

# ICS - C4100

## Integrated Circuit Selector - Type C4100



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# Compliance with standards

ICAO Aerodrome design manual, part 5  
IEC (CCR's standard 61822)  
FAA (AC150/5345-5 – L847)



## Applications

C4100 series ICS are up-to-date circuits selectors designed to supply up to 5 circuits series from one DIAM4100 CCR. They are controlled through the same HMI for local control, or the same remote control interface than the CCR, allowing a very fast and simple commissioning.

Circuits can be alternate (only one circuit will be supplied at a time), or simultaneous (different circuit at the same time).

Typical applications are :

- Alternate supply for PAPI's and approach systems.
- Supply parts for taxiway (ground guidance).

## Advantages

### • **Integrated design :**

Circuit selector and CCR operate as the same unit : all operations and security interlocks are managed by the microprocessor of the CCR. In consequence, there are no electronic boards or special electronic devices attached to the ICS : Spare parts are limited to the high-voltage relays and one auxiliary power supply.

Local operations, status of each circuit and warning messages are clearly displayed on the semi-graphic display of the CCR, as are the current status of the CCR or all input or output electrical measurements.

This compact construction allows to optimize external cables and wiring : Only lighting loops are to be connected to the output terminals.

### • **Safety of operations :**

Zero current switching is automatically achieved without any extra connections or controls. All these controls and timing are transparent for the user. Final state of the load can be then between short circuit and full load, without possibility of lamp's damages.

### • **Purchase and life-cycle costs :**

C4X00 selectors represent the most reduced cost solution, in regard to purchase, installation and spare parts costs, thanks to its simple design combined to efficient high-voltage switches and digital technology of the CCR.

# C4100 : Technical Characteristics

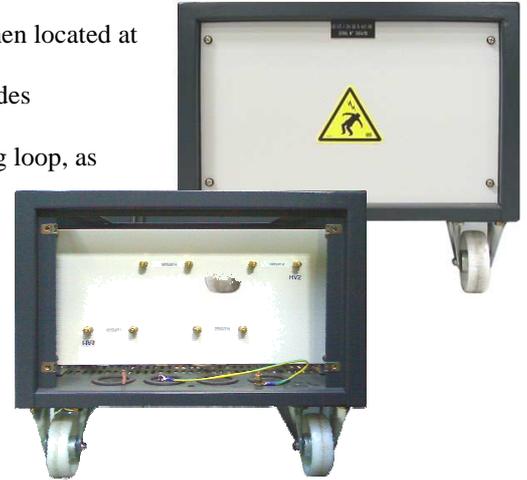
## GENERAL PRESENTATION

Each C4100 is delivered into a metal frame fastened under the CCR's frame.



This **High voltage compartment** is then located at the lower part of the device, and includes components connected to each lighting loop, as lightning arrestors and load terminals.

It can be reached while opening the front panel of the ICS (up to 4 circuits for IEC model, up to 3 circuits for



FAA model) or at the rear of the cabinet (5<sup>th</sup> circuit for IEC model). It can be delivered with the same options of ground support as the CCR, i.e. casters (omnidirectional or unidirectional), or with metallic feet.

## FEATURES

- Number of ways : up to 5 (IEC version) or 3 (FAA version)
- Insulation : compliant with the CCR and according the standard : IEC:  $2xUn + 2500$  Vac - FAA:  $5xUn$ .
- Power supply : same as for the CCR
- Protection : IP 21 (other on request)
- Dimensions (all powers and voltages): H 300 mm, W 500 mm, D 700 mm
- Axle track and wheelbase (If casters option): 355 x 610 mm
- Use : Normal temperature :  $-20^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$ , humidity max. : 95%.  
(FAA style :  $-40^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$ ).
- Natural air cooling.
- Accessibility: front and back panels.



# C4100 : Technical Characteristics

## PROTECTIONS

- Lightning arrestors on outputs (option)

## USER INTERFACE

The ICS uses the same flat polyester keypad located on the front plate of the CCR, which includes a wide display of 16 x 140 p. showing preferably on the upper line the installation state, warnings and parameters, and on the lower line the 4 keys definition, depending of the present menu.

**An USB front socket allows the connection of a laptop computer, for a parameter setting possible without live voltage.**



## DISPLAY FUNCTIONALITY

The display shows 2 lines of text allowing to monitor many parameters, values and warnings. The lower line sets the definition of the keypad.

