Switchgear
Technical Data
TD280017EN

Effective July 2015
Supersedes R280-90-36 8/2012

COOPER POWER
SERIES

Communications Point Data Base

for Communications Protocol IEC60870-5

For use with Eaton's Cooper Power series
Form 6 Recloser Control

Powering Business Worldwide

Form 6 IEC 60870-5 Map Points

July 9, 2015 v3.00

Document	Date	Description
1.00	8/20/2003	Initial release.
1.01	9/3/2003	Updated Definitions
1.02	3/15/2004	Added Supervisory Enable Status for Single Commands and Minor Description Edits
1.03	8/4/2005	Minor updates in the Measured Value and Single Command tabs.
1.04	10/28/2005	Minor updates in the Single Input tab.
2.00	8/24/2012	Updates and re-release for ProView 5.0
3.00	7/9/15	Updates and re-release for ProView 5.1

Point Numbering Convention

IEC 60870-5 data points consist of 7 main types: single input, double input, measured values, single command, double command, floating point, and integrated totals. The numbering convention refers to the individual data points by prefixing their addresses so that when looking at a number for a given point the user would know which type of data point was being referenced.

Data type	Base Address
Single Input	0
Double Input	4096
Measured Value	8192
Single Command	12288
Double Command	32000
Floating Point	16384
Integrated Totals	24576

Note: The Form 6 does not have any Double Input or Floating Point points defined.

INPUT SUBSYSTEM

Single Inputs
Base Address: 0

Description	Offset	Hex Offset
Recloser Open	00	00
Recloser Closed	01	01
Control is Locked Out	02	02
Any Control or System Alarm	03	03
Above Minimum Trip	04	04
Supervisory Off	05	05
Non-Reclosing	06	06
Ground Trip Blocked	07	07
SEF Blocked	08	08
CLPU Blocked	09	09
Fast Trips Blocked	10	0A
Profile Selected (Normal)	11	0B
Profile Selected (Alt1)	12	0C
Profile Selected (Alt2)	13	0D
Profile Selected (Alt3)	14	0E
Hot Line Tag	15	0F
Bus Voltage Present (Phase A)	16	10
Bus Voltage Present (Phase B)	17	11
Bus Voltage Present (Phase C)	18	12
Reverse Power Flow	19	13
Battery Test in Progress	20	14
No AC Power	21	15
Battery Alarm	22	16
ci8:Alt1 (TB3:9-10)	23	17
ci9:Alt2 (TB3:11-12)	24	18
ci10:Alt3 (TB3:13-14)	25	19
ci11:Nrml (TB3:15-16)	26	1A
co1:aux (TB1:11-12,13)	27	1B
co2:ok (TB1:14-15)	28	1C
co3:hlt (TB1:16-17)	29	1D
co4:gtb (TB1:18-19)	30	1E
ss1:lo (TB1:9-10)	31	1F
co5:nr (TB3:17-18)	32	20
co6:alm (TB3:19-20,21)	33	21
co7:nrm (TB4:1-2)	34	22
co8:alt1 (TB4:3-4)	35	23
co9:alt2 (TB4:5-6)	36	24

INPUT SUBSYSTEM

Single Inputs
Base Address: 0

Description	Offset	Hex Offset
co10:alt3 (TB4:7-8)	37	25
co11:frq (TB4:9-10)	38	26
co12:vlt (TB4:11-12,13)	39	27
Reclose Retry Enabled	40	28
A Phase Fault Trip	41	29
B Phase Fault Trip	42	2A
C Phase Fault Trip	43	2B
Ground Fault Trip	44	2C
SEF Trip	45	2D
ci1:RTrip (TB1:3-4)	46	2E
ci2:SClose (TB1:5-6)	47	2F
ci3:STrip (TB1:7-8)	48	30
ci4:GTB (TB3:1-2)	49	31
ci5:NRecl (TB3:3-4)	50	32
ci6:TargR (TB3:5-6)	51	33
ci7 (TB3:7-8)	52	34
Ground Overcurrent Alarm	53	35
Phase Overcurrent Alarm	54	36
Negative Sequence Overcurrent Alarm	55	37
Hot Line Tag On from Workbench	56	38
Hot Line Tag On from Communications	57	39
Hot Line Tag On from Front Panel Switch	58	3A
Control Circuit Interrupted	59	3B
USEF Blocked	60	3C
Profile Selected (Alt 4)	61	3D
Profile Selected (Alt 5)	62	3E

