Bitcoin Purity: The Complete Beginner's Mining Guide

From your very first mining connection to accepted pool shares and verifying block rewards.

Version: v0.9.2 • October 16, 2026
Audience: Complete beginners; owners of ASIC miners; people renting hashpower without owning hardware; operators of multiple ASICs; and miners considering their own node.
Important notice: This is an operational review draft based on publicly available documentation. Verify **all public endpoints on the day of use** with the actual operator before purchasing hashpower, placing a rental, or switching substantial mining capacity. Third-party websites and menus may change. Every drawn configuration panel is labeled as an **illustration**, not a live screenshot. SmartPool's PPLNS, dynamic routing, cross-chain direct coinbase payouts, and registration-free connection are supplemented by pool-operator information. The public SmartPool **Pool Info** page and the official web frontend source define the exact Username and Password syntax. **Current coin-specific fee rates, PPLNS window parameters, and certain cross-chain payout rules remain subject to the pool's live information.** No unverified configuration values are invented in this guide.

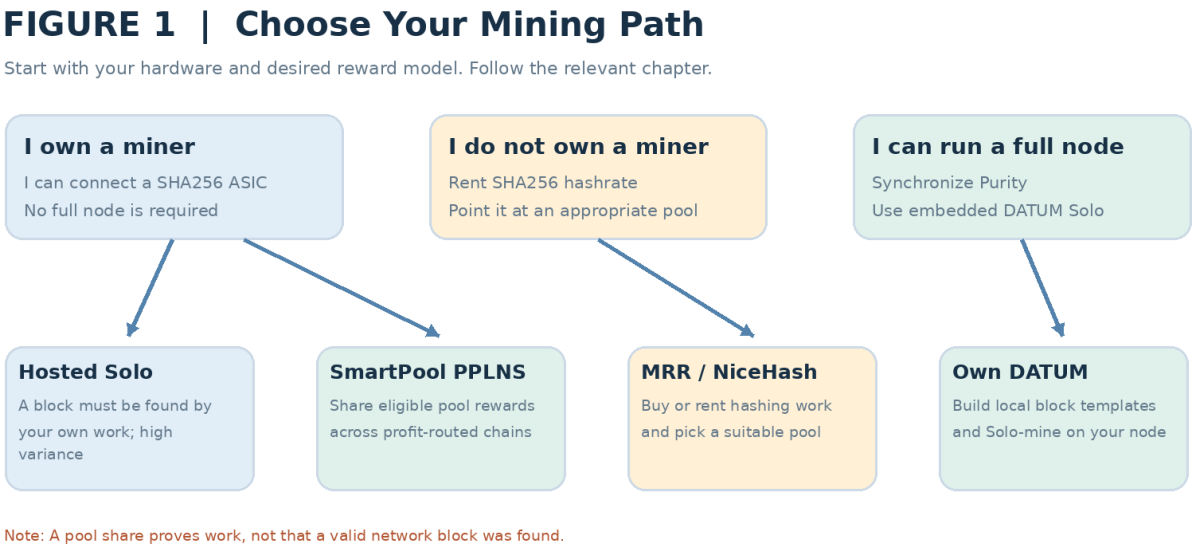


Figure 1. Choose your mining path

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1. Choose the Right Path for You

You do **not** need to read the whole manual before starting. Answer three questions: **Do you own a SHA256 miner? Are you prepared to install and maintain your own Bitcoin Purity node? Are you comfortable with the possibility of receiving no Solo rewards for a long time?**

Your situation	Start with chapters	Run your own node?	Main characteristic
Own a small Bitaxe, NerdOCTaxe, or similar device	3, 5, 12, 13	No	Simple, approachable Solo experiment
Own an Antminer, Whatsminer, Avalon, or other SHA256 ASIC	3, 5, 6, 12, 13	No	Quick setup; validate accepted shares first
Own an ASIC and want to share pool block rewards	3, 7, 8, 13	No	SmartPool uses PPLNS and routes work among four chains by estimated profitability
Own an ASIC and are willing to operate a node	3, 9, 13	Yes	Create your own block templates and Solo-mine
No ASIC; willing to pay for a small experiment	3, 7, 10, 13	No	Rent in MRR's **SHA256 AsicBoost** market, then use Solo or compatible SmartPool PPLNS
No ASIC; already use NiceHash	3, 11, 13	No	Verify target-pool compatibility before ordering
Manage a fleet of ASICs	5–9, 12–15	Depends	Worker naming, monitoring, failover, reward reconciliation

