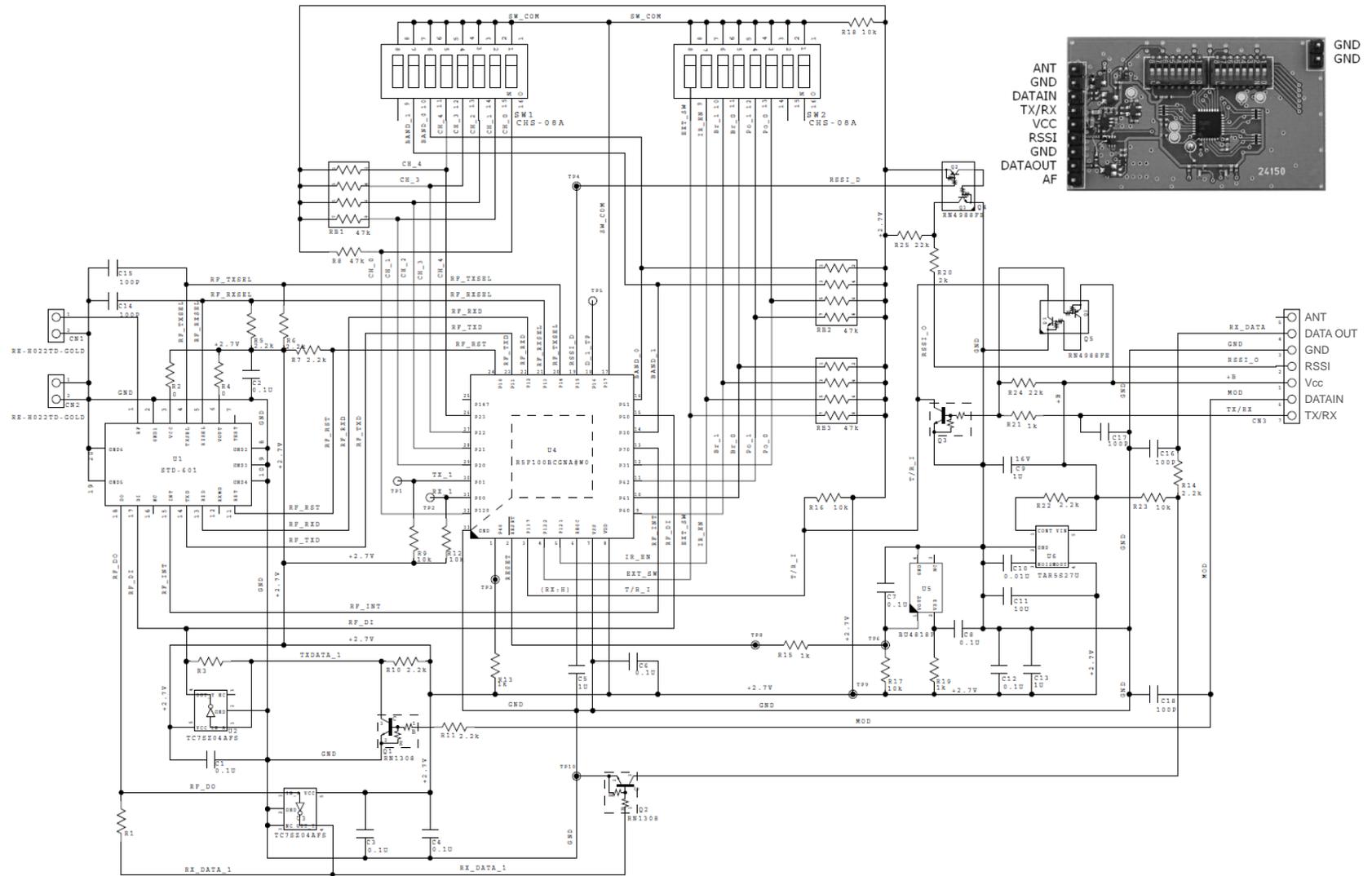
CIRCUIT DIAGRAM

Board A



CIRCUIT DIAGRAM

Board B

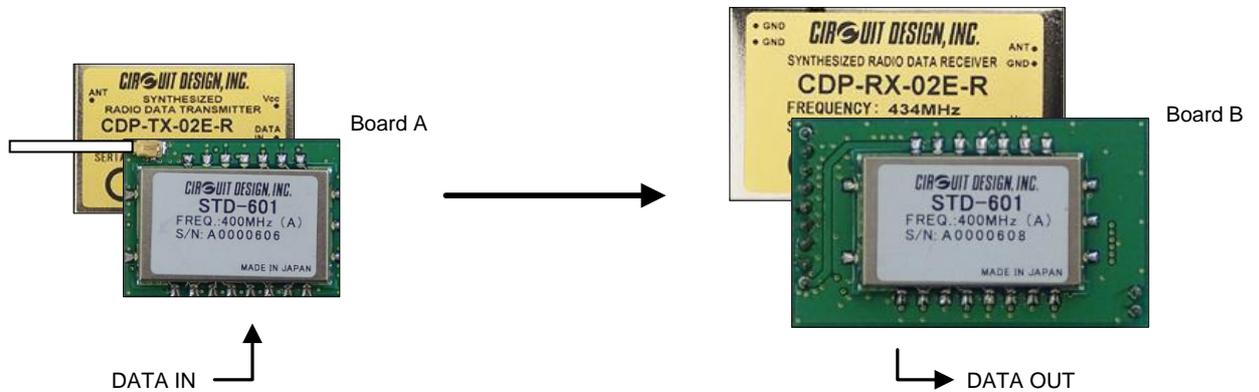


CDP-TX-02E-R, CDP-RX-02E-R COMPATIBILITY

Introduction

The adaptor boards have been designed to match the size and pin layout of the CDP-TX-02E-R and CDP-RX-02E-R modules. Thus for current users of these modules, it becomes possible to evaluate the STD-601 modules easily by replacing