INPUT SUBSYSTEM

Single Inputs (Triple-Single)
Base Address: 0

Description	Offset	Hex Offset
Recloser Closed (Phase A)	00	00
Recloser Open (Phase A)	01	01
Control is Locked Out (Phase A)	02	02
Any Control or System Alarm	03	03
Above Minimum Trip	04	04
Supervisory Off	05	05
Non-Reclosing	06	06
Ground Trip Blocked	07	07
SEF Blocked	08	08
CLPU Blocked	09	09
Fast Trips Blocked	10	0A
Profile Selected (Normal)	11	0B
Profile Selected (Alt1)	12	0C
Profile Selected (Alt2)	13	0D
Profile Selected (Alt3)	14	0E
Hot Line Tag	15	0F
Bus Voltage Present (Phase A)	16	10
Bus Voltage Present (Phase B)	17	11
Bus Voltage Present (Phase C)	18	12
Reverse Power Flow	19	13
Battery Test in Progress	20	14
No AC Power	21	15
Battery Alarm	22	16
ci8:Alt1 (TB3:9-10)	23	17
ci9:Alt2 (TB3:11-12)	24	18
ci10:Alt3 (TB3:13-14)	25	19
ci11:Nrml (TB3:15-16)	26	1A
co1:aux (TB1:11-12,13)	27	1B
co2:ok (TB1:14-15)	28	1C
co3:hlt (TB1:16-17)	29	1D
co4:gtb (TB1:18-19)	30	1E
ss1:lo (TB1:9-10)	31	1F
co5:nr (TB3:17-18)	32	20
co6:alm (TB3:19-20,21)	33	21
co7:nrm (TB4:1-2)	34	22
co8:alt1 (TB4:3-4)	35	23
co9:alt2 (TB4:5-6)	36	24

INPUT SUBSYSTEM

Single Inputs (Triple-Single)
Base Address: 0

Description	Offset	Hex Offset
co10:alt3 (TB4:7-8)	37	25
co11:frq (TB4:9-10)	38	26
co12:vlt (TB4:11-12,13)	39	27
Reclose Retry Enabled	40	28
A Phase Fault Trip	41	29
B Phase Fault Trip	42	2A
C Phase Fault Trip	43	2B
Ground Fault Trip	44	2C
SEF Trip	45	2D
ci1:RTrip (TB1:3-4)	46	2E
ci2:SClose (TB1:5-6)	47	2F
ci3:STrip (TB1:7-8)	48	30
ci4:GTB (TB3:1-2)	49	31
ci5:NRecl (TB3:3-4)	50	32
ci6:TargR (TB3:5-6)	51	33
ci7 (TB3:7-8)	52	34
Ground Overcurrent Alarm	53	35
Phase A Overcurrent Alarm	54	36
Negative Sequence Overcurrent Alarm	55	37
Hot Line Tag On from Workbench	56	38
Hot Line Tag On from Communications	57	39
Hot Line Tag On from Front Panel Switch	58	3A
Control Circuit Interrupted (Phase A)	59	3B
Recloser Closed (Phase B)	60	3C
Recloser Open (Phase B)	61	3D
Control is Locked Out (Phase B)	62	3E
Control Circuit Interrupted (Phase B)	63	3F
Recloser Closed (Phase C)	64	40
Recloser Open (Phase C)	65	41
Control is Locked Out (Phase C)	66	42
Control Circuit Interrupted (Phase C)	67	43
Phase B Overcurrent Alarm	68	44
Phase C Overcurrent Alarm	69	45
Ganged Mode	70	46
1-3 Mode	71	47
1-1 Mode	72	48
USEF Blocked	73	49
Profile Selected (Alt 4)	74	4A

