

PROTON

Analog Paraphonic Semi-Modular Synthesizer with 2 VCOs,
2 Multi-Mode VCFs and 2 VCAs, 4 Envelopes and Wave Folder in Eurorack Format

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EN Important Safety Instructions

 Terminals marked with this symbol carry electrical current of sufficient magnitude to constitute risk of electric shock. Use only high-quality professional speaker cables with ¼" TS or twist-locking plugs pre-installed. All other installation or modification should be performed only by qualified personnel.

 This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure - voltage that may be sufficient to constitute a risk of shock.

 This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.

 **Caution**
To reduce the risk of electric shock, do not remove the top cover (or the rear section). No user serviceable parts inside. Refer servicing to qualified personnel.

 **Caution**
To reduce the risk of fire or electric shock, do not expose this appliance to rain and moisture. The apparatus shall not be exposed to dripping or splashing liquids and no objects filled with liquids, such as vases, shall be placed on the apparatus.

 **Caution**
These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operation instructions. Repairs have to be performed by qualified service personnel.

**Warning**

Please refer to the information on the exterior of bottom enclosure for electrical and safety information before installing or operating the device.

1. Please read and follow all instructions and warnings.
2. Keep the apparatus away from water (except for outdoor products).
3. Clean only with dry cloth.
4. Do not block ventilation openings. Do not install in a confined space. Install only according to manufacturer's instructions.
5. Protect the power cord from damage, particularly at plugs and appliance socket.
6. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
7. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other (only for USA and Canada). A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
8. Use only attachments and accessories recommended by the manufacturer.



Use caution to prevent tip-over when moving the cart/apparatus combination.

9. Use only specified carts, stands, tripods, brackets, or tables.
10. Unplug during storms, or if not in use for a long period.
11. Only use qualified personnel for servicing, especially after damage.
12. The apparatus with protective earthing terminal shall be connected to a MAINS socket outlet with a protective earthing connection.

13. Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

14. Avoid installing in confined spaces like bookcases.

15. Do not place naked flame sources, such as lighted candles, on the apparatus.

16. Operating temperature range 5° to 45°C (41° to 113°F).

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ES Instrucciones de seguridad

 Las terminales marcadas con este símbolo transportan corriente eléctrica de magnitud suficiente como para constituir un riesgo de descarga eléctrica. Utilice solo cables de altavoz profesionales y de alta calidad con conectores TS de 6,3 mm o de bayoneta prefijados. Cualquier otra instalación o modificación debe ser realizada únicamente por un técnico cualificado.

 Este símbolo, siempre que aparece, le advierte de la presencia de voltaje peligroso sin aislar dentro de la caja; este voltaje puede ser suficiente para constituir un riesgo de descarga.

 Este símbolo, siempre que aparece, le advierte sobre instrucciones operativas y de mantenimiento que aparecen en la documentación adjunta. Por favor, lea el manual.

 **Atención**
Para reducir el riesgo de descarga eléctrica, no quite la tapa (o la parte posterior). No hay piezas en el interior del equipo que puedan ser reparadas por el usuario. Si es necesario, póngase en contacto con personal cualificado.

 **Atención**
Para reducir el riesgo de incendio o descarga eléctrica, no exponga este aparato a la lluvia, humedad o alguna otra fuente que pueda salpicar o derramar algún líquido sobre el aparato. No coloque ningún tipo de recipiente para líquidos sobre el aparato.

 **Atención**
Las instrucciones de servicio deben llevarlas a cabo exclusivamente personal cualificado. Para evitar el riesgo de una descarga eléctrica,

no realice reparaciones que no se encuentren descritas en el manual de operaciones. Las reparaciones deben ser realizadas exclusivamente por personal cualificado.

**Advertencia**

Consulte la información en el exterior del recinto inferior para obtener información eléctrica y de seguridad antes de instalar u operar el dispositivo.

1. Por favor, lea y siga todas las instrucciones y advertencias.
2. Mantenga el aparato alejado del agua (excepto para productos diseñados para uso en exteriores).
3. Limpie solo con un paño seco.
4. No obstruya las aberturas de ventilación. No instale en un espacio confinado. Instale solo de acuerdo con las instrucciones del fabricante.
5. Proteja el cable de alimentación contra daños, especialmente en los enchufes y en el tomacorriente del aparato.
6. No lo instale cerca de fuentes de calor como radiadores, rejillas de calefacción, estufas u otros aparatos (incluyendo amplificadores) que generen calor.
7. No anule el propósito de seguridad del enchufe polarizado o del tipo con toma de tierra. Un enchufe polarizado tiene dos clavijas, una más ancha que la otra (solo para EE. UU. y Canadá). Un enchufe con toma de tierra tiene dos clavijas y una tercera clavija de toma de tierra. La clavija ancha o la tercera clavija se proporcionan para su seguridad. Si el enchufe suministrado no encaja en su toma de corriente, consulte a un electricista para reemplazar la toma obsoleta.
8. Utilice solo accesorios y accesorios recomendados por el fabricante.



para evitar que el carro/ combinación de aparatos se vuelque al moverlo.

10. Desenchufe durante tormentas o si no se utiliza durante un largo período.

11. Solo utilice personal cualificado para el servicio, especialmente después de daños.

12. El aparato con terminal de puesta a tierra protectora debe conectarse a un tomacorriente de red con una conexión de puesta a tierra protectora.

13. Cuando se utilice el enchufe de red o un acoplador de aparatos como dispositivo de desconexión, el dispositivo de desconexión debe seguir siendo fácilmente operable.

14. Evite la instalación en espacios confinados como estanterías.

15. No coloque fuentes de llama desnuda, como velas encendidas, en el aparato.

16. Rango de temperatura de funcionamiento de 5° a 45°C (41° a 113°F).

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FR Consignes de sécurité



Les points repérés par ce symbole portent une tension électrique suffisante pour constituer un risque d'électrocution. Utilisez uniquement des câbles d'enceintes professionnels de haute qualité avec fiches Jack mono 6,35 mm ou fiches à verrouillages déjà installées. Toute autre installation ou modification doit être effectuée uniquement par un personnel qualifié.

Ce symbole avertit de la présence d'une tension dangereuse et non isolée à l'intérieur de l'appareil - elle peut provoquer des chocs électriques.

Ce symbol signale les consignes d'utilisation et d'entretien importantes dans la documentation fournie. Lisez les consignes de sécurité du manuel d'utilisation de l'appareil.

Attention Pour éviter tout risque de choc électrique, ne pas ouvrir le capot de l'appareil ni démonter le panneau arrière. L'intérieur de l'appareil ne possède aucun élément réparable par l'utilisateur. Laisser toute réparation à un professionnel qualifié.



Attention

Pour réduire les risques de feu et de choc électrique, n'exposez pas cet appareil à la pluie, à la moisissure, aux gouttes ou aux éclaboussures. Ne posez pas de récipient contenant un liquide sur l'appareil (un vase par exemple).



Attention

Ces consignes de sécurité et d'entretien sont destinées à un personnel qualifié. Pour éviter tout risque de choc électrique, n'effectuez aucune réparation sur l'appareil qui ne soit décrite par le manuel d'utilisation. Les éventuelles réparations doivent être effectuées uniquement par un technicien spécialisé.



Avertissement

Veillez vous référer aux informations situées à l'extérieur du boîtier inférieur pour obtenir les renseignements électriques et de sécurité avant d'installer ou d'utiliser l'appareil.

1. Veuillez lire et suivre toutes les instructions et avertissements.
2. Éloignez l'appareil de l'eau (sauf pour les produits conçus pour une utilisation en extérieur).
3. Nettoyez uniquement avec un chiffon sec.
4. Ne bloquez pas les ouvertures de ventilation. N'installez pas dans un espace confiné. Installez uniquement selon les instructions du fabricant.
5. Protégez le cordon d'alimentation contre les dommages, en particulier au niveau des fiches et de la prise de l'appareil.
6. N'installez pas près de sources de chaleur telles que radiateurs, registres de chaleur, cuisinières ou autres appareils (y compris les amplificateurs) qui produisent de la chaleur.
7. Ne contrecarrez pas le but de sécurité de la fiche polarisée ou de type mise à la terre. Une fiche polarisée a deux lames, l'une plus large que l'autre (uniquement pour les États-Unis et le Canada). Une fiche de type mise à la terre a deux lames et une troisième

broche de mise à la terre. La lame large ou la troisième broche sont fournies pour votre sécurité. Si la fiche fournie ne s'adapte pas à votre prise, consultez un électricien pour remplacer la prise obsolète.

8. Utilisez uniquement des accessoires et des pièces recommandés par le fabricant.



9. Utilisez uniquement des chariots, des supports, des trépieds, des supports ou des

tables spécifiés. Faites attention pour éviter le renversement lors du déplacement de la combinaison chariot/appareil.

10. Débranchez pendant les tempêtes ou si l'appareil n'est pas utilisé pendant une longue période.

11. Utilisez uniquement du personnel qualifié pour l'entretien, surtout après des dommages.

12. L'appareil avec une borne de mise à la terre protectrice doit être connecté à une prise secteur avec une connexion de mise à la terre protectrice.

13. Lorsque la fiche secteur ou un coupleur d'appareil est utilisé comme dispositif de déconnexion, le dispositif de déconnexion doit rester facilement utilisable.

14. Évitez l'installation dans des espaces confinés comme des bibliothèques.

15. Ne placez pas de sources de flamme nue, telles que des bougies allumées, sur l'appareil.

16. Plage de température de fonctionnement de 5° à 45°C (41° à 113°F).

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DE Wichtige Sicherheitshinweise



Die mit dem Symbol markierten Anschlüsse führen so viel Spannung, dass die Gefahr eines Stromschlags besteht. Verwenden Sie nur hochwertige, professionelle Lautsprecherkabel mit vorinstallierten 6,35 mm MONO-Klinkensteckern oder Lautsprecherstecker mit Drehverriegelung. Alle anderen Installationen oder Modifikationen sollten nur von qualifiziertem Fachpersonal ausgeführt werden.



Dieses Symbol weist Sie immer dann darauf hin, wenn es erscheint, dass im Inneren des Gehäuses gefährliche unisolierte Spannung vorhanden ist – eine Spannung, die ausreichend sein kann, um ein Stromschlagrisiko darzustellen.



Dieses Symbol weist Sie an jeder Stelle, an der es erscheint, auf wichtige Betriebs- und Wartungsanweisungen in der beiliegenden Literatur hin. Bitte lesen Sie die Bedienungsanleitung.



Vorsicht

Um eine Gefährdung durch Stromschlag auszuschließen, darf die Geräteabdeckung bzw. Geräterückwand nicht abgenommen werden. Im Inneren des Geräts befinden sich keine vom Benutzer reparierbaren Teile. Reparaturarbeiten dürfen nur von qualifiziertem Personal ausgeführt werden.



Vorsicht

Um eine Gefährdung durch Feuer bzw. Stromschlag auszuschließen, darf dieses Gerät weder Regen oder Feuchtigkeit ausgesetzt werden noch sollten Spritzwasser oder tropfende Flüssigkeiten in das Gerät gelangen können. Stellen Sie keine mit Flüssigkeit gefüllten Gegenstände, wie z. B. Vasen, auf das Gerät.



Vorsicht

Die Service-Hinweise sind nur durch qualifiziertes Personal zu befolgen. Um eine Gefährdung durch Stromschlag zu vermeiden, führen Sie bitte keinerlei Reparaturen an dem Gerät durch, die nicht in der Bedienungsanleitung beschrieben sind. Reparaturen sind nur von qualifiziertem Fachpersonal durchzuführen.



Warnung

Bitte beachten Sie die Informationen auf der Außenseite der unteren Abdeckung bezüglich elektrischer und sicherheitstechnischer Hinweise,

bevor Sie das Gerät installieren oder in Betrieb nehmen.

