

# XOMRON Driver Manual

Omron Sysmac C20H/C28H/C40H Protocol Driver

**OMRON**

SYSMAC C20H  
SYSMAC C28H  
SYSMAC C40H  
SYSMAC C60H



## CPKSoft Engineering

### Process Monitoring and Industrial Automation Software

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# 1. Introduction

CPKSoft Engineering assumes no responsibility for any errors that may appear in this document. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

This driver is included with all unlimited licenses of TAS-HMITalk. It is not sold separately. It requires the TAS-HMITalk ActiveX to work, therefore it cannot be used as a stand-alone driver.

If you use this driver in your applications, you need to include the `xomron.tlk` in the set of files that you distribute. This file must be located in the same folder where the `hmitalk.ocx` file is registered in order to be found by the activex when the applications are executed.

The source-code for the `xomron.tlk` driver is available in plain-C language for additional USD 299 if you own a license of TAS-HMITalk 8.04 or higher.

Refer to the following link to visit the `xomron` driver page at CPKSoft Engineering website: <http://www.cpksoft.com/tabid/55/ProductID/74/PageIndex/1/Default.aspx>.

Visit this link if you want to see a complete list of drivers that are currently available for TAS-HMITak: <http://www.cpksoft.com/Drivers/tabid/55/Default.aspx>.

Also, refer to this link if you are interested in purchasing a license of the most recent version of TAS-HMITalk: <http://www.cpksoft.com/Products/tabid/54/Default.aspx>.

We welcome your comments about this document. You can reach us by e-mail at [contact @ cpksoft.com](mailto:contact@cpksoft.com).

## 2. Driver details

### 2.1. Driver overview

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XOMRON allows you to connect to the OMRON programmable controllers which use the Host Link System communications protocol for the models SYSMAC C20H, C28H, C40H and C60H.

### 2.2. Supported devices

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This driver can communicate with these devices, but is not necessarily limited to this list:

- OMRON PLC model SYSMAC C20H
- OMRON PLC model SYSMAC C28H
- OMRON PLC model SYSMAC C40H
- OMRON PLC model SYSMAC C60H
- OMRON PLC model CPM1A
- OMRON PLC model SRM1
- OMRON PLC model CQM1
- OMRON PLC model C200HX/G/E
- OMRON PLC model CVM1/CPU01
- OMRON PLC model CVM1/CPU11
- OMRON PLC model CVM1/CPU21
- OMRON Panel Indicator K3TS

## 3. Command list

### 3.1. IR Area Read

---

**Description of this command:**

Reads the contents of the specified number of IR words.

**Type of data handled by this command:**

Analog Input / Digital Input

**Number of points accepted by this command:**

1-250

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

0

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the address of data to be read.

### 3.2. HR Area Read

---

**Description of this command:**

Reads the contents of the specified number of HR words.

**Type of data handled by this command:**

Analog Input / Digital Input

**Number of points accepted by this command:**

1-250

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

1

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the address of data to be read.

### 3.3. RJ Area Read

---

**Description of this command:**

Reads the contents of the specified number of RJ words.

**Type of data handled by this command:**

Analog Input / Digital Input

**Number of points accepted by this command:**

1-250

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

2

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the address of data to be read.

### 3.4. RL Area Read

---

**Description of this command:**

Reads the contents of the specified number of RL words.

**Type of data handled by this command:**

Analog Input / Digital Input

**Number of points accepted by this command:**

1-250

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

3

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the address of data to be read.

## 3.5. RD Area Read

---

**Description of this command:**

Reads the contents of the specified number of RD words.

**Type of data handled by this command:**

Analog Input / Digital Input

**Number of points accepted by this command:**

1-250

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

4

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the address of data to be read.

## 3.6. RC Area Read

---

**Description of this command:**

Reads the contents of the specified number of RC words.

**Type of data handled by this command:**

Analog Input / Digital Input

**Number of points accepted by this command:**

1-250

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

5

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the address of data to be read.

## 3.7. SV Read 1

---

**Description of this command:**

Reads the contents of the specified number of SV 1 words.

