

CT 2000 Prox

Installation manual

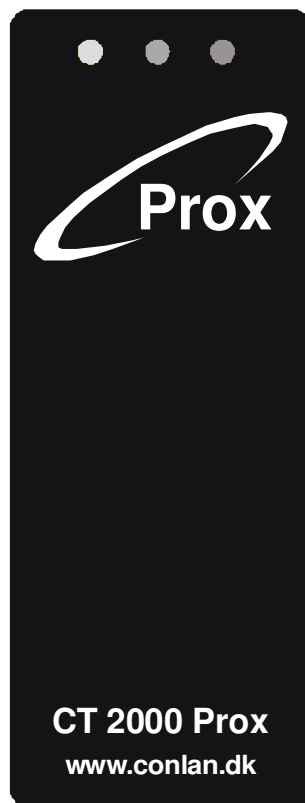


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1. Introduction

CT 2000 is an advanced, waterproof, multifunction proximity reader, equipped with antitamper switch. It can work outside as well as inside. The unit has the following features:

- easy to use
- stainless
- tamper security
- capacity up to 100 proximity tag users
- programmable LEDs
- advanced RS485 communication
- programmable outputs (timer or On/Off toggle)
- Log printing

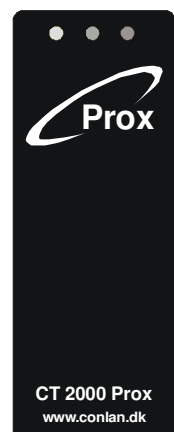
Typical applications:

- remote element in an alarm system (see chapter 8 „CT 2000 Proximity Reader as part of a burglary alarm system”)
- stand-alone work (for example: operation of an electric lock)
- time registration
- access control
- switching on/off alarm system

Proximity tag identification:

The proximity reader CT 2000 Prox is activated by proximity tags, which are part of the system. A tag shall be placed in front of the reader near the word “Prox”. Tag is identified from a maximum distance of 25 mm in a time period over 0,4 sek.

Note: while the identification is going on, no other objects than a tag shall be placed within the field of the proximity reader’s operation. You must avoid especially metal objects (for example keys), as they can interfere correct identification of tags.



2. Programming

The Proximity Reader can be programmed **ONLY** by use of PC-interface (PCI 1).
If you do not have the PC-interface, contact your supplier for assistance.

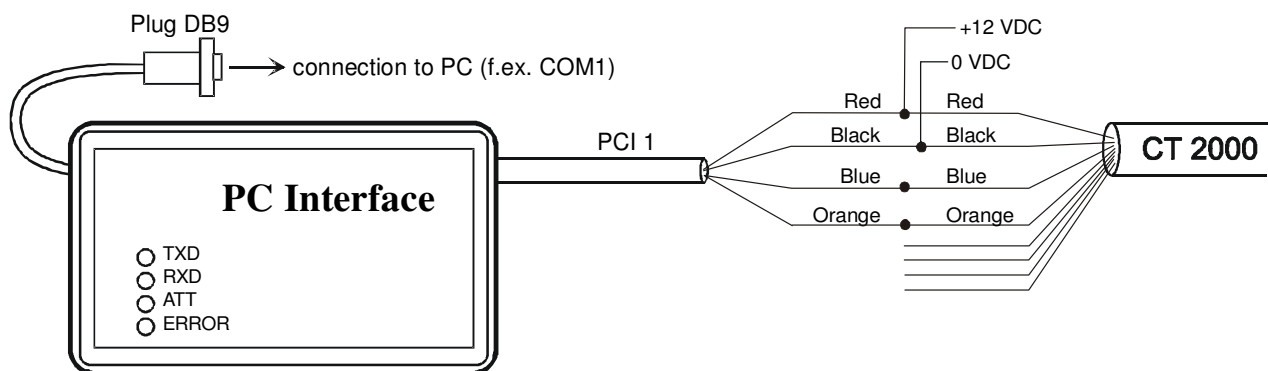
PCI 1 is a communication interface between a computer and other item(s) of the CT 2000 series, for example the CT 2000 Proximity reader.

PCI 1 is used for programming of the CT 2000 series equipment and for scanning the system for new elements.

The DB9 plug is used to plug into one of the computer's COM ports (for ex. COM 1).

The other end of the PCI 1 shall be connected as follows:

- **Red** connect to **+12 VDC**
- **Black** connect to **0 VDC**
- **Blue** connect to **A** on the RS485 bus
- **Orange** connect to **B** on the RS485 bus



Programming of the proximity reader is made by means of changing, via the PCI 1, values of one or more of programming positions.

Positions from 00 to 99 can each contain information about one tag. Other programming positions can contain information about how the proximity reader shall operate.

Each proximity reader is accompanied by five proximity tags, programmed from the factory (programming positions 00 to 04). Also the CT 2000 Prox reader is from the factory programmed to cover the most typical applications. Please note:

Overview of programming positions::

Programming position	Function
00 – 99	Programming positions (for proximity tags)
100	Stand alone address
101	Engineer code (1 to 8 digits)
102	ID number
103	Output selection (timer function or reverse timer function)
104	Delay between code and tag or vice versa
105	LEDs' functions
110	Output time for user codes 00 - 07
111	Output time for user codes 08 – 15
112	Output time for user codes 16 – 23
113	Output time for user codes 24 – 31
114	Output time for user codes 32 – 39
115	Output time for user codes 40 – 47
116	Output time for user codes 48 – 55
117	Output time for user codes 56 – 63
118	Output time for user codes 64 – 71
119	Output time for user codes 72 – 79
120	Output time for user codes 80 – 87
121	Output time for user codes 88 – 95
122	Output time for user codes 96 – 99

Default settings (where the prox reader is delivered with five tags):

Programming position	Prox tag no.	Group
00	1	0
01	2	0
02	3	0
03	4	0
04	5	0
05 do 99	not programmed	

Programming position	Value	Description
100	0	Stand alone proximity reader
101	1234 7890	Engineer code
102	50	ID number 50
103	1	Timer function on open collector output
104	0	No delay
105	0	Yellow LED indicates standby mode and green LED indicates activation by a proximity tag
110	5	Open collector output activated for 5 seconds
111	5	Open collector output activated for 5 seconds
112	5	Open collector output activated for 5 seconds
113	5	Open collector output activated for 5 seconds
114	5	Open collector output activated for 5 seconds
115	5	Open collector output activated for 5 seconds
116	5	Open collector output activated for 5 seconds
117	5	Open collector output activated for 5 seconds
118	5	Open collector output activated for 5 seconds
119	5	Open collector output activated for 5 seconds
120	5	Open collector output activated for 5 seconds
121	5	Open collector output activated for 5 seconds
122	5	Open collector output activated for 5 seconds

2.1. Stand alone address (100)

This programming position defines if the proximity reader works as a stand alone reader or it mates with a CT 2000 keypad. Setting the value of this position to 0 means stand alone operation. Any other value (1 to 255) will be interpreted as an ID number of keypad in the system which shall be "looked for" by the proximity reader. It means that the same programming position on the CT 2000 shall be activated and approved, thereafter a proximity tag presented and approved within the time programmed in position 104. Activation of both programming positions results in activation of the CT 2000 Prox output.

2.2. Engineer code (101)

Engineer code is the code you must type in the CT 2000 software of the PC-interface (PCI 1) if you want to access the proximity reader's settings. The engineer code enables you to change programming positions and functions of the proximity reader. The engineer code is by default set to 1234 7890 (note that the digits 5 and 6 are let out of the engineer code).

If you forget the engineer code or you cannot communicate with the proximity reader of any other reason, it is possible to set a new code, new proximity tags and settings by downloading new settings to the CT 2000 Prox (providing the ID-number is known). Alternatively, you can seek assistance of your equipment provider.

2.3. ID Number (102)

This programming position can contain a number between 1 and 255 and it indicates the ID number of the proximity reader (f.ex. if it is a part of a bigger system). The programming position 102 is by default set to 50, which means ID number 50.

