

# Communication Protocol

## Introduction

This document provides the information needed to communicate with the OEM RotaValve board through direct UART communication.

## Document status & Revision history

Version	Author	Release date	Comments
v1.0.0	Camille MALEK	12/04/2024	launch version

# Serial connection settings

Baud rate: 230400

Data bits: 8

Stop bit: 1

Parity: none

Termination character: '\n'

## Syntax

### Command syntax

char 0: '<' to start the query

char 1 to 5: command name

char 6: '?' to read, '!' to write

then ':' to start a value. Can iterate over many arguments

### Error handling

In an answer, after the read/write character, '[xx]' with xx 2 hexadecimal numbers are also sent and indicating the error code associated with the request. '00' means non error. The following error codes are:

Error code	Meaning
00	No error
C0	Channel error: wrong channel requested
L0	Locking error: you do not have writing access to this parameter
I0	Impossible command: this query can not be processed
P0	Pause error: this command can not be processed while pause is set to 1
U0	Command incompatible with universal sensor connected to this channel
NU	Command incompatible with non universal (=classic) sensor connected to this channel
B0	Argument value out of bound

## Valve status handling

When controlling the position of the RotaValveution's valve, a hexadecimal value representing the valve's status is accessible. '00' means non error. The following valve statuses are:

Status code	Name	Description
0xFF = 255	<b>Busy</b>	Valve currently executing an instruction
0x00 = 0	<b>Done</b>	Valve available for next instruction
0x90 = 144	<b>Not homed</b>	You forgot the homing! Otherwise, check that you have the right port configuration and try again
E0 = 224	<b>Blocked</b>	Something prevented the valve to move
E1 = 225	<b>Sensor error</b>	Unable to read position sensor. This probably means that the cable is disconnected
E2 = 226	<b>Missing reference</b>	Unable to find the valve's main reference magnet during homing. This can mean that a reference magnet of the valve is bad/missing or that the motor is blocked during homing. Please also check motor cables and crimp
E3 = 227	<b>Missing reference</b>	Unable to find a valve's reference magnet during homing. Please check that you have the correct valve number configuration. If not, change it according to the valve you are working with. This can also mean that a reference magnet of the valve is bad/missing or that the motor is blocked during homing
E4 = 228	<b>Bad reference polarity</b>	One of the magnets of the reference valve has a bad polarity. Please check that you have the correct valve number configuration. If not, change it according to the valve you are working with. This can also mean that a reference magnet has been assembled in the wrong orientation in the valve

## List of commands

Parameter	Arguments	W	R	Number of characters returned	Example query	Typical answer	Note
_IDN_	<b>str:</b> device name		X	22	<_IDN_?	>_IDN_? 00 OEMVALVES_	
DEVSN	<b>str:</b> SN		X	18	<DEVSN?	>DEVSN? 00 48V111	
FIRMV	<b>str:</b> firmware version		X	21	<FIRMV?	>FIRMV? 00 v01.03.01	
RESET					<RESET		reset firmware
PINGA	<b>int:</b> position <b>int:</b> valve status		X	19	<PINGA?	>PINGA? 00 004:000	valve status = 0 means no error (see valve status correspondence table)
POSTN	<b>int:</b> position <b>int:</b> how to	X	X	17	<POSTN?  <POSTN!:5:1 OR <POSTN!:b:0 (in recirculation mode)	>POSTN? 00 11:00 OR >POSTN? 00 Xa:02 (in recirculation mode)  >POSTN! 00 05:01 OR >POSTN! 00 Xb:00 (in recirculation mode)	<b>OR char:</b> position in recirculation mode, where position can be 'a' or 'b' how to <b>value controls the rotation to go to a position :</b> <b>0 = shortest</b> <b>1 = clockwise</b> <b>2 = counterclockwise</b>