**Type of data handled by this command:**

Analog Input / Digital Input

**Number of points accepted by this command:**

Analog Input:1 DI:1-16

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

6

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the TC type.

- 0 = For TIM
- 1 = For TIMH
- 2 = For CNT
- 3 = For CNTR

**Meaning of the DriverP4 parameter:**

Number (0 to 47).

## 3.8. TC Status Read

---

**Description of this command:**

Reads the contents of the specified number of TC Status.

**Type of data handled by this command:**

Analog Input

**Number of points accepted by this command:**

1-250

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

7

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the address of data to be read.

### 3.9. IR Area Write

---

**Description of this command:**

Writes the contents of the specified number of IR words.

**Type of data handled by this command:**

Analog Output / Digital Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

10

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the address of data to be written.

### 3.10. HR Area Write

---

**Description of this command:**

Writes the contents of the specified number of HR words.

**Type of data handled by this command:**

Analog Output / Digital Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

11

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the address of data to be written.

## 3.11. AR Area Write

---

**Description of this command:**

Writes the contents of the specified number of AR words.

**Type of data handled by this command:**

Analog Output / Digital Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

12

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the address of data to be written.

## 3.12. LR Area Write

---

**Description of this command:**

Writes the contents of the specified number of LR words.

**Type of data handled by this command:**

Analog Output / Digital Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

13

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the address of data to be written.

### 3.13. DM Area Write

---

**Description of this command:**

Writes the contents of the specified number of DM words.

**Type of data handled by this command:**

Analog Output / Digital Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

14

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the address of data to be written.

## 3.14. PV Write

---

**Description of this command:**

Writes the contents of the specified number of PV words.

**Type of data handled by this command:**

Analog Output / Digital Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

15

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the address of data to be written.

## 3.15. SV Change 1

---

**Description of this command:**

Writes the contents of the specified number of SV Change 1.

**Type of data handled by this command:**

Analog Output / Digital Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

16

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the TC type.

- 0 = For TIM
- 1 = For TIMH
- 2 = For CNT
- 3 = For CNTR

**Meaning of the DriverP4 parameter:**

Number (0 to 511).

## 3.16. TC Status Write

---

**Description of this command:**

Writes the contents of the specified number of TC status.

**Type of data handled by this command:**

Analog Output / Digital Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

17

**Meaning of the DriverP2 parameter:**

Indicates the type of read.

- 0 = Reads information in word mode. In the event of using it from DI, it will return 1 if the value is higher than 0 and 0 is less than or equal to 0.
- 1..16 = Number of bit (0-15) wherefrom the value returned by the PLC is read. For the case of outputs, indicates the number of bit to be modified. It will write 1 if the value to be written is higher than 0 and 0 if less than or equal to 0.

**Meaning of the DriverP3 parameter:**

Defines the address of data to be written.

## 3.17. K3TS Read Set Value

---

**Description of this command:**

Reads the set value information from K3TS.

**Type of data handled by this command:**

Analog Input

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

20

**Meaning of the DriverP2 parameter:**

Defines the element to read.

- 0 = For LL set value data.
- 1 = For L set value data.
- 2 = For H set value data.
- 3 = For HH set value data.

## 3.18. K3TS Read Hold Data

---

**Description of this command:**

Reads the contents of the hold data.

**Type of data handled by this command:**

Analog Input / Digital Input

**Number of points accepted by this command:**

1-2

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

21

**Meaning of the DriverP2 parameter:**

Indicates the element to read.

- 0 = For maximum hold value.
- 1 = For minimum hold value.

**Values that are returned:**

- Value in PointValue (0) = Requested Value.
- Value in PointValue (1) = Status Data
  - 1 = For Overflow.
  - 2 = For Underflow.
  - 4 = For Sensor failure.
  - 8 = For Zero-shift.
  - 16 = For Hold input now ON.
  - 32 = For Bank 1.
  - 64 = For Bank 2.
  - 128 = For Bank 4.

## 3.19. K3TS Read Display Value (PV)

---

**Description of this command:**

Reads the contents of the display value.

