



EN3001A

取扱説明書

**安全にお使いいただくために  
必ずお読み下さい**

この取扱説明書には、あなたや他の人々への危険や財産への損害を未然に防ぎ、本商品を安全にお使いいただくために、守っていただきたい事項を示しています。本商品のご使用前に、本書をよくお読みのうえ、内容を理解してからお使いください。お読みになったあとも、本商品のそばなど、いつも手元においてお使いください。

---

## 安全情報の表示について

当社では人身事故や財産の損害を避けるために、危険の程度に応じて下記のようなシグナルワードを用いて安全に関する情報を提供しています。記述内容を十分理解して機器を操作するようにしてください。

下記の表示およびシンボルは、そのすべてが本器に使用されているとは限りません。また、外観図などが本書に含まれるとき、製品に貼り付けたラベルなどがその図に記入されていない場合があります。

### 説明書中の表示について



**危険**

回避しなければ、死亡または重傷に至る切迫した危険状況があることを警告しています。



**警告**

回避しなければ、死亡または重傷に至る可能性がある潜在的危険について警告しています。



**注意**

回避しなければ、軽度または中程度の人体の傷害に至る可能性がある潜在的危険、または、物的損害の発生のみが予測されるような危険状況について警告しています。

### 機器に表示または説明書に使用されるシンボルについて

機器の内部や操作か所の近くに、または説明書に、安全上あるいは操作上の注意を喚起するための表示があります。これらの表示に使用しているシンボルの意味についても十分理解して、注意に従ってください。



禁止行為を示します。丸の中や近くに禁止内容が描かれています。



守るべき義務的行為を示します。丸の中や近くに守るべき内容が描かれています。



警告や注意を喚起することを示します。三角の中や近くにその内容が描かれています。



注意すべきことを示します。四角の中にその内容が書かれています。

EN3001A

取扱説明書

2026年4月(初版)

- ・予告なしに本書の内容を変更することがあります。
- ・許可なしに本書の一部または全部を転載・複製することを禁じます。

## 安全にお使い頂くために



### 警告

修理



- 1 本装置は、お客様自身では、修理できません。ネジを取り外し、装置を分解しないでください。感電する恐れがあります。  
保守に関しては、所定の訓練を受け、火災や感電事故等の危険を熟知した方、またはNTT東日本株式会社/NTT西日本株式会社の保守契約業者にご依頼ください。
- 2 本装置へ電源を供給するには、本装置に添付された3芯電源コードを接地極付コンセントへ接続し、本装置が接地されるようにして使用してください。接地極付コンセントがなく変換アダプタを使用する場合は、変換アダプタから出ている緑色の線の先端の端子を必ず接地してから、ご使用ください。接地しないで電源を投入すると、負傷または死につながる感電事故を引き起こす恐れがあります。また、精密部品を破損する可能性があります。



### 注意

- 1 電源端子の周囲のほこりを清掃してください。  
電源コンセントに付着したほこりなどは、ときどき、清掃してお使いください。ほこりが電極にたまると火災になる恐れがあります。
- 2 本装置は、風通しの良い場所でお使いください。筐体の表面温度が高温になる場合がありますので火傷をする危険があります。
- 3 本装置は、メモリのバックアップ用電池として、フッ化黒鉛リチウム電池を使用しています。

## 電波妨害について

---

この装置は、クラスA機器です。この装置を住宅環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI-A

---

## 輸出する際の注意事項

---

1. 本製品は日本国内仕様であり、外国の安全規格などに準拠していない場合もありますので、国外へ持ち出して使用された場合、当社は一切の責任を負いかねます。
  2. 本製品および添付マニュアル類は、輸出および国外持ち出しの際には、「外国為替および外国貿易法」により、日本国政府の輸出許可や役務取引許可を必要とする場合があります。また、米国の「輸出管理規則」により、日本からの再輸出には米国政府の再輸出許可を必要とする場合があります。本製品や添付マニュアル類を輸出または国外持ち出しをする場合は、事前に必ず当社の営業担当までご連絡ください。輸出規制を受ける製品やマニュアル類を廃棄処分する場合は、軍事用途等に不正使用されないよう、破碎または裁断処理していただきますようお願い致します。
- 

## 廃棄対策について

---

本装置は、フッ化黒鉛リチウム電池を使用しています。  
廃棄する場合は、関連法令に従ってください。

---

## 特記事項

---

本装置に搭載されているすべてのソフトウェアの解析（逆コンパイル、逆アセンブル、リバースエンジニアリングなど）、コピー、転売、改造を行うことを禁止します。

---

# ソフトウェア使用許諾契約書

本使用許諾契約書（以下、「本契約書」といいます。）は、アンリツ株式会社 EN3001Aソフトウェア（以下、「本ソフトウェア」といいます。）に関してお客様とアンリツ株式会社（以下、「アンリツ」といいます。）の間に締結される法的な契約書です。

お客様は、本ソフトウェアを使用（実行、インストール、複製、記録等を含み以下、「使用」といいます。）する前に、本契約書をお読みください。お客様から本契約書の規定にご同意いただいた場合のみ、お客様は、本契約書に定められた範囲において、本ソフトウェアを使用することができます。お客様が本ソフトウェアを使用したとき、当該ご同意をいただいたものとし、本使用許諾契約（以下、「本契約」といいます。）が成立したものとみなされます。

本ソフトウェアは、著作権法および著作権に関する条約をはじめ、その他の無体財産権に関する法律およびその条約によって保護されています。本ソフトウェアはアンリツがお客様に対してその使用を許諾するものです。

なお、本ソフトウェアは、オープンソースソフトウェアを含んでいます。オープンソースソフトウェアに関しては、本書「付録B 第三者ソフトウェアライセンス」を参照してください。オープンソースソフトウェアのライセンス記述との間で矛盾が生じた場合は、オープンソースソフトウェアのライセンスの記述が優先されます。

## 1. 使用許諾

アンリツはお客様に対し以下の使用を許諾いたします。

- (1) お客様は、本ソフトウェアを特定の1台の本製品EN3001Aにおいてのみ使用することができます。
- (2) お客様は、本ソフトウェアをお客様の自社業務のために限り使用することができます。

## 2. 使用の制限

- (1) お客様は、本ソフトウェアをお客様の保有するもの、第三者の保有するものであることを問わず、いかなるコンピュータ上においても並行して使用しないものとします。
- (2) お客様は、本ソフトウェアについて、バックアップする目的以外の複製、または第三者に対し頒布、貸与、リース、担保設定等を行うことはできません。また、本ソフトウェアを使用する権利を第三者に譲渡、転売、または再使用許諾することはできません。お客様はいかなる状況においても、他の法人または団体の従業員および構成員に対して、本ソフトウェアを使用する権利を与えることはできません。
- (3) お客様は、本ソフトウェアまたは本ソフトウェアに関するドキュメントを修正、改変、翻訳、リバースエンジニアリング、逆コンパイル、逆アセンブルし、または本ソフトウェアの派生製品を作成することはできません。また、本ソフトウェアは一つの製品として許諾されており、お客様はその構成部分を分離して使用することはできません。

- (4) お客様は、本製品および本製品に添付される第三者ソフトウェアの権利表示を変更、または修正することはできません。

### 3. 本契約の解除および終了

- (1) お客様が、本契約の条項の一つにでも違反したとき、アンリツの著作権およびその他の権利を侵害したとき、暴力団等反社会的な団体に属しもしくは当該団体に属する者と社会的に非難されるべき関係があることが判明したとき、または法令に違反したとき等、本契約を継続できないと認められる相当の事由があるときは、アンリツは本契約をなんらの催告なくして即時に解除することができます。
- (2) お客様またはアンリツは、30日前までに書面で相手方へ通知することにより、本契約を終了させることができます。
- (3) 本契約が解除されまたは終了したときは、お客様は直ちに、本ソフトウェア、その構成部分、本ソフトウェアに関するドキュメント、およびそれらの一切の複製物を破棄、またはコンピュータの記憶媒体上から完全に消去するものとし、使用を継続してはなりません。
- (4) 本契約の解除または終了に伴って本ソフトウェアの全部または一部が使用不可能となることによって、お客様および第三者が被った損害等について、アンリツは一切責任を負いません。

### 4. 保証の制限

- (1) お客様は、本ソフトウェアの使用に基づいて発生する一切の直接・間接の損害または損失（データ滅失、サーバーダウン、業務停滞、第三者からのクレーム等）の危険をすべてお客様のみが負うことをここに確認し、同意するものとします。
- (2) アンリツは、本ソフトウェアの品質に契約内容と適合しない部分（いわゆるバグをいい、構造上の問題等を含みます。）が存していた場合に、これが修正されることを保証いたしません。また、アンリツの口頭または書面によるいかなる情報提供または助言も、新たな保証を行なうものではなく、その他いかなる意味においても本保証の範囲を拡大するものではありません。

### 5. 責任の制限

不法行為、契約その他いかなる法的根拠による場合でも、アンリツならびに本ソフトウェアの供給者、再販売業者、および各情報コンテンツの提供会社は、お客様その他の第三者に対し、本ソフトウェアの使用または使用不能に関して生じた営業価値の喪失、業務の停止、コンピュータの故障による損害、その他あらゆる商業的損害・損失等を含め一切の直接的、間接的、特殊的、付随的または結果的な損失または損害について責任を負いません。ただし、当該損失または損害がアンリツの故意または重大な過失により生じた場合はこの限りではありません。

### 6. 輸出法令の遵守

お客様は、本ソフトウェアを、直接、間接を問わず、核、化学・生物兵器およびミサイルなどの大量破壊兵器および通常兵器、ならびにこれらの製造設備等・関連資機材等の拡散防止の観点から、日本国の「外国為替及び外国貿易法」およびアメリカ合衆国の「輸出管理法」その他国内外の関

係する法律, 規則, 規格等に違反して, いかなる仕向け地, 自然人もしくは法人に対しても輸出しないものとし, または輸出させないものとし

#### 7. 規定の変更

アンリツは, 本契約の規定の変更が, お客様の一般の利益に適う場合, または本契約の目的および変更に係る諸事情に照らして合理的な場合に, お客様の承諾を得ることなく変更を実施することができます。変更にあたりアンリツは, 原則として 45 日前までに, その旨(変更後の内容および実施日)を自己のホームページに掲載し, またはお客様に書面もしくは電子メールで通知します。

#### 8. 損害賠償

お客様が本契約の規定に違反したことに起因してアンリツが損害を被った場合, アンリツはお客様に対して当該損害の賠償を請求することができます。

#### 9. 協議

本契約の条項における個々の解釈について生じた疑義, または本契約に定めのない事項について, お客様およびアンリツは誠意をもって協議のうえ解決するものとします。

#### 10. 準拠法および裁判管轄

本契約は, 日本法に準拠し, 日本法に従って解釈されるものとします。本契約に関する紛争の第一審の専属的合意管轄裁判所は, 東京地方裁判所とします。

#### 改定履歴

2023 年 10 月 1 日

## 当社へのお問い合わせ

本製品の故障については、本装置に同梱されている「はじめにお読みください」に記載の「本製品についてのお問い合わせ窓口」へすみやかにご連絡ください。

## 本書の内容

この取扱説明書は、EN3001A（以下、本装置）の使用方法について記述したものです。

本説明書が適用できる本装置の形名を下記に示します。

・ EN3001A

本装置の取扱説明書は、以下の①で構成されています。本書は①です。

### ① 取扱説明書

この説明書は、本装置の設置・取り扱い・保守の方法について記述してあります。

# 目次

本書の内容	I
目次	II
1. 概要	2
1.1 概要	2
1.2 使用例	2
1.3 品名	3
2. 仕様	5
2.1 主要諸元	5
3. 各部の名称と機能	7
3.1 外観図	7
3.2 正面パネルの名称	8
3.3 背面パネルの名称	9
3.4 アラーム表示	10
3.5 ピンアサイン	11
3.5.1 各種ポートのコネクタピンアサイン	11
4. 設置・設定	14
4.1 設置手順	14
4.2 開梱と設置	15
4.2.1 梱包内容のチェック	15
4.2.2 設置場所の選び方	15
4.2.3 再輸送	16
4.3 ケーブルの接続	17
4.3.1 電源ケーブル	17
4.3.2 LAN ケーブル	18
4.3.3 端末インタフェースケーブル	18
4.3.4 シリアルインタフェースケーブル	19
4.3.5 ALM 接点出力	20
4.4 端末インタフェースの設定	21
4.5 エコーキャンセラの設定	23
4.6 取付方向と取付方法	24
4.6.1 取付方向	24
4.6.2 取付方法	24
5. 運用	28
5.1 コンソール	28
5.1.1 コマンドラインインタフェース	28
5.1.2 シリアル接続での通信設定	28
5.1.3 Telnet 接続または SSH 接続での設定	29
5.1.4 ログイン	29
5.1.5 ログアウト	29
5.2 基本設定	30
5.2.1 設定手順	30
5.2.2 VLAN の設定	31
5.2.3 管理用 IP アドレスの設定	31

5.2.4	通信用 IP アドレスと UDP ポート番号の設定	32
5.2.5	再起動による設定値の反映	32
5.2.6	相手装置通信用 IP アドレスと UDP ポート番号の設定	33
5.2.7	通信の開始設定	33
5.2.8	通信の正常性の確認	33
5.2.9	設定値の保存	34
5.3	設定値の反映	34
5.3.1	保存後に再起動が必要な設定	34
5.3.2	再起動方法	34
5.3.3	再起動時の注意事項	34
6.	保守	36
6.1	ループバック試験	36
6.1.1	ループバック種別	36
6.1.2	ループバック試験例	38
6.2	装置の交換	39
6.3	故障探索フロー	40
6.3.1	電源系探索フロー	40
6.3.2	制御通信系探索フロー	41
6.3.3	端末系探索フロー	43
6.4	工場出荷状態に戻す	44
6.4.1	設定手順	44
6.4.2	設定の初期化	44
6.4.3	パスワードの初期化	45
A.	付録	A-2
A.1	コマンド一覧	A-2
A.2	工場出荷時の設定一覧	A-5
A.3	システムログ情報一覧	A-6
A.4	EN3001A を VLAN 無効で対向接続する場合の設定例	A-10
A.5	EN3001A を VLAN 有効で対向接続する場合の設定例	A-11
A.6	技術基準適合認定	A-13
B.	付録	B-2
B.1	第三者ソフトウェア	B-2
B.2	GPLv2	B-3
B.3	GPLv3	B-8
B.4	LGPLv2.1	B-18
B.5	BSD	B-25
B.6	ntp	B-26
B.7	sudo	B-27
B.8	shadow	B-29
B.9	libpam-modules	B-32
B.10	openssh	B-33
B.11	apache	B-38
B.12	zlib	B-41

# 第 1 章 概要

## 第1章 概要

### 1. 概要

#### 1.1 概要

本装置は、既存のアナログ専用線（メタル回線）を IP 回線（光ファイバ）に変更する IP 変換装置です。

2 線式対自動交換機レピータ (CO) と 2 線式対自動電話機レピータ (LC) の機能を持ちます。どちらか一つの機能を設定して使用します。

#### 1.2 使用例

使用形態を図 1-1 に示します

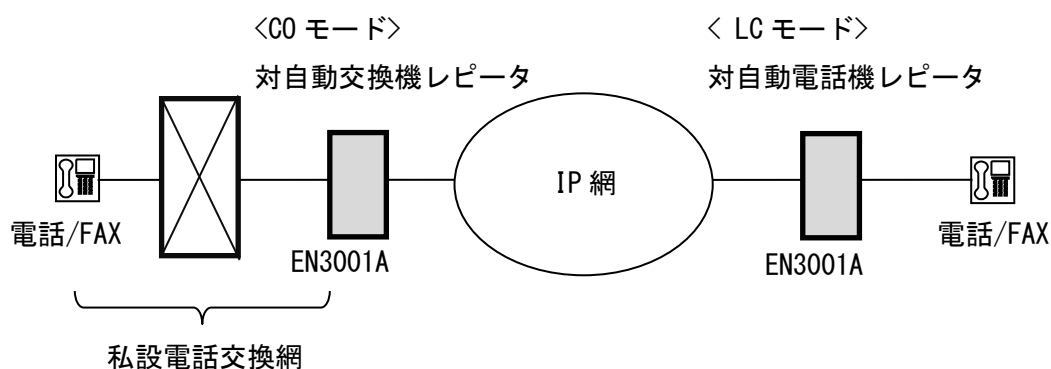


図 1-1 使用形態図

- 注. 本装置は、一般電話網を直接接続することはできません。  
一般電話網を利用する場合は、私設電話交換網を経由させてください。  
14.4Kbps以上の高速モデム等は、動作保証していません。  
また、ナンバーディスプレイ、ダイヤルイン等各種付加機能は利用できません。

