

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

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

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

Byte 18	Byte 19	Byte 20	Byte 21
AO1 MSB	AO1 LSB	AO2 MSB	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	Byte 1	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Message type	DI0	DI1	DI2	DI3	DI4	DI5

Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11	Byte 12	Byte 13
DI6	DI7	DI8	DI9	ADC0 MSB	ADC0 LSB	ADC1 MSB	ADC1 LSB

Byte 14 ADC2 MSB	Byte 15 ADC2 LSB	Byte 16 ADC3 MSB	Byte 17 ADC3 LSB	Byte 18 ADC4 MSB	Byte 19 ADC4 LSB	Byte 20 ADC5 MSB
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Byte 21 ADC5 LSB	Byte 22 ADC6 MSB	Byte 23 ADC6 LSB	Byte 24 ADC7 MSB	Byte 25 ADC7 LSB	Byte 26 ADC8 MSB	Byte 27 ADC8 LSB
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Byte 28 ADC9 MSB	Byte 29 ADC9 LSB	Byte 30 ADC10 MSB	Byte 31 ADC10 LSB	Byte 32 ADC11 MSB	Byte 33 ADC11 LSB	Byte 34 DADC0 MSB
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Byte 35 DADC0 LSB	Byte 36 DADC1 MSB	Byte 37 DADC1 LSB	Byte 38 DADC2 MSB	Byte 39 DADC2 LSB	Byte 40 DADC3 MSB	Byte 41 DADC3 LSB
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Byte 42 DADC4 MSB	Byte 43 DADC4 LSB	Byte 44 ENCODER0 MSB	Byte 45 ENCODER0 LSB	Byte 46 ENCODER1 MSB	Byte 47 ENCODER1 LSB	Byte 48 ENCODER2 MSB
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Byte 49 ENCODER2 LSB	Byte 50 IC0 MSB	Byte 51 IC0 LSB	Byte 52 IC1 MSB	Byte 53 IC1 LSB	Byte 54 IC2 MSB	Byte 55 IC2 LSB	Byte 56 IC2 MSB	Byte 57 IC2 LSB
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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

## 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
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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	Byte 1
Message type	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	Byte 1	Byte 2	Byte 3
Message type	Gain 0	Gain 1	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 prescaler set OpenSourceLogger → STM32 PLC

Transmitted on GUI event:

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

Receive: No response back

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

## 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	Byte 1	Byte 2
Message type	Prescaler 0	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

## Date time set OpenSourceLogger → STM32 PLC

Transmitted on GUI event:

Byte 0	Byte 1	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Message type	year	month	date	week day	hour	minute

Receive: No response back

Byte	Value	Comment
Message type	0x8	For STM32PLC
year	0x0 to 0x63	Year for RTC
month	0x1 to 0xC	Month for RTC
date	0x1 to 0x1F	Date for RTC
week day	0x1 to 0x7	Week day for RTC
hour	0x0 to 0x17	Hour for RTC
minute	0x0 to 0x3B	Minute for RTC

## Date time request OpenSourceLogger → STM32 PLC

Transmitted on GUI event:

Byte 0
Message type

Byte	Value	Comment
Message type	0x9	For STM32 PLC

Receive date time back:

Byte 0	Byte 1	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Message type	year	month	date	week day	hour	minute

Byte	Value	Comment
Message type	0x9	For OpenSourceLogger
year	0x0 to 0x63	Year for RTC
month	0x1 to 0xC	Month for RTC
date	0x1 to 0x1F	Date for RTC
week day	0x1 to 0x7	Week day for RTC
hour	0x0 to 0x17	Hour for RTC
minute	0x0 to 0x3B	Minute for RTC

## Alarm A set OpenSourceLogger → STM32 PLC

Transmitted on GUI event:

Byte 0	Byte 1	Byte 1	Byte 2	Byte 3
Message type	date	hour	minute	enable

Receive: No response back

Byte	Value	Comment
Message type	0xA	For STM32PLC
date	0x1 to 0x1F	Date for RTC
hour	0x0 to 0x17	Hour for RTC
minute	0x0 to 0x3B	Minute for RTC
enable	0x0 to 0x1	Enable alarm A

## Alarm A request OpenSourceLogger → STM32 PLC

Transmitted on GUI event:

Byte 0
Message type

Byte	Value	Comment
Message type	0xB	For STM32 PLC

Receive date time back:

Byte 0	Byte 1	Byte 1	Byte 2	Byte 3	Byte 4
Message type	date	hour	minute	enabled	activated

Byte	Value	Comment
Message type	0xB	For OpenSourceLogger
date	0x1 to 0x1F	Date for RTC
hour	0x0 to 0x17	Hour for RTC
minute	0x0 to 0x3B	Minute for RTC
enabled	0x0 to 0x1	Enabled for RTC
activated	0x0 to 0x1	Active for RTC

## Alarm B set OpenSourceLogger → STM32 PLC

Transmitted on GUI event:

Byte 0	Byte 1	Byte 1	Byte 2	Byte 3
Message type	Week day	hour	minute	enable

Receive: No response back

Byte	Value	Comment
Message type	0xC	For STM32PLC
week day	0x1 to 0x7	Week day for RTC
hour	0x0 to 0x17	Hour for RTC
minute	0x0 to 0x3B	Minute for RTC
enable	0x0 to 0x1	Enable alarm B

## Alarm B request OpenSourceLogger → STM32 PLC

Transmitted on GUI event:

Byte 0
Message type

Byte	Value	Comment
Message type	0xD	For STM32 PLC

Receive date time back:

Byte 0	Byte 1	Byte 1	Byte 2	Byte 3	Byte 4
Message type	week day	hour	minute	enabled	activated

Byte	Value	Comment
Message type	0xD	For OpenSourceLogger
week day	0x1 to 0x7	Date for RTC
hour	0x0 to 0x17	Hour for RTC
minute	0x0 to 0x3B	Minute for RTC
enabled	0x0 to 0x1	Enabled for RTC
activated	0x0 to 0x1	Active for RTC