**Type of data handled by this command:**

Analog Input / Digital Input

**Number of points accepted by this command:**

1-2

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

22

**Values that are returned:**

- Value in PointValue (0) = Requested Value.
- Value in PointValue (1) = Status Data
  - 1 (bit 0) = For Overflow.
  - 2 (bit 1) = For Underflow.
  - 4 (bit 2) = For Sensor failure.
  - 8 (bit 3) = For Forced zero.
  - 16 (bit 4) = For Hold mode.
  - 32 (bit 5) = For Bank 1.
  - 64 (bit 6) = For Bank 2.
  - 128 (bit 7) = For Bank 4.
  - 256 (bit 8) = For LL comparative output.
  - 512 (bit 9) = For L comparative output.
  - 1024 (bit 10) = For H comparative output.
  - 2048 (bit 11) = For HH comparative output.
  - 4096 (bit 12) = For PASS output.

- 8192 (bit 13) = For In test mode.

## 3.20. K3TS Write Set Value

---

**Description of this command:**

Writes the set value.

**Type of data handled by this command:**

Analog Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

Identifies the controller's station number (00-31).

**Meaning of the DriverP1 parameter:**

30

**Meaning of the DriverP2 parameter:**

Indicates the element to write.

- 0 = For LL set value data.
- 1 = For L set value data.
- 2 = For H set value data.
- 3 = For HH set value data.

## 4. Appendices

### 4.1. Error messages

The following list shows all the possible error messages that can be returned by the protocol driver during a failed communication in the 'DriverStatus' property.

This list does not include some error messages that can be returned by the activex component while attempting to establish a connection.

- [1005] DRIVER (Internal): Invalid driver stage
- [1300] PROTOCOL (Timeout): No answer
- [1433] PROTOCOL (Format): Validation error in device response
- [2147] CONFIG (NumValues): Only one value can be read or written
- [2189] CONFIG (NumValues): Too many values (max=16)
- [2194] CONFIG (NumValues): Too many values (max=2)
- [3007] CONFIG (P0): Invalid device address
- [3508] CONFIG (P1): Invalid command
- [4072] CONFIG (P2): Invalid mode
- [4074] CONFIG (P2): Invalid mode (0-3)
- [4115] CONFIG (P2): Invalid type (0-2)
- [4116] CONFIG (P2): Invalid type (0-3)
- [4573] CONFIG (P3): Invalid TC type (0-3)
- [5018] CONFIG (P4): Invalid number (0-47)
- [5019] CONFIG (P4): Invalid number (0-511)
- [8004] CONFIG (Remote): Aborted due to entry number data error in transmit data
- [8005] CONFIG (Remote): Aborted due to format error in transmit data
- [8006] CONFIG (Remote): Aborted due to frame length error in transmit data
- [8007] CONFIG (Remote): Aborted due to framing error in transmit data
- [8008] CONFIG (Remote): Aborted due to overrun in transmit data
- [8009] CONFIG (Remote): Aborted due to parity error in transmit data
- [8021] CONFIG (Remote): Address over (data overflow)
- [8114] CONFIG (Remote): Entry number data error
- [8144] CONFIG (Remote): Format error (parameter length error)
- [8146] CONFIG (Remote): Frame checksum error (FCS)
- [8148] CONFIG (Remote): Frame length error
- [8150] CONFIG (Remote): Framing Error
- [8186] CONFIG (Remote): Instruction not found
- [8224] CONFIG (Remote): No memory unit mounted
- [8231] CONFIG (Remote): Not executable
- [8232] CONFIG (Remote): Not executable in MONITOR mode
- [8233] CONFIG (Remote): Not executable in PROGRAM mode
- [8234] CONFIG (Remote): Not executable in RUN mode
- [8235] CONFIG (Remote): Not executable with PROM mounted
- [8256] CONFIG (Remote): Overrun error
- [8259] CONFIG (Remote): Parity error

- [8270] CONFIG (Remote): Probably produced by noise
- [8359] CONFIG (Remote): User memory is write protected

## 4.2. Keywords list

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The following list shows a set of words directly related to this driver.

"C200HX/G/E, C20H, C28H, C40H, C60H, CPM1A, CPU01, CPU11, CPU21, CQM1, CVM1, Indicator, K3TS, model, OMRON, Panel, PLC, SRM1, SYSMAC".