## 1.3 品名

本装置の品名を表 1-1 に示します。

表 1-1 品名

品名	カナ品名	記事
EN3001A	EN3001A	<b>【内訳】</b> ・ EN3001A 本体 1 台 ・ 添付品 1 式

本装置の添付品を表 1-2 に示します。

表 1-2 添付品

添付品名	記事
固定金具	EN3000 固定金具（取付用金具類一式）
取扱説明書	注意書「はじめにお読みください」 取扱説明書のダウンロードサイトのご案内
AC 電源ケーブル	長さ：2.5 m
端末インタフェースケーブル 3	アナログ端末接続用ケーブル（ローゼット付き）
保証書	—

本装置のオプション品を表 1-3 に示します。

表 1-3 オプション品

オプション品	記事
EY1085A	シリアルインタフェースケーブル EN3003A と共用可

## 第2章 仕様

## 2. 仕様

## 2.1 主要諸元

本装置の基本仕様を表 2-1 に示します。

表 2-1 EN3001A 基本仕様

項目	仕様概要
伝送路側インタフェース	<ul style="list-style-type: none"> <li>・イーサネット規格 100BASE-TX/10BASE-T オートネゴシエーション有効/無効 (オートネゴシエーション無効時は全二重通信固定) フロー制御有効設定 (Pause パケット受信時に送信停止) Auto MDIX/MDI-X あり</li> <li>・LAN プロトコル Ethernet Ver2.0 (IEEE802.3 準拠) UDP/IP</li> <li>・VLAN タグ 有/無設定可 (IEEE802.1Q 準拠)</li> <li>・ポート数 1</li> <li>・コネクタ形状 RJ-45 型モジュージャック (ISO IS8877 準拠)</li> </ul>
端末側インタフェース	<ul style="list-style-type: none"> <li>・通信方式 2 線式 対自動電話機レピータ (LC) / 対自動交換機レピータ (CO) いずれか設定</li> <li>・標本化周波数 8 kHz</li> <li>・圧伸特性 <math>\mu=255</math> 15 折線非直線符号化方式</li> <li>・符号器構成 シングルチャネル CODEC 方式</li> <li>・符号化ビット数 8 bit</li> <li>・ポート数 1</li> <li>・コネクタ形状 RJ-11 型モジュージャック</li> </ul>
	<ul style="list-style-type: none"> <li>・周波数帯域 300~3400 Hz</li> <li>・入出力レベル 0 dBr 送り, -8 dBr<math>\pm</math>1 dB 受け (1020 Hz 工場出荷時)</li> <li>・入出カインピーダンス 600<math>\Omega</math> 平衡 (公称インピーダンス)</li> <li>・電話機側ループ抵抗 1200<math>\Omega</math> 以下 (電話機抵抗を含む)</li> <li>・呼出信号 20<math>\pm</math>5 Hz, 75 Vrms 以上</li> <li>・発着信号 ループ発信, 16 Hz 着信</li> <li>・転極方式 ノーマル/リバース (着信, 応答時)</li> </ul>
エコーキャンセラ機能	<ul style="list-style-type: none"> <li>・エコーキャンセラ機能 有効/無効は, Mode スイッチにより切替可。 注: 以下の場合, エコーキャンセラ機能を無効にしてください。正しく動作しません。 1. モデムを使用する場合 2. 転極のない回線で使用する場合</li> <li>・エコーキャンセラ減衰量 30 dB 以上</li> </ul>
ネットワーク管理	Telnet, SSH, Ping, SNMP, FTP
外形寸法	55 mm(W) $\times$ 150 mm(H) $\times$ 158 mm(D) 以下 (突起部を除く) [縦置き/横置き可]
質量	1.5 kg 以下
電源電圧	AC 100 V (動作範囲 90~110 V) (50 Hz/60 Hz)
消費電力	19VA 以下, 10 W 以下
環境条件	周囲温度: -10~+55 $^{\circ}$ C 相対湿度: 20~85% (結露なきこと)

## 第3章 各部の名称と機能

### 3. 各部の名称と機能

#### 3.1 外観図

本装置の外観図を図 3-1 に、解説を表 3-1 に示します。

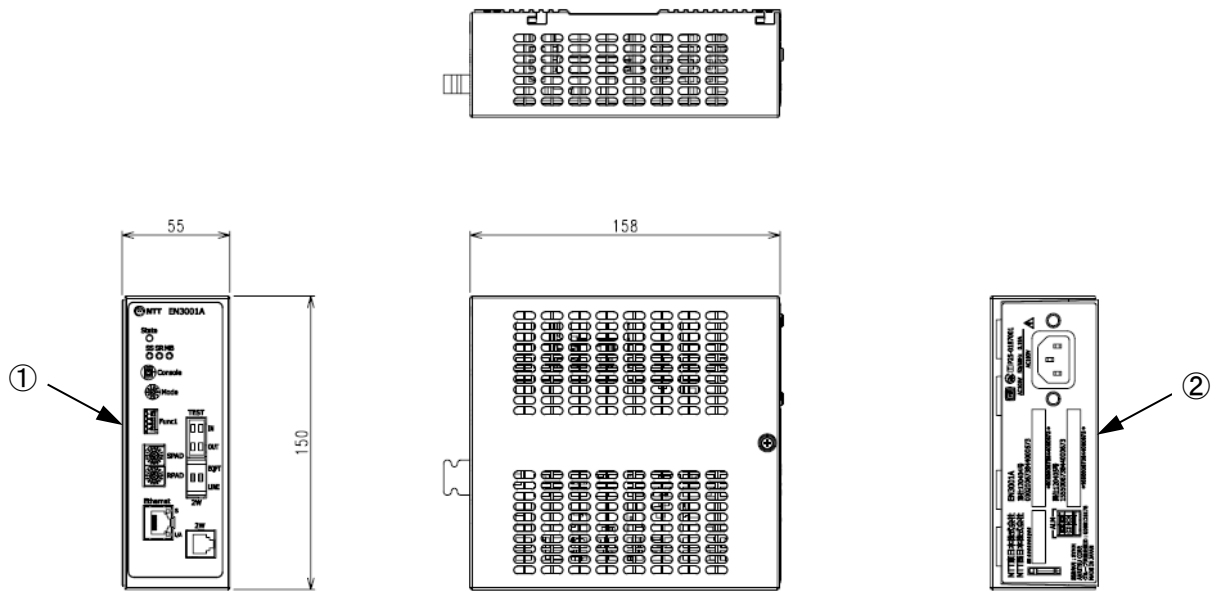


図 3-1 外観図

表 3-1 外観図解説

部位	名称	機能
①	正面パネル	詳細は表 3-2 参照。
②	背面パネル	詳細は表 3-3 参照。

### 3.2 正面パネルの名称

正面パネル図を図 3-2 に、解説を表 3-2 に示します。

表 3-2 正面パネル解説

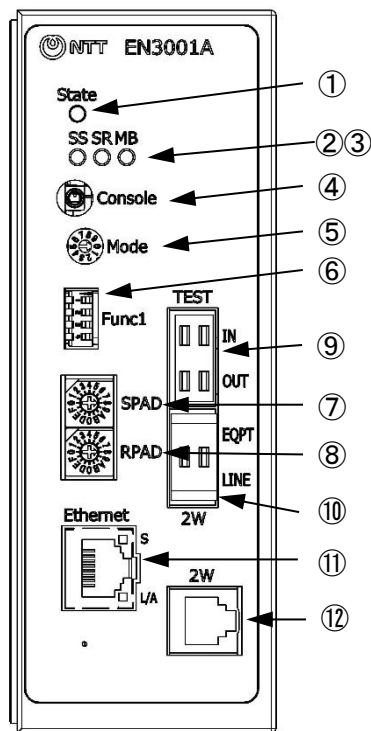


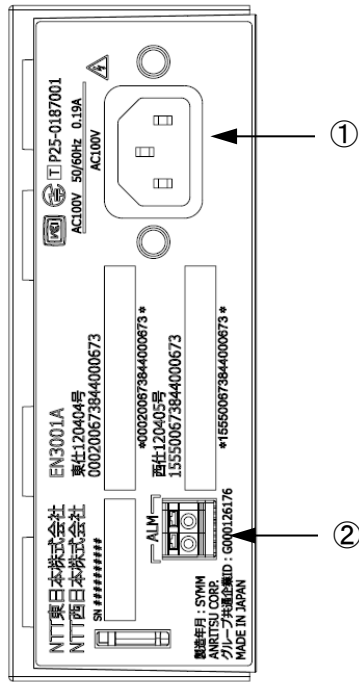
図 3-2 正面パネル図

部位	名称	機能
①	State (LED)	通常運用中に点灯 (緑) 起動中または試験中に点灯 (橙) 異常時に点灯 (赤)
②	SS/SR (LED)	SS が ON 時状態で点灯 (緑) SR が ON 時状態で点灯 (緑)
③	MB (LED)	回線閉塞時に点灯 (赤)
④	Console	シリアルインタフェース (オプション) にて、 端末 (PC 等) と接続し、設定/確認を 行います。
⑤	Mode	エコーキャンセラ機能の有効/無 効を設定するときを使用します。 また、保守・試験時に使用します。 詳細は表 4-4、表 6-1 参照。
⑥	Func1	端末インタフェースの設定スイッ チ 詳細は表 4-1 参照
⑦	SPAD	送信アッテネータ (0~15 dB, 1 dB ステップ) 詳細は表 4-2 参照
⑧	RPAD	受信アッテネータ (0~15 dB, 1 dB ステップ) 詳細は表 4-2 参照
⑨	TEST IN/OUT	保守/試験時に外部測定器と接続 して、確認します。
⑩	U リンク (2W EQPT/LINE)	保守/試験時に外部測定器と接続 して、切り分け確認します。
⑪	Ethernet	ネットワーク接続用ポート S(LED) : Speed, L/A(LED) : Link/Act
⑫	2W	音声端末機器接続用ポート

### 3.3 背面パネルの名称

背面パネル図を図 3-3 に、解説を表 3-3 に示します。

表 3-3 背面パネル解説



部位	名称	機能
①	AC100V	AC インレット
②	ALM	ALM 接点出力

図 3-3 背面パネル図

### 3.4 アラーム表示

表 3-4 の発生条件がひとつでもあるとアラームが発生します。すべての解除条件が成立するとアラームを解除します。これらのうちの何が発生しているのかは、コンソールからの“show device status”コマンドの実行結果表示（Alarm Itemの項目）で確認することができます。また、システムログ情報でも確認できます。A.3 システムログ情報一覧を参照してください。

表 3-4 の項番 1~6 がアラーム発生中は、State LED が赤点灯します。

表 3-4 の項番 3, 5, 6 は、ALM 接点出力を有効（set alarm output enable）設定にしていれば、ALM 接点が閉じます。

表 3-4 アラームの発生条件と解除条件

項番	発生条件	解除条件
1	装置起動時にコンフィグレーションデータが読めなかった。	“save config”または“init config”コマンドを実行し再起動する。再起動しても解除されない場合は装置を交換する。
2	装置起動時に内蔵の LSI（FPGA）が動作しなかった。	装置を交換する。
3	CPU 温度が 95°C以上になった。	CPU 温度が 90°C未満になった。
4	内蔵の LSI（FPGA）が動作しなくなった。	自動的に再起動する。再起動しても解除されない場合は装置を交換する。
5	イーサネットポートのオートネゴシエーション結果が半二重になった。	イーサネットポートのオートネゴシエーション結果が全二重になった。または、Ethernetポートのオートネゴシエーションを無効とし通信速度を設定する。
6	実行中のプログラムで異常終了した。	自動的に再起動する。再起動しても解除されない場合は装置を交換する。

### 3.5 ピンアサイン

#### 3.5.1 各種ポートのコネクタピンアサイン

Ethernet ポートを表 3-5 に、2W ポートを表 3-6、Console ポートを表 3-7 に示します。

##### (1) Ethernet ポート

表 3-5 Ethernet ポートピンアサイン

ピン番号	機能 (100BASE-TX/10BASE-T)	
	MDI	MDI-X
1	Tx0b(+):送信データ(+)	Rx1b(+):受信データ(+)
2	Tx0b(-):送信データ(-)	Rx1b(-):受信データ(-)
3	Rx1b(+):受信データ(+)	Tx0b(+):送信データ(+)
4	—	—
5	—	—
6	Rx1b(-):受信データ(-)	Tx0b(-):送信データ(-)
7	—	—
8	—	—



