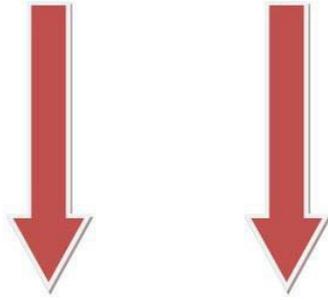# INSTALLATION GUIDE

CTRL-FL1^{MC}

Arrow signaling controller

WARNING
Before proceeding to the system,
Take the time to read and understand the instructions in this guide.

WARNING

IMPORTANT

This document provides all the necessary informations for the proper and safe installation of your system.

Before proceeding with the installation or configuration of your **CTRL-FL1^{MC}** system, the technician must first have read and understood the instruction in this.

This document contains important information to prevent the risk of serious injury to users and installation technicians.

The CTRL-FL1MC system Zone Technology Electronics Inc. is fully programmable (all parameters are flexible).

To reach technical support for all questions concerning :

PROGRAMMING AND OPERATION
Of modules manufactured or distributed by *Zone Technology Électronique Inc.*,

Contact :

Technician (service and repairs)
(450) 572-1476
support@zonetechnologie.com

MODULE INSTALLATION IN VEHICLE

Contact :

Garage
(450) 572-1476 post : 202

TABLE DES MATIÈRES

GENERAL DESCRIPTION OF THE MODULE

The **CTRL-FL1^{MC}** module allows you to control a signal arrow with or without elevation and a three auxiliary outputs. This compact module has the advantage of controlling everything without external components (except the main fuse on supply line).

Note that all outputs are protected against short circuits internally by circuit breakers.

ESSENTIAL CONNECTIONS

As there can have many accessories related to CTRL-FL1MC module, it is essential to ensure that critical connections are perfectly executed.

Important connections to monitor :

- The negative (black wire) of the **CTRL-FL1^{MC}** module;
- Power supply (+12V on the supply terminal);
- Ignition (+12 V).

TECHNICAL SPECIFICATIONS

Operation voltage..10 à 16Vcc

Operation temperature:..-40°C à 75°C (-40°F à 167°F)

Electric consumption: - Without ignition (closed keys)..1.27 mA
(voltage input at 14V)   - With ignition (no load) ....maximum 270mA

Output: - Arrow supply:.. 12V, 15A
          - Arrow channel 3A/channel

        MOTOR MODE « ON » : Point #7, Programmation Section.
        - Motors (MOT + / MOT **-**)...20A
        - Auxiliairy :   - With motor...12V, 5A
                     - Without motor...12V, 10A

        MOTOR MODE « OFF » : Point #7, Programmation Section.
        - Auxiliairy (MOT + / MOT **-**)...10A
        - Auxiliairy (AUX) 12V, 10A

Table of outputs description

#Output	Description
1	Arrow Supply
4	MOT-
5	MOT+
6	AUX
7 à 11	Arrow Channel (A à E)

INSTALLING

CTRL-FL1 ^{MC} M<small>ODULE</small>

WARNING
Pay a particular attention on safety instructions and on installation instructions of this guide to prevent damage to the module or to the vehicle as well as the serious injuries to you, to the occupants or every person working on the vehicle.

The technician needs to have a very good knowledge of the automobile electricity and electronics and clearly understood the safety and installation instructions before proceeding to the installation of this module.

To make sure this product works with an optimal efficiency, protect all the electric and mechanical components according to the current standards.

Once the installation is completed, verify all the functions of the system and the vehicle to make sure everything works correctly and according to the standards. |

MECHANICAL INSTALLATION

Installation of the CTRL-FL1^{MC} module

During the installation, assure that there is no risk to damage the module by any unsecured objects in the vehicle and that the chosen location will not expose the module to rain, snow or salt.

The module must be installed in the Le module doit être installé dans l'habitacle du véhicule ou dans un boîtier étanche

The module is design to support a temperature range of -40 C à 75 C (-40 F à 167 F).

