



Leading Conversion Technology for Power Resilience

# IRIS 25 - 48/380

DC/DC CONVERTER

## User Manual

### THE NEW GENERATION OF POWER CONVERTERS

- DUAL DC/ DC OUTPUT CONVERTER 48 VDC - 380 VDC
- BIDIRECTIONAL DC /DC POWER FLOW
- ONE STOP SHOP
- Wide output power range



Copyright © 2013. Construction électroniques & telecommunications S.A.  
All rights reserved. The contents in document are subject to change  
without notice. The products presented are protected by several  
international patents and trademarks.  
Address: CE+T S.a, Rue du Charbonnage 12, B 4020  
Wandre, Belgium [www.cet-power.com](http://www.cet-power.com) - [info@cet-power.com](mailto:info@cet-power.com)

[www.cet-power.com](http://www.cet-power.com)

Belgium, China, India, Luxembourg, Malaysia, Russia, United Kingdom, United States, Australia & Germany

Release Note:

| Version | Release date<br>(DD/MM/YYYY) | Modified page<br>number | Modifications                             |
|---------|------------------------------|-------------------------|---|
| 1.0     | 27/07/2020                   | -                       | Draft release of the manual               |
| 2.0     | 29/07/2020                   |                         | Final Release                             |
| 3.0     | October 2020                 |                         | Initial parameter list and configuration  |
| 3-REV1  | November 2020                |                         | Update specification and product labeling |
|         |                              |                         |   |

|   |                                    |
|---|------------------------------------|
| CE+T Power at a glance .....  | 6                                  |
| 2. Abbreviations .....  | 6                                  |
| WARNING: .....  | 7                                  |
| Important Safety Instructions, Save These Instructions. ....  | 7                                  |
| 3.3 Installation .....  | 8                                  |
| 3.3.1 Handling .....  | 8                                  |
| 3.3.2 Other .....   | 8                                  |
| 3.4 Maintenance .....   | 9                                  |
| 3.5 Replacement and Dismantling .....   | 9                                  |
| To download the latest documentation and software, please visit our website at <a href="http://www.cet-power.com">www.cet-power.com</a> ..... | 9                                  |
| 4.1 48 Vdc to 380Vdc .....  | 11                                 |
| 4.2 380 Vdc to 48Vdc .....  | 11                                 |
| 5. Building Blocks .....  | 14                                 |
| 5.1 Iris 25 - 48/380 .....  | 14                                 |
| 5.1.1 Specifications .....  | 14                                 |
| 5.3 Product marking .....   | <b>Erreur ! Signet non défini.</b> |
| Accessories .....   | 16                                 |
| 6.1 Cabinet .....   | 16                                 |
| 6.2 DC Distribution Unit .....  | 16                                 |
| 6.2.1 Miniature Circuit Breakers .....  | 16                                 |
| 6.2.2 MCCB .....  | 16                                 |
| 6. Installation of Iris Shelf .....   | 16                                 |
| 7.1 Mounting kit for Iris shelf .....   | 16                                 |
| 7.2 Electrical installation for Iris shelf .....  | 17                                 |
| 7.2.1 Pre requisites .....  | 17                                 |
| 7.2.2 Terminations .....  | 18                                 |
| 7.2.3 Grounding .....   | 18                                 |
| 7.2.4 DC1 48 Vdc connection .....   | 18                                 |
| 7. Operation .....  | 21                                 |
| 8.1 Converter module .....  | 21                                 |
| 8. Inserting/removing/replacing - modules .....   | 22                                 |
| 9.1 Iris 25 - 48/380 Converter .....  | 22                                 |
| 9.1.1 Removal .....   | 22                                 |
| 9.1.2 Inserting .....   | 22                                 |
| 9.2 Fan replacement .....   | 23                                 |
| 10. DCCabinetOutputDistribution .....   | 24                                 |
| 10.1 Miniature Circuit breaker Installation/Removal .....   | 24                                 |
| 10.2 MCCB .....   | 24                                 |
| 11. Finishing .....   | 25                                 |
| 12. Commissioning .....   | 26                                 |
| 12.1 Check list .....   | 26                                 |
| 13.2 Defective modules .....  | 27                                 |
| 14. Maintenance .....   | 28                                 |
| 14.1 Access Inview controller with laptop .....   | 28                                 |
| 14.2 Manual check .....   | 28                                 |
| 14.3 Optional .....   | 28                                 |
| 15. IRIS converter configuration .....  | 29                                 |
| 15.1 Global System SIERRA configuration parameter list .....  | 30                                 |

## CE+T Power at a glance

---

CE+T Power designs, manufactures and markets a range of products for industrial operators with mission critical applications, who are not satisfied with existing AC backup systems performance and related maintenance costs.

Our product is an innovative AC backup solution that unlike most used UPS's

- Maximizes the operator's applications uptime;
- Operates with lowest OPEX;
- Provides best protection to power disturbances;
- Optimizes footprint.

Our systems are:

- Modular
- Truly redundant
- Highly efficient
- Maintenance free
- Battery friendly

CE+T puts 60+ years expertise in power conversion together with worldwide presence to provide customized solutions and extended services 24/7 – 365 days a year.

## 2. Abbreviations

---

|        |  |
|--------|--|
| ECI    | Enhanced Conversion Innovation                           |
| EPC    | Enhanced Power Conversion                                |
| REG    | Regular  |
| DSP    | Digital Signal Processor                                 |
| AC     | Alternating current                                      |
| DC     | Direct current   |
| PE     | Protective Earth (also called Main Protective Conductor) |
| N      | Neutral  |
| PCB    | Printed Circuit Board                                    |
| TRS    | True Redundant Structure                                 |
| PWR    | Power  |
| ESD    | Electro Static Discharge                                 |
| MET    | Main Earth Terminal                                      |
| UA     | Urgent Alarm   |
| NUA    | Non-Urgent Alarm   |
| MBP    | Manual By-pass   |
| MBB    | Measure Box Battery                                      |
| TCP/IP | Transmission Control Protocol/Internet Protocol          |
| USB    | Universal Serial Bus                                     |
| LAN    | Local Access Network                                     |
| ETH    | Ethernet   |
| SNMP   | Simple Network Management Protocol                       |
| HTTP   | HyperText Transfer Protocol                              |
| HTTPS  | Secure HyperText Transfer Protocol                       |
| NTP    | Network Time Protocol                                    |
| MIB    | Management Information Base                              |
| DHCP   | Dynamic Host Configuration Protocol                      |

## 3. Warranty and Safety Conditions\*

---

### **WARNING:**

The electronics in the power supply system are designed for an indoor, clean environment. When installed in a dusty and/or corrosive environment, indoor, it is important to:

- Install an appropriate filter on the enclosure door, or on the room's air conditioning system.
- Keep the enclosure door closed during operation.
- Replace the filters on a regular basis.