Note: there must not be two proximity readers with the same ID number on the same data-bus.

2.4. Output selection (103)

Value of this programming position defines how the proximity reader shall react to a proximity tag. Choosing digit 1 means activation of the open collector output of proximity reader (open collector, max. 500 mA) with 0 VDC in relation to the programmed time (programming position 110 to 122, f.ex. 5 sec.) See fig. 2. Choosing digit 2 means 0 VDC removed from the proximity reader's open collector output in relation to the programmed time (programming positions 110 to 122, f.ex. 5 sec.). See fig. 1.

By default this position is programmed to 0, which means timer function and normal use of the open collector output.

Value	Function
0	Open collector output active in timer period (stand alone)
1	Open collector output inactive in timer period (stand alone)

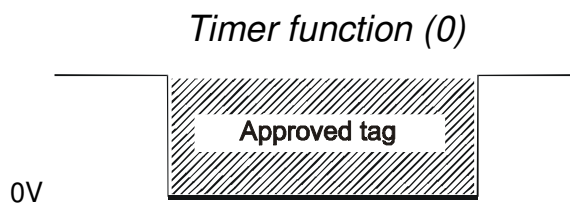


Figure 1

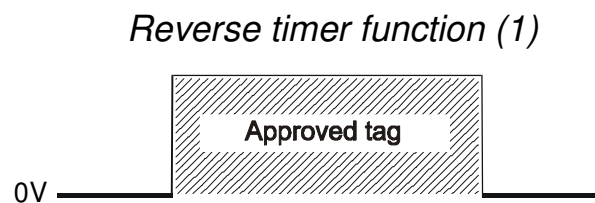


Figure. 2

2.5. Delay (104)

This programming position is only relevant if position 100 is set to a value between 1 and 255, it is if the proximity reader is programmed to work together with a CT 2000 keypad.

Value programmed in position 104 defines the longest time allowed between valid activation of two related items, it means time between activation of the proximity reader and entering a valid user code on a CT 2000 keypad, or vice versa. Programming position 104 is by default set to 0, which means "no delay".

2.6. LED functions (105)

Flashing of the LEDs visible on the upper part of the proximity reader's front can be programmed.

Normal refers to which LED illuminates when the proximity reader is on stand by and ready (constant light of the yellow LED programmed by default);

Activated refers to which LED illuminates when the proximity reader is activated by a valid identification (by default: green LED flashes shortly when identification is going on and a “bip” sound can be heard);

LEDs refers to how LEDs illuminate.

Number	Normal		Activated		LEDs
0	yellow		yellow	green	constant
1	yellow		yellow	red	constant
2	yellow	red	yellow	green	constant
3	yellow	green	yellow	red	constant
4				green	constant
5				red	constant
6		red		green	constant
7		green		red	constant
8	yellow		yellow	green	puls (0,5 sec.)
9	yellow		yellow	red	puls (0,5 sec.)
10	yellow	red	yellow	green	puls (0,5 sec.)
11	yellow	green	yellow	red	puls (0,5 sec.)
12				green	puls (0,5 sec.)
13				red	puls (0,5 sec.)
14		red		green	puls (0,5 sec.)
15		green		red	puls (0,5 sec.)

Programming position 105 is by default set to 0, which means that the yellow LED illuminates at normal mode and yellow and green LEDs illuminate at activation by a valid proximity tag.

2.7. Output time for activation with a proximity tag (110 – 122)

These programming positions refer to position 103, which can either be set to value 1 (timer function) or 2 (reverse timer function). Values in positions 110 – 122 specify how long the open collector output of the proximity reader shall be activated when a valid proximity tag is presented. Each of these thirteen positions can carry a value between 0 and 255. By default these programming positions are set to 5, which means 5 seconds.

Values have the following meaning:

Value	Function
0 – 9	0 – 9 sec., with 1 second interval (0 = 0,1 sec.)
10 – 19	10 – 55 sec., with 5 second interval
20 – 35	1:00 – 3:45 min., with 15 second interval
36 – 45	5 – 14 min., with 1 minute interval
46 – 54	15 – 55 min., with 5 minute interval
55 – 243	1:00 – 48:45 hours, with 15 minute interval
255	Change function on/off (toggle)

See the overview at the end of this manual for precise values which shall be entered for desired time (hours, minutes, seconds). See table 1 on page 20 – 21.

It is not possible to set the time of activation of the open collector output for each proximity tag individually. Therefore the proximity tags have been divided in 12 groups of 8 programming positions and 1 group of 4 programming positions. Consequently, tags programmed in positions 0 to 7 create group 0. It means that each time a tag programmed in positions 0 to 7 is identified, value from the programming position 10 (group 0) defines how long the output shall be activated.

2.8. Programming of positions referring to proximity tags

All the programming of CT 2000 Prox is made with use of the PC-interface (PCI 1).

3. Mechanical mounting

The CT 2000 Prox shall be mounted on an as even and flat surface as possible. With use of the drill gauge mark positions of screws, hole for the mechanical tamper switch and opening through the wall for cable. **If the mounting surface is not even, the CT 2000 Prox must under no circumstances be screwed so hard that it bends. An alternative is using an aluminium back plate (Product number 42598, bought separately).**

Note: in case you mount two or more CT 2000 Prox readers next to each other, you must keep a distance of minimum 35 cm between each two items.

Figure 4 shows side view of mounting. The proximity reader shall be fixed to the wall with four screws and additionally one screw for the mechanical tamper switch.

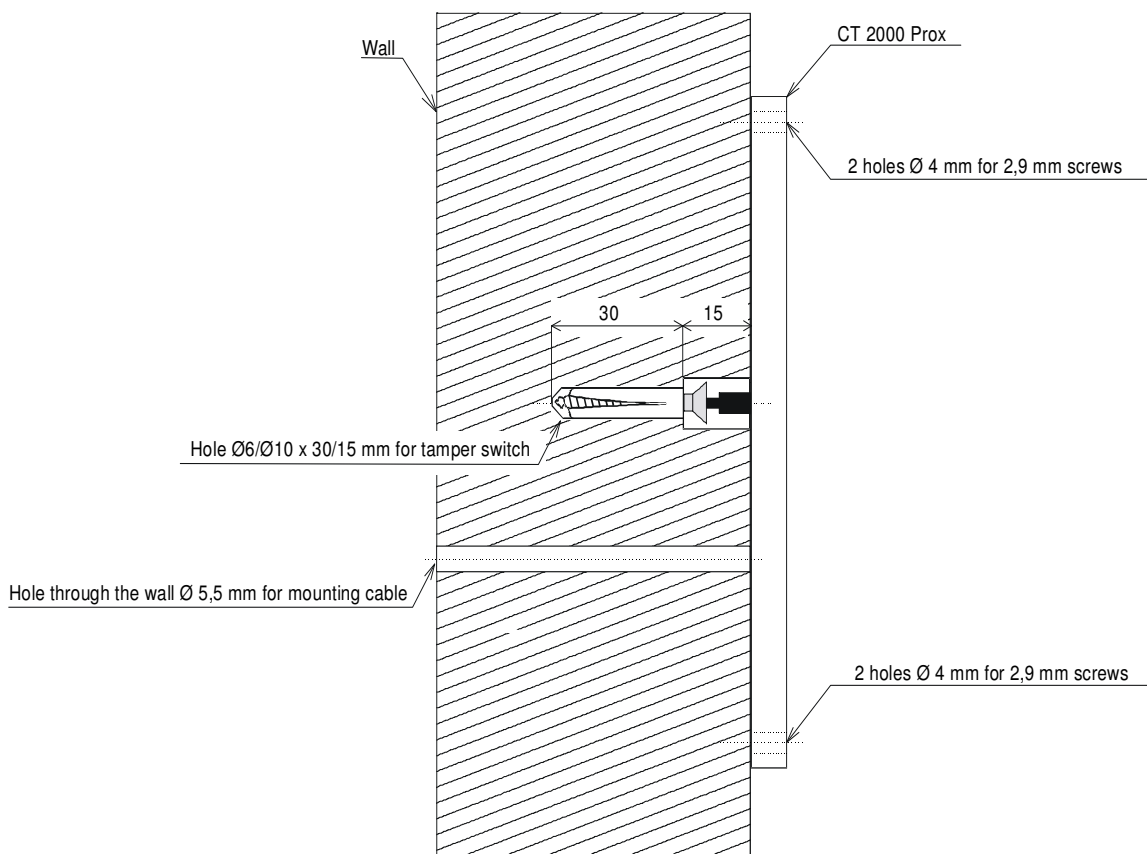


Figure. 4: Mounting, side view

4. Electrical connection

The CT 2000 Prox is delivered with a 4 meter 8-core cable. The picture below shows how the reader is to be connected.