The module also has its own built-anchor base and can be installed at any angle (even reversed). There are several ways to fix the module, the installation technician must consult the user in order to best meet its needs. It is strongly recommended to fix it so that it is accessible to the user at all times and under all operating conditions.

Ensure that the module is set so as not to move when a key is pressed.

ELECTRICAL INSTALLATION

Please make the necessary connections for the operation of the system and its components. Install all electrical protection (fuse, circuit breaker, fuse wire) on power wire, as close as possible to the power source. All wire passing through a wall to be protected by a rubber or plastic washer.

Please follow all installation recommendations found in this guide.

CAUTION: Before installation, please disconnect the negative battery of the vehicle. Failure to follow the recommendations found in this guide, could result in fire or personal injury.

Please wait until all electrical connections are completed and checked before reconnecting the battery |

PROGRAMMING

The **CTRL-FL1^{MC}** module has a programming philosophy that allows quick and easy configuration of several parameters **CTRL-FL1^{MC}** module.

To change a parameter, a combination of 1 or 2 keys must be pressed simultaneously on the keyboard and held for at least two seconds.

According to the key or keys pressed at length, different programs will be available. See the table below for a list of available programming.

Note that several programming menus provide a choice of menus, pay attention to the description of each programming mode.

To quit the programming mode, press and hold the key 5 for at least 2 seconds.

Note that each programmation must be made independantly from the other.

Arrow motor

This table contains the different programmations in connection with the engine of the arrow

N.B. Please note that the CTRL-FL1^{MC} contains an actuator controller that control the automatic detection of the cylinder stroke end (for Zone Technology cylinders with no cluch). It is still possible to control the cylinder stroke with a maximal displacement timer.

FONCTIONS	Prog. Menu (Keys to press)	DESCRIPTION AND POSSIBLE DATA
Programming time up / down of the arrow	Keys (←) and (AUX)	Used to enter the programming menu of the rise time and fall of the arrow. The configured time is a maximum. The CTRL-FL1MC module is designed to detect the current peaks of the motor. The engine stops by itself if it encounters an obstacle, too much resistance, or the end of its travel. **Programming the rise time:** 1. Make sure that the key (←) is off and enter the menu, the engine will activate, rising. 2. Save the rise time by pressing the (AUX) button when the arrow reaches its maximum. **Programming the fall time :** 3. Make sure that the key (←) is activated and enter the menu, the motor will activate, falling. 4. Save the falling time by pressing the (AUX) button when the arrow reaches its maximum. **Default configuration :** By default, the rise time is 10 seconds uphill and downhill. The maximum time is 5 minutes.

FONCTIONS	Prog. Menu (Keys to press)	DESCRIPTION AND POSSIBLE DATA

Motor Selection	Press & Hold Keys (←) and (→)	Allows the use of motors outputs as auxiliary outputs.
		
		Programming:
		
		The (↔) allows you to change between the 2 modes:
		
		- Motor mode : The cylinder stroke is present and functional
		
		    You will hear a long beep and the **led (—)** will be fixed.
		
		- Mode single flashing light: We can then connect an additional beacon on the engine output "+". The engine output "-" is also activate with the auxiliary key (AUX), but closes with activation of the arrow.
		
		    You will hear a triple beep and the LED (←) will be fixed.
		
		- (AUX) Key : Exit the programming mode
		
		Default configuration :
		
		By default, the motor mode is programmed.

BATTERY

Low battery warning is present to give an alarm or disable the keyboard when the battery voltage drops below a certain limit. The level limit is programmable.

FUNCTION	Prog. Menu (Keys to press)	DESCRIPTION AND POSSIBLE DATA
Low battery warning	Press & Hold Key AUX	Sets the level of the low battery alarm. **Programming :** In programming mode, you will see the LED of the selected mode remains lit while other flash. Then select the voltage of the low battery alarm:: • Key (←) : 10.5v • Key (—) : 11v • Key (↔) : 11.5v • Key (AUX) : Exit the progrmaming mode **Default configuration :** By default, low battery alarm is set to 10.5V.

Arrow Management

This menu grouped the different possible programmation affecting the arrow.

