



# Remote Monitoring and Control

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**DNP-RTM™**

## **Cooper Form 4C/Visionary Integration Guide**

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v. 1.2

## Revision Log

Date	Revision	Changes
4/9/05	1.0	Initial version
5/24/05	1.1	Included information on fiber optic to RS232 25 pin adapter.
7/19/05	1.2	Included enclosure drawings and measurements

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## Introduction

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### Overview

The Telemetric DNP-Remote Telemetry Module (DNP-RTM™) is a cost-effective communications solution for remote monitoring and control of Intelligent Electronic Devices (IED's) such as the Cooper Form 4C Recloser. The DNP-RTM continuously polls the IED through a local serial connection. When a reportable change is detected, the DNP-RTM transmits an event report. This minimizes the cost of communication, yet provides near real-time information. Access to the IED with DNP-RTM can be gained from the utility's SCADA system by using the Telemetric SCADA-Xchange™.

Integrating the Telemetric DNP-RTM with the Cooper Form 4C provides immediate status indication of operating conditions to improve system operation and protect investments.

This integration provides monitoring capability over many of the Cooper Form 4C points, See Table 1, Table 2, and Table 3 for the points provided in this integration.

## Features

Integrating the Telemetric DNP-RTM with the Cooper Form 4C provides remote notification of Cooper Form 4C events and internal parameter status. The following points are provided in this integration:

**Table 1 – Digital Input Points**

Point Number	Point Name	Enabled on RTM	Report on Change	Report Interval	Trigger Time
0	Tripped	X	X	24 Hours	0
1	Lockout	X	X	24 Hours	0
2	Malfunction	X	X	24 Hours	0
3	Battery Status	X	X	24 Hours	0
4	Closed	X	X	24 Hours	0
5	Above Min Trip	X	X	24 Hours	0
6	Accessory Operation	X	X	24 Hours	0
7	AC OK	X	X	24 Hours	0
8	Supervisory	X	X	24 Hours	0
9	Power Status	X	X	24 Hours	0
10	Alternate Minimum Trip	X	X	24 Hours	0
11	Ground Trip Block	X	X	24 Hours	0
12	Non-reclose	X	X	24 Hours	0
13	Event Data Available	X	X	24 Hours	0
14	SGF Active/Available	X	X	24 Hours	0
15	Power-down	X	X	24 Hours	0
16	Sequence Coordination	X	X	24 Hours	0
17	Target Reset on Close	X	X	24 Hours	0
18	Trip Counter	X	X	24 Hours	0
19	Event Recorder	X	X	24 Hours	0
20	Interrupter Monitor	X	X	24 Hours	0
21	Phase Complex TCC 1	X	X	24 Hours	0
22	Ground Complex TCC 1	X	X	24 Hours	0
23	Phase Complex TCC 2	X	X	24 Hours	0
24	Ground Complex TCC 2	X	X	24 Hours	0
25	Phase High Current Trip	X	X	24 Hours	0
26	Ground High Current Trip	X	X	24 Hours	0
27	Phase High Current Lockout	X	X	24 Hours	0
28	Ground High Current Lockout	X	X	24 Hours	0
29	Ground Trip Precedence	X	X	24 Hours	0
30	Momentary Relay Operation	X	X	24 Hours	0
31	Target Recorder : Ground	X	X	24 Hours	0
32	Target Recorder : Phase A	X	X	24 Hours	0
33	Target Recorder : Phase B	X	X	24 Hours	0
34	Target Recorder : Phase C	X	X	24 Hours	0
35	Target Recorder : SGF	X	X	24 Hours	0
36	Accessory Op : High Current Lockout	X	X	24 Hours	0
37	Accessory Op : Remote Trip & Lockout	X	X	24 Hours	0

38	Accessory Op : Supv Trip & Lockout	X	X	24 Hours	0
39	Malfunction : Failed to Close on Remote	X	X	24 Hours	0
40	Malfunction : Low Battery Voltage	X	X	24 Hours	0
41	Malfunction : Power down in less than programmed time	X	X	24 Hours	0
42	Malfunction : Defective Data in EPROM	X	X	24 Hours	0
43	Combined Internal : SGF On/Off	X	X	24 Hours	0