注. Auto MDI/MDI-X機能があります。

##### (2) 2W ポート

表 3-6 2W ポートピンアサイン

ピン番号	機能
1	—
2	—
3	L2 (-側)
4	L1 (+側)
5	—
6	—



注. 2Wの極性はマイナス (-側) が2WS(T)、プラス (+側) が2WR(R)です。  
極性を確認して接続してください。

### 第3章 各部の名称と機能

#### (3) Console ポート

表 3-7 Console ポートピンアサイン

	ピン番号	機 能
	1	TXD送信データ
	2	RXD受信データ
	3	GND

## 第4章 設置・設定

## 4. 設置・設定

設置方法について以下に説明します。

### 4.1 設置手順

本装置の設置手順を図 4-1 に示します。

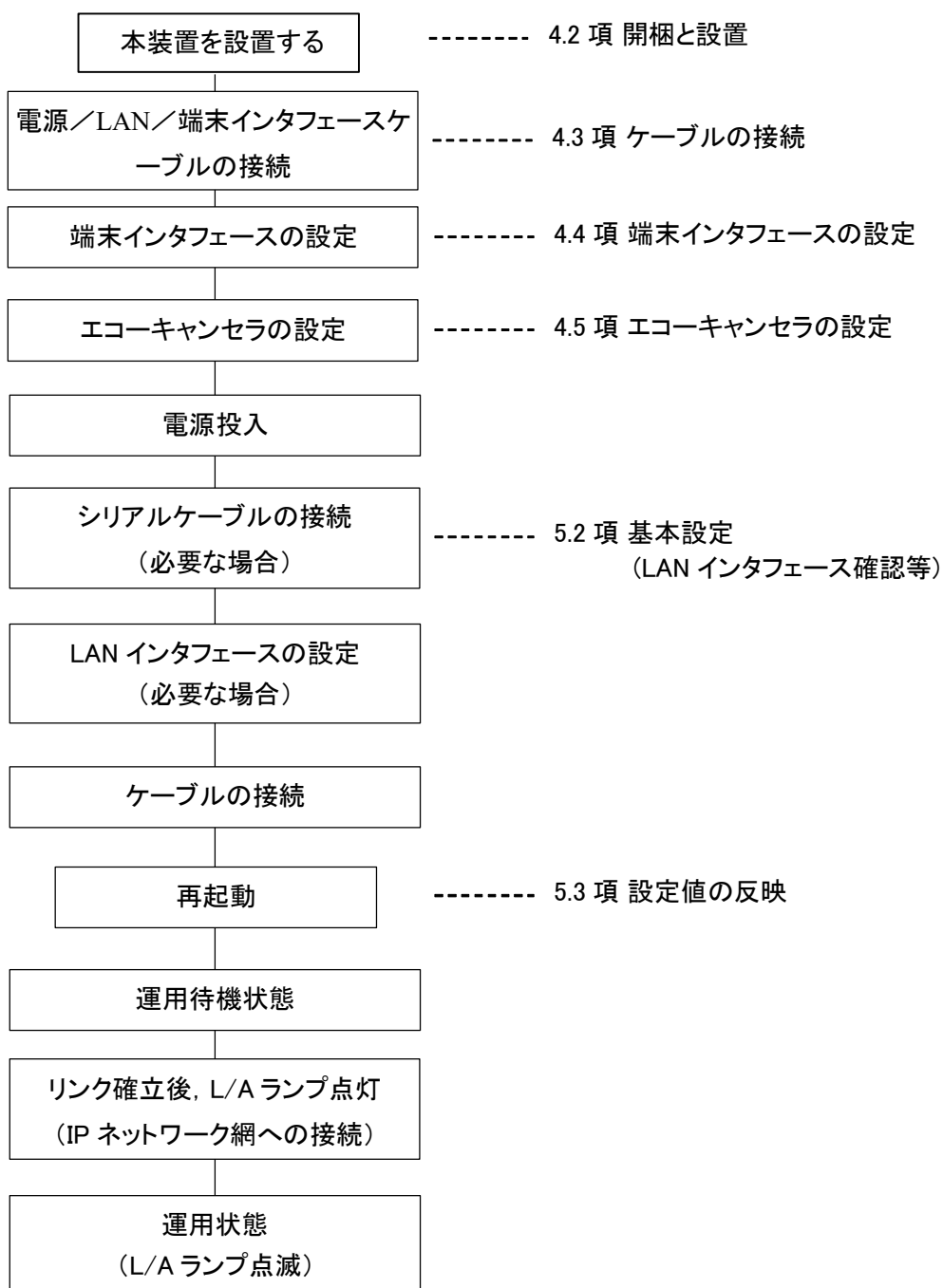


図 4-1 設置手順

## 4.2 開梱と設置

梱包を解いてから、設置するまでを説明します。

### 4.2.1 梱包内容のチェック

梱包箱から内容物を取り出し、本体、および本書の表 1-2 に記載の添付品が入っていることを確認してください。もし、不足品や輸送中に破損したものがあれば購入先に連絡してください。

再輸送に備えて、梱包箱やスペーサなどの梱包材料を保管しておいてください。

### 4.2.2 設置場所の選び方

本装置を設置するときは以下のような場所を避けてください。

- ・ 直射日光が当たる場所
- ・ 粉じんが多い環境
- ・ 屋外
- ・ 水、油、有機溶剤もしくは薬液などの液中、またはこれらの液体が付着する場所
- ・ 潮風、腐食性ガス（亜硫酸ガス、硫化水素、塩素、アンモニア、二酸化窒素、塩化水素など）がある場所
- ・ 静電気または電磁波の強い環境
- ・ 電源の瞬断または異常電圧が発生する環境
- ・ 部品が結露するような環境
- ・ 潤滑油からのオイルミストが発生する環境
- ・ 高度 2,000 m を超える環境
- ・ 振動または衝撃が多く発生する環境

潮風、腐食性ガス（亜硫酸ガス、硫化水素、塩素、アンモニア、二酸化窒素、塩化水素など）がある場所では、金属製 BOX 内に設置するなどの方法で、腐食性ガス等の影響を回避して使用してください。



---

本装置を上記のような場所に設置すると、転落落下、感電、火災の危険があるほか故障の原因となります。また、本装置は自然空冷のため、スペースのない積み重ね実装は避けてください。

---

#### 4.2.3 再輸送

本装置を再輸送する場合は、納入時に使用されていた梱包材に入れて輸送してください。



---

納入時に使用されている梱包材を使用しないで輸送すると、振動、衝撃などにより故障する可能性があります。

---

### 4.3 ケーブルの接続

#### 4.3.1 電源ケーブル

本装置へ電源を供給するには、添付の AC 電源ケーブルを AC インレットへ差し込んだ後に、接地極付コンセントへ接続し、本装置が接地されるようにして使用してください。



---

本装置および本装置と接続する装置は、確実に接地してください。

接地しないで電源に接続すると、負傷または死につながる感電事故を引き起こす恐れがあります。

本装置は、AC 電源コードのプラグをコンセントから抜くことにより電源を遮断するようになっています。作業者が容易に接近できるコンセントの近傍に、本装置を設置してください。また、接続するコンセントから容易にプラグを引き抜くことができるよう、本装置の設置場所や AC 電源コードの引き回しにご留意ください。

電源を容易に切断できないと火災などを引き起こし、死につながる恐れがあります。

---



---

・ 本装置に規定以外の電圧の電源を供給しないで下さい。  
装置の故障または火災の原因となることがあります。

・ 本装置を接地しないで使用した場合、精密部品が破壊され、装置が故障する可能性があります。

---

#### 4.3.2 LAN ケーブル

Ethernet ポートに接続します。ピンアサインは「表 3-5 Ethernet ポートピンアサイン」を参照してください。Auto MDI/MDI-X 機能があります。

#### 4.3.3 端末インタフェースケーブル

2W ポートに添付の端末インタフェースケーブル3を接続します。また、端末または私設電話交換機と接続する電話回線を端末インタフェースケーブル3に付属されたローゼット (MJ-4S) の端子台に接続します。

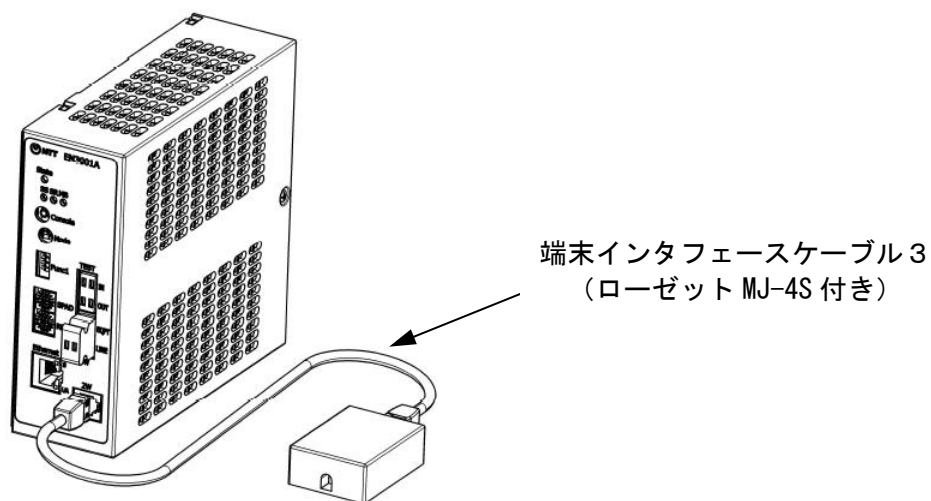


図 4-2 端末インタフェース3の接続

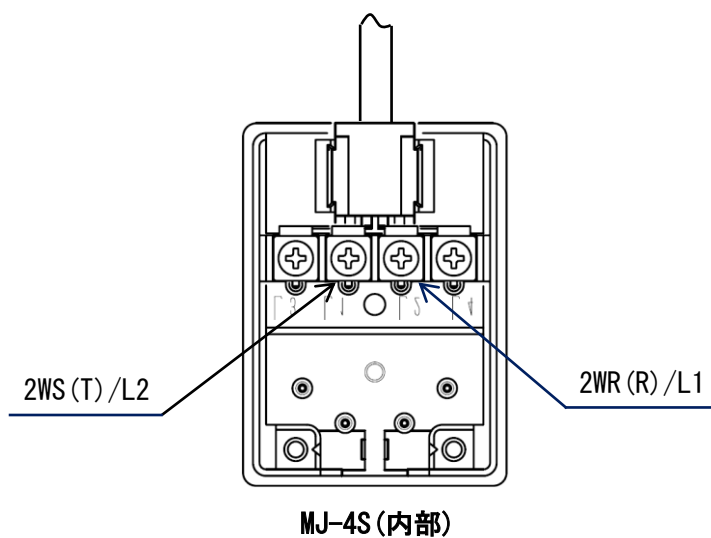


図 4-3 端末インタフェースケーブル3のローゼット端子台への接続

**!** 注意

端末などを架空配線で接続する場合は落雷によって本装置が損傷する可能性があります。  
本装置の前に一次避雷器を実装してください。

#### 4.3.4 シリアルインタフェースケーブル

オプションのシリアルインタフェースケーブルを Console ポートに接続して、各種設定を行ってください。

### 4.3.5 ALM 接点出力

アラーム接点出力を外部装置に接続することができます。  
接続例を図4-4に示します。

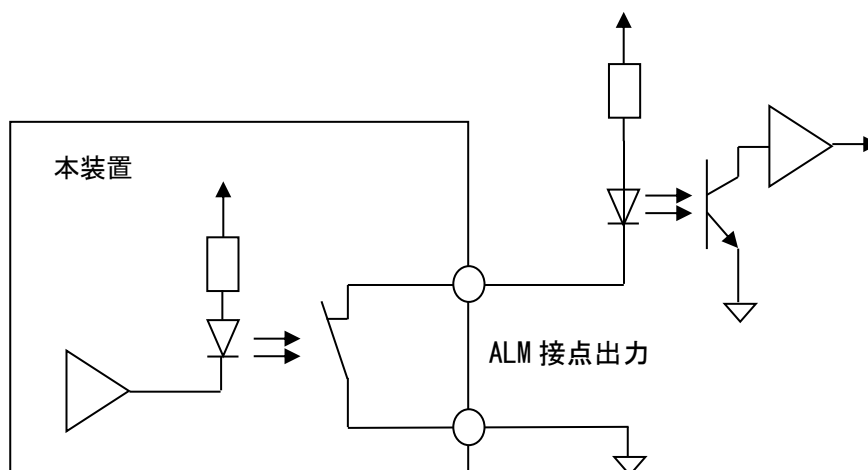


図4-4 ALM 接点出力の接続例

## ⚠ 注意

---

ALM 接点出力の印加最大電圧は DC 65 V、最大許容電流は 60 mA、最大許容電力は 200 mW です。本定格範囲内でご使用ください。  
定格範囲外で使用すると、装置が破損する可能性があります。

---

## 4.4 端末インタフェースの設定

端末インタフェースの設定を表 4-1 に、レベル設定を表 4-2、表 4-3 に示します。

## (1) 端末インタフェースの設定

表 4-1 端末インタフェースの設定

機能	番号	説明	備考	Func1 スイッチ
転極	1	OFF : 無効 ON : 有効	出荷時設定 全て OFF	
呼出信号発振周期	2	OFF : SR 従属 ON : インターバル発振		
LC/CO モード	3	OFF : LC ON : CO		
音声データモード	4	OFF : ノーマル ON : ショート		

注1. Func1 スイッチの設定は、装置の電源投入時または起動時にのみ動作が反映されます。  
運用中に設定を変更しても、装置の動作には反映されません。

注2. 音声データモードがノーマルの場合、15.75 ms 毎に音声データパケットを転送します。  
音声データモードがショートの場合、5.25 ms 毎に音声データパケットを転送します。

注3. 音声データモードがノーマルの場合、ゆらぎ吸収バッファの設定は、10ms 以上でご使用ください。

(2) レベル設定

表 4-2 レベル設定

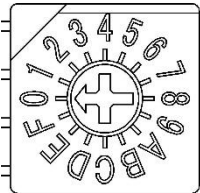
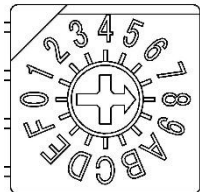
機能	アッテネータ		備考	SPAD/RPAD スイッチ
レベル設定	送信アッテネータ (SPAD)		出荷時設定 0 dB	
	スイッチ No.	減衰量 [dB]		
	0	0		
	1	1		
	.	.		
	.	.		
	.	.		
	E	14		
	F	15		
	受信アッテネータ (RPAD)		出荷時設定 8 dB	
	スイッチ No.	減衰量 [dB]		
	0	0		
	1	1		
	.	.		
.	.			
.	.			
E	14			
F	15			

表 4-3 出荷時設定のレベルダイヤ

回線方式	アッテネータ		レベルダイヤ	
	送信 (SPAD)	受信 (RPAD)	送信	受信
2W	0 dB	8 dB	0 dB <sub>r</sub>	-8 dB <sub>r</sub>

注. レベル設定は、コマンド入力によっても実施可能です。

SPAD/RPAD スイッチによる設定を適用するか、コマンドで指定した設定を適用するかは、コマンドにより選択します。

#### 4.5 エコーキャンセラの設定

エコーキャンセラの設定は、Mode スイッチで行います。

設定内容を表 4-4 に示します。

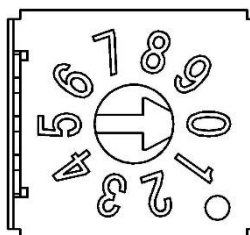


図 4-5 Mode スイッチ

表 4-4 エコーキャンセラの設定

Mode スイッチ	エコーキャンセラ	機能説明
0	無効	FAX通信時，モデム通信時に使用します。（出荷時設定）
8	有効	音声通話時に使用します。 発信時は，着信側応答後の交換機からの応答信号（転極）によりエコーキャンセラが動作し，通信終了時（オフフック時）に停止します。 着信時は，着信側応答（オフフック）によりエコーキャンセラが動作し，通信終了時（オフフック時）に停止します。
1, 3, 5	無効	装置の保守・試験に使用します。 詳細は，6.1.1項を参照してください。
6, 7	無効	メーカー保守用です。設定しないでください。
2, 4, 9	無効	未使用です。（Modeスイッチが0の時と同じ動作）

## 第4章 設置・設定

### 4.6 取付方向と取付方法

#### 4.6.1 取付方向

本装置は、縦置き設置と横置き設置の2通りがあります。図4-6、図4-7および図4-8、図4-9を参照し、添付の固定金具を取り付けて使用してください。

#### 4.6.2 取付方法

本装置を縦置き設置する場合の本体に対する固定金具の取付方法を図4-6に、取付寸法を図4-7に示します。

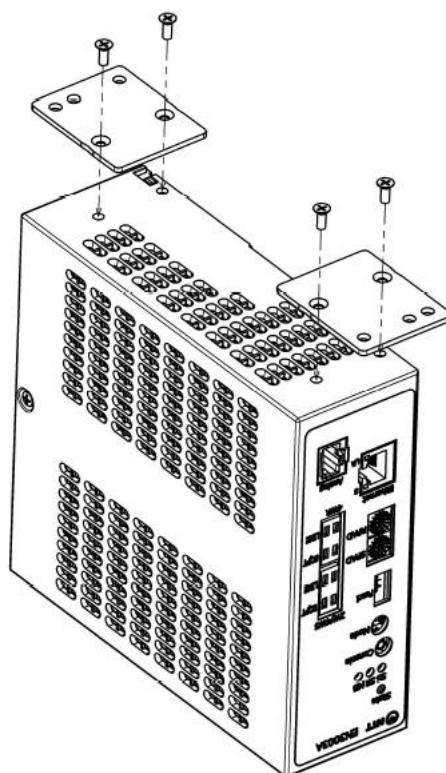
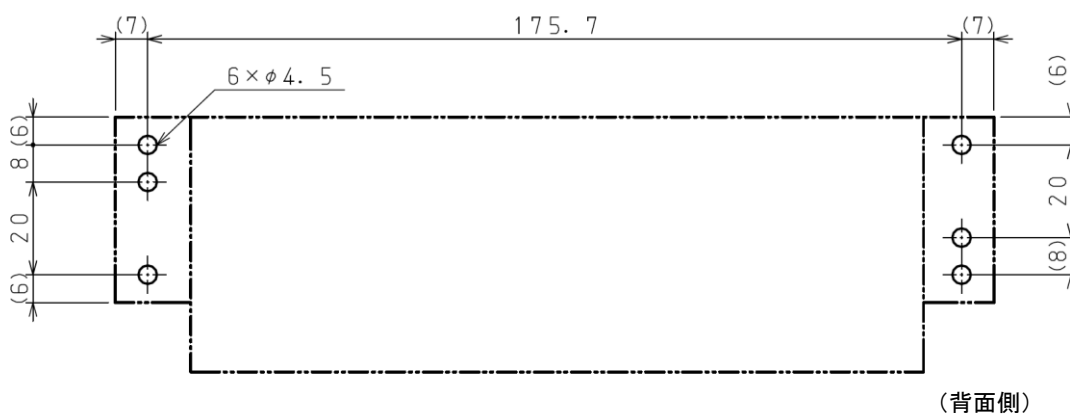