FUNCTION	Prog. Menu (Keys to press)	DESCRIPTION AND POSSIBLE DATA
Flashing arrow speed	Press & Hold Key (—)	Allows programming the desired speed flashing. The (↔) and (-) flash together to indicate the speed of flashing arrow. **Programming :** Once in the programming menu : • Key (←) : Decrement the flash rate • Key (→) : Increment the flash rate • Key (AUX) : Exit the programming menu **Default configuration :** The default delay is 2 secondes.
The intensity of the flashing arrow in night mode	Press & Hold Key (↔)	Allows programming of the desired intensity of the boom in night mode. Note that the controller has built-in photocell enables it to monitor nighttime operation of the arrow. **If your arrow already has an integrated photocell, set the maximum power (100%).** The value is programmable from 0% to 100% in increments of 5%. The (↔) and (-) indicate the power of lighting. **Programming :** Once in the programming menu : • Key (←) : Decrement the flash intensity • Key (→) : Increment the flash intensity • Key (AUX) : Exit the programming menu **Default configuration :** **By default the power is set to maximum (100%).**

7

Miscellaneous

Ce menu regroupe les autres programmations possibles.

FUNCTION	Prog. Menu (Keys to press)	DESCRIPTION AND POSSIBLE DATA
Operating conditions of the keyboard	Press & Hold Keys (↔) and (—)	Allows programming of keypad operation with and without ignition (input) or if the engine is running or is turned off (battery voltage). Also allows the programming of the ignition recognition mode. Once a key is pressed, the LED on the button will remain active to indicate your choice. **Programming :** Once in the programming menu, select the operating mode of the keyboard: • **Key (←) ON:** Active key without ignition • **Key (←) OFF:** Key inactive without ignition • **Key (↔) ON:** Key remains ON when the ignition is switched off • **Key (↔) OFF:** Key turns OFF when the ignition is switched off *Choose* the ignition signal source: • **Key (—):** The ignition comes from the ignition input (Pos 12). • **Key (→):** The ignition comes from the supply voltage level (functional when the engine is running) (>13.1V = ON) (<12.9V = OFF) • **Key (AUX):** Exit the programming menu **Default configuration:** By default the keyboard is functional without ignition. By default the ignition comes from the ignition input.

FUNCTION	Prog. Menu (Keys to press)	DESCRIPTION AND POSSIBLE DATA
Management of the vehicle speed	Press & Hold Key (→)	Allows programming of different vehicle speed-related configurations for automatic closure of the arrow. **Important:** *12VDC must be connected to the IGNITION input for proper operation of VSS mode, even if CTRL-FL1 is programmed to operate without ignition.* **Default configuration**. Speed is acquired via CAN BUS. There is no default programmed speed. The buttons are not disabled by default. This menu has three levels of configuration --- **Key deactivation strategy when closing the arrow automatically** **Key (←)** • **Key (←) Blinks.** The key is deactivated, but can be reactivated by the user if required. • **Key (←) On.** The button remains activated, triggering the arrow's upward movement when the speed drops below the programmed limit. • **Key (←) Off.** The Key deactivates and will remain locked until the speed falls below the programmed limit. --- **Method of acquiring vehicle speed** **Key (↔)** • **Key (↔) Off.** Using a Standard VSS • **Key (↔) Blinks.** Use of a sensitive VSS (comparative) • **Key (↔) On.** Using CAN BUS signals. --- **Selecting the speed limit when using CAN BUS signals** **Key (—) On :** Speed limit programmed to 30 km/h **OR** **Key (→) On :** Speed limit programmed to 60 km/h To exit programming mode, press and hold the **(AUX) Key**. --- **Programming methodology based on speed acquisition via VSS or CAN BUS** **VSS.** Once in the programming menu, make sure the Key (↔) is flashing or off. Next, drive the vehicle to reach the desired speed. Next, press and hold the (AUX) Key to save the programming and speed. **CAN BUS.** Once in the programming menu, make sure the Key (↔) is lit. Next, select the (—) Key or (→) Key to select 30 km/h or 60 km/h. Next, press and hold the (AUX) Key to save the programming
Photocell	*Please contact technical service to acces this menu*	Calibration of the integrated photocell for night mode on the CTRL-FL1MC module. **Programming :** The current light level will be consider as the edge between light day mode and night mode. **Default configuration :** By default, the photocell is calibrated