1. Bitte lesen Sie alle Anweisungen und Warnhinweise sorgfältig durch und befolgen Sie diese.
2. Halten Sie das Gerät von Wasser fern (außer bei Produkten für den Außenbereich).
3. Reinigen Sie nur mit einem trockenen Tuch.
4. Blockieren Sie nicht die Belüftungsöffnungen. Installieren Sie das Gerät nicht in einem engen Raum und nur gemäß den Anweisungen des Herstellers.
5. Schützen Sie das Netzkabel vor Beschädigungen, insbesondere an Steckern und Gerätebuchsen.
6. Installieren Sie das Gerät nicht in der Nähe von Wärmequellen wie Heizkörpern, Heizregistern, Öfen oder anderen Geräten (einschließlich Verstärkern), die Wärme erzeugen.
7. Verwenden Sie den polarisierten Stecker oder den Erdungsstecker nicht entgegen seiner Sicherheitsbestimmung. Ein polarisierter Stecker hat zwei Stifte, von denen einer breiter ist als der andere (nur für USA und Kanada). Ein Erdungsstecker hat zwei Stifte und einen Erdungsstift. Der breite Stift oder der dritte Erdungsstift dienen Ihrer Sicherheit. Wenn der mitgelieferte Stecker nicht in Ihre Steckdose passt, konsultieren Sie einen Elektriker, um die veraltete Steckdose zu ersetzen.
8. Verwenden Sie nur vom Hersteller empfohlene Anbaugeräte und Zubehöreile.
9. Verwenden Sie nur spezifizierte Wagen, Ständer, Stative, Halterungen oder Tische. Achten Sie darauf, dass der Wagen/Geräte-Kombination beim Bewegen nicht umkippt.
10. Ziehen Sie bei Gewittern oder bei längerer Nichtbenutzung den Stecker.
11. Lassen Sie nur qualifiziertes Personal für Wartungsarbeiten



arbeiten, besonders nach Beschädigungen.

12. Das Gerät mit schützendem Erdungsterminal muss an eine Steckdose mit schützender Erdungsverbindung angeschlossen werden.

13. Wenn der Netzstecker oder ein Gerätekuppler als Trennvorrichtung verwendet wird, muss die Trennvorrichtung leicht bedienbar bleiben.

14. Vermeiden Sie die Installation in engen Räumen wie Bücherregalen.

15. Platzieren Sie keine offenen Flammenquellen, wie brennende Kerzen, auf dem Gerät.

16. Betriebstemperaturbereich von 5° bis 45°C (41° bis 113°F).

HAFTUNGSAUSSCHLUSS

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PT Instruções de Segurança Importantes



Terminais marcados com o símbolo carregam corrente elétrica de magnitude suficiente para constituir um risco de choque elétrico. Use apenas cabos de alto-falantes de alta qualidade com plugues TS de ¼" ou plugues com trava de torção pré-instalados. Todas as outras instalações e modificações devem ser efetuadas por pessoas qualificadas.



Este símbolo, onde quer que apareça, alerta para a presença de tensão perigosa não isolada dentro do invólucro - uma tensão que pode ser suficiente para constituir um risco de choque.



Este símbolo, onde quer que o encontre, alerta-o para a leitura das instruções de manuseamento que acompanham o equipamento. Por favor leia o manual de instruções.



Atenção
De forma a diminuir o risco de choque elétrico, não remover a cobertura (ou a secção de trás). Não existem peças substituíveis por parte do utilizador no seu interior. Para esse efeito recorrer a um técnico qualificado.



Atenção
Para reduzir o risco de incêndios ou choques eléctricos o aparelho não deve ser exposto à chuva nem à humidade. Além disso, não deve ser sujeito a salpicos, nem devem ser colocados em cima do aparelho objectos contendo líquidos, tais como jarras.



Atenção
Estas instruções de operação devem ser utilizadas, em exclusivo, por técnicos

de assistência qualificados. Para evitar choques eléctricos não proceda a reparações ou intervenções, que não as indicadas nas instruções de operação, salvo se possuir as qualificações necessárias. Para evitar choques eléctricos não proceda a reparações ou intervenções, que não as indicadas nas instruções de operação. Só o deverá fazer se possuir as qualificações necessárias.



Aviso
Consulte as informações na parte externa do invólucro inferior para obter informações eléctricas e de segurança antes de instalar ou operar o dispositivo.

1. Por favor, leia e siga todas as instruções e advertências.
2. Mantenha o aparelho longe da água (exceto para produtos destinados a uso externo).
3. Limpe apenas com um pano seco.
4. Não obstrua as aberturas de ventilação. Não instale em espaços confinados. Instale apenas de acordo com as instruções do fabricante.
5. Proteja o cabo de alimentação contra danos, especialmente nos plugs e na tomada do aparelho.
6. Não instale próximo a fontes de calor, como radiadores, registros de calor, fogões ou outros aparelhos (incluindo amplificadores) que produzam calor.
7. Não desfaça a finalidade de segurança da tomada polarizada ou do tipo com aterramento. Uma tomada polarizada possui duas lâminas, sendo uma mais larga que a outra (apenas para EUA e Canadá). Uma tomada com aterramento possui duas lâminas e uma terceira ponta de aterramento. A lâmina larga ou a terceira ponta são fornecidas para sua segurança. Se o plug fornecido não se encaixar na sua tomada, consulte um electricista para substituir a tomada obsoleta.

8. Use apenas acessórios e equipamentos recomendados pelo fabricante.



para evitar tombamentos ao mover a combinação carrinho/aparelho.

10. Desconecte durante tempestades ou se não estiver em uso por um longo período.

11. Use apenas pessoal qualificado para serviços, especialmente após danos.

12. O aparelho com terminal de aterramento protetor deve ser conectado a uma tomada de corrente com conexão de aterramento protetor.

13. Quando o plugue de corrente ou um acoplador de aparelho é usado como dispositivo de desconexão, o dispositivo de desconexão deve permanecer prontamente operável.

14. Evite instalar em espaços confinados, como estantes.

15. Não coloque fontes de chama nua, como velas acesas, no aparelho.

16. Faixa de temperatura de operação de 5° a 45°C (41° a 113°F).

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9. Use apenas carrinhos, suportes, tripés, suportes ou mesas especificados. Tenha cuidado

GARANTIA LIMITADA

Para obter os termos de garantia aplicáveis e condições e informações adicionais a respeito da garantia limitada do Music Tribe, favor verificar detalhes na íntegra através do website community.musictribe.com/support.

IT Informazioni importanti



I terminali contrassegnati con il simbolo conducono una corrente elettrica sufficiente a costituire un rischio di scossa elettrica. Usare unicamente cavi per altoparlanti (Speaker) d'elevata qualità con connettori jack TS da ¼" pre-installati. Ogni altra installazione o modifica deve essere effettuata esclusivamente da personale tecnico qualificato.



Questo simbolo, ovunque appaia, avverte della presenza di una tensione pericolosa non isolata all'interno dello chassis, tensione che può essere sufficiente per costituire un rischio di scossa elettrica.



Questo simbolo, ovunque appaia, segnala importanti istruzioni operative e di manutenzione nella documentazione allegata. Si invita a leggere il manuale.



Attenzione
Per ridurre il rischio di scosse elettriche, non rimuovere il coperchio superiore (o la sezione posteriore). All'interno non ci sono parti riparabili dall'utente. Per la manutenzione rivolgersi a personale qualificato.



Attenzione
Per ridurre il rischio di incendi o scosse elettriche, non esporre questo apparecchio a

poggia e umidità. L'apparecchio non deve essere esposto a gocciolio o schizzi di liquidi e nessun oggetto contenente liquidi, come vasi, deve essere collocato sull'apparecchio.



Attenzione
Queste istruzioni di servizio sono destinate esclusivamente a personale qualificato. Per ridurre il rischio di scosse elettriche non eseguire interventi di manutenzione diversi da quelli contenuti nel manuale di istruzioni. Le riparazioni devono essere eseguite da personale di assistenza qualificato.



Avvertimento
Consultare le informazioni sulla parte esterna dell'involucro inferiore per ottenere informazioni elettriche e di sicurezza prima di installare o utilizzare il dispositivo.

1. Si prega di leggere e seguire tutte le istruzioni e gli avvertimenti.
2. Mantenere l'apparecchio lontano dall'acqua (tranne che per i prodotti destinati all'uso all'aperto).
3. Pulire solo con un panno asciutto.
4. Non ostruire le aperture di ventilazione. Non installare in spazi ristretti. Installare solo secondo le istruzioni del produttore.
5. Proteggere il cavo di alimentazione dai danni, soprattutto alle spine e alla presa dell'elettrodomestico.
6. Non installare vicino a fonti di calore come termosifoni, bocchette di calore, fornelli o altri apparecchi (compresi gli amplificatori) che producono calore.

7. Non eludere lo scopo di sicurezza della spina polarizzata o della spina con messa a terra. Una spina polarizzata ha due lame di cui una più larga dell'altra (solo per USA e Canada). Una spina con messa a terra ha due lame e una terza spina di messa a terra. La lama larga o la terza spina sono fornite per la vostra sicurezza. Se la spina fornita non si adatta alla vostra presa, consultare un elettricista per la sostituzione della presa obsoleta.

8. Utilizzare solo accessori e attrezzature raccomandati dal produttore.



9. Utilizzare solo carrelli, supporti, treppiedi, staffe o tavoli specificati. Prestare

attenzione per evitare il ribaltamento durante lo spostamento della combinazione carrello/apparecchio.

10. Scollegare durante le tempere o se non viene utilizzato per un lungo periodo.

11. Utilizzare solo personale qualificato per la manutenzione, specialmente dopo danni.

12. L'apparecchio con terminale di messa a terra protettiva deve essere collegato a una presa di corrente con connessione di messa a terra protettiva.

13. Se la spina di rete o un accoppiatore dell'elettrodomestico viene utilizzato come dispositivo di disconnessione, il dispositivo di disconnessione deve rimanere facilmente utilizzabile.

14. Evitare l'installazione in spazi ristretti come librerie.

15. Non posizionare fonti di fiamma nuda, come candele accese, sull'apparecchio.

16. Intervallo di temperatura di funzionamento da 5° a 45°C (da 41° a 113°F).

DISCLAIMER LEGALE

Music Tribe non si assume alcuna responsabilità per eventuali danni che possono essere subiti da chiunque si affidi in tutto o in parte a qualsiasi descrizione, fotografia o dichiarazione contenuta qui. Specifiche tecniche, aspetti e altre informazioni sono soggette a modifiche senza preavviso. Tutti i marchi sono di proprietà dei rispettivi titolari. Midas, Klark Teknik, Lab Gruppen, Lake, Tannoy, Turbosound, TC Electronic, TC Helicon, Behringer, Bugera, Aston Microphones e Coolaudio sono marchi o marchi registrati di Music Tribe Global Brands Ltd.

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GARANZIA LIMITATA

Per i termini e le condizioni di garanzia applicabili e le informazioni aggiuntive relative alla garanzia limitata di Music Tribe, consultare online i dettagli completi su community.musictribe.com/support.

NL Belangrijke veiligheidsvoorschriften



Aansluitingen die gemerkt zijn met het symbool voeren een zodanig hoge spanning dat ze een risico vormen voor elektrische schokken. Gebruik uitsluitend kwalitatief hoogwaardige, in de handel verkrijgbare luidsprekerkabels die voorzien zijn van ¼" TS stekkers. Laat uitsluitend gekwalificeerd personeel alle overige installatie- of modificatiehandelingen uitvoeren.



Dit symbool waarschuwt u, waar het ook verschijnt, voor de aanwezigheid van ongeïsoleerde gevaarlijke spanning binnenin de behuizing - spanning die voldoende kan zijn om een risico op elektrische schokken te vormen.



Dit symbool wijst u altijd op belangrijke bedienings- en onderhoudsvoorschriften in de bijbehorende documenten. Wij vragen u dringend de handleiding te lezen.



Attentie
Verwijder in geen geval de bovenste afdekking (van het achterste gedeelte) anders bestaat er gevaar voor een elektrische schok. Het apparaat bevat geen te onderhouden onderdelen.

