

# XCOOPER Driver Manual

Cooper Power Systems Apparatus Controls Driver

 **COOPER** Power Systems

**Form 4C**  
**Microprocessor-Based**  
**Recloser Control**



## CPKSoft Engineering

### Process Monitoring and Industrial Automation Software

Copyright 1990-2008, CPKSoft Engineering. All rights reserved.

# Index

<b>1.</b>	<b>Introduction</b>	<b>3</b>
<b>2.</b>	<b>Driver details</b>	<b>4</b>
2.1.	Driver overview .....	4
2.2.	Supported devices.....	4
<b>3.</b>	<b>Command list</b>	<b>5</b>
3.1.	Read 16-Bit Signed Analog Data .....	5
3.2.	Read 16-Bit Pulse Accumulator Data.....	5
3.3.	Read Simple Status Data .....	6
3.4.	Read All Data .....	7
3.5.	Perform Operation - Trip & Lockout (SBO0/0h) .....	9
3.6.	Perform Operation - Trip (SBO1/1h) .....	10
3.7.	Perform Operation - Close (SBO2/2h) .....	10
3.8.	Alternate Minimum Trip - On/Off (SBO3/3h) .....	11
3.9.	Ground Trip Block - On/Off (SBO4/4h) .....	11
3.10.	Non-Reclose - On/Off (SBO5/5h) .....	12
3.11.	Power-down - On/Off (SBO6/6h) .....	12
3.12.	Sequence Co-ordination - On/Off (SBO7/7h) .....	13
3.13.	Target Reset on Successful Reclose - On/Off (SBO8/8h) .....	14
3.14.	Operation Counter - On/Off (SBO9/9h) .....	14
3.15.	Event Recorder - On/Off (SBO10/10h) .....	15
3.16.	Interrupter Duty - On/Off (SBO11/11h) .....	15
3.17.	Complex TCC #1, Phase - On/Off (SBO12/Ch).....	16
3.18.	Complex TCC #2, Ground - On/Off (SBO13/Dh) .....	16
3.19.	Complex TCC #3, Phase - On/Off (SBO14/Eh).....	17
3.20.	Complex TCC #4, Ground - On/Off (SBO15/Fh) .....	17
3.21.	High Current Trip - On/Off (SBO16/10h).....	18
3.22.	High Current Trip Ground - On/Off (SBO17/11h).....	18
3.23.	High Current Lockout - On/Off (SBO18/12h) .....	19
3.24.	High Current Lockout Ground - On/Off (SBO19/13h) .....	20
3.25.	Reset Target Status Indicators (SBO20/14h).....	20
3.26.	Reset Malfunction Status Indicators (SBO21/15h) .....	21
3.27.	Reset Accessory Operation Status Indicators (SBO22/16h).....	21
3.28.	Ground Trip Precedence - On/Off (SBO23/17h).....	22
3.29.	Superv. via Mom. Contact - On/Off (SBO24/18h).....	22
3.30.	SGF - On/Off (SBO25/19h) .....	23
3.31.	Operate .....	23
3.32.	Reset Select .....	24
<b>4.</b>	<b>Appendices</b>	<b>26</b>
4.1.	Error messages .....	26
4.2.	Keywords list.....	26

# 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 xcooper.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 xcooper.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 xcooper driver page at CPKSoft Engineering website: <http://www.cpksoft.com/tabid/55/ProductID/21/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

---

XCOOPER driver allows you to connect to Cooper Power Systems Apparatus Controls devices, according to the Cooper Digital Communications Protocol (R280-90-12), Data 2179, Revision 1 and the Cooper Communications Point Data Base (R280-90-11), Data 2180, Revision 1.

### 2.2. Supported devices

---

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

COOPER POWER SYSTEMS Form-4C Recloser Control  
COOPER POWER SYSTEMS CL-4C Regulator Control  
COOPER POWER SYSTEMS LTC-4C Power Transformer Control

## 3. Command list

### 3.1. Read 16-Bit Signed Analog Data

---

**Description of this command:**

In response to this function, the Cooper device will return all analog data as 16-bit signed integers.

