

conga-SKIT/APL

Starter Kit for congatec SMARC 2.0 Development



Quick Start Guide

Revision 1.6

Preface

This quick start guide provides information on the contents of the conga-SKIT/APL kit and how to set it up.

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1 Introduction

1.1 conga-SKIT/APL

The conga-SA5 features a quad core Intel® Atom™ x7-E3950 processor with up to 2.0 GHz, Gen 9 graphics with 18 execution units and 8 GB LPDDR4 RAM. Other features are WiFi 802.11 ac/a/b/g/n, Bluetooth 4.2, dual GbE, USB 3.0, 32 GB eMMC 5.0 flash memory and TPM 2.0.

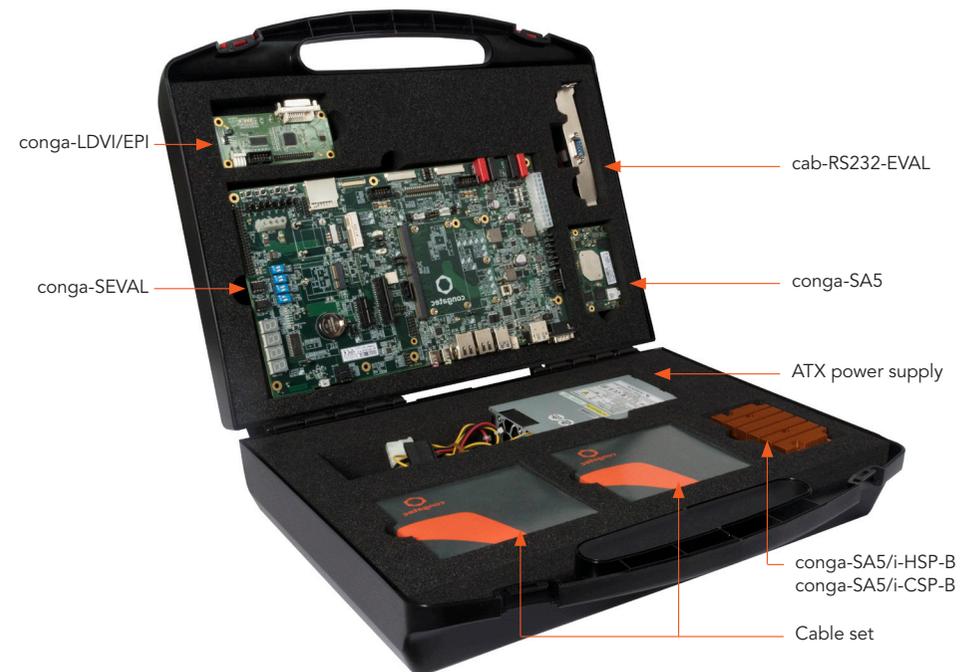
The conga-SEVAL evaluation carrier board provides 1x PCIe x4, 1x PCIe x1, 1x mini PCIe, 1x M.2 Key E, 2x USB 3.0, and 4x USB 2.0 for generic extensions. It also provides 2x RJ45 for Gigabit Ethernet, 4x COM, 1x CAN bus, 12x GPIO, Digital and analog audio I/Os for I2S and HDA. Displays can be connected via dual channel LVDS, eDP, DP and HDMI. Additional storage media are available via a SD/MMC socket and 1x SATA 6G.

The conga-SKIT/APL also includes an ATX power supply, WiFi antenna with pigtail cable, LVDS adapter, SATA, USB cables, as well as a heatspreader and cooling solution for the module.

1.2 Kit Contents

PN. No	Name	Description	Qty
077650	conga-SKIT/APL	Starterkit for SMARC 2.0 modules	
007010	conga-SEVAL	Evaluation carrier board for standard SMARC modules based on SMARC Specification 2.0	1
050031	conga-SA5/E3950-8G eMMC32 SPKL-AC	SMARC 2.0 module with Intel® Atom™ x7-E3950 quad core processor with 1.6 GHz core frequency up to 2.0 GHz, 2 MB L2 cache, 8 GB 2400MT/s LPDDR4 onboard memory and 32 GB eMMC onboard flash. Sparklan WNSQ-261ACN WiFi/BT module and TPM 2.0 onboard.	1
050051	conga-SA5/i-CSP-B	Passive cooling for SMARC 2.0 module conga-SA5. All stand-offs are bore hole 2.7mm	1
050053	conga-SA5/i-HSP-B	Standard Heatspreader for SMARC 2.0 module conga-SA5. All stand-offs are bore hole 2.7mm	1
10000471	ATX Power Supply	FSP180-50FNGBI max. 180 W (150 x 81.5 x 40.5 mm)	1
10000379	Pigtail Cable	15cm I-PEX/MHF4 to RP-SMA F for WiFi antenna	1
10000378	WiFi Antenna	Dual-Band 2.4GHz/5GHz 2dBi Omnidirectional RP-SMA M, TPU housing, tilt and swivel function	1