INPUT SUBSYSTEM

Single Inputs (Triple-Single)
Base Address: 0

Description	Offset	Hex Offset
Profile Selected (Alt 5)	75	4B

INPUT SUBSYSTEM

Measured Values (IEC 60870-5-101)
Base Address: 8192

Description	Offset	Hex Offset	Division Scale Factor	Default Deadband	Units	Min	Max
A Phase Primary Current Magnitude	00	00	10	100	Amps	-8000	8000
B Phase Primary Current Magnitude	01	01	10	100	Amps	-8000	8000
C Phase Primary Current Magnitude	02	02	10	100	Amps	-8000	8000
3I0 Primary Current Magnitude	03	03	10	100	Amps	-8000	8000
A Phase Primary Voltage Magnitude	04	04	1	100	Volts	-19000	19000
B Phase Primary Voltage Magnitude	05	05	1	100	Volts	-19000	19000
C Phase Primary Voltage Magnitude	06	06	1	100	Volts	-19000	19000
A Phase Power Factor	07	07	10000	100		-0.50	0.50
B Phase Power Factor	08	08	10000	100		-0.50	0.50
C Phase Power Factor	09	09	10000	100		-0.50	0.50
A Phase Primary Apparent Power	10	0A	1	100	kVA	-304000	304000
B Phase Primary Apparent Power	11	0B	1	100	kVA	-304000	304000
C Phase Primary Apparent Power	12	0C	1	100	kVA	-304000	304000
A Phase Primary Real Power	13	0D	1	100	kW	-304000	304000
B Phase Primary Real Power	14	0E	1	100	kW	-304000	304000
C Phase Primary Real Power	15	0F	1	100	kW	-304000	304000
A Phase Primary Reactive Power	16	10	1	100	kvar	-304000	304000
B Phase Primary Reactive Power	17	11	1	100	kvar	-304000	304000
C Phase Primary Reactive Power	18	12	1	100	kvar	-304000	304000
Line Frequency	19	13	100	100	Hz	-35	35
A Phase Primary Demand Currents	20	14	10	100	Amps	-50000	50000
B Phase Primary Demand Currents	21	15	10	100	Amps	-50000	50000
C Phase Primary Demand Currents	22	16	10	100	Amps	-50000	50000
Battery Voltage	23	17	100	100	Volts	-20	31
Battery Current	24	18	1000	100	Amps	-0.50	0.50

INPUT SUBSYSTEM

Measured Values (IEC 60870-5-104)
Base Address: 8192

Description	Offset	Hex Offset	Division Scale Factor	Default Deadband	Units	Min	Max
A Phase Primary Current Magnitude	00	00	10	100	Amps	-8000	8000
B Phase Primary Current Magnitude	01	01	10	100	Amps	-8000	8000
C Phase Primary Current Magnitude	02	02	10	100	Amps	-8000	8000
3I0 Primary Current Magnitude	03	03	10	100	Amps	-8000	8000
A Phase Primary Voltage Magnitude	04	04	1	100	Volts	-19000	19000
B Phase Primary Voltage Magnitude	05	05	1	100	Volts	-19000	19000
C Phase Primary Voltage Magnitude	06	06	1	100	Volts	-19000	19000
A Phase Power Factor	07	07	10000	100		-0.50	0.50
B Phase Power Factor	08	08	10000	100		-0.50	0.50
C Phase Power Factor	09	09	10000	100		-0.50	0.50
A Phase Primary Apparent Power	10	0A	1	100	kVA	-304000	304000
B Phase Primary Apparent Power	11	0B	1	100	kVA	-304000	304000
C Phase Primary Apparent Power	12	0C	1	100	kVA	-304000	304000
A Phase Primary Real Power	13	0D	1	100	kW	-304000	304000
B Phase Primary Real Power	14	0E	1	100	kW	-304000	304000
C Phase Primary Real Power	15	0F	1	100	kW	-304000	304000
C Phase Primary Real Power	16	10	1	100	kW	-304000	304000
A Phase Primary Reactive Power	17	11	1	100	kvar	-304000	304000
B Phase Primary Reactive Power	18	12	1	100	kvar	-304000	304000
C Phase Primary Reactive Power	19	13	1	100	kvar	-304000	304000
C Phase Primary Reactive Power	20	14	1	100	kvar	-304000	304000
Line Frequency	21	15	100	100	Hz	-35	35
A Phase Primary Demand Currents	22	16	10	100	Amps	-50000	50000
B Phase Primary Demand Currents	23	17	10	100	Amps	-50000	50000
C Phase Primary Demand Currents	24	18	10	100	Amps	-50000	50000
Battery Voltage	25	19	100	100	Volts	-20	31
Battery Current	26	1A	1000	100	Amps	-0.50	0.50

