

About This Manual

Vjku"o cpwcn"ykm"i wkgf" {qw"vj tqwi j"uk o rng"kpucmncvkqp"cpf"ugv"wr" r tqegfwtgul

Introduction N Vjg"Wpkuqp."j qy"kv"y qtmu."y jgtg"vq" wug"kv."kvu" o ckp"hgcvwtgu0

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Warranty

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Rtqfwew"pqv" o cpwhcevtgf"d { "GpfTwp"Vgejppnq i kgu"dw" kpenwfgf"cu"cp"kpvgi tcn" rctv"qh"cu" {uvg o "*g0i0" rgtkr jgtcnu."qrvkqpu+"ctg" y ctcpvgf"htq"pkpgv" { "fc"u."qt"nqpi gt"cu" r tqxkfgf"d { "vjg"qtki kpcn"gswwkr o gpv" o cpwhcevtgt."htq o "fcvg"qh"ujkr o gpv0

Extended Warranty

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Limitation of Warranty

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VQ"V JG"GZVGPV"RGTOKVVGF"D ["NCY."V J KU" YCTTCPV ["CPF"TGOGOFKGU"UGV"HQTV J " CDQXG"CTG"GZENWUKXG"CPF"KP"NKGW"QH"CN"QV JGT" YCTTCPVKGU."TGOGFKGU"CPF" EQP FKVQPU" Y JGV JGT"QTCN"QT" YTKVVG.P"UVCVWVQT ["GZRTGUU."QT"KORNKGF0"CU" RGTOKVVGF"D ["CRRNKECDNG"NCY."GPF TWP"URGEKHECEN ["FKUENCKOU"V JG"KORNKGF" YCTTCPVKGU"QH"OGTE J CPVCDKNK ["QT"HKVPGUU"HQT"C"RCTVKEWNCT"RWTRQU0

Warranty Repair

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IRU/vk o g0"Vjg"tguwvnu"qh"vjgug" o gcuwtg o gpvu"htq"gecj "ucvgnkv"ctg"vjgp"wrnqcf"gf"vq"vjcv"ucvgnkv"uq" vjcv"vjg{" o c{"dg"kpqtrqtcvgf"kpqv"vjg"fcvc"eqpvckpgf"kp"kvu"vtcpu o kuukqpu0"Vjg"tgegkxgt"ecp"wug"vjku" fcvc"vq"tgnvcg"vjg"vk o g/qh/cttkxcn"qh"vjg"tgegkxgf"vtcpu o kuukqpu"htq o "vjcv"ucvgnkv"vq" IRU/vk o g0

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Where to Use It

Ukpeg"uki"pcnu"htq o "vjg" IRU"ucvgnkv"ctg"cxckncdng"cv"cn"nqecvkqpu"qp"vjg"inqdg."{qw" o c{"fgrnq{"vjg" Wpkuqp"xktvcnn{"cp"y jgtg0" Jqy"gxgt."{qw" o wuv"dg"cdng"vq"kpucvnn"cp"cpvgppc"gvjg"qp"vjg"tqghvqr" qt"kp"c"ykpfaq"uq"vjcv"ucvgnkv"vtcpu o kuukqpu" o c{"dg"tgegkxgf"cv"ngcu"ugxgtcn"vk o gu"fwtkpi"vjg"fc0" Qpeg"u{"pej"tqpk|gf."vjg"wpkuqp"ecp" o ckpvckp"ceegrvcdng"pgvy qtm"u{"pej"tqpk|cvkqp"ceewtce{"hqt"cdqvw" c"fc{"ykvjqw" IRU"tgegrvkqp."d{"f"y jggnkpi"qp"kvu"uvpcfctf"vg o rgtcvwtg"eq o rgpucv"et{"uvn"queknc/ vqt0

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Main Features

Performance, Reliability and Economy

Vjg"wpkuqp"rtqxf"gu"jki"j"rghqt o cpeg"cpf"tgnkcdnkv{"eq o dkpgf"ykvj"nqy"rqygt"eqpuw o rvkqp"cpf" equv0"kvu"kpvgtpcn"uwd/cuug o dnkgu"ctg"hedtkecvgf"wukpi"uvcvg/qh/vjg/ctv"eq o rppgpvu"cpf"rtqeguugu"cpf" ctg"kpvgitcvgf"kp"cuqnf."jki"j/swcnk{"e"jcuuku0

Flexibility

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Easy Installation

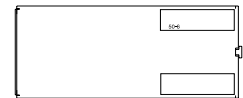
Kvu"uvpcfctf"3W"jki"j."3;ö"tcm/ o qwpvcndng"ejcuuku"cpf"tqghvqr"qt"ykpfaq"y/ o qwpvgf"cpvgppc" o cmg" kpucvnnvkqp"uk o rngt"eq o rctgf"vq"eq o rgvki"rtqfwewu"vjcv"tgswtg"tqghvqr"kpucvnnvkqp"qh"vjg"cpvgppc0" Vjg"tcm/ o qwpv"ejcuuku" o c{"dg" o qwpvgf"kp"cp{"eqpxgpkgp"nqecvkqp0"Eqppgev"kv"vq"qwt"pgvy qtm" xkc"vjg"tgct"rcpgn" o qwpvgf."321322Dcug/V"TL/67"eqppgevqt"cpf"rnw"i"kp"vjg"CE"rqygt"eqt"0"Kpkvkn" pgvy qtm"eqpL"i wtcvkqp"ku"cwvq o cvke"qp"pgvy qtmu"wkpi"vjg"F"pc o ke"Jquv"EqpL"i wtcvkqp"Rtqvqeqn" *FJER+0" Ocpwcn"pgvy qtm"eqpL"i wtcvkqp"ku"xc"vjg"TU/454"ugtkcn"klQ"rtqv"cpf"cu"uk o rng"Nkpwz"ujgm" uetkrv0

Free FLASH Upgrades

Hkt o yctg"cpf"eqpL"i wtcvndng"jctfyctg"rtc o gvgtu"ctg"uvqtgf"kp"pqp/xqncvkn"HNCUJ" o g o qt{"uq"vjg" Wpkuqp"ecp"dg"gcukn{"wri"tcfgu"kp"vjg"Łgnf"wkpi"HVR"cpf"VGNGPV"qt"vjg"nqecn"TU/454"ugtkcn"klQ" rqtv0"Ugewtg"wri"tcfgu"ctg"rqukdng"xc"UUJ"cpf"UER0" Yg" o cmg"cn"Łt o yctg"wri"tcfgu"vq"qwt"rtqf/ wewu"cxckncdng"vq"qwt"ewuvq o gtu"htgg"qh"ejctig0

Unison Physical
Description

U{pe"NGF" "	"	Vjku"i tggp"NGF" ħcu jgu"vq"kp fkecvg"u {pe j tqp k cvkqp"uvcvwu0
Pgy y qtm"NGF"	"	Vjku"c o dgt"NGF"knw o kpcvgu" y jgp"vjg"Wpkuqp"ku"eqppgevgf"vq"vjg
" " " "	"	pgy y qtm"cpf" ħcu jgu" y jgp"tgegkxkpi "qt"vtcpu o kvkpi "rcemgvu00
Cnct o"NGF"	"	Vjku"tgf"NGF"knw o kpcvgu"dtkg ħ { "cv"rq ygt/wr."cpf"vjgtgchvgt" y jgpgxgt
" " " "	"	c"ugtkqwu"hcwnv"eqpfkvkqp"gzkuvu0



30" Vjg"wpkv" yknn"nki jv"vjg"tgf"Cnct o"Uvcvwu"NGF"htq"cdqww"vgp"ugeqpfu0

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50" Yjgp"vjg"wpkv"nqemu"qpvc" I RU"uki pcn"cpf"dgikpu"vq" fgeqfg"vjg"vk o kpi" fcv"cpf"cf lwuv"vjg"nqecn" quekncvqt."vjg" i tggp"U{pe"Uvcvwu"NGF" yknn" fcu j" xgt{"tcrkfn{"*cdqww" c"8" J | "tcvg+"wpvkn"vjg" fcv"ku"hwnn{" fgeqfgf"cpf"vjg"nqecn"quekncvqt"ku"hwnn{"nqemgf"vq"vjg" I RU"htgswgpe{0

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Installing the Unison

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Mount the Unison

Wukpi"uvcpcfctf"3;ö"tcem" o qwpvki" jctf y ctg." o qwpv"vjg"wpkv"kp"vjg" fguktgf"nqecvkqpu0"Chvgt" o qwpvki" vjg"wpkv"cpf"eqppgevki"vjg"cpvgppc"ecdng."xgtkh{"vjcv"kv"uvkm"ceswktgu"cpf"vtcemu" c" I RU"uki pcn0

CAUTION

Ground the unit properly with the supplied power cord.

Position the power cord so that you can easily disconnect it from the Unison.

Do not install the Unison where the operating ambient temperature might exceed 122°F (50°C).

Connecting the DC Power Option

EqppgeVvjg"uchgv{"i tqwpf"vgt o kpcn"vq" gctvj " i tqwpf0""EqppgeVvjg"ö-ö"vgt o kpcn"vq"vjg" rqukvkxg"qwwrww" qh"vjg"FE"rqygt"uqwtegl""EqppgeVvjg"ö/ö"vgt o kpcn"vq"vjg"pgi cvkxg"qwwrww"qh"vjg"FE"rqygt"uqwtegl"" Pqvg"vjcv"vjg"Wpkuqp"jcu"ö"ö"qcvkpi"ö"kpvgtpcn"rqygt"uwr rn{"vjg"tgthqtg"gvjgt"vjg" rqukvkxg"qt"pgi cvkxg" qwwrww"qh"vjg"FE"rqygt"uqwteg"ecp"dg"tgthgtpegf"vq" gctvj " i tqwpf0""Vjku"wpkv" yknn"pqv"qrgtcvg"kh"vjg" - 1/" eqppgeVkjpu"ctg"tgxgtugf="j qy gxgt"kv" yknn"pqv"dg"fc o ci gf" d{ "c"tgxgtug"eqppgeVkjpu

SHOCK / ENERGY HAZARD

- Install in Restricted Access Location.
- Use 10-14 AWG copper wire only.
- Terminal block screw torque: 9 in-lbs (1 nM).
- Branch circuit must have circuit breaker, 15A or less.
- Install terminal block cover after wiring.

Connecting and Configuring Ethernet

EqppgeVqp"gp"qh"vjg"ECV/7"rcvej"ecdng"uwr rnkfg" ykvj {"qwt"Wpkuqp"vq"vjg"tgct"rcpgn" o qwpvgf" TL/67"eqppgeVqt"ncdngf"321322DCUG/M0""EqppgeVvjg"qvjgt"gp"qh"vjg"rcvej"ecdng"vq" {qwt"pgv y qtm" vj tqw i j "c"=uvtck i j vø" rqtv"qp" {qwt" j wd0"" Fq"pqv"eqppgeVkv"vq" c"=etquuqxgtø" rqtv"qp" {qwt" j wd0

D{"hcevqt{"fghcwnv."vjg"Wpkuqp" yknn"cvwg o rv"vq"eqpLi wtg"vjg"gvjgtpgv"kpvgthceg"cwvq o cvkecm{"xkc"vjg" F {pc o ke" J quv"EqpLi wtcvkqp"Rtqvqeqn"*F J ER+0""Vjg"Wpkuqp" yknn"cvwg o rv"vq"ugv"vjg"pgv y qtm"kvu"KR" c f ftguu."vjg"KR" c f ftguu"qh"vjg" fghcwnv" i cvgy c {"vjg"fq o ckp"pc o g"cpf"vjg"KR" c f ftguu"qh"cp {"pc o / gugt xgtu."kh"vjg" F J ER"ugt xgt"ku"eqpLi wtg"vq" r tqxkf"vjg" o 0"" [qw" o c {"qrkvqpcm {"eqpLi wtg"vjg"Wpkuqp" vq"cnuq"ugv"kvu" j quvpc o g"xkc" F J ER"kh" {qwt" F J ER"ugt xgt"ku"eqpLi wtg"vq" r tqxkf"kv0"" [qw"ecp"fq"vjku" d {"twppkp i "c"uk o rng"ujgmn"uetkrv"ecnngf"ofudpogjh"chvgt" {qwt"wpkv"ku"wr"qp"vjg"pgv y qtm0

kh" {qwt"pgv y qtm"fggu" wug" F J ER" hqt" j quv"eqpLi wtcvkqp."cpf" {qw"ctg"kp" c" j wtt {"vq" i gv" {qwt"Wpkuqp"wr" cpf"twppkp i ." {qw" o c {"rtqegfg"vq"Xgthkpi" Pgv y qtm"EqpLi wtcvkqp"vq" o cmg"uwtg"vjcv"vjg"pgv y qtm" rctc o gvtu" ytg"ugv"wr" eqttgevn {0"" Qvjgt y kug."kv"ku"tgeq o o gpgfgf"vjcv" {qw"tgcf"vjg"hqnmq y kpi"ugevkqpu" qp" wug"qh"vjg" TU/454"ugt kcn"KIQ" rqtv"pqy."ukpeg"vjg" {y knn"jgnr" {qw"kp"fgdwi i kpi"cp" {rtqdnq o u"vjcv" {qw" o c {"gpeqwpvgt" y kvj"vjg"cwvq o cvke"eqpLi wtcvkqp"xkc" F J ER0

kh" {qwt"pgv y qtm"fggu"pqv" wug" F J ER" {qw" y knn"pggf"vq"eqpLi wtg" {qwt"gvjgtpgv"kpvgthceg" wukpi"vjg" TU/ 454"ugt kcn"KIQ" rqtv0""Vjg"hqnmq y kpi"ugevkqpu"eqpvckp"dtkgh" fguetkrvkqpu"qp" j qy"vq"fq"vjcv0

Configuring Ethernet with the Serial Port

Vq"eqpLi wtg" {qwt"gvjgtpgv"kpvgthceg" y kvj"vjg"ugt kcn" rqtv."chvgt"nqi i kpi"kp"cu"vjg"tqqv" wugt." {qw" o wuv" twp" c"uk o rng"ujgmn"uetkrv"ecnngf"ofudpogjh"htq o "vjg"cbti"ujgmn"rtq o rv0""Vjku"ujgmn"uetkrv" y knn"rtq o rv" {qw" hqt"vjg"pggf"kv"kp" hqt o cvkqp"cpf" r gthqt o "uq o g"u {pvcz"ej gemkpi" qp" {qwt"kp"rvvu0""Vjgp"kv" y knn"etgcvg" qt" o qfkh" {vjg"cr r tqr tkcvg"Lnqu"pggf"vq"eqpLi wtg"vjg"gvjgtpgv"kpvgthceg0""Vjg"hqnmq y kpi"ugevkqpu" y knn" i wkfg" {qw"kp"ugv"kv" i "wr"eq o o wpkecvkqpu" y kvj"vjg"Wpkuqp" wukpi"kvu" TU/454"ugt kcn"KIQ" rqtv0

Connect the RS-232 Serial I/O Port

[qw" y knn"pggf"vq" wug"vjg" TU/454"ugt kcn"KIQ" rqtv"kh" {qwt"pgv y qtm" fggu"pqv"uwr rqtv"vjg" F {pc o ke" J quv" EqpLi wtcvkqp"Rtqvqeqn"*F J ER+0""Kp"vjcv"ecug." {qw" o wuv"dg"cdng"vq"eqpLi wtg"vjg"Wpkuqp"pgv y qtm"


```
JQ;!spvu;joh!dbdif!ibti!ubcmf!pg!623!cvdlfut-!5Lczuft
UDQ;!Ibti!ubcmft!dpogjhvsfe!)ftubcmjtife!3159!cjoe!3159*
OFU5;!Vo;jy!epnbjo!tpdlfut!2/10TNQ!gps!Mjovy!OFU5/1/
nuecmpdl`pqfo
pl
SBNEJTL;!Dpnqsf t t f e ! j n b h f ! g p v o e ! b u ! c m p d l ! 1
nuecmpdl`sfmfbtf
pl
WGT;!Npvoufe!sppu!)fyu3!gjmftztufn*/
Gsf fjoh!vovtfe!lfsofm!nfnpsz;!79l!gsffe
JOJU;!wfstjpo!3/87!cppujoh
Ofud0sd/e0sd/T;!0cjo;!jt!b!ejsfdupsz
nuecmpdl`pqfo
pl
nuecmpdl`pqfo
pl
Mpbejoh!HQT
Gsj!Bvh!31!11;64;65!3115!.1/818239!tfdpoet
3115
Tfuujoh!tztufn!ujnf!vtjoh!ixdmpdl
JOJU;!Foufsjoh!svomfwf;!4
Foufsjoh!nvmujvtfs///
Buufnqujoh!up!dpogjhvsf!fui1!cz!dpoubdujoh!b!EIDQ!tfswfs///
```

```
Cv"vjku"rqkpv."kh"{qw"fq"pqv"jcxg"c"FER"ugtxgt"eqpLiwtgf"qp"{qwt"pgvyqtm"vjg"wpkv"yknn"vko g/qwv"
"ugtxgt"e @
```


qbttxpse;

vjg"ukip"qp"o guucig"ku"ujqyp0""Kv"kfgpvkLgu"vjg"jqvu"u{uvgo"cu"Wpkuqp"IRU"cpf"ujqyu"vjg"uqhv yctg" rctv"pwodgt."xgtukqp"cpf"dwkrf"fcvg<

Vojtpto!HQT!7121.1153.111!w!2/11!Xfe!Nbz!!!:25;28;55!VUD!3113
Vojtpto!HQT!)sppuAhouq;!*.*?