Reparatiewerkzaamheden mogen uitsluitend door gekwalificeerd personeel uitgevoerd worden.



Attentie

Om het risico op brand of elektrische schokken te beperken, dient u te voorkomen dat dit apparaat wordt blootgesteld aan regen en vocht. Het apparaat mag niet worden blootgesteld aan neerdruppelend of opspattend water en er mogen geen met water gevulde voorwerpen – zoals een vaas – op het apparaat worden gezet.



Attentie

Deze onderhoudsinstructies zijn uitsluitend bedoeld voor gekwalificeerd onderhoudspersoneel. Om elektrische schokken te voorkomen, mag u geen andere onderhoudshandelingen verrichten dan in de bedieningsinstructies vermeld staan. Reparatiewerkzaamheden mogen alleen uitgevoerd worden door gekwalificeerd onderhoudspersoneel.



Waarschuwing

Raadpleeg de informatie op de buitenkant van de onderste behuizing voor elektrische en veiligheidsinformatie voordat u het apparaat installeert of bedient.

1. Gelieve alle instructies en waarschuwingen zorgvuldig te lezen en op te volgen.
2. Houd het apparaat uit de buurt van water (behalve voor producten bedoeld voor gebruik buitenshuis).
3. Reinig alleen met een droge doek.
4. Blokkeer de ventilatieopeningen niet. Installeer niet in een afgesloten ruimte. Installeer alleen volgens de instructies van de fabrikant.
5. Bescherm de voedingskabel tegen schade, vooral bij stekkers en het stopcontact van het apparaat.
6. Installeer niet in de buurt van warmtebronnen zoals radiatoren, warmte registers, fornuizen of andere apparaten (inclusief versterkers) die warmte produceren.

7. Hef het veiligheidsdoel van de gepolariseerde of geaarde stekker niet op. Een gepolariseerde stekker heeft twee pennen waarvan één breder is dan de andere (alleen voor de VS en Canada). Een geaarde stekker heeft twee pennen en een derde aardingspen. De brede pen of de derde pen zijn voor uw veiligheid. Als de meegeleverde stekker niet in uw stopcontact past, raadpleeg dan een elektricien om het verouderde stopcontact te vervangen.

8. Gebruik alleen accessoires en apparatuur die door de fabrikant worden aanbevolen.



9. Gebruik alleen gespecificeerde karren, stands, statieven, beugels of tafels. Wees

voorzichtig om kantelen te voorkomen bij het verplaatsen van de kar/apparaatcombinatie.

10. Trek de stekker uit tijdens stormen of als het apparaat gedurende lange tijd niet wordt gebruikt.

11. Gebruik alleen gekwalificeerd personeel voor onderhoud, vooral na schade.

12. Het apparaat met een beschermende aardingsaansluiting moet worden aangesloten op een stopcontact met een beschermende aardingsverbinding.

13. Als de stekker van het stopcontact of een apparaatkoppeling als het ontkoppelingsapparaat wordt gebruikt, moet het ontkoppelingsapparaat gemakkelijk bedienbaar blijven.

14. Vermijd installatie in afgesloten ruimtes zoals boekenkasten.

15. Plaats geen open vlambronnen, zoals brandende kaarsen, op het apparaat.

16. Bedrijfstemperatuurbereik van 5° tot 45°C (41° tot 113°F).

WETTELIJKE ONTKENNING

Music Tribe aanvaardt geen aansprakelijkheid voor enig verlies dat kan worden geleden door een

persoon die geheel of gedeeltelijk vertrouwt op enige beschrijving, foto of verklaring hierin. Technische specificaties, verschijningen en andere informatie kunnen zonder voorafgaande kennisgeving worden gewijzigd. Alle handelsmerken zijn eigendom van hun respectievelijke eigenaren. Midas, Klark Teknik, Lab Gruppen, Lake, Tannoy, Turbosound, TC Electronic, TC Helicon, Behringer, Bugera, Aston Microphones en Coolaudio zijn handelsmerken of gedeponeerde handelsmerken van Music Tribe Global Brands Ltd. © Music Tribe Global Brands Ltd. 2025 Alle rechten voorbehouden.

BEPERKTE GARANTIE

Voor de toepasselijke garantievoorwaarden en aanvullende informatie met betrekking tot de beperkte garantie van Music Tribe, zie de volledige details online op community.musictribe.com/support.

SE Viktiga säkerhetsanvisningar



Uttag markerade med symbolen leder elektrisk strömstyrka som är tillräckligt stark för att utgöra en risk för elchock. Använd endast högkvalitativa, kommersiellt tillgängliga högtalarkablar med förhåndsinstallerade ¼" TS-kontakter. All annan installering eller modifikation bör endast utföras av kompetent personal.



Denna symbol, var den än förekommer, varnar för närvaron av farlig, oisolerad spänning inuti höljet - spänning som kan vara tillräcklig för att utgöra en risk för stöt.



Den här symbolen hänvisar till viktiga punkter om användning och underhåll i den medföljande dokumentationen. Var vänlig och läs bruksanvisningen.



Försiktighet

Minska risken för elektriska stötar genom att aldrig ta av höljet upptill på apparaten (eller ta av baksidan). Inuti apparaten finns det inga delar som kan repareras av användaren. Endast kvalificerad personal får genomföra reparationer.



Försiktighet

För att minska risken för brand och elektriska stötar ska apparaten skyddas mot regn och fukt. Apparaten går inte utsätts för dropp eller spill och inga vattenbehållare som vaser etc. får placeras på den.



Försiktighet

Serviceinstruktionerna är enbart avsedd för kvalificerad servicepersonal. För att undvika risker genom elektriska stötar, genomföra inga reparationer på apparaten, vilka inte är beskrivna i bruksanvisningen. Endast kvalificerad fackpersonal får genomföra reparationerna.



Varning

Vänligen se informationen på utsidan av bottenhöljet för elektrisk och säkerhetsinformation innan du installerar eller använder enheten.

1. Vänligen läs och följ alla instruktioner och varningar noggrant.
2. Håll apparaten borta från vatten (utom för utomhusprodukter).
3. Rengör endast med en torr trasa.
4. Blockera inte ventilationsöppningarna. Installera inte i trånga utrymmen. Installera endast enligt tillverkarens anvisningar.
5. Skydda nätkabeln från skador, särskilt vid kontakter och apparatkontakten.
6. Installera inte nära värme källor som element, värmeregistrar, spisar

eller andra apparater (inklusive förstärkare) som producerar värme.

7. Förstör inte säkerhetsfunktionen hos den polariserade eller jordade kontakten. En polariserad kontakt har två blad varav ett är bredare än det andra (endast för USA och Kanada). En jordad kontakt har två blad och en tredje jordningsstift. Det breda bladet eller det tredje stiftet är till för din säkerhet. Om den medföljande kontakten inte passar i ditt uttag, kontakta en elektriker för att byta ut det föråldrade uttaget.

8. Använd endast tillbehör och tillbehör som rekommenderas av tillverkaren.



9. Använd endast specificerade vagnar, ställ, stativ, fästen eller bord. Var försiktig för att

förhindra vältningsrisk när du flyttar vagnen/apparatkombinationen.

10. Koppla ur under åskväder eller om enheten inte används under en längre tid.

11. Använd endast kvalificerad personal för service, särskilt efter skador.

12. Apparaten med skyddsjordanslutning ska anslutas till ett vägguttag med skyddsjordanslutning.

13. Om nätkontakten eller en apparatkoppling används som frånkopplingsanordning måste frånkopplingsanordningen vara lätt åtkomlig.

14. Undvik installation i tränga utrymmen som bokhyllor.

15. Placera inte öppna lågor, som tända ljus, på apparaten.

16. Drifttemperaturområde 5°C till 45°C (41°F till 113°F).

FRISKRIVNINGSKLAUSUL

Music Tribe tar inget ansvar för någon förlust som kan drabbas av någon person som helt eller delvis förlitar sig på någon beskrivning, fotografi eller uttalande som finns här. Tekniska

specifikationer, utseenden och annan information kan ändras utan föregående meddelande. Alla varumärken tillhör respektive ägare. Midas, Klark Teknik, Lab Gruppen, Lake, Tannoy, Turbosound, TC Electronic, TC Helicon, Behringer, Bugera, Aston Microphones och Coolaudio är varumärken eller registrerade varumärken som tillhör Music Tribe Global Brands Ltd. © Music Tribe Global Brands Ltd. 2025 Alla Rättigheter reserverade.

BEGRÄNSAD GARANTI

För tillämpliga garantivillkor och ytterligare information om Music Tribes begränsade garanti, se fullständig information online på community.musictribe.com/support.

PL Ważne informacje o bezpieczeństwie



Terminale oznaczone symbolem przenoszą ryzyko porażenia prądem. Używaj wyłącznie wysokiej jakości fabrycznie przygotowanych kabli z zainstalowanymi wtyczkami ¼" TS. Wszystkie inne instalacje lub modyfikacje powinny być wykonywane wyłącznie przez wykwalifikowany personel techniczny.



Ten symbol, gdziekolwiek się pojawi, informuje Cię o obecności nieizolowanego niebezpiecznego napięcia wewnątrz obudowy - napięcia, które może stanowić ryzyko porażenia.



Ten symbol informuje o ważnych wskazówkach dotyczących obsługi i konserwacji urządzenia w dołączonej

dokumentacji. Proszę przeczytać stosowne informacje w instrukcji obsługi.



Uwaga

W celu wyeliminowania zagrożenia porażenia prądem zabrania się zdejmowania obudowy lub tylnej ścianki urządzenia. Elementy znajdujące się we wnętrzu urządzenia nie mogą być naprawiane przez użytkownika. Naprawy mogą być wykonywane jedynie przez wykwalifikowany personel.



Uwaga

W celu wyeliminowania zagrożenia porażenia prądem lub zapalenia się urządzenia nie wolno wystawiać go na działanie deszczu i wilgotności oraz dopuszczać do tego, aby do wnętrza dostała się woda lub inna ciecz. Nie należy stawiać na urządzeniu napełnionych cieczą przedmiotów takich jak np. wazony lub szklanki.



Uwaga

Prace serwisowe mogą być wykonywane jedynie przez wykwalifikowany personel. W celu uniknięcia zagrożenia porażenia prądem nie należy wykonywać żadnych manipulacji, które nie są opisane w instrukcji obsługi. Naprawy wykonywane mogą być jedynie przez wykwalifikowany personel techniczny.



Ostrzeżenie

Przed zainstalowaniem lub uruchomieniem urządzenia prosimy zajrzeć do informacji umieszczonej na zewnętrznej części dolnej obudowy dotyczącej informacji elektrycznych i bezpieczeństwa.

1. Proszę przeczytać i ściśle przestrzegać wszystkich instrukcji i ostrzeżeń.
2. Trzymaj urządzenie z dala od wody (z wyjątkiem produktów przeznaczonych do użytku na zewnątrz).
3. Czyść tylko suchą szmatką.
4. Nie blokuj otworów wentylacyjnych. Nie instaluj w

zamkniętym miejscu. Instaluj tylko zgodnie z instrukcjami producenta.

5. Zabezpiecz przewód zasilający przed uszkodzeniem, zwłaszcza przy wtyczkach i gnieździe urządzenia.

6. Nie instaluj w pobliżu źródeł ciepła, takich jak grzejniki, rejestratory ciepła, kuchenki lub inne urządzenia (w tym wzmacniacze), które generują ciepło.

7. Nie unieważniaj celu bezpieczeństwa wtyczki spolaryzowanej lub wtyczki z uziemieniem. Wtyczka spolaryzowana ma dwie wtyczki, z których jedna jest szersza niż druga (tylko dla USA i Kanady). Wtyczka z uziemieniem ma dwie wtyczki i trzeci bolc uziemiający. Szeroka wtyczka lub trzeci bolc są dostarczone dla Twojego bezpieczeństwa. Jeśli dostarczona wtyczka nie pasuje do Twojej gniazdka, skonsultuj się z elektrykiem w celu wymiany przestarzałego gniazdka.