**Table 2 – Analog Input Points**

Point Number	Point Name	Enabled on RTM	Report Interval	Low Limit	Low-Mid Limit	High-Mid Limit	High Limit
0	Inst RMS Current GND	X	0	Low	Low-Medium	High-Medium	High
1	Inst RMS Current 1-2	X	0	Low	Low-Medium	High-Medium	High
2	Inst RMS Current 3-4	X	0	Low	Low-Medium	High-Medium	High
3	Inst RMS Current 5-6	X	0	Low	Low-Medium	High-Medium	High
4	Therm Demand GND	X	0	Low	Low-Medium	High-Medium	High
5	Therm Demand 1-2	X	0	Low	Low-Medium	High-Medium	High
6	Therm Demand 3-4	X	0	Low	Low-Medium	High-Medium	High
7	Therm Demand 5-6	X	0	Low	Low-Medium	High-Medium	High
8	Ground Target Counter	X	0	Low	Low-Medium	High-Medium	High
9	Phase 1-2 Target Counter	X	0	Low	Low-Medium	High-Medium	High
10	Phase 3-4 Target Counter	X	0	Low	Low-Medium	High-Medium	High
11	Phase 5-6 Target Counter	X	0	Low	Low-Medium	High-Medium	High
12	Operation Counter	X	0	Low	Low-Medium	High-Medium	High
13	SGF Target Counter	X	0	Low	Low-Medium	High-Medium	High

**Table 3 – Digital Output Points**

<b>Point Number</b>	<b>Point Name</b>	<b>Enabled on RTM</b>
0	Trip and Lockout	X
1	Trip	X
2	Close	X
3	Alternate Min Trip	X
4	Ground Trip Block	X
5	Non-Reclose	X
6	Power Down	X
7	Sequence Coordination	X
8	Target Reset on Successful Reclose	X
9	Operation Counter	X
10	Event Recorder On	X
11	Interrupter Duty	X
12	Complex TCC #1 - Phase	X
13	Complex TCC #2 - Ground	X
14	Complex TCC #3 - Phase	X
15	Complex TCC #4 - Ground	X
16	High Current Trip	X
17	High Current Trip Ground	X
18	High Current Lockout	X
19	High Current Lockout Ground	X
20	Reset Target Status Indicators	X
21	Reset Malfunction Status Indicators	X
22	Reset Accessory Operation Status Indicators	X
23	Ground Trip Precedence	X
24	Supervisory via Momentary Contact	X
25	SGF	X

Points can be enabled or disabled using the Telemetric web site interface or the Telemetric local configuration program provided with the DNP-RTM. The other settings for the DNP points, such as report interval or trigger time, can be changed only by using the local configuration program.

See Appendix A in the DNP-RTM Users' Guide for complete instructions on using the local configuration program.

## Safety Information

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The instructions in this manual are not intended as a substitute for proper training or adequate experience in the safe operation of the equipment described. Only competent technicians who are familiar with this equipment should install, operate, and service it. We strongly urge that you follow all locally approved safety procedures and safety instructions when working around high voltage lines and equipment.

*A competent technician has these qualifications:*

- *Is thoroughly familiar with these instructions.*
- *Is trained in industry-accepted high-voltage and low-voltage safe operating practices and procedures.*
- *Is trained and authorized to energize, de-energize, clear, and ground power distribution equipment.*
- *Is trained in the care and use of protective equipment such as flash clothing, safety glasses, face shield, hard hat, rubber gloves, hotstick, etc.*

Following is important safety information. For safe installation and operation of this equipment, be sure to read and understand all cautions and warnings.

Following are general caution and warning statements that apply to this equipment.

***WARNING:*** *This equipment is not intended to protect human life. Follow all locally approved procedures and safety practices when installing or operating this equipment. Failure to comply can result in death, severe personal injury and equipment damage.*

***DANGER:*** *Hazardous voltage. Contact with hazardous voltage will cause death or severe personal injury. Follow all locally approved safety procedures when working around high and low voltage lines and equipment.*

***WARNING:*** *Before installing, operating, maintaining, or testing this equipment, carefully read and understand the contents of this manual. Improper operation, handling or maintenance can result in death, severe personal injury, and equipment damage.*

***WARNING:*** *Power distribution equipment must be selected for the intended application. It must be installed and serviced by competent personnel who have been trained and understand proper safety procedures. These instructions are written for such personnel and are not a substitute for adequate training and experience in safety procedures. Failure to properly select, install, or maintain this equipment can result in death, severe personal injury, and equipment damage.*

## Wiring

The DNP-RTM/Visionary Integration comes with an enclosure, an AC power supply and wiring through a conduit. Once the conduit is attached, the only connections needed should be on the Cooper Form 4C side of the conduit.