PROGRAMMING

Advanced parameters

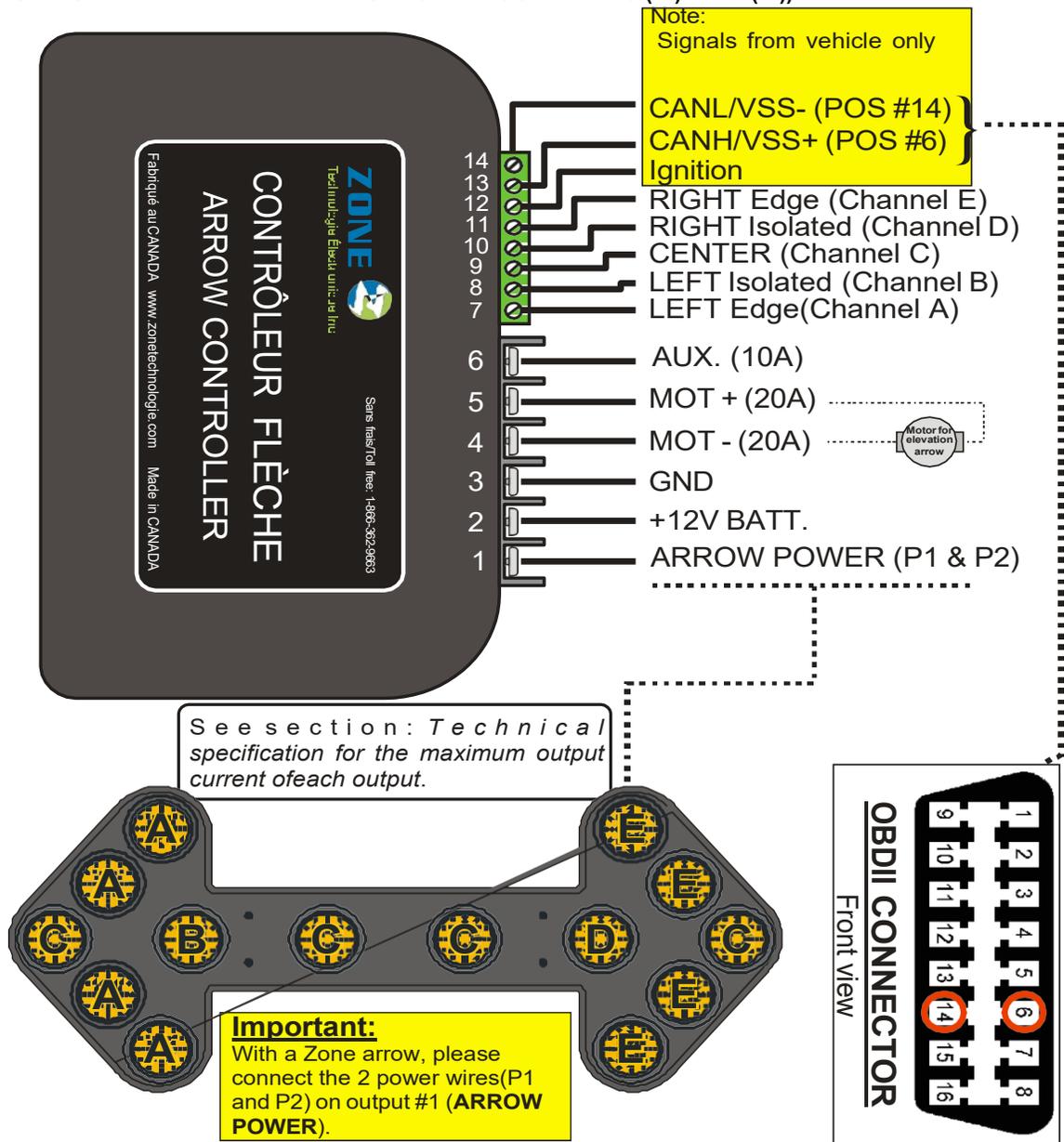(**Note:** *Some programming in this menu could damage your CTRL-FL1^{MC} module*)