the CDP modules with the adaptor boards without modifying the user PCB. The user can access other features not covered by the CDP modules eg. selectable data rates upto 19200 bps.

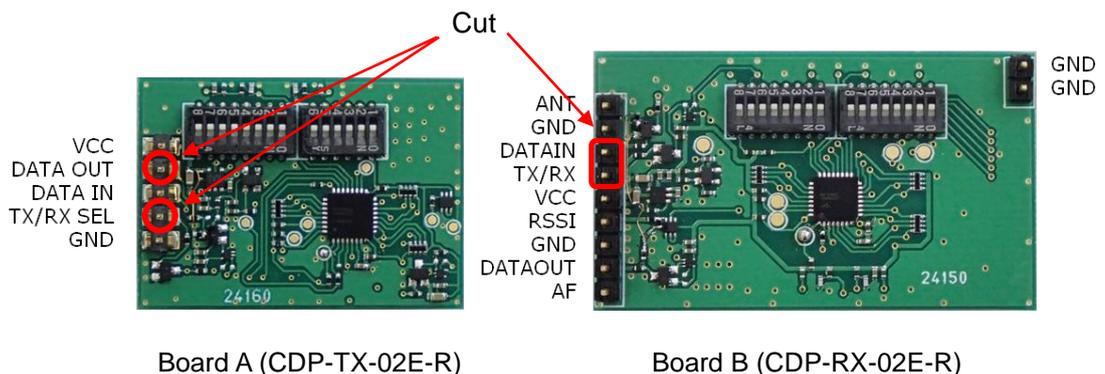
As the CDP-TX-02E-R and CDP-RX-02E-R modules are designed for one way transmission, it will not be possible to access the full transceiver functions of the STD-601 during this configuration.



