

P 2170 USB transmission function

Push the PCLINK key to start a 9600bps USB transmission active. Push the PCLINK key again to cancel the transmission. When USB output port is transmitting, a USB indication of LCD segment will be active .

When *EN_UART* pin (pin21 of ES51919) is pulled to VDD, it means the UART port is available. The packet rate is two times per second. Each transmission includes 17 bytes totally.

<i>Baud rate</i>	9600 bps
<i>Start bit</i>	1 bit
<i>Data bits</i>	8 bits
<i>Stop bit</i>	1 bit
<i>Parity</i>	No Parity

Data transmission configuration

Byte 0	Byte 1	Byte 2 - 14	Byte 15	Byte 16
00H	0DH	Data	0DH	0AH

Data format description

Byte No.	Data byte	Function
0	START	The content of start byte is 00h
1	LENGTH	The data length of transmission is 13 bytes (0Dh)
2	STATUS0	Status0 indication
3	STATUS1	Status1 indication
4	STATUS2	Status2 indication
5	MMOD	Operation mode of primary display
6	MREADH	High byte of primary display data
7	MREADL	Low byte of primary display data
8	MSCOPE	Ranging information of primary display data
9	MSTATUS	Status byte of primary display data
10	SMOD	Operation mode of secondary display
11	SREADH	High byte of secondary display data
12	SREADL	Low byte of secondary display data
13	SSCOPE	Ranging information of secondary display data
14	SSTATUS	Status byte of secondary display data
15	END0	The content of end0 byte is 0Dh
16	END1	The content of end1 byte is 0Ah

STATUS0 (Byte 2)

Bit No.	Data bit	Function
0	HOLD	Set to 1 when data hold is active
1	RELRF	Set to 1 when relative reference mode is active
2	REL	Set to 1 when relative % mode is active
3	CAL	Set to 1 when open/short calibration mode is active
4	SORT	Set to 1 when sorting mode is active
5	AUTOLCR	Set to 1 when auto LCR smart mode is active
6	AMOD	Set to 1 when auto series/parallel mode is active
7	MOD	LCR test mode: 0: in series 1: in parallel

STATUS1 (Byte 3)

Bit No.	Data bit	Function
0	Extra4	User define LCD segment
1	Extra5	User define LCD segment
2	Extra6	User define LCD segment
3	BAT0	Battery life indication: 00: Lower than 5% 01: Lower than 30% 10: Lower than 60% 11: Higher than 60%
4	BAT1	
5	FREQ0	Test frequency ranges: 000: 100Hz 001: 120Hz 010: 1kHz 011: 10kHz 100: 100kHz
6	FREQ1	
7	FREQ2	

STATUS2 (Byte 4)

Bit No.	Data bit	Function
0	SORTP0	Tolerance range at sorting mode: 0011: + 0.25% 0100: + 0.5% 0101: + 1.0% 0110: + 2.0% 0111: + 5.0% 1000: + 10.0% 1001: + 20.0% 1010: +80%/-20%
1	SORTP1	
2	SORTP2	
3	SORTP3	
4	Extra1	User define LCD segment
5	Extra2	User define LCD segment
6	Extra3	User define LCD segment
7	X	Not available

MMOD (Byte 5)

Bit No.	Data bit	Function
0	MMOD0	Primary display mode: 000: None 001: L (Inductance) mode 010: C (Capacitance) mode 101: R (Resistance) mode 100: DCR mode
1	MMOD1	
2	MMOD2	
3	X	Not available
4	X	Not available
5	X	Not available
6	X	Not available
7	X	Not available

MREADH (Byte 6) / MREADL (Byte 7)

Bit No.	Data bit	Function
0	MRL0	Primary data readings: 16-bit binary code
1		
2	MRL7	
3		
4		
5		
6		
7		
0	MRH0	
1		
2	MRH7	
3		
4		
5		
6		
7		

MSCOPE (Byte 8)

Bit No.	Data bit	Function	
0	MDOT0	Decimal point location on primary display :	
1	MDOT1		
2	MDOT2		
		000: 19999	
		001: 1999.9	
		010: 199.99	
		011: 19.999	
		100: 1.9999	
3	MUNIT0	Unit of ranging on primary display:	
4	MUNIT1		
5	MUNIT2		
6	MUNIT3		
7	MUNIT4		
			00000: None
			00001: Ω
			00010: k Ω
			00011: M Ω
			00100: None
			00101: μ H
		00110: mH	
		00111: H	
		01000: kH	
		01001: pF	
		01010: nF	
		01011: μ F	
		01100: mF	

MSTATUS (Byte 9)

Bit No.	Data bit	Function
0	MDIS0	The contents on primary display:
1	MDIS1	00000: Number
2	MDIS2	00001: Space
3	MDIS3	00010: Dash
4	MDIS4	00011: OL 00100: OFF 00101: None 00110: Err 00111: Pass 01000: Fail 01001: Open 01010: Short (Srt)
5	MDASH	Set to 1 if dash" ---- " shown on display
6	MOL	Set to 1 if OL shown on display
7	MCNT	Primary display count: 0: 20000 counts 1: 2000 count

SMOD (Byte 10)

Bit No.	Data bit	Function
0	SMOD0	Secondary display mode:
1	SMOD1	000: None
2	SMOD2	001: D (Dissipation factor) 010: Q (Quality factor) 101: ESR or Rp (Equivalent resistance) 100: θ (Phase angle)
3	X	Not available
4	X	Not available
5	X	Not available
6	X	Not available
7	X	Not available

SREADH (Byte 11) / SREADL (Byte 12)

Bit No.	Data bit	Function
0	SRL0	Secondary data readings: 16-bit binary signed code
1		
2	SRL7	
3		
4		
5		
6		
7		
0	SRH0	
1		
2	SRH7	
3		
4		
5		
6		
7		

SSCOPE (Byte 13)

Bit No.	Data bit	Function	
0	SDOT0	Decimal point location on secondary display :	
1	SDOT1		
2	SDOT2		
		000: 19999	
		001: 1999.9	
		010: 199.99	
		011: 19.999	
		100: 1.9999	
3	SUNIT0	Unit of ranging on secondary display:	
4	SUNIT1		
5	SUNIT2		
6	SUNIT3		
7	SUNIT4		
			00000: None
			00001: Ω
			00010: k Ω
			00011: M Ω
			00100: None
			00101: uH
			00110: mH
			00111: H
			01000: kH
		01001: pF	
		01010: nF	
		01011: uF	
		01100: mF	
		01101: %	
		01110: deg	