**Important Safety Instructions, Save These Instructions.**

### 3.1 Disclaimer

- The manufacturer declines all responsibilities if equipment is not installed, used or operated according to the instructions herein by skilled technicians according to local regulations.
- Warranty does not apply if the product is not installed, used or handled according to the instructions in the manual.

### 3.2 Technical care

- This electric equipment can only be repaired or maintained by a “qualified employee” with adequate training. Even personnel who are in charge of simple repairs or maintenance are required to have knowledge or experience related to electrical maintenance.
- Please follow the procedures contained in this Manual, and note all the “DANGER”, “WARNING” AND “NOTICE” marks contained in this Manual. Warning labels must not be removed.
- Qualified employees are trained to recognize and avoid any dangers that might be present when working on or near exposed electrical parts.
- Qualified employees know how to lock out and tag out machines so the machines will not accidentally be turned on and injure employees working on them.
- Qualified employees also know safety related work practices, including those by OSHA and NFPA, as well as knowing what personal protective equipment should be worn.
- All operators are to be trained to perform the emergency shut-down procedure.
- Never wear metallic objects such as rings, watches, or bracelets during installation, service and maintenance of the product.
- Maximum operating ambient temperature is 40°C (104°F).
- Insulated tools must be used at all times when working with live systems.
- When handling the system/units pay attention to sharp edges.
- This product is suitable for use in a computer room.

---

\* These instructions are valid for most CE+T Products/Systems. Some points might however not be valid for the product described in this manual.

## 3.3 Installation

- This product is intended to be installed only in restricted access areas as defined by local regulations and in accordance with the National Electric Code, ANSI/NFPA 70, or equivalent agencies.
- The Converter System may contain output over current protection in the form of circuit breakers. In addition to these circuit breakers, the user must observe the recommended upstream and downstream circuit breaker requirements as defined in this manual.
- Please use extreme caution when accessing circuits that may be at hazardous voltages or energy levels.
- The modular converter rack is a dual input power supply. The complete system shall be wired in a way that both input and output leads can be de-energized when necessary.
- DC circuits shall be terminated with no voltage / power applied (de-energized).
- The safety standard IEC/EN62040-1-1 requires that, in the event of an output short circuit, the converter must disconnect in 5 seconds maximum. The parameter can be adjusted on Inview; however, if the parameter is set at a value > 5 seconds, an external protection must be provided so that the short circuit protection operates within 5 seconds. Default setting is 60 seconds.
- The system is designed for installation within an IP20 environment. When installed in a dusty or humid environment, appropriate measures (air filtering) must be taken.
- Environment Conditions:
  - Storage Conditions: -40 to 70°C
  - Relative Humidity: 95%, non-condensing
  - Altitude above sea without de-rating: Less than 1500 m  
Greater than 1500 m – de-rating at 0.8% per 100 m
- All illustrations in the manual are for general reference, refer to the technical drawing which is received along with the system for exact information.

### 3.3.1 Handling

- The cabinet shall not be lifted using lifting eyes.
- Remove weight from the cabinet by unplugging the converters. Mark converters clearly with shelf and position for correct rebuild. This is especially important in dual or three phase configurations.
- Empty converter positions must not be left open. Replace with module or dummy cover.

### 3.3.2 Other

- Insulation test (Hi-Pot) must not be performed without instructions from the manufacturer.

## 3.4 Maintenance

- The converter system/rack can reach hazardous leakage currents. Earthing must be carried out prior to energizing the system. Earthing shall be made according to local regulations.
- Prior to any work conducted to a system/unit, make sure that DC input voltage are disconnected.
- Prior to accessing the system or modules, make sure all source of supply is disconnected. **CAUTION** – Risk of electric shock. Capacitors store hazardous energy. Do not remove cover until 5 minutes after disconnecting all sources of supply.
- Some components and terminals carry high voltage during operation. Contact may result in fatal injury.

## 3.5 Replacement and Dismantling

- ESD Strap must be worn when handling PCB's and open units.
- The converter system/rack is not supplied with internal disconnect devices on input nor output.
- CE+T cannot be held responsible for disposal of the converter system and therefore the customer must segregate and dispose of the materials which are potentially harmful to the environment, in accordance with the local regulations in force in the country of installation.
- If the equipment is dismantled, to dispose of its component products, you must comply with the local regulations in force in the country of destination and in any case avoid causing any kind of pollution.

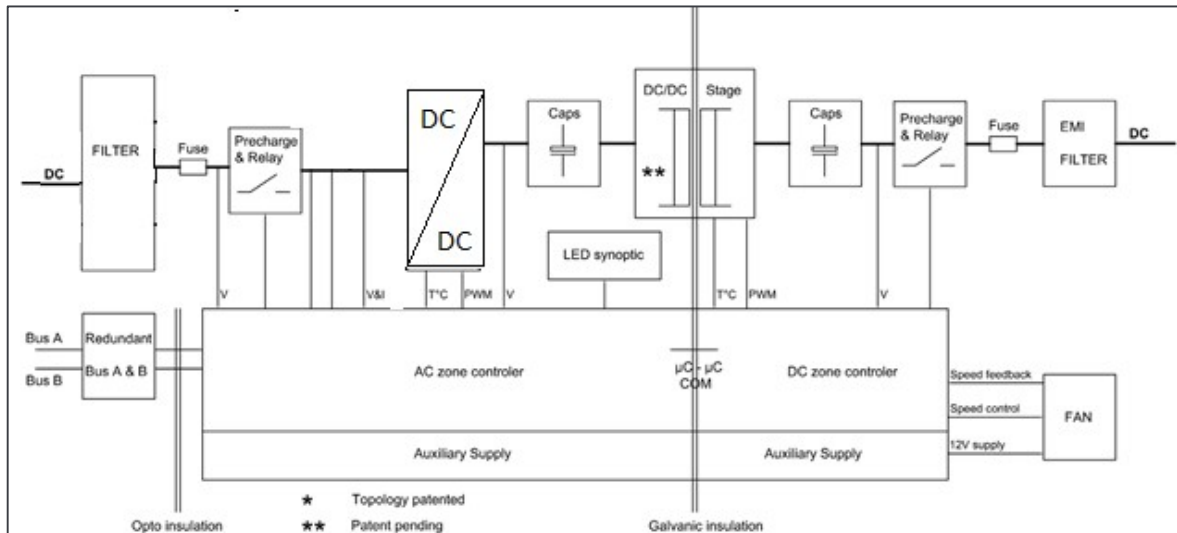
To download the latest documentation and software, please visit our website at [www.cet-power.com](http://www.cet-power.com)