8. Używaj tylko akcesoriów i dodatków zalecanych przez producenta.



9. Używaj tylko określonych wózków, stojaków, statywów, uchwyty lub stolików. Uważaj,

aby uniknąć przewrócenia wózka/kombinacji urządzenia podczas przemieszczania.

10. Odłączaj w czasie burz lub jeśli urządzenie nie jest używane przez długi okres.

11. Korzystaj tylko z kwalifikowanego personelu do serwisowania, zwłaszcza po uszkodzeniach.

12. Urządzenie z zabezpieczonym terminalem uziemiającym powinno być podłączone do gniazdka sieciowego z połączeniem ochronnym.

13. Jeśli wtyczka sieciowa lub złącze urządzenia jest używane jako urządzenie odłączające, urządzenie odłączające powinno pozostać łatwo dostępne.

14. Unikaj instalacji w zamkniętych miejscach, takich jak biblioteczki.

15. Nie umieszczaj źródeł otwartego ognia, takich jak palące się świeczki, na urządzeniu.

16. Zakres temperatury pracy od 5°C do 45°C (od 41°F do 113°F).

ZASTRZEŻENIA PRAWNE

Music Tribe nie ponosi odpowiedzialności za jakiegokolwiek straty, które mogą ponieść osoby, które polegają na całości lub w części na jakimkolwiek opisie, fotografii lub oświadczeniu zawartym w niniejszym dokumencie. Specyfikacje techniczne, wygląd i inne informacje mogą ulec zmianie bez powiadomienia. Wszystkie znaki towarowe są własnością ich odpowiednich właścicieli. Midas, Klark Teknik, Lab Gruppen, Lake, Tannoy, Turbosound, TC Electronic, TC Helicon, Behringer, Bugera, Aston Microphones i Coolaudio są znakami towarowymi lub zastrzeżonymi znakami towarowymi firmy Music Tribe Global Brands Ltd. © Music Tribe Global Brands Ltd. 2025 Wszystkie prawa zastrzeżone.

OGRANICZONA GWARANCJA

Aby zapoznać się z obowiązującymi warunkami gwarancji i dodatkowymi informacjami dotyczącymi ograniczonej gwarancji Music Tribe, zapoznaj się ze wszystkimi szczegółami w trybie online pod adresem community.musictribe.com/support.

JP 安全にお使いいただくために



感電の恐れがありますので、カバーやその他の部品を取り外したり、開けたりしないでください。高品質なプロ用スピーカークーブル (¼" TS 標準ケーブルおよびツイスト ロッキング プラグケーブル) を使用してください。



このシンボルは、どこに現れても、筐体内部に絶縁のない危険な電圧が存在しており、これは感電の危険性を構成する可能性があることを示しています。



火事および感電の危険を防ぐため、本装置を水分や湿気のあるところには設置しないで下さい。装置には決して水分がかからないように注意し、花瓶など水分を含んだものは、装置の上には置かないようにしてください。



注意

このマークが表示されている箇所には、内部に高圧電流が生じています。手を触れると感電の恐れがあります。



注意

取り扱いとお手入れの方法についての重要な説明が付属の取扱説明書に記載されています。ご使用前に良くお読みください。



注意

これらのサービス指示は、有資格のサービス担当者のみが使用するためのものです。操作説明書に含まれているもの以外のサー

ビスを行わないでください。
修理は有資格のサービス担当者によって行われなければなりません。



警告

デバイスの取り付けまたは操作を行う前に、電気および安全に関する情報については、底部の外装に記載されている情報を参照してください。

- すべての指示と警告を注意深く読み、従ってください。
- 装置を水から離してください (屋外用の製品を除く)。
- 乾いた布でしか清掃しないでください。
- 換気口を塞がないでください。密閉されたスペースには取り付けしないでください。必ず製造元の指示に従って取り付けてください。
- 電源コードを特にプラグやアプライアンスの差込口で損傷から守ってください。
- 暖房器、ヒーター、ストーブ、アンプなど発熱する機器の近くには取り付けしないでください。
- 偏光または接地型プラグの安全目的を妨げないでください。偏光プラグは片方がもう一方より幅が広いものです (アメリカとカナダ専用)。接地型プラグは二本の刃と三本目のアースプラグがついています。幅の広い刃または三本目のプラグは安全のために設けられています。提供されたプラグがコンセントに合わない場合は、電気技師に相談して陳腐化したコンセントを交換してください。
- 製造元が推奨するアタッチメントやアクセサリだけを使用してください。



- 指定されたカート、スタンド、三脚、ブラケット、またはテーブルだけを使用してください。

さい。カート/装置の組み合わせを移動する際には倒れないように注意してください。

- 嵐時や長期間使用しない場合はプラグを抜いてください。

- 特に損傷後は、修理には資格のある専門家を利用してください。

- 保護アース端子のある装置は、保護アース接続のあるメインの電源コンセントに接続してください。

- メインプラグまたはアプライアンスコブラが切断装置として使用される場合、切断装置は操作可能でなければなりません。

- 書棚などの密閉された空間には設置しないでください。

- ろうそくなどの明火を装置に置かないでください。

- 動作温度範囲は 5° から 45°C までです (41° から 113°F)。

法的放棄

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1. About the PROTON

- Analog synthesizer with dual VCO design for insanely fat music creation
- Paraphonic mode allows both oscillators to be independently controlled for multi-timbral sounds
- Semi-modular design requires no patching for immediate performance
- Pure analog signal path based on authentic VCO, VCF and VCA designs
- Dual oscillators with 5 waveforms, oscillator sync, pulse width modulation and individual sub-oscillators
- Oscillator waveform control blends seamlessly between 5 shapes (tone mod, pulse, sawtooth, triangle and sine)
- 2 self-oscillating, multi-mode VCFs can be configured in parallel or series with linkable CVs
- 2 ASR envelopes with reverse/inverse/loop/bounce options to control VCAs and wave folder
- 2 analog ADSR generators for modulating the VCFs for unique sound performance
- Multi-mode wave folder adds rich harmonic content and massive flexibility to the LFOs
- 2 flexible LFOs with 5 waveforms, MIDI clock sync, key sync, phase and depth controls
- Noise generator dramatically expands waveform generation
- External audio can be summed into one or both VCFs to massively enhance sound generation
- Utility functions include attenuverters, multiples, signal/CV mixer and summer for creative patching
- External audio input with level control and soft clipping circuit for processing external sound sources
- 64 patch points for advanced modular connection and integration with external equipment
- 68 controls give you direct and real-time access to all important parameters
- Complete Eurorack solution – main module can be transferred to a standard Eurorack case
- Comprehensive MIDI implementation with MIDI channel and Voice Priority selection

2. Getting Started

Your PROTON was carefully packaged in the factory to guarantee safe transport. Nevertheless please check the packaging for any sign of physical damage before opening; and, after opening, please also check the contents before use. If the packaging or the PROTON are damaged in any way please return to the dealer for replacement. This does not affect your warranty rights.

Please ensure that your PROTON is used in a suitable environment that is within its recommended operating temperature range (5°C to 40°C, 41°F to 104°F), is not over humid and is out of direct sunlight.

Please only use the supplied power adaptor to connect your PROTON to the mains.

This manual is designed to be used alongside the Quick Start Guide included in your package and goes into your PROTON's features in much greater depth.

Please ensure that your PROTON is powered up before powering up mixers, amplifiers etc. to ensure that your loudspeakers are not damaged. Switch off your amplifier first at the end of the session.

Your PROTON can be controlled from a suitable keyboard or DAW over 5-pin DIN or USB MIDI, and by CV and gate via its comprehensive patchbay. It is advised to only use one control source to avoid unexpected results.

Your PROTON is a class compliant USB device and requires no drivers to work with either Mac OS™ or Microsoft Windows™. It is recommended that you use the SynthTribe app, which is available as a free download from Behringer.com to check for firmware updates, as well as for easy access to your PROTON's additional features.

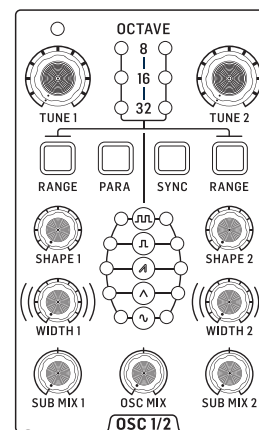
The MIDI channel of the PROTON can be set using the 4 dip switches on the rear panel, or, if these are not available (eg when using a Eurorack case) via the SynthTribe app.

Your PROTON can be used as a standalone desktop synth, removed from its case and mounted in a Eurorack case (see Quick Start Guide for the correct procedure for achieving this) or mounted in a standard 19" rack, using Behringer Model D rack ears (supplied separately).

Throughout your PROTON a red LED indicates that the first of any dual item is being controlled where controls are shared, with a white LED indicating that the second is under control. In some instances there are separate LEDs where both can be controlled together or individually.

Throughout this manual the use of the abbreviation CW indicates clockwise motion; CCW indicates counter-clockwise.

3. Oscillators



Your PROTON has two analog VCOs, whose pitch can be controlled by MIDI (5-pin DIN or USB) or from a suitable CV source in the range -5 V to +5 V. The VCOs are capable of producing frequencies between 0.7 Hz to 50 kHz. Each VCO has its own controls for tuning, range, shape, pulse width and sub mix. In addition there is an Oscillator mix control and buttons to select Oscillator sync and paraphonic mode.

3.1 Tuning

The two VCOs can be individually tuned by 13 semitones up or down.

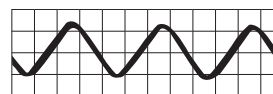
3.2 Range

The two VCOs can have their range set to either 32', 16' or 8', which is indicated by the LEDs on the front panel. The ranges can be stepped through using the range buttons, from 8' down to 32'. When all three LEDs are lit on either VCO it is in ten octave mode and will respond to the full note range.

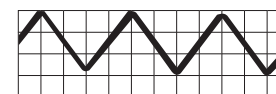
Shape

The PROTON VCOs have five waveshapes, which can either be switched or blended using the SynthTribe app or according to the second panel settings. Press Range (Osc 1 or 2) for two seconds and, once it is flashing, use the para button to toggle between switched and blended for the selected oscillator. Press Range again for two seconds to exit second panel.

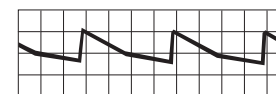
The basic shapes are:



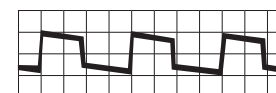
Sine



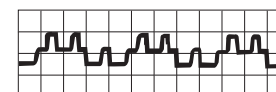
Triangle



Sawtooth

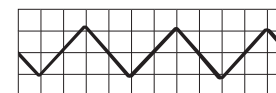


Square/Pulse

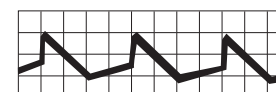


Tone Mod

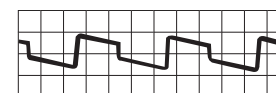
When the blending option is selected then adjacent waves blend into one another, with the more dominate wave's LED showing brighter. These waveforms are:



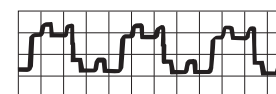
Sine/Triangle



Triangle/Sawtooth



Sawtooth/Square



Square/Tone Mod

3.3 Sub-Oscillators

Each oscillator has its own sub-oscillator, whose waveform is independent of the main one selected, and whose pitch is one octave below that of the oscillator. To change the sub-oscillator waveform press and hold the relevant VCO's range button for more than two seconds, until it starts flashing. Then use the LFO encoder to select the required wave. Press the range button again to return to main panel functions. Alternatively the waveform can be selected using the SynthTribe app. The choice of waveforms is: square, sawtooth, triangle or sine. Please note that although the LFOs have a ramp wave as an option this is not available as a sub-oscillator choice.

The main and sub-oscillators can be mixed using the sub mix control. At the central position they are at equal levels, turning the control clockwise (CW) emphasizes the main VCO; counter-clockwise (CCW) emphasizes the sub.