1. Attach the green wire to the cabinet ground on the Cooper Form 4C.
2. Attach the white wire to the AC Neutral terminal block in the Cooper Form 4C.
3. Attach the black wire to the 120 VAC terminal block in the Cooper Form 4C.
4. Attach the DB25 connector to the DB25 Port on the Fiber Optic to RS232 adapter for the Cooper Form 4C.

(If you are using the RS232 accessory board for the Cooper Form 4c (Part# KME4-229-1), a DB9 to DB25 adapter will be needed to attach the DB25 connector to the DB9 port on the Cooper Form 4C accessory board.)

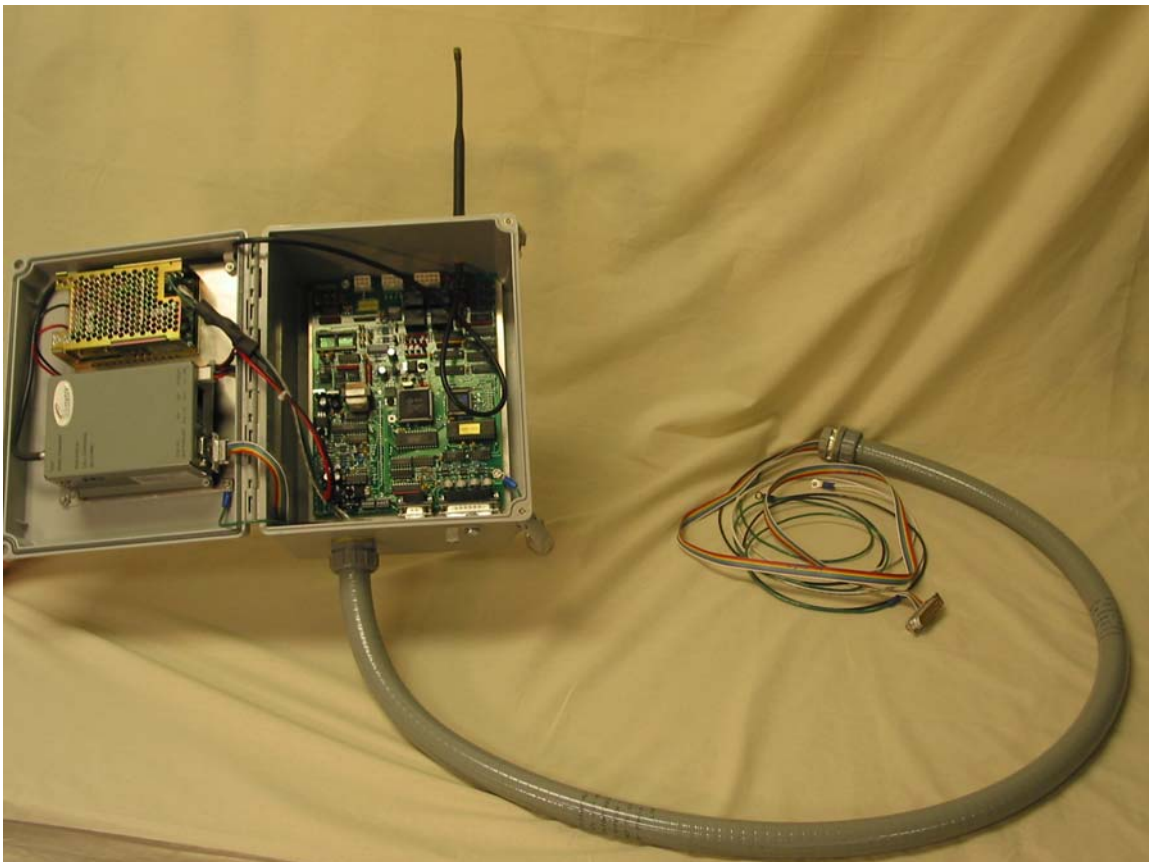


Figure 1 – DNP-RTM/Visionary

## **DNP-RTM Programming**

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The DNP-RTM should already be factory programmed with the default configuration necessary for the Cooper Form 4C. If changes from the factory default configuration are necessary, consult the DNP-RTM Users' Guide for directions on customizing the configuration.