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

Analog Input

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

1-11

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046)

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0

**Meaning of the DriverP2 parameter:**

1

**Values that are returned:**

Value in PointValue (0) = Examine Instan. RMS Current GND

Value in PointValue (1) = Examine Instan. RMS Current 1-2

Value in PointValue (2) = Examine Instan. RMS Current 3-4

Value in PointValue (3) = Examine Instan. RMS Current 5-6

Value in PointValue (4) = Examine Therm. Demand GND

Value in PointValue (5) = Examine Therm. Demand 1-2

Value in PointValue (6) = Examine Therm. Demand 3-4

Value in PointValue (7) = Examine Therm. Demand 5-6

Value in PointValue (8) = Calibration reference fixed at +29491 (90% of full scale)

Value in PointValue (9) = Calibration reference fixed at zero

Value in PointValue (10) = Sequence Position

### 3.2. Read 16-Bit Pulse Accumulator Data

---

**Description of this command:**

In response to this function, the Cooper device will return all pulse accumulator data as 16-bit signed integers.

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

Analog Input

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

1-6

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046)

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0

**Meaning of the DriverP2 parameter:**

2

**Values that are returned:**

Value in PointValue (0) = Ground Target Counter  
Value in PointValue (1) = Phase 1-2 Target Counter  
Value in PointValue (2) = Phase 3-4 Target Counter  
Value in PointValue (3) = Phase 5-6 Target Counter  
Value in PointValue (4) = Operation Counter  
Value in PointValue (5) = SGF Target Counter

### 3.3. Read Simple Status Data

---

**Description of this command:**

In response to this function, the Cooper device will return all simple status data as 0=Off or 1=On values.

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

Digital Input

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

1-44

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046)

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0

**Meaning of the DriverP2 parameter:**

3

**Values that are returned:**

Value in PointValue (0) = Tripped  
Value in PointValue (1) = Lockout  
Value in PointValue (2) = Malfunction  
Value in PointValue (3) = Battery Not OK  
Value in PointValue (4) = Closed  
Value in PointValue (5) = Above Minimum Trip

Value in PointValue (6) = Accessory Operation  
Value in PointValue (7) = AC OK  
Value in PointValue (8) = Supervisory On  
Value in PointValue (9) = Power Status OK  
Value in PointValue (10) = Alternate Minimum Trip  
Value in PointValue (11) = Ground Trip Block  
Value in PointValue (12) = Non-Reclose  
Value in PointValue (13) = Event Data Available (remote)  
Value in PointValue (14) = SGF Active/Available  
Value in PointValue (15) = Power-down  
Value in PointValue (16) = Sequence Co-ordination  
Value in PointValue (17) = Target reset on Reclose  
Value in PointValue (18) = Trip Counter on/off  
Value in PointValue (19) = Event Recorder on/off  
Value in PointValue (20) = Interrupter Monitor on/off  
Value in PointValue (21) = Phase Complex TCC 1 on/off  
Value in PointValue (22) = Ground Complex TCC 1 on/off  
Value in PointValue (23) = Phase Complex TCC 2 on/off  
Value in PointValue (24) = Ground Complex TCC 2 on/off  
Value in PointValue (25) = Phase High Current Trip on/off  
Value in PointValue (26) = Ground High Current Trip on/off  
Value in PointValue (27) = Phase High Current Lockout on/off  
Value in PointValue (28) = Ground High Current Lockout on/off  
Value in PointValue (29) = Ground Trip Precedence on/off  
Value in PointValue (30) = Momentary Relay Operation on/off  
Value in PointValue (31) = Target Recorder: Ground  
Value in PointValue (32) = Target Recorder: Phase A  
Value in PointValue (33) = Target Recorder: Phase B  
Value in PointValue (34) = Target Recorder: Phase C  
Value in PointValue (35) = Target Recorder: SGF  
Value in PointValue (36) = Accessory Op.: High Current Lockout  
Value in PointValue (37) = Accessory Op.: Remote Trip & Lockout  
Value in PointValue (38) = Accessory Op.: Sup. Trip & Lockout  
Value in PointValue (39) = Malfunction: Failed to close on remote  
Value in PointValue (40) = Malfunction: Low battery voltage  
Value in PointValue (41) = Malfunction: Power down in less than programmed time  
Value in PointValue (42) = Malfunction: Defective data in EPROM  
Value in PointValue (43) = Combined Internal: SGF on/off

### 3.4. Read All Data

---

#### **Description of this command:**

In response to this function, the Cooper device will

*return all data following this order:*

- 1) analog data as 16-bit signed integers (11 points)
- 2) pulse accumulator data as 16-bit signed integers (6 points)
- 3) simple status data as 0=Off or 1=On values (44 points)

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

Analog Input

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

1-61

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046)