3.4 Width

On each oscillator the square and tone mod waveforms can have their pulse width altered by means of the width controls. The range is 10% duty to 90% duty.

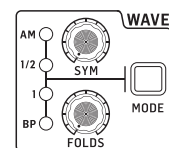
3.5 Sync

The waveform cycle of Osc 2 can be synchronized to Osc 1 by pressing the sync button. The further that Osc 2 is tuned away from Osc 1 the more dramatic the effect. Modulation of Osc 2 from an envelope generator produces a classic effect. This can be achieved by mixing an incoming CV from a keyboard, such as the Behringer Swing with the output of an ASR envelope generator using the CV mixer in the utilities section.

3.6 Paraphonic Mode

Pressing the para button puts the PROTON into paraphonic mode, where playing two notes will assign one to each oscillator. The note priority can be set differently for normal mode and paraphonic mode. To select the note priority for normal mode press and hold the sync button for more than two seconds, until it flashes, then use the VCF 1 mode button to select: LPF = lowest note priority; HPF = highest note priority and BPF = latest note priority. For paraphonic selection use VCF 2 mode to select: LPF = Osc 1 will play the lowest note, Osc 2 the highest; HPF = Osc 1 will play the highest note, Osc 2 the lowest; BPF = Osc 1 will play the first note, Osc 2 the second. Pressing the para button again saves your selection. This can also be done using the SynthTribe app.

4. Wavefolder



The wavefolder works by 'folding' a waveform back onto itself to create complex harmonics. The PROTON wavefolder has two controls and four modes.

4.1 Folds

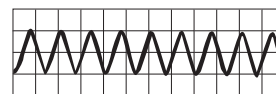
The folds control sets the level of folding that the wavefolder performs, turning it CW increases the number of folds. Turning it fully CCW has the effect of cancelling the input altogether.

4.2 Symmetry

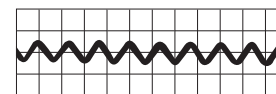
The Sym(metry) control causes the top of the waveform to be folded in a different way to the bottom, thus altering the timbre further.

Amplitude Modulation

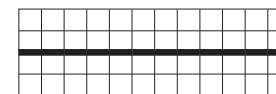
When the wavefolder is set to AM (amplitude modulation) mode the sym control has no effect, and the folds control alters the amplitude of the waveform. When it is turned fully CCW the waveform is cancelled altogether; turning it CW brings the wave back in until at full CW the waveform is unaltered.



Folds fully CCW



Folds midway

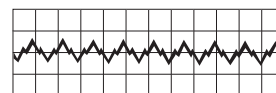


Folds fully CW

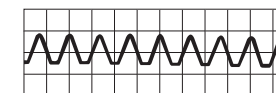
4.3 1/2

1/2 mode allows both controls to work on the waveform, but at half intensity. As with the AM mode turning the folds control fully CCW cancels out the incoming waveform, regardless of where the sym control is set.

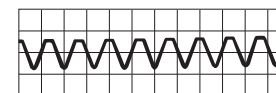
Therefore, with the folds control at the midway point altering the sym control gives the following results:



Sym fully CCW

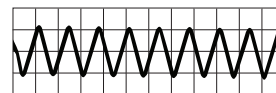


Sym midway

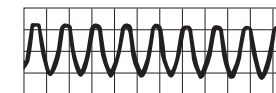


Sym fully CW

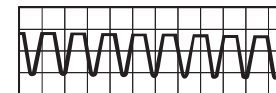
And with the folds control fully CW:



Sym fully CCW



Sym midway

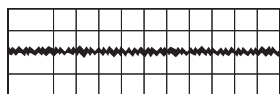


Sym fully CW

4.4 1

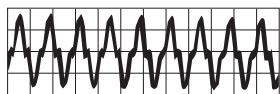
With the mode set to 1 the wavefolder controls work to their full intensity. As with the other modes turning folds fully CCW cancels the input.

Therefore, with the folds control at the midway point altering the sym control gives the following results:

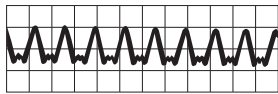


Sym fully CCW

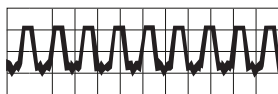
And with the folds control fully CW:



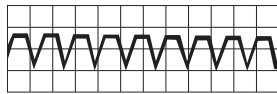
Sym fully CCW



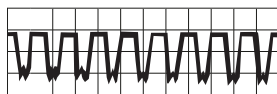
Sym midway



Sym midway



Sym fully CW



Sym fully CW

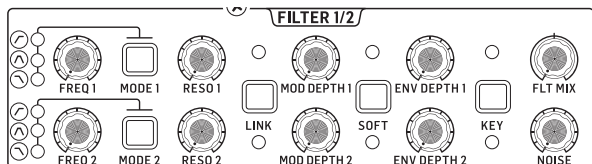
4.5 Bypass

When the wavefolder is in BP (bypass) mode neither of the controls have any effect, and the incoming waveform is passed to the VCFs unaltered. Please note that when the wavefolder is used to process an external signal, which can be done using its in and out sockets on the patchbay, setting the mode to BP will allow the internal oscillator mix to feed into the VCFs.

4.6 Modulation

Both folds and sym can be modulated by any modulation source, unipolar or bipolar in the range -5 V to +5 V via the dedicated sockets on the In patchbay. The modulation source(s) are summed with the internal controls and can be used to produce even more pronounced effects.

5. Filters



The PROTON has two, independent, 12 dB/octave VCFs, which can also have some of their functions linked together.

5.1 Mode

Each of the filters can be switched into either low pass, band pass or high pass mode. The current mode is indicated by an LED next to the appropriate panel graphic.

5.2 Frequency

The filters' cutoff frequencies can be set using the freq 1 and 2 controls and can also be externally controlled by a voltage in the range -5 V to +5 V via the In patchbay. Both have a range of 10 Hz to 15 kHz. The frequency of each filter can also be modulated by a voltage in the range -5 V to +5 V via the In patchbay, which will replace LFO 1 as the modulation source.

5.3 Resonance

The resonance of the filters can be adjusted using the reso 1 and 2 controls, and can also be externally controlled by a voltage in the range -5 V to +5 V via the In patchbay. Increasing the resonance emphasizes a band of frequencies around the filter cutoff frequency, until at the highest settings the filter will self-oscillate.

5.4 Link

The link button has different effects, according to whether the red or the white LED is lit. When neither is lit it has no effect.

Red: VCF 2 will be modulated by the VCF 1 modulation source rather than that of VCF 2.

White: VCF 2 will be modulated by an inversion of the VCF 1 modulation source.

5.5 Modulation Depth

These controls determine the level of modulation depth to each of the filters. When link is not in use then VCF 1 is modulated by LFO 1 or a source patched via the patchbay; and VCF 2 by LFO 2 or a source patched via the patchbay. When they are linked then the modulation is as described above, but the controls are still effective for their respective filters.

There is a second modulation available, which can be set up using the SynthTribe app, or by using the second panel functions. To access this press and hold the mode button for the required filter for two seconds. When it starts to flash use the LFO encoder to select one of the following modulation sources:

Sine: no source (default)

Triangle: MIDI velocity

Sawtooth: MIDI mod wheel CC #1)

Square: MIDI aftertouch

Pressing the shift button then allows the LFO encoder to set the modulation depth for the selected source.

5.6 Soft

The soft button softens the resonance of the selected filter. If neither LED is lit then resonance is not softened, red means that only VCF 1 is softened, white VCF 2 and both LEDs mean that both are affected.

Envelope Depth

The envelope depth controls set the amount of ADSR envelope modulation to each filter from ADSR 1.

5.7 Key

The key button selects whether either, both or neither filter tracks the keyboard input. If neither LED is lit then neither filter is tracking, red means the VCF 1 tracks, white VCF 2 and both means that both track.

5.8 Filter Mix

The setting of this control determines how much of the output of each filter is fed to 1VCAs. At the center point both filters are fed equally, turning the control CCW biases towards VCF 1; CW to VCF 2.

5.9 Noise

The noise control sets the level of white noise that is fed into the filters alongside the VCOs. When it is fully CCW then no noise is present, fully CW then the noise is of equal volume to the oscillator mix.

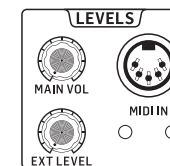
6. Voltage Controlled Amplifiers



The PROTON has two parallel VCAs. Each has an independent bias control that will allow a level of signal through regardless of what the control source is doing. When the bias controls are fully CCW then the VCAs are entirely under the control of their respective sources, when they are fully CW then the sources are overridden.

Under normal operation VCA 1 receives the output of the filter mix and VCA 2 receives the output of VCF 2. Both are controlled by ADSR 2. However either or both can be send a different input, and/or be controlled from a different source using the relevant sockets on the In patchbay. VCA 1 feeds into the PROTON's main and headphone outputs, but also have their own outputs on the Out patchbay, which do not break the connection to main and headphone.

7. Levels



7.1 Main Volume

The levels section contains the volume control for the main line level output (the volume control for the headphone output is on the rear panel).

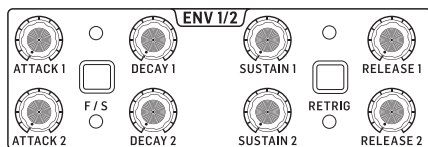
7.2 External Level

The level control for external signals to be processed by the PROTON's VCFs, whose input socket is also on the rear panel.

7.3 MIDI In

The PROTON's 5-pin DIN MIDI in is also situated on the front panel. The MIDI input channel can be selected either by the four dip switches on the rear panel or by using the SynthTribe app. The MIDI in socket is accompanied by two LEDs which light when a MIDI note is received on the selected channel.

8. ADSR Envelope Generators



The PROTON has two entirely independent ADSR envelope generators, which are individually triggered via the In patchbay. ADSR 1 is normally used to modulate the filters, while ADSR 2 is connected to the VCAs, although this connection can be broken using the In patchbay; and the ADSR curves are also available to patch into other destinations on the Out patchbay.

8.1 Attack

Each ADSR envelope has an attack time from around 300 μ s when the control is fully CCW to 7 s when the control is fully CW, in fast mode. In slow mode the maximum time increases to 42 s.

8.2 Decay

Each ADSR envelope has a decay time from 2.4 ms when the control is fully CCW to 20 s when the control is fully CW, in fast mode. In slow mode the maximum time increases to 1 m 56 s.

8.3 Sustain

The sustain level can be adjusted to give no sustain at all when the control is fully CCW to full sustain at whatever level decay falls to when the control is fully CW, until the key is released.

8.4 Release

Each ADSR envelope has a release time from 1.5 ms when the control is fully CCW to 24 s when the control is fully CW, in fast mode. In slow mode the maximum time increases to 2 m. Please note that if sustain is fully CCW then release will not function.

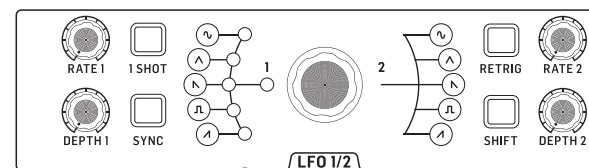
8.5 Fast/Slow

The F/S button allows the ADSR envelope generators to be switched from their normal (fast) mode to slow mode, where times are extended significantly. The associated LEDs light to indicate whether either, neither or both ADSRs are in slow mode.

8.6 Retrigger

When retrigger is off, which is its default state, any new notes played while a note is held will not cause the envelope generator(s) to break their cycle. Switching retrigger on will cause any new note played to start a new envelope cycle, regardless of whether another note is being held. Please note that retrigger only works when the PROTON is under MIDI control.

9. Low Frequency Oscillators



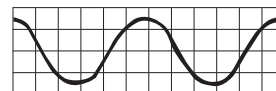
The PROTON has two independent LFOs. Owing to space considerations some controls are shared between the two, which is achieved by use of the shift button.