OUTPUT SUBSYSTEM

Single Commands
Base Address: 12288

Description	Offset	Hex Offset	Conditioned by Supervisory State (Factory Default)
* Close Mechanism	00	00	Yes
* Trip Mechanism	01	01	Yes
Block Reclosing	02	02	Yes
Block Ground Trip	03	03	Yes
Block SEF	04	04	Yes
Block CLPU	05	05	Yes
Block Fast Trips	06	06	Yes
* Profile - Normal	07	07	Yes
* Profile - Alt1	08	08	Yes
* Profile - Alt2	09	09	Yes
* Profile - Alt3	10	0A	Yes
* Reset Targets	11	0B	Yes
* Reset Demand Meters	12	0C	Yes
* Reset Alarms	13	0D	Yes
* Test Battery	14	0E	Yes
*, *** Hot Line Tag Set	15	0F	No
*, *** Hot Line Tag Reset	16	10	Yes
Enable Reclose Retry	17	11	Yes
Enable Sync Check	18	12	Yes
Combined Trip and Close	19	13	Yes
Block USEF	20	14	Yes
* Profile - Alt4	21	15	Yes
* Profile - Alt5	22	16	Yes
Not Used	23	17	Yes
Not Used	24	18	Yes
Not Used	25	19	Yes
Not Used	26	1A	Yes
Not Used	27	1B	Yes
Not Used	28	1C	Yes
Not Used	29	1D	Yes
Not Used	30	1E	Yes
Not Used	31	1F	Yes

* Momentary/Self Resetting
*** Hot Line Tag activates a latching relay in the control "close" circuit.
Crosshatch indicates point is supervised regardless of setting

OUTPUT SUBSYSTEM

Single Commands (Triple-Single)
Base Address: 12288

Description	Offset	Hex Offset	Conditioned by Supervisory State (Factory Default)
* Close Mechanism (Phase A)	00	00	Yes
* Trip Mechanism (Phase A)	01	01	Yes
Block Reclosing	02	02	Yes
Block Ground Trip	03	03	Yes
Block SEF	04	04	Yes
Block CLPU	05	05	Yes
Block Fast Trips	06	06	Yes
* Profile - Normal	07	07	Yes
* Profile - Alt1	08	08	Yes
* Profile - Alt2	09	09	Yes
* Profile - Alt3	10	0A	Yes
* Reset Targets	11	0B	Yes
* Reset Demand Meters	12	0C	Yes
* Reset Alarms	13	0D	Yes
* Test Battery	14	0E	Yes
*, *** Hot Line Tag Set	15	0F	No
*, *** Hot Line Tag Reset	16	10	Yes
Enable Reclose Retry	17	11	Yes
Combined Trip and Close	18	12	Yes
Enable Sync Check	19	13	Yes
* Trip Mechanism (Phase B)	20	14	Yes
* Trip Mechanism (Phase C)	21	15	Yes
* Close Mechanism (Phase B)	22	16	Yes
* Close Mechanism (Phase C)	23	17	Yes
* Activate Ganged Mode	24	18	Yes
* Activate 1-3 Mode	25	19	Yes
* Activate 1-1 Mode	26	1A	Yes
* Trip All Phases	27	1B	Yes
* Close All Phases	28	1C	Yes
Block USEF	29	1D	Yes
* Profile - Alt4	30	1E	Yes
* Profile - Alt5	31	1F	Yes

* Momentary/Self Resetting
*** Hot Line Tag activates a latching relay in the control "close" circuit.
Crosshatch indicates point is supervised regardless of setting

INPUT SUBSYSTEM

Integrated Totals
Base Address: 24576

Description	Offset	Hex Offset	Division Scale Factor	Default Deadband
Trip Counter (Phase A)	00	00	1	0
Trip Counter (Phase B)	01	01	1	0
Trip Counter (Phase C)	02	02	1	0
Trip Counter (Ground)	03	03	1	0
Trip Counter (SEF)	04	04	1	0
Total Trip Counter	05	05	1	0

INPUT SUBSYSTEM

Integrated Totals (Triple-Single)
Base Address: 24576

Description	Offset	Hex Offset	Division Scale Factor	Default Deadband
Trip Counter (Phase A)	00	00	1	0
Trip Counter (Phase B)	01	01	1	0
Trip Counter (Phase C)	02	02	1	0
Trip Counter (Ground)	03	03	1	0
Trip Counter (SEF)	04	04	1	0
Total Trip Counter	05	05	1	0
Operations Counter (Phase A)	06	06	1	0
Operations Counter (Phase B)	07	07	1	0
Operations Counter (Phase C)	08	08	1	0

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