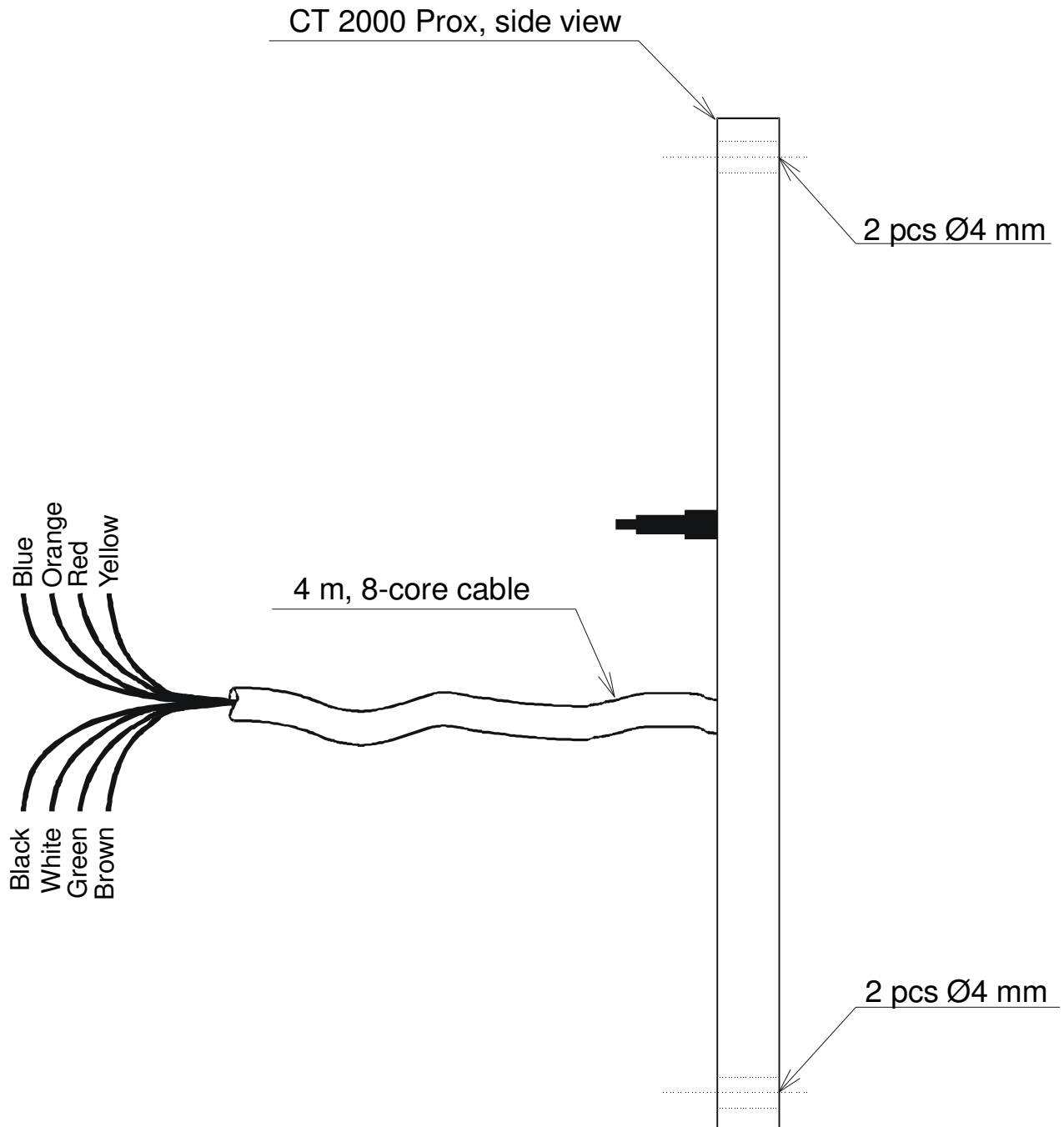
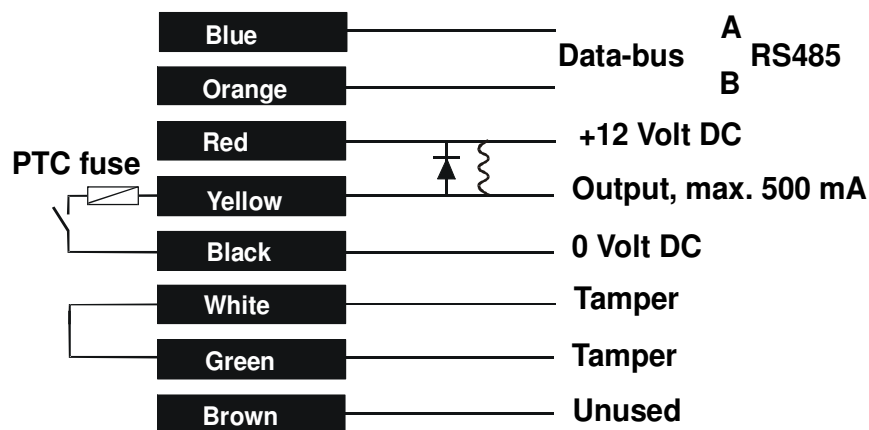


Figure 5

Colour scheme:



The proximity reader has a PTC fuse connected to the yellow core, which protects the item against overload or incorrect installation (consumption over 500 to 750 mA). In such a case the yellow core shall be disconnected, the fault corrected, and the yellow core connected again.

The yellow core is an open collector output, which gives a 0 VDC!

If the CT 2000 Prox is connected into a system, there can be a need for use of a relay (see chapter 8 “CT 2000 Prox connected to an alarm system”)

Note that the brown core is not used!

For connection to an electric lock, electricity consumption under 500 mA see fig. 6.

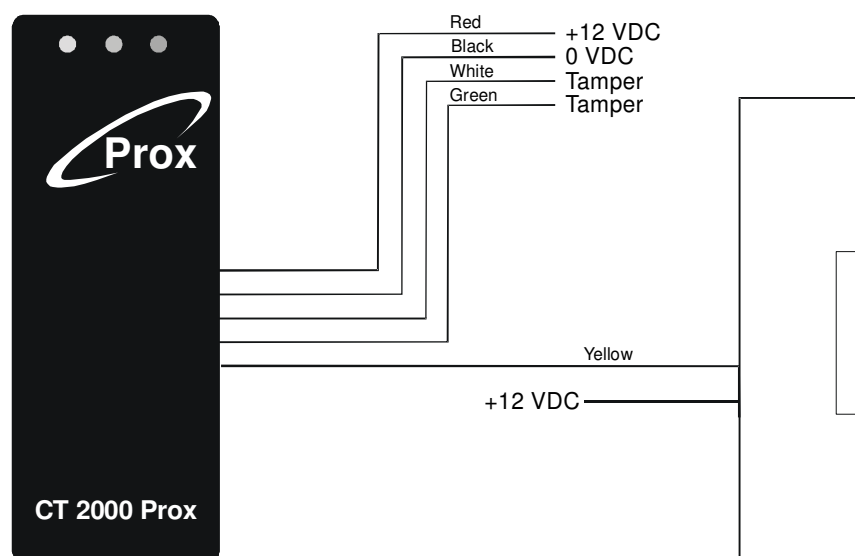


Figure 6: Connection to electric lock

For connection to an electric lock, electricity consumption over 500 mA see fig. 7.