9.1 Rate

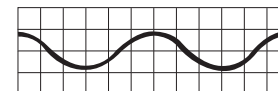
Each LFO has its own rate control, with a range from 0.01 Hz at full CCW to 200 Hz at full CW.

9.2 Depth

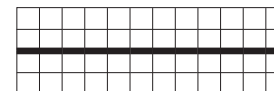
Each LFO has its own depth control, which allows full amplitude when turned CW, with the amplitude reducing to zero as it is turned CCW.



100% depth



50% depth



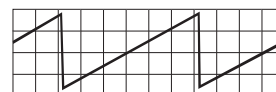
0% depth

9.3 Shift

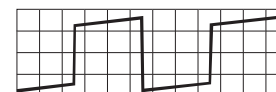
The shift button is used to select which LFO is affected by shared controls. When it is lit in red then LFO 1 is affected, white for LFO 2. The shift control is also used to select which ADSR envelope is affected by their shared buttons.

9.4 Waveform

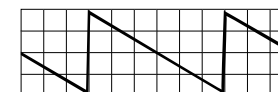
Each LFO can have its own waveform selected from ramp, square, sawtooth, triangle and sine. These waveforms can also be set to blend rather than being switched, either by using the SynthTribes app, or by the second panel function. Press 1-shot for two seconds and, once it is flashing, use the para button to toggle between switched and blend for LFO 1. Press 1-shot again for two seconds to exit second panel. For LFO 2 press the LFO retrigger button for two seconds, then para. Press retrigger again to exit second panel.



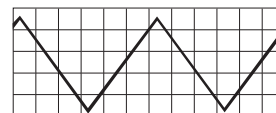
Ramp



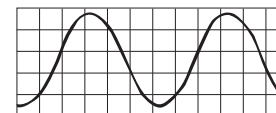
Square



Sawtooth

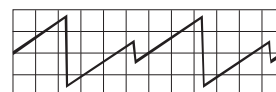


Triangle



Sine

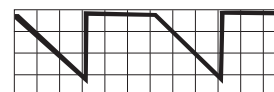
The waveform blending is a continuous process, so there are many possible blends of adjacent waveforms



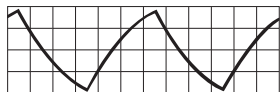
Ramp / Square



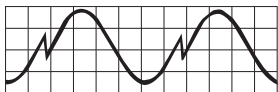
Square / Sawtooth



Sawtooth / Triangle



Triangle / Sine



Sine / Ram

9.5 1-Shot

When 1-shot is selected a trigger or gate received at the relevant LFO's trigger in on the In patchbay will cause that LFO's waveform to reset to the start of its cycle.

9.6 Sync

Sync synchronizes the selected LFO to incoming MIDI clock. In order for sync to work the relevant LFO must have had sync selected using the SynthTribe app or using the second panel functions. For LFO 1 press the 1-shot button for two seconds until it flashes, then press sync, then press 1-shot again to exit. For LFO 2 use the retrig button.

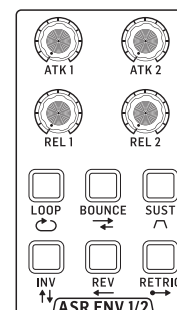
9.7 Retrigger

LFO retrigger resets the LFO's cycle to the start on the when a key is pressed, regardless of whether another key is already being held (dependent on note priority). Please note that retrigger will only work correctly when LFO sync is selected, and with a MIDI source. CV/gate control will work in the same way as 1-shot.

9.8 Key Tracking

Either LFO can have a variable depth key tracking enabled. This can either be done using the SynthTribe app or by using the second panel functions. For LFO 1 press and hold the 1-shot button for two seconds until it starts flashing, then use the LFO encoder to adjust the depth. Then press 1-shot again to exit second panel. For LFO 2 use the retrig button.

10. ASR Envelope Generators



The PROTON has two ASR envelope generators, which can be individually triggered from the In patchbay. Because the buttons are shared between the two the shift button in the LFO section should be used to toggle between the two. Buttons light up in red when they are selected for ASR 1, white for ASR 2.

10.1 Attack

Each ASR envelope generator has an attack time which is adjustable between 0 ms when the control is fully CCW and 8 s when it is fully CW.

10.2 Release

Each ASR envelope generator has a release time which is adjustable between 0 ms when the control is fully CCW and 31 s when it is fully CW.

10.3 Loop

When loop is selected the relevant ASR envelope generator will repeat its attack/release cycle for as long as a gate is present at its input. If sustain is selected then the loop function will not work, as the envelope will sustain for as long as the gate is present before releasing.

10.4 Bounce

When bounce is selected the relevant ASR envelope generator will go through its attack/release cycle, then reverse it so that release becomes attack and attack release for as long as a gate is present at its input.

10.5 Sustain

Selecting sustain adds a sustain element to the envelope curve.

10.6 Invert

Selecting invert causes the envelope curve to change from a positive going 0 V to + 10 V to 0 V to - 10 V.

10.7 Reverse

Selecting reverse turns the release into attack and attack into release on the selected ASR.

10.8 Retrigger

When retrigger is selected the relevant ASR envelope generator will start a new cycle every time it receives a new gate.

All of the buttons can be used in any combination. Please note that some button combinations do not necessarily give the desired affect, so it is worth checking which combinations are best for your work.

11. Utilities



The PROTON has four patchable utilities

11.1 CV Mix

The CV mix allow two voltage sources to be mixed together. If no plugs are inserted into the In patchbay then the two sources are LFO 1 and LFO 2. When the control is at midway both sources are equally represented, turning it CCW emphasizes source 1; CW source 2.

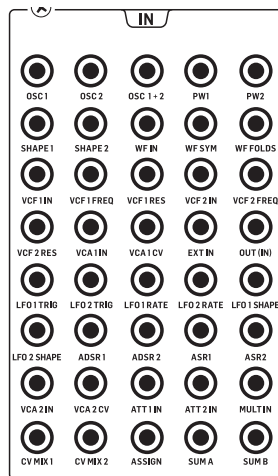
11.2 Portamento

The portamento control introduces a glide effect between notes, with the glide time increasing as the control is turned CW. This only works when the PROTON is under MIDI control. Hold the first note while playing the second to activate the portamento effect.

11.3 Attenuverters

The PROTON has two independent attenuverters, which accept a CV from the In patchbay and output to the Out patchbay. In each case when the control is at midway no voltage is passed, turning the control fully CW passes the voltage unaltered; turning it CCW passes an inverted voltage.

12. In Patchbay



The PROTON features a forty input patchbay that allows CV and audio sources to be routed as signals or controls to the various sections, whether these are sourced internally from the Out patchbay or externally. CVs are in the range -5 V to +5 V, unless otherwise stated.

12.1 Oscillators

Osc 1 CV; osc 2 CV; osc 1 and 2 combined CV; osc 1 pulse width; osc 2 pulse width; osc 1 shape; osc 2 shape.

12.2 Wavefolder

Wavefolder audio in, which overrides the internal feed from osc mix; folds CV; symmetry CV.

12.3 Filters

VCF 1 audio in, which overrides the internal feed from the wavefolder; VCF 1 frequency CV; VCF 1 resonance CV; VCF 2 audio in, which overrides the internal feed from the wavefolder; VCF 2 frequency CV; VCF 2 resonance CV.

12.4 Voltage Controlled Amplifiers

VCA 1 audio in, which overrides the internal feed from filter mix; VCA 1 CV; VCA 2 audio in, which overrides the internal feed from VCF 2; VCA 2 CV.

12.5 External Audio

Ext in sends and external audio signal whose level is controlled by the Ext Level control into the PROTON VCFs (this is a duplicate of the socket on the rear panel); Out (in) overrides the internal signal flow and sends an external audio signal whose level is not affected by the Ext Level control direct to the PROTON's main output on the rear panel.

12.6 Low Frequency Oscillators

LFO 1 trigger and LFO 2 trigger, which cause the LFOs 1-shot and retrigger to occur if selected when a suitable voltage trigger is received (any voltage over 0 V will usually work); LFO 1 rate CV; LFO 2 rate CV; LFO 1 shape CV; LFO 2 shape CV.

12.7 Envelope Generators

ADSR 1 gate/trigger; ADSR 2 gate/trigger; ASR 1 gate/trigger; ASR 2 gate/trigger.

12.8 Attenuverters

Attenuverter 1 in; attenuverter 2 in.

12.9 Multiple In

Allows an signal or voltage to be split and fed to two outputs on the Out patchbay.

12.10 CV Mix

Input 1; input 2.

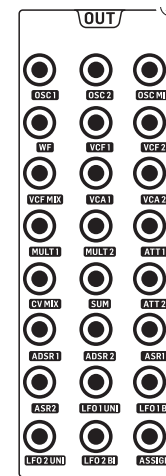
12.11 Assign In

Assignable CV input which can be set to feed either nothing (default), osc 1, osc 2, osc 1 & 2, VCF 1, VCF 2 or VCF 1 & 2. This can be set up using the SynthTribe app, or through the second panel by pressing and holding the wavefolder mode button for two seconds until it flashes then using the LFO encoder to scroll through the options. Pressing the LFO shift button allows the encoder to be used to set the depth from 0% to 100%. Pressing the mode button again exits second panel.

12.12 Sum

Sum A; sum B where two CVs are summed together a fed to the sum out socket on the Out patchbay.

13. Out Patchbay



The PROTON features a twenty four output patchbay, which allows signals and control voltages to be routed to external processors, or re-routed internally. Taking a feed from the Out patchbay will not affect internal routing, unless specifically noted.

13.1 Oscillators

Osc 1; Osc 2; Osc mix – audio feeds from the oscillators.

13.2 Wavefolder

Audio feed from the wavefolder output.

13.3 Filters

VCF 1; VCF 2; VCF mix – audio feeds from the VCFs.

13.4 Voltage Controller Amplifiers

VCA 1; VCA 2 – audio feeds from the VCAs.

13.5 Multiples

Multiple 1; multiple 2 – split of a signal or CV fed into the multiple in on the In patchbay. If there is no cable plugged into Multiple In then Multiples 1 and 2 can be assigned using SynthTribe.

13.6 Attenuverters

Attenuverter 1; attenuverter 2 – outputs from the attenuverters fed from the In patchbay. If there is no input on attenuverter 1 then the output will be ADSR 1. If there is no input on attenuverter 2 then the output will be LFO 1 (bipolar).

13.7 CV Mix

Output of the CV mix fed from the In patchbay and mixed with the CV mix utility. If there are no inputs to the CV mix then the mix will be of LFO 1 and 2 (bipolar).

13.8 Sum

Output of the two CVs fed into the sum inputs on the In patchbay. If there are no inputs then the output will be a mix of sub oscillators 1 and 2.

13.9 Envelope Generators

ADSR 1; ADSR 2; ASR 1; ASR 2 – CV outputs of the envelope generators' curves.

13.10 Low Frequency Oscillators

LFO 1 uni; LFO 1 bi; LFO 2 uni; LFO 2 bi – CV outputs from the LFOs, where the uni outputs give a unipolar response from 0 V to +5 V and the bi outputs give a bipolar response from -5 V to +5 V.

13.11 Assign

Assignable output whose source can be selected from osc 1 CV, osc 2 CV, velocity (MIDI only), mod wheel (MIDI only), aftertouch (MIDI only). This can be selected using the SynthTribe app or from the second panel by pressing the osc sync button for two seconds until it flashes, then using the LFO encoder to scroll through the options. Pressing osc sync again exits second panel.

14. Rear Panel

Please note that if the PROTON is removed from its supplied case and mounted in a Eurorack case (see Quick Start Guide for details on how to do this) then the rear panel will no longer be available.

14.1 Input

The input socket is a TS 6.35 mm jack which duplicates the 3.5 mm jack on the In patchbay and feeds an external audio signal into the PROTON's filters.