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0

**Meaning of the DriverP2 parameter:**

4

**Values that are returned:**

Value in PointValue (0) = Examine Instan. RMS Current GND  
Value in PointValue (1) = Examine Instan. RMS Current 1-2  
Value in PointValue (2) = Examine Instan. RMS Current 3-4  
Value in PointValue (3) = Examine Instan. RMS Current 5-6  
Value in PointValue (4) = Examine Therm. Demand GND  
Value in PointValue (5) = Examine Therm. Demand 1-2  
Value in PointValue (6) = Examine Therm. Demand 3-4  
Value in PointValue (7) = Examine Therm. Demand 5-6  
Value in PointValue (8) = Calibration reference fixed at +29491 (90% of full scale)  
Value in PointValue (9) = Calibration reference fixed at zero  
Value in PointValue (10) = Sequence Position  
Value in PointValue (11) = Ground Target Counter  
Value in PointValue (12) = Phase 1-2 Target Counter  
Value in PointValue (13) = Phase 3-4 Target Counter  
Value in PointValue (14) = Phase 5-6 Target Counter  
Value in PointValue (15) = Operation Counter  
Value in PointValue (16) = SGF Target Counter  
Value in PointValue (17) = Tripped  
Value in PointValue (18) = Lockout  
Value in PointValue (19) = Malfunction  
Value in PointValue (20) = Battery Not OK  
Value in PointValue (21) = Closed  
Value in PointValue (22) = Above Minimum Trip  
Value in PointValue (23) = Accessory Operation  
Value in PointValue (24) = AC OK  
Value in PointValue (25) = Supervisory On  
Value in PointValue (26) = Power Status OK  
Value in PointValue (27) = Alternate Minimum Trip  
Value in PointValue (28) = Ground Trip Block  
Value in PointValue (29) = Non-Reclose  
Value in PointValue (30) = Event Data Available (remote)  
Value in PointValue (31) = SGF Active/Available  
Value in PointValue (32) = Power-down

Value in PointValue (33) = Sequence Co-ordination  
Value in PointValue (34) = Target reset on Reclose  
Value in PointValue (35) = Trip Counter on/off  
Value in PointValue (36) = Event Recorder on/off  
Value in PointValue (37) = Interrupter Monitor on/off  
Value in PointValue (38) = Phase Complex TCC 1 on/off  
Value in PointValue (39) = Ground Complex TCC 1 on/off  
Value in PointValue (40) = Phase Complex TCC 2 on/off  
Value in PointValue (41) = Ground Complex TCC 2 on/off  
Value in PointValue (42) = Phase High Current Trip on/off  
Value in PointValue (43) = Ground High Current Trip on/off  
Value in PointValue (44) = Phase High Current Lockout on/off  
Value in PointValue (45) = Ground High Current Lockout on/off  
Value in PointValue (46) = Ground Trip Precedence on/off  
Value in PointValue (47) = Momentary Relay Operation on/off  
Value in PointValue (48) = Target Recorder: Ground  
Value in PointValue (49) = Target Recorder: Phase A  
Value in PointValue (50) = Target Recorder: Phase B  
Value in PointValue (51) = Target Recorder: Phase C  
Value in PointValue (52) = Target Recorder: SGF  
Value in PointValue (53) = Accessory Op.: High Current Lockout  
Value in PointValue (54) = Accessory Op.: Remote Trip & Lockout  
Value in PointValue (55) = Accessory Op.: Sup. Trip & Lockout  
Value in PointValue (56) = Malfulction: Failed to close on remote  
Value in PointValue (57) = Malfulction: Low battery voltage  
Value in PointValue (58) = Malfulction: Power down in less than programmed time  
Value in PointValue (59) = Malfulction: Defective data in EPROM  
Value in PointValue (60) = Combined Internal: SGF on/off

### **3.5. Perform Operation - Trip & Lockout (SBO0/0h)**

---

#### **Description of this command:**

In response to this function, the Cooper device will perform lockout of control. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

#### **Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

#### **Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

0

**Values that are sent:**

Value in PointValue (0) = SBO0 status (0=Off/1=On)

## 3.6. Perform Operation - Trip (SBO1/1h)

---

**Description of this command:**

In response to this function, the Cooper device will perform trip of control. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

1

**Values that are sent:**

Value in PointValue (0) = SBO1 status (0=Off/1=On)

## 3.7. Perform Operation - Close (SBO2/2h)

---

**Description of this command:**

In response to this function, the Cooper device will perform close of control. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