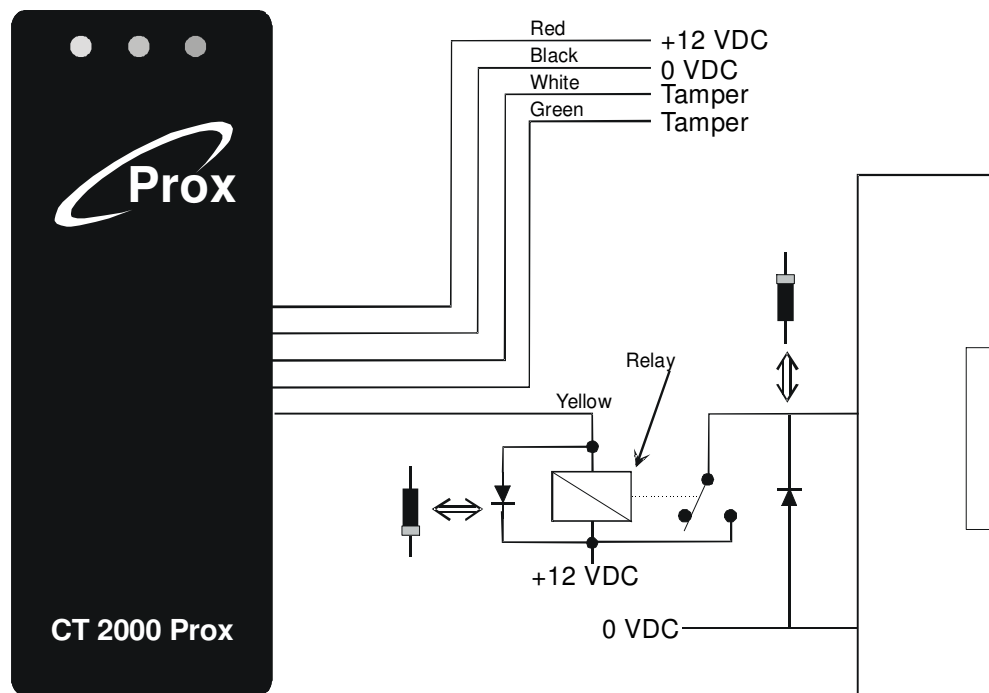


Figure 7: Connection to electric lock with use of relay

For connection to a relay (f.ex. as remote element in alarm system) see fig. 8.

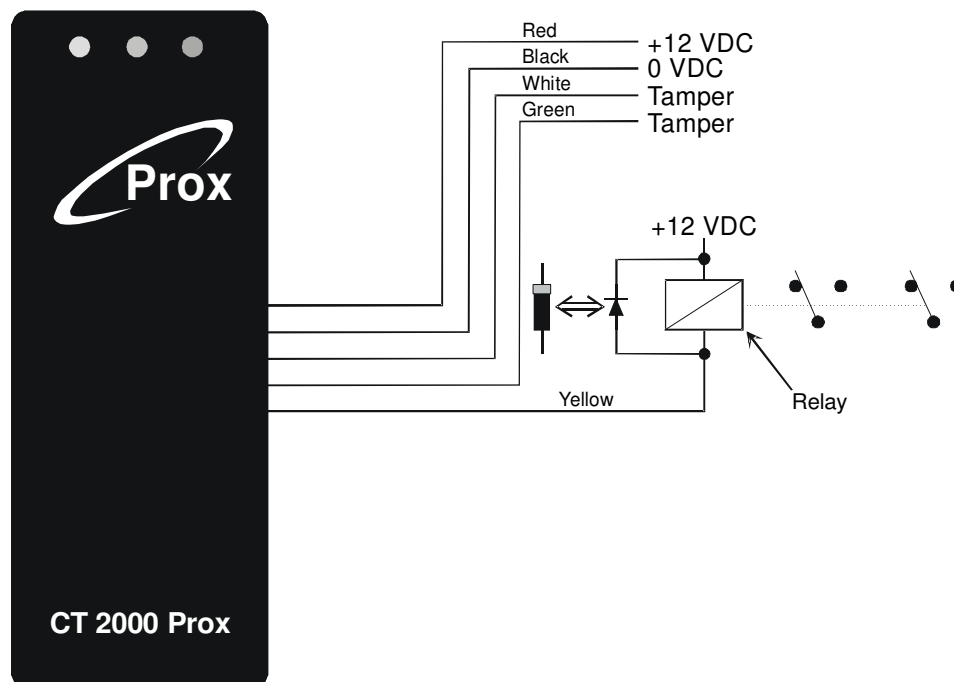


Figure 8: Connection with use of relay for other purposes

The relay can f.ex. be a relay box. (P/N 35508)

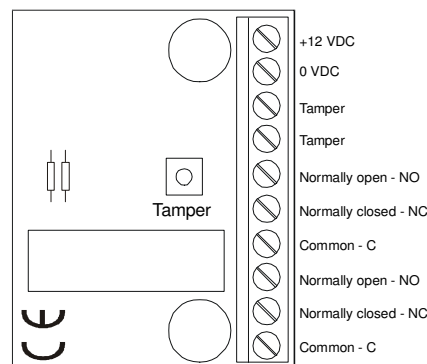


Figure 9: Relay box (P/N 35508)

or an RPT-1 (P/N 35507)

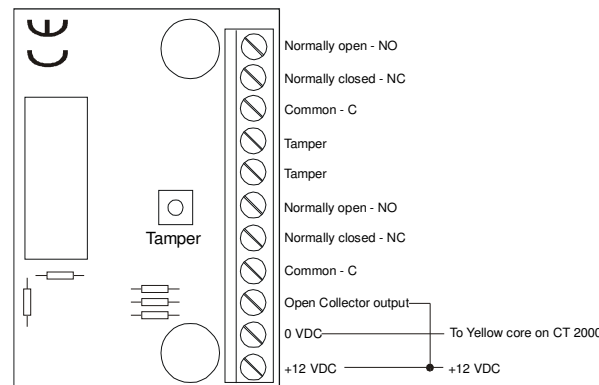


Figure 10: RPT-1 (P/N 35507)

The CT 2000 Prox can be connected to data-bus, where to you can connect f.ex. a door control module Box 485 (P/N 42485 – see fig. 11). For further information please consult the Box 485 manual.

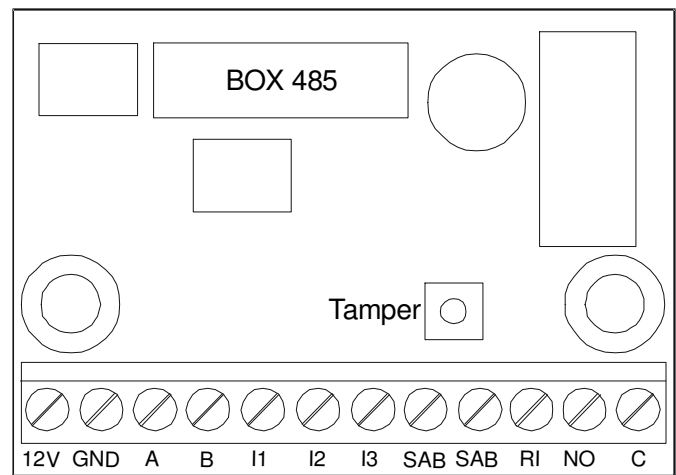
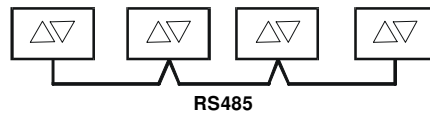


Figure 11: Box 485 module

5. RS485 communication

The whole CT 2000 series equipment, herein also the CT 2000 Prox, uses the RS485 communication method.