## 4. ECI TECHNOLOGY<sup>1</sup>

Iris DC/DC module built with ECI technology and it is a dual port converter. This module deliver regulated DC output and ripple free DC output from battery or DC source.

The below block diagram gives an explicit description of the topology and its operation.



ECI technology has galvanic isolated 48 V to 400 DC and DC to regulated 380 Vdc converters to provide constant and disturbance-free output power regardless of the input source.

The power flows either from DC1 or DC2 source under the control of the DSP controller. Thanks to internal energy buffering for transferring the load between two input sources by 0 ms.

Iris DC/DC module works on True Redundant Structure (TRS) that features decentralized, independent logic, and redundant communication bus.

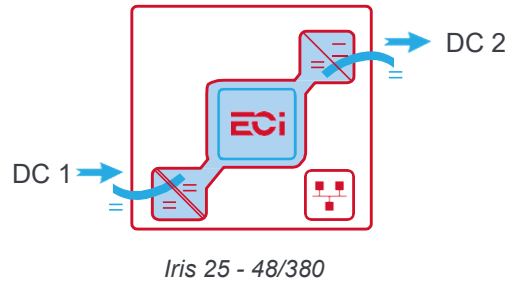
Each Iris DC/DC module has three levels of protection, and it will help to isolate from other modules in case of any fault in the corresponding module. Due to this functionality in each module, it provides no single point of failure in modular systems.

The Iris DC/DC modular systems provide quality output power with higher efficiency.

<sup>1</sup> Information and data given in this chapter is intended to serve as an overview of the ECI Technology. Detailed features and parameters for each individual module type in the range may differ and should be referred to in the dedicated data sheet.

## 4.1 48 Vdc to 380Vdc

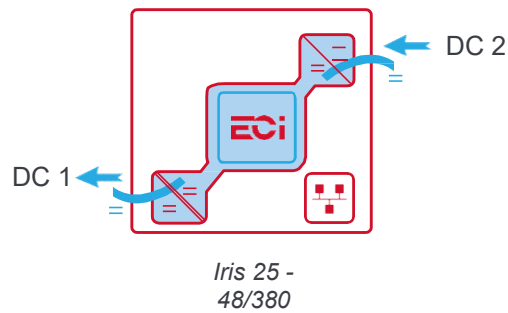
In this mode, the 48 Vdc source is the primary source. When 48V is present, the Iris DC/DC module takes energy from the 48 Vdc source and feed to 380 Vdc.



The 48V to 380V mode provides a higher efficiency of  $\geq 94\%$

## 4.2 380 Vdc to 48Vdc

From 380 Vdc source, the IRIS DC/DC converter provided a regulated DC voltage to 48 Vdc to maintains battery in charge.



## 5. Building Blocks

### 5.1 Iris 25 - 48/380

|                    |       |         |
|--------------------|-------|---------|
| Telecom / Datacom: | DC1   | 48 Vdc  |
|                    | DC2   | 380 Vdc |
|                    | Power | 2400 W  |



- Each converter can supply 2400 W on any DC port
- Hot swappable and hot pluggable.
- The front LED's indicate the converter status and output power.
- Module is equipped with soft start.
- Fan is equipped with alarm and run time meter. The fan is field replaceable.
- 435 mm (D) x 102 mm (W) x 88 mm (H).
- 5 Kg.

#### 5.1.1 Specifications

| Model  | IRIS 25 48-380  |
|--|---|
| Part Number: Module / shelf                                    | Module T821730071 Shelf T82473070   |
| Cooling / Audible noise  | Forced fan cooling / <65dbA @1meter   |
| MTBF   | 240 000 hrs (MIL-217IF) at 30°C ambient and 80% load  |
| Dielectric strength DC/AC                                      | 4300 Vdc  |
| RoHS / WEEE:   | Compliant to RoHS Directive 2011/65/EU / WEEE Directive 2012/19/EU                                  |
| Operating T° / Relative Humidity (RH) non-condensing           | -40°C to 65°C, power de-rating from 50°C to 65°C / RH 5% to 85%-<br>Tested according GR3108 Class 2 |
| Storage T° / Relative Humidity (RH) non-condensing             | -40°C to 70°C, / RH 5% to 85% Tested according GR3108 Class 2                                       |
| Material (casing)  | Nikel Zinc coated steel   |
| DC 1 DATA 48VDC  |   |
| Nominal voltage (range)  | 48 Vdc (40 - 60 Vdc)  |
| Maximum power  | 2,4 kW (derating from 40 to 45VDC)  |
| Nominal output current   | 51A   |
| Maximum input/output current (for 15 seconds) / voltage ripple | 66,8/63,7A / <10 mV RMS   |
| Reverse polarity protection                                    | YES   |
| Peak efficiency 48 to 380VDC                                   | >93,5 %   |
| DC 2 DATA 380VDC   |   |
| Nominal voltage (range)  | 380 Vdc (200 to 400 Vdc)  |
| Maximum power  | 2,4 kW (derating from 200 to 250VDC)  |
| Nominal output current   | 6,31A   |
| Maximum input/output current (for 15 seconds) / voltage ripple | 8,4A /7,9A/100mV RMS  |

|                                     |   |
|-------------------------------------|---|
| Reverse polarity protection         | YES   |
| Peak efficiency 48 to 380VDC        | >93,5 %   |
| <b>Signalling &amp; Supervision</b> |   |
| Display                             | Synoptic LED  |
| Remote on / off                     | On rear terminal of the shelf through Inview                                  |
| <b>Certification</b>                |   |
| Safety                              | IEC62368 / UL62368  |
| EMI/EMC                             | FCC Part 15 class A<br>CISPR 32 Class A<br>IEC61000-4-2/3/4/5/6<br>ETSI300386 |
| Environment                         | ETSI300019  |
| NEBS                                | GR3108 class 2  |