Vjku"ncuv"nkpg"ku"vjg"uvcpfctf"Wpkuqp"IRU"ujgmn"rtqorv0""Vjg"Wpkuqp"wugu"vjg"cbti"ujgmn."y jkej"ku"vjg" Nkpwz"uvcpfctf."hwnn/hgcwvtgf"ujgmn0""Chvgt"eqpLi wtkpi"vjg"wpkv."{qw"ujqwnf"ejcpi g"vjg"rcuuyqt fu"wu/ kpi"vjg"houqgbttxe"eqo o cpf"kuuwgf"htqo"vjg"ujgmn"rtqorv0

kh"{qw"fq"pqv"ugg"ejctcevtu"fkurnc{gf"d{"{qwt"vgtokpcn"rtqitc o"ykvj k p"52"ugeqp fu"chvgt"vjg"wpkv"ku" r qygtgf"wr."{qw"owuv"vtqwdngujqqv"{qwt"ugvwr0""Cp"kpqettgevn{"yktgf"ecdng"qt"kpqettgevrqtv"ugvvp i" kp"{qwt"vgtokpcn"g o wncvkqp"rtqitc o"ctg"vjg"o quv"eqo o qp"rtqdn g o u0""Tghgt"vq"Ejcrvgt"7/"TU/454" Ugtkcn"KIQ"Rqt"Uki pcn"Fghkpvkqpu"ht"vjg"ukipcn"eqppgevkqpu"ht"vjg"Wpkuqp0

NOTE
You must use a null-modem cable or adapter if you are connecting the Unison to another computer or other equipment configured as Data Terminal Equipment (DTE). The supplied cable is a null-modem cable.

Qpeg"{qw"jcxg"uweeguuhwnn{"guvcdnkujgf"eqo o wpkecvkqpu"ykvj"vjg"Wpkuqp."{qw"oc{"rtqegfg"vq"eqp/ Li wtkpi"vjg"pgv y qtm"rctc o gvgtu0""Vjgp"{qw"ecp"eqo o wpkecvg"ykvj"vjg"Wpkuqp"qxgt"vjg"pgv y qtm" wukpi" ufmofu"qt"t ti"cpf"u{"pej tqpk|g"{qwt"pgv y qtm"eqo o r wvgtu"vq"WVE" wukpi"PVRO

Using netconfig to Set Up Your IP

Vjg"uetkrv"Lng"ofudpogjh"y kmn"eqpLi wtg"vjg"VERIKR"pgv y qtm"rctc o gvgtu"htq"{qwt"Wpkuqp0""Kh"{qw" ycpv"vq"jcxg"vjg"JVVR"Kpvgt hceg"gp cdngf"kp"{qwt"Wpkuqp"vjgp"dg"uwtg"vq"eqpLi wtg"vjg"pc o g"ugtxgt"KR" c f f t g u u " f w t k p i " v j g " o f u d p o g j h " r t q e g u u 0 "" V j g " J V V R " K p v g t h c e g " y k m n " p q v " u v c t v " k h " v j k u " k u " e q p L i w t g f " k p e q t / t g e v n { 0 "" Q p n { " q p g " p c o g " u g t x g t " k u " t g s w k t g f . " v y q " i k x g u " u q o g " t g f w p f c p e { 0 "

Vjg"hqnnqy kpi"ku"uc o r n g " v t c p u e t k r v " y j k e j " k n n w u v t c v g u " v j g " w u g " q h " o f u d p o g j h 0 "" V j g " g p v t k g u " o c f g " d { " v j g " w u g t " c t g " w p f g t n k p g f " c p f " c t g " r t q x k f g f " r w t g n { " h q t " k n n w u v t c v k x g " r w t r q u g u 0 "" [q w " o w u v " r t q x k f g " g s w k x c / n g p v " g p v t k g u " v j c v " c t g " u r g e k L e " v q " { q w t " p g v y q t m 0 "" V j q u g " u j q y p " j g t g " c t g " c r r t q r t k c v g " h q t " c " v { r k e c n " p g v y q t m " v j c v " f q g u " p q v " w u g " F J E R 0 "" U v c t v " v j g " e q p L i w t c v k q p " r t q e g u u " d { " v { r k p i " o f u d p o g j h " c v " v j g " u j g m n " r t q o r v <

Vojtpto!HQT)sppuAhouq*.*?!ofudpogjh
+++++
+++++!Vojtpto!HQT!Ofuxpsl!Dpogjhvsbu jpo! !+++++
+++++

+++++
+++++
+!!!!!!
+!!!!!!Uif!Vojtpo!HQT!ofuxpsl!dpogjhvsbujpo!ibt!cffo!vgebufe/!!!!!!
+!!!!!!
+!!!!!!Qmfbtf!sfcppu!opx!gps!uif!dibohft!up!ublf!fggfdv/!!!!!!
+!!!!!!
+++++
+++++

Verify Network Configuration

kh{qw"jcxg"ocfg"ejcpi"gu"vq}{qwt"pgv"yqtm"eqpL"iwtevkqp"wukpi"ofudpogjh."{qw"ujqwnf"ujwvfqyp"vjg"
Wpkuqp"cpf"tgdqqv"kv"Vjgtg"ctg"vyq"yc{u"vq"fq"vjku<

30" E{eng"rqygt"vq"vjg"Wpkuqp0

40" Kuuwg"vjg"ujwvfqyp"ykvj"tgdqqv"eqo"ocpf"cv"vjg"ujgmn"rtq"orv<

Vojtpo!HQT)spuAhouq;!*?.?!tivuepxo!.s!opx

kh{qw"ctg"wukpi"vjg"TU/454"ugtken"KIQ"rqtv"vq"eqo"owpkecvg"ykvj"vjg"Wpkuqp."{qw"yknn"dg"cdng"vq"ugg"
vjg"mgtpgn"igpgtcvgf"dqqv"oguu"ic"gu"y"jgp"vjg"wpkv"tgdqqvu0"[qw"ujqwnf"pqvg"vjg"nkpg

Dpogjhvsjoh!fui1!bt!2:3/279/2/356///

kh{qw"jcxg"ugv"wr"cu"uvcvke"KR"cf"ftguu."qt"vjku"nkpg

Buufnqujoh!up!dpogjhvsf!fui1!cz!dpoubdujoh!b!EIDQ!tfswfs///

kh{qw"ctg"wukpi"FER"kv"cr"rgctu"pgct"vjg"gpf"qh"vjg"mgtpgn"igpgtcvgf"dqqv"oguu"ic"gu0"

kh{qw"ctg"wukpi"FER"cpf"ctg"pqv"wukpi"vjg"TU/454"ugtken"KIQ"rqtv."{qw"yknn"jcxg"vq"ejgem"vjg"
FER"eqpL"iwtevkqp"kpht"ocvkqp"ockpvcpgf"d{"qwt"FER"ugtngx"vq"fgvgt"okpg"vjg"gzrgevfg"KR"cf/
ftguu"cpf"nqi"kv"vjg"Wpkuqp"wukpi"ufmofu"qt"t"i"vq"xgkth{"uweeguuhwn"FER"eqpL"iwtevkqp0"Thggt"
vq"vjg"uwdugswgpv"vqrkeu"kv"vjku"ugevkqp"Wukpi"Vgnpgv"cpf"Wukpi"UUJ."hqt"fgvcknu"qp"nqi"ikpi"kv"vjg"
Wpkuqp"vjcv"yc{0"Qpeg}{qw"jcxg"nqi"igf"kp."{qw"oc{"rgthqt"ov"vjg"hqmqy"kp"iejgemu0

kh{qw"ctg"pqv"wukpi"FER"vjg"KR"cf"ftguu"ujqyp"ujqwnf"ocvej"vjg"uvcvke"KR"cf"ftguu"y"jkej}{qw"
gpvgtgf"fwtkpi"vjg"ofudpogjh"rtqegfwtg0"Kh"uq."nqi"kv"cu"otqqvo"cv"vjg"nqi"kv"rtq"orv"cpf"ejgem"vjg"
qvjgt"eqpL"iwtevkqp"rctc"ogvgtu"wukpi"jgd"pogjh<

Vojtpo!HQT)spuAhouq;!*?.?!jgd"pogjh

fui1!!!!!!Mjol!fodbq;Fuifsofu!!IXbees!11;1F;GF;11;11;45
!!!!!!jofu!bees;!2:3/279/2/356!Cdbtu;!2:3/279/2/358!Nbt1;366/366/366/359
!!!!!!VQ!CSPBEDBTU!SVOOJOH!NVMUJDBTU!NUV;2611!Nfusjd;2
!!!!!!SY!qbdlfut;488!fsspst;1!espqqfe;1!pwfssvot;1!gsbnf;1
!!!!!!UY!qbdlfut;838!fsspst;1!espqqfe;1!pwfssvot;1!dbssjfs;1
!!!!!!dpmmjtpot;1!uyrvfvfmo;211
!!!!!!Joufssvqu;6!Cbt!beesftt;1y411

mp!!!!!!Mjol!fodbq;Mpdbm!Mppqcbd1
!!!!!!jofu!bees;238/1/1/2!Nbt1;366/1/1/1
!!!!!!VQ!MPPQCBDL!SVOOJOH!NUV;4:35!Nfusjd;2
!!!!!!SY!qbdlfut;281!fsspst;1!espqqfe;1!pwfssvot;1!gsbnf;1
!!!!!!UY!qbdlfut;281!fsspst;1!espqqfe;1!pwfssvot;1!dbssjfs;1
!!!!!!dpmmjtpot;1!uyrvfvfmo;1

+++++
+!!!!!!!Xfmdpnf!up!Vojtpo!HQT!ufmofu!dpotpmf!o \$ T

Using HTTP

[qw"oc{"oqpkvqt"vjg"uvcvwu"qh"vjg"Wpkuaq"xc"vjg"JVVR"kpvgthceg0""Hqt"ugewtkv{"tgcuaqpu."{qw"oc{"pqv"ejcpi"g"cp{"ugwkp"iu"xc"vjg"JVVR"kpvgthceg0""Ugg"Jjcrvgt"9"/"JVVR"kpvgthceg"ht"o"qtg"lphqt"ocvkqpl0

IMPORTANT

SSH, Telnet, SNMP and HTTP are all enabled with default passwords. To ensure security, change the passwords or disable the protocols.

To change the passwords for SSH, Telnet and HTTP use the `houqqbttxe` command. To change the passwords/community strings for SNMP see

To disable Telnet use the `jofuedpogjh` command. To disable SSH, SNMP and HTTP see

Configuring the Network Time Protocol

Pqy"vjcv"vjg"pgvyqtm"jcu"dgpp"eqpLiwtgf"cpf"vguvgf."{qw"oc{"eqpLiwtg"vjg"qrgtcvkqp"qh"vjg"PVR"ugtsgt0""D{"fghcwnv."vjg"Wpkuaq"ku"eqpLiwtgf"vq"tguvqpf"vq"PVR"tsgwguvu"htq"o"enkppvu"vjcv"oc{"qt"oc{"pqv"dg"wukpi"OF7"cwvjgpvkcevkqp0""Kh"vjg"enkppvu"ctg"wukpi"OF7"cwvjgpvkcevkqp."vjg{"o"uwv"dg"eqpLiwtgf"rtqrgtn{"ykvj"vjg"ucog"OF7"cwvjgpvkcevkqp"mg{"u"cu"vjg"Wpkuaq0""Kh{"qw"pggf"vq"o"qfkh{"vjg"hce/vqt{"fghcwnv"Wpkuaq"OF7"mg{"u"*tgeq"o"gpfgf+"qt"ugv"wr"dtqfecuvl"o"wnkceuv"qrgtcvkqp."vjgp{"qw"yknn"pggf"vq"tgeqpLiwtg"vjg"PVR"Uwdu{"uvgo"0""[qw"oc{"rgthqt"o"vjg"eqpLiwtg"vq"htq"o"gvjgt"o"u"fmofu"qt"t"i"uguukqp."qt"vjg"nqecn"U/454"eqpuqng0

NOTE

If you would like to configure your server for multicast operation, configure it as you would for broadcast operation, with the exception that you must enter this specific NTP multicast address: 224.0.1.1, when you are prompted to enter the broadcast address.

Configuring NTP Using the Network Interface or Serial Port

Vjg"hqmqykp"i"ku"c"vtcpuetkrv"qh"vjg"swguvkqp"cpf"cpu"ygt"eqpLiwtg"vq"vwnkv{"rtqxf"gf"d{"ouqdp"o"gjhl""Vjg"wugt"gpvtgf"rctc"ogvgtu"ctg"wpfgtnkpgf<

```
Vojtpo!HQT)spuAhouq;i*.*?!ouqdpogjh

+++++
+++++Ofuxpsl!Ujnf!Qspupdpm!Dpogjhvsbu jpo+++++
+++++
+++++
+++++Uijt!tdsjqu!xjmm!bmmpx!zpv!up!dpogjhvsf!uif!ouq/dpog!boe!ouq/lfzt!gjmf!!!!+
+++++uibu!dpouspm!Vojtpo!OUQ!ebfnpo!pqfsbu jpo/!!!!!!+
+++++
+++++Zpv!xjmm!cf!bcmf!up!dsfbuf!ofx!NE6!bvui foujdbu jpo!lfzt!xi jdi!bsf!tupsfe!!!!+
+++++jo!uif!ouq/lfzt!gjmf/!!!!!!+
+++++
```


Tfu!uif!ofuxpsl!cspbedbtu0nvmujdbtu!beesftt!gps!uif!Vojtpo!HQT!up!vtf!!Gps
cspbedbtu!npef-!uijt!beesftt!jt!uif!bmm!2 t!beesftt!po!uif!tvc.ofu/
Fybnqmf;!222/223/224/366
Gps!nvmujdbtu!pqfsbujpo-!ju!jt!uijt!tqfdjgjd!beesftt;!!335/1/2/2

Foufs!JQ!beesftt!gps!OUQ!cspbedbtu0nvmujdbtu!pqfsbujpo!)bbb/ccc/ddd/eee*;!335/1/2/2

Zpv!ibwf!tvmfdufe!nvmujdbtu!pqfsbujpo/!!Foufs!uif!ovncfs!pg!ipqt!uibu
bsf!offefe!gps!uif!nvmujdbtu!qbdlfut!po!zpbs!ofuxpsl!)qptjujwf!joufhfs*;!2

Ju!jt!ijhimz!sfdpnnfoefe!uibu!bvufoujdbujpo!cf!vtfe!jg!zpv!bsf!vtjoh!OUQ!jo!
cspbedbtu0nvmujdbtu!npef/!!Puijsxjtf!dmjfout!nbz!fbtjnz!cf!tqppgfe!cz!b!gblf!OUQ
tfsdfs/!!Zpv!dbo!tqfdjgz!bo!NE6!lfz!ovncfs!uibu!uif!Vojtpo!HQT!xjmm!vtf!jo!jut
cspbedbtu0nvmujdbtu!qbdlfut/!!Uif!dmjfout!po!zpbs!ofuxpsl!nvtu!cf!dpogjhvsfe!up!vtf!
uif!tbnf!lfz/

Xpvme!zpv!mjlf!up!tqfdjgz!bo!NE6!lfz!ovncfs!up!vtf!xjui
cspbedbtu!npef@!)z^ft-!o^p*!z

Foufs!uif!NE6!lfz!ovncfs!up!vtf!)2.76645*;!3

++++
++++
+!!+
+!!!Uif!Vojtpo!HQT!Ofuxpsl!Ujnf!Qspupdpm!dpogjhvsbujpo!ibt!cffo!vqebufe/!!!!+
+!!+
+!!!!!!!!!!!!!!!!!!!!Qmfbtf!sfcppu!opx!gps!uif!dibohft!up!ublf!fggfdu/!!!!+
+!!+
++++
++++

Configuring the Unison as a Stratum 2 Server

Qrgtcvki"vjg"Wpkuqp"cu"Uvtcvw o"3"Ugtxgt"ku"vjg"tgeq o o gpfgf" o qfg0" [qw"oc{"qrgtcvg"vjg"wpkv"cu"
c"Uvtcvw o"4"ugtxgt"dw"ukpeg"vjg"ctg"kpww o gtc dng"yc{u"vq"eqpLiwtg"{qwt"pgvy qtm"ykvj"Uvtcvw o"4"
ugtxgtu."urgekLe"kpwtwevkqpu"ht"jqy"vq"fq"vjcv"ctg"dg{qpf"vjg"ueqrg"qh"vjku" o cpwcn0" I gpgtcn"kpwtwe/
vkqpu"ctg<

Gfkv"PVREQPH

[qw" o wuv"gfkv"vjg"pvrleqph"Lng"kp"qtfgt"vq"rqkpv"{qwt"Uvtcvw o"4"ugtxgt"cv"Uvtcvw o"3"ugtxgt0"Gfkv"
lgvelpvrleqph"cpf"cff"{qwt"ugtxgt"nkg*u+0"*Ugg" *Wukpi*"Gfkv"dgnqy0+"" Jgtg"ku"cp"gzc o rng<

! tfsdfs!2:3/279/2/2

Qt."kh"{qw"ugv"wr"c"fq o ckp"pc o g"ugtxgt"xkc"ofudpogjh."jgtg"ku"cpqvjgt"gzc o rng<

! tfsdfs!zpbs/ujnftfswfs/dpn

IMPORTANT
Do not remove the server lines for the refclock. Even if your Time Server is not connected to an antenna, the refclock server lines must remain.



```
E" [qw"jcxg"kpucnngf"PVR"qp">{qwt"enkgpv"eq o rwwgtl)
```

```
E" [qw"jcxg"uweeguuhwnn{"rgthqt o gf"vjg"Dcuke"PVR"Enkgpv"Ugvr"qp">{qwt"enkgpv"eq o rwwgtl)
```

Create the ntp.keys File

```
[qw"o wuv"etgcv"c"Łng"pc o gf"pvrłmg{u"kp"vjg"lve" fktgevqt{0""kv" o wuv"dg"c"eqr {"qh"vjg"qpg"tgukfki"kp"
vjg"lve" fktgevqt{"qh"{qwt"Wpkuqp0"" [qw"ecp"ufmofu"kp"vq">{qwt"Wpkuqp"cpf"uvctv"cp"guq"uguukqp"ykvj"
{qwt"enkgpv"eq o rwwgt"vq"ugpf"vjg"Wpkuqpłu"lve"pvrłmg{u"Łng"vq">{qwt"enkgpv"eq o rwwgt."wug"vjg"ugewtg"
eqr {"wvknkv {"tdq."qt"{qw"ecp"lwuv"wug"c"vgzv"gfkvqt"qp">{qwt"enkgpv"eq o rwwgt"vq"etgcv"cp"gswxcnngpv"Łngl)
```

IMPORTANT	
Handling of the t m	file is the weak link in the MD5 authentication scheme. It is very impor- M M

Configure NTP Client for Multicast

```
[qw"o wuv"gfkv"vjg"pvr0eqph"Łng"y jkej "ouqe."vjg"PVR"fcg o qp."nqqmu"hqt"d{ "fghcwnv"kp"vjg"vjg"lge"
fktgevqt{0"Cpf"cff"vjgug"nkpgu"hqt"o wnwkecu<
```

```
nvmujdbtudmjfou!335/1/2/2
```

```
qt"hqt"KRx8<
```

```
nvmujdbtudmjfou!gg16;;212
```

```
kh"{qw"ctg"pqv"wukpi"OF7"cwvjgpkvcvkqp."{qw"y qwnf"cff"vjgug"nkpgu<
```

```
ejtbcmf!bvui
nvmujdbtudmjfou!335/1/2/2
```

```
qt"hqt"KRx8<
```

```
ejtbcmf!bvui
nvmujdbtudmjfou!gg16;;212
```

```
[qw"oc{"tgoqxg"vjg"nkpg"cffgf"rtgkxkwun{"kp"Dcuke"PVR"Enkpv"Ugvr<
```

```
tfswws!2:3/279/2/356
```

```
qt"vjg"cwvjgpkvcvgf"xgtukqp"cffgf"kp"OF7"Cwvjgpkvcvgf"PVR"Enkpv"Ugvr<
```

```
tfswws!2:3/279/2/356!lfz!2
```

Test Broadcast / Multicast

```
Tgucvt"ouqe"vq"jcxg"kv"dgi"kp"wukpi"vjg"Wpkuqp"cu"cdtqc fecuv"qt"o wnwkecu"ugtugt"Wug"vjg"PVR"vwnkv{"
ouqr"vq"ejgem"vjcv!ouqe"ku"cdng"vq"eq o o wpkvcvg"y kvj"vjg"Wpkuqp"Chvt"kuuwkpi"vjg"eq o o cpf
```

```
ouqr
```

```
{qw"y knn"ugg"vjg"ouqr"eq o o cpf"rtq o rv<
```

```
ouqr?
```

```
Wug"vjg"eq o o cpf
```

```
qffst
```

```
vq"fkurnc{"vjg"PVR"rggtu"y jkej" {qwt"eq o rwwgt"ku"wukpi"0"Qpg"qh"vjg o "ujqwnf"dg"vjg"Wpkuqp"ugtugt"
y jkej" {qw"jcxg"lwuv"eqpŁi wtgfl" [qw"ujqwnf"xgtkh{"vjcv"kv"ku"dgkpi"÷tgejg f0" [qw"oc{"jcxg"vq"eqp/
vkpwg"kuuwkpi"vjg"rggtu"eq o o cpf"ht"c" o kpwvg"qt"vyq"dghqtg" {qw"y knn"ugg"vjg"÷tgejg eqwv"kpvtg o gpv0+
```

```
kh"{qw"ctg"wukpi"cwvjgpkvcvkqp."{qw"ecp"xgtkh{"vjcv"cwvjgpkvcvkqp"ku"dgkpi" wugf"d{"kuuwkpi"vjg"eq o /
o cpf
```

```
bttpdjbu jpot
```

```
vq"fkurnc{"vjg"ejctcevgtku"qhv"vjg"enkpv"ugtugt"cuuqekvcvkpu"0"kp"vjg"öcwwj ö"eqnw o p"qh"vjg"fkurnc{"
{qw"ujqwnf"ugg"öQMö"ht"vjg"tqy"eqttgurqp fkp i"vq"vjg"Wpkuqp"ugtugt"kh" {qw"ugg"ödcfö." {qw"ujqwnf"
```

vjg"ödcfö"kp fkecvkqp"rgtukuv"vjgp" {qw" o wuv"ej gem" {qwt"eqpŁ i wtcvkqp" hqt"gttqtu0""V{ rkecm{ "vjku"ku"fwg"
vq" c"v{ rkp i "gttqt"kp"etgcvkpi "vjg"lgvelpvr0mg{u"Łng"qp"vjg"enkpv"vjcv"ecwugu" c" o ku o cvej"dgvyggp"vjg"
mg{u"dgkpi" wugf" d{ "vjg"ugtxgt"cpf"enkpv0""*Kh" {qw"vtepuhgt"vjg"Łng" d{ !gud"qt"tdq."vjku"ujqwnfpøv"dg" c"
rtqdn g o 0+""Kv"ku"cnuq" rquukdn g"vq"jcxg" c"v{ rkp i "gttqt"kp"vjg"lgvelpvr0eqph"Łng"vjcv"ecwugu"vjg"pggfgf"mg{ "
vq"pqv"dg" kpenwfgf"kp"vjg"övtwuv g fmg {ö"nkuv0



PVR"kpucncvkqp"rtqitc o "kpucnno"ouqe /fyf"cu"c"ugtxkeg"ecnngf"Pgvyqtm"Vko g"Rtqvqeqn."cpf"uvctvu"
kv0" [qw" o wuv"wug"vjg"Ugtxkegu"wkknv{"kp"Eqpvtqn"Rcpgn"vq"uvqr"vjg"Pgvyqtm"Vko g"Rtqvqeqn"ugtxkeg"cpf"
vjgp"tguvctv"kv0

Wug"vjg"PVR"wkknv{ !ouqr /fyf"vq"ejgem"vjcv"ouqe /fyf"ku"cdng"vq"eq o o wpkecvg"ykvj"vjg"Wpkuqp0""D{ "
fghcwnv"kv"ku"kpucnngf"kp"vjg"Rtqitc o "Hkngu^Pgvyqtm"Vko g"Rtqvqeqn"uwd/fktgevqt{"qh"{qwt"Ykpfqyu"
PVI4222lZR"rctvkvkqp0""Htq o "c"eqpuqng"ykpfaqy."chvgt"kuuwkpi"vjg"eq o o cpf

ouqr

{qw"yknn"ugg"vjg"ouqr /fyf"eq o o cpf"rtq o r\<

ouqr?

Wug"vjg"eq o o cpf

qffst

vq"fkurnc{"vjg"PVR"rggtu"y jkej" {qwt"eq o rwwgt"ku"wkupi 0""Qpg"qh"vjg o "ujqwnf"dg"vjg"Wpkuqp"ugtxgt"
y jkej" {qw"jcxg"lwuv"eqpLiwtgf0" [qw"ujqwnf"xgtxh{"vjcv"kv"ku"dgkpi"-:tgcejgf0"* [qw"oc{"jcxg"vq"eqp/
vkpwg"kuuwkpi"vjg"rggtu"eq o o cpf"ht" c"okpwwg"qt"vyq"dghqtg" {qw"yknn"ugg"vjg"-:tgcej0 j

Available User Commands

EQOOCPF	HWPEVKQP
ceeguueqpŁi	kpvgtcevkxg"ujgmn"uetkr"vjcv"i wkgfu"vjg" wugt"kp"eqpŁi wtkpi " ufmofu tti "cpf" tonqe "ceeguu"vq"vjg"Wpkuqp"vjcv"ku"nk o kvgf" vq"urgekŁe"j quvu0""Vjg"tguwnvki "lgveljqvu0cmqy"cpf" lgveljqvu0fgpŁ"Łngu"ctg"ucxgf"vq"vjg"pqp/xqncvknq"HNCUJ "fkum0"" Hcevqt{"fghcwnv"eqpŁi wtcvkqp"cmqy u"ceeguu"d{"cnn"j quvu0
cpvŁv o cum	Rtkpvu"vjg"ewttgpn"ugvki u"hq"vjg"Cpvppc"Hcwnv"O cum0
erwqrvu	Tgwtpu"vjg"ewttgpn"ugvki u"hq"cp{"kpuvcnngf."wugt/ugngevcnng." ERW"Qrvkqu0""Vjgug"ctg<3RRU."CO"Eqfg"qt"Rtqi"VVN0
erwqrvueqpŁi	Cp"kpvtcevkxg"uetkr"vjcv"cmqy u"vjg" wugt"vq" o qfkh{"vjg"ugvki u" hqt"vjg"ERW"Qrvkqu"nkuvgf"cdqxs0
erwugtkog	Rtkpvu"vjg"ewttgpn"ugvki u"hq"vjg"qrvkqpcn"Ugtkn"Vko g"qwwrvw0
erwugtkogeqpŁi	Cp"kpvtcevkxg"uetkr"vjcv"cmqy u"vjg" wugt"vq" o qfkh{"vjg"ugvki u" hqt"vjg"qrvkqpcn"Ugtkn"Vko g"qwwrvw0"
gtcugtqqhua3	Eq o o cpf"vq"gtcug"vjg"WR I TCFG"tqqv"Łng"u{uv g o "HNCUJ " rctvkvkqp0""Vjku" o wuv"dg"gzgewvgf"r tkqt"vq"nqc fki "vjg"pgy "Łng" u{uv g o "k o ci g"fwtkpi "vjg"Nkpwz l PVR"wr i tcf g"rtqegu0
iruf{poqfg	Rtkpvu"vjg" IRU"f{pc o ke" o qfg"ewttgpn{"kp"ghhgev"vq"vjg"eqpuqng0
irutghrqu	Rtkpvu"vjg" IRU"tghgtgpeg"r qukvkqp"vq"vjg"eqpuqng0
iruuvcv	Rtkpvu"vjg" IRU"Uwdu {uv g o "uvcvwu"kphqt o cvkqp"vq"vjg"eqpuqng0
irvmtmuvcv	Rtkpvu"vjg" IRU"ucvgnkvgtcemkpi "uvcvwu"vq"vjg"eqpuqng0
iruxgtukqp	Rtkpvu"vjg" IRU"Łt o yctg"cpf"HR I C"xgtukqp"kphqt o cvkqp"vq"vjg" eqpuqng0
ipvrjycfft	Rtkpvu"vjg"gvjgtgpn"jctfyctg"cf fgtuu."kh"vjg"gvjgtgpn"jcu"dggp" eqpŁi wtgf0
ipvrquev{rg	Rtkpvu"vjg"kpucnngf"queknncvqt"v{rg."y jkej"ku"VEZQ"qt" OU/QEZQ0
ipvr rcuuy f	Cnnqy u"vjg"tqqv" wugt"vq"ejcpi g"vjg"rcuuy qtf"hq"vjg"vy q"eqpŁi / wtgf" wugtu"qp"vjg"Wpkuqp<""ipvrwugt"cpf"tqqv0""Vjku"uetkr"v"ecnu" vjg"ucp fctf"Nkpwz"qbttxe"dkpct{"cpf"vjgp"ucxgu"vjg"tguwnvki " lgveljcfqy"Łng"vq"vjg"pqp/xqncvknq"HNCUJ "fkum0
ipvrtqqvhu	Rtkpvu"vjg"ewttgpn"tqqv"Łng"u{uv g o "k o ci g."gkvjgt"Wpkuqp I RUa2" *hcevqt{"fghcwnv+"qt"Wpkuqp I RUa3"*Łgnf"wr i tcf g+"y jkej"ku"twp/ pki "kp"vjg"Wpkuqp"vq"vjg"eqpuqng0
ipvrucv	Rectugu"vjg"qwwrvw"qh"ouqr! d!qffst"vq"qdvkpv"vjg"u{uv g o "rggt"

iprvkogogfgeqpli	Kpvtcevkxg"ujgm"uetkr"vjcv"i wkgu"vjg" wugt"kp"eqpli wtkpi"vjg" vkog" o qfg"ugvki u" hqt"cp{ "qrkqpcn"CO"Eqfg"Qwvrwv"*vkog" eqfg+"qt"Ugtkn"Vkog"Qwvrwv0"Cnnqyu"ugvki "vq"vjg"NQECN." IRU"qt"WVE"vkog uecng"cpf"kh"NQECN."vjg"ugvki"qh"vjg"qhugv" vq"WVE"cpf"vjg"Fc{nkijv"Ucxki u"Vkog"*FUV+"uvctv"cpf"uvqr" fcvglvkog"rctcogvgtu0
iprvxgtukqp	Rtkpvu"vjg"Nkpwz PVR"Uwdu{ uvg o"uqhvyctg"xgtukqp" kphqto cvkqp" vq"vjg"eqpuqng0
irvrucv *qrkqpcn+	Rtkpvu"vjg"uvcvwu"qh"vjg"qrkqpcn"RVR KGGG/37: : "uwdu{ uvg o0"
jgnr	Rtkpvu"jgnr" hqt"Wpkuqp"eqo ocpfu"*pqv"Nkpwz+0
kpgvfeqpli	Kpvtcevkxg"ujgm"uetkr"vjcv"cnqyu"vjg" wugt"vq"eqpli wtg"vjg" nkuv"qh"rtqvqeqn"ugtxgtu"y jkej"ctg"uvctvgf"d{ "vjg"jofue"ugtxgt" fcgogp"twppki"kp"vjg"Wpkuqp0
pgveqpli	Kpvtcevkxg"ujgm"uetkr"vjcv"cnqyu"vjg" wugt"vq"eqpli wtg"vjg"KR" pgy qtm"uwdu{ uvg o"qh"vjg"Wpkuqp0
pvreqpli	Kpvtcevkxg"ujgm"uetkr"vjcv"i wkgu"vjg" wugt"kp"eqpli wtkpi"vjg" Wpkuqp"PVR"uwdu{ uvg o0"Cnnqyu"eqpli wtcvqp"qh"OF7"cw/ vjgpkcevkqp"cpf"dtqcfecuvl o wnvkecuv" o qfg0"Cnn"rctcogvgtu"ctg" tgvckpgf"kp"ppq/xqncvkn"HNCUJ"fkum"uvqtcig0
rvreqpli rvr4eqpli *qrkqpcn+	Kpvtcevkxg"ujgm"uetkr"vjcv"i wkgu"vjg" wugt"kp"eqpli wtkpi"rc/ tcogvgtu" hqt"vjg"qrkqpcn"RVR KGGG/37: : "rtqvqeqn0
rvrxgtukqpeqpli *qrkqpcn+	Kpvtcevkxg"ujgm"uetkr"vjcv"i wkgu"vjg" wugt"kp"ugngevki" gkvjgt" RVR KGGG/37: : "xgtukqp"3"qt"xgtukqp"40
ugvcpvivo cum	Eqo ocpf"vq"gpdcng"qt" o cum"vjg"Cpvgppc"Hcwnv0"
ugviruf{poqfg	Cnnqyu"vjg" wugt"vq"ugv"vjg" f{pcke" o qfg"qh"qrgtcvkqp"qh"vjg" IRU"Uwdu{ uvg o0"kv"oc{ "dg"QP"qt"QHH0
ugvirutghrqu	Kpvtcevkxg"ujgm"uetkr"vjcv"rtqo rvu"vjg" wugt" hqt"cp"ceewtcvg" tghgtpeg"rqukvqp." rghqto u"u{pvcz"cpf"ctiwogpv"xcnkfkv{ " e jgemki"vjg"rcuugu"vjg"rqukvqp"vq"vjg" IRU"Uwdu{ uvg o0
ugvukiivo cum	Eqo ocpf"vq" o cum"qt"gpdcng"vjg"Ukipc"nQuu"Hcwnv0
ukiivo cum	

Detailed Command
Descriptions

accessconfig

```
Vjku"eqo o cpf"uvctvu"cp"kpvgtcvkg"ujggn"uetkrv"vjcv"yknn"cnngy"vjg"tqqv"wgut"vq"eqpL"iwtg"nk o kvcvkqp"qh"
ufmofu."tti"cpf"tonq"ceeguu"vq"vjg"Wpkuqp0"D{"fghcwnv."vjg"wpkv"ku"eqpL"iwtgf"vq"cnngy"ceeguu"d{"cnn"
wugtu0"Kh" {qw"pggf"vq"nk o kv"ufmofu."tti"qt"tonq"ceeguu."g0i0"htq"ugewtkv{"tgcuppu." {qw"o wuv"twp"vjku"
uetkrv"cu"tqqv"htq o"gvjgt"vjg"TU/454"ugtkcn"klQ"rqtv"qt"htq o" c!ufmofu"qt!tti"uguukqp0
```

```
Vjku"uetkrv" o qfkLgu"vjgug"Lngu<"lgveljqvu0cnngy"cpf"lgveljqvu0fgp{0"Vjgug"ctg"pqp/xqncvkngn{"uvqtgf"
kp"vjg"HNCUJ"fkum"ldqqvlgve" fktgevqt{0" [qw"o wuv"tgdaqv"vjg"Wpkuqp"chvgt"twppkp i"vjku"uetkrv"htq"vjg"
ejcpi gu"vq"vcmg"ghhgev0
```

```
" Ugv<" " " " bddf ttdpogjh
" Wpkuqp"tgurqpug<" " Kpvgtcvkg"ujggn"uetkrv"ku"uvctvgf0
```

antfltmask

```
Vjku"eqo o cpf"fkurnc{u"vjg"ewttgvp"ugvvp i"htq"vjg"Cpvgppc"Hcwnv"Ocun0"
```

```
" Swgt{<" " " bougmunbt1
" Wpkuqp"tgurqpug<" Boufoob!Gbvmu!jt!FOBCMFE
```

cpuopts

```
Vjku"eqo o cpf"fkurnc{u"vjg"ewttgvp"ugvvp i u"htq"vjg"kpucvngf"ERW"Qrvkqpu0
```

```
" Swgt{<" " " dqvpqut
" Wpkuqp"tgurqpug<" DQV!Pqujpo!UJNF!DPEF!jt!jotubmmfe/
!! ! ! Dvssfou!Tfuujoh!>!JSJH.C233/
```

cpuoptsconfig

```
Vjku"eqo o cpf"uvctvu"cp"kpvgtcvkg"ujggn"uetkrv"vjcv"yknn"cnngy"vjg"tqqv"wgut"vq"ejcpi g"vjg"ugvvp i u"qh"
cp{"kpucvngf"ERW"Qrvkqpu0"Vjg"wgut/ugngevcdng"qrvkqpu"ctg<"3RRU."CO"Eqfg."cpf"Rtqi"VVN0
```

```
" Ugv<" " " dqvpqutdpogjh
" Wpkuqp"tgurqpug<" Kpvgtcvkg"ujggn"uetkrv"ku"uvctvgf0
```

cpusertime

```
Vjku"eqo o cpf"fkurnc{u"vjg"ewttgvp"ugvvp i u"htq"vjg"qrvkqpcn"Ugtkcn"Vko g"Qwvrvw0"Ugvvp i u"htq"vjg"vjtg"
POGC"Ugpgpegu"ctg"cnyc{u"ujqyp"dwv"ctg"qpn{"crrnkecdng"kh" {qw"jcxg"ugngevgf"POGC"cu"vjg"Qwvrvw"
Hqt o cv"Ugvvp i 0"Oqtg"kpht o cvkqp"cdqvw"vjg"xctkqwu"htq o cvu"ku"kp"Crrgpfkz" I"/"Ugtkcn"Vko g"Qwvrvw0
```

```
" Swgt{<" " " dqvtfsujnf
" Wpkuqp"tgurqpug<" Dvssfou!Tfsjbm!Ujnf!Pvuqvu!Cbve!Sbuf!Tfuujoh!>! :711
!! ! ! Dvssfou!Tfsjbm!Ujnf!Pvuqvu!Gpsnbu!Tfuujoh!>!Tzmqmfy
!! ! ! Dvssfou!Tfsjbm!Ujnf!Pvuqvu!Qbsjuz!Tfuujoh!>!Pee
```




gntproofs

Vjku"eqo o cpf"fkurnc{u"vjg"ewttgpn{"dqvgf"tqqv"Łng"u{avg o"ko cig0""Kv"ecp"dg"gvjgt"Wpkuqp IRUa2"
*hcevt{"ko cig+"qt"Wpkuqp IRUa3"*Łgnf"wr itcfg"ko cig+0""Tghgt"vq"**Crrgpfkz"D"/"Wr itcfkpi"vjg"Hkt o/
yctg**"hqt"fgvckngf"kpvtwevkqpu"qp"rgthqt okpi"vjg"wr itcfg"rtqegfwtg0

" Swgt{<" " " " **houqsppugt**
" Wpkuqp"tgurqpug<" " **CPPU`JNBHF>VojtpoHQT`2**

gntpstat

Vjku"eqo o cpf"cnnyu"vjg"wugt"vq"swgt{"vjg"uvcvwu"qh"vjg"PVR"uwdu{avg o0""Kv"tgvtkgxgu"kphqt oc/
vkqp"htq o"vjg"PVR"fkvtkdwvkqp"**ouqr**"dkpct{"wukpi"vjg"rggtu"eqo o cpf"vq"fgvgt okpg"vjg"ewttgpn"
u{pejtqpk|cvkqp"uvcvwu"qh"vjg"PVR"uwdu{avg o0""Kv"vjgp"tgvtkgxgu"vjg"ncuv"nkpg"kp"vjg"nqiŁng"**lxctlnqil**
rtcgeku20o qpkvqt


```
" Ugv<" " " " ouqdpogjh
" Wpkuqp"tгурqpug<" " kpvgtcevkg"ujgmn"uetkrv"ku"uvctvgf0
```

ptpconfig and ptp2config (Optional)

```
Vjgug"eq o o cpf"ctg"qp{ "cxckncdng"kh"vjg"RVRIKGGG/37 : : "qrvkqp"jcu"dggp"kpucvngf0""Tghgt"vq"Cr/
rgpfkz"J"/"Rtgekukqp"Vko g"RtqvqeqlKGGG/37 : : "hqt" o qtg""kphqt o cvkqp0
```

ptpversionconfig (Optional)

```
Vjku"eq o o cpf"ku"qp{ "cxckncdng"kh"vjg"RVRIKGGG/37 : : "qrvkqp"jcu"dggp"kpucvngf0""Tghgt"vq"Cr"rgpfkz"
J"/"Rtgekukqp"Vko g"RtqvqeqlKGGG/37 : : "hqt" o qtg""kphqt o cvkqp0
```

setantfltmask

```
Vjku"eq o o cpf"cnqyu"vjg"wugt"vq"gpcedng"qt" o cum"vjg" IRU"cpvgppc"hcwnv0""Rctc o gvgt"hqt"vjku"eq o o cpf"
ku"gvkjgt"OCUMGF"qt"GPCDNGF0""Ugwkpi"vjku"eq o o cpf"vq"OCUMGF"y knn"rtgxgp"vjg"cpvgppc"
hcwnv"htq o "etgcvkpi"cp"cnct o "eqpfkvkqp0""Uq o g"kpucvncvkkpu" o c { "pggf"vq" o cum"vjku"hcwnv"fwg"vq"urgekca"
cpvgppc"ukvwcvkqpu"nkmg"urnkvgtu"qt"FE"dnqemu"vjcv"eqphwug"vjg"cpvgppc"fgvgevqp"ektewk0""Vjg"hcevqt { "
fghcwnv"ugwkpi"ku"GPCDNGF0
```

```
" Ugv<" " " " bougmunbt1!NBTLFE
" Wpkuqp"tгурqpug<" " Boufoob!Gbvmu!Nbt1!tfu!up!NBTLFE
```

setgpsdynmode

```
Vjku"eq o o cpf"ceegrvu"cu"ukping"ctiw o gpv<"QP"qt"QHH"vq"cnqy"vjg"wugt"vq"ugv"vjg"fp{p o ke" o qfg"qh"
qrgtcvkqp"qh"vjg" IRU"Uwdu{uvgo 0""D{ "fghcwnv."vjg"wpkv"ku"eqpŁiwtgf"vq"nqecvq"kvgnh"wukpi"vjg" IRU"ucvgnkvgu0""Kp"
uq o g"ukvwcvkqpu."xkukdkkv{ "qh"vjg"um{ "ku"nk o kvgf"cpf"vjg"wpkv"y knn"pqv"dg"cdng"vq"fgvgt o kpg"kvu"rqukvkqp0""
kp"vjku"ecug."vjg"wugt" o wuv"fgvgt o kpg"cp"ceewtcvg"Y IU/: 6"rqukvkqp"d{ "qvjgt" o gcpu"cpf"kprrwv"kv"wukpi"
vjku"eq o o cpf0""Kh" { qw"pggf"vq"ugv"vjg"ceewtcvg"tghgtgpeg"rqukvkqp." { qw" o wuv"twp"vjku"uetkrv"cu"tqqv0""
Vjg"ejcpigu"vcmg"nceg"k o o gfkcvgn{0""Tghgt"vq"Cr"rgpfkz"F"/" IRU"tghgtgpeg"Rqukvkqp" hqt" fgvccknu0""Kh"
vjg" IRU"fp{p o ke" o qfg"ugwkpi"ku"QP"*ugg" hqtezonpef/0fũm̄qtezonpef Y" IRU"ucvgnk
```

```
" Ugv<" " " " tfuhqtezonpef!PO
" Wpkuqp"tгурqpug<" " HQT!Ezobnjd!Npef!jt!PO/
```

setgpsrefpos

```
Vjku"eq o o cpf"uvctvu"cp"kpvtcevkg"ujgmn"uetkrv"vjcv"y knn"cnqy"vjg"wugt"vq"ugv"vjg"ceewtcvg."tghgtgpeg"
rqukvkqp"qh"vjg"Wpkuqp0""D{ "fghcwnv."vjg"wpkv"ku"eqpŁiwtgf"vq"nqecvq"kvgnh"wukpi"vjg" IRU"ucvgnkvgu0""Kp"
uq o g"ukvwcvkqpu."xkukdkkv{ "qh"vjg"um{ "ku"nk o kvgf"cpf"vjg"wpkv"y knn"pqv"dg"cdng"vq"fgvgt o kpg"kvu"rqukvkqp0""
kp"vjku"ecug."vjg"wugt" o wuv"fgvgt o kpg"cp"ceewtcvg"Y IU/: 6"rqukvkqp"d{ "qvjgt" o gcpu"cpf"kprrwv"kv"wukpi"
vjku"eq o o cpf0""Kh" { qw"pggf"vq"ugv"vjg"ceewtcvg"tghgtgpeg"rqukvkqp." { qw" o wuv"twp"vjku"uetkrv"cu"tqqv0""
Vjg"ejcpigu"vcmg"nceg"k o o gfkcvgn{0""Tghgt"vq"Cr"rgpfkz"F"/" IRU"tghgtgpeg"Rqukvkqp" hqt" fgvccknu0""Kh"
vjg" IRU"fp{p o ke" o qfg"ugwkpi"ku"QP"*ugg" hqtezonpef/0fũm̄qtezonpef Y" IRU"ucvgnk
```

ku"gvjgt"OCUMGF"qt"GPCDNGF0"Ugvpki"vjku"eq o o c p f"vq"OCUMGF"y knn"rtgxgpv"cu"ki pcn"nquu"
 hcwnv"htq o"etgcvkpi"cp"cnct o"eqpfkvkqp0"Uq o g"kpucnncvkkpu" o c {"pggf"vq" o cum"vjku"hcwnv" y jgp"qrgtcv/
 kpi"vjg"PVR"ugtxgt"cu"Uvtevw o"4"ugtxgt0"Vjg"hecvqt {" fghcwnv"ugvki"ku"GPCDNGF0

" Ugv<" " " " **tjhgmunbt1!NBTLEF**
 " Wpkuqp"tgurqpug<" " **Tjhobm!Mptt!Gbvmu!Nbt1!tfu!up!NBTLEF**

sigfltmask

Vjku"eq o o c p f"fkurnc{"u"vjg"ewttgvp"ugvki"htq"vjg"Uki pcn"Nquu"Hcwnv"Ocum0"

" Swgt{<" " " " **tjhgmunbt1**
 " Wpkuqp"tgurqpug<" " **Tjhobm!Mptt!Gbvmu!jt!FOBCMFE**

updaterootflag

Vjku"eq o o c p f"cmqyu"vjg"wugt"vq"wr fcvq"vjg"eqpŁi wtcvkqp"qh"vjg"Nkpwz"dqvnqcfgt"chvgt"cp"pgy"tqqv"
 Łng"u{uvq o"ko ci g"jcu"dgpp"wrnqcfgf"vq"vjg"WRITCFG"tqqv"Łng"u{uvq o"rctvkvkqp."Ifgxltqqvhu3"qh"vjg"
 Wpkuqp"HNCUJ"fkum0"Kv" o c {"cnuq"dg"wugf"vq"tgugv"vjg" fghcwnv"dcem"vq"vjg"HCEVQT [{"tqqv"Łng"u{uvq o"
 rctvkvkqp0"Thgt"vq"**Crrgpfkz"D"/"Writcfkpi"vjg"Hkt o yctg**"htq"fgvcngf"kpvtwvkkpu"htq"rgtqt o kpi"
 vjg"wr itcfgrtqegfwtg0"Qpg"cti w o gpv"ku"ceegrvgf." y jqug"xcnwg"ku"gvjgt"2"qt"3."ecwukpi"ci"vq"dg"
 ug"vjcv"y knn"kp fkecvq"vq"vjg"dqvnqcfgt" y jkej"tqqv"Łng"u{uvq o"ko ci g"ujqwnf"dg"nqcfgf"d {" fghcwnv0"Kh"
 cp"cti w o gpv"xcnwg"qh"4"ku"ikxgp."vjgp"vjg"ewttgvpn {"eqpŁi wtf" fghcwnv"tqqv"Łng"u{uvq o"ku"ujqyp0

" Ugv<" " " " **vqebufspugmbh!2**
 " Wpkuqp"tgurqpug<" " **VQHSBEF!jt!uif!efgbvmu!sppu!gjmf!tztufn/**
 " Swgt{<" " " " **vqebufspugmbh!3**
 " Wpkuqp"tgurqpug<" **!** **VQHSBEF!jt!uif!efgbvmu!sppu!gjmf!tztufn/**

upgradegps

Vjku"uetkrv"cmqyu"vjg"wugt"vq"wr itcfgr"vjg"IRU"Uwdu{uvq o"Łt o yctg0"Kv"tgsuktgu"qpg"cti w o gpv<"vjg"
 rcvq"vq"vjg"dkpct {"Łng"vq"dg"wrnqcfgf"vq"vjg"IRU"Uwdu{uvq o0"Kv"kuuwgu"vjg"eq o o c p f"uqxt"vjg"ug/
 tkcn"rqt"vq"vjg"IRU"Uwdu{uvq o"vjcv"ctg"pggf"vq"uvct"vjg"Z/ o qfg o"Łng"vtcpuhgt."cpf"vjgp"fkurnc{"u"
 vjg"tgurqpugu"htq o"vjg"IRU"Uwdu{uvq o"vq"vjg"eqpuqng0"Y jgp"vjg"Z/ o qfg o"÷Eø"ejctcevt"cr rgctu."
 kp fkecvkpi"vjcv"vjg"IRU"Uwdu{uvq o"ku"tgcf {"vq"tgegkxg"vjg"Łng." {qw" o wuv"jkv"vjg">GPVGT@"mg {"cpf"
 vjg"vtcpuhgt"y knn"dg ikp0"Chvgt"cdqvw"qpg" o kpwvg."kv"ujqwnf"eq o rnvqg."cv" y jkej"rqp" {"qw"ujqwnf"ugg"vjg"
 IRU"Uwdu{uvq o"dqqv" o guuci gu"cr rgct"qp"vjg"eqpuqng0"htq o"vjgug." {qw"y knn"dg"cdng"vq"xgtkh {"vjcv"vjg"
 Łt o yctg"y cu"uweeguuhwnn {"wr itcfgf0

Kp"vjg"gzc o rng"eqpuqng"qvrwv"dgngqy."nkpgu" y jkej"dg ikp"y kvj"ø//ö"ctg"i gpgtcvgf"d {"vjg"vqhsbefhtq"
 uetkrv0"Cnn"qvjgt"nkpgu"ctg"htq o"vjg"IRU"Uwdu{uvq o." y kvj"vjg"gzegrvkqp"qh"vjg"ujgnn" o guuci g"kp fkecv/
 kpi"vjcv"vjg"rtqeguu"dbu!=!0efw0bsn~vtf"jcu"dgpp"vgt o kpcvqf." y jkej"ku"pqt o c n0"Kp"vjku"gzc o rng."
 vjg"÷Eø"ejctcevt"y cu"tgegkxg"vjtg"vk o gu"dg hqte"vjg"wugt"jkv"vjg">GPVGT@"mg {"vq"dg ikp"vjg"vtcpuhgt0"
 Vjg"ncuv"vjtg"nkpgu"ctg"vjg"dqqv" o guuci gu"vjcv"ctg"ugpv"d {"vjg"IRU"Uwdu{uvq o"cu"kv"eq o gu"wr0"Vjg"
 Łt o yctg"xgtukp"ujqwnf" o cvej"vjcv"qh"vjg"dkpct {"Łng"vjcv"y cu"wrnqcfgf0"Ugg"**Rgthqt o kpi"vjg"IRU**
Writcfkpi"vjg"Crrgpfkz"D"/"Writcfkpi"vjg"Hkt o yctg"htq" o qtg"kp hqt o cvkqp0

" Ugy<" " " " " vqhsbefhqt!0unq07121.1131.111/cjo
" Wpkuqp"tgurqpug<"

IPv6-Capable syslog-ng

```
Vq"gpdcng"tg o qvg"u{ unqi i kpi "vq"cp"KRx8"jquv." {qw" yknn"pggf"vq"gfkv"vjg"pgy"lgvelu{unqi/pi0eqph"Lnq"
cpf"eqr {"kv"vq"ldqqvlgve0""Cv"dqqv"vk o g."vjg"rtgugpeg"qh"dqvj"vjg"tztmph.oh"fcg o qp"cpf"vjg"dqqvl
gvelu{unqi/pi0eqph"Lnq" yknn"ecwug"vjg"pgy"KRx8/ecrcdng"tztmph.oh"fcg o qp"vq"dg"uvctvgf"kpuvgcf"qh"
vjg"rtgkxkwu"tztmphe0lmphe"rckt"qh"fcg o qpu0""Vjgug"vyq"Lnqu"tg o ckp"qp"vjg"u{ uvg o "hqt"dcemyctf"
eq o rcvkdknkv {" ykvj"ewuvq o gtu0"gzkuvkpi"lgvelu{unqi0eqph"ugvru."dvw"vjg {"ctg"pqv"KRx8"ecrcdng0""Kh" {qw"
ctg"pqv"ewttgpn {" fktgevki {" qwt"u{ uvg o "nqi u"vq"ctg o qvg"jquv."qt" {qw"ctg"pqv"wukpi"KRx8."vjgp"vjgtg"ku"
nkvnng"qt"pggf"qt"dgpplv"vq"ejcpikpi"vq"tztmph.oh0
```

IPv4-Only Protocols

```
Vjgtg"ctg"ugxgtcn"rtqvqeqnu" yjkej"ctg"pqv"KRx8/ecrcdng<"ufmofu"*enkgpv"cpf"ugtxgt+."iuuq.!guq"cpf"
eidqde0""Fwg"vq"vjgkt"kpvtkpuke"kpugewtkv {"."ufmofu"cpf"guq"ctg"tgrkfn {"dgkpi"fgrtgecvgf."cpf"rtqd/
cdn {"jcxg"nkvnng"dwukpguu"twppkpi"qxgt"cp"KRx8"pgvyqtm0""Vjg"cfftguu"cwvqeqpl"iwcvkqp"ecrcdknkvkgu"
qh"KRx8" o cmg"vjg"F J ER"rtqvqeqn"nguu"k o rqtvepv."jqy gxgt"kv"ku"nkmg {"vjcv"vjg"pgy"eidqw7"ecrcdknkv {"
yknn"cr rgct"kp"chwwtg"wr itcfg0
```


HTTP Interface Description

Hqt"ugewtkv{"tgcuppu"vjg"ygd"rcigu"qp"vjg"Wpkuqp"ujqy"uvcvwu"kpht"ocvkqp"qpn{"0" [qw"ecppqv"tgeqpLi/wtg"vjg"Wpkuqp"gzegr"vht"wr"itcfkpi"Łto yctg."y jkej"ku"fqpg"ykvj"ugxgtcn"ugewtkv{"o gcuwtgu"kp"rnceg0" Vq"tgeqpLi wtg"vjg"Wpkuqp" {qw"y knn"pggf"vq"uwg"vjg"pgv y qtm"qt"ugtken"rqtv"eq o o cpf"nkp"kpvgthceg0

NOTE

For proper operation, your web browser must be configured to allow pop-up windows and have Javascript enabled.

Vq"igv"uvctvgf"ykvj"vjg"ygd"kpvgthceg"ukorn{"r qkpv" {qwt"dtqyugt"vq"vjg"KR"cfftguu"qh"vjg"Wpkuqp"cpf" nqi"kp"ugewtgn{"ykvj"JVVR0""Hqt"gzco rng<

jwvr<113;4038:0303

C"yctpkpi"fkcnqi"rcig"yknn"dg"rtgugpyvgf"ht"vjg"egtkŁecvg0""Cempqyngfig"vjg"fkcnqi"rcig"cpf"vjg" ugtxgt"yknn"eqpvkpwg"vq"nqcf."rtqvgevgf"d{"UUN0""Vjg"dtqyugt"ujqwnf"fkurnc{"vjg"öNqemö"keqp."kpfkecv/ kpi"vjcv"vjg"rcig"ku"rtqvgevgf"d{"UUN0""Vq"oczok"lg"ugewtkv" {"qw"ujqwnf"tgrnceg"vjg"UUN"EgkŁecvg0"" Ugg"Crpgfkz"C"/Ugewtkv{."JVVR""hqt"fgvcknu0

Dgnqy"ku"c"rkevwtg"qh"vjg"nqikp"rcig<



Navigation

Vjg"ockp"ogpw"vedu"cetquu"vjg"vqr"qh"gcej"ygdrcig"cmnqy" {qw"vq"pcxkicvg"vj tqwi j"vjg"uvcvwu"kpht/ ocvkqp"kp"vjg"Wpkuqp"y jkng"nkpmu"qp"vjg"nghvjcpf"ukfg"qh"gcej"ygdrcig"rtqxxfg"uwdecvgiqt{"pcxkic/ vkqp0

Hqt"gzco rng."kp"vjg"rcig"dgnqy"vjg"ockp"ogpw"vedu"ctg< Jqog."Tgegkxgt."Enqem."KlQ."Hcwnvu."Pgv/ y qtm."PVR."RVR"cpf"Hkto yctg0""Vjg"uwdecvgiqt{"nkpmu"qp"vjku"rctvkewnet"rcig"ctg<KRx6."KRx8"cpf" FPU0""KRx6"ku"ugngevgf0

UkipcHcwvOcum

Firmware Page

```
Vjg"Łto yctg"uvcvwu"rcig"ujqyu"rctv"pw o dgtu"cpf"xgtukqpu"qh"vjg"Nkpwz"Uwdu{uvgo "Łto yctg"*tqqv"
Łng"u{uvgo "cpf"mgtpgn+"cpf"vjg" IRU"Uwdu{uvgo "Łto yctg}
```

Nkpwz"Uwdu{uvgo "Writcfg." IRU"Uwdu{uvgo "Writcfg

```
Vjgug"rcigu"ctg"wugf"hqt"wr itcfkpi"vjg"Łto yctg" [qw"owuv"dg"nqi igf"kp"cu"ōtqqi"ō"kp"qtfgt"vq"jcxg"
ceeguu"vq"vjgug"rcigu"Vjg"ncvuv"tgngcugf"xgtukqpu"qh"Wpkuqp"Łto yctg"ctg"htggn{"cxckncdng"qp"vjg"Gp/
fTwp"ygdukyg" "Hqt"fgvckngf"kphqt o cvkqp"qp"jqy"vq"rgthqt o "vjg"wr itcfg"gvjgt"xkc"vjg"pgvyqtm"rqtv."
vjg"ugtkcn"rqtv."qt"vjg"JVVR"kpvgthceg"ugg"Crngpfkz"D"/"Writcfkpi"Vjg"Hkt o yctg"Qpn{"vjg"Nkpwz"
Uwdu{uvgo "tqqv"Łng"u{uvgo "*THU+"cpf" IRU"Uwdu{uvgo "ecp"dg"wr itcfgf"xkc"vjg"JVVR"kpvgthceg"Vq"
wr itcfg"vjg"Nkpwz"Uwdu{uvgo "mgtpgn"ugg"Crngpfkz"D"/"Writcfkpi"Vjg"Hkt o yctg."Rgthqt okpi"vjg"
Nkpwz"MGtpgn"Writcfg}
```

Tgdqqv

```
Vjku"rcig"yknn"cnqy" {qw"vq"rgthqt o "c"uqhvyctg"tgdqqv"qh"dqv"vjg"Nkpwz"Uwdu{uvgo "cpf"vjg" IRU"
Uwdu{uvgo "Vjku"ku"pqt o cnn {"wugf"chvgt"c"Łto yctg"wr itcfg"dw"ecp"dg"fqpg"cp {vk o g" {qw"yukj"vq"
tgugv"vjg"Wpkuqp}
```

Disabling The HTTP Protocol

```
Vq"fkucdng"JVVR" {qw"pggf"vq"gfkv"cu{uvgo "uvctv/wr"uetkrv"ecmgf"lgveltelqecm"Vjku"uetkrv"uvctvu"
ugxgtcn"fcgo qpu" [qw"ecp"gvjgt"tgo qxg"vjg"nkpg"vjcv"nkuvu"JVVR"qt" {qw"ecp"rnceg"c" "ejctcevgt"cv"vjg"
dgi kppkpi"qh"vjg"nkpg"uq"vjcv"kv"yknn"pqv"dg"gzgewvgf" "C"xgt {"eq"rcev"gfkvqt"ku"cxckncdng"qp"vjg"u{/
vg o "hqt"vjku"rwtrqug< !fejū"Kh" {qw"uvctv"fejū"ykvjqwv"ikxkpi"kv"c"Łng"pc o g"vq"qrgp."kv"yknn"fkurnc {"kvu"
jgnr"uetgpp."ujqykp i"vjg"uwrrqtvgf"mg {uvtqmgū+
```

IMPORTANT

After editing `u-boot`, you must copy it to the `u-boot` directory and reboot the system. It is very important to retain the access mode for the file, so be sure to use `!dq! .q` when performing the copy. During the boot process, the files contained in the `u-boot` directory are copied to the working directory on the system RAM disk. In this way the factory defaults are overwritten.


```
kp0vgnpgvf<"3;4038:0304."3;4038:0305
uu j f<"3;4038:0304."3;4038:0305
up o r f<"3;4038:0304."3;40n8:0305
```

```
Vjku"uk o rng"uj gnn"uetkrv"j c p f n g u"v j g"p g g f u"q h"o q u v" w u g t u." j q y g x g t"v j g"u { p v c z"q h"v j g u g"v y q" L n g u"u w r /
r q t v u" g n c d q t c v g" e q p L i w t c v k q p" r q u u k d k n k v k g u" y j k e j" c t g" d g { q p f"v j g" e c r c d k n k v g u" q h"v j k u" u k o r n g" u j g n n" u e t k r v 0"
C f x c p e g f" w u g t u" y j q" p g g f"v j g u g" e c r c d k n k v k g u" y k n n" p g g f"v q" g f k v"v j g u g"v y q" L n g u" f k t g e v n { "c p f"v j g p" e q r { "
v j g o"v q"v j g"l d q q"l g v e" f k t g e v q t { 0" * U g g" Wukp i" G f k v c d q x g 0" " D g" e c t g h w n" v q" o c k p v c k p"v j g" r t q r g t" q y p g t u j k r"
c p f" c e e g u u" r g t o k u u k q p u" d { " w u k p i" d q ! . q" y j g p" e q r { k p i"v j g" L n g u 0
```

```
Vq"eqpvtqn"ceeguu"xc"J VVR."v j g" w u g t" o w u v" g f k v"v j g"l g v e l c r c e j g l j w r f 0 e q p h" L n g" c p f" c f f"v j g" g s w k x c n g p v"
f g p { " h q n n q y g f" d { " c n n q y" f k t g e v k x g u 0" " H q t" g z c o r n g."v j g" f g h c w n v" L n g" e q p v c k p u"v j g u g" n k p g u <
```

```
%"Eqpvtqnu"y j q"ecp"i g v"u v w h h" h t q o"v j k u" u g t x g t 0
%
" Q t f g t" c n n q y. f g p {
" C n n q y" h t q o" c n n
> l F k t g e v q t { @
```

```
Vq"tguvtkv"ceeguu"vq"c"u r g e k L e" j q u v" y k v j" K R" c f f t g u u" z z z 0 z z z 0 z z z 0 z z z." { q w" y q w n f" o q f k h { "v j g" f k t g e v k x g u"
c u" u q <
```

```
%"Eqpvtqnu"y j q"ecp"i g v"u v w h h" h t q o"v j k u" u g t x g t 0
%
" Q t f g t" c n n q y. f g p {
" F g p { " h t q o" c n n
" C n n q y" h t q o" z z z 0 z z z 0 z z z 0 z z z
> l F k t g e v q t { @
```

Dix D

HTTP



Łng"u{uvgo0""Ycvej"vjg"tguv"qh"vjg"dqqv"rtqegu"vq"ocmg"uwtg"vjcv"{qw"jcxg"uweeguuhwnn{"tgeqxgtgf0""Kh"
vjg"u{uvgo"dqqvu"pqtocnn{"vjgp"{qw"ujqwnf"tguqnxg"vjg"rtqdnqou"ykvj"vjg"rtgxkqwu"wrictfg"cpf"tg/
rthqtokv0

Performing the Linux Kernel Upgrade

Vjg"Wpkuqp"ku"ujkr r g f"htqo"vjg"ncevqt{"ykvj"cmgtpgn"vjcv"ku"KRx6/qpn{"ecrcdng"qpn{0""Kh"{qw"ycpv"
vq"wrictfg"{qwt"mgtpgn"vq"vjg"KRx6lKRx8/ecrcdng"qpg"vjgp"{qw"owuv"Łtuv"dg"uwtg"vjcv"{qwt"tqqv"Łng"
u{uvgo"ku"xgtukqp"4082"qt"ncvgtf0""Vq"ugg"vjg"tqqv"Łng"u{uvgo"xgtukqp"v{rg"hof" a o {

ng"

p

Performing the GPS Subsystem Upgrade

Vq"rgthqt o "vjk"wr i tcf g."nq i "kp"cu"vjg"tqv" wugt"vq"vjg"Wpkuqp"wukpi "gkvjgt"vjg"nqecn"eqpuqng"ugtkcn"KlQ" rqtv."ufmofu"qt"t ti"cpf"rgthqt o "vjgug"qrgtcvkqpu<

Ejcpig"vjg"yqtmkpi "fktgevqt {"vq"vjg"lv o r" fktgevqt {<

de! 0unq

kh {qw"ctg"wukpi "guq"vq"rgthqt o "vjg"wr i tcf g."vtcpuhgt"vjg"rtgkxqwun {"fgy pncfgf"Eng"wukpi "dkpct {" vtcpuhgt" o qfg"htq o "vjg"tg o qvg"jqv"vq"vjg"yqtmkpi "fktgevqt {"lv o r0"Vjg" IRU"Uwdu {uvgo "koci g"yknn" dg"pc o gf"ykvj"vjg"uqhv yctg"rctv"pw o dgt"cpf"xtgukqp"nkmg<"8232/2242/222a50230dkp0"" Y jgp"hqnnq ykpi " vjg"kpvtwevkqpu"dgngq y."uwdvkvwvg"vjg"pc o g"qh"vjg"cevwc n" IRU"Uwdu {uvgo "koci g"vjcv" {qw"ctg"kpucmkpi " hqt"8232/2242/222a50230dkp<

guq!sfnpuf`iptu	rgthqto" hvr"nqikp" qp" tgoqvg" jquvc
cjo	}ugv"vtcpuhgt" oqfg"vq"dkpct {i
hfu!7121.1131.111`4/12/cjo	

Rngcug"v{rg"vjg"hqnnqykpi"eqo o cpf"dww"fq"pqv"rtguu"gpvgt<

fdip!.f! sfdpwfs]s !?!0efw0bsn`vtfs

Pqy"yckv"wpkn"{qw"ugg"cpqvjgt"dqqvncfgt"oguucig"eqog"qww"cpf"vjgp"rtguu"gpvgt0"[qw"ykn"vjgp"ugg"vjg"öEö"eqog"qww"gxgt{"5"ugeqpfu0"[qw"vjgp"mkn"vjg"rtgkqwu"dbu"eqo o cpf"d{"gpvgtkpi<

ljmm!%"

[qw"ujqwnf"ugg"c"eqo o cpf"rtqorv0"Pqy"kuuwg"vjku"eqo o cpf"vq/tg/vtcpuht"vjg"eqttgev"dkpct{"Lng<

vqhsbefhqt!0unq07121.1131.111`4/12/cjo

Change Default Community Strings (Passwords)

```
Vq"gpuwtg"ugewtkv{"{qw"ujqwnf"ejcpi"vjg"fgbcwnv"eqo o wpkv{"pc o gu"d{"gfkvki"lgvelup o rf0eqph"cpf"
o qfkh{kp i"vjgug"vyq"nkpgu<
```

```
sxdpnnvo juz!!!foesvo`2
```

Configuring SNMPv1 Trap Generation

```
Vq"jcxg"{qwt"Wpkuqp"ugpf"UPORx3"vtcru"*THE/3437+ "{qw"owuv"eqpŁiwtg"vjg"eqo o wpkv{"cpf"fguvk/
pcvkqp"hqt"UPORx3"vtcru"d{"wpeqo o gpvki"cpf"gfkvki"vjku"nkpg"kp"lgvelup o rf0eqph<
```

IMPORTANT

After editing `u-boot`, you must copy it to the `u-boot` directory and reboot the system. It is very important to retain the access mode for the file (readable only by `root`), so be sure to use `chmod 400 u-boot` when performing the copy. During the boot process, the files contained in the `u-boot` directory are copied to the working `u-boot` directory on the system RAM disk. In this way the factory defaults are overwritten.

Configuration of SNMPv3

```
kh {qw"ctg" rncppkpi "vq"wug"UPORx5." {qw"ujqwnf" fgLpkvgn { " o cmg"wug"qh"vjg"v y q"tguqwtegu" o gpvkkpgf"
rtgxkqwn {"*PGV/UPOR" y gdukvg" cpf"Guugpvkcn"UPOR+" cpf"uwvf { "vjg o ectghwnn {0""Vjgtg"ctg"tcvjgt"
gncdqtcvg"eqpLi wtcvkqp"qrvkqpu"cxckcdng" y jgp" {qw"ctg"wukpi "x50""Vjg"kpvtwewkqp"rtgugpvvgf" jgtg" y knn"
ikxg" {qw"vjg" 1cxqt"qh"vjg"eqpLi wtcvkqp"dww" fgLpkvgn { "pqv"vjg"hwmm"ueqrg"qh" rquukdknkvgu0""Vq"ceeguu"
{qwt"Wpkuqp"xkc"x5"qh"UPOR." {qw" y knn" jcxg"vq"eqpLi wtg"v y q"Lngu<
```

```
lgveluporflqeph
ldqqvlpv/uporluporflqeph
```

```
Vjg"Łtuv"Łng"eqpvckpu"uvckv"eqpLi wtcvkqp" rctc o gvgtu"vjcv"vjg"ci gpv"wugu"vq"eqpvtqn"ceeguu"cpf"vq" fg/
vgt o kpg" y jgtg"vq"ugpf"pqvkŁecvkqpu"vtcrul0""Qvjgt"curgevu"qh"vjg"ci gpv"u"qrgtcvkqp"ctg"cnuq"eqpLi wtcvng"
kp"vjku"Łng."dww" {qw"ujqwnf"pqv"pggf"vq" o qfkh { "vjqug0""Vq"wug"vjg"UPORx5"ecrcdknkvgu"qh"vjg"Wpkuqp."
{qw" o wuv"Łtuv"ugv"wr" wugt" kphqt o cvkqp"cpf"ceeguu"nk o kvu" hqt"vjg" wugt"kp"lgveluporflqeph0""Wpeq o /
o gpv"cpf" gfkv"vjgug"v y q"nkpgu"vq" fgŁpg" {qwt"x5" wugt"cpf"vjgkt"ceeguu" rctc o gvgtu<
```

!!

!

!

```
Vjg"Łtuv"nkpg" fgŁpgu" c"UPORx5"tgcf/ y tkvg" wugt"tqqv" y jqug" o kpk o w o "ugewtkv { "ngxgn" y knn"dg"cwvjgpvk/
ecvvgf"cpf" gpet { rvvgf" hqt" rtkxce { "e.jqkegu"ctg"pqcvwj." cwvj"cpf" rtkx+."cpf" y j q" y knn" jcxg"tgcf/ y tkvg"ce/
eguu"vq"vjg"gpvktg"kuq*3+"dtpcej"qh"vjg"UOK"qdlgev"vtgg0""Vjg"ugeqpf"nkpg" fgŁpgu" c"UPORx5"tgcf/qpni {
wugt"pvrwugt" y jqug" o kpk o w o "ugewtkv { "ngxgn" y knn"dg"cwvjgpvkecvvgf" dww"pqv" gpet { rvvgf."cpf" y j q" y knn"
jcxg"tgcf/qpni { "ceeguu"vq"vjg"gpvktg"kuq*3+0qti*5+0fqf*8+0kpvgtpgv*3+0rtkxcvg*6+0gppvgt rtkugu*3+0gpfTwp/
VgejppnqikguOKD*35:49+"dtpcej"qh"vjg"UOK"qdlgev"vtgg0""Chvgt"cf fkp i "vjg" wugt"nkpgu"vq"lgvel
uporflqeph."eqr { "kv"vq"vjg"ldqqvlgve" fktgevqt { "wukpi" dq! q0
```

```
Vjg"ugeqpf"Łng"ku"nqecvvgf"qp"vjg"pqv/xqncvknng"HNCUJ" fkum"cpf"ku" wugf" d { "vjg"UPOR"ci gpv"vq"uvqtg"
ōrgtukuvvgp" fcvö"vjcv" o c { "dg" f { pc o ke"kp"pcvwtg0""Vjku" o c { "kpenwfg"vjg"xcnwg"qh"vjg"OKD/KK"xctckcdngu"
u { uNqecvkqp."u { uEqpvcev"cpf"u { uPc o g"cu" y gnn"cu"cp { "eqpLi wtgf"UPORx5" wugt"et { rvq"mg { u0""Kp"qtfgt"
vq" wug"UPORx5." {qw" o wuv"eqpLi wtg" wugt"mg { u"kp"vjku"Łng" hqt" gcej"UPORx5" wugt"vjcv" {qw" jcxg"ugv"wr"
kp"lgveluporflqeph0""Vq"fq"vjku." {qw" o wuv" c f f"nkpgu"vq"ldqqvlpv/uporluporflqeph""nkmg: O O
```


Disabling The SNMP Protocol

Vq"fkucdng"UPOR"{qw"pggf"vq"gfkv"cu{uvgo"uvctv/wr"uetkrv"ecnngf"lgveltel0fltel0nqecn0""Vjku"uetkrv"uvctvu"
ugxgtcn"fcgoqpu0""[qw"ecp"gvjgt"tgoqxg"vjg"nkpq"vjc"nkuvu"UPOR"qt"{qw"ecp"rnceg"cu"ejctcevg"cv"
vjg"dgi kppki"qh"vjg"nkpq"uq"vjc"kv"ykm"pqv"dg"gzgewvgf0""*C"xgt{"eqo rcev"gfkvqt"ku"cxckncdng"qp"vjg"
Wpkuqp"u{uvgo"ecnngf"fej0""Kh"{qw"uvctv"fej"ykvjqwv"ikxpi"kv"cu"Lng"pcog"vq"qrgp."kv"ykm"fkurnc{"kvu"
jgnr"uetggp."ujqykp"i"cm"uwr rqtvgf"gfkvki"mg{uvtqmu0+

IMPORTANT

After editing

vjg"gzgewcdngl" Jqy gxt."cu"cu"ur gekc G ."cu"cu"cu

RRGP

:0"Kh"vjg"fkvtdkdwkqp"cpflqt"wug"qh"vjg"Rtqi"tc"o"ku"tguvtkevgf"kp"egtvc"kp"eqwvptkgu"gvjgt"d{"rcv"pvu"qt"d{"
eqr{"tki"jvgf"kpvgthcegu."vjg"qtki"kp"eqr{"tki"jv"j"qnf"gt"y"jq"rncegu"vjg"Rtqi"tc"o"wpfgt"v"jku"Nkegpug"oc{"
c"ff"cp"gzrnkekv"i"qgi"tcr"jkecn"fkvtdkdwkqp"nk"okvcvkqp"gzewf"kp"i"vj"qug"eqwvptkgu."uq"vjcv"fkvtdkdwkqp"ku"
rgt"okvvgf"qpn{"kp"qt"co"qpi"eqwvptkgu"pqv"v"jwu"gzewf"gf"kp"uwej"ecug."v"jku"Nkegpug"kp"eqtr"qtcv"vjg"
nk"okvcvkqp"cu"kh"y"tkvvgp"kp"vjg"dqf{"qh"v"jku"Nkegpug"0"

;0"Vjg"Htgg"Uqhv"yctg"Hqwpfcvkqp"oc{"rwdnku"j"tgxkugf"cpflqt"pgy"xtukqpu"qh"vjg"l"gp"gtcn"Rwdnke"
Nkegpug"htq"o"vk"og"vq"vk"og"Uwej"pgy"xtukqpu"y"knndg"uk"oknct"kp"urktkv"vq"vjg"rtgugpv"xtukqpu."dvw"oc{"
fkhgt"kp"fgvckn"vq"cf"ftguu"pgy"rtqdn"o"u"qt"eqpegtpu"0"

Gcej"xtukqpu"ku"ikxgp"c"fkv"kp"i"wkuj"kp"i"xtukqpu"pw"odgt"0"Kh"vjg"Rtqi"tc"o"urgek"l"gu"c"xtukqpu"pw"odgt"qh"
v"jku"Nkegpug"y"jkej"cr"rnkgu"vq"kv"cpf"0cp{"ncvgt"xtukqpu"0{"q"wjcxg"vjg"qrvkqp"qh"hqmqy"kp"i"vjg"vgt"ou"
cpf"eqpfk"vkqpu"gvjgt"qh"vjcv"xtukqpu"qt"qh"cp{"ncvgt"xtukqpu"rwdnku"j"gf"d{"vjg"Htgg"Uqhv"yctg"Hqwpfc/
vkqp"0"Kh"vjg"Rtqi"tc"o"fqgu"pqv"urgek"{"c"xtukqpu"pw"odgt"qh"v"jku"Nkegpug."{"q"wo"oc{"ej"qqug"cp{"xtukqpu"
gxgt"rwdnku"j"gf"d{"vjg"Htgg"Uqhv"yctg"Hqwpfcvkqp"0"

320"Kh"{"q"wy"ku"j"vq"kp"eqtr"qtcv"g"rctvu"qh"vjg"Rtqi"tc"o"kp"vq"qv"jgt"htgg"rtqi"tc"o"u"y"jqug"fkvtdkdwkqp"eqpfk/
vkqpu"ctg"fkhhgtgpv."y"tkvg"vq"vjg"cwv"jqt"vq"cum"hqt"rgt"okku"kp"0"Hqt"uqhv"yctg"y"jkej"ku"eqr{"tki"jvgf"d{"vjg"
Htgg"Uqhv"yctg"Hqwpfcvkqp."y"tkvg"vq"vjg"Htgg"Uqhv"yctg"Hqwpfcvkqp-"y"gu"o"gvk"og"u"ocmg"gzegrvkqpu"
hqt"vjku"0"Qwt"fg"ekukqp"y"knndg"i"wk"pö- qcvkqp. O



Truetime Format

```
Vjg"hqt o cv"qh"vjg"Vtwgk o g"uvtkpi "ku"kgp vk ecn"vq"vjg"U{urngz"hqt o cv0""Vjg"qpn{" fkhgtgpeg"dgvyggp"
vjg"vyq"ku"vjcv"vjg"U{urngz"hqt o cv"cnyc{u"wugu"WVE"vk o g0""Vjg"vk o g"eqpvckpgf"kp"vjg"Vtwgk o g"hqt o cv"
fgrgpfu"qp"vjg"vk o g"o qfg"qh"vjg"Wpkup0""*Ugg"houqujnfnpefdpogjh"kp"Ejcrvgt"7"/"Eqpvtqn"cpf"
Uvcrwu"Eqo o cpfu0+""Hqt"gzc o rng."kh"{qw"y cpv"cp"qwrwv" ykvj"vjku"uvtkpi "hqt o cv"vjcv"wugu"Nqecn"Vk o g."
vjgp"ugngev"vjg"Vtwgk o g"hqt o cv0
```

EndRun Format

```
Vjg"vk o g"eqpvckpgf"kp"vjku"uvtkpi "fgrgpfu"qp"vjg"vk o g"o qfg"qh"vjg"Wpkup0""Hqt"gzc o rng."kh"{qw"y cpv"
vjg"vk o g"kp"vjku"uvtkpi "vq"dg"WVE."vjgp"ugv"vjg"vk o g"o qfg"qh"vjg"Wpkup"vq"WVE0""*houqujnfnp.
efdpogjh"kp"Ejcrvgt"7"/"Eqpvtqn"cpf"Uvcrwu"Eqo o cpfu0+""Vjg"hqmq ykpi "uvtkpi "ku"ugpv"qpeg"gcej"
ugeqpf<
```

```
" V" [ [ [ [ "FFF" J J<O O<UU" | \ \ " o>ET@>NH@
```

```
V" " ku"vjg"Vk o g"Hkiwtg"qh"Ogtkv"*VHQO+"e jctcevtg"fguetkdgf"kp"Crrgpfkz"G"/"VHQO0
" " Vjku"ku"vjg"õqp/vk o gö"e jctcevtg0
[ [ [ [ " ku"vjg"{gct
FFF" ku"vjg"fc{/qh/{gct
<" " ku"vjg"eqnqp"e jctcevtg"*2z5C+
J J" ku"vjg"jqwt"qh"vjg"fc{
O O" ku"vjg"okpwwg"qh"vjg"jqwt
UU" ku"vjg"ugeqpf"qh"vjg"okpwwg
|" " ku"vjg"ukip"qh"vjg"qhhugv"vq"WVE." - "k o rnkgu"vk o g"ku"cjgcf"qh"WVE0
\\ " ku"vjg"ocipkwfg"qh"vjg"qhhugv"vq"WVE"kp"wpkvu"qh"jcnh/jqwtu0
" " Pqp/|gtq"qpn{" y jgp"vjg"Vk o g"o qfg"ku"Nqecn0
o " " ku"vjg"Vk o g"o qfg"e jctcevtg"cpf"ku"qpg"qh<
" " I"?"IRU
" " N"?"Nqecn
" " W"?"WVE
>ET@" ku"vjg"CUEKK"ecttkcig"tgwtp"e jctcevtg"*2z2F+0
>NH@" ku"vjg"CUEKK"nkp"hgfg"e jctcevtg"*2z2C+
```


EndRunX (Extended)
Format

Vjg"GpfTwpZ" hqt o cv"ku" kfgpvkecn"vq"vjg"GpfTwp" hqt o cv" ykvj "vjg"cf fkvkqp"qh"v yq"Łgnfu"/"vjg"ewt/
tgpv"ngcr"ugeqpf"ugvvpkiu"cpf"vjg"hwvwtg"ngcr"ugeqpf"ugvvpkiu0""Vjg" hqnnq ykpi "uvtkpi"ku"ugpv"qpeg" gcej"
ugeqpf<

" V" [[[["FFF" J J<OO<UU" | \ \ " o"EE"HH>ET@>NH@

V" " ku"vjg"Vko g"Hkiwtg"qh"Ogtkv"*VHQO+"ejctcevt"fguetkdgf"kp"*Crrgpfkz"G"/"VHQO*0
 " " Vjku"ku"vjg"ōqp/vk o gō"ejctcevt0
 [[[[" ku"vjg" {gct
 FFF" ku"vjg"fc{/qh/{gct
 <" " ku"vjg"eqnqp"ejctcevt"*2z5C+
 J J" ku"vjg"jqwt"qh"vjg"fc {
 O O" ku"vjg"okpwwg"qh"vjg"jqwt
 UU" ku"vjg"ugeqpf"qh"vjg"okpwwg
 |" " ku"vjg"uki p"qh"vjg"qhhugv"vq"WVE." - "k o rnkgu"vk o g"ku"cjgcf"qh"WVE0
 \ \ " ku"vjg"ocipkwfg"qh"vjg"qhhugv"vq"WVE"kp"wpkvu"qh"jcnh/jqwtu0
 " " Pqp/|gtq"qp{ " yjgp"vjg"Vko go qfg"ku"Nqecn0
 o "" ku"vjg"Vko go qfg"ejctcevt"cpf"ku"qpg"qh<
 " " I "?" IRU
 " " N "?" Nqecn
 " " W "?" WVE
 EE" ku"vjg"ewtgpv"ngcr"ugeqpfu0"
 HH" ku"vjg"hwvwtg"ngcr"ugeqpfu." yjkej" yknn"ujqy" c"ngcr"ugeqpf"rgpfkpi"46"jqwtu"kp"cfxcpeg0
 >ET@" ku"vjg"CUEKK"ecttkicg"tgwtp"ejctcevt"*2z2F+
 >NH@" ku"vjg"CUEKK"nkpg"hgff"ejctcevt"*2z2C+

NENA Format

```
V\?ZZ" ku"vjg"vkog"|qpg"y jgtg"ZZ"ku"22"vj tqw i j"45
>ET@" ku"vjg"CUEKK"ecttkci g"tgwtp"ejctcevg t"*2z2F+0"
" " Vjg"Łtuv">ET@"ku"vjg"qp/vkog"ejctcevg t0
>NH@" ku"vjg"CUEKK"npg"hg f"ejctcevg t"*2z2C+0
```

PGPC3"

```
>ET@>NH@S`Y Y Y`F F O O O [ [ ` J J<O O<U U>ET@>NH@
```

```
S" " ku"vjg"vkog"swcnkv{"kpfkecvqt"cpf"oc{"dg"gvjgt<
" " >urceg@"CUEKK"urceg"ejctcevg t"*2z42+"y jkej"kp fkecvgu"nqemgf0
" " A"CUEKK"swgvkqp"octm"*2z5H+"y jkej"kp fkecvgu"vjg"wpu{pej tqpk |gf"eqpfkvkqp0
" " Vjku"ku"vjg"ōqp/vkog"ē"ejctcevg t0
`" " ku"vjg"urceg"ejctcevg t"*2z42+0
Y Y Y" ku"vjg"fc{/qh/yggm"*OQP."VWG."YGF."VJW."HTK."UCV
FF" ku"vjg"fc{/qh/oppvj"*3/53+
O O O" ku"vjg"oppvj"*LCP."HGD."OCT."CRT."OC[."LWP."LWN."CWI."UGR."QEV."PQX"FG E+
[ [ " ku"vjg"vyq/fkikv"{gct
<" " ku"vjg"eqnqp"ejctcevg t"*2z5C+
J J" ku"vjg"jqwt/qh/vjg/fc{"*22/45+
O O" ku"vjg"okpwwg/qh/vjg/jqwt"*22/7;+
U U" ku"vjg"ugeqpf/qh/vjg/okpwwg"*22/82+
>ET@" ku"vjg"CUEKK"ecttkci g"tgwtp"ejctcevg t"*2z2F+0"
" " Vjg"Łtuv">ET@"ku"vjg"qp/vkog"ejctcevg t0
>NH@" ku"vjg"CUEKK"npg"hg f"ejctcevg t"*2z2C+
```

PGPC:

```
>ET@>NH@S`` [ [ [ ` F F F` J J<O O<U U` F - \ \ >ET@>NH@
```

```
S" " ku"vjg"vkog"swcnkv{"kpfkecvqt"cpf"oc{"dg"gvjgt<
" " >urceg@"CUEKK"urceg"ejctcevg t"*2z42+"y jkej"kp fkecvgu"nqemgf0
" " A"CUEKK"swgvkqp"octm"*2z5H+"y jkej"kp fkecvgu"vjg"wpu{pej tqpk |gf"eqpfkvkqp0
" " Vjku"ku"vjg"ōqp/vkog"ē"ejctcevg t0
`" " ku"vjg"urceg"ejctcevg t"*2z42+0
[ [ [ [ " ku"vjg"hwqwt/fkikv"{gct
F F F" ku"vjg"fc{/qh/{gct"*223/588+
<" " ku"vjg"eqnqp"ejctcevg t"*2z5C+
J J" ku"vjg"jqwt/qh/vjg/fc{"*22/45+
O O" ku"vjg"okpwwg/qh/vjg/jqwt"*22/7;+
U U" ku"vjg"ugeqpf/qh/vjg/okpwwg"*22/82+
f" " ku"vjg"FUV"kp fkecvqt"*U.K.F.Q+0
- \ \ " -"qt"/vkog"|qpg"qh hugv"tgncvkg"vq"WVE"*22/34+
>ET@" ku"vjg"CUEKK"ecttkci g"tgwtp"ejctcevg t"*2z2F+0"
" " Vjg"Łtuv">ET@"ku"vjg"qp/vkog"ejctcevg t0
>NH@" ku"vjg"CUEKK"npg"hg f"ejctcevg t"*2z2C+0
```


\ FC*Vkog"cpf"Fcvg+

Vjg" \ FC"ugpvgpeg"kgpvlgu"vjg"vkog"cuuqekcvgf"ykvj"vjg"ewttgpw"3RRU"rwnug0"Gcej"ugpvgpeg"ku"
vtcpuokvvgf"ykvj"kp"722"oknkugeqpfu"chvgt"vjg"3RRU"rwnug"ku"qwrwv"cpf"vgmu"vjg"vkog"qh"vjg"rwnug"vjcv"
lwuv"qeewttgf0"kh"vjg"Wpkuqp"ku"wpu{pejtqpk|gf"vjgp"vjku"ugpvgpeg"ykn"dg"eqorqugf"qh"pwnn"Lgnfu0"
Gzco"rgu"ctg"dgnqy<

&IR\FC.....,6:>ET@>NH@

&IR\FC.39787:022.42.27.422:.29.22,8;>ET@>NH@

Oui"KF" &IR\FC

Hkgnf"3" 39787:022" WVE"vkog"cv"3RRU"*jjooou0uu+"

Hkgnf"4" 42" " Fc{"*23"vq

Version PTPv2
or PTPv1

Kp"vjg"Wpkuqp."{qw"oc{"wug"vjg"RVRx3"rtqvqeqn"qt"vjg"RVRx4"rtqvqeqn0"RVRx4"ku"vjg"fgbcwnv0"Kp"
qtfgt"vq"ejcpi"vjg"ugngewkqp"htqo"RVRx4"vq"RVRx3"{qw"pggf"vq"wug"vjg"quqwfstjpodpogjh"eqo/
ocpf0

Vjg"hqmqykipi"ku"c"vtcpuetkrv"qh"vjg"swguvkqp"cpf"cpu"ygt"eqpŁiwtcvkqp"vknkv{"rtqkfgf"d{"quqwfst.
tjpodpogjh0"

Vojtpo!HQT)sppuAfoesvo; i*.?!quqwfstjpodpogjh

+++++
+++++Qsfdjtjpo!Ujnf!Qspupdpm!JFFF.2699!Wfstjpo!Dpogjhvsbuipo+++++
+++++
+!!+
+!!Uijt!tdsjqu!xjmm!bmmpx!zpv!up!dpogjhvsf!QUQ!Wfstjpo!2!ps!3!3!!!!!!!!!!!!!!!!+
+!!+
+!!+
+!!Uif!dibohft!zpv!nblf!opx!xjmm!opu!ublf!fggfdu!voujm!zpv!sf.cppu!uif!!!!!!+
+!!Vojtpo!HQT/!Jg!zpv!nblf!b!njtublf-!kvtu!sf.svo!quqwfstjpodpogjh!qsjps!!!!+
+!!up!sf.cppujoh/!!+
+!!+
+!!Zpv!xjmm!opx!cf!qspnqufe!gps!uif!ofdfstsz!tfu!vq!qbsbnfufst/!!!!!!!!!!!!+
+!!+
+++++
+++++

...QUQ!Wfstjpo!Dpogjhvsbuipo

Tfu!uif!QUQ!Wfstjpo!)2!ps!3*!3

Dpogjhvsjoh!QUQ!up!tubsu!bt!Wfstjpo!3///

+++++
+++++
+!!+
+!!Uif!Vojtpo!HQT!Qsfdjtjpo!Ujnf!Qspupdpm!JFFF.2699!Wfstjpo!dpogjhvsbuipo!!!!+
+!!ibt!cf!vqebufe/!!+
+!!+
+!!+
+!!+
+++++
+++++

Pqy"tgdqq"z ++++++

.....
.....
...
Tf

Y jgtg<

X"	ku"vjg"KGGG/37: : "xgtukqp"4"hqt"vjg"422: "uvcpfctf0
UK"	ku"vjg"RVR"u{pe"kpvgtxcn."gkvjgt"3"qt"4"ugeqpfu0
CK"	ku"vjg"RVR"cppqwpeg"kpvgtxcn."gkvjgt"3."4."6." : ."qt"38"ugeqpfu0
R3"	ku"vjg"RVR"rtkqtkv{"3"kp"c"tcpigt"htqo"2"vq"4770
R4"	ku"vjg"RVR"rtkqtkv{"4"kp"c"tcpigt"htqo"2"vq"4770
FO"	ku"vjg"RVR"fgnc{"ogejcpkuo"."gkvjgt"G4G"qt"R4R0
FQO"	ku"vjg"RVR"fqockp."kp"c"tcpigt"htqo"2"vq"4770
OQFG"	ku"vjg"RVR"vko"og"oqfg."gkvjgt"WVE"qt"RVR0
VVN"	ku"vjg"RVR"o wnvkecu"vvn""kp"c"tcpigt"htqo"3"vq"4770
ENCUU"	ku"vjg"RVR"enqem"encuu"gkvjgt"U [PEJ TQPK\GF."JQNFQXGT."qt"WPNQEMGF0
UECNG"	ku"vjg"RVR"vko"guecng"gkvjgt"RVR"qt"CTD0
UVCVG"	ku"vjg"RVR"rqt"uvcvg"gkvjgt"OCUVGT."RCUUKXG."qt"NKUVGPKPI0
ENMKF"	ku"vjg"RVR"enqem"uqwtg"gkvjgt"IRU."qt"QUE0
WVE"	ku"vjg"RVR"wve"qhhugv"kp"ugeqpfu0
WVEX"	ku"vjg"RVR"wve"qhhugv"xcnkf."gkvjgt"VTWG"qt"HCNUG0
EC"	ku"vjg"RVR"enqem"ceewtce{"gkvjgt"3wu."407wu."32wu."47wu."322wu.
" "	"472wu."3ou."407ou."32ou."qt"Wmpqyp0
N7;"	ku"vjg"RVR"ngcr"7;"ugeqpf""kpfkecvqt."gkvjgt"VTWG"qt"HCNUG0
N83"	ku"vjg"RVR"ngcr"83"ugeqpf""kpfkecvqt."gkvjgt"VTWG"qt"HCNUG0
VV"	ku"vjg"RVR"vko"gtcegcdng"kp"kecvqt."gkvjgt"VTWG"qt"HCNUG0
HV"	ku"vjg"RVR"htgswgpe{"vtcegcdng"kp"kecvqt."gkvjgt"VTWG"qt"HCNUG0


```
Vjg"RVR"WVE"Qhhugv"Xcnkf"gvjgt"VTWG"qt"HCNUG0"Vjg"RVR"WVE"Qhhugv"Xcnkf"ku"VTWG"kh"vjg"ewt/
tgpv"RVR"WVE"Qhhugv"ku"mpqyp"vq"dg"eqttgev."qvjgtykug"kv"ku"HCNUG0"
```

```
Vjg"RVR"Enqem"Ceewtce{"ku"vtcpuokvvgf"yjjgvjg"vkg"ku"ceewtcvg"vq"ykvjkip"vjg"vjg"hqnnqypki<
```

```
" 3wu" " Enqem"ku"u{pejtqpk|gf"qt"kp"jqnfqxtg."RVR"enqem">"3"oketqugeqpf
" 407wu" " Enqem"ku"u{pejtqpk|gf"qt"kp"jqnfqxtg."RVR"enqem">"407"oketqugeqpfu
" 32wu" " Enqem"ku"u{pejtqpk|gf"qt"kp"jqnfqxtg."RVR"enqem">"32"oketqugeqpfu
" 47wu" " Enqem"ku"u{pejtqpk|gf"qt"kp"jqnfqxtg."RVR"enqem">"47"oketqugeqpfu
" 322wu" " Enqem"ku"u{pejtqpk|gf"qt"kp"jqnfqxtg."RVR"enqem">"322"oketqugeqpfu
" 472wu" " Enqem"ku"u{pejtqpk|gf"qt"kp"jqnfqxtg."RVR"enqem">"472"oketqugeqpfu
" 3ou" " Enqem"ku"u{pejtqpk|gf"qt"kp"jqnfqxtg."RVR"enqem">"3"oknnkugeqpf
" 407ou" " Enqem"ku"u{pejtqpk|gf"qt"kp"jqnfqxtg."RVR"enqem">"407"oknnkugeqpfu
" 32ou" " Enqem"ku"u{pejtqpk|gf"qt"kp"jqnfqxtg."RVR"enqem">"32"oknnkugeqpfu
" Wmpqyp" Enqem"ku"wpu{pejtqpk|gf."VHQO"?";
```

```
Vjg"RVR"Ngcr"7;"ugeqpf""kpfkecvqt."gvjgt"VTWG"qt"HCNUG0"Vjg"Ngcr"7;"ku"VTWG"kh"vjg"RVR"Vko gu/
ecng"ku"RVR"cpf"vjg"ncuv"okpwwvg"qh"vjg"ewttgpp"WVE"fc{"eqpvckpu"7;"ugeqpfu."qvjgtykug"kv"ku"HCNUG0
```

```
Vjg"RVR"Ngcr"83"ugeqpf""kpfkecvqt."gvjgt"VTWG"qt"HCNUG0"Vjg"Ngcr"83"ku"VTWG"kh"vjg"RVR"Vko gu/
ecng"ku"RVR"cpf"vjg"ncuv"okpwwvg"qh"vjg"ewttgpp"WVE"fc{"eqpvckpu"83"ugeqpfu."qvjgtykug"kv"ku"HCNUG0
```

```
Vjg"RVR"Vko g"Vtcegcdng"kpfkecvqt."gvjgt"VTWG"qt"HCNUG0"Vjg"Vko g"Vtcegcdng"ku"VTWG"kh"vjg"Vko g"
Uecng"ku"RVR"cpf"vjg"Enqem"Encuu"ku"U{pejtqpk|gf"qt"Jqnfqxtg."qvjgtykug"kv"ku"HCNUG0
```

```
Vjg"RVR"Htgswwpe{"Vtcegcdng"kpfkecvqt."gvjgt"VTWG"qt"HCNUG0"Vjg"Htgswwpe{"Vtcegcdng"ku"VTWG"
kh"vjg"Vko g"Vtcegcdng"ku"VTWG."qvjgtykug"kv"ku"HCNUG0
```

PTPv1 Configuration and Status

```
Vjg"fghcwnv"RVRx3"eqpLiwtcvkqp"ugvvpkiu"kp"vjg"Wpkuqp"ctg"ujqyp"dgnqy0""Kh"{qw"pggf"vq"oqfkh{"vjgug"
ugvvpkiu"vjgp"{qw"ykn"pggf"vq"tgeqpliwtg"vjg"RVRx3"uwdu{uvgo0""[qw"oc{"rgthqto"vjg"eqpLiwtcvkqp"
htqo"gvjgtc"ufmofu"qt"t"i"uguukqp."qt"vjg"nqecn"TU/454"eqpuqng0""Fghcwnv"RVRx3"ugvvpkiu"ctg<
```

```
" RVR"Rtghgttgf" " VTWG
" RVR"U{pe"Kpvgtxcn<" Vyq"ugeqpfu
" RVR"Uwdfqockp"Pcog<" FHNv
" RVR"Vko g"Oqfg" " WVE
" RVR"VVN" " 3
```

PTPv1 Configuration Using the Network or Serial Port

```
Vjg"quqdpogjh"eqoocpf"uvctvu"cp"kpvtgcevkg"ujgnn"uetkrv"vjcv"ykn"cnqy"{qw"vq"eqpLiwtg"vjg"RVRx3"
uwdu{uvgo"qh"vjg"Wpkuqp0""[qw"ykn"dg"rtqorvgf"vq"ugv"vjg"RVRx3"rctcogvgtu"cu"hqnnqyu<
```

```
" Rtghgttgf"Uvcvg<" " VTWG"qt"HCNUG
" U{pe"Kpvgtxcn<" " 3.4.:.38."qt"86"ugeqpfu
" Uwdfqockp"Pcog<" FHNv."CNV3."CNV4."qt"CNV5
```

" RVR"Vkog"Oqfg<" WVE"qt"RVR
" RVR"VVN<" " 3/477

Qpg"Lng"ku" o qfkLgf."lgvelrvrleqph

Pqy"tgdqqv"vjg"u{uvgo"d{"kuuwkpi"vjku"eqo"ocpf"cv"vjg"ujgmn"rtqo"rv<

tivuepxo!.s!!opx

PTPv1 Status Using the Network or Serial Port

Vjg"bquqtubu"eqo"ocpf"cmqyu"vjg"wugt"vq"swgt{"vjg"uvcvwu"qh"vjg"RVRx3"uwdu{uvgo"Vjg"rvrf"fcg/
oqp"twppkpi"qp"vjg"u{uvgo"wr"fcvgu"vjg"lxtlqilrvr"oqpkvqt"gxgt{"Lxg"ugeqpfu"wpfgt"pqt"ocn"qrgtc/
vkqp"Vjku"nqi"Lng"ku"rctugf"cpf"hqt"ocvfg"vq"rtqxfk"vjg"uvcvwu"uvtkpi"jcxkpi"vjgug"Lngfu<