2

**Values that are sent:**

Value in PointValue (0) = SBO2 status (0=Off/1=On)

### 3.8. Alternate Minimum Trip - On/Off (SBO3/3h)

---

**Description of this command:**

Sets the 'Alternate Minimum Trip' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

3

**Values that are sent:**

Value in PointValue (0) = SBO3 status (0=Off/1=On)

### 3.9. Ground Trip Block - On/Off (SBO4/4h)

---

**Description of this command:**

Sets the 'Ground Trip Block' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

4

**Values that are sent:**

Value in PointValue (0) = SBO4 status (0=Off/1=On)

### 3.10. Non-Reclose - On/Off (SBO5/5h)

---

**Description of this command:**

Sets the 'Non-Reclose' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

5

**Values that are sent:**

Value in PointValue (0) = SBO5 status (0=Off/1=On)

### 3.11. Power-down - On/Off (SBO6/6h)

---

**Description of this command:**

Sets the 'Power-down' parameter. Used when control has station battery backup rather than internal backup. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

6

**Values that are sent:**

Value in PointValue (0) = SBO6 status (0=Off/1=On)

---

## 3.12. Sequence Co-ordination - On/Off (SBO7/7h)

---

**Description of this command:**

Sets the 'Sequence Co-ordination' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

7

**Values that are sent:**

Value in PointValue (0) = SBO7 status (0=Off/1=On)

### 3.13. Target Reset on Successful Reclose - On/Off (SBO8/8h)

---

**Description of this command:**

Sets the 'Target Reset on Successful Reclose' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

8

**Values that are sent:**

Value in PointValue (0) = SBO8 status (0=Off/1=On)

### 3.14. Operation Counter - On/Off (SBO9/9h)

---

**Description of this command:**

Sets the 'Operation Counter' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

9

**Values that are sent:**

Value in PointValue (0) = SBO9 status (0=Off/1=On)

### 3.15. Event Recorder - On/Off (SBO10/Ah)

---

**Description of this command:**

Sets the 'Event Recorder' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

10

**Values that are sent:**

Value in PointValue (0) = SBO10 status (0=Off/1=On)

### 3.16. Interrupter Duty - On/Off (SBO11/Bh)

---

**Description of this command:**

Sets the 'Interrupter Duty' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

11

**Values that are sent:**

Value in PointValue (0) = SBO11 status (0=Off/1=On)

### 3.17. Complex TCC #1, Phase - On/Off (SBO12/Ch)

---

**Description of this command:**

Sets the 'Complex TCC #1, Phase' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

12

**Values that are sent:**

Value in PointValue (0) = SBO12 status (0=Off/1=On)

### 3.18. Complex TCC #2, Ground - On/Off (SBO13/Dh)

---

**Description of this command:**

Sets the 'Complex TCC #2, Phase' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

13

**Values that are sent:**

Value in PointValue (0) = SBO13 status (0=Off/1=On)

### 3.19. Complex TCC #3, Phase - On/Off (SBO14/Eh)

---

**Description of this command:**

Sets the 'Complex TCC #3, Phase' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

14

**Values that are sent:**

Value in PointValue (0) = SBO14 status (0=Off/1=On)

### 3.20. Complex TCC #4, Ground - On/Off (SBO15/Fh)

---

**Description of this command:**

Sets the 'Complex TCC #4, Phase' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

15

**Values that are sent:**

Value in PointValue (0) = SBO15 status (0=Off/1=On)

## 3.21. High Current Trip - On/Off (SBO16/10h)

---

**Description of this command:**

Sets the 'High Current Trip' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

16

**Values that are sent:**

Value in PointValue (0) = SBO16 status (0=Off/1=On)

## 3.22. High Current Trip Ground - On/Off (SBO17/11h)

---

**Description of this command:**

Sets the 'High Current Trip Ground' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

17

**Values that are sent:**

Value in PointValue (0) = SBO17 status (0=Off/1=On)

---

### 3.23. High Current Lockout - On/Off (SBO18/12h)

---

**Description of this command:**

Sets the 'High Current Lockout' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

18

**Values that are sent:**

Value in PointValue (0) = SBO18 status (0=Off/1=On)

## 3.24. High Current Lockout Ground - On/Off (SBO19/13h)

---

**Description of this command:**

Sets the 'High Current Lockout Ground' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

19

**Values that are sent:**

Value in PointValue (0) = SBO19 status (0=Off/1=On)

## 3.25. Reset Target Status Indicators (SBO20/14h)

---

**Description of this command:**

Sets the 'Reset Target Status Indicators' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