## 5.2 Sub-rack

- The Iris shelf shall be integrated in min 600 mm deep cabinets, Inch/ETSI mounting.
- The Iris shelf house max four (4) Iris modules.
- The Iris shelf is designed with common 380 Vdc input (one per shelf)
- The Iris shelf is designed with individual 48 Vdc input (one per module)
- Optional rear cover for IP 20 in open rack.
- Max 12 kVA per shelf.
- 480 mm (D) x 19" (W) x 2U (H).
- 6 Kg (without modules)



# 6. Accessories

## 6.1 Cabinet

Powder coated (RAL 7024), 19 inch Flat Pack cabinet with 600 x 600 mm foot print. Cabinet designed for top cabling or bottom cabling.

- 1100 mm (600 x 600 mm)23U
- 1800 mm (600 x 600 mm)39U
- 2100 mm (600 x 600 mm)45U

The cabinet comes with a separable top cover to facilitate cabling. Tie strap support at cable entrance/exit. Door accessory is an optional.

## 6.2 DC Distribution Unit

### 6.2.1 Miniature Circuit Breakers

The standard DC output distribution unit is designed with a 35 mm DIN rail, Multi Clip termination board and N/PE copper terminal bars, and built as a part of the cabinet.

The Multi Clip offers unique flexibility during installation and expansion. The terminals are spring loaded and adapt contact pressure to the size of conductor. Only one cable can be inserted per spring loaded terminal.

The DC distribution unit is available with 1 pole, 2 pole

Max current per DU is 200 A, max current per terminal connector is 40 A. Two adjacent terminal connectors shall be used for 63 A breakers..



If an alarm is required for DC output breakers, a help contact attached to each individual breaker is used (OF or SD). The alarm function is common and uses one of the digital inputs on the control unit. The help contact limits the breakers quantity.

|           | Single pole      |                          | Double pole      |                          | Three pole       |                          |
|-----------|------------------|--------------------------|------------------|--------------------------|------------------|--------------------------|
|           | w/o help contact | With help contact OF/ SD | w/o help contact | With help contact OF/ SD | w/o help contact | With help contact OF/ SD |
| Up to 40A | 24               | 16                       | 12               | 9                        | 8                | 6                        |

### 6.2.2 MCCB



DC output distribution via MCCB in the range up to 400 A (1p, 2p or 3p).

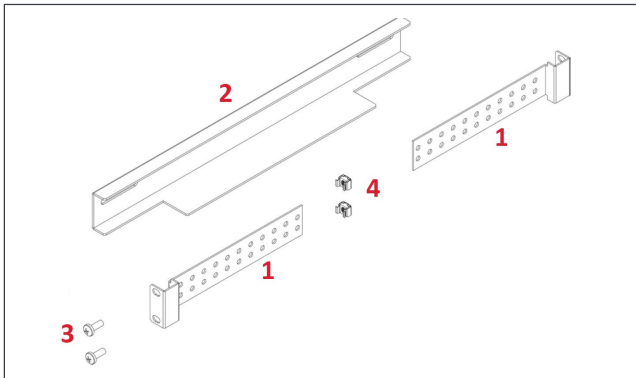
Max two MCCB per converter cabinet.

## 7. Installation of Iris Shelf

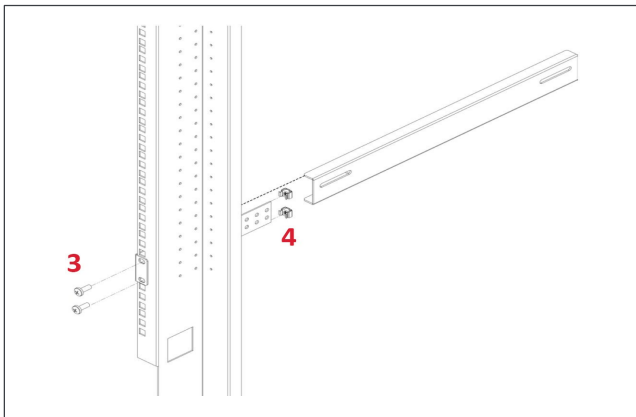
- Read safety instructions prior starting any work.
- Do not attempt to use lifting eyes to erect the cabinet.
- System is preferable handled without modules.
- Pay attention to the module position, make sure that modules are repositioned in the same slot.

### 7.1 Mounting kit for Iris shelf

The fixing brackets, together with the sliders, allow for different cabinet depths.



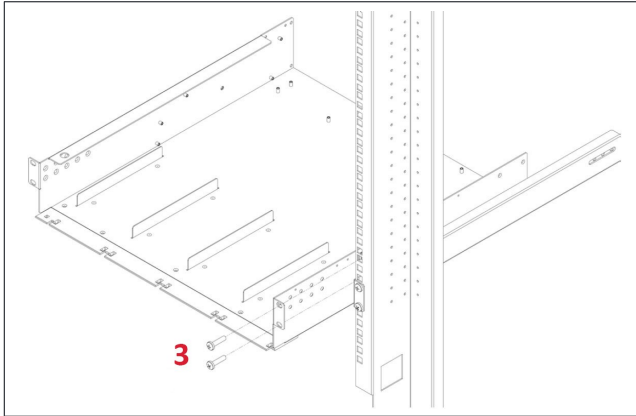
- 1 → Fixing brackets - 4 Nos
- 2 → Slider - 2 Nos
- 3 → Mounting screws - 12 Nos
- 4 → Cage nuts - 12 Nos



Assemble the sliders and adjust the length to suit the mounting depth.

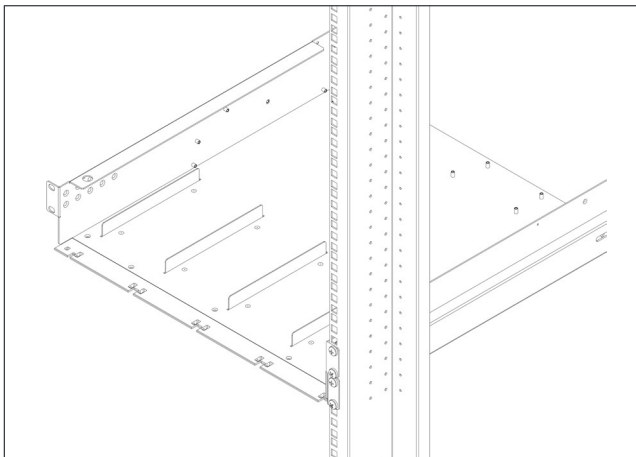
Fix cage nuts (4) in the cabinet front and rear frame of the left and the right side.

