

4 Raman Pump Host Computer Commands

1. **Data Transmission (transmitted in hexadecimal, baud rate 9600,1 stop bit, no parity bit, 8 data bits)**

0xEF	0xEF	LEN	ADDR	DATA	SUM
------	------	-----	------	------	-----

ADDR: Data Address Bit

DATA: Sets the parameter data bit; this field can be left blank when reading parameters.

SUM: Checksum $SUM = 0xEF + 0xEF + LEN + ADDR + DATA$

LEN: DATA length + 2

2. **Data Reception (received in hexadecimal, baud rate 9600, 1 stop bit, no parity bit, 8 data bits)**

0xED	0xFA	LEN	ADDR	DATA	SUM
------	------	-----	------	------	-----

ADDR: Data Address Bit

DATA: Return Parameter

SUM: Checksum $SUM = 0xED + 0xFA + LEN + ADDR + DATA$

LEN: DATA length + 2

3. **Query Work Status (Data Address bit 0x00)**

Send command:

0xEF	0xEF	0x02	0x00	0xE0
------	------	------	------	------

Return command:

0xED	0xFA	0x22	0x00	DATA(1-32)	SUM
------	------	------	------	------------	-----

Current Read 1 = $DATA1 * 256 + DATA2$ (mA)

Current Read 2 = $DATA3 * 256 + DATA4$ (mA)

Current Read 3 = $DATA5 * 256 + DATA6$ (mA)

Current Read 4 = $DATA7 * 256 + DATA8$ (mA)

Chip Temperature 1 = $(DATA9 * 256 + DATA10) / 100$ (°C)

Chip Temperature 2 = $(DATA11 * 256 + DATA12) / 100$ (°C)

Chip Temperature 3 = $(DATA13 * 256 + DATA14) / 100$ (°C)

Chip Temperature 4 = $(DATA15 * 256 + DATA16) / 100$ (°C)

Pump Power 1 = $(DATA25 * 256 + DATA26) / 10$ (mW)

Pump Power 2 = $(DATA27 * 256 + DATA28) / 10$ (mW)

Pump Power 3 = $(DATA29 * 256 + DATA30) / 10$ (mW)

Pump Power 4 = $(DATA31 * 256 + DATA32) / 10$ (mW)

Example:

Send command: EF EF 02 00 E0

Return command: ED FA 22 00 03 E8 03 E7 03 E6 03 E5 09 C4 09 C3 09 C2 09
C1 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 13 88 13 87 13 86 13 85 43

Current Read 1 = $0x03*256+0xE8=1000(\text{mA})$

Current Read 2 = $0x03*256+0xE7=999(\text{mA})$

Current Read 3 = $0x03*256+0xE6=998(\text{mA})$

Current Read 4 = $0x03*256+0xE5=997(\text{mA})$

Chip Temperature 1 = $(0x09*256+0xC4)/100=25.00 (\text{°C})$

Chip Temperature 2 = $(0x09*256+0xC3)/100=24.99 (\text{°C})$

Chip Temperature 3 = $(0x09*256+0xC2)/100=24.88 (\text{°C})$

Chip Temperature 4 = $(0x09*256+0xC1)/100=24.87 (\text{°C})$

Pump Power 1 = $(0x13*256+0x88)/10=500.0 (\text{mW})$

Pump Power 2 = $(0x13*256+0x87)/10=499.9 (\text{mW})$

Pump Power 3 = $(0x13*256+0x86)/10=499.8 (\text{mW})$

Pump Power 4 = $(0x13*256+0x85)/10=499.7 (\text{mW})$

4. Query the Set Current (Address bit 0x07)

Send command:

0xEF	0xEF	0x02	0x07	0xE7
------	------	------	------	------

Return command:

0xED	0xFA	0x0A	0x07	DATA(1-8)	SUM
------	------	------	------	-----------	-----

Current Set 1 = $\text{DATA1}*256+\text{DATA2} (\text{mA})$

Current Set 2 = $\text{DATA3}*256+\text{DATA4} (\text{mA})$

Current Set 3 = $\text{DATA5}*256+\text{DATA6} (\text{mA})$

Current Set 4 = $\text{DATA7}*256+\text{DATA8} (\text{mA})$

Example:

Send command: EF EF 02 07 E7

Return command: ED FA 0A 07 03 E8 03 E7 03 E6 03 E5 9E

Current Set 1 = $0x03*256+0xE8=1000(\text{mA})$

Current Set 2 = $0x03*256+0xE7=999(\text{mA})$

Current Set 3 = $0x03*256+0xE6=998(\text{mA})$

Current Set 4 = $0x03*256+0xE5=997(\text{mA})$

5. Query Current Upper Limit (Address bit 0x09)

Send command:

0xEF	0xEF	0x02	0x09	0xE9
------	------	------	------	------

Return command:

0xED	0xFA	0x0A	0x09	DATA(1-8)	SUM
------	------	------	------	-----------	-----

Current Lim 1 = $\text{DATA1}*256+\text{DATA2} (\text{mA})$

Current Lim 2 = $\text{DATA3}*256+\text{DATA4} (\text{mA})$

Current Lim 3 = $\text{DATA5}*256+\text{DATA6} (\text{mA})$

Current Lim 4 = $\text{DATA7}*256+\text{DATA8} (\text{mA})$

Example:

Send command: EF EF 02 09 E9

Return command: ED FA 0A 09 03 E8 03 E7 03 E6 03 E5 A0

Current Lim 1 = $0x03*256+0xE8=1000(\text{mA})$

Current Lim 2 = $0x03*256+0xE7=999(\text{mA})$

Current Lim 3 = $0x03*256+0xE6=998(\text{mA})$

Current Lim 4 = $0x03*256+0xE5=997(\text{mA})$

6. Current Setting (Address bit 0x08)

Send command:

0xEF	0xEF	0x05	0x08	CHN	HSB	LSB	SUM
------	------	------	------	-----	-----	-----	-----

$\text{HSB}=\text{Current}/256$; $\text{LSB}=\text{Current}\%256$ 。

Return command:

0xED	0xFA	0x0A	0x07	DATA(1-8)	SUM
------	------	------	------	-----------	-----

CHN 0-3 is used to distinguish between channels 1-4.

Current Set = $\text{HSB}*256+\text{LSB}$ (mA), if the set value exceeds the upper limit, the current set value is returned.

Example:

Set the current for Channel 1 to 1000 mA, $\text{HSB}=1000/256=3=0x03$;

$\text{LSB}=1000\%256=232=0xE8$ 。

Send command: EF EF 05 08 00 03 E8 D6

Return command: ED FA 0A 07 03 E8 03 E7 03 E6 03 E5 9E

Current Set 1 = $0x03*256+0xE8=1000(\text{mA})$

Current Set 2 = $0x03*256+0xE7=999(\text{mA})$

Current Set 3 = $0x03*256+0xE6=998(\text{mA})$

Current Set 4 = $0x03*256+0xE5=997(\text{mA})$

Set the current to 1001 mA, $\text{HSB}=1000/256=0x03$; $\text{LSB}=1001\%256=0xE9$ 。

Send command: EF EF 05 08 00 03 E9 D7

Return command: ED FA 0A 07 03 E8 03 E7 03 E6 03 E5 9E (Exceeded maximum current; setting failed)