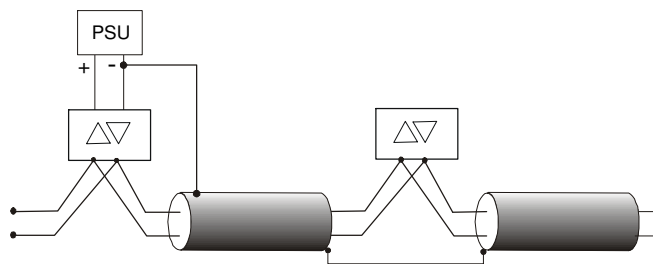
There is a danger of damaging the RS485 data-bus if different items of a CT 2000 system, each supplied by a separate 12 VDC, are connected to different phases of 230 VAC power supply. To prevent this, make sure that all items have the same potential.

This is typically made by connecting the items' – (DC minus) to each other. In case of power supply common to all items, this is made automatically.

5.1. Screened cable

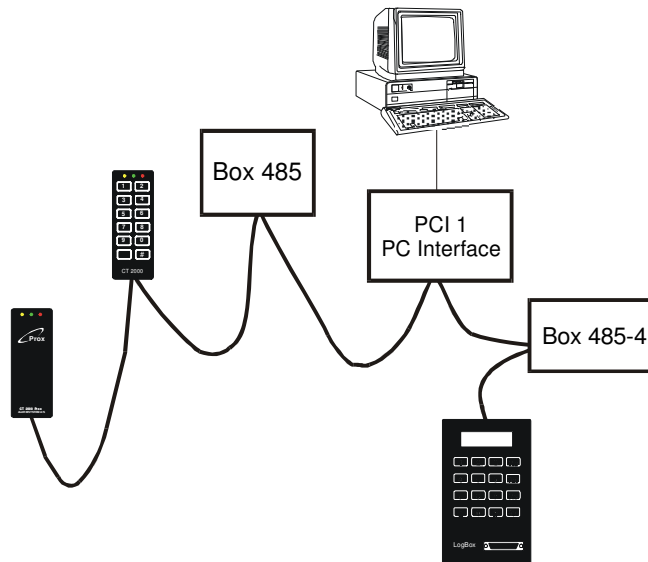
Twisted pair cables give some security against electrical noises, but if a local noise level is high or if system is vulnerable to noises, it is advisable to use screened cable.

If all items in a system are supplied from one source, the cable shall be screened on its' whole length.



5.2. Cabling method

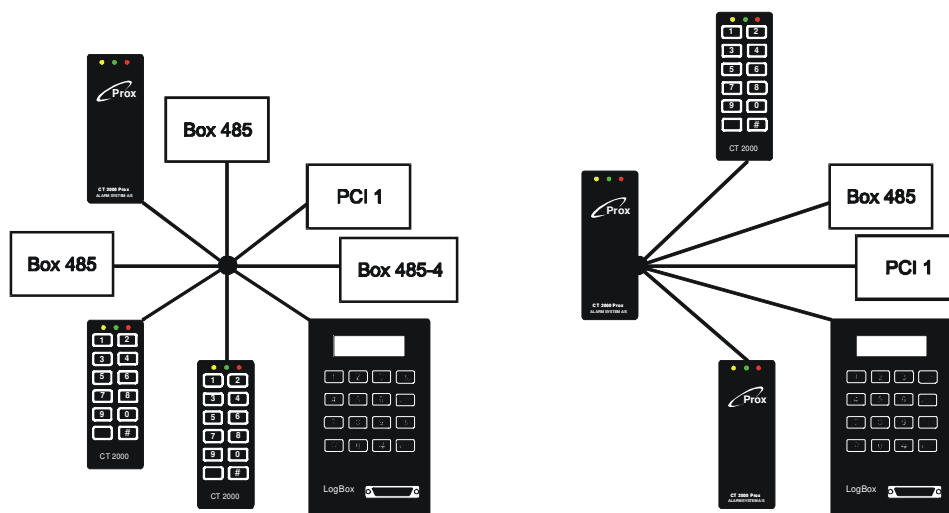
Items mounted to a system shall look like beads on a string (see drawing below).



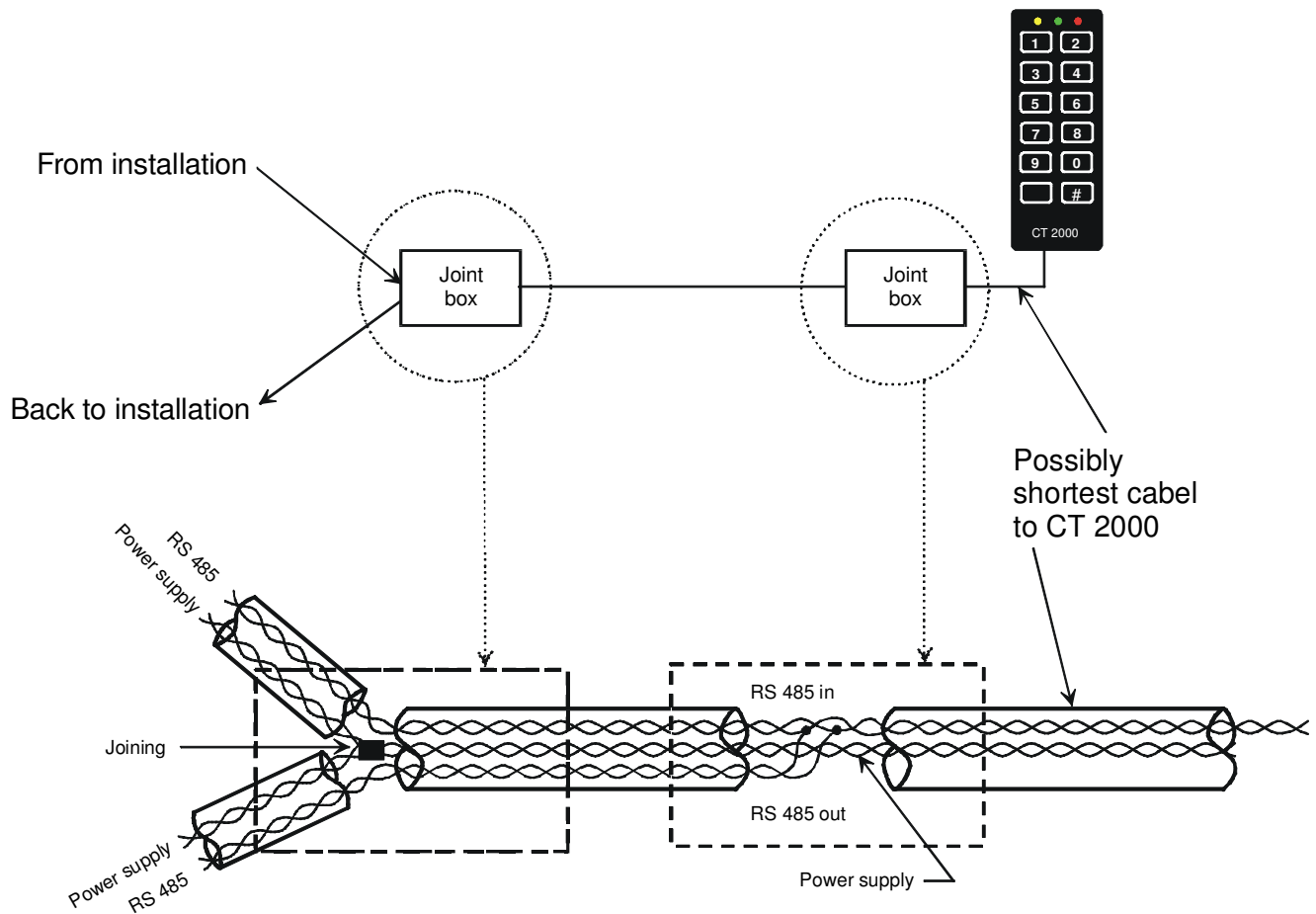
Star installations must NOT be made under any circumstances. If using T-connections, such connection shall be as short as possible.