Fix the left and right slider of the cabinet with the supplied screws (3).



Fix cage nuts (4) in the mounting frame.

Slide the shelf in position and fix the shelf with the supplied screws (3).



Finished.

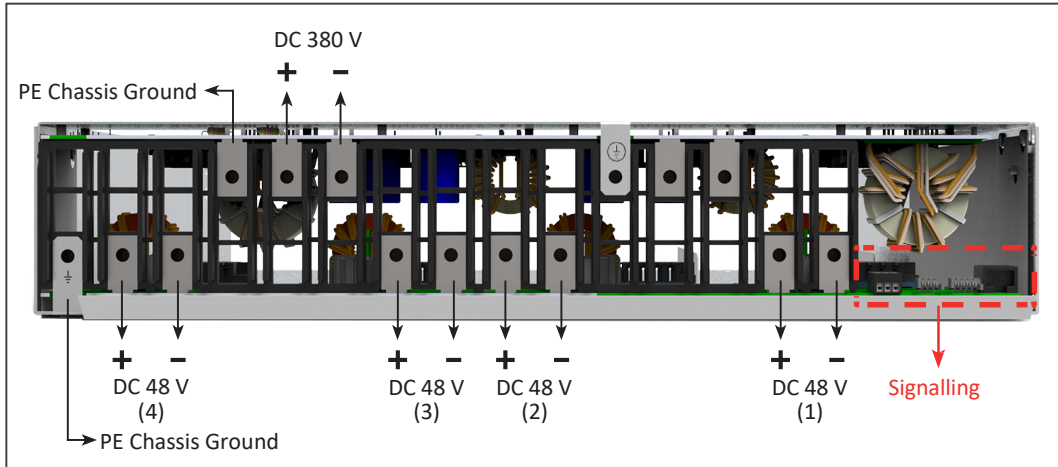
## 7.2 Electrical installation for Iris shelf

### 7.2.1 Pre requisites

- The sub-rack have markings for all terminations.
- All cables shall be rated at Min 90 deg C.
- Electrical terminations shall be tightened with 5Nm.
- All connection screws are M5 x 12 mm.
- DC Input-Individual (per module), observe polarity.
- DC input -Common (per shelf), respect polarity
- Wire all positions in the sub-rack for future expansion.
- Power DC and Signal cables shall be separated.
- Cable crossings shall be done in 90 deg angles.
- Empty converter positions shall be covered with dummy cover or module

## 7.2.2 Terminations

The below image is termination details of Iris 25 - 48/380 shelf.



*Iris 25 - 48/380 - Shelf Rear Details*

## 7.2.3 Grounding

“PE CHASSIS GROUND” 

PE Chassis ground shall be wired to MET or distributed earth bar connected to MET, according to local regulations.

## 7.2.4 DC1 48 Vdc connection

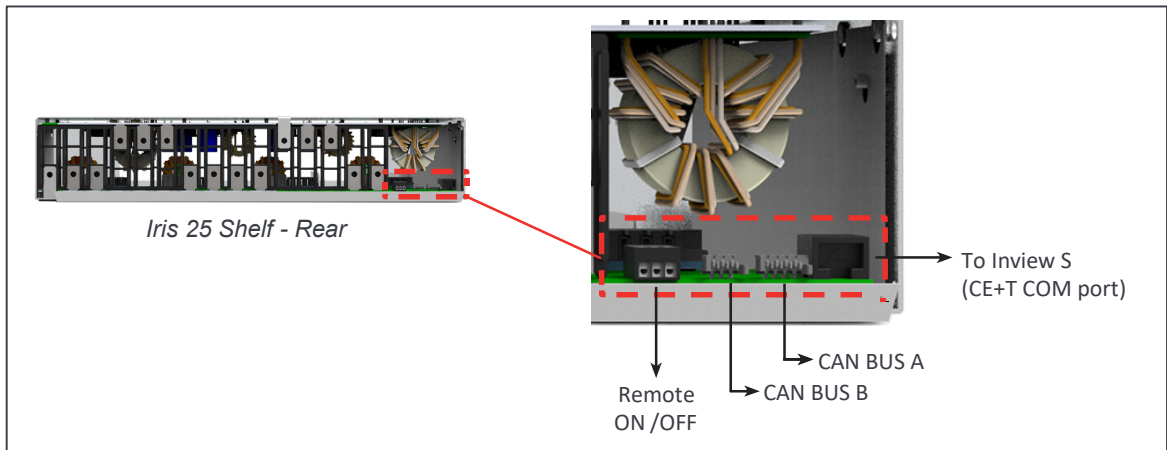
| Model            | MCB per converter module | Cable, min             | Connect or | Torque |
|------------------|--------------------------|------------------------|------------|--------|
| Iris 25 - 48/380 | 63 A                     | 2 x 16 mm <sup>2</sup> | M5         | 5 Nm   |

## 7.2.5 DC2 380 Vdc connection

| Model            | Cable, min              | Connect or | Torque |
|------------------|-------------------------|------------|--------|
| Iris 25 - 48/380 | 3 x 2.5 mm <sup>2</sup> | M5         | 5 Nm   |



## 7.2.6 Signalling



## 7.2.7 Remote ON/OFF

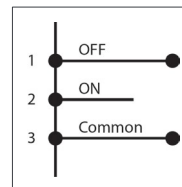
The function of remote ON/OFF is used to turn off the module/system output.

By default a jumper is placed between pin 3 and 2. If remote on/off is used, the jumper should be removed from the shelf and connect changeover contactor.

- DC inputs are not affected by the remote ON/OFF function.
- The remote ON/OFF can be connected to any shelf.
- The remote ON/OFF requires a changeover contactor, one input opens as the other closes. If both transitions are not picked up, the status is not changed.