When used with an ICS, the preferred information displayed on the CCR can be changed in “STOP” mode, and can be chosen (long press on STOP) among CCR’s information or ICS’ information :

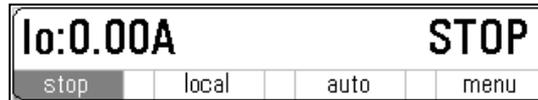
- “Output current  $I_o$ ” – “brightness state  $B_x$ ”
- “Output current  $I_o$ ” – “Output power  $P_o$ ”
- “Output current  $I_o$ ” – “Output voltage  $U_o$ ”
- “STATE OF EACH CIRCUIT – State  $B_x$ ”

That last display allows to see immediately the whole state of the circuit selector, and the current brightness.

# C4100 : Display and Menus

## DISPLAY EXAMPLES AND KEYS DEFINITION :

- “Stop” (regulator) mode:



- “State of ICS” mode : (in Stop mode) :

This display shows loops 1, 4, 5 short-circuited (not selected ways), and loops 2 & 3 energised :



- The display shows all loops energised :



- The display shows all loops short-circuited :



- The display shows the loop 1 short-circuited, the loop 2 energised, in case of only 2 circuits validated :



## BACK INDICATIONS AND REMOTE CONTROL

As the CCR, the ICS can be controlled by the same mean, which could be multi-wire interface or serial link. All control options of the CCR are available.

# C4100 : Display and Menus

## CONFIGURATION MENU

The “*Configuration*” menu allows to set the number of operational circuits, from 2 to 5:

Circuits quantity:5				
esc	←	→	modif	

Operational mode can be chosen between “Simultaneous” (all circuits can be energised or not, at the same time) and “Alternate” (Only one circuit can be energised at the same time).

## LOCAL MODE

When the CCR is in STOP or LOCAL mode, it is possible to select manually a circuit, entering the menu “*Circuit selection*”.

- In “Simultaneous” mode, each circuit can be energised or not, using “modif” and “arrows left / right” keys : (in this example, circuit 1 is set ON, circuit 2 is set OFF)

Circuit 1:Yes				
esc	←	→	modif	

Circuit 5:No				
esc	←	→	modif	

- In “Alternate” mode, the circuit N° to be energised can be selected, using “modif” and “arrows left / right” keys :

Circuit number:2				
esc	←	→	modif	

## CUT-OUT PLUGS

In option, ICS can be equipped with FAA cut-out plugs which allows short-circuit of the load and short-circuit of the CCR when unplugged, for each circuit. With that option, the load cables are directly connected to the cut-out.

# Integrated Circuit Selector - C4100

The Integrated Circuit Selector is identified by a serialised ordering code which indicates its type and particularity. If needed, add all useful precision and options

Example : C41-IEC-1-4S1-50-15-400- 001 = ICS compliant to IEC, 6.6A, 4 simultaneous ways, 50Hz/400V for max. 15kVA CCRs, with lightning arrestors and 4 casters :

C 4 1 - I E C - 1 - 4 S 1 - 5 0 - 1 5 - 4 0 0 - 1 0 1

**Series** C41 : ICS family C4100, (integrated under regulators type DIAM4100)

**Type** IEC : Compliant with IEC regulation (no circuit isolator, -20°C +55°C, supply ±10% , dielectric 2xUn, + 5500V)  
847 : Compliant with FAA AC 150 / 5345 - 5 L-847

**Class** 1 : Class 1 (nominal switchable current 6.6A)

**Composition** 2XX : 2 circuits      XAX : alternate (only one circuit selected)      XX1 : for use with an IEC type DIAM  
3XX : 3 circuits      XSX : simultaneous      XX2 : for use with a FAA type DIAM  
4XX : 4 circuits  
5XX : 5 circuits

**Frequenza** 50 : 50 Hz  
60 : 60 Hz

**Switched Power** 15 : For 15 kVA max. CCRs and loops  
30 : For 30 kVA max. CCRs and loops, or FAA type

**Supply** XXX : One input single-phase voltage : 208 Vac to 480 Vac or supply voltage as the CCR  
A22 : Multi-input supply : 220/230 Vac and 380 / 400 Vac

**Regular Options** 0XX : No Lighting arrestors      X0X : No cut-out plug      XX0 : Support option defined by the CCR (\*\*)  
1XX : Lighting arrestors (\*)      X1X : FAA cut-out plug (1 per way)      XX1 : 4 unidirectional casters  
XX2 : 2 omni / 2 uni-directional caster  
XX3 : 4 steel foot

(\*) : Not on FAA type. The CCR include 2 L.A on each its HV terminals

On IEC type, the number of included lightning arrestors = ((number of circuits) – 1), since the CCR must include one L.A. on each output terminal.

Example : for a CCR with 4 ways ICS with lightning arrestors, 2 are inside the CCR and 3 are inside the Circuit selector.

(\*\*) : Options defined for the CCR (wheels, legs) are fitted at the bottom of the ICS cabinet