Best first route for an absolute beginner: If you already own a miner and want to share a pool's block rewards, begin with **SmartPool PPLNS** in Chapter 7. If you prefer to seek a whole block reward independently, begin with **Solo** in Chapter 5. In either case, first verify that Accepted Shares

increases. Without a miner, start with a very small, short SHA256 AsicBoost rental rather than a large upfront commitment.

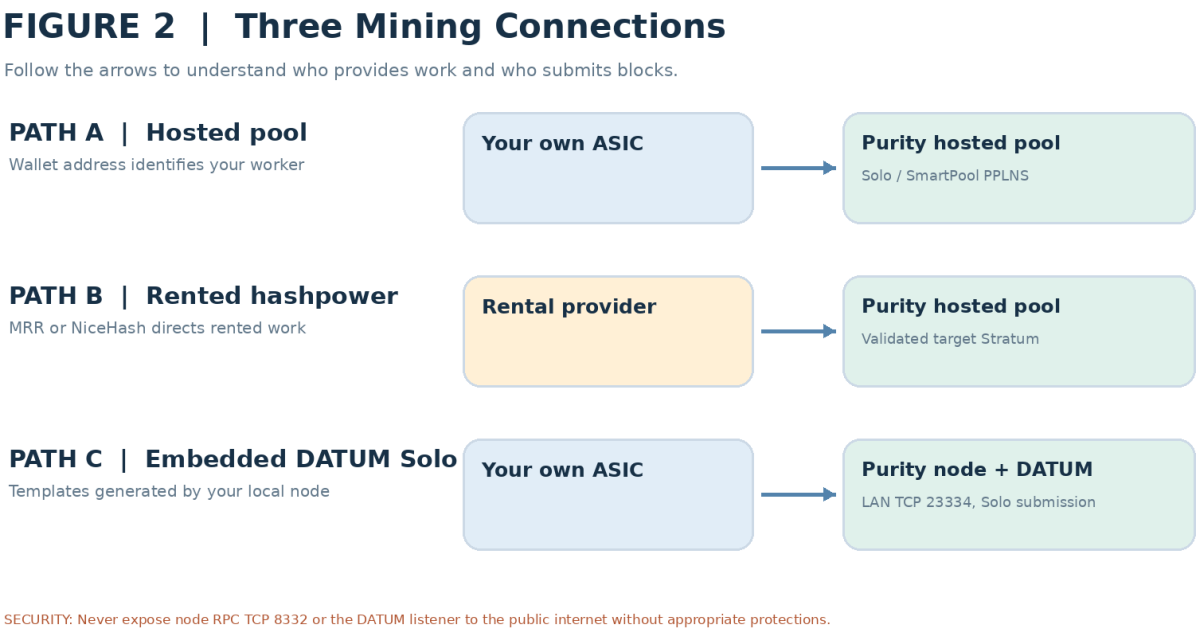


Figure 2. Three ways mining equipment connects

2. Seven Basic Concepts Before You Begin

Mining: A miner repeatedly calculates SHA256d hashes, trying to discover a new block meeting the network's difficulty target. A valid block may earn the block subsidy and eligible transaction fees. It is **not** a fixed-return product.

Hashrate: Number of hash attempts per second. Common units are GH/s, TH/s, and PH/s, each 1,000 times the previous unit. Higher hashrate means a greater chance of finding a block at the same network difficulty over the same period.

Mining pool: A service that distributes mining jobs and collects work results from participants. The Pool URL is a **host and port used by mining equipment**, not the web dashboard address.

Stratum: The communication protocol for jobs, worker identity, and shares between miners and pools. `stratum+tcp://...` in most examples means an ordinary, plaintext Stratum V1 TCP connection.