### Relay characteristics (Remote ON/OFF)

- Signal voltage +5 Vdc (galvanic insulated)
- Max wire size 1 mm<sup>2</sup>



### Functional table for remote ON/OFF function

| # | Pin 1-3 | Pin 2-3 | Status           | Indication       |
|---|---------|---------|------------------|------------------|
| 1 | Open    | Open    | Normal operation | All (Green)      |
| 2 | Closed  | Open    | OFF              | DC Input (Green) |
| 3 | Open    | Closed  | Normal operation | All (Green)      |
| 4 | Closed  | Closed  | Normal operation | All (Green)      |

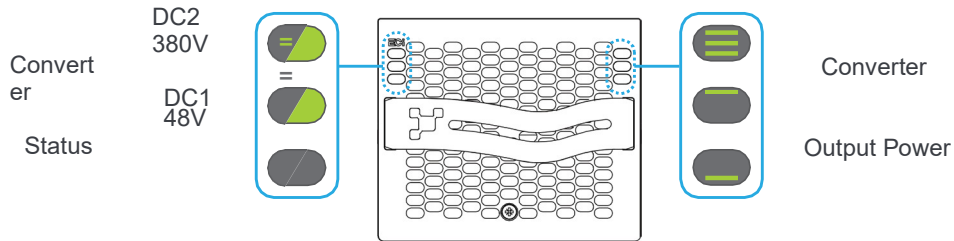
**Warning: If remote ON/OFF is not used, pin 2 and 3 MUST be bridged together!**

## 7.2.8 Internal CAN BUS A and B

- In A la Carte systems the internal Bus is pre installed.
- The internal bus comprise of a 6 and 8 pin ribbon cables.
- The internal bus connectors are sensitive and special caution should be taken during installation to keep them out of harms way.
- The internal bus is connected from the first shelf to the last shelf.

# 8. Operation

## 8.1 Converter module



| Converter Status LED                | Description   | Remedial action             |
|-------------------------------------|---|-----------------------------|
| OFF                                 | No input power or forced stop   | Check environment           |
| Permanent green                     | Operation   |                             |
| Blinking green                      | Converter OK but working conditions are not fulfilled to operate properly |                             |
| Blinking green/orange alternatively | Recovery mode after boost (10 In short circuit condition)                 |                             |
| Permanent orange                    | Starting mode   |                             |
| Blinking orange                     | Modules cannot start  | Check Inview                |
| Blinking red                        | Recoverable fault   |                             |
| Permanent red                       | Non recoverable fault   | Send module back for repair |

| Output Power (redundancy not counted) |           |           |           |       |                 |   |
|---------------------------------------|-----------|-----------|-----------|-------|-----------------|---|
| <5%                                   | 5% to 40% | 40 to 70% | 80 to 95% | 100 % | 100% = overload | Output Power (redundancy not counted)   |
| x                                     | x         | x         | ≡         | ≡     | ≡               | Status output power LED                 |
| x                                     | x         | =         | =         | =     | =               |   |
|                                       |           |           | x         |       |                 |   |
| 1B                                    | 1P        | 2P        | 2P        | 3P    | 3B              | Behaviour (B = Blinking, P = Permanent) |

## 9. Inserting/removing/replacing - modules

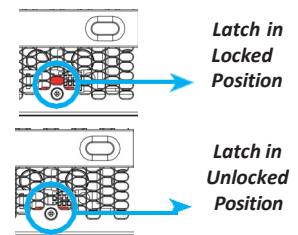
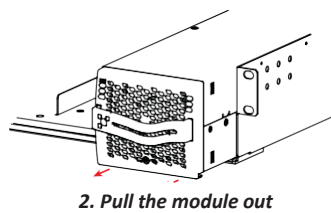
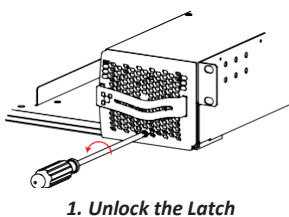
### 9.1 Iris 25 - 48/380 Converter

- The Iris converter is hot swappable.
- When a new module is inserted in a live system it automatically takes the working set of parameters.
- When a new module is inserted in a live system it is automatically assigned to the next available address.

#### 9.1.1 Removal

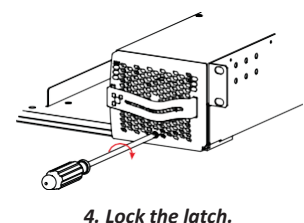
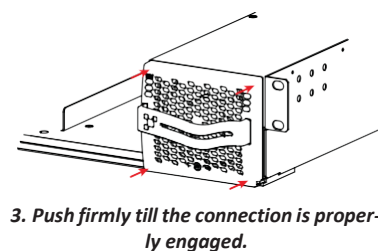
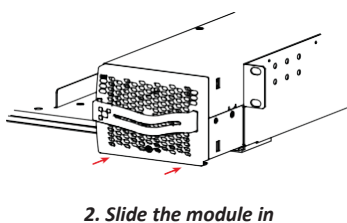
**Notice:** When one or several converter modules is/are removed access to live parts becomes possible. Replace module(s) with dummy cover without delay.

1. Rotate the screw in anti clockwise by using cross head screw driver to unlock the latch.
2. Hold the front handle and pull the module out.
3. Replace with a new module or a dummy cover.



#### 9.1.2 Inserting


1. Check module compatibility (DC Voltage!).
2. Place the module in the shelf and slide in.
3. Using the module handle, push firmly until the unit is properly connected.
4. Rotate the screw in clockwise by using cross head screw driver to lock the latch.
5. The module will start up and take the first address available on the bus.

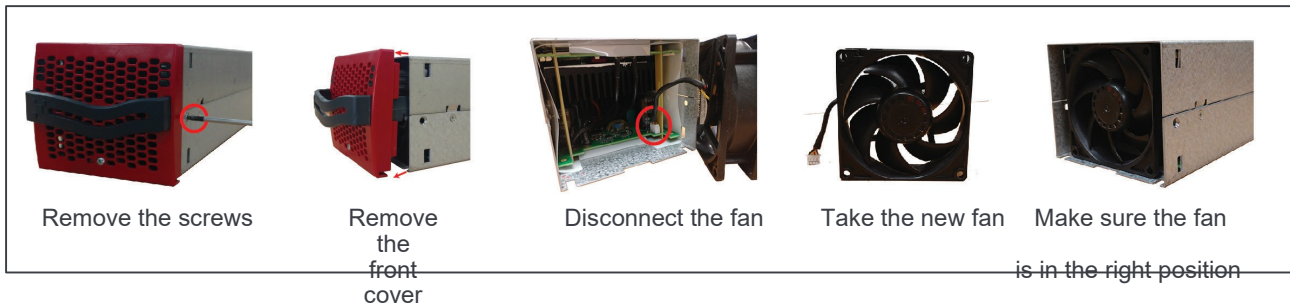


## 9.2 Fan replacement

The FAN life is approximately 60,000 (Sixty Thousand) hours. The converter modules have fan runtime meters and fan failure alarms. Fan failure can result from a failing fan or driver circuit.