48000029	SATA III Cable	30cm SATA III cable, straight / straight	1
033331	cab-LVDV-DAT-34-15	15cm data cable LVDS to DVI adapter	1
052147	cab-LVDV-PWR-10-15	15cm power cable LVDS to DVI adapter	1
14000199	USB Type-C to Type-A	15cm USB Type-C to Type-A adapter cable	1
14000200	cab-RS232-EVAL	20cm 2x5pin female to D-Sub 9P male	1
14000202	SATA power cable	12cm SATA HDD 15pin SATA to 4pin ATX	1
011115	conga-LDVI/EPI	LVDS to DVI converter board for digital flat panels with onboard EEPROM	1
91500002	Safety and Regulatory Information	Safety and Regulatory Information	1
91500003	Wireless Content Information	Wireless Content Information	1
85500012	Quick Start Guide	Quick Start Guide	1



1.3 Connecting the Hardware

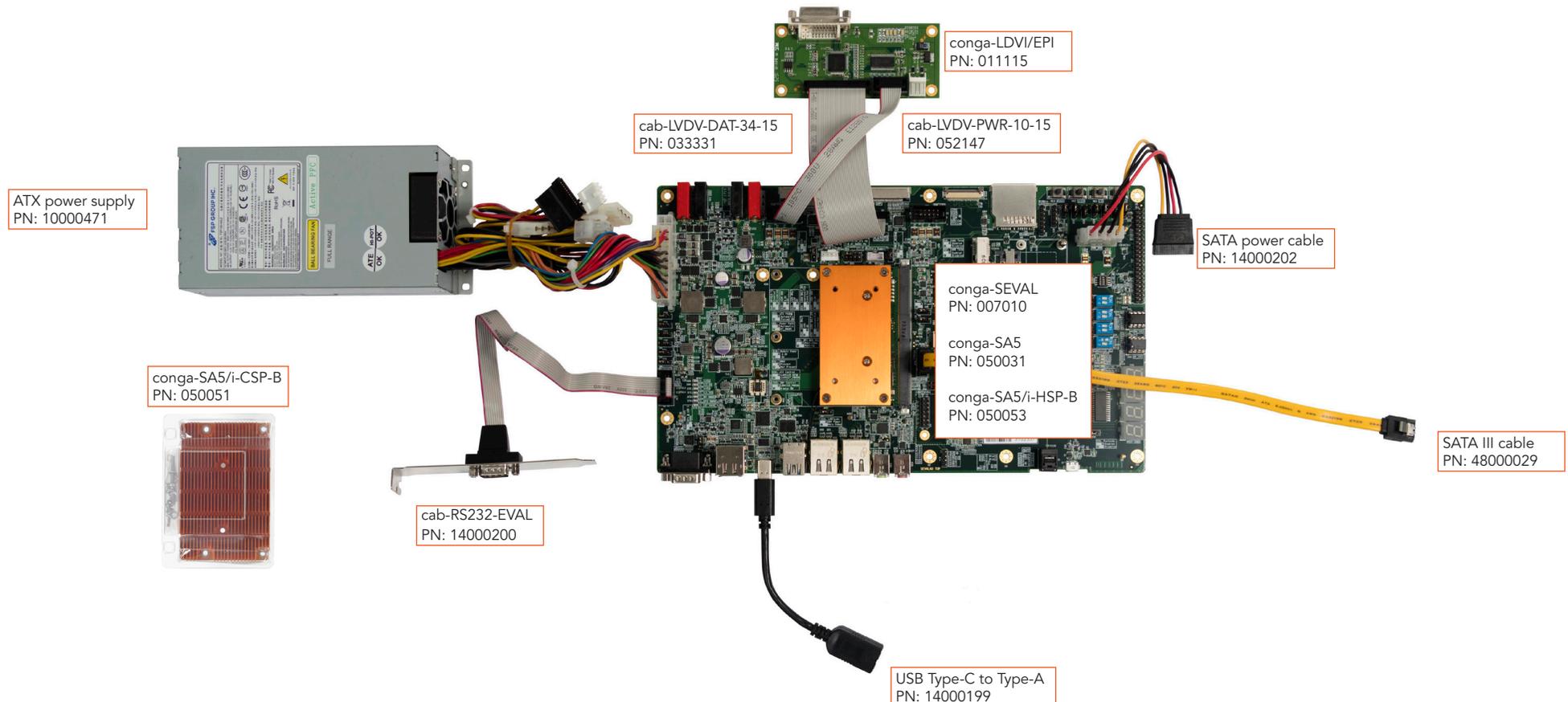
1. Ensure the hardware is protected from the effects of electrostatic discharge (ESD).
2. Attach the WiFi antenna with the pigtail cable to the MAIN connector of the conga-SA5 module. (Not shown in the image below)
3. Attach the conga-SA5 module to the conga-SEVAL carrier board.
4. Install the conga-SA5/i-HSP-B heatspreader or conga-SA5/i-CSP-B passive cooling solution using four screws.