20

**Values that are sent:**

Value in PointValue (0) = SBO20 status (0=Off/1=On)

## 3.26. Reset Malfunction Status Indicators (SBO21/15h)

---

**Description of this command:**

Sets the 'Reset Malfunction Status Indicators' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

21

**Values that are sent:**

Value in PointValue (0) = SBO21 status (0=Off/1=On)

## 3.27. Reset Accessory Operation Status Indicators (SBO22/16h)

---

**Description of this command:**

Sets the 'Reset Accessory Operation Status Indicators' parameter. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

22

**Values that are sent:**

Value in PointValue (0) = SBO22 status (0=Off/1=On)

---

## 3.28. Ground Trip Precedence - On/Off (SBO23/17h)

---

**Description of this command:**

Sets the 'Ground Trip Precedence' parameter. Used when the number of shots programmed for ground is preferred over the number of phase shots, when phase & ground are both above min trip. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

23

**Values that are sent:**

Value in PointValue (0) = SBO23 status (0=Off/1=On)

---

## 3.29. Superv. via Mom. Contact - On/Off (SBO24/18h)

---

**Description of this command:**

Sets the 'Superv. via Mom. Contact' parameter. On discrete SCADA, momentary signals activate inputs, rather than sustained inputs. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

24

**Values that are sent:**

Value in PointValue (0) = SBO24 status (0=Off/1=On)

### 3.30. SGF - On/Off (SBO25/19h)

---

**Description of this command:**

Sets the 'SGF' parameter. On discrete SCADA, momentary signals activate inputs, rather than sustained inputs. An Operate command must be sent to the Cooper device within 5 seconds after this function is sent for it to be executed. It can also be cancelled by sending a Reset Select command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

25

**Values that are sent:**

Value in PointValue (0) = SBO25 status (0=Off/1=On)

### 3.31. Operate

---

**Description of this command:**

After the MASTER successfully opens or closes any parameter in the Cooper device, it must immediately send an operate message to the Cooper device, which will cause it to perform the selected function. The operate command must be sent within 5 seconds after the

previous open/close operation was completed, or the device will time-out and abort. If the MASTER subsequently sends an operate command, the Cooper device will respond with a NOP error message and take no action. If the MASTER sends any other type of message to the Cooper device while there is a select active, the Cooper device will reset the select function and will respond with a RESET error message in its response. Its response will be a simple echo, with no other action taken.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

100

**Values that are sent:**

Value in PointValue (0) = Any value.

## 3.32. Reset Select

---

**Description of this command:**

If, for any reason, the MASTER should want to abort the selected operation, it can issue a RESET function and the Cooper device will immediately cancel the select. This might be done upon receipt of an unsuccessful response from the Cooper device after an open/close command.

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

Digital Output

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

1

**Meaning of the DriverP0 parameter:**

COOPER DEVICE ADDRESS (0-2046). Use 2047 for sending a broadcast message.

**Meaning of the DriverP1 parameter:**

MASTER ADDRESS (0-31), usually 0.

**Meaning of the DriverP2 parameter:**

101

**Values that are sent:**

Value in PointValue (0) = Any value.

## 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
- [1424] PROTOCOL (Format): Out of sequence or time-out reached
- [1433] PROTOCOL (Format): Validation error in device response
- [2001] CONFIG (DataType): Analog outputs are not supported by this driver
- [2175] CONFIG (NumValues): Too many values (max=1)
- [2179] CONFIG (NumValues): Too many values (max=11)
- [2219] CONFIG (NumValues): Too many values (max=44)
- [2226] CONFIG (NumValues): Too many values (max=6)
- [2228] CONFIG (NumValues): Too many values (max=61)
- [3012] CONFIG (P0): Invalid device address (0-2046)
- [3013] CONFIG (P0): Invalid device address (0-2047)
- [3561] CONFIG (P1): Invalid master address (0-31)
- [4033] CONFIG (P2): Invalid command (0 to 25, 100 or 101)
- [4039] CONFIG (P2): Invalid command (1/2 or 4)
- [4044] CONFIG (P2): Invalid command (3 only)
- [8314] CONFIG (Remote): SBO sequence number is invalid
- [8333] CONFIG (Remote): There is already a select active

### 4.2. Keywords list

---

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

"Apparatus, CL4C, Control, Controls, COOPER, Form4C, LTC4C, POWER, Recloser, Regulator, SYSTEMS, Transformer".