STM32 PLC – OpenSourceLogger Protocol

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Introduction

STM32 PLC is the USB slave unit and OpenSourceLogger is the logging software.

Protocol

TX CAN Bus message OpenSourceLogger → STM32 PLC

Transmitted on GUI event:

Byte 0	Byte 1	Byte 2	to	Byte 5	Byte 6	Byte 7	to	Byte 15
Message type	IDE	ID MSB		ID LSB	DLC	Data MSB		Data LSB

Byte	**Value**	**Comment**
Message type	0x1	For STM32 PLC
IDE	0x0 or 0x4	0x0 = Standard ID, 0x4 = Extended ID
ID	0x0 to 0xFFFFFFFF	For both standard ID and extended ID
DLC	0x0 to 0x8	Length of data
Data	0x0 to 0xFF	Message data

Receive: No response back

RX CAN Bus message STM32 PLC→ OpenSourceLogger

Transmitted when STM32 PLC got a CAN message:

Byte 0	Byte 1	Byte 2	to	Byte 5	Byte 6	Byte 7	to	Byte 15
Message type	IDE	ID MSB		ID LSB	DLC	Data MSB		Data LSB

Byte	Value	Comment
Message type	0x0	For OpenSourceLogger
IDE	0x0 or 0x4	0x0 = Standard ID, 0x4 = Extended ID
ID	0x0 to 0xFFFFFFFF	For both standard ID and extended ID
DLC	0x8	Length of data.
Data	0x0 to 0xFF	Message data

Receive: No response back

Control message OpenSourceLogger → STM32 PLC

Transmitted every 1 millisecond:

Byte 0 Message type	Byte 1 PWM0 MSB	Byte 1 PWM0 LSB	Byte 2 PWM1 MSB	Byte 3 PWM1 LSB	Byte 4 PWM2 MSB	Byte 5 PWM2 LSB

Byte 6 PWM3 MSB	Byte 7 PWM3 LSB	Byte 8 PWM4 MSB	Byte 9 PWM4 LSB	Byte 10 PWM5 MSB	Byte 11 PWM5 LSB

Byte 12 PWM6 MSB	Byte 13 PWM6 LSB	Byte 14 PWM7 MSB	Byte 15 PWM7 LSB	Byte 16 AO0 MSB	Byte 17 AO0 LSB

Byte 18 AO1 MSB	Byte 19 AO1 LSB	Byte 20 AO2 MSB	Byte 21 AO2 LSB

Byte	Value	Comment
Message type	0x3	For STM32 PLC
PWMx	0x0 to 0xFFFF	16-bit PWM control period
AOx	0x0 to 0xFFF	12-bit Analog output

Receive measurements back:

Byte 0 Message type	Byte 1 DI0	Byte 1 DI1	Byte 2 DI2	Byte 3 DI3	Byte 4 DI4	Byte 5 DI5

Byte 6 DI6	Byte 7 DI7	Byte 8 DI8	Byte 9 ADC0 MSB	Byte 10 ADC0 LSB	Byte 11 ADC1 MSB	Byte 12 ADC1 LSB

Byte 13	Byte 14	Byte 15	Byte 16	Byte 17	Byte 18	Byte 19

ADC2 MSB	ADC2 LSB	ADC3 MSB	ADC3 LSB	ADC4 MSB	ADC4 LSB	ADC5 MSB

Byte 20 ADC5 LSB	Byte 21 ADC6 MSB	Byte 22 ADC6 LSB	Byte 23 ADC7 MSB	Byte 24 ADC7 LSB	Byte 25 ADC8 MSB	Byte 26 ADC8 LSB

Byte 27 ADC9 MSB	Byte 28 ADC9 LSB	Byte 29 ADC10 MSB	Byte 30 ADC10 LSB	Byte 31 ADC11 MSB	Byte 32 ADC11 LSB	Byte 33 DADC0 MSB

Byte 34 DADC0 LSB	Byte 35 DADC1 MSB	Byte 36 DADC1 LSB	Byte 37 DADC2 MSB	Byte 38 DADC2 LSB	Byte 39 DADC3 MSB	Byte 40 DADC3 LSB

Byte 41 DADC4 MSB	Byte 42 DADC4 LSB	Byte 43 ENCODER 0 MSB	Byte 44 ENCODER0 LSB	Byte 45 ENCODER 1 MSB	Byte 46 ENCODER1 LSB	Byte 47 IC0 MSB

Byte 48 IC0 LSB	Byte 49 IC1 MSB	Byte 50 IC1 LSB				

Byte	**Value**	**Comment**
Message type	0x2	For OpenSourceLogger
ADCx	0x0 to 0xFFFF	16-bit ADC measurement
DADCx	0x0 to 0xFFFF	16-bit Differential ADC measurement
ENCODERx	0x0 to 0xFFFF	16-bit Encoder measurement
ICx	0x0 to 0xFFFF	16-bit Input Capture measurement

PWM prescaler set OpenSourceLogger → STM32 PLC

Transmitted on GUI event:

Byte 0 Message type	Byte 1 Peripherial	Byte 1 Prescaler MSB	Byte 2 Prescaler LSB

Receive: No response back

Byte	**Value**	**Comment**
Message type	0x5	For STM32 PLC
Peripherial	0x0 or 0x1	0x0 = PWM 0 to 3, 0x1 = PWM 4 to 7
Prescaler	0x0 to 0xFFFF	16-bit PWM prescaler

Sigma Delta ADC gain set OpenSourceLogger → STM32 PLC

Transmitted on GUI event:

Byte 0 Message type	Byte 1 SDADC	Byte 1 Configuration index	Byte 2 Gain

Receive: No response back

Byte	**Value**	**Comment**
Message type	0x4	For STM32 PLC
SDADC	0x1, 0x2 or 0x3	What type of Sigma Delta peripheral
Configuration index	0x0 to 0x2	Type of configuration index for Sigma Delta
Gain	0x0 to 0x7	Type of gain

Sigma Delta ADC gains request OpenSourceLogger → STM32 PLC

Transmitted on GUI event:

Byte 0 Message type	Byte 1 SDADC

Byte	**Value**	**Comment**
Message type	0x7	For STM32 PLC
SDADC	0x1, 0x2 or 0x3	What type of Sigma Delta peripheral

Receive three gains:

Byte 0 Message type	Byte 1 Gain 0	Byte 2 Gain 1	Byte 3 Gain 2

Byte	**Value**	**Comment**
Message type	0x7	For OpenSourceLogger
Gain 0	0x0 to 0x7	Gain for configuration index 0
Gain 1	0x0 to 0x7	Gain for configuration index 1
Gain 2	0x0 to 0x7	Gain for configuration index 2

PWM prescalers request OpenSourceLogger → STM32 PLC

Transmitted on GUI event:

Byte 0

Message type

Byte	**Value**	**Comment**
Message type	0x6	For STM32 PLC

Receive two prescalers:

Byte 0 Message type	Byte 1 Prescaler 0	Byte 2 Prescaler 1

Byte	**Value**	**Comment**
Message type	0x6	For OpenSourceLogger
Prescaler 0	0x0 to 0xFFFF	Prescaler for PWM 0 to PWM 3
Gain 1	0x0 to 0xFFFF	Prescaler for PWM 4 to PWM 7