5. Connect the desired adapters, cables and devices as shown in the image below.

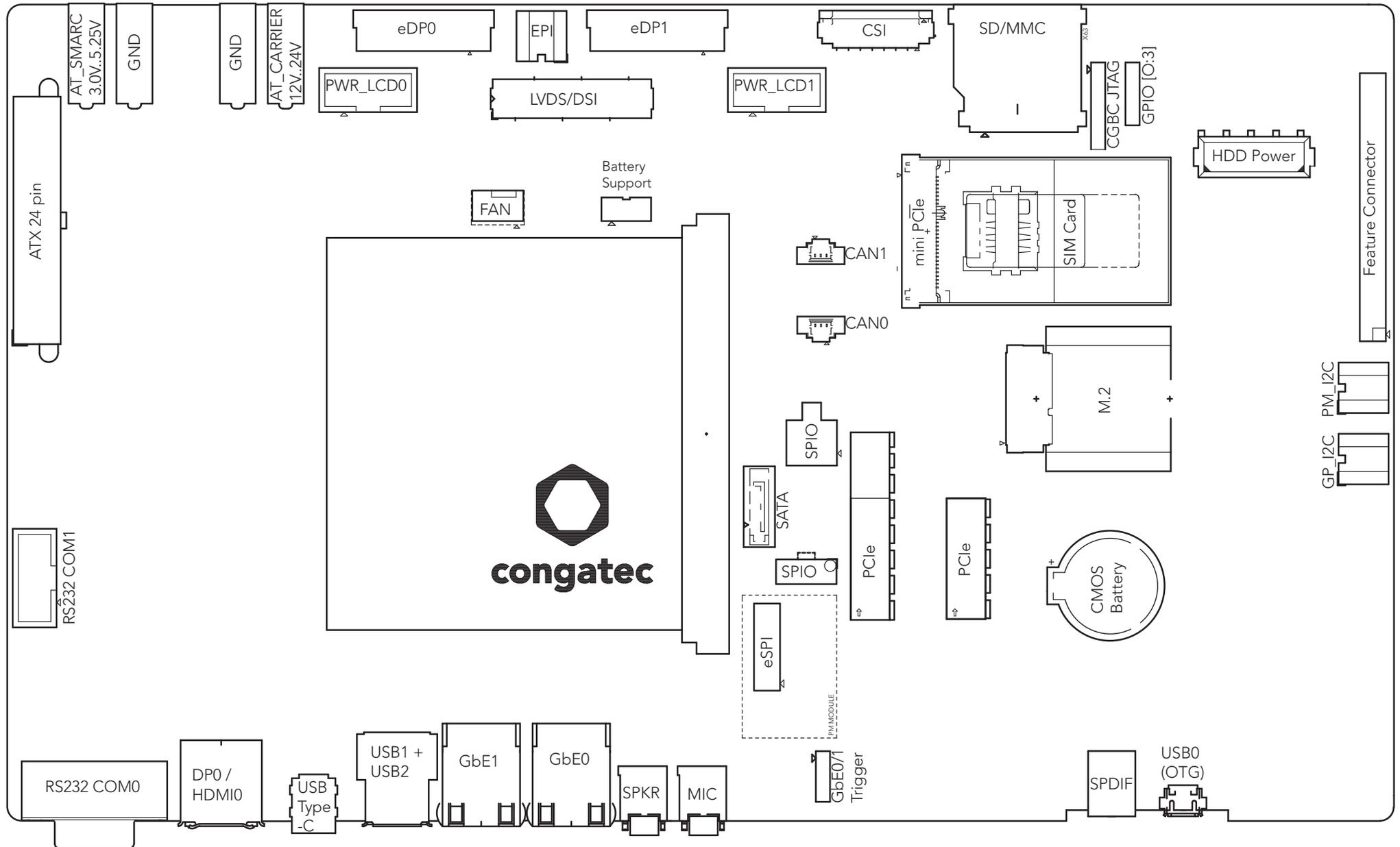
Note: To use the conga-LDVI/EPI adapter, set the Local Flat Panel Type to XGA 1024*768 1x24 (008h) in BIOS Setup under Advanced -> Graphics.

6. Plug a power cable into the ATX power supply (cable not included).
7. Plug the power cable into a power outlet (110V-240V).

For the latest documentation, utilities and drivers, visit the product page of conga-SA5 at www.congatec.com



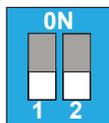
1.4 Interfaces



1.5 DIP Switch Settings

M11 - DIP Switch (Wireless Disable Signal 1, 2)

Switch #	Switch ON	Switch OFF
1	W_DISABLE1# ON	W_DISABLE1# OFF
2	W_DISABLE2# ON	W_DISABLE2# OFF



M12 - DIP Switch (Audio and Display)

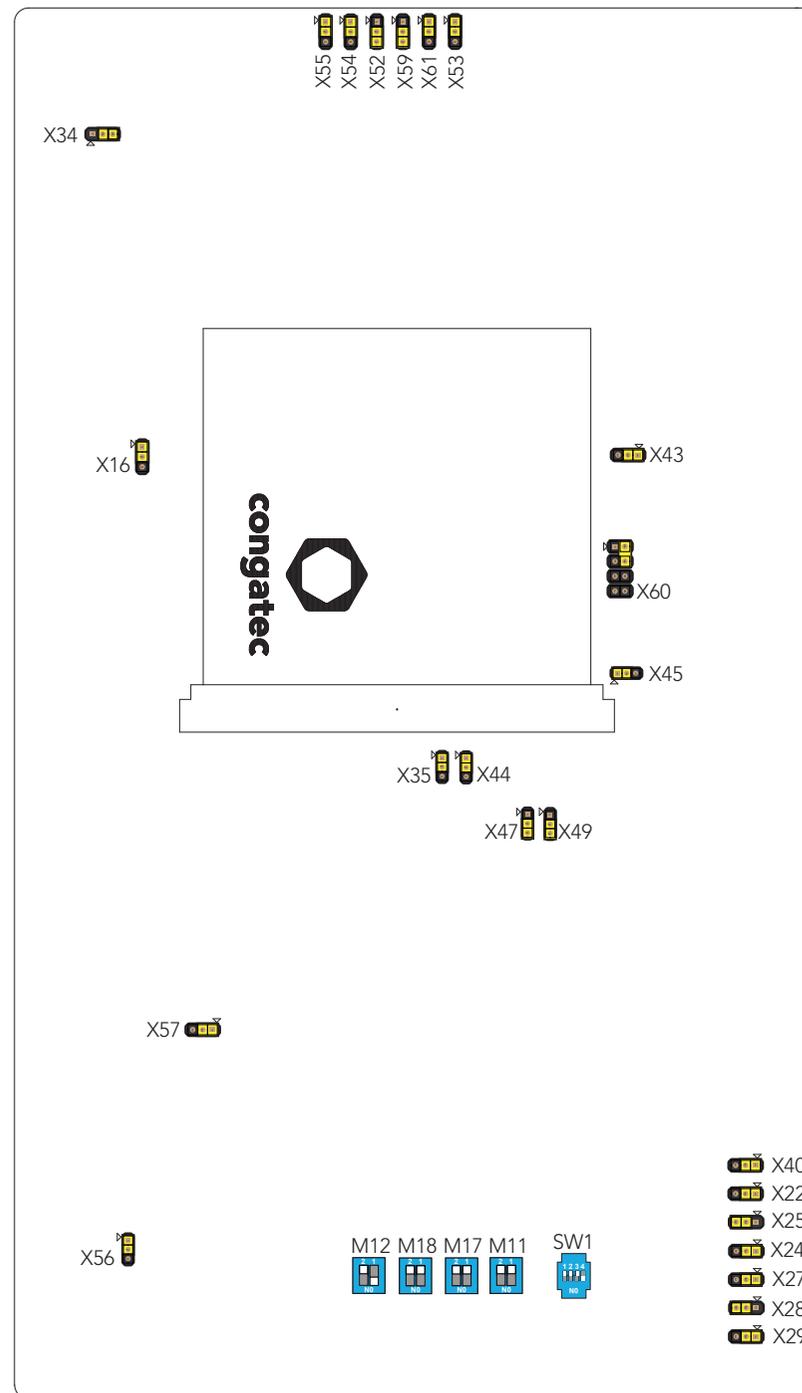
Switch #	Switch ON	Switch OFF
1	HDA	I ² S
2	eDP	LVDS / DSI