Worker: A label identifying one mining device, such as `rig01` or `garage`. Some registration-free pools use `payout-address.worker-name`; account-based pools may use `account.worker-name`. **Always follow the specific pool's rules.**

Share: A hash meeting the pool-assigned share difficulty, proving that some computation was performed. Rising `Accepted Shares` means the pool counted work. A share is **not a block**, and submitting one does **not** mean a block reward has been earned.

Solo versus PPLNS: In Solo mining, the individual bears the full randomness of finding blocks. PPLNS (Pay Per Last N Shares) distributes rewards when the pool finds a valid block, based on eligible work in a historical share window. **SmartPool uses PPLNS** and dynamically routes SHA256 work among multiple chains based on current estimated profitability. The pool must specify its precise window and

accounting rules. SmartPool distributes rewards **directly in the block's coinbase transaction**, not by first holding all mined funds in a pool wallet and later sending ordinary withdrawal transactions.

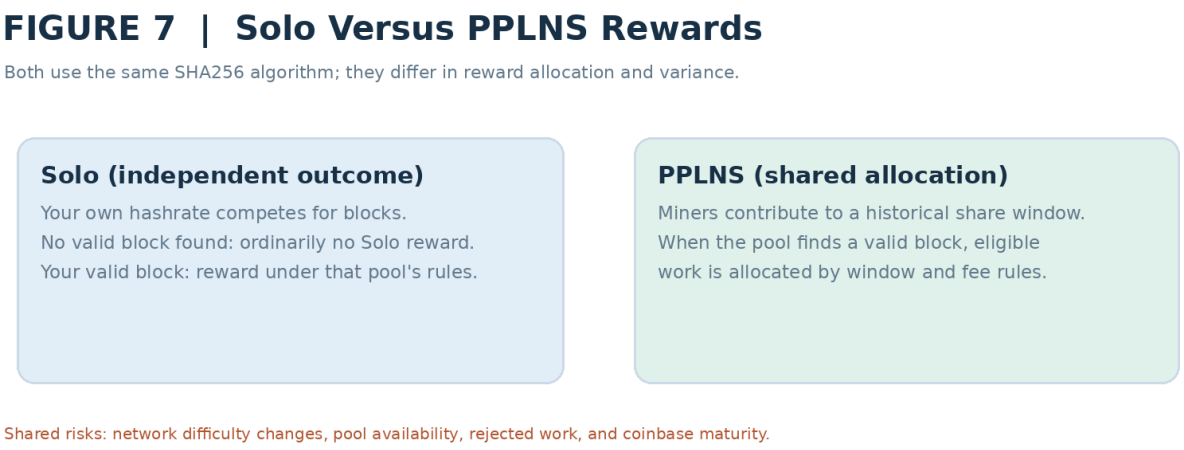


Figure 7. Solo compared with PPLNS

> **Important:** Bitcoin Purity retains the SHA256d mining algorithm. For **Solo mining to a Purity-specific pool**, select the Purity chain. **SmartPool** is an explicitly cross-chain hashrate-routing service supporting Purity, Bitcoin Core, BCH, and NMC. Its jobs can direct the same compatible miner to different chains. Verify addresses, balances, and block histories for each chain separately—do not treat them as a single ledger.

3. Create and Protect Your Bitcoin Purity Payout Address

Most address-based Solo pools identify miners by their **Purity receiving address**. Create an address before setting up the pool.

3.1 Three security preparations

1. Prepare a computer you control, a reliable connection, and secure backup media. Do not create wallets through an unknown person's remote desktop session.
2. Download the client only from Bitcoin Purity's official website (Full URL: https://bitcoinpurity.org/run.html) or the official GitHub Releases page linked there. At the time of writing, the site listed **v1.0.2** as the stable version; confirm the latest release when you download.
3. If you already run Bitcoin Core or Knots, **never let two different chains write to the same data directory**. Give Purity a separate data directory to avoid database and wallet conflicts.

3.2 Use the Bitcoin Purity graphical wallet (recommended for beginners)

1. On the website, open **Run a Node → Download binaries** and follow the official release link. Select the package for your operating system.
2. Check the filename, version, and publisher; verify the SHA256 checksum if supplied. Install and start Purity's bitcoin-qt.