図4-6 縦置き設置時の固定金具取付方法



取付穴加工図（縦置の場合）  
（装置の上方から見た図）

図 4-7 縦置き設置時の取付寸法

本装置を横置き設置する場合の本体に対する固定金具の取付方法を図 4-8 に、取付寸法を図 4-9 に示します。

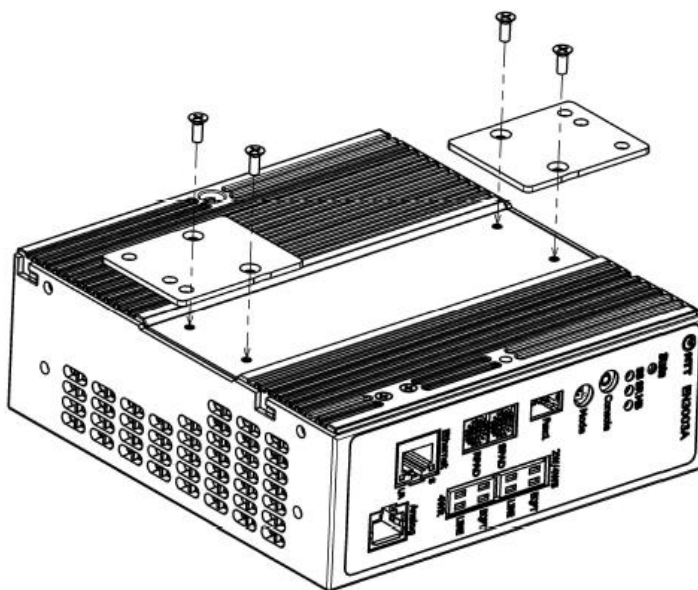
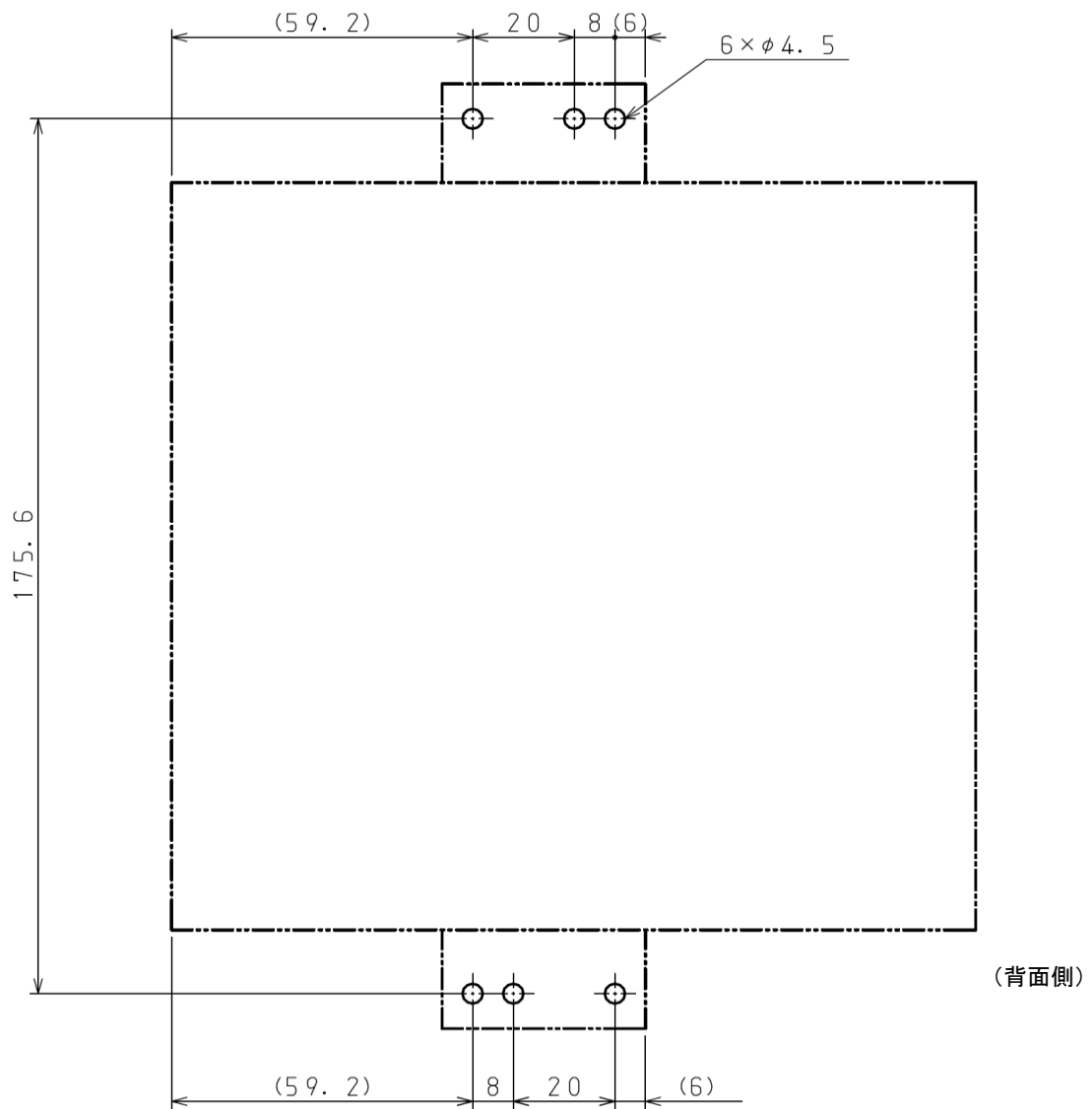


図 4-8 横置き設置時の固定金具取付方法



取付穴加工図 (横置の場合)

(装置の上方から見た図)

図 4-9 横置き設置時の取付寸法

## 第5章 運用

## 5. 運用

設定などの運用方法について以下に説明します。

### 5.1 コンソール

本装置のコンソールは、シリアル接続、SSH 接続、Telnet 接続で使用します。

シリアル接続は1セッションのみ使用可能です。SSH 接続と Telnet 接続は、シリアル接続と合わせて最大4セッションまで同時に使用可能です。

以下にコンソールの使用方法について示します。

#### 5.1.1 コマンドラインインタフェース

コンソールは、本装置の基本的な動作条件の設定および動作状態を確認するためのコマンドラインインタフェース (CLI) です。本装置を初めて設置する時や動作条件の変更時には、必ず CLI で動作条件の設定を行ってください。

#### 5.1.2 シリアル接続での通信設定

シリアル接続で CLI を使用する場合は、前面パネルの Console コネクタに、汎用の通信ターミナルソフトがインストールされたパソコン (PC) などを、オプションのシリアルインタフェースケーブルで接続してください。

シリアル接続の通信条件を表 5-1 に示します。

表 5-1 シリアル接続の通信条件

項目	設定値	備考
通信方式	調歩同期	—
通信速度	9600 bit/s	—
データビット長	8 ビット	—
ストップビット	1 ビット	—
パリティ	パリティなし	—
フロー制御	なし	—

注. シリアルインタフェースケーブルを延長して使用した場合やオプションのシリアルインタフェースケーブルを使用しない場合は、正常に動作しない可能性があります。

### 5.1.3 Telnet 接続または SSH 接続での設定

汎用の通信ターミナルソフトがインストールされたパソコン (PC) を、本装置の Ethernet ポートに LAN ケーブルで接続し、ターミナルソフトを使って本装置に Telnet または SSH で接続してください。本装置の Telnet 接続に使用される TCP ポート番号は 23、SSH 接続に使用する TCP ポート番号は 22 です。工場出荷時の IP アドレスは 192.168.10.1、ネットマスクは 255.255.255.0 に設定されています。また、工場出荷時のイーサネットインタフェースは VLAN タグ (VID=10) 付きで、オートネゴシエーションが有効になっています。

### 5.1.4 ログイン

工場出荷時の状態ではログインパスワードが設定されていないため、ユーザー名 “admin” を入力するだけでログインできます。

```
IPADP login: admin
```

```
If you are logged in with the default password, please change the password.
```

```
IPADP(A)>
```

ログインすると上記のプロンプトが表示されます。

パスワードを変更してから運用することをお勧めします。また、パスワードを忘れるとログインできなくなりますので、絶対に忘れないようにしてください。万が一忘れてしまった場合は、修理により設定を工場出荷時の状態に戻します。お問い合わせ窓口までご連絡ください。

### 5.1.5 ログアウト

コマンドプロンプトにログアウトコマンドを入力します。

```
IPADP(A)> logout
```

シリアル接続でログインしている場合は、次回ログインのためにユーザ名の入力待ち状態になります。SSH 接続または Telnet 接続でログインしている場合は、接続が切断されます。なお、プロンプトが表示されたまま何も入力しない状態が約 10 分間 (工場出荷時設定) 続くと、自動的にログアウトされます。

## 5.2 基本設定

ここでは基本的な設定方法を説明します。

### 5.2.1 設定手順

基本的な設定手順を図 5-1 に示します。

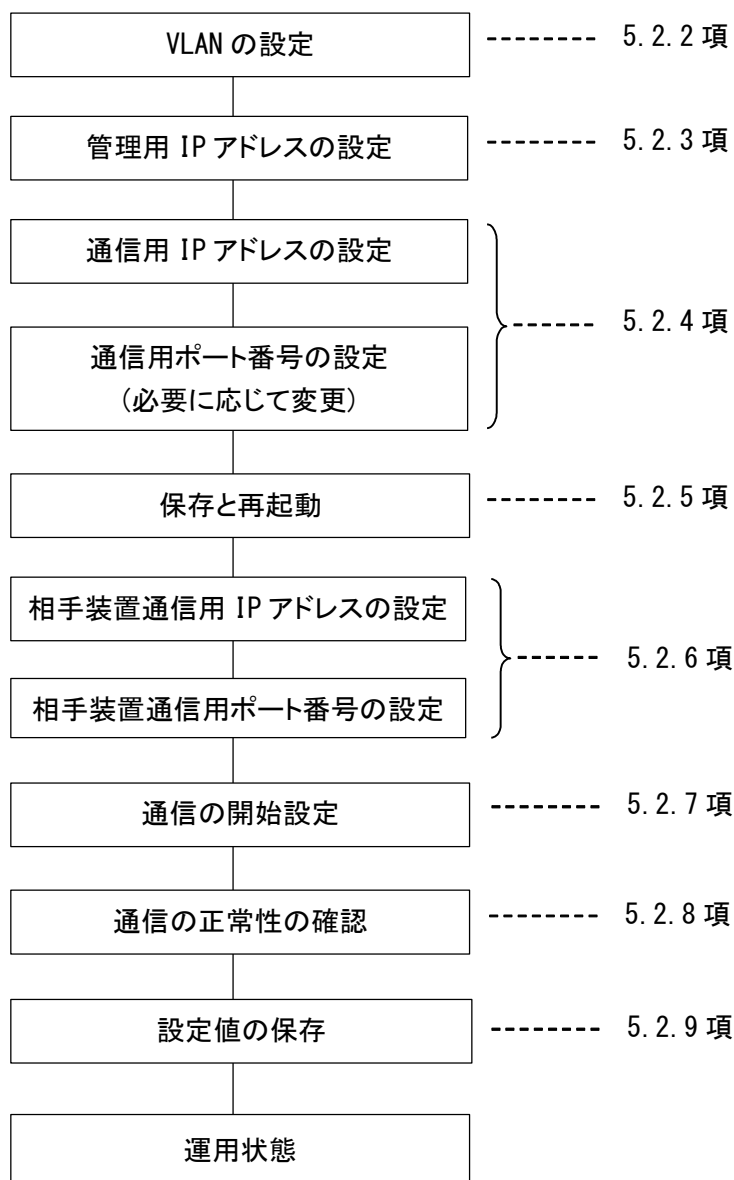


図 5-1 設定手順

### 5.2.2 VLAN の設定

本装置はイーサネットポートを IEEE802.1Q 準拠 VLAN タグに対応 (有効) するか否 (無効) かを設定することができます。VLAN タグに対応 (有効) する設定にすると、イーサネットポートから送信するパケットに IEEE802.1Q 準拠 VLAN タグを付加します。また、受信したパケットの VLAN タグの VLANID をチェックします。

工場出荷時には、VLAN タグが有効で、通信用は VLAN ID : 1・プライオリティ : 7、管理用は VLAN ID : 10・プライオリティ : 0 に設定されています。

通信用 VLAN ID : 10・プライオリティ : 5 に、管理用 VLAN ID : 20・プライオリティ : 1 に変更する場合は、以下のように設定します。

```
IPADP(A)> set vlan analog vid 10 priority 5
IPADP(A)> set vlan system vid 20 priority 1
```

VLAN タグを無効にする場合は、以下のように設定します。

```
IPADP(A)> set vlan disable
```

### 5.2.3 管理用 IP アドレスの設定

本装置には工場出荷時に IP アドレス 192.168.10.1、ネットマスク 255.255.255.0 が設定されています。ご使用になるネットワークに合わせ、各装置に割り当てられた IP アドレスとネットマスクに変更してください。以下の例では、管理用 IP アドレスを 192.168.20.11 に変更しています。

```
IPADP(A)> set ip interface system 192.168.20.11 netmask 255.255.255.0
```

SSH/Telnet を使用する PC などがルータを介して別のサブネットに接続されている場合は、デフォルトゲートウェイの設定が必要です。工場出荷時には設定されていません。以下の例では、デフォルトゲートウェイの IP アドレスとして 192.168.20.254 を設定しています。

```
IPADP(A)> add ip sroute default 192.168.20.254 interface system
```

#### 5.2.4 通信用 IP アドレスと UDP ポート番号の設定

本装置の通信用 IP アドレスを設定します。

工場出荷時は 192.168.1.1 が設定されています。ご使用になるネットワークに合わせ、各装置に割り当てられた IP アドレスとネットマスクに変更してください。

以下の例では、通信用 IP アドレスを 192.168.10.11 に変更しています。

```
IPADP(A)> set ip interface analog 192.168.10.11 netmask 255.255.255.0
```

必要に応じて、自装置の通信用 UDP ポート番号を変更します。

本装置には工場出荷時に 50001 が設定されています。通常は変更する必要はありません。

変更する必要がある場合は、以下のコマンドで設定してください。

以下の例では UDP ポート番号を 60001 に設定する場合を示します。

```
IPADP(A)> set analog transmission local udp_port 60001
```

#### 5.2.5 再起動による設定値の反映

ここまでの設定値は内蔵のフラッシュメモリに保存した後に、再起動することによって装置の動作に反映されます。

以下のコマンドで設定を保存します。コマンドを実行すると、確認のため問い合わせが表示されます。“y”を入力すると設定が保存されます。“n”を入力すると保存せずにコマンドを終了します。設定の保存には数秒かかります。

```
IPADP(A)> save config
```

```
Do you wish to save the system configuration into the flash memory (y/n)? y
```