Ignoring this rule can result in shortening the maximum cable length and slowing down the transmission speed by up to factor 100 per each forbidden connection in the system.

FORBIDDEN – star connection - FORBIDDEN



RS 485 mounting principle



Note: how the RS485 data-bus goes, in separate pairs, from one items in the system to another. Power supply can be directed freely as it suits best in the installation.

6. Technical specifications

Supply Voltage:	12 VDC
Voltage range:	8 do 15 VDC
Ripple Voltage:	max 200 mV
Current consumption:	40 do 120 mA
Output:	Open Collector 500 mA, PTC fuse
Operation distance:	min. 25 mm
Operation temperatures:	-20°C do +85°C
Humidity:	max 99% RF
Weight:	0,2 kg
Dimensions (H x W x D):	130 x 50 x 8 mm
Mounted cable:	4 m, 8-core

Part list:

- 1 proximity reader with cable
- 1 front label
- 5 proximity tags
- 5 screws (Ø2,9 x 25 mm)
- 5 plugs (Ø5,5 x 25 mm)
- 1 spring for tamper switch

Note:

CT 2000 Prox must be supplied from a regulated 12 VDC power supply (8 – 15 VDC).

Max 200 mV ripple.

Use f.ex.: SG 1000, SG 900, HAS 14-14, PSU 1, PSU 12, PS 750, PSU 1000 or similar

Note:

In order to secure correct operation of CT 2000 Prox, the reader must not be mounted in the vicinity of equipment which produces electric field of frequency between 110 KHz and 140 KHz

7. Time overview

Output times for *timer*-function / *reverse timer*-function (hh:mm:ss)

Value	Time	Value	Time	Value	Time	Value	Time
0	0:00	33	4:15	66	3:45:00	99	12:00:00
1	0:01	34	4:30	67	4:00:00	100	12:15:00
2	0:02	35	4:45	68	4:15:00	101	12:30:00
3	0:03	36	5:00	69	4:30:00	102	12:45:00
4	0:04	37	6:00	70	4:45:00	103	13:00:00
5	0:05	38	7:00	71	5:00:00	104	13:15:00
6	0:06	39	8:00	72	5:15:00	105	13:30:00
7	0:07	40	9:00	73	5:30:00	106	13:45:00
8	0:08	41	10:00	74	5:45:00	107	14:00:00
9	0:09	42	11:00	75	6:00:00	108	14:15:00
10	0:10	43	12:00	76	6:15:00	109	14:30:00
11	0:15	44	13:00	77	6:30:00	110	14:45:00
12	0:20	45	14:00	78	6:45:00	111	15:00:00
13	0:25	46	15:00	79	7:00:00	112	15:15:00
14	0:30	47	20:00	80	7:15:00	113	15:30:00
15	0:35	48	25:00	81	7:30:00	114	15:45:00
16	0:40	49	30:00	82	7:45:00	115	16:00:00
17	0:45	50	35:00	83	8:00:00	116	16:15:00
18	0:50	51	40:00	84	8:15:00	117	16:30:00
19	0:55	52	45:00	85	8:30:00	118	16:45:00
20	1:00	53	50:00	86	8:45:00	119	17:00:00
21	1:15	54	55:00	87	9:00:00	120	17:15:00
22	1:30	55	1:00:00	88	9:15:00	121	17:30:00
23	1:45	56	1:15:00	89	9:30:00	122	17:45:00
24	2:00	57	1:30:00	90	9:45:00	123	18:00:00
25	2:15	58	1:45:00	91	10:00:00	124	18:15:00
26	2:30	59	2:00:00	92	10:15:00	125	18:30:00
27	2:45	60	2:15:00	93	10:30:00	126	18:45:00
28	3:00	61	2:30:00	94	10:45:00	127	19:00:00
29	3:15	62	2:45:00	95	11:00:00	128	19:15:00
30	3:30	63	3:00:00	96	11:15:00	129	19:30:00
31	3:45	64	3:15:00	97	11:30:00	130	19:45:00
32	4:00	65	3:30:00	98	11:45:00	131	20:00:00

Value	Time	Value	Time	Value	Time	Value	Time
132	20:15:00	163	28:00:00	194	35:45:00	225	43:30:00
133	20:30:00	164	28:15:00	195	36:00:00	226	43:45:00
134	20:45:00	165	28:30:00	196	36:15:00	227	44:00:00
135	21:00:00	166	28:45:00	197	36:30:00	228	44:15:00
136	21:15:00	167	29:00:00	198	33:45:00	229	44:30:00
137	21:30:00	168	29:15:00	199	37:00:00	230	44:45:00
138	21:45:00	169	29:30:00	200	37:15:00	231	45:00:00
139	22:00:00	170	29:45:00	201	37:30:00	232	45:15:00
140	22:15:00	171	30:00:00	202	37:45:00	233	45:30:00
141	22:30:00	172	30:15:00	203	38:00:00	234	45:45:00
142	22:45:00	173	30:30:00	204	38:15:00	235	46:00:00
143	23:00:00	174	30:45:00	205	38:30:00	236	46:15:00
144	23:15:00	175	31:00:00	206	38:45:00	237	46:30:00
145	23:30:00	176	31:15:00	207	39:00:00	238	46:45:00
146	23:45:00	177	31:30:00	208	39:15:00	239	47:00:00
147	24:00:00	178	31:45:00	209	39:30:00	240	47:15:00
148	24:15:00	179	32:00:00	210	39:45:00	241	47:30:00
149	24:30:00	180	32:15:00	211	40:00:00	242	47:45:00
150	24:45:00	181	32:30:00	212	40:15:00	243	48:00:00
151	25:00:00	182	32:45:00	213	40:30:00	244	48:15:00
152	25:15:00	183	33:00:00	214	40:45:00	245	48:30:00
153	25:30:00	184	33:15:00	215	41:00:00	246	48:45:00
154	25:45:00	185	33:30:00	216	41:15:00	247	49:00:00
155	26:00:00	186	33:45:00	217	41:30:00	248	49:15:00
156	26:15:00	187	34:00:00	218	41:45:00	249	49:30:00
157	26:30:00	188	24:15:00	219	42:00:00	250	49:45:00
158	26:45:00	189	24:30:00	220	42:15:00	251	50:00:00
159	27:00:00	190	34:45:00	221	42:30:00	252	50:15:00
160	27:15:00	191	35:00:00	222	42:45:00	253	50:30:00
161	27:30:00	192	35:15:00	223	43:00:00	254	50:45:00
162	27:45:00	193	35:30:00	224	43:15:00	255	on / off

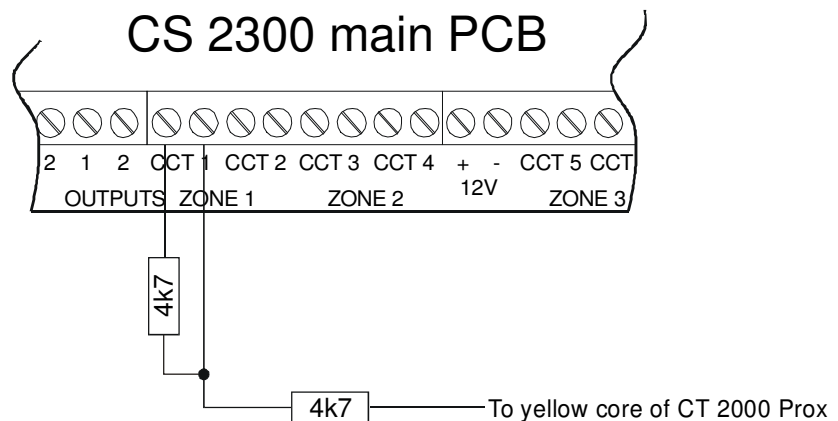
8 CT 2000 Prox as part of a burglary alarm system

If CT 2000 Prox is to be a remote element in a burglary alarm system used as an on/off switch, it shall, in most cases, be connected by use of a relay print (output on CT 2000 Prox is an open collector with max. charging of 500 mA).

