

# 1. Serial Communication Protocol

## 1.1 Introduction

### Info

This section uses the following notation:

< >: One byte.

[ ]: Optional fields.

Numbers in Serial Commands are in hexadecimal format.

For simplicity, the CRC field is omitted in the Serial Commands in the following sections.

DWIN DGUSII LCM is composed of 2 commands:

- 0x82: Write VPs (RAM)
- 0x83: Read VPs (RAM)

A Frame (or packet) structure follows this format:

<Frame Header H> <Frame Header L> <Byte Count> <Command> [<Data>...] [<CRC H>  
<CRC L>]

Or, in abbreviated notation:

<FHH> <FHL> <BC> <CMD> [<DATA>...] [<CRCH> <CRCL>]

- **Frame Header:** Identifies the start of a new Proculus Protocol packet. Can be used to uniquely identify a LCM on a communication bus. Fixed value (unchangeable) = 0x5AA5.
- **Byte Count:** Counts the number of bytes in the packet, excluding the Frame Header and this byte, i.e., counts all the bytes starting from the Command byte.
- **Command:** Defines the Command to be executed.
- **Data:** Includes addresses, lengths and values.
- **CRC:** Optional error detection value.

## 1.2 VP (RAM) Commands

### 1.2.1 Write VPs (0x82)

This Command writes one or more VPs. You can write multiple VPS at once, if they are sequential

#### • Format

<FHH> <FHL> <BC> 82 <VP><VP> <VL1><VL1> [<VL2><VL2> <VL3><VL3> ...]

<VP><VP>: RAM Address.

<VL#><VL#>: Value(s) written.

#### • Examples

Write the value 1234 in VP 0x1000:

5A A5 05 82 1000 04D2

Write values on 4 sequential VPs, starting from VP 0x1000:

5A A5 0B 82 1000 0022 0071 0006 0031

#### Info

The address of the DGUS LCM read-write address is understood as the start address, and the maximum data length is 0xFF: For example, the effect of the following a and b instructions is equal to c, and the unit of the address is word

a: 5A A5 05 05 82 1000 000A

b: 5A A5 05 82 1002 000B

c: 5A A5 07 07 82 1000 000A 000B

### 1.2.2 Read VPs (0x83)

This Command reads one or more VPs. You can read multiple VPs at once, if they are sequential.

#### • Format

<FHH> <FHL> <BC> 83 <VP><VP> <LEN>

<VP><VP>: RAM Address.

<LEN>: Number of VPs (words) to read.

Answer from LCM:

<FHH> <FHL> <BC> 83 <VP><VP> <LEN> <VL1><VL1> [<VL2><VL2> <VL3><VL3> ...]

<VL#><VL#>: Value(s) read.

#### • Examples

Read the value in VP 0x1000:

5A A5 04 83 1000 01

Answer from LCM:

5A A5 06 83 1000 01 04D2

Read values on 4 sequential VPs, starting from VP 0x1000:

5A A5 04 83 1000 04

Answer from LCM:

5AA5 0C 83 0000 04 0022 0071 0006 0031

#### Info

The Command of "Answer from LCM" is Same format as the data format returned to the serial port after touching the touch button.