以下のコマンドで再起動することができます。コマンドを実行すると、確認のため問い合わせが表示されます。“y”を入力すると再起動します。“n”を入力すると再起動せずにコマンドを終了します。再起動には数十秒かかります。

```
IPADP(A)> reboot system
```

```
Rebooting the system, ok(y/n)? y
```

```
·  
·  
·
```

```
ANRITSU CORPORATION IP Adapter EN3000-S001A
```

**IPADP login:**

#### 5.2.6 相手装置通信用 IP アドレスと UDP ポート番号の設定

通信相手装置の IP アドレスを設定します。

通信相手装置の IP アドレスを 192.168.10.21 に設定する場合は示します。

```
IPADP(A)> set analog transmission peer 192.168.10.21
```

必要に応じて、通信相手装置の通信用 UDP ポート番号を変更します。

工場出荷時には 50001 が設定されています。通常は変更する必要はありません。

NN6001C3 と通信する場合には変更してください。

通信相手装置の通信用 UDP ポート番号を 60001 に設定する場合は示します。

```
IPADP(A)> set analog transmission peer 192.168.10.21 udp-port 60001
```

音声データパケットを受信する際に、通信相手装置の IP アドレスおよび UDP ポート番号を確認する機能があります。このチェック機能を有効にすると、通信相手装置として設定した IP アドレスや UDP ポート番号と一致しない音声データパケットは受信されません。工場出荷時には、この機能は無効になっています。必要に応じて、有効にしてください。チェック機能を有効にするには、以下のコマンドを実行してください。

```
IPADP(A)> set analog receive check enable
```

#### 5.2.7 通信の開始設定

以下のコマンドで通信を開始します。

```
IPADP(A)> set analog transmission enable
```

#### 5.2.8 通信の正常性の確認

音声データパケットの送受信が開始されると前面パネルにある Ethernet ポートの L/A LED が点滅します。さらに、MB LED が消灯することを確認します。正常に通信されない場合は show config running などのコマンドで設定内容を再確認してください。

### 5.2.9 設定値の保存

5.2.5 項で再起動後に設定したデータを保存します。

```
IPADP(A)> save config
```

```
Do you wish to save the system configuration into the flash memory (y/n)? y
```

なお、設定作業中に再起動が必要な項目を再設定した場合は、再起動をもう一度行ってください。

## 5.3 設定値の反映

### 5.3.1 保存後に再起動が必要な設定

装置動作の反映に、設定の保存後に再起動が必要なコマンドを表 5-2 に示します。

表 5-2 設定保存後に再起動が必要なコマンド

No	コマンド名称	コマンド説明
1	set vlan	VLAN の有効/無効を設定する。
2	set vlan interface	インタフェースの VID とプライオリティを設定する。
3	set ip interface	インタフェースの IP アドレスとネットマスクを設定する。
4	add ip sroute	デフォルトゲートウェイの IP アドレスを設定する。
5	delete ip sroute	デフォルトゲートウェイの IP アドレスを削除する。
6	set analog transmission local	自装置の通信用 UDP ポート番号を設定する。

### 5.3.2 再起動方法

以下のどちらかで装置を再起動します。

- ・電源をいったん切り、再び投入します。
- ・CLI で“reboot system”コマンドを入力し、“y”と入力します。

### 5.3.3 再起動時の注意事項

再起動の前に、“save config”コマンドを実行して必ず設定を保存してください。

設定値の保存前に装置の再起動を行うと、設定変更前の値に戻りますので注意してください。

## 第6章 保守

## 6. 保守

運用後の保守について説明します。

### 6.1 ループバック試験

ループバック試験方法を説明します。

#### 6.1.1 ループバック種別

本装置のループバック試験種別を表 6-1 に、ループバックポイントの概略を図 6-1 に示します。

前面パネルの Mode スイッチを 1 または 3 に設定するとループバックを行います。

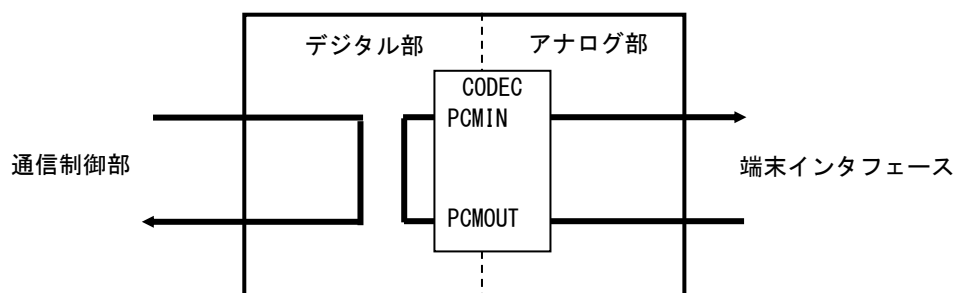
ループバックを解除する場合は、Mode スイッチを 0 または 8 に設定します。

ループバックは、コマンドでも行うことができます。

表 6-1 ループバック試験種別

Mode スイッチ	ループバック	説明
0	解除	ループバックは行いません。 エコーキャンセラが無効の状態です。
1	ローカルループバック 1 (Local LP1)	自装置のデジタル部でループバックを行います。 LED状態 自装置：橙点灯／対向装置：緑点灯
3	リモートループバック 1 (Remote LP1)	対向装置のデジタル部でループバックを行います。 LED状態 自装置：橙点灯／対向装置：橙点灯
5	テスト (TEST)	音声信号を2WポートではなくTEST IN/OUT端子へ入出力 します。ループバックは行いません。 LED状態 自装置：橙点灯／対向装置：緑点灯
2, 4	解除	未使用です。Modeスイッチが0の時と同じ状態です。
6, 7	メーカー保守用	設定しないでください。
8	解除	ループバックは行いません。 エコーキャンセラが有効の状態です。
9	解除	未使用です。Modeスイッチが0の時と同じ状態です。

ループバック中は、エコーキャンセラが無効になります。



(a) ループバックポイント1 (LP1)