Preparation

As the STD-601 with adaptor board allows bi-directional communication, each board incorporates data IN/OUT and TX/RX selection pins. When the boards are used to duplicate the CDP-TX-02E-R and CDP-RX-02E-R functions, the TX/RX selection pin will not be used. For the transmitter side DATA OUT pin is not used and for the receiver side DATA IN pin is not used.

These unused pins should be broken off using suitable tool to match the pin layout of the CDP-02 modules as shown below.



Comparison between STD-601 / adaptor board and CDP module

Comparison between CDP-TX-02E-R and adaptor board A (transmitter)

Interface pin	CDP-TX-02E-R		STD-601 / Adaptor board A
VCC	3 – 12 V	->	3 – 12 V
Data IN	Max. 4800 bps	->	Selectable *1
GND	GND	->	GND

Comparison between CDP-RX-02E-R and adaptor board B (receiver)

Interface pin	CDP-RX-02E-R		STD-601 / Adaptor board B
ANT	RF In	->	RF In
GND	GND	->	GND
VCC	3 – 12 V	->	3 – 12 V
RSSI	Received signal strength (Analogue)	->	Received signal strength (H/L) *2
GND	GND	->	GND
DATA OUT	Max. 4800 bps	->	Selectable *1
AF	Demodulated signal output	->	NA (Not available)

*1

- a) 2400bps, 4800bps, 9600bps, 19200bps selectable (STD-601 400 MHz)
- b) 4800bps, 9600bps selectable (STD-601 434 MHz)

*2 RSSI H/L indicator: Hi when received signal is higher than -90dBm.

RSSI acquisition

The CDP-RX-02E-R is able to provide RSSI output in the form of an analogue voltage. When using the adaptor board, the RSSI pin will not output analogue voltage but instead output a digital HIGH and LOW signal when the RSSI crosses a set threshold (-90dBm).

Cautions

- As the product communicates using electronic radio waves, there are cases where transmission will be temporarily cut off due to the surrounding environment and method of usage. The manufacturer is exempt from all responsibility relating to resulting harm to personnel or equipment and other secondary damage.
- Do not use the equipment within the vicinity of devices that may malfunction as a result of electronic radio waves from the product.
- The manufacturer is exempt from all responsibility relating to secondary damage resulting from the operation, performance and reliability of equipment connected to the product.
- Communication performance will be affected by the surrounding environment, so communication tests should be carried out before actual use.
- Ensure that the power supply for the product is within the specified rating. Short circuits and reverse connections may result in overheating and damage and must be avoided at all costs.
- Ensure that the power supply has been switched off before attempting any wiring work.
- The case is connected to the GND terminal of the internal circuit, so do not make contact between the '+' side of the power supply terminal and the case.
- When batteries are used as the power source, avoid short circuits, recharging, dismantling, and pressure. Failure to observe this caution may result in the outbreak of fire, overheating and damage to the equipment. Remove the batteries when the equipment is not to be used for a long period of time. Failure to observe this caution may result in battery leaks and damage to the equipment.
- Do not use this product in vehicles with the windows closed, in locations where it is subject to direct sunlight, or in locations with extremely high humidity.
- The product is neither waterproof nor splash proof. Ensure that it is not splashed with soot or water. Do not use the equipment if water or other foreign matter has entered the case.
- Do not drop the product or otherwise subject it to strong shocks.
- Do not subject the equipment to condensation (including moving it from cold locations to locations with a significant increase in temperature.)
- Do not use the equipment in locations where it is likely to be affected by acid, alkalis, organic agents or corrosive gas.
- The GND for the product will also affect communication performance. If possible, ensure that the case GND and the circuit GND are connected to a large GND pattern.

Warnings

- Do not take apart or modify the equipment.
- Do not remove the product label (the label attached to the upper surface of the product.) Using a product from which the label has been removed is prohibited.

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REVISION HISTORY

Version	Date	Description	Remark
1.0	Jun. 2018	The first issue	