# 通信协议

写多寄存器

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 帧头 | 指令(读/写) | 寄存器地址 | 寄存器个数（长度） | 写入的数据 | 校验 |
| 示例 | 5AA5 | 92 | 0x0057 | 0x01 | n | CRC16 |
| 字节 | 2 | 1 | 2 | 1 | 2\*n | 2 |
| 偏移量 | 0 | 2 | 3 | 5 | 6—— | 最后2字节 |

返回

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 帧头 | 指令(读/写) | 寄存器地址 | 寄存器个数（长度） | 校验 |
| 示例 | 5AA5 | 92 | 0x0001 | 0x01 | CRC16 |
| 字节 | 2 | 1 | 2 | 1 | 2 |
| 偏移量 | 0 | 2 | 3 | 5 | 最后2字节 |

读多寄存器

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 帧头 | 指令(读/写) | 寄存器地址 | 寄存器个数（长度） | 校验 |
| 示例 | 5AA5 | 93 | 0x0001 | 0x01 | CRC16 |
| 字节 | 2 | 1 | 2 | 1 | 2 |
| 偏移量 | 0 | 2 | 3 | 5 | 最后2字节 |

返回

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 帧头 | 指令(读/写) | 寄存器地址 | 读寄存器数 | 读出的数据 | 校验 |
| 示例 | 5AA5 | 93 | 0x0001 | 0x01 | n | CRC16 |
| 字节 | 2 | 1 | 2 | 1 | 2\*n | 2 |
| 偏移量 | 0 | 2 | 3 | 5 | 6—— | 最后2字节 |

返回错误码

|  |  |  |  |
| --- | --- | --- | --- |
|  | 帧头 | 错误码 | 校验 |
| 示例 | 5AA5 | 0x82 | CRC16 |
| 字节 | 2 | 1 | 2 |
| 偏移量 | 0 | 2 | 最后2字节 |

错误码：0x80 功能码错误

0x81 命令长度错误

0x82 读出寄存器个数错误

0x83 寄存器地址错误

0x84 帧头错误

0x85 CRC校验错误

主动上传

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 帧头 | 指令(功能码) | 寄存器地址 | 寄存器个数 | 数据 | 校验 |
| 示例 | 5AA5 | 94 | 0x0003 | 0x08 | n | CRC16 |
| 字节 | 2 | 1 | 2 | 1 | 2\*n | 2 |
| 偏移量 | 0 | 2 | 3 | 5 | 6—— | 最后2字节 |