14.2 Output

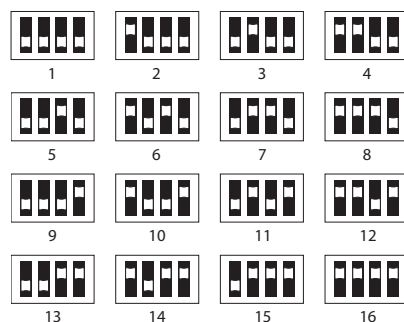
The output socket is a TS 6.35 mm jack which sends the VCA output as adjusted by the output level control to external mixers, amplifiers etc.

14.3 Phones

The phones out is a TRS 6.35 mm jack socket suitable for use with any standard headphones. It is independent of the output level control, and has its own dedicated level control adjacent.

14.4 MIDI Channel Select

Use these four dip switches to set the MIDI in channel of the PROTON as illustrated:



Please note that this setting can be overridden using the SynthTribe app.

14.5 MIDI Thru

This 5-pin DIN socket can be used to mirror incoming MIDI messages received on the front panel MIDI In socket.

14.6 USB

This USB 2.0 Type B socket can be used to control the PROTON over MIDI, for example direct from a DAW, and to alter settings and update the firmware via the SynthTribe app.

14.7 Power

The PROTON comes supplied with a 12 V 1000 mA PSU. This is the only PSU that should be used, unless the PROTON is Eurorack mounted. The adjacent switch can be used to switch the Proiton on and off as required.

15. Extra Panel Functions

Below is a summary of the control combinations required to access and adjust the extra panel functions. The extra panel functions can be switched on or off using SynthTribe, which makes these functions only adjustable using the app.

First	Second	Third	Action
Osc 1 Range	LFO Encoder		Selects the waveform for Osc 1 sub oscillator, from the LFO options.
	Para		Selects whether the Osc 1 waveform is switched (default) or blended.
	Osc Sync		Selects whether the Osc 1 tuning control is enabled (default) or disabled.
	Wave Mode		Switches Osc 1 frequency input from exponential to linear
	F/S		Switches Osc 1 frequency input to exponential
	Env Retrig		Disables MIDI control of Osc 1.
Osc 2 Range	MIDI Note	VCF 1 Mode	Sets the key split point, for paraphonic behavior in Last Note Priority mode: when a split point is set then Osc 1 will sound the note below the split point, and Osc 2 the one above. Otherwise the last note will be played by both Oscs.
	MIDI Note	LFO 1 Shot	Sets the base note for LFO 1 key tracking
	LFO Encoder		Selects the waveform for Osc 2 sub oscillator, from the LFO options.
	Para		Selects whether the Osc 2 waveform is switched (default) or blended.
	Osc Sync		Selects whether the Osc 2 tuning control is enabled (default) or disabled.
	Wave Mode		Switches Osc 2 frequency input from exponential to linear
VCF 1 Mode	F/S		Switches Osc 2 frequency input to exponential
	Env Retrig		Disables MIDI control of Osc 2.
	MIDI Note	VCF 2 Mode	Sets the key split point, for paraphonic behavior in Last Note Priority mode: when a split point is set then Osc 1 will sound the note below the split point, and Osc 2 the one above. Otherwise the last note will be played by both Oscs.
	MIDI Note	LFO 1 Shot	Sets the base note for LFO 2 key tracking.
	LFO Encoder		Selects the modulation source for VCF 1 from: none, MIDI velocity, Mod Wheel (MIDI CC #1), Aftertouch.
	LFO Shift	LFO Encoder	Sets the VCF 1 modulation depth.
VCF 2 Mode	LFO Encoder		Selects the modulation source for VCF 2 from: none, MIDI velocity, Mod Wheel (MIDI CC #1), Aftertouch.

First	Second	Third	Action
	LFO Shift	LFO Encoder	Sets the VCF 2 modulation depth.
Osc Sync	VCF 1 Mode		Sets the note priority for both oscillators when in mono mode: HPF – highest, BPF – last, LPF – lowest.
	VCF 2 Mode		Set the note priority for paraphonic mode. Osc 1 will play the first priority note, Osc 2 the second. Reaction to a third note will be governed by the setting: HPF – highest, BPF – last, LPF – lowest.
	LFO Encoder		Selects the source for Assign Out on the patchbay, from: Osc 1 CV, Osc 2 CV, velocity, Mod Wheel, Aftertouch.
	Para		Switches Poly chaining on or off: 0 = off, 1 = on.
	LFO Sync		Switches MIDI clock forwarding on or off 0 = off, 1 = on
	Env Retrigger		Selects the mode for ASR retriggering, from: Neutron (default) – new notes will retrigger the ASRs or PROTON – notes will not retrigger the ASRs while at least one note is held.
Wave Mode	LFO Encoder		Selects the destination for Assign In, from: None (default), Osc 1, Osc 2, Osc 1&2, VCF 1, VCF 2, VCF 1&2.
	LFO Shift	LFO Encoder	Adjusts the depth of the Assign In, from 0% to 100%.
Osc Para	ASR Retrigger		Pressing Osc Para and ASR Retrigger for more than two seconds will recalibrate the PROTON.

16. Factory Restore

If it becomes necessary to restore the PROTON to its factory settings press and hold the Osc Para and Osc Sync buttons while powering up.

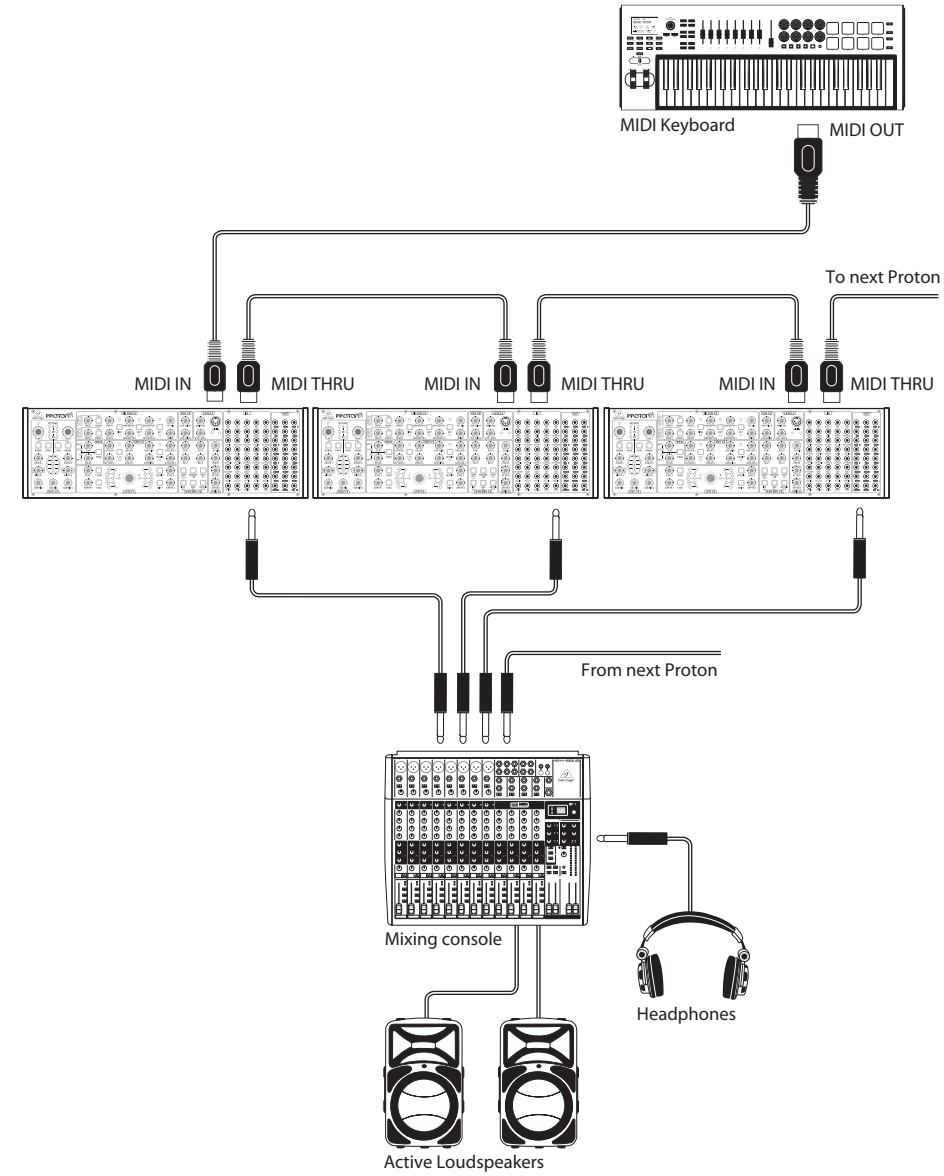
17. Poly chaining

If you have multiple PROTON units, you can connect them in a 'Poly Chain' to produce polyphonic sounds. The PROTON works by sending unhandled notes to the next in the chain. When the chain runs out, subsequent notes are not played. The first PROTON plays the first played note, the second plays the second, the third plays the third etc. Note that a PROTON in Paraphonic mode will handle 2 notes. Each PROTON must have the same MIDI channel number set using the rear panel switches or SynthTribes app. The Poly Chain connections are shown in the diagram. Set the Poly Chain ON for all PROTONs. The last PROTON in the chain can either be set to Poly Chain on or off depending on how you would like the MIDI information to be handled. If Poly Chain is on, the last PROTON will act as if it is sending the next played note over the maximum number of notes played to the next device in the chain, and the note will not be heard or dropped. If Poly chain is off for the last PROTON, the next played note over the maximum number of notes will steal the last played note from the last PROTON. To toggle Poly Chain mode, press and hold the OSC SYNC button for 2 seconds. The LED will repeatedly flash (once when in mono mode - twice when in duo mode). A short press on the PARA button will still toggle the PARA/MONO mode. Hold PARA to exit. If you are only using one PROTON, make sure the Poly Chain is OFF.

18. Calibration

The PROTON has no manual calibration function – automatic calibration is carried out every time it is powered up; and is indicated by the six Octave LEDs flashing in rotation. When they stop flashing and show the octave for the two VCOs then calibration is complete.

19. Poly Chain Function



20. MIDI CCs

The PROTON responds to two MIDI CCs:

Modulation Wheel (MIDI CC #1 (MSB) and CC #33 (LSB)) which can also be assigned to the Assign Out using the Synthtribe App;
Sustain Pedal (MIDI CC #64).