図 6-1 ループバックポイントの概略

6.1.2 ループバック試験例

オシレータ，レベルメータを用いたループバック試験例を図6-2に示します。

Modeスイッチをループバックに設定することで，アナログ部がTESTコネクタに接続されます。

試験終了後は必ず，Modeスイッチを元の位置に戻してください。

注：TESTコネクタ入力（IN）は，-10 dBm以下の信号をご使用ください。

6 dB アンプされます。

TESTコネクタ出力（OUT）は，2W インタフェースより，13.5 dB 低い信号が出力されます。

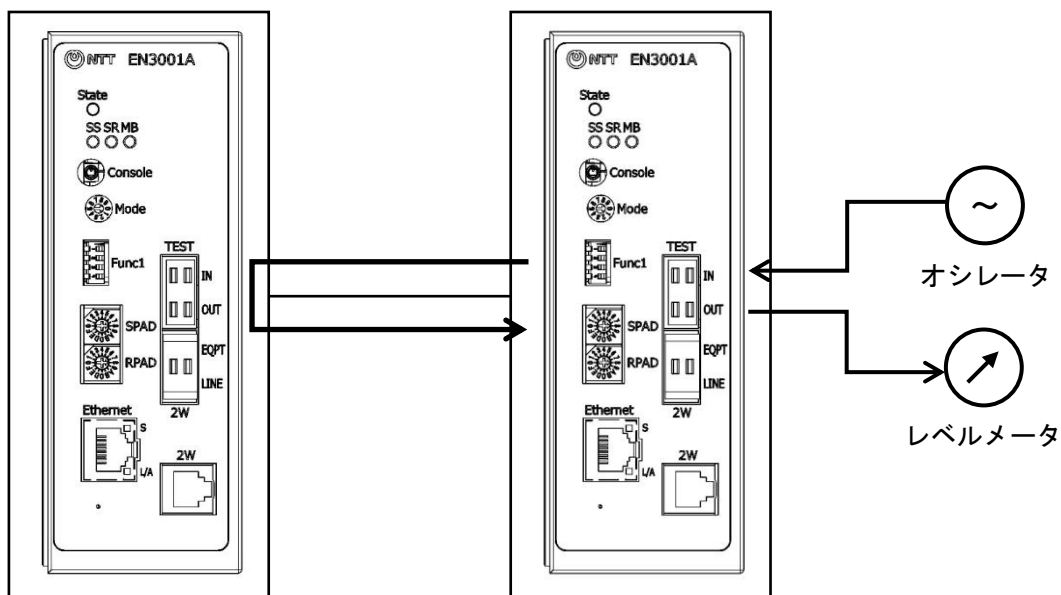


図6-2 ループバック試験例

## 6.2 装置の交換

故障の契機は6.3項の故障探索フローを参照してください。

故障した装置は契約形態に応じて、交換を実施します。

お問い合わせ窓口まで、ご連絡をお願いします。



---

交換作業は保守に関する所定の訓練を受けた方が行ってください。  
装置内部には高圧部や突起部があり、感電やけがの恐れがあります。

---

### 6.3 故障探索フロー

基本的な故障探索フローを以下に示します。

#### 6.3.1 電源系探索フロー

電源系の故障探索フローを図 6-3 に示します。

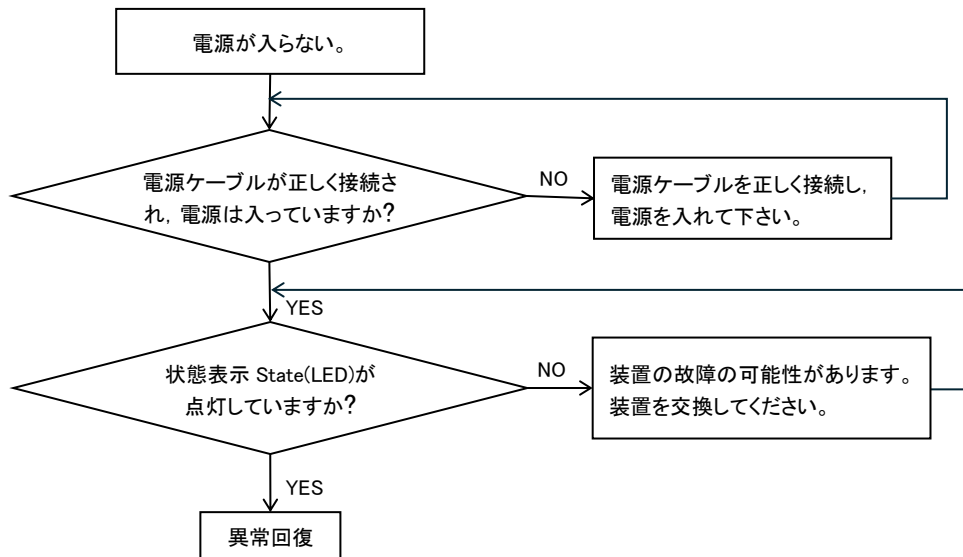


図 6-3 電源系の故障探索フロー

6.3.2 制御通信系探索フロー

制御通信系の故障探索フローを図 6-4 および図 6-5 に示します。

(1) 制御系の探索フロー

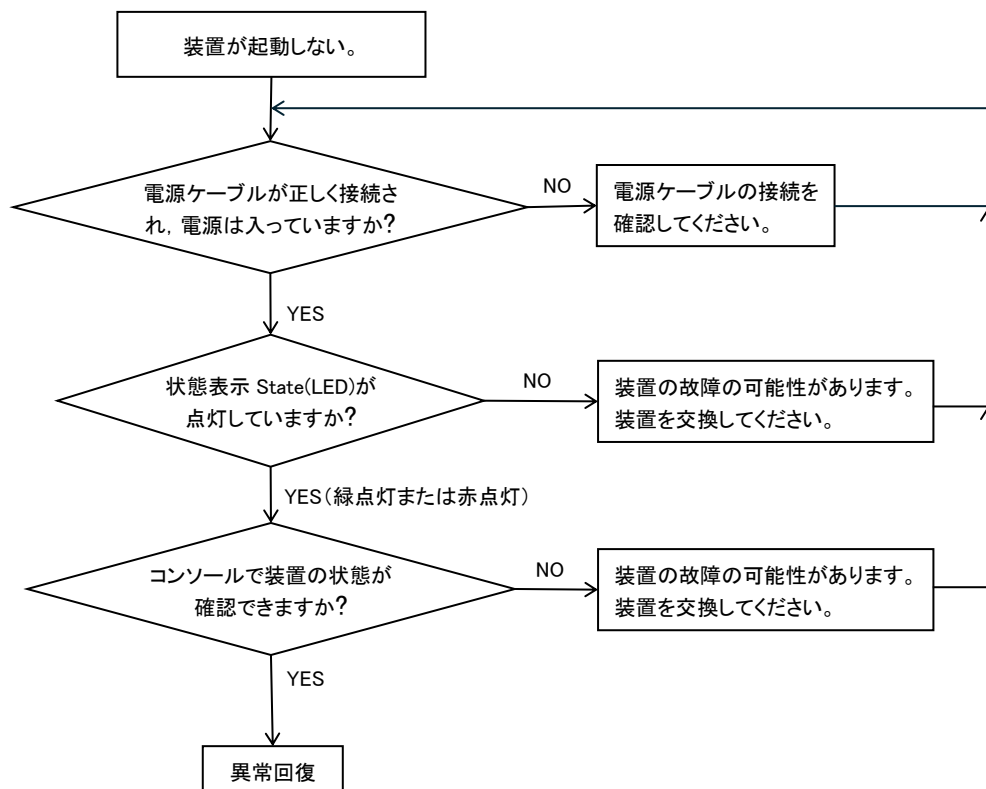


図 6-4 制御系故障探索フロー

(2) 通信系の探索フロー

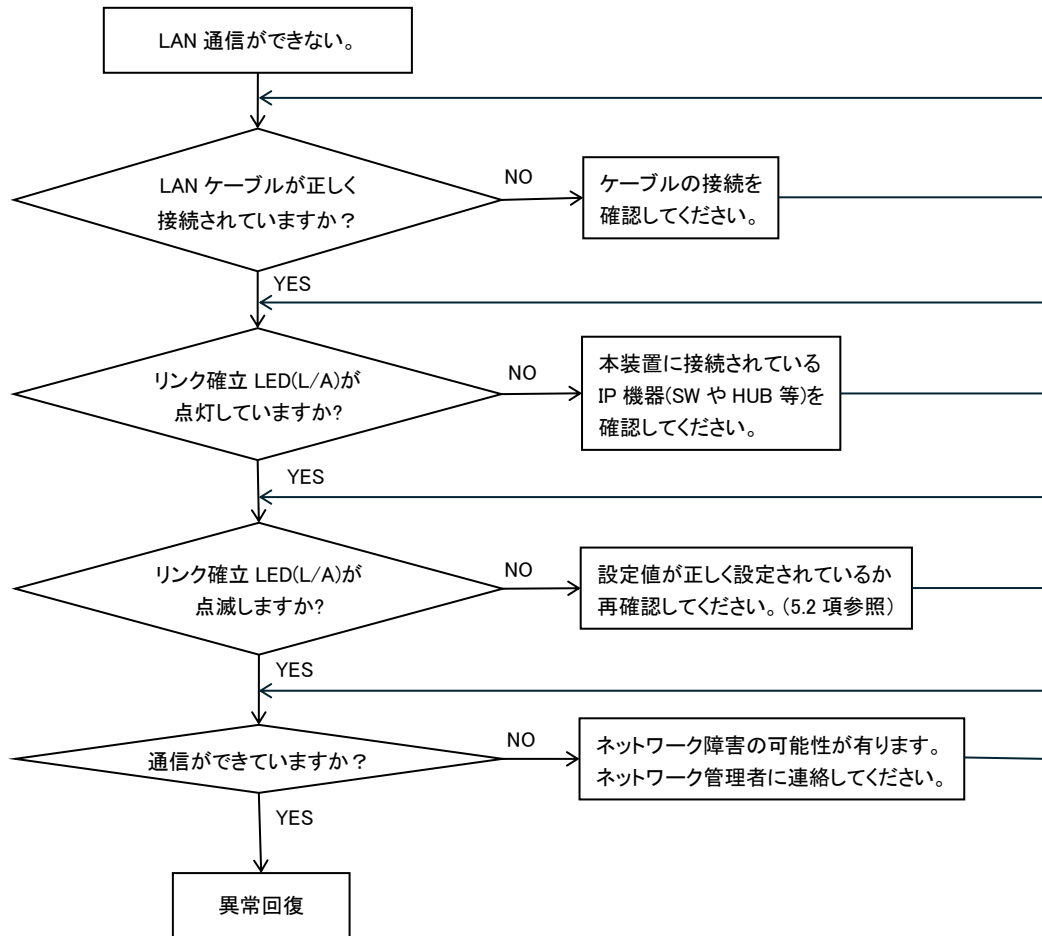


図 6-5 通信系故障探索フロー

6.3.3 端末系探索フロー

端末系の故障探索フローを図 6-6 に示します。

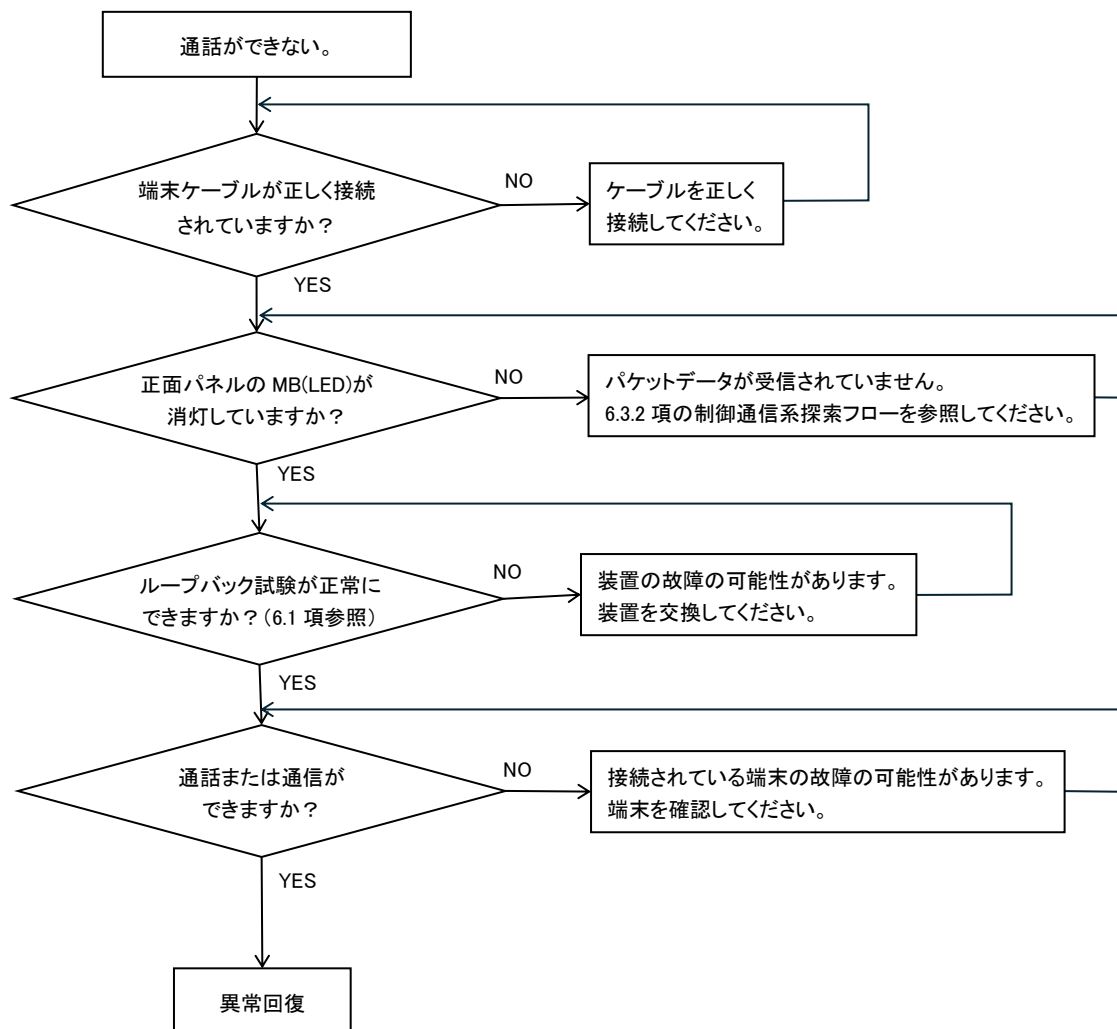


図 6-6 端末系故障探索フロー

## 6.4 工場出荷状態に戻す

ここでは各設定を工場出荷時の状態に戻す方法を説明します。

本製品を廃棄する際にも設定情報の漏洩防止のため、以下の手順を実施してください。

### 6.4.1 設定手順

工場出荷状態に戻すための設定手順を図 6-7 に示します。

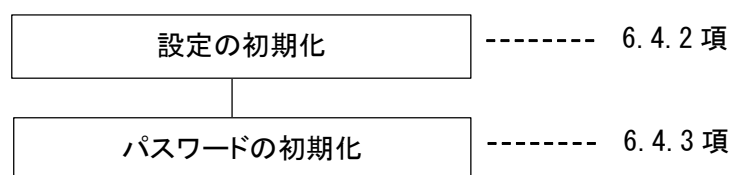


図 6-7 設定手順

### 6.4.2 設定の初期化

本装置を工場出荷状態に戻すために初期化コマンドを実行します。

```
IPADP(A)> init config
```

```
Do you wish to initialize flash memory (y/n)? y
```

```
The value of flash memory was set on the default value.  
This set content becomes valid after the next re-start
```

```
Done
```

初期化コマンドの実行後、本装置を再起動してください。

### 6.4.3 パスワードの初期化

本装置を工場出荷状態に戻すためにパスワード設定コマンドを実行します。

“New password”と“Retype new password”の両方共, [Enter]キーを入力してください。

```
IPADP(A)> set password admin
```

```
New password:
```

```
Retype new password:
```

パスワードが未登録（[Enter]キーの入力のみでログインできる状態）になります。

# 付録 A

## A. 付録

## A.1 コマンド一覧

本装置のコマンド一覧を表 A-1 に示します。

表 A-1 コマンド一覧(1/3)

コマンド名称	コマンド説明
set port autonegotiation {enable   disable}	イーサネットポートのオートネゴシエーション有効/無効を設定する。
set port speed {10M   100M}	オートネゴシエーション無効時のイーサネットポートの通信速度を設定する。
show port	イーサネットポートの設定と状態を表示する。
set vlan {enable   disable}	VLAN の有効/無効を設定する。
set vlan interface {system   analog} vid <VID> priority <priority>	管理用/通信用の VLAN ID とプライオリティを設定する。
show vlan	VLAN の情報を表示する。
set ip interface {system   analog} <IP_address> netmask <netmask>	管理用/通信用の IP アドレスとネットマスクを設定する。
show ip interface	管理用/通信用の IP アドレスとネットマスクを表示する。
add ip sroute default <gateway> interface {system   analog}	管理用/通信用デフォルトゲートウェイの IP アドレスを登録する。
delete ip sroute default <gateway> interface {system   analog}	管理用/通信用デフォルトゲートウェイの IP アドレスを削除する。
show ip sroute	登録しているデフォルトゲートウェイの情報を表示する。
set analog transmission {enable   disable}	音声データパケットの送受信の有効/無効を設定する。
set analog transmission local udp_port <UDP_port>	音声データパケットの受信 UDP ポート番号を設定する。
set analog transmission peer <IP_address> [udp_port <UDP_port>]	音声データパケットを送信する相手装置の IP アドレスと UDP ポート番号を設定する。
set analog transmission copymode {enable   disable}	音声データパケットのコピー送信機能の有効/無効を設定する。
set analog receive buffer <time>	音声データパケットを受信するゆらぎ吸収バッファの量を設定する。
set analog receive peakcut <time>	回線閉塞 (MB) 解除後のゆらぎ吸収バッファのピークカット時間を設定する。
set analog receive check {enable   disable}	音声データパケットの受信チェック (対向装置の IP アドレスと UDP ポート番号をチェックする) の有効/無効を設定する。
show analog	音声データパケットの通信設定に関する情報を表示する。

表 A-1 コマンド一覧 (2/3)

コマンド名称	コマンド説明
set device loopback digital {local   remote} {off   on}	装置内のループバックを設定する。
set device {spad   rpad} {command   switch}	端末インタフェースのアッテネータの設定方法を選択する。
set device {spad   rpad} level <level>	端末インタフェースのアッテネータの減衰量を設定する。
show device status	装置の端末インタフェースの設定状態と警報状態を表示する。
set device oscout {ethernet   analog} {enable   disable}	保守用の装置内蔵のオシレータ機能の有効/無効を設定する。
monitor analog level	保守用の装置内蔵のレベル測定機能で測定した値を表示する。
show counter interface [{system   analog}]	管理用/通信用インタフェースの統計情報を表示する。
clear counter interface	管理用/通信用インタフェースの統計情報をクリアする。
show analog statistics	音声データパケットに関する統計情報を表示する。
clear analog statistics	音声データパケットに関する統計情報をクリアする。
show analog histogram	音声データパケットの受信間隔に関する統計情報を表示する。
clear analog histogram	音声データパケットの受信間隔に関する統計情報をクリアする。
set alarm output {enable   disable}	ALM 接点出力の有効/無効を設定する。
alarm output test {on   off}	ALM 接点出力のテストをする。
show alarm	装置の警報発生と ALM 接点出力の状況を表示する。
ping <IP_address> interface {analog   system}	疎通確認を行う。
telnet <IP_address> [<port>]	引数<IP_address>に telnet で接続する。
arp -a interface {analog   system}	ARP テーブルの内容を表示する。
show syslog	システムログ情報を表示する。
show backup syslog [last   second_last]	前回/前々回起動時のシステムログ情報を表示する。
clear syslog	システムログ情報をクリアする。
set date <yyymmddhhmmss>	装置内蔵の時刻を設定する。
show date	装置の時刻を表示する。
set sntp {enable   disable}	SNTP クライアント機能の有効/無効を設定する。
set sntp server <IP_address>	SNTP/NTP サーバの IP アドレスを設定する。
set sntp interval <interval>	SNTP/NTP サーバへ定期的に時刻の問い合わせを行う間隔を設定する。
show sntp	SNTP クライアント機能の状態を表示する。
set autologout time <time_interval>	オートログアウト時間を設定する。
show autologout	設定されているオートログアウト時間を表示する。
set prompt [<prompt-string>]	プロンプトを設定する。
set pager {enable   disable}	CLI のページャ機能の有効/無効を設定する。
show session	装置にログインしているターミナルの情報を表示する。

表 A-1 コマンド一覧 (3/3)

コマンド名称	コマンド説明
? help	使用できるコマンドを表示する。
exit logout quit	ログアウトする。
set password <user_name>	ログインパスワードを設定する。
show module	装置の各種モジュール情報を表示する。
show tech-support	テクニカルサポート情報を表示する。
init config	内蔵フラッシュメモリのコンフィギュレーションを工場出荷時の設定にする。
save config	現在動作中のコンフィギュレーション (running configuration) を内蔵フラッシュメモリに保存する。
show config running	現在動作中のコンフィギュレーションを表示する。
show config startup	内蔵フラッシュメモリのコンフィギュレーションを表示する。
download ftp obj <IP_address> <file>	装置のプログラムをFTPサーバから装置へダウンロードする。
download ftp conf <IP_address> <file>	装置のコンフィギュレーションをFTPサーバから内蔵フラッシュメモリにダウンロードする。
upload ftp conf <IP_address> <file>	内蔵フラッシュメモリのコンフィギュレーションをFTPサーバにアップロードする。
reboot system	装置を再起動する。

## A.2 工場出荷時の設定一覧

主な設定値の工場出荷時の値を表 A-2 に示します。

表 A-2 工場出荷時の設定一覧

設定内容	デフォルト設定
VLAN 機能	有効
管理用 VLAN ID	10
管理用 VLAN プライオリティ	0
通信用 VLAN ID	1
通信用 VLAN プライオリティ	7
管理用 IP アドレス	192.168.10.1
管理用サブネットマスク	255.255.255.0
管理用デフォルトゲートウェイ	未登録
通信用 IP アドレス	192.168.1.1
通信用サブネットマスク	255.255.255.0
通信用デフォルトゲートウェイ	未登録
通信用 UDP ポート番号	50001
通信相手の IP アドレス	未登録
通信相手の UDP ポート番号	50001
通信状態	無効 (送受信停止)
受信データパケットのコピー機能	無効
受信ゆらぎ吸収バッファ量	30 ms
受信ゆらぎ吸収バッファのピークカット時間	5 秒
音声データパケットの受信チェック	無効
端末インタフェースのアッテネータ設定方法	前面パネルのスイッチ
ALM 接点出力	有効
イーサネットインタフェース	オートネゴシエーション有効
ログインパスワード	未登録
オートログアウト時間	10 分
プロンプト	IPADP
ページャ	有効
SNTP クライアント	無効



## ③ メッセージ

主なメッセージを表 A-3-2 に示します。

表 A-3-2 システムログ情報一覧(1/3)

Severity	メッセージ	説明
Emergency	Temperature[CPU] of the system is critical : <temperature>	CPU 温度が 95℃以上になった時に記録します。 <temperature>に検出した温度 (°C) を記録します。
Alert	Temperature[CPU] of the system is abnormal: <temperature>	CPU 温度が 90℃以上になった時に記録します。 <temperature>に検出した温度 (°C) を記録します。
Alert	Temperature[CPU] of the system is OK: <temperature>	CPU 温度が 85℃未満になった時に記録します。 <temperature>に検出した温度 (°C) を記録します。
Alert	[Ethernet] physically link up	イーサネットポートがリンクアップした時に記録します。
Alert	[Ethernet] physically link down	イーサネットポートがリンクダウンした時に記録します。
Alert	[Ethernet] physically link Half duplex alarm detected	イーサネットポートが半二重でリンクアップした時に記録します。
Alert	[Ethernet] physically link Half duplex alarm recovery	イーサネットポートが半二重になっている状態で、全二重でリンクアップした時に記録します。
Alert	Analog peer device [<IP-address>] response was lost.	通信中に<IP-address>の相手装置からキープライブ応答が受信できなくなった場合に記録します。
Alert	Analog peer device [<IP-address>] response was confirmed.	通信開始時、または通信中に<IP-address>の相手装置からキープライブ応答が受信できない状態で、キープライブ応答を確認できた場合に記録します。
Alert	Analog receive buffer failure	受信ゆらぎ吸収バッファが空になった場合に記録します。
Alert	Analog receive buffer recover	受信ゆらぎ吸収バッファが空でなくなった場合に記録します。

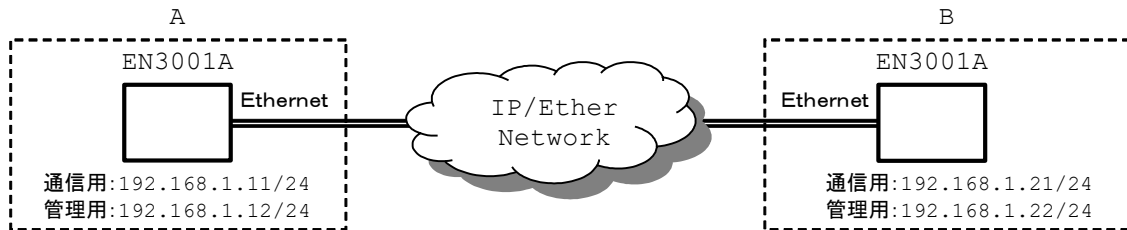
表 A-3-2 システムログ情報一覧 (2/3)