Likewise, a relay print must be used to connect an electric lock which uses over 500 mA. There is, however, a number of burglary alarm systems available on the market, to which a CT 2000 Prox can be connected directly, without the use of a relay print.

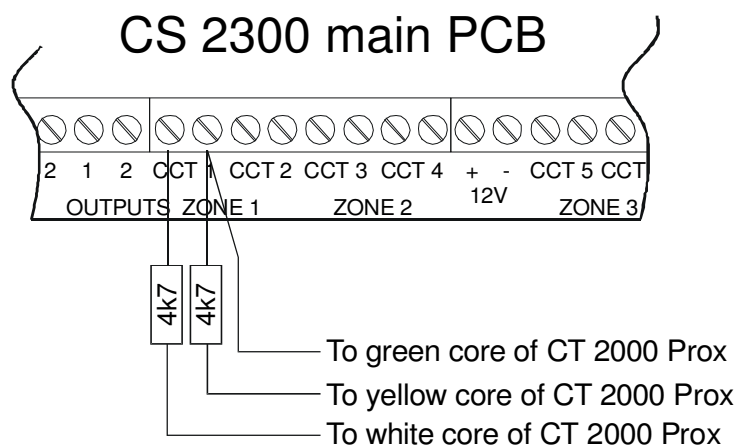
CT 2000 Prox connected directly to SC2300, without tamper switch:

use only the right grip of respectively CCT1, CCT3, CCT5 or CCT7 for direct connection (without relay print) of CT 2000 Prox.



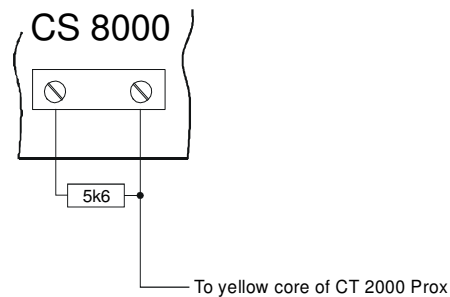
CT 2000 Prox connected directly to SC2300, with tamper switch:

use only the right grip of respectively CCT1, CCT3, CCT5 or CCT7 for direct connection (without relay print) of CT 2000 Prox.



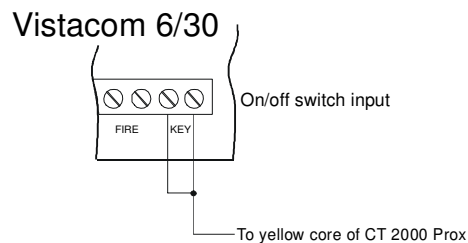
CT 2000 Prox connected directly to CS8000:

Set activation time on CT 2000
Prox to 1 – 2 sec.



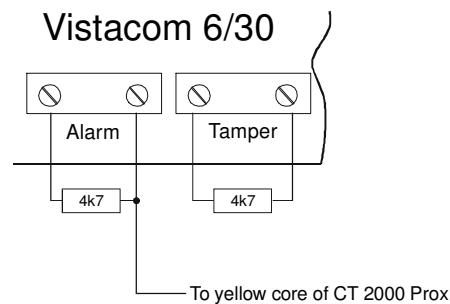
CT 2000 Prox connected directly to Vistacom 6/30 on the remote on/off output:

Set activation time on CT 2000
Prox to 1 – 2 sec.



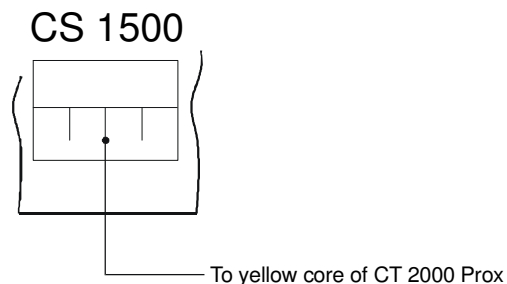
CT 2000 Prox connected directly to Vistacom 6/30 on alarm input:

If tamper circuit on CT 2000
Prox is to be used, the white
and green cores shall be
connected to the tamper grip on
the Vistacom 6/30 connected in
series to the resistance.



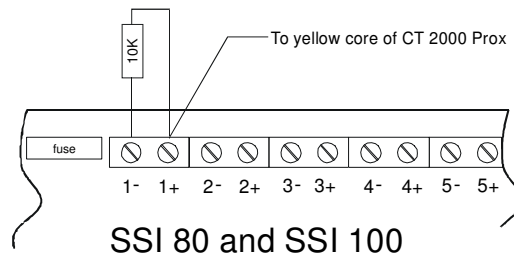
CT 2000 Prox connected directly to CS1500:

CT 2000 Prox can be used to
switch the CS1500 on and off
via the key switch in the lower
right hand corner of the PCB.

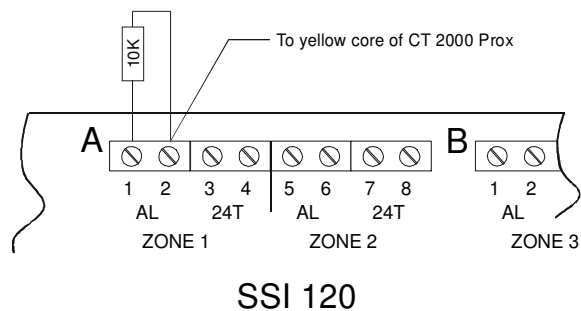


CT 2000 Prox connected directly to SSI systems:

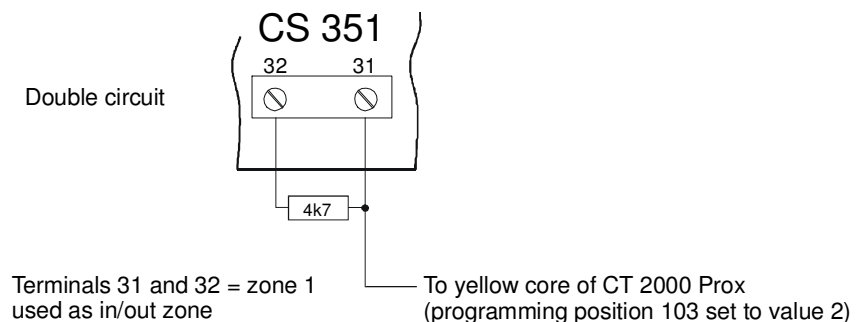
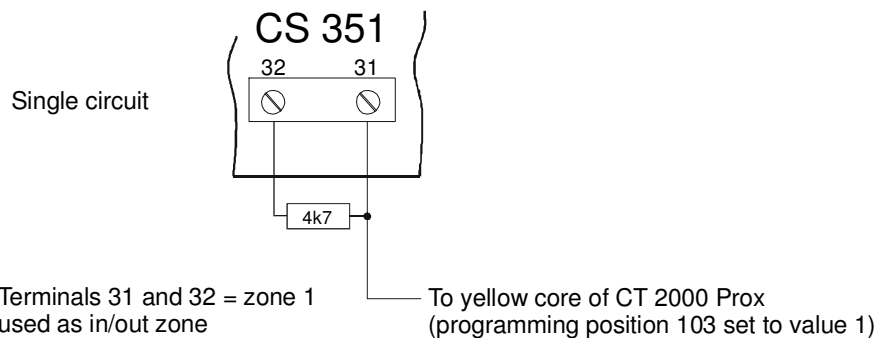
CT 2000 Prox can be connected directly on grips 1+, 2+, 3+, 4+, 5+, 6+, 7+ or 8+.