3. At first launch, choose a **Purity-only data directory** and check your disk capacity. Full historical synchronization may require considerable space and time. Never overwrite an existing Bitcoin directory by mistake.
4. Follow the client's wallet-creation prompts. Set a strong encryption passphrase you can retain securely. Back up the wallet offline according to the software instructions. **Never give the wallet's seed, private keys, or backup to a pool or rental platform.**
5. Open the wallet's **Receive** page and generate an address. Save it securely and label it, for example, Purity-Mining-01.
6. Reopen the wallet and compare the copied address character-by-character with the one shown by the wallet. Make sure **you control the private key**.
7. Complete the backup **before** testing the pool. Do not use an ordinary BTC exchange deposit address as your default Purity mining address: address format and actual exchange crediting across fork histories are different questions.

Completion check: You have an address in your own Purity wallet and a secure backup. **Creating an address does not require an existing coin balance.**

3.3 Command-line method for users already running a Purity node

The example assumes a **dedicated Purity data directory** at /home/ubuntu/purity-data. Adapt paths to your installation; never paste these commands indiscriminately into an existing BTC node environment.

```
# Check synchronization status
bitcoin-cli -datadir=/home/ubuntu/purity-data getblockchaininfo

# Inspect loaded wallets (create one first if necessary)
bitcoin-cli -datadir=/home/ubuntu/purity-data listwallets

# Assume a wallet named 'mining' already exists and is loaded
bitcoin-cli -datadir=/home/ubuntu/purity-data -rpcwallet=mining getnewaddress "Purity mining"
```

Record the address returned by the last command and **confirm the wallet is backed up**. If initialblockdownload is true, the node is still syncing. Do not use it for embedded DATUM work that requires current block templates yet.

3.4 Why you must take extra care with the payout address

Purity retains Bitcoin-style addresses and compatible transaction rules and currently has no transaction-level replay protection. An address beginning with bc1, 1, or 3 does not, by appearance alone, identify which chain is being used. Sending a mining reward to a standard BTC exchange deposit address does not ensure that the exchange will recognize a payment on the Purity fork. Consult the official Safety guide (Full URL: https://bitcoinpurity.org/safety.html) before later spending or moving value across chains.

4. Find the Correct Mining Pool and Current Connection Details

Start with two sources: official For Miners (Full URL: https://bitcoinpurity.org/miners.html) and the BBS forum (Full URL: https://bbs.bitcoinpurity.org/) → Mining → Pool & Solo Mining. The forum includes a List of known mining pools thread. A forum listing is a discovery lead, **not** a guarantee of a pool's reliability.

4.1 Endpoints listed by the project as of October 16, 2026

Service	Mode / role	Published Stratum URL	Notes
Official experimental Solo, higher hashrate	Hosted Solo	stratum+tcp://pool.bitcoinpurity.org:3333	mindiff=25M; startdiff=100M
Official experimental Solo, lower hashrate	Hosted Solo	stratum+tcp://pool.bitcoinpurity.org:4444	mindiff=200K; startdiff=500K
SmartPool primary	PPLNS, automated routing	stratum+tcp://smartpool-a.bitcoinpurity.org:3333	Four-chain estimated-profit routing; direct coinbase distribution
SmartPool backup	Backup for the same service	stratum+tcp://smartpool-b.bitcoinpurity.org:3333	Configure alongside primary
SmartPool emergency	Emergency for the same service	stratum+tcp://smartpool-a.bitcoinpurity.org:3433	Emergency listener
Competitiously	Third-party Solo	stratum+tcp://stratum.competitiously.com:4444	Independent operator
MolePool Europe	Third-party Solo	stratum+tcp://eu.molepool.com:5021	Russian endpoint also exists
MolePool Russia	Third-party Solo	stratum+tcp://ru.molepool.com:5021	Choose by real connection quality
Embedded DATUM, self-hosted	Your own Solo	stratum+tcp://YOUR_NODE_LAN_IP:23334	Requires your own Purity node

Caution: These are published endpoints, not proof that this manual performed live TCP connectivity checks or that a service is online at the moment you read it. SmartPool's PPLNS model is confirmed

by operator information, but fees, windows, and account options should be verified against current announcements. Mole's website may use **BTC1** as its chain label; that does not establish an official Purity ticker or a newly issued asset.

4.2 Create a pool connection information card

Confirm every item **before** connecