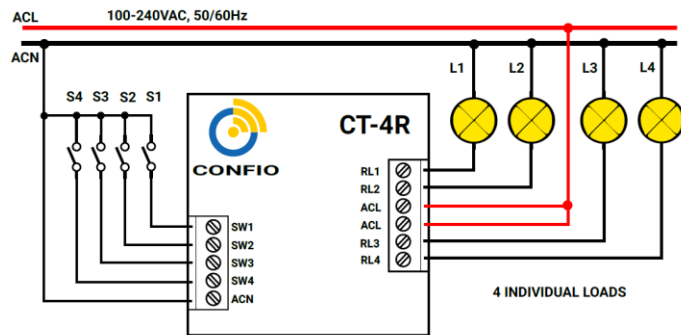


About the product – CT4R

CT4R is a 4-channel power strip device. That can operate on 4 loads independently. It supports local operation via switches and because this product is based on Z-Wave technology it can also be operated remotely within the home or from outside anywhere in the world. Four independent channels can be used to control individual home appliance or can be grouped together to handle higher wattage load. Ungrouped channels can be used as individual channel. This product is certified by Z-Wave alliance that means it can be used with any Z-Wave certified device. Please see interoperability section for more information. CT4R can be used out of the box and needs no configuration. However, it supports different configuration parameters that extends its functionality. **CT4R is a Security (S0 & S2) Enabled Z-Wave Plus Product. It uses S2 UNAUTHENTICATED SECURITY CLASS as its highest level of security. Hence a Security Enabled Z-Wave Controller must be used in order to avail security features of the product.** Please read this user manual carefully before installing this product.

Wiring diagram & Installation steps



Inclusion into the network

The term "INCLUSION", "ADDING", "PARING" implies to the same meaning. Inclusion is a process by which a new device (or a device which previously got out of Z-Wave network by force reset or exclusion process) can join a new or existing Z-Wave network.

Basically, two steps are involved in inclusion process,

- 1) Set Gateway/Controller into the inclusion mode (See gateway user manual)
- 2) Set device into the learn mode

Learn mode can be invoked by one-time short press of NODE_INFO key or three time ON press (within 5 seconds) of S1 key.

User indication: Blinking of green LED shows successful inclusion.

Exclusion from the network

The term "EXCLUSION", "REMOVING", "UNPARING" implies to the same meaning. Exclusion is a process by which an already included device can be made to leave its existing Z-wave network. Upon exclusion all user configuration parameters are set to their default values.

Exclusion of device can be done in two steps,

- 1) Set Gateway/Controller into the exclusion mode (See gateway user manual)
- 2) Set device into the learn mode

Learn mode can be invoked by one-time press of NODE_INFO key or three time ON press (within 5 seconds) of S1 key.

User indication: Blinking of red LED shows successful exclusion.

Product specification

CT4R specifications and permissible maximum load ratings are given below.
Verified at ambient temperature of Ta=25°C.

ELECTRICAL AND POWER LIMITS	
AC Power Input Standard Range	100VAC - 240VAC +/-10%, 50/60Hz
AC Power Input Limits and Robustness	300VAC_max, UPS & AC Generator Power tolerant ⁽¹⁾
Maximum Load per Relay - RL1 to RL4 Maximum Istart = 8A Maximum Total Load & Istart = 20A (Sum (RL1:RL4))	2000W resistive load, 8A at 250VAC 2000VA inductive load, 8A at 250VAC 5000W resistive load, 20A at 250VAC ⁽²⁾
DC Power Input	24VDC - 300VDC
Maximum DC Load per Relay - L1, L2, L3, L4	240W, 8A at 30VDC
GENERAL	
Power Consumption - 230VAC power input	0.6W no load
Power Consumption - 230VAC power input	1.6W loaded (all 4R ON)
Operating Ambient Temperature	-10°C to +85°C
Relative Humidity	8 - 80%
PCB Dimensions	44mm x 44mm x 1.6mm
RF	865.22MHz for India
Typical Line of Sight Range	Up to 40 meters
Plastic Case Material	Fire retardant ABS
Internal Power Protection	Fusible Resistors, in Phase and Neutral lines
Internal Surge Voltage Protection	470V_pk, MOV
1) Tested on 300Vrms mains and several UPS and Generator powered installations. Expected MTBF may be reduced.	
2) When total combined load current is greater than 10A (2.5kW@250AC) then both Phase terminal poles must be wired into one higher current Phase line.	

LED Indications

The device with the help of on-board LEDs reflects the following states,

RED LED blinking (1 sec approx.): Device is not a part of any network and ready to be included into any z-wave network.

GREEN LED blinking (1 sec approx.): Device is already a part of Z-wave network and can be able to communicate with its gateway or controller

RED & GREEN LED fast blinking: Firmware upgrade via OTA is in progress

Over The Air (OTA)

CT4R supports firmware upgrade Over-The-Air. Whenever OEM releases a new firmware, this feature can be used to upgrade the existing device to the latest available firmware. Controller must support this feature to upgrade device firmware over the air. This functionality is recommended to be performed by the installers only. Firmware upgrade steps are described in installer's manual.

Interoperability

This product can be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers. All non-battery-operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

Device Classification

Generic Device Class - GENERIC_TYPE_SWITCH_BINARY
Specific Device Class - SPECIFIC_TYPE_POWER_STRIP

Endpoint Classification

- All Endpoints are identical

Generic Device Class - GENERIC_TYPE_SWITCH_BINARY
Specific Device Class - SPECIFIC_TYPE_POWER_SWITCH_BINARY

Command Classes

Non-Secure

COMMAND_CLASS_ZWAVEPLUS_INFO
COMMAND_CLASS_SUPERVISION
COMMAND_CLASS_TRANSPORT_SERVICE
COMMAND_CLASS_SECURITY
COMMAND_CLASS_SECURITY_2

Secure

COMMAND_CLASS_SWITCH_BINARY
COMMAND_CLASS_ASSOCIATION
COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION
COMMAND_CLASS_ASSOCIATION_GRP_INFO
COMMAND_CLASS_VERSION
COMMAND_CLASS_MANUFACTURER_SPECIFIC
COMMAND_CLASS_DEVICE_RESET_LOCALLY
COMMAND_CLASS_POWERLEVEL
COMMAND_CLASS_MULTI_CHANNEL
COMMAND_CLASS_CONFIGURATION
COMMAND_CLASS_FIRMWARE_UPDATE_MD

Application Status Command Class

COMMAND_CLASS_APPLICATION_STATUS is supported by endpoints and not supported by root device. Root device always act/respond for SET/GET commands. In some scenario, some or all endpoints may not be able to act on BASIC_SET & BINARY_SET commands (GETs are always supported by endpoints & root device). Details are provided below,

scenario #1: Action for BASIC_SET & BINARY_SET will not be implemented by endpoint1 & endpoint2 when Configuration parameter number 09 is set to value 02. Also local switch related to endpoint2 will be internally disabled.

scenario #2: Action for BASIC_SET & BINARY_SET will not be implemented by endpoint1, endpoint2 & endpoint3 when Configuration parameter number 09 is set to value 03. Also local switch related to endpoint2, endpoint3 will be internally disabled.

scenario #3: Action for BASIC_SET & BINARY_SET will not be implemented by endpoint1, endpoint2, endpoint3 & endpoint4 when Configuration parameter number 09 is set to value 04. Also local switch related to endpoint2, endpoint3, endpoint4 will be internally disabled.

In the above three scenarios, APPLICATION_BUSY with value APPLICATION_BUSY_TRY_AGAIN_LATER will be responded to back to endpoints that issues BASIC_SET & BINARY_SET command

Restoring Configuration parameter number 09, to its default value:01 will restore the full functionality of individual endpoints with respect to its remote & local operations and APPLICATION_BUSY command will not be issued.

Force resetting the device

Device Reset can be invoked by press & hold NODE_INFO key for more than 10 seconds.
User indication: Blinking of red LED shows a successful reset.
The controller will be informed about this event via COMMAND_CLASS_DEVICE_RESET_LOCALLY command, Once the device resets, it will no longer be a part of the Z-Wave network and all the user configuration parameters are set to their default values.

Note: Please use this procedure only when the network primary controller is missing or otherwise inoperable.

Device’s basic functionality

Basic operations are available to the nodes who wants to control this device. CT4R implemented with the support of Basic Command Class and below is the mapping shown,
Basic Set = 255 maps to Binary Switch Set = 255
Basic Set = 0 maps to Binary Switch Set = 0
Basic Get/Report maps to Binary Switch Get/Report

Associations

This device supports association command class with one group as a LIFELINE. This group is automatically configured to gateway during inclusion process. Lifeline link is established to ensure device updates the gateway about basic events such as DEVICE_RESET_LOCALLY_NOTIFICATION upon applying forced reset.
Group ID: 01
Group name: Lifeline
Max. device can be added to this group: 03 (one utilized by gateway, other two are available to the user)

Associations Group Mapping

No endpoint supports association group.

Multichannel implementation

This device implements Z-Wave multichannel specifications. This specification allows to have more than one functional channel/endpoint within a device. CT4R has implemented with four fixed channels/endpoints. All the endpoints are identical. i.e. uses same device type and supported command classed. This product does not support dynamic endpoints and controlled command classes.
Generic Device Class used by all endpoints (1/2/3/4) - GENERIC_TYPE_SWITCH_BINARY
Specific Device Class used by all endpoints (1/2/3/4) - SPECIFIC_TYPE_POWER_SWITCH_BINARY
Supported command classes by all endpoints (1/2/3/4),
Non-Secure
- COMMAND_CLASS_ZWAVEPLUS_INFO
- COMMAND_CLASS_SUPERVISION
- COMMAND_CLASS_SECURITY
- COMMAND_CLASS_SECURITY_2
- COMMAND_CLASS_APPLICATION_STATUS
Secure
- COMMAND_CLASS_SWITCH_BINARY
- COMMAND_CLASS_ASSOCIATION
- COMMAND_CLASS_ASSOCIATION_GRP_INFO
- COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION

Basic Command Class Mapping

This device provides the following mapping of Basic command class
Basic Set = 255 maps to Binary Switch Set = 255
Basic Set = 0 maps to Binary Switch Set = 0
Basic Get/Report maps to Binary Switch Get/Report
A non-multichannel encapsulated command reflects channel1/endpoint1 application functionality (depends on configuration parameter number 09). To control individual channels/endpoints (depends on configuration parameter number 09) a multichannel encapsulated command is needed.

Product Configuration settings

Configuration Parameters
The product is factory set to default values so that it can operate normally without the need of any additional parameter setting. Below is the description of parameters supported by this product to further enhance its functionality.

Parameter 01: Power ON state for Load1 (L1)
Size: 1 Byte | Range: 0 to 1 (0: Memory, 1: Switch S1) | Default: 0 Memory
Description: This parameter decides the power ON state (when module is powered ON) of Load1 (L1). This parameter provides two options either power ON to memory (previous state as it was before power OFF) or present switch position.

Parameter 02: Power ON state for Load2 (L2)
Size: 1 Byte | Range: 0 to 1 (0: Memory, 1: Switch S2) | Default: 0 Memory
Description: This parameter decides the power ON state (when module is powered ON) of Load2 (L2). This parameter provides two options either power ON to memory (previous state as it was before power OFF) or present switch position.

Parameter 03: Power ON state for Load3 (L3)
Size: 1 Byte | Range: 0 to 1 (0: Memory, 1: Switch S3) | Default: 0 Memory
Description: This parameter decides the power ON state (when module is powered ON) of Load3 (L3). This parameter provides two options either power ON to memory (previous state as it was before power OFF) or present switch position.

Parameter 04: Power ON state for Load4 (L4)
Size: 1 Byte | Range: 0 to 1 (0: Memory, 1: Switch S4) | Default: 0 Memory
Description: This parameter decides the power ON state (when module is powered ON) of Load4 (L4). This parameter provides two options either power ON to memory (previous state as it was before power OFF) or present switch position.

⚡ Upcoming parameter 05, 06, 07, 08 comes in conflict with parameter 09 when set to value 02, 03, 04. Parameter 09 designed to combine multiple relay to handle higher wattage load. User must set this parameter to 0, before enabling relay combination via parameter 09 to avoid hazardous situation.

Parameter 05: Auto OFF for Load L1
Size: 1 Byte | Range: 0: Auto OFF disabled, 1 minute to 240 minutes (4 hours)
Default: 0 Auto OFF disabled
Description: This parameter decides the ON time duration for Load1 (L1). It ranges from 1 minute to 240 minutes i.e. 4 hours. Auto OFF counting starts as soon as L1 is turned ON either via S1 or GUI. Once duration expires the L1 turned off automatically. Setting this value to 0 (Zero) will disable auto OFF functionality.

Parameter 06: Auto OFF for Load L2
Size: 1 Byte | Range: 0: Auto OFF disabled, 1 minute to 240 minutes (4 hours)
Default: 0 Auto OFF disabled
Description: This parameter decides the ON time duration for Load2 (L2). It ranges from 1 minute to 240 minutes i.e. 4 hours. Auto OFF counting starts as soon as L2 is turned ON either via S2 or GUI. Once duration expires the L2 turned off automatically. Setting this value to 0 (Zero) will disable auto OFF functionality.

Parameter 07: Auto OFF for Load L3
Size: 1 Byte | Range: 0: Auto OFF disabled, 1 minute to 240 minutes (4 hours)
Default: 0 Auto OFF disabled
Description: This parameter decides the ON time duration for Load3 (L3). It ranges from 1 minute to 240 minutes i.e. 4 hours. Auto OFF counting starts as soon as L3 is turned ON either via S3 or GUI. Once duration expires the L3 turned off automatically. Setting this value to 0 (Zero) will disable auto OFF functionality.

Parameter 08: Auto OFF for Load L4
Size: 1 Byte | Range: 0: Auto OFF disabled, 1 minute to 240 minutes (4 hours)
Default: 0 Auto OFF disabled
Description: This parameter decides the ON time duration for Load4 (L4). It ranges from 1 minute to 240 minutes i.e. 4 hours. Auto OFF counting starts as soon as L4 is turned ON either via S4 or GUI. Once duration expires the L4 turned off automatically. Setting this value to 0 (Zero) will disable auto OFF functionality.

Parameter 09: Combine Relays/endpoints
Size: 1 Byte | Range: 1 to 4
1: L1 only operates with S1 and GUI master
2: L1 & L2 only operates with S1 and GUI master
3: L1, L2, & L3 only operates with S1 and GUI master
4: L1, L2, L3, & L4 only operates with S1 and GUI master
Default: 1 L1 only operates with S1 and GUI master
Description: this parameter is designed to combine two or more relays to handle higher wattage load current.

Parameter 10: Switch S1 behavior

Size: 1 Byte | Range: 0 to 1

0: regular switch (i.e. ON-to-ON and OFF-to-OFF)

1: toggle switch (ON-to-Toggle and OFF-to-Toggle)

Default: 0 regular switch (i.e. ON-to-ON and OFF-to-OFF)

Description: This parameter defines the behavior of switch S1. If set to 0, it behaves as regular switch (i.e. putting switch to ON position will turn ON L1 and putting to OFF position will turn OFF L1) and if set to 1, it behaves as toggle switch (i.e. putting switch to either ON or OFF position makes L1 to toggle). By default, this parameter is set to 0 (regular switch operations)

Parameter 11: Switch S2 behavior

Size: 1 Byte | Range: 0 to 1

0: regular switch (i.e. ON-to-ON and OFF-to-OFF)

1: toggle switch (ON-to-Toggle and OFF-to-Toggle)

Default: 0 regular switch (i.e. ON-to-ON and OFF-to-OFF)

Description: This parameter defines the behavior of switch S2. If set to 0, it behaves as regular switch (i.e. putting switch to ON position will turn ON L2 and putting to OFF position will turn OFF L2) and if set to 1, it behaves as toggle switch (i.e. putting switch to either ON or OFF position makes L2 to toggle). By default, this parameter is set to 0 (regular switch operations)

Parameter 12: Switch S3 behavior

Size: 1 Byte | Range: 0 to 1

0: regular switch (i.e. ON-to-ON and OFF-to-OFF)

1: toggle switch (ON-to-Toggle and OFF-to-Toggle)

Default: 0 regular switch (i.e. ON-to-ON and OFF-to-OFF)

Description: This parameter defines the behavior of switch S3. If set to 0, it behaves as regular switch (i.e. putting switch to ON position will turn ON L3 and putting to OFF position will turn OFF L3) and if set to 1, it behaves as toggle switch (i.e. putting switch to either ON or OFF position makes L3 to toggle). By default, this parameter is set to 0 (regular switch operations)

Parameter 13: Switch S4 behavior

Size: 1 Byte | Range: 0 to 1

0: regular switch (i.e. ON-to-ON and OFF-to-OFF)

1: toggle switch (ON-to-Toggle and OFF-to-Toggle)

Default: 0 regular switch (i.e. ON-to-ON and OFF-to-OFF)

Description: This parameter defines the behavior of switch S4. If set to 0, it behaves as regular switch (i.e. putting switch to ON position will turn ON L4 and putting to OFF position will turn OFF L4) and if set to 1, it behaves as toggle switch (i.e. putting switch to either ON or OFF position makes L4 to toggle). By default, this parameter is set to 0 (regular switch operations)

Parameter 14: On board LED indications enable/disable

Size: 1 Byte | Range: 0 to 1 (0: disable, 1: enable)

Default: 1 enable

Description: This parameter makes on board LED indication enable/disable. By default, this parameter is set to 1 (enable LED indications)

Parameter 15: Local switch S1 enable/disable

Size: 1 Byte | Range: 0 to 1 (0: disable, 1: enable)

Default: 1 enable

Description: This parameter makes local switch S1 either enable or disable. By default, this is set to 1 (enable S1)

Parameter 16: Local switch S2 enable/disable

Size: 1 Byte | Range: 0 to 1 (0: disable, 1: enable)

Default: 1 enable

Description: This parameter makes local switch S2 either enable or disable. By default, this is set to 1 (enable S2)

Parameter 17: Local switch S3 enable/disable

Size: 1 Byte | Range: 0 to 1 (0: disable, 1: enable)

Default: 1 enable

Description: This parameter makes local switch S3 either enable or disable. By default, this is set to 1 (enable S3)

Parameter 18: Local switch S4 enable/disable

Size: 1 Byte | Range: 0 to 1 (0: disable, 1: enable)

Default: 1 enable

Description: This parameter makes local switch S4 either enable or disable. By default, this is set to 1 (enable S4)

Troubleshooting

No LED blinks: Please check all the wiring connections once again as per wiring diagram.

Cannot include device into the gateway: 1) check gateway is in inclusion mode, 2) Press node information switch properly, 3) Check LEDs if green led is blinking that means device is already included in some gateway, please do a forced reset and ensure red led is blinking.

Cannot operate loads with local switches: Check parameter 15, 16, 17, 18, value must be 1.

Load turns off automatically: Check parameter 05, 06, 07, 08, value must be 0.

Safety Precautions

- Avoid wet hands during installation as it increases the conductivity.
- Never work on live wire, ensure turn off mains power.
- Always use appropriate insulated rubber gloves and goggles during installation.
- Never use an aluminum or steel ladder if you are working on any receptacle at height in your home.
- Ensure all wires are well insulated
- Please read instructions carefully before making any connection.
- Never metal pin to press node info pin hole switch. Use wooden or plastic or well insulated pin type screwdriver

SmartStart

This Z-Wave device Supports SmartStart feature, has a unique Device Specific Key (DSK) inside the product box on a card that is required to add or re-add the device to a network with a controller supporting Security 2 (S2). Be sure to keep the DSK card for each device and store in a safe place. Do not remove the "Z-Wave DSK" label from the product and from the box. write the following details on back the card and here:

Device Name: _____

Location in home: _____

Purchase date: _____

24 Months GUARANTEE

- The Manufacturer is responsible for equipment malfunction resulting from physical defects (manufacturing or material) of the Device for 24 months from the date of purchase.
- During the Guarantee period, the Manufacturer shall remove any defects, free of charge, by replacing with a new or regenerated one, which shall be free of any defects and its condition shall not be worse than the original device owned by the Customer.
- Costs of delivering the faulty device shall be borne by the Customer.
- The Manufacturer shall not be liable for damages to property caused by defective device. The Manufacturer shall not be liable for indirect, incidental, special, consequential or punitive damages, or for any damages, including, inter alia, loss of profits, savings, data, loss of benefits, claims by third parties and any property damage or personal injuries arising from or related to the use of the Device.

The guarantee shall not cover:

- Mechanical damages caused by impact, falling or dropping the device or their object, improper use or not observing the operating manual;
- Damages resulting from external causes, e.g.: flood, storm, fire, lightning, natural disasters, earthquakes, war, civil disturbance, force majeure, unforeseen accidents, theft, water damage, liquid leakage, battery spill, weather conditions, sunlight, sand, moisture, high or low temperature, air pollution;
- Damages resulting from: surges in the power and/or telecommunication network, improper connection to the grid in a manner inconsistent with the operating manual, or from connecting other devices not recommended by the Manufacturer.
- Damages resulting from the use of spurious spare parts or accessories improper for given model, repairing and introducing alterations by unauthorized persons;
- Defects caused by operating faulty Device or accessories.

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