1. Let the module rest at least 5 minutes before initiating .
2. The converter front cover must be removed. Use a screw driver and remove the screws on both side of the module.
3. Free up the fan. (Note the fan connector and wires position).
4. Disconnect the supply cord, and remove the fan..
5. Replace with new fan and connect supply cord.
6. Place the front cover and tighten the screws on both sides of the module.
7. Check fan for operation.
8. Access Inview and reset the fan run time alarm from within the action menu



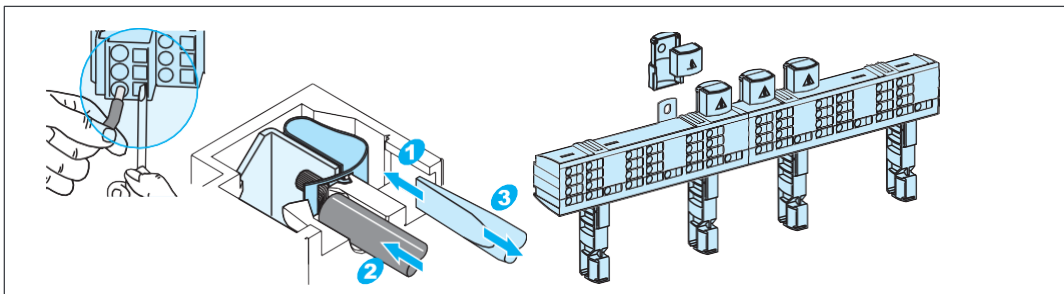
## 10. DC Cabinet Output Distribution

### 10.1 Miniature Circuit breaker Installation/Removal

Circuit breakers are normally factory installed. How to add breakers:

1. Insert the short connection cable (10 mm<sup>2</sup> (included)) in the breaker Line-side and tighten.
  - Up to 40 A breaker - use one connection cable.
  - 63 A breaker - use two connection cables.
2. Clip breaker on to the DIN rail.
3. Insert insulated screw driver into the terminal to load the spring.
4. Insert connection cable and remove screw driver.
5. Connect load cable to breaker, Neutral and Ground.
6. Switch breaker ON.

Remove breaker in reverse order



### 10.2 MCCB

MCCBs are factory installed.

A wide range of breakers is used. Delivered breakers may vary from the example shown in the picture.

1. Make sure that the breaker is in OFF position.
2. Connect load cables to the terminal.
3. Switch the breaker ON.



## 11. Finishing

---

- Make sure that the sub-rack/cabinet is properly fixed to the cabinet/floor
- Make sure that the sub-rack/cabinet is connected to Ground.
- Make sure that all DC input breakers are switched OFF.
- Make sure that all cables are according to recommendations and local regulations.
- Make sure that all cables are strained relieved.
- Make sure that all breakers are according to recommendation and local regulations.
- Make sure that DC polarity is according to marking.
- Re tighten all electrical terminations.
- Make sure that no converter/controller positions are left open.
- Cover empty converter positions with dummy cover.
- Make sure that the Remote ON/OFF is appropriately wired according to local regulations.

## 12. Commissioning

The DC breaker is a protection device. Modules are plugged in a system and DC breaker is then engaged. Please make sure the corresponding DC breaker is engaged in the ON position.

Installation and commissioning must be done and conducted by trained people fully authorized to act on installation. It is prohibited to perform any isolation test without instruction from manufacturer.

Equipments are not covered by warranty if procedures are not respected.

### 12.1 Check list

| DATA   |          |
|--|----------|
| Date   |          |
| Performed by   |          |
| Site   |          |
| System serial number   |          |
| Module serial numbers  |          |
|  |          |
| Inview Serial number   |          |
| ACTI<br>ON   | OK/ N.OK |
| Unplug all converters except one converter per phase (Just pull off the converter from the shelf, to interrupt electrical contacts)            |          |
| Check the DC presence and polarity before closing any DC input breaker.  |          |
| Check if converters are working (Green led)  |          |
| Check the DC power supply and switch ON the DC breakers  |          |
| Plug in all converters one by one  |          |
| Check output voltage (on bulk output or on breaker)  |          |
| Check if converters are working properly   |          |
| Check if system has no alarm (Disable the alarm if any)  |          |
| Read configuration file and review all parameters. Some parameters must be adapted according to the site (LVD, load on DC, DC threshold level) |          |
| Check if display working properly (Inview)   |          |
| Check if TCP/IP working properly (if this option is present)   |          |
| Test on load (if available)  |          |
| ALARM  |          |
| Switch ON DC input and check that no alarm are present   |          |
| Pull out one converter and check alarm according to redundancy   |          |
| Pull out two converters and check alarm according to redundancy  |          |
| Switch OFF DC input (commercial power failure) and check the alarm according to the configuration  |          |
| Check the different digital input according to the configuration (when used)   |          |



## 13. Trouble Shooting and Defective Situations Fixing

### 13.1 Trouble Shooting

|                                     |   |
|-------------------------------------|---|
| Converter module does not power up: | <p>Check DC input present and in range (DC breakers)</p> <p>Check that the converter is properly inserted</p> <p>Remove converter to verify that slot is not damaged, check connectors Check that module(s) is (are) in OFF state</p> <p>Check for loose terminations</p> |
| Converter system does not start:    | <p>Check that Inview is present and properly connected</p> <p>Check remote ON/OFF terminal Check the configuration and setting</p> <p>Check threshold level</p>   |
| No output power:                    | Check output breaker  |
| All OK but I have alarm:            | Check the type of event and log file in the controller  |
| No alarm:                           | <p>Check relay delay time of alarms in the controller</p> <p>Check configuration file</p>   |

### 13.2 Defective modules

- A repair request should follow the regular logistics chain: End-user => Distributor => CE+T Power.
- Before returning a defective product, a RMA number must be requested through the <http://my.cet-power.com> extranet. Repair registering guidelines may be requested by email at [repair@cet-power.com](mailto:repair@cet-power.com).
- The RMA number should be mentioned on all shipping documents related to the repair.
- Be aware that products shipped back to CE+T Power without being registered first will not be treated with high priority!