You will need to use the local programming utility to properly set the device baud rate and the master/slave addresses. The local programming utility is included on the Telemetric CD provided with the DNP-RTM device. Reference the DNP-RTM Users' Guide for instructions on interfacing to a device locally.

## **Additional Information**

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Product manuals, installation manuals, application notes, application guides and technical specifications are available for download at the Telemetric web site.

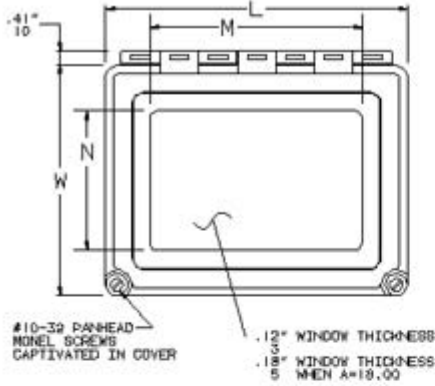
<http://www.telemetric.net/documentation.htm>

For more information, questions or feedback, please feel free to contact Telemetric technical support.

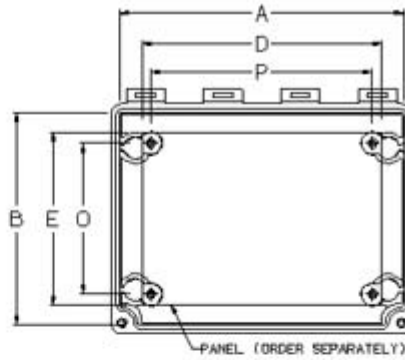
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# Enclosure Information

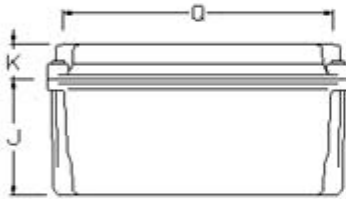
## Solid Cover Type 4X Enclosures



Top View

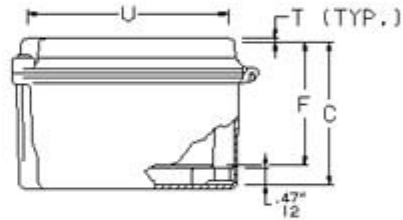


Top View with Cover Removed



Side View

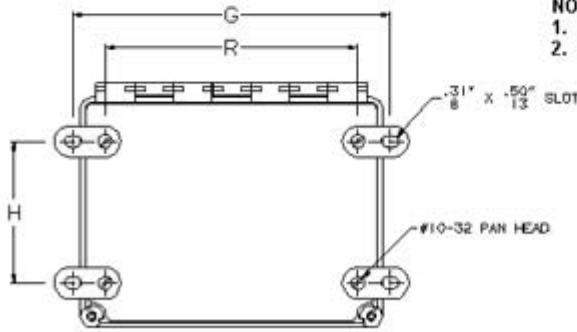
Millimeter  
Inch



End View

**NOTE:**

1. Panel screws are #10-32 pan head.
2. Mounting feet are .16 (4) thick.



Bottom view



Side View  
Quick-Release Cover Enclosure

C2567

Size	Height A (inch)	Height A (mm)	Width B (inch)	Width B (mm)	Depth C (inch)	Depth C (mm)	Panel Catalog Number	Panel Size D x E (inch)	Panel Size D x E (mm)	Mounting G x H (inch)	Mounting G x H (mm)	Overall L x W (inch)	Overall L x W (mm)
10.00x8.00x6.00	10.0	254.0	8.0	203.0	6.0	152.0	A-10P8	8.75 x 6.88	222 x 175	10.94 x 6.00	278 x 152	10.50 x 8.50	267 x 216

F (inch)	F (mm)	J (inch)	J (mm)	K (inch)	K (mm)	O (inch)	O (mm)	P (inch)	P (mm)	Q (inch)	Q (mm)	R (inch)	R (mm)	T (inch)	T (mm)	U (inch)	U (mm)
5.45	138	4.94	125	1.31	33	6.25	159	8.25	210	9.61	244	9.12	232	0.12	3	7.61	193