Severity	メッセージ	説明
Notice	Exceeds max no. of sessions.	シリアル, Telnet, SSH のいずれかで、すでに4つのセッションにログインしている状態で、さらにログインしようとした場合に記録されます。
Notice	Analog receive packet length error	音声データ通信で設定しているパケット長と異なる長さのパケットを受信した場合に記録します。
Notice	Analog receive sequence error [<no> times, <lost> (peak <peak>) packets/1 min].	音声データ通信でシーケンス番号エラーを検出した場合、1分間に何回発生したかを<no>に記録します。 シーケンス番号エラーを検出した時に、受信したシーケンス番号と直前に受信したシーケンス番号の差から欠落パケット数を求めます。1分間の欠落パケット数の合計を<lost>に記録します。欠落パケット数のうち、1分間の最大値を<peak>に記録します。
Informational	<process name> process is start	起動時に、起動したプロセスを<process name>に記録します。
Informational	ANRITSU CORPORATION EN3000-S001A Software Version <version>	起動時に記録します。 <version>には“1.1.1”のように起動したソフトウェアの版数を記録します。
Informational	Loading Object from Master.	内蔵フラッシュメモリの Master ファイルからソフトウェアを起動した場合に記録します。
Informational	Loading Object from Backup.	内蔵フラッシュメモリの Backup ファイルからソフトウェアを起動した場合に記録します。
Informational	Loading Configuration from Master.	起動時に、内蔵フラッシュメモリの Master ファイルからコンフィギュレーションファイルを読み込んだ場合に記録します。
Informational	Loading Configuration from Backup.	起動時に、内蔵フラッシュメモリの Backup ファイルからコンフィギュレーションファイルを読み込んだ場合に記録します。
Informational	System is LC mode	起動時に、端末インタフェースが LC モードである場合に記録します。
Informational	System is CO mode	起動時に、端末インタフェースが CO モードである場合に記録します。
Informational	System booting up complete	システム起動の完了時に記録します。

表 A-3-2 システムログ情報一覧 (3/3)

Severity	メッセージ	説明
Informational	User admin logged in by Telnet	Telnet でログインした場合に記録します。
Informational	User admin logged in by SSH	SSH でログインした場合に記録します。
Informational	SNTP corrected time. [<IP-address>]	NTP サーバ<IP-address>と同期し、時刻を修正した場合に記録します。
Informational	SNTP lost synchronization. [<IP-address>]	NTP サーバ<IP-address>と同期できなかった場合に記録します。
Informational	Reboot device	”reboot system”コマンド実行により装置を再起動させた場合に記録します。

A.4 EN3001A を VLAN 無効で対向接続する場合の設定例



【 A の設定例 】

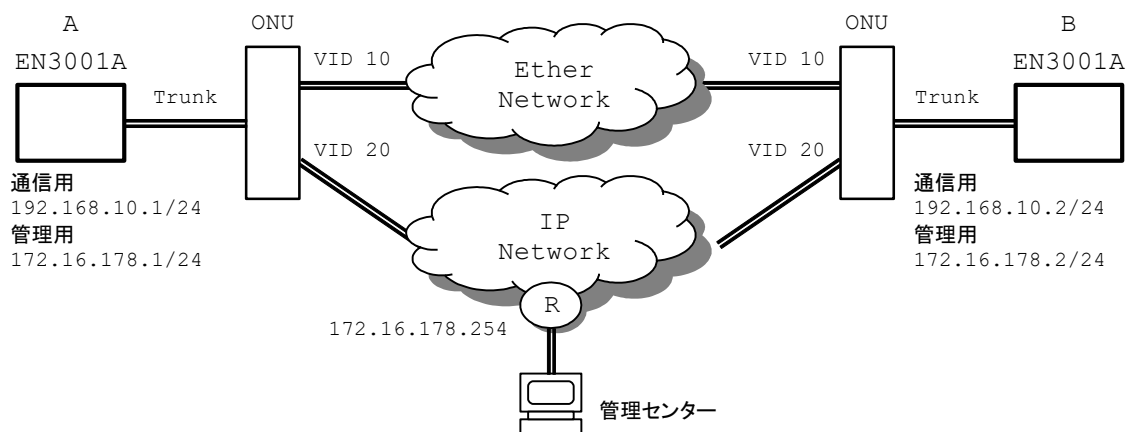
set vlan disable	VLAN を無効に設定
set ip interface analog 192.168.1.11 netmask 255.255.255.0	通信用 IP アドレスとネットマスクを設定
set ip interface system 192.168.1.12 netmask 255.255.255.0	管理用 IP アドレスとネットマスクを設定
set analog transmission peer 192.168.1.21	B の通信用 IP アドレスを設定
set analog transmission enable	通信を有効に設定
save config	設定を保存
reboot system	装置を再起動

【 B の設定例 】

set vlan disable	VLAN を無効に設定
set ip interface analog 192.168.1.21 netmask 255.255.255.0	通信用 IP アドレスとネットマスクを設定
set ip interface system 192.168.1.22 netmask 255.255.255.0	管理用 IP アドレスとネットマスクを設定
set analog transmission peer 192.168.1.11	A の通信用 IP アドレスを設定
set analog transmission enable	通信を有効に設定
save config	設定を保存
reboot system	装置を再起動

※ 本例は、工場出荷時の設定を基に、音声データ通信に必要な最小限の変更を加えたものです。ご利用環境に応じて追加の設定を行ってください。

## A.5 EN3001A を VLAN 有効で対向接続する場合の設定例



## 【 A の設定例 】

```
set vlan interface analog vid 10 priority 7  通信用の VID と優先度（最高）を設定
set vlan interface system vid 20 priority 0  管理用の VID と優先度（最低）を設定
set vlan enable                               VLAN を有効に設定
```

```
set ip interface analog 192.168.10.1 netmask 255.255.255.0
```

通信用 IP アドレスとネットマスクを設定

```
set ip interface system 172.16.178.254 netmask 255.255.255.0
```

管理用 IP アドレスとネットマスクを設定

```
add ip sroute default 172.16.178.254 interface system
```

管理用デフォルトゲートウェイを設定

```
set analog transmission peer 192.168.10.2  B の通信用 IP アドレスを設定
```

```
set analog transmission enable              通信を有効に設定
```

```
save config                                設定を保存
```

```
reboot system                              装置を再起動
```

## 【 B の設定例 】

```
set vlan interface analog vid 10 priority 7  通信用の VID と優先度（最高）を設定
set vlan interface system vid 20 priority 0  管理用の VID と優先度（最低）を設定
set vlan enable                               VLAN を有効に設定
```

```
set ip interface analog 192.168.10.2 netmask 255.255.255.0
```

	通信用 IP アドレスとネットマスクを設定
set ip interface system 172.16.178.2 netmask 255.255.255.0	
	管理用 IP アドレスとネットマスクを設定
add ip sroute default 172.16.178.254 interface system	
	管理用デフォルトゲートウェイを設定
set analog transmission peer 192.168.10.1	A の通信用 IP アドレスを設定
set analog transmission enable	通信を有効に設定
save config	設定を保存
reboot system	装置を再起動

※ 本例は、工場出荷時の設定を基に、音声データ通信に必要な最小限の変更を加えたものです。ご利用環境に応じて追加の設定を行ってください。

A.6 技術基準適合認定

本装置の Ethernet ポートは、電気通信事業法第 56 条に基づく端末機器の設計認証を受けています。認証表示は、背面にあります。

◆ 認証番号 : P25-0187001

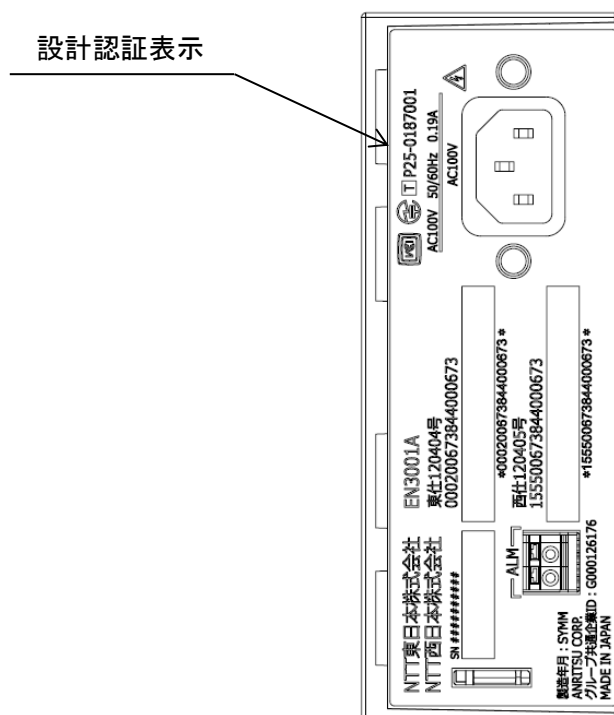


図 A-6 設計認証表示

## 付録 B

## B. 付録

## B.1 第三者ソフトウェア

本装置で使用しているライブラリ、アプリケーションなどで第三者ソフトウェアに該当するものは以下となります。これらのソフトウェアについては、当社のソフトウェア使用許諾の対象外とし、それぞれのソフトウェアに適用されているライセンスを尊重することとします。

表 B-1 ライブラリ、アプリケーションおよびライセンス一覧

名称	内容	ライセンス
u-boot	ブートローダ	GPLv2
linux	Linux カーネル	GPLv2
busybox	コマンドラインアプリケーション (Telnet クライアントなど)	GPLv2
net-tools	NET-3 ネットワークツール ネットワークサブシステムを制御するためのツール (arp, ifconfig, route など)	GPLv2
netkit-telnet	Telnet サーバ	BSD
ntp	NTP サーバ/SNTP クライアント	オリジナル
rsyslog	Syslog デーモン	GPLv3
libee	文字列操作ライブラリ	LGPLv2.1
libestr	文字列操作ライブラリ	LGPLv2.1
libuuid	識別子生成ライブラリ	BSD
sudo	特定のユーザに制限版スーパーユーザ権限を供与	ISC-style
shadow	パスワードとグループデータの変更および管理	オリジナル
libpam-modules	PAM 用プラグイン式認証モジュール	オリジナル
iptables	パケットフィルタリング	GPLv2
openssh	SSH サーバ	オリジナル
openssl	暗号化ライブラリ	apache
zlib	圧縮ライブラリ	オリジナル

次ページ以降に、それぞれのライセンスを掲示します。

## B. 2 GPLv2

GNU GENERAL PUBLIC LICENSE  
Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.  
675 Mass Ave, Cambridge, MA 02139, USA  
Everyone is permitted to copy and distribute verbatim copies  
of this license document, but changing it is not allowed.

## Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE  
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law:

that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.
- b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.
- c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it,

under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

- a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this

License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

#### NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING

WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

### B. 3 GPLv3

GNU GENERAL PUBLIC LICENSE  
Version 3, 29 June 2007

Copyright (C) 2007 Free Software Foundation, Inc. <<http://fsf.org/>>  
Everyone is permitted to copy and distribute verbatim copies  
of this license document, but changing it is not allowed.

#### Preamble

The GNU General Public License is a free, copyleft license for  
software and other kinds of works.

The licenses for most software and other practical works are designed  
to take away your freedom to share and change the works. By contrast,  
the GNU General Public License is intended to guarantee your freedom to  
share and change all versions of a program--to make sure it remains free  
software for all its users. We, the Free Software Foundation, use the  
GNU General Public License for most of our software; it applies also to  
any other work released this way by its authors. You can apply it to  
your programs, too.

When we speak of free software, we are referring to freedom, not  
price. Our General Public Licenses are designed to make sure that you  
have the freedom to distribute copies of free software (and charge for  
them if you wish), that you receive source code or can get it if you  
want it, that you can change the software or use pieces of it in new  
free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you  
these rights or asking you to surrender the rights. Therefore, you have  
certain responsibilities if you distribute copies of the software, or if  
you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether  
gratis or for a fee, you must pass on to the recipients the same  
freedoms that you received. You must make sure that they, too, receive  
or can get the source code. And you must show them these terms so they  
know their rights.

Developers that use the GNU GPL protect your rights with two steps:  
(1) assert copyright on the software, and (2) offer you this License  
giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains  
that there is no warranty for this free software. For both users' and  
authors' sake, the GPL requires that modified versions be marked as  
changed, so that their problems will not be attributed erroneously to  
authors of previous versions.

Some devices are designed to deny users access to install or run  
modified versions of the software inside them, although the manufacturer  
can do so. This is fundamentally incompatible with the aim of  
protecting users' freedom to change the software. The systematic  
pattern of such abuse occurs in the area of products for individuals to  
use, which is precisely where it is most unacceptable. Therefore, we  
have designed this version of the GPL to prohibit the practice for those  
products. If such problems arise substantially in other domains, we  
stand ready to extend this provision to those domains in future versions  
of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents.  
States should not allow patents to restrict development and use of  
software on general-purpose computers, but in those that do, we wish to  
avoid the special danger that patents applied to a free program could  
make it effectively proprietary. To prevent this, the GPL assures that  
patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

## TERMS AND CONDITIONS

### 0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

### 1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all

the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

## 2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

## 3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

## 4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all

recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

#### 5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

- a) The work must carry prominent notices stating that you modified it, and giving a relevant date.
- b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".
- c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.
- d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

#### 6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

- a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.
- b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.
- c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This

alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly

documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

#### 7. Additional Terms.

"Additional permissions" are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

- a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or
- b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or
- c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or
- d) Limiting the use for publicity purposes of names of licensors or authors of the material; or
- e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or
- f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered "further restrictions" within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

#### 8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

#### 9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

#### 10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An "entity transaction" is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party's predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

#### 11. Patents.

A "contributor" is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The

work thus licensed is called the contributor's "contributor version".

A contributor's "essential patent claims" are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, "control" includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor's essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a "patent license" is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To "grant" such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. "Knowingly relying" means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient's use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is automatically extended to all recipients of the covered work and works based on it.

A patent license is "discriminatory" if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

## 12. No Surrender of Others' Freedom.

If conditions are imposed on you (whether by court order, agreement or

otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License "or any later version" applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy's public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

## B. 4 LGPLv2.1

### GNU LESSER GENERAL PUBLIC LICENSE Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.  
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA  
Everyone is permitted to copy and distribute verbatim copies  
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts  
as the successor of the GNU Library Public License, version 2, hence  
the version number 2.1.]

#### Preamble

The licenses for most software are designed to take away your  
freedom to share and change it. By contrast, the GNU General Public  
Licenses are intended to guarantee your freedom to share and change  
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some  
specially designated software packages--typically libraries--of the  
Free Software Foundation and other authors who decide to use it. You  
can use it too, but we suggest you first think carefully about whether  
this license or the ordinary General Public License is the better  
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,  
not price. Our General Public Licenses are designed to make sure that  
you have the freedom to distribute copies of free software (and charge  
for this service if you wish); that you receive source code or can get  
it if you want it; that you can change the software and use pieces of  
it in new free programs; and that you are informed that you can do  
these things.

To protect your rights, we need to make restrictions that forbid  
distributors to deny you these rights or to ask you to surrender these  
rights. These restrictions translate to certain responsibilities for  
you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis  
or for a fee, you must give the recipients all the rights that we gave  
you. You must make sure that they, too, receive or can get the source  
code. If you link other code with the library, you must provide  
complete object files to the recipients, so that they can relink them  
with the library after making changes to the library and recompiling  
it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the  
library, and (2) we offer you this license, which gives you legal  
permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that  
there is no warranty for the free library. Also, if the library is  
modified by someone else and passed on, the recipients should know  
that what they have is not the original version, so that the original  
author's reputation will not be affected by problems that might be  
introduced by others.