# 14. Maintenance

---

Maintenance should be performed by properly trained people.

## 14.1 Access Inview controller with laptop

- Download system LOG FILE and save
  - Analyze log file and correct errors
- Download system CONFIGURATION FILE and save
  - Check/correct configuration file according to operation conditions
  - Check/correct alarm configuration
- Check module internal temperature for deviation between modules
  - Temperature deviation may indicate build up of dust. Clean the module by air suction blower or vacuum cleaner.
- Check module/system load
- Check/Correct converter mapping (DC group/ Address)

## 14.2 Manual check

- Check voltages of DC input and DC output using the multi-meter.
- Replace door filter if more dust is accumulated.
- Take a snap shot of the cabinet and site condition

## 14.3 Optional

- With an infrared camera check termination hot spots
  - Tighten terminations

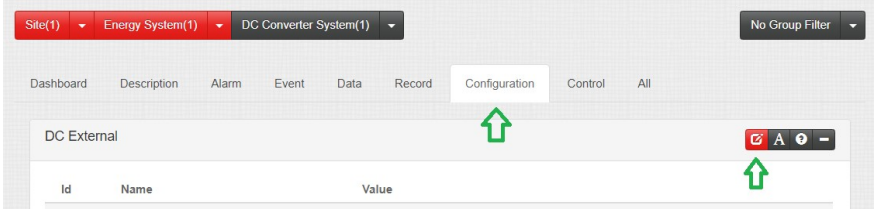
## 15. IRIS converter configuration

### IRIS DC/DC System and Modules configuration parameter

The system needs proper configuration depending on site topology

The table below gives the different system parameter, default, min and max value

Connect to Inview and to the web UI

|   |   |  |
|---|---|--|
| 1 | <p>Select "Converter system" to configure SIERRA 25 system<br/>Go to configuration tab and enter in edit mode</p> |  |
| 2 | <p>Scroll down and configure system according parameter list below</p>  |  |
| 3 | <p>Save the configuration when completed</p>  |  |

## 15.1 Global System IRIS configuration parameter list

| CF#  | Parameter                               | Description   | Min  | Default | Max  | Unit |
|------|---|---|------|---------|------|------|
| 121  | Configured Modules                      | Nbr of module DC/DC IRIS 25   | 1    | 1       | 32   |      |
| 122  | Redundant Modules                       | Nbr of redundant module   | 1    | 1       | 3    |      |
| 131  | Override Low Start Push Power Timeout   | Used control mode or with API need to refresh below 20s   |      | 20      |      | S    |
| 132  | Override High Start Take Power Timeout  | Used control mode or with API need to refresh below 20s   |      | 20      |      | s    |
| 531  | Override Low Start Push Power Timeout   | Used control mode or with API need to refresh below 20s   |      | 20      |      |      |
| 532  | Override High Start Take Power Timeout  | Used control mode or with API need to refresh below 20s   |      | 20      |      |      |
| 1000 | V DC in low start - dV (000)            | Low DC Voltage where a higher value leads the DC/AC converter to re-start   | 39.0 | 44.0    | 61.0 | V    |
| 1001 | V DC in low transfer - dV (001)         | Low DC Voltage where a lower value leads to transfer the load from DC IN to AC IN. Under this voltage peak-shaving is relaxed and battery discharge test is stopped.      | 3900 | 39.0    | 61.0 | V    |
| 1002 | V DC in low stop - dV (002)             | Low DC voltage where a lower value stops the DC/AC converter  | 39.0 | 39.0    | 61.0 | V    |
| 1003 | V DC in high start - dV (003)           | High DC voltage where a higher value re-starts the DC/AC converter  | 39.0 | 58.0    | 61.0 | V    |
| 1005 | V DC in high stop - dV (005)            | High DC voltage where a higher value stops the DC IN converter. Value increased from sw 173 to 62 VDC   | 39.0 | 61.0    | 61.0 | V    |
| 1034 | Short circuit voltage threshold (034)   | Minimum Voltage Threshold where module considers that AC out is in short circuit.   | 80   | 80      | 200  | V    |
| 1035 | Short circuit hold time (035)           | Time Duration when a module tries to eliminate the short-circuit existing on AC out. If the system is still in short-circuit after this time, the output will be stopped. | 1    | 60      | 600  | s    |
| 1049 | Start without supervision (049)         | When this mode is activated, the module is able to start without Inview S.  | 0    | 1       | 1    |      |
| 1073 | Lvd mode (073)                          | If this mode is ON, module goes in low consumption mode 1 minute after it stops by Vdc LowStop  | 0    | 0       | 1    |      |
| 1074 | Max V DC increment safe mode - cV (074) | Vdc set point rising speed when there is no supervision   |      |         |      |      |

| CF#  | Parameter                          | Description | Min  | Default | Max  | Unit |
|------|------------------------------------|-------------|------|---------|------|------|
| 1083 | Scaling Factor                     |             |      | 1       |      |      |
| 1085 | Low Start Push Power               |             | 39.0 | 39.0    | 48.0 | V    |
| 1086 | High Start Take Power              |             |      | 64.V    |      |      |
| 1087 | Slope                              |             |      | 0       |      | W/V  |
| 1088 | Low Start Push Power               |             |      | 320     |      | V    |
| 1089 | High Start Take Power              |             |      | 400     |      | V    |
| 1090 | Slope                              |             |      | 0       |      | W/V  |
| 1091 | Power Limitation DC External to DC |             |      |         |      |      |
| 1092 | Power Limitation DC to DC External |             |      |         |      |      |
| 1093 | Low Start                          |             |      |         |      |      |
| 1094 | Low Stop                           |             |      |         |      |      |
| 1095 | High Start                         |             |      |         |      |      |
| 1096 | High Stop                          |             |      |         |      |      |
| 1097 | BackFeedDetectionMode              |             |      |         |      |      |
| 1098 | SleepMode                          |             |      |         |      |      |