M18 - DIP Switch (SPI_HOLD#)

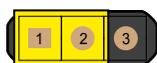
Switch #	Switch ON	Switch OFF
2	SPI_HOLD# ON	SPI_HOLD# OFF

M18 - DIP	M17 - DIP		Selected Boot Source
Switch 1	Switch 2	Switch 1	
ON	ON	ON	Carrier SATA
ON	ON	OFF	Carrier SDIO
ON	OFF	ON	Carrier eSPI
ON	OFF	OFF	Carrier SPI
OFF	ON	ON	Module device
OFF	ON	OFF	Remote boot
OFF	OFF	ON	Module eMMC
OFF	OFF	OFF	Module SPI

SW1 - DIP				Selected I2C Address
Switch 1	Switch 2	Switch 3	Switch 4	
ON	OFF	OFF	OFF	A0
OFF	ON	OFF	OFF	A1
OFF	OFF	ON	OFF	A2
OFF	OFF	OFF	ON	WP



1.6 Jumper Settings



X16 - LAN LEDs

Pin	Configuration
1-2	Standby powered
2-3	Main powered

X22 - LCD0 VDD

Pin	Configuration
1-2	3.3 V panel power
2-3	5 V panel power

X24 - LCD0 BKLT_EN

Pin	Configuration
1-2	Non-inverted
2-3	Inverted

X25 - LCD0 BKLT

Pin	Configuration
1-2	Backlight power 12 V
2-3	Backlight power 5 V

X27 - LCD1 Panel Power

Pin	Configuration
1-2	3.3 V
2-3	5 V

X28 - LCD1 BKLT1

Pin	Configuration
1-2	12 V
2-3	5 V

X29 - LCD1 BKLT_EN1

Pin	Configuration
1-2	Non-inverted
2-3	Inverted

X34 - HDMI/DP1*1

Pin	Configuration
1-2	DP1 @ USB Type-C
2-3	HDMI

X35 - DP1 AUX_SEL*1

Pin	Configuration
1-2	Pull-down
2-3	Pull-up

X40 - GPIO [0:7]

Pin	Configuration
1-2	Enabled
2-3	Disabled

X43 - FAN Power

Pin	Configuration
1-2	12V
2-3	5V

X44 - TEST#

Pin	Configuration
1-2	Normal operation
2-3	Test mode

X45 - FORCE_RECOV#

Pin	Configuration
1-2	Normal operation
2-3	Force recovery mode

X47 - CAN0 Term

Pin	Configuration
1-2	Enabled
2-3	Disabled

X49 - CAN1 Term

Pin	Configuration
1-2	Enabled
2-3	Disabled

X52 - SBM3

Pin	Configuration
1-2	Present
2-3	Not present

X53 - ATX PSON#

Pin	Configuration
1-2	ATX Mode
2-3	AT Mode / Always ON

X54 - ATX Control

Pin	Configuration
1-2	CARRIER_SBY#
2-3	CARRIER_PWRON

X55 - SBY Control

Pin	Configuration
1-2	CARRIER_PWRON
2-3	Always ON

X56 - Postcode

Pin	Configuration
1-2	Enabled
2-3	Disabled

X57 - RTC Battery

Pin	Configuration
1-2	Normal operation
2-3	RTC battery disconnected

X59 - Module Power

Pin	Configuration
1-2	3.3 V
2-3	5 V

X60 - VIN PWRBAD#

Pin	Configuration
1-2	ATX_PG (only for debug)
3-4	AT_CARRIER PG
5-6	+3.3V_ATX PG
7-8	AT_SMARC PG
2-4	No VIN PWRBAD# control

X61 - Power Path

Pin	Configuration
1-2	Automatic*2
2-3	AT_SMARC

*1 Only for modules with support for DP++ at HDMI0/DP1.

*2 Every time +V3.3A gets enabled, the status of +AT_SMARC is used to select the power path (AT vs. 3.3 V / 5 V). This means once activated, the AT_SMARC path is kept active until a full power cycle is performed.

For more information, refer to the conga-SA5 and conga-SEVAL User's Guide or contact congatec technical support.