Finally, software patents pose a constant threat to the existence of  
any free program. We wish to make sure that a company cannot  
effectively restrict the users of a free program by obtaining a  
restrictive license from a patent holder. Therefore, we insist that  
any patent license obtained for a version of the library must be  
consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the

ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

#### GNU LESSER GENERAL PUBLIC LICENSE TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to

exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.

Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not.

Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the

original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

#### NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

## B. 5 BSD

## BSD 3-Clause License

Copyright 1997 Niels Provos <provos@physnet.uni-hamburg.de>  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of the <ORGANIZATION> nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

## BSD 2-Clause License

Copyright (c) 2001 The NetBSD Foundation, Inc.  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

B. 6 ntp

Copyright (c) University of Delaware 1992-2015

Permission to use, copy, modify, and distribute this software and its documentation for any purpose with or without fee is hereby granted, provided that the above copyright notice appears in all copies and that both the copyright notice and this permission notice appear in supporting documentation, and that the name University of Delaware not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission. The University of Delaware makes no representations about the suitability this software for any purpose. It is provided "as is" without express or implied warranty.

Copyright (c) Network Time Foundation 2011-2024

All Rights Reserved

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHORS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

## B. 7 sudo

Sudo is distributed under the following license:

Copyright (c) 1994-1996, 1998-2013  
Todd C. Miller <Todd.Miller@courtesan.com>

Permission to use, copy, modify, and distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND THE AUTHOR DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

Sponsored in part by the Defense Advanced Research Projects Agency (DARPA) and Air Force Research Laboratory, Air Force Materiel Command, USAF, under agreement number F39502-99-1-0512.

The file redblack.c bears the following license:

Copyright (c) 2001 Emin Martinian

Redistribution and use in source and binary forms, with or without modification, are permitted provided that neither the name of Emin Martinian nor the names of any contributors are be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The files getcwd.c, glob.c, glob.h and snprintf.c bear the following license:

Copyright (c) 1989, 1990, 1991, 1993  
The Regents of the University of California. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of the University nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS

OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The file fnmatch.c bears the following license:

Copyright (c) 2011, VMware, Inc.  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of the VMware, Inc. nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL VMWARE, INC. OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The embedded copy of zlib bears the following license:

Copyright (C) 1995-2012 Jean-loup Gailly and Mark Adler

This software is provided 'as-is', without any express or implied warranty. In no event will the authors be held liable for any damages arising from the use of this software.

Permission is granted to anyone to use this software for any purpose, including commercial applications, and to alter it and redistribute it freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented; you must not claim that you wrote the original software. If you use this software in a product, an acknowledgment in the product documentation would be appreciated but is not required.
2. Altered source versions must be plainly marked as such, and must not be misrepresented as being the original software.
3. This notice may not be removed or altered from any source distribution.

Jean-loup Gailly                      Mark Adler  
jloup@gzip.org                      madler@alumni.caltech.edu

## B. 8 shadow

## NOTE:

This license has been obsoleted by the change to the BSD-style copyright.  
You may continue to use this license if you wish, but you are under no obligation to do so.

(\*)

This document is freely plagiarised from the 'Artistic Licence',  
distributed as part of the Perl v4.0 kit by Larry Wall, which is available from most major archive sites.  
I stole it from CrackLib.

\$Id: COPYING 1342 2007-11-10 23:46:11Z nekral-guest \$  
\*)

This documents purpose is to state the conditions under which this Package (See definition below) viz:  
"Shadow", the Shadow Password Suite which is held by Julianne Frances Haugh, may be copied,  
such that the copyright holder maintains some semblance of artistic control  
over the development of the package, while giving the users of the package the right to use  
and distribute the Package in a more-or-less  
customary fashion, plus the right to make reasonable modifications.

So there.

\*\*\*\*\*

## Definitions:

A "Package" refers to the collection of files distributed by the Copyright Holder,  
and derivatives of that collection of files created through textual modification, or segments thereof.

"Standard Version" refers to such a Package if it has not been modified,  
or has been modified in accordance with the wishes of the Copyright Holder.

"Copyright Holder" is whoever is named in the copyright or copyrights for the package.

"You" is you, if you're thinking about copying or distributing this Package.

"Reasonable copying fee" is whatever you can justify on the basis of media cost,  
duplication charges, time of people involved, and so on.  
(You will not be required to justify it to the Copyright Holder, but only to the computing community  
at large as a market that must bear the fee.)

"Freely Available" means that no fee is charged for the item itself, though there may be fees  
involved in handling the item. It also means that recipients of the item may redistribute  
it under the same conditions they received it.

1. You may make and give away verbatim copies of the source form of the Standard Version  
of this Package without restriction, provided that you duplicate all of the original  
copyright notices and associated disclaimers.

2. You may apply bug fixes, portability fixes and other modifications derived from the Public Domain or from the Copyright Holder. A Package modified in such a way shall still be considered the Standard Version.

3. You may otherwise modify your copy of this Package in any way, provided that you insert a prominent notice in each changed file stating how and when AND WHY you changed that file, and provided that you do at least ONE of the following:

- a) place your modifications in the Public Domain or otherwise make them Freely Available, such as by posting said modifications to Usenet or an equivalent medium, or placing the modifications on a major archive site such as uunet.uu.net, or by allowing the Copyright Holder to include your modifications in the Standard Version of the Package.
- b) use the modified Package only within your corporation or organization.
- c) rename any non-standard executables so the names do not conflict with standard executables, which must also be provided, and provide separate documentation for each non-standard executable that clearly documents how it differs from the Standard Version
- d) make other distribution arrangements with the Copyright Holder.

4. You may distribute the programs of this Package in object code or executable form, provided that you do at least ONE of the following:

- a) distribute a Standard Version of the executables and library files, together with instructions (in the manual page or equivalent) on where to get the Standard Version.
- b) accompany the distribution with the machine-readable source of the Package with your modifications.
- c) accompany any non-standard executables with their corresponding Standard Version executables, giving the non-standard executables non-standard names, and clearly documenting the differences in manual pages (or equivalent), together with instructions on where to get the Standard Version.
- d) make other distribution arrangements with the Copyright Holder.

5. You may charge a reasonable copying fee for any distribution of this Package.

You may charge any fee you choose for support of this Package.

**YOU MAY NOT CHARGE A FEE FOR THIS PACKAGE ITSELF.**

However, you may distribute this Package in aggregate with other (possibly commercial) programs as part of a larger (possibly commercial) software distribution provided that YOU DO NOT ADVERTISE this package as a product of your own.

6. The name of the Copyright Holder may not be used to endorse or promote products derived from this software without specific prior written permission.

7. THIS PACKAGE IS PROVIDED "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION,

THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS  
FOR A PARTICULAR PURPOSE.

The End

## B. 9 libpam-modules

Copyright (C) 1994, 1995, 1996 Olaf Kirch, <okir@monad.swb.de>  
Copyright (C) 1995 Wietse Venema  
Copyright (C) 1995, 2001-2008 Red Hat, Inc.  
Copyright (C) 1996-1999, 2000-2003, 2005 Andrew G. Morgan <morgan@kernel.org>  
Copyright (C) 1996, 1997, 1999 Cristian Gafton <gafton@redhat.com>  
Copyright (C) 1996, 1999 Theodore Ts'o  
Copyright (C) 1996 Alexander O. Yuriev  
Copyright (C) 1996 Elliot Lee  
Copyright (C) 1997 Philip W. Dalrymple <pwd@mdtsoft.com>  
Copyright (C) 1999 Jan Rekorajski  
Copyright (C) 1999 Ben Collins <bcollins@debian.org>  
Copyright (C) 2000-2001, 2003, 2005, 2007 Steve Langasek  
Copyright (C) 2003, 2005 IBM Corporation  
Copyright (C) 2003, 2006 SuSE Linux AG.  
Copyright (C) 2003 Nalin Dahyabhai <nalin@redhat.com>  
Copyright (C) 2005-2008 Thorsten Kukuk <kukuk@thkukuk.de>  
Copyright (C) 2005 Darren Tucker

Unless otherwise \*explicitly\* stated the following text describes the licensed conditions under which the contents of this Linux-PAM release may be distributed:

-----  
Redistribution and use in source and binary forms of Linux-PAM, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain any existing copyright notice, and this entire permission notice in its entirety, including the disclaimer of warranties.
2. Redistributions in binary form must reproduce all prior and current copyright notices, this list of conditions, and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. The name of any author may not be used to endorse or promote products derived from this software without their specific prior written permission.

ALTERNATIVELY, this product may be distributed under the terms of the GNU General Public License, in which case the provisions of the GNU GPL are required INSTEAD OF the above restrictions. (This clause is necessary due to a potential conflict between the GNU GPL and the restrictions contained in a BSD-style copyright.)

THIS SOFTWARE IS PROVIDED ``AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR(S) BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
On Debian GNU/Linux systems, the complete text of the GNU General Public License can be found in `/usr/share/common-licenses/GPL`.

## B. 10 openssh

This file is part of the OpenSSH software.

The licences which components of this software fall under are as follows. First, we will summarize and say that all components are under a BSD licence, or a licence more free than that.

OpenSSH contains no GPL code.

1)

Copyright (c) 1995 Tatu Ylonen <ylo@cs.hut.fi>, Espoo, Finland  
All rights reserved

As far as I am concerned, the code I have written for this software can be used freely for any purpose. Any derived versions of this software must be clearly marked as such, and if the derived work is incompatible with the protocol description in the RFC file, it must be called by a name other than "ssh" or "Secure Shell".

[Tatu continues]

However, I am not implying to give any licenses to any patents or copyrights held by third parties, and the software includes parts that are not under my direct control. As far as I know, all included source code is used in accordance with the relevant license agreements and can be used freely for any purpose (the GNU license being the most restrictive); see below for details.

[However, none of that term is relevant at this point in time. All of these restrictively licenced software components which he talks about have been removed from OpenSSH, i.e.,

- RSA is no longer included, found in the OpenSSL library
- IDEA is no longer included, its use is deprecated
- DES is now external, in the OpenSSL library
- GMP is no longer used, and instead we call BN code from OpenSSL
- Zlib is now external, in a library
- The make-ssh-known-hosts script is no longer included
- TSS has been removed
- MD5 is now external, in the OpenSSL library
- RC4 support has been replaced with ARC4 support from OpenSSL
- Blowfish is now external, in the OpenSSL library

[The licence continues]

Note that any information and cryptographic algorithms used in this software are publicly available on the Internet and at any major bookstore, scientific library, and patent office worldwide. More information can be found e.g. at "<http://www.cs.hut.fi/crypto>".

The legal status of this program is some combination of all these permissions and restrictions. Use only at your own responsibility. You will be responsible for any legal consequences yourself; I am not making any claims whether possessing or using this is legal or not in your country, and I am not taking any responsibility on your behalf.

NO WARRANTY

BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

3)

ssh-keyscan was contributed by David Mazieres under a BSD-style license.

Copyright 1995, 1996 by David Mazieres <dm@lcs.mit.edu>.

Modification and redistribution in source and binary forms is permitted provided that due credit is given to the author and the OpenBSD project by leaving this copyright notice intact.

4)

The Rijndael implementation by Vincent Rijmen, Antoon Bosselaers and Paulo Barreto is in the public domain and distributed with the following license:

@version 3.0 (December 2000)

Optimised ANSI C code for the Rijndael cipher (now AES)

@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>  
@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>  
@author Paulo Barreto <paulo.barreto@terra.com.br>

This code is hereby placed in the public domain.

THIS SOFTWARE IS PROVIDED BY THE AUTHORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHORS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

5)

One component of the ssh source code is under a 3-clause BSD license, held by the University of California, since we pulled these parts from original Berkeley code.

Copyright (c) 1983, 1990, 1992, 1993, 1995

The Regents of the University of California. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of the University nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

6)

Remaining components of the software are provided under a standard 2-term BSD licence with the following names as copyright holders:

Markus Friedl  
 Theo de Raadt  
 Niels Provos  
 Dug Song  
 Aaron Campbell  
 Damien Miller  
 Kevin Steves  
 Daniel Kouril  
 Wesley Griffin  
 Per Allansson  
 Nils Nordman  
 Simon Wilkinson

Portable OpenSSH additionally includes code from the following copyright holders, also under the 2-term BSD license:

Ben Lindstrom  
 Tim Rice  
 Andre Lucas  
 Chris Adams  
 Corinna Vinschen  
 Cray Inc.  
 Denis Parker  
 Gert Doering  
 Jakob Schlyter  
 Jason Downs  
 Juha Yrjola  
 Michael Stone  
 Networks Associates Technology, Inc.  
 Solar Designer  
 Todd C. Miller  
 Wayne Schroeder  
 William Jones  
 Darren Tucker  
 Sun Microsystems  
 The SCO Group  
 Daniel Walsh  
 Red Hat, Inc  
 Simon Vallet / Genoscope

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.

IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

8) Portable OpenSSH contains the following additional licenses:

a) snprintf replacement

Copyright Patrick Powell 1995  
This code is based on code written by Patrick Powell  
(papowell@astart.com) It may be used for any purpose as long as this  
notice remains intact on all source code distributions

b) Compatibility code (openbsd-compat)

Apart from the previously mentioned licenses, various pieces of code  
in the openbsd-compat/ subdirectory are licensed as follows:

Some code is licensed under a 3-term BSD license, to the following  
copyright holders:

Todd C. Miller  
Theo de Raadt  
Damien Miller  
Eric P. Allman

The Regents of the University of California  
Constantin S. Svintsoff  
Kungliga Tekniska Hogskolan

Redistribution and use in source and binary forms, with or without  
modification, are permitted provided that the following conditions  
are met:

1. Redistributions of source code must retain the above copyright  
notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright  
notice, this list of conditions and the following disclaimer in the  
documentation and/or other materials provided with the distribution.
3. Neither the name of the University nor the names of its contributors  
may be used to endorse or promote products derived from this software  
without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE REGENTS AND CONTRIBUTORS ``AS IS" AND  
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE  
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE  
ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE  
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL  
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS  
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)  
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT  
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY  
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF  
SUCH DAMAGE.

Some code is licensed under an ISC-style license, to the following  
copyright holders:

Internet Software Consortium.  
Todd C. Miller  
Reyk Floeter  
Chad Mynhier

Permission to use, copy, modify, and distribute this software for any  
purpose with or without fee is hereby granted, provided that the above  
copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS" AND TODD C. MILLER DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL TODD C. MILLER BE LIABLE FOR ANY SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

Some code is licensed under a MIT-style license to the following copyright holders:

Free Software Foundation, Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, distribute with modifications, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE ABOVE COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name(s) of the above copyright holders shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization.

B. 11 apache

Apache License  
Version 2.0, January 2004  
<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of

this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

- (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
- (b) You must cause any modified files to carry prominent notices stating that You changed the files; and
- (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and
- (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify

the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

## B. 12 zlib

Copyright (C) 1995-2017 Jean-loup Gailly and Mark Adler

This software is provided 'as-is', without any express or implied warranty. In no event will the authors be held liable for any damages arising from the use of this software.

Permission is granted to anyone to use this software for any purpose, including commercial applications, and to alter it and redistribute it freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented; you must not claim that you wrote the original software. If you use this software in a product, an acknowledgment in the product documentation would be appreciated but is not required.
2. Altered source versions must be plainly marked as such, and must not be misrepresented as being the original software.
3. This notice may not be removed or altered from any source distribution.

Jean-loup Gailly                      Mark Adler  
jloup@gzip.org                      madler@alumni.caltech.edu