Mode reserved to technical service expert only

FUNCTION	Prog. Menu (Keys to press)	DESCRIPTION AND POSSIBLE DATA
Programming menu for Advanced Settings (**Note :** *Some programming in this menu can damage your CTRL-FL1^{MC}*)	Press & Hold Keys ($\rightarrow$) and (AUX)	Allows programming of some advanced parameters for the technical service. Once in this mode you can activate other advanced programming. **Programming :** Once in the programming menu, select a program or holding the button(s) key(s) for at least 2 seconds. • **Keys ($\leftarrow$) and (AUX): Reset all to default configuration.** • **Key (AUX): Exit programming menu**

WIRING DIAGRAM

STANDARD CONNECTION

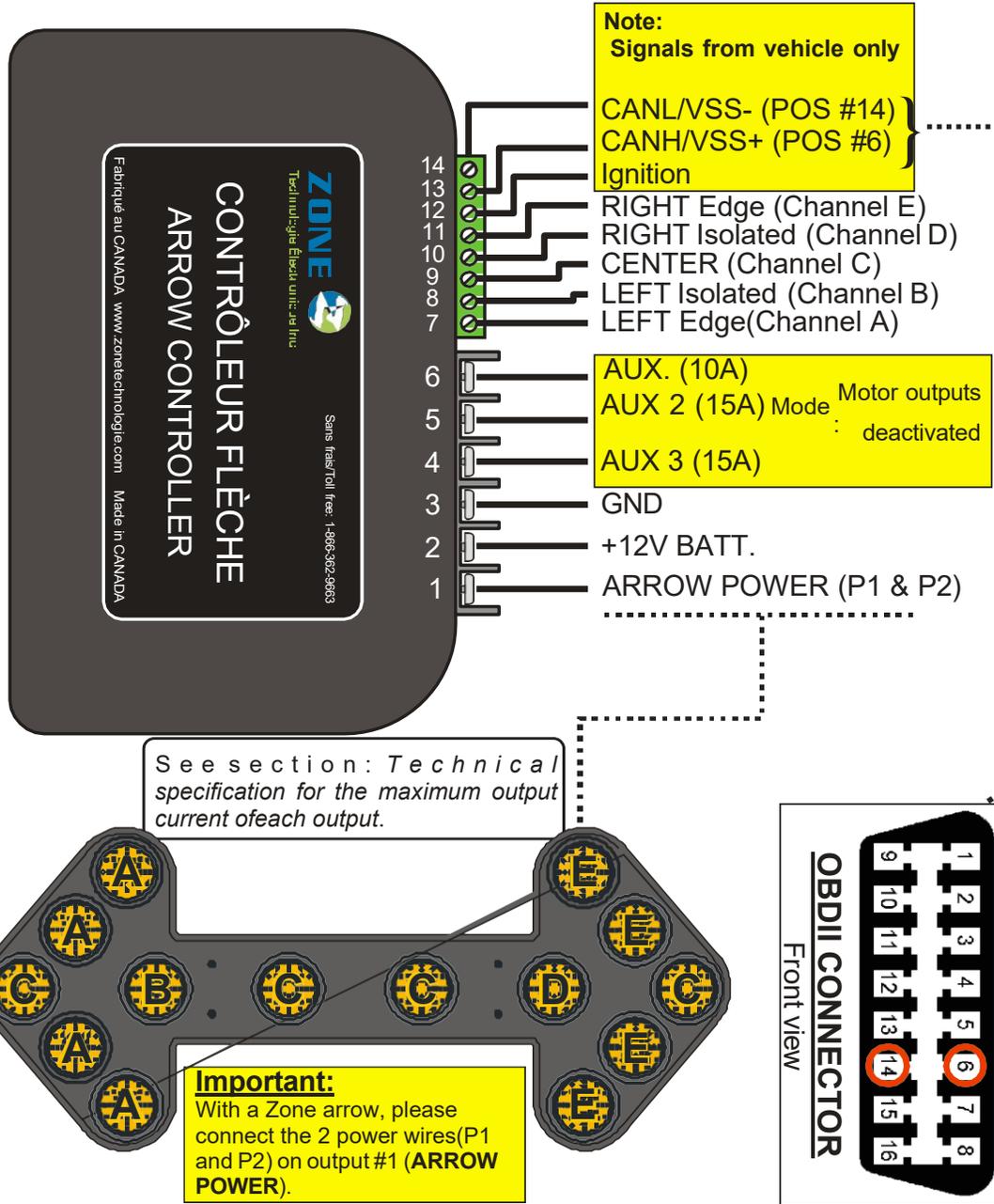**(MOTOR MODE WITH ACTIVATED ARROW: SEE PROGRAMMING (←) AND (→))**

CONTRÔLEUR FLÈCHE
ARROW CONTROLLER

Fabriqué au CANADA www.zonetechnologie.com   Made in CANADA

ZONE
Technologie Électronique Inc.

Sans frais/Toll free: 1-866-362-9663

Note:
Signals from vehicle only

- 14 — CANL/VSS- (POS #14)
- 13 — CANH/VSS+ (POS #6)
- 12 — Ignition
- 11 — RIGHT Edge (Channel E)
- 10 — RIGHT Isolated (Channel D)
- 9 — CENTER (Channel C)
- 8 — LEFT Isolated (Channel B)
- 7 — LEFT Edge(Channel A)
- 6 — AUX. (10A)
- 5 — MOT + (20A)
- 4 — MOT - (20A)
- 3 — GND
- 2 — +12V BATT.
- 1 — ARROW POWER (P1 & P2)

Motor for elevation arrow

See section: *Technical specification for the maximum output current of each output.*

Important:
With a Zone arrow, please connect the 2 power wires(P1 and P2) on output #1 (**ARROW POWER**).

OBDII CONNECTOR
Front view

CONNECTION TABLE

	CHANNEL	WIRE COLOR
For Zone signalisation arrow (models : FL1 et FL2) **Harness color : Black**	A	Black
	B	Green
	C	White
	D	Orange
	E	Blue
	P1	Red (Left)
	P2	White/Black (Right)

AUXILIAIRIES CONNECTIONS

(FOR A DEACTIVATED MOTOR : PROGRAMMING (←) ET (→))

Note:
 Signals from vehicle only

CANL/VSS- (POS #14)
CANH/VSS+ (POS #6)
Ignition

- 14
- 13
- 12 RIGHT Edge (Channel E)
- 11 RIGHT Isolated (Channel D)
- 10 CENTER (Channel C)
- 9 LEFT Isolated (Channel B)
- 8 LEFT Edge(Channel A)
- 7

- 6 AUX. (10A)
- 5 AUX 2 (15A) Mode : Motor outputs
- 4 AUX 3 (15A)   deactivated
- 3 GND
- 2 +12V BATT.
- 1 ARROW POWER (P1 & P2)

CONTRÔLEUR FLÈCHE ARROW CONTROLLER

Fabriqué au CANADA www.zonetechnologie.com   Made in CANADA
Sans frais/Toll free: 1-866-362-9963

See section: *Technical specification for the maximum output current ofeach output.*

Important:
With a Zone arrow, please connect the 2 power wires(P1 and P2) on output #1 (**ARROW POWER**).

OBDII CONNECTOR
Front view

CONNECTION TABLE

	CHANNEL	WIRE COLOR
For Zone signalisation arrow (models : FL1 et FL2)	A	Black
	B	Green
	C	White
	D	Orange
Harness color : Black	E	Blue
	P1	Red (Left)
	P2	White/Black (Right)

12

ZONE

Technologie Électronique Inc.

Toll free : **1 866 362-9663**

Phone : **450 572-1476**

Technical support

Fax : **450 572-0898**

9000, boul. Industriel, Chambly (Québec) J3L 4X3