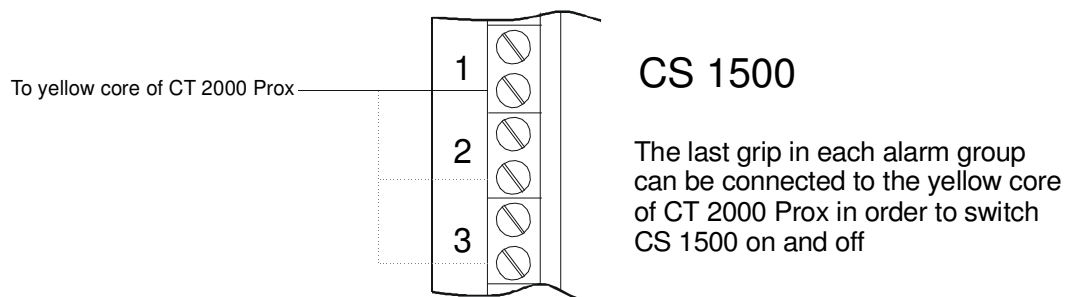
CT 2000 Prox can be connected directly on grips 2 or 6 of respective zones.



CT 2000 Prox connected directly to CS351:

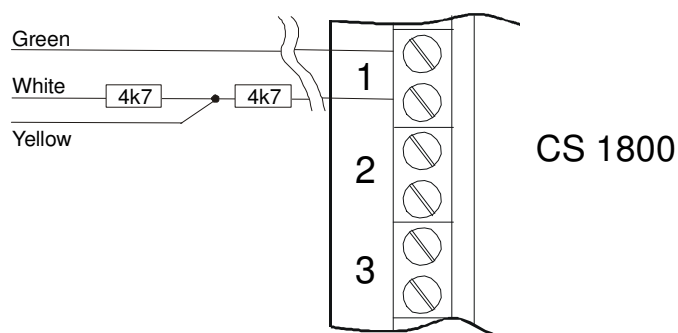


CT 2000 Prox connected directly to CS1500:



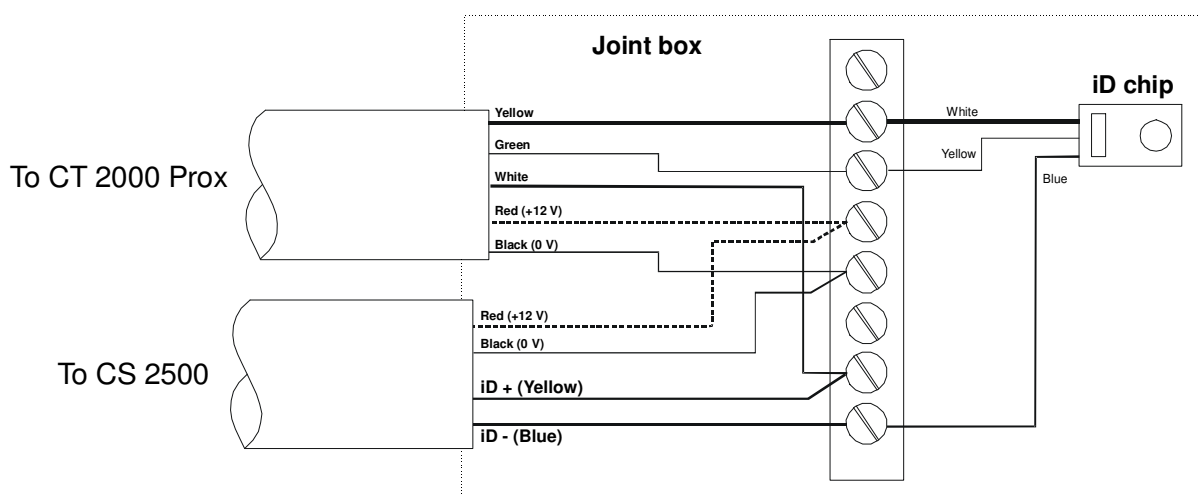
(Programming position 103 set to value 2)

CT 2000 Prox connected directly to CS1800:



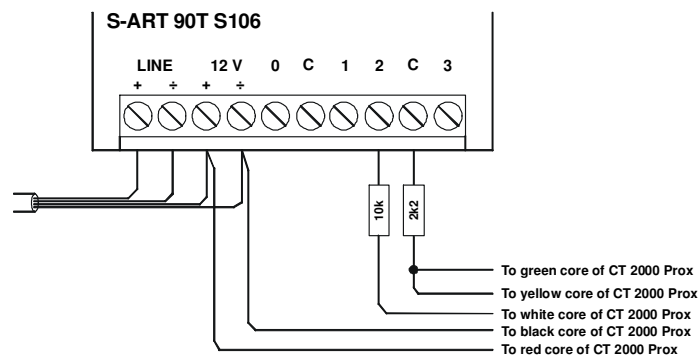
(Programming position 103 set to value 2)

CT 2000 Prox connected directly to CS2500:



(Programming position 103 set to value 2)

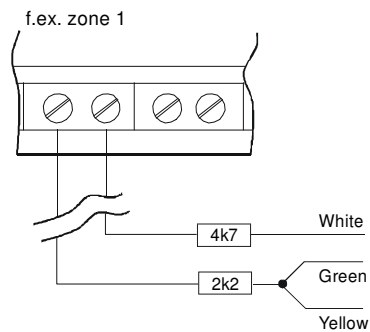
CT 2000 Prox connected directly to THOR:



(Programming position 103 set to value 2)

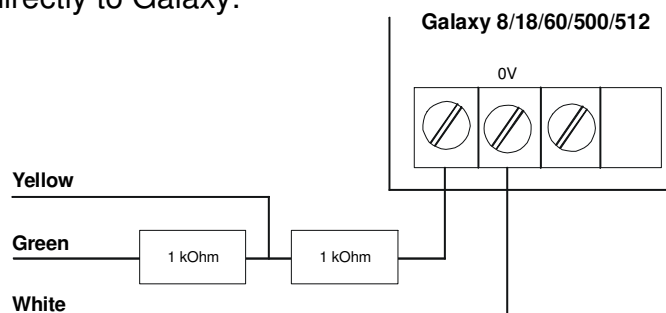
CT 2000 Prox connected directly to RS206 / 210 / 240:

RS 206 / 210 / 240



(Programming position 103 set to value 2)

CT 2000 Prox connected directly to Galaxy:



(Programming position 103 set to 2)

All other AIA systems except for the aforementioned shall be connected by use of relay box, RPT-1, Box 485 or similar.

Please contact Conlan on www.conlan.dk if you have a burglary alarm which you wish to connect to CT 2000 or CT 2000 Prox.

9. CT 2000 series overview:

Symbol	P/N	EAN-number	Description
CT 2000 Prox	42503	5 703360 425036	Stand alone proximity reader, incl. 5 proximity tags
CT 2000 Tg	42504	5 703360 425043	Proximity tag for CT 2000 Prox
CT 2000 kl. 3	42501	5 703360 425012	Stand alone keypad (<i>SKAFOR</i> certified)
CT 2000	42500	5 703360 425005	Stand alone keypad
Box 485	42485	5 723360 424855	Door control unit (<i>SKAFOR</i> certified)
Box 485-4	42486	5 703360 424862	Output module with 4 relay outputs
Parrallelbox 2	42530	5 703360 425302	Control unit which controls up to 16 CT 2000
LogBox 2	42523	5 703360 425234	LogBox (registrates last 1000 operations)
PCI 1	42520	5 703360 425203	PC interface
ALU-PLADE	42598	5 703360 425982	Aluminium back plate for CT 2000 and CT 2000 kl. 3
ALU-HAT	42597	5 703360 425975	5 replacement aluminium caps
DH 1	42590	5 703660 425906	Demo set
ADK 2000	42510	5 703360 425104	Mini access control unit based on CT 2000
RPT-1	35507	5 703360 355074	Boxed relay print
Relæbox	35508	5 703360 355081	Print to be mounted in joint box
SG 1000	48800	5 703360 488000	Universal power supplier plastic sealed
PSU 1000	48810	5 703360 488109	Univarsal power supplier in metal box
CTL 2000	42595	5 703360 425951	Front labels for CT 2000 and CT 2000 kl.
CTL Kunde	42596	5 703360 425968	Customer designed front label (customsr's own logo and design)