QUQNPEF!DLJE!Tusbuvn!TTT!QQQQQ!TEPN!JJ!MM!UNE!W!UUM

Yjgtg<

RVROQFG"		ku"vjg"RVR"rqtv"uvcvg."gkvjgt"Ocuvgt"qt"Rcuukxg0
EMKF"	"	ku"vjg"u{pe"kf"gpvkLgt."gkvjgt"CVQO"qt"IRU0
UUU"	"	ku"vjg"RVR"uvtcvwo."gkvjgt"3."4."5"qt"477."yjgtg"3"ko"rnkgu"cp"gttqt"qh">"47"pu.
" "	"	4"ko"rnkgu">"322"pu."5"ko"rnkgu"@"322"pu."cpf"477"ku"vjg"wpu{pej"tqpk gf"uvcvg0
RRRRR"	"	ku"vjg"RVR"rtghgttgf"ocuvgt"ugvvpki."gkvjgt"Vtwg"qt"Hcnug0
UFQO"	"	ku"vjg"RVR"uwdfq"ockp."qpg"qh"FHNV."CNV3."CNV4"qt"CNV50
KK "	"	ku"vjg"RVR"u{pe"wr"fcvg"kpvtxcn."qpg"qh"3.4.:.38."qt"86."kp"ugeqpfu0
NN"	"	ku"vjg"RVR"ngcr"ugeqpf"ugvvpki."qpg"qh"7;."82."qt"83."yjgtg"7;"ko"rnkgu"vjcv"vjg
" "	"	ncuv"okpwwg"qh"vjg"ewttgpn"fc{"yknn"jcxg"7;"ugeqpfu"*ngcr"ugeqpf"fgngvkkp+."cpf"
" "	"	83"ko"rnkgu"vjcv"vjg"ncuv"okpwwg"qh"vjg"ewttgpn"fc{"yknn"jcxg"83"ugeqpfu"
" "	"	*ngcr"ugeqpf"kpugtkqp+0
VOF"	"	ku"vjg"RVR"vko"grqej"gkvjgt"RVR"qt"WVE0
X "	"	ku"vjg"RVR"rtqvqeqn"xgtukqp."qpn{"xgtukqp"3"ku"ko"rng"ogpvgf0
VVN"	"	ku"vjg"RVR"onvkecu"VVN."3/4770

PTPv1 Operation

Vjg"Wpkup"ku"eqpLiwtgf"cu"cp"KGGG/37:."I"tcpfo"cuvgt"Enqem0""Xgthk{"vjcv"vjg"pgvy"qtm"ugvvpki"u"jcxg"
dggp"eqpLiwtgf"cpf"vguvf"wukpi"ofudpogjh"Qpeg"vjg"pgvy"qtm"jcu"dggp"eqpLiwtgf"vjg"Wpkup"yknn"
dgi"kp"vq"vtcpu"okv"RVR"U{pe"ogucigu"vq"vjg"uncxg"enqemu0""

Vjg"RVR"u{pe"ogucig"cpf"uvcvwu"tgrqtv"htq"o"vjg"Wpkup"ku"fgrgpfgpv"qp"vjg"uvcvwu"qh"vjg"enqem"eqp/
Liwtcvkqp"kpenwfkpi"vjg"quekncvqt"v{rg"cpf"IRU"Uwdu{uvgo0

Vjg"Rqtv"Uvcvg"yknn"tgrqtv"gkvjgt"OCUVGT"qt"RCUUKXG0""OCUVGT"ku"tgrqtv"y"jgp"vjg"enqem"ku"
nqemgf"vq"IRU"cpf"vjg"dguv"ocuvgt"enqem"cn"iqtkvj"o"*DOE+"fgukipcvgu"vjku"enqem"cu"vjg"OCUVGT0""

GPS Antenna Kit

Vjg"vk"og"ugtxgt"ujkru"ykvj"ch"tg" I RU"Cpvgppc"Mkv"y jke j"kpenwfgu"72"hggv"37" o gvtu+"qh"cpvgppc"
 ecdngl"Vjku"coqwpv"qh"ecdng"ku"uwłŁekgpv"hqt"vjg"o clqtkv{ "qh" I RU"cpvgppc"kpucmncvkqpu"0"Nqpi gt"ecdng"
 twpu"ecp"cnuq"dg"cee q o o qfcvgf0"Dgnqy"ku"cnkuv"qh"vjg"kvgo u"kp"cv{ rkecn" I RU"Cpvgppc"Mkv."rctv"pw o /
 dgt"2832/2229/223<

É" I RU"Cpvgppc"*rctv"%2724/2234/222+

É" Cpvgppc"Oqwpvki"Cfcrvqt"*rctv"%2824/2257/222+

É" RXE"Oqwpvki"Rkrq"*rctv"%2322/222;/23:+

É" Jqug"Encoru"*rctv"%2322/222:/222+

É" 72"hggv"qh"TI/7;W"*Dgnfgp";326+"EcdnglVPE"Ocnq"*rctv"%2822/2235/272+

É" I RU"Cpvgppc"Kpukfg"Ykpfqy"Oqwpv"Mkv"*rctv"%282:/2224/223+

Hqnnqy kpi"ku"vjg"Kpucmncvkqp" I wkfg"hqt"ct"tqhqvr"o qwpv"vjcv"ku"kpenwfgf"ykvj"vjg"cpvgppc"mkv0

Long Cable Runs

Oquv" IRU"Vk o g"Ugtxgtu"ctg"kpucmngf" ykvj"qpn{"72"hggv"*37" o gvgtu+"qh"cpvgppc"ecdng0"" J qy gxgt."v jgtg" ctg" o cp{"ektew o uwcpegu" y jgtg"72"hggv"ku"kpfcgswcvgl0""GpfTwp"ecp"ceeq o o qfcvg" c"ecdng"ngpi vj"qh"wr" vq"3222"hggv"wukpi" c"eq o dkpcvkqp"qh"nq y /nquu"ecdng"cpf"rtgc o rnkŁgtu0

Recommended Cable

Vjg"hcevqt{/uwr rnkgf" IRU"ecdng"ku"TI/7;"Dgnfgp";326"qt"Dgnfgp"3727C."fgrgpfpki"qp"ngpi vj0""Kh" {qw"ctg"tgu rqpukdng"ht"vjg" IRU"kpucmncvkqp"cpf" {qw"ctg"uwr rn{kp i"vjg"ecdng"vjgp" {qw"pggf"vq" o cmg" uwtg"kv"ku"eq o rctcdng" y kvj"nguu"vjcp"32"fd"qh"nquu"cv"307" I J |0""Ejqqkpi" c"ecdng"v{rg"vjcv"ku"fkhhgtgpv" ecp"ecwug" c" o {tkcf"qh" IRU"tgegrvkqp"rtqdn g o u0""Kh"vjg"ecdng"ngpi vj"ku"nguu"vjcp"922"hggv"vjgp"Dgnfgp" ;326"ku"cr rtrtkcvgl0""Kh"vjg"ecdng"ngpi vj"ku" i tgcvt"vjcp"922"hggv"vjgp"Dgnfgp"3727C"ku"vjg"ecdng"qh" e j qkeg0"" [qw" y knn"cnuq"pggf"rtgc o rnkŁgtu"kh"vjg"ecdng"ngpi vj"ku" i tgcvt"vjcp"472"hggv0""Ugg"vjg"ejctv" dgnqy"ht"fgvcknu0

Using GPS Preamplifiers

GpfTwp"rtqfwegu" c" IRU"Rtgc o rnkŁgt" y jkej"ku" c" xgt{ "jki j/rgthqt o cpeg."nq y /pqkug."kpnkpg" c o rnkŁgt" hqt"fkhlŁewn" IRU"uki pcn"gp xktqp o gpvu"cpf"nqpi" ecdng"twpu"* i tgcvt"vjcp"472"hggv"qh"hevqt{/uwr rnkgf" ecdng+0""Vjg"hnqy kpi"vcdng"ujqyu"vjg"pw o dgt"qh"rtgc o rnkŁgtu"yg"tgeq o o gpf"ht"gej" IRU"cpvgppc" kpucmncvkqp"wukpi"qwt" IRU"tgegkxgt"cpf"qwt"hevqt{/uwr rnkgf"ecdng0""Kpucmncvkqpu"wukpi"qvjgt"ecdng" v{rgu" o c{ "jcxg"fkhhgtgpv"rtgc o rnkŁgt"tgs wktg o gpvu0

Ecdng"Ngpi vj	Ecdng" V{rg	Pw o dgt"qh" Rtgc o rnkŁgtu
Wr"vq"472"hggv" *98" o gvgtu+	TI/7; Dgnfgp";326	2
473"vq"722"hggv" *99"vq"374" o gvgtu+	TI/7; Dgnfgp";326	3
723"vq"922"hggv" *375"vq"435" o gvgtu+	TI/7; Dgnfgp";326	4
923"vq"972"hggv"		

Other Accessories

Lightning Arrestor

C"nkijvplpi"cttguvqt"jgnru"rtqvgey"{qwt"IRU"kpucmckqp"htqo"fcocigO

Wpkuqp"FD; O'Rkp	Ukipcn"Pc o g
3	Pqv"Eqppgevgf
4	Tgegxg"Fcvc"*TZ+
5	Vtcpu o kv"Fcvc"*VZ+
6	Fcvc"Vgt o kpcn"Tgcf {"*FVT+
7	I tqwpf
8	Fcvc"Ugv"Tgcf {"*FUT+
9	Tgswguv"Vq"Ugpf"*TVU+
:	Engct"Vq"Ugpf"*TVU+
;	Pqv"Eqppgevgf

U{pej tqpk|cvkqp"Ceewtce{<

IRU"Tgegxgt"Ceewtce{<">52"pcpqugeqpfu"vq" IRU"Vk o g" y jgp"nqemgf0,
 VR"Vk o guvc o r"Ceewtce{<">32" o ketqugeqpfu" B "422" rcemgvulugeqpf"*422.222"enkppvu+0
 PVR"Enkppv"U{pej tqpk|cvkqp"Ceewtce{<">P g v y qtm"hcvtqtu"ecp"nk o kv"NC P"u{pej tqpk|cvkqp"ceewtce{
 vq"314"vq"4" o kmkugeqpfu."v{ rkecn0
 ,">322"pcpqugeqpfu"vq"WVE0"Eqpuvtckpvu"kp"vjg"qhhekcen" IRU"urgekhekcvcqp"rtqjkdkv"enck o kpi "cp"ce/
 ewtce{<"vq"WVE"dgvwt"vjcp"322"pcpqugeqpfu0

Uwrrqtvgf"KRx6"Rtqvqeqnu<

UPVR" PVR"x4."x5."x6"cpf"dtqcfecuvl o wvkecuv" o qfg="OF7"cwvjgpvkecvcqp"cpf"cwvqmg{
 UUJ"ugtugt"ykvj"öugewtg"eqr {ö"vknkv{."UER
 UPOR"x3."x4e."x5"ykvj"Gpvgrtkug"OKD
 VKOG"cpf"FC[VKOG"ugtugt
 VGNGPV"enkppvugtugt
 HVR"enkppv
 F J ER"enkppv
 U [UNQ I
 J VVR

Uwrrqtvgf"KRx8"Rtqvqeqnu<

UPVR" PVR"x4."x5."x6"cpf"dtqcfecuvl o wvkecuv" o qfg="OF7"cwvjgpvkecvcqp"cpf"cwvqmg{
 UUJ"ugtugt"ykvj"öugewtg"eqr {ö"vknkv{."UER
 UPOR"x3."x4e."x5"ykvj"Gpvgrtkug"OKD
 VKOG"cpf"FC[VKOG"ugtugt
 U [UNQ I
 Pqvg<"Ugg"Ejcrvgt"8"/"KRx8"Kphqt o cvkqp"hqt"fgvcknu0

Qrvkqpcn"RVRIKGGG/37: : I tcpf o cuvgt<

KGGG/37: : /422: "*"x4+"cpf"KGGG/37: : /4224*"x3+
 RVR"Vk o guvc o r" Tguqnwvqpcn<"3" o ketqugeqpf0
 RVR"Unxcxg"U{pej tqpk|cvkqp"Ceewtce{<"vq"vjg" I tcpf o cuvgt<"32" o ketqugeqpfu."v{ rkecn."
 " pgy qtm"vqrqqi { "fgrgpfgpv0
 Pqvg<"Ugg"Crngpfkz"J"/"Rtgekukqp"Vk o g"Rtqvqeqn"hqt" o qtg"Kphqt o cvkqp0

Rqygt<

;2/486"XCE."69/85" J |."207"C"Ocz0" B "342"XCE."2047"C"Ocz0" B "462"XCE
 332/592"XFE."207C"Ocz" B "342"XFE
 5/Rkp"KGE"542"qp"tgct"rcpgn."4" o gvt"nkpgeqtf"ku"kpewfgf0

FE"Rqygt"*qrvkqp<

5:/94"Xfe."307C"oczko wo0
 5/rqukvkqp"vgt okpcn"dnqem"qp"tgct"rcpgn<" - FE"KP."UCHGV ["ITQWPF."/FE"KP
 Hqcvkpi"rqygt"kprrwv<"Gkvjgt"ö-ö"qt"ö/ö"ecp"dg"eqppgevgf"vq"gctvj"i tqwpf0+

Uk|g<

Ejcuuk" " " " 3097öJ"z"3902öY"z"32097öF
 Cpvppc<" " " " 507ö" Fkc0"z"407ö" J
 Ykijv<" " " " >"7"nd0"*4092"mi0+

Gpxktqp o gpvcn<

Qrgtcvki"Vg o rgtcwtg<" " 2Å"vq" - 72ÅE
 Qrgtcvki"J wokf{<" " 2"vq";7' ".pqp/eqpfgpukpi
 Uvqtcig"Vg o rgtcwtg<" " /62Å"vq" - : 7ÅE
 Cpvppc"Qrgtcvki"Vg o rgtcwtg<" /62Å"vq" - : 7ÅE

Qrvkqpcn"Qwvrvwu<

Ugg"Ejcrvgt"4"/"Rj fukecn"fguetkrvkqp"hqt" o qtg"kphqt o cvkqp"qp"vj gug"qvwrvwu0

3"RRU<"Rqukvkxg"VVN"rwnug" B "72 "qt"TU/644"ngxgnu0
 Ykfvj<"Wugt/ugngevcdng"vq"42"wu."3" o u."322" o u."722" o u0
 Ceewtce{<">"52"pcpqugeqpfu"vq" I RU"Vko g" y jgp"nqemgf0,
 Uvcdkqv{<"VFGX">"42"pu." 7"ugeqpfu0
 Eqppgevqt"*VVN+<"Tgct/rcpgn"DPE"lcem"ncdngf"ö3"RRUö0
 Eqppgevqt"*TU/644+<"Tgct/rcpgn"FD/ ; O"lcem"ncdngf"ö3RRU"TU/644ö0
 Rkpqvw"*TU/644+<"Rkp"5"ku" - ukipcn0""Rkp"8"ku"/ukipcn0""Rkp"7"ku" I P F0
 , ">322"pcpqugeqpfu"vq" WVE0"Eqpuvtckpvu"kp"vjg"qhhekcen" I RU"urgekhecvkqp"rtqjkdv"enck okpi"cp"
 ceewtce{"vq" WVE"dgvgt"vjcp"322"pcpqugeqpfu0
 Pqvq<"Vq"ejcpi g"vjg"rwnug" ykfvj"tghgt"vq"vjg"dqvpqut"cpf"dqvpqutdpogjh"eq o o cpfu"kp"Ejcrvgt"
 7/"Eqvtqn"cpf"Uvcvwu"Eq o o cpfu0

CO"Eqfg<"3"Xt ou" B "72 ."3"mJ |"ectktgt0

Ukipcn<"C o rnkvwfg/ o qfwncvgf"*CO+."5<3"tcvkq0
 Hqt o cv<"Wugt/ugngevcdng"vq"KTK I /D"*342IKGGG/3566."344."345+."PCUC/58."43590
 Eqppgevqt<"Tgct/rcpgn"DPE"lcem"ncdngf"öCO"EQFGö0
 Pqvq<"Vq"ejcpi g"vjg"vko g"eqfg"ht o cv"tghgt"vq"vjg"dqvpqut"cpf"dqvpqutdpogjh"eq o o cpfu"kp"
 Ejcrvgt"7/"Eqvtqn"cpf"Uvcvwu"Eq o o cpfu0

SPECIFICATIONS



CE

(According to ISO/IEC GUIDE 22 and EN 45014)