21. SysEx

The PROTON can be controlled using the System Exclusive protocol. The format of PROTON SysEx messages is as follows:

Lead	Manufacturer ID				Model ID				Dev	PKT	SPKT	SSPKT	Value	End
F0	00	20	32	00	01	25	00	0x74	0x10					F7

The following table shows the SSPKT numbers and their associated values

SSPKT	Function	Value Range	Default Value	Description
0x0F	Polychain enable/disable	0-1	0	0 = disabled; 1 = enabled
0x10	Dipswitch enable/disable	0-1	0	0 = dipswitch MIDI channel; 1 = software MIDI channel
0x11	Software MIDI Channel	0-15	0	
0x13	Mono key priority	0-2	2	0 = low; 1 = high; 2 = last
0x14	Paraphonic key priority	0-2	2	0 = low; 1 = high; 2 = last
0x17	Assign out 1	0-4	0	0 = Osc 1 CV; 1 = Osc 2 CV; 2 = velocity; 3 = mod wheel; 4 = aftertouch
0x18	Assign out 2	0-4	0	0 = Osc 1 CV; 1 = Osc 2 CV; 2 = velocity; 3 = mod wheel; 4 = aftertouch
0x19	Minimum MIDI note	0C – 60	0C	0C = MIDI C0
0x1A	Maximum MIDI note	0C – 60	60	60 = MIDI C7
0x1B	Mute out of range notes	0-1	0	0 = disabled; 1 = mute out of range notes
0x1D	Forward clock	0-1	1	0 = disabled; 1 = enabled
0x1E	Assign in destination	0-6	0	0 = none; 1 = Osc 1; 2 = Osc 2; 3 = Osc 1&2; 4 = VCF 1; 5 = VCF 2; 6 = VCF 1&2
0x1F	Assign in depth	0-65	65	
0x21	Local control on/off	0-1	1	0 = second panel enabled; 1 = second panel disabled
0x23	VCF link	0-2	0	0 = no link; 1 = mod link; 2 = inverse mod link
0x24	VCF soft	0-3	0	0 = disabled; 1 = VCF1 enabled; 2 = VCF2 enabled; 3 = both enabled
0x25	VCF Key tracking	0-3	0	0 = disabled; 1 = VCF1 enabled; 2 = VCF2 enabled; 3 = both enabled

SSPKT	Function	Value Range	Default Value	Description
0x26	VCF1 mode	0-2	2	0 = high pass; 1 = band pass; 2 = low pass
0x27	VCF1 modulation source	0-3	0	0 = none; 1 = velocity; 2 = mod wheel; 3 = aftertouch
0x28	VCF1 modulation depth	0-FC	0	
0x2A	VCF2 mode	0-2	2	0 = high pass; 1 = band pass; 2 = low pass
0x2B	VCF2 modulation source	0-3	0	0 = none; 1 = velocity; 2 = mod wheel; 3 = aftertouch
0x2C	VCF2 modulation depth	0-FC	0	
0x2E	LF01 key track base note	0C-60	0C	0C = MIDI C0
0x2F	LF01 shape mix	0-FF	0	
0x30	LF01 shape	0-4	0	0 = sine; 1 = triangle; 2 = sawtooth; 3 = square; 4 = ramp
0x31	LF01 blend	0-1	1	0 = blended; 1 = switched
0x32	LF01 one shot	0-1	0	0 = disabled; 1 = one shot on
0x33	LF01 retrigger	0-1	0	0 = disabled; 1 = retrigger on
0x34	LF01 key sync	0-1	0	0 = disabled; 1 = key sync on
0x35	LF01 key track depth	0-65	0	
0x36	LF01 MIDI clock sync	0-1	0	0 = disabled; 1 = clock sync on
0x39	LF02 shape mix	0-FF	0	
0x3A	LF02 shape	0-4	0	0 = sine; 1 = triangle; 2 = sawtooth; 3 = square; 4 = ramp
0x3B	LF02 blend	0-1	1	0 = blended; 1 = switched
0x3C	LF02 one shot	0-1	0	0 = disabled; 1 = one shot on
0x3D	LF02 retrigger	0-1	0	0 = disabled; 1 = retrigger on
0x3E	LF02 key sync	0-1	0	0 = disabled; 1 = key sync on
0x3F	LF02 key track depth	0-65	0	
0x40	LF02 MIDI clock sync	0-1	0	0 = disabled; 1 = clock sync on
0x43	LF02 key track base note	0C-60	0C	0C = MIDI C0

SSPKT	Function	Value Range	Default Value	Description
0x44	Wavefolder mode	0-3	3	0 = AM; 1 = half; 2 = 1; 3 = bypass
0x46	Osc sync	0-1	0	0 = not synced; 1 = Osc 2 synced to Osc 1
0x47	Osc paraphony	0-1	0	0 = mono; 1 = paraphonic
0x48	Osc key split	0 or 0C-60	0	0 = no split; 0C-60 = split at this note
0x49	Sub Osc shape	0-3	0	0 = pulse; 1 = sawtooth; 2 = triangle; 3 = sine
0x4A	Osc 1 range	0-3	2	0 = 8°; 1 = 16°; 2 = 32°; 3 = free
0x4B	Osc 1 mute	0-1	0	0 = unmuted; 1 = muted
0x4C	Sub Osc 1 mute	0-1	0	0 = unmuted; 1 = muted
0x50	Osc 1 linear FM	0-1	0	0 = disabled; 1 = enabled
0x51	Osc 1 waveform blend	0-1	1	0 = blended; 1 = switched
0x52	Osc 1 tuning control	0-1	0	0 = enabled; 1 = disabled
0x53	Osc 1 CV modulation	0-1	0	0 = enabled; 1 = disabled
0x54	Osc 1 MIDI	0-1	0	0 = enabled; 1 = disabled
0x55	Osc 1 portamento	0-18	0C	0 = 12 semitone glide; 18 = greater than 12 semitone glide; 0C = no glide
0x56	Osc 2 range	0-3	2	0 = 8°; 1 = 16°; 2 = 32°; 3 = free
0x57	Osc 2 mute	0-1	0	0 = unmuted; 1 = muted
0x58	Sub Osc 2 mute	0-1	0	0 = unmuted; 1 = muted
0x5C	Osc 2 linear FM	0-1	0	0 = disabled; 1 = enabled
0x5D	Osc 2 waveform blend	0-1	1	0 = blended; 1 = switched
0x5E	Osc 2 tuning control	0-1	0	0 = enabled; 1 = disabled
0x5F	Osc 2 CV modulation	0-1	0	0 = enabled; 1 = disabled
0x60	Osc 2 MIDI	0-1	0	0 = enabled; 1 = disabled

SSPKT	Function	Value Range	Default Value	Description
0x61	Osc 2 portamento	0-18	0C	0 = 12 semitone glide; 18 = greater than 12 semitone glide; 0C = no glide
0x63	Envelope fast/slow	0-1	0	0 = fast; 1 = slow
0x64	Envelope retrigger	0-1	0	0 = disabled; 1 = enabled
0x65	Envelope retrigger mode	0-1	0	0 = Neutron mode; 1 = PROTON mode
0x67	ASR Envelope 1 loop	0-1	0	0 = disabled; 1 = enabled
0x68	ASR Envelope 1 bounce	0-1	0	0 = disabled; 1 = enabled
0x69	ASR Envelope 1 sustain	0-1	0	0 = disabled; 1 = enabled
0x6A	ASR Envelope 1 inverse	0-1	0	0 = disabled; 1 = enabled
0x6B	ASR Envelope 1 reverse	0-1	0	0 = disabled; 1 = enabled
0x6C	ASR Envelope 1 retrigger	0-1	0	0 = disabled; 1 = enabled
0x6D	ASR Envelope 1 Decay	0-1	0	0 = disabled; 1 = enabled
0x6E	ASR Envelope 2 loop	0-1	0	0 = disabled; 1 = enabled
0x6F	ASR Envelope 2 bounce	0-1	0	0 = disabled; 1 = enabled
0x70	ASR Envelope 2 sustain	0-1	0	0 = disabled; 1 = enabled
0x71	ASR Envelope 2 inverse	0-1	0	0 = disabled; 1 = enabled
0x72	ASR Envelope 2 reverse	0-1	0	0 = disabled; 1 = enabled
0x73	ASR Envelope 2 retrigger	0-1	0	0 = disabled; 1 = enabled
0x74	ASR Envelope 2 Decay	0-1	0	0 = disabled; 1 = enabled

There is a further special SysEx command, which resets all parameters to factory default and restarts the PROTON: F0 00 20 32 00 01 25 00 7D F7.

22. Glossary

ADSR – Envelope generator with four stages: Attack, Decay, Sustain and Release.

A(S)R – Envelope generator with two or three stages: Attack, (Sustain) and Release.

Amplitude – The volume of a sound.

Arpeggiator – a part of the synthesizer which causes the notes of a chord to be played individually as an arpeggio according to settings.

Attack Time – The first stage of the envelope. Specified as the time taken for the envelope to reach maximum level when keys are played.

Attenuate – To reduce the level of a signal or modulation source.

Cent – Unit of measurement for tuning. One semitone is divided into 100 cents.

Cutoff Frequency – The point at which the filter starts to cut frequencies.

Decay Time – The second stage of the envelope. Specified as the time taken for the sound level to drop from maximum to the sustain level while the played keys are being held.

Digital Audio Workstation (DAW) – A computer based software package that allows the recording, editing and playing back of audio and/or MIDI data.

Envelope Generator – Envelope generators can be used to contour the sound. Most commonly used to affect the amplitude (volume) of the sound they can also be used on filters and to affect pitch.

Filter – Filters attenuate the frequencies above or below their cutoff point, thus affecting the timbre of the sound.

Frequency – The number of cycles per second (Hz) that an oscillator runs at.

Hertz (Hz) – Unit of measurement for frequencies. 1 Hz is one cycle per second.

Invert – change to the opposite, so a positive becomes negative for example.

Keyboard Tracking – Use of the notes played on the keyboard to adjust another parameter, for example.

KiloHertz (kHz) – Common abbreviation for one thousand Hz.

Low Frequency Oscillator (LFO) – An oscillator that runs at a low speed and is used to modulate other parts of the synthesiser.

Musical Instrument Digital Interface (MIDI) – a protocol that allows musical instruments, other peripherals and DAWs to pass data according to a defined standard.

MIDI Clock – a timing signal that is sent as part of the MIDI data.

MIDI Message – data transmitted from one MIDI device to another that constitutes an instruction.

Mix – The balance between two or more signals.

Modulation – The use of sources to control a parameter of a destination.

Monophonic – Only allowing one note to be played at a time.

Noise – A random sound comprising of all frequencies.

Note Priority – Determines which note is played when the maximum number is exceeded. Typically lowest, highest or last.

Octave – A measure of pitch.

Oscillator (Osc or VCO) – The basic sound source of the synthesizer.

Oscillator Sync – The process by which the cycle of one oscillator is synchronized to the cycle of another.

Output – Can refer both to the signal sent out from one part of the synthesizer to another, or to the physical sockets used to connect to external equipment.

Parameter – A setting whose value can be changed.

Paraphony – When two or more oscillators are playing different notes, but feeding into the same filter(s), VCAs (etc) this is known as paraphony.

Phase – The measurement in degrees of the time difference between two waveforms or a waveform and a fixed reference point.

Pitch Bend – Changing the pitch of a note up or down while it is being played.

Polychain – The linking of two or more monophonic synthesizers via MIDI to share note input polyphonically.

Portamento – The effect of 'gliding' the pitch between notes rather than changing instantly.

Pulse Wave – A wave similar to a square wave, but whose symmetry can be changed.

Pulse Width Modulation – The modulation of the symmetry of a pulse wave.

Rate – The speed at which an action takes place.

Release Time – The final stage of the envelope. Specified as the time taken for the envelope to reach zero once keys have been released.

Resonance – The emphasis of frequencies centered on the cutoff frequency.

Sample & Hold (S&H) – the sampling of a waveform, typically that of an LFO or noise source, to provide a series of voltages at a set rate.

Sawtooth – A waveform resembling the teeth of a saw, with an instantaneous leading edge followed by a gradual decline to zero point.

Self Oscillation – The point at which a filter starts to produce a sine wave output owing to excessive use of resonance.

Semitone – A measure of pitch. Each octave contains 12 semitones.

Sequencer – A part of the synthesizer which can be programmed with a series of notes and/or chords which are then repeated back at a selected tempo.

Signal Flow – The path of a signal from one part of the synthesizer to another.

Sine Wave – A smooth waveform that contains only the fundamental frequency with no harmonics.

Square Wave – a symmetrical waveform which changes instantaneously from zero state to full.

Sustain Level – The third stage of the envelope. This is the level that the envelope holds at after decay until keys are released.

Synchronization (Sync) – Co-ordinating the timing of devices where one is the master and the other(s) are synchronized to it.

Trigger – The activation of a function, for example pressing a key to start the Envelope cycle.

Tune – The adjustment of the pitch of an instrument to be the same as that of another instrument; or the adjustment of one oscillator to be in tune with the other.

Unison – Two or more voices played together on the same key(s).

Universal Serial Bus (USB) – An interface that can be used to connect your synthesizer to a DAW, or to receive firmware updates.

Velocity – The strength at which the keyboard is played, which can be used as a modulation source.

Voltage Controlled Amplifier (VCA) – An amplifier whose level can be adjusted by control voltages, for example from an envelope generator.

Wavefolder – A circuit that allows a wave to be folded back onto itself, producing different harmonic content.

FEDERAL COMMUNICATIONS COMMISSION COMPLIANCE INFORMATION

Behringer

PROTON

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PROTON

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

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Full text of EU DoC is available at <https://community.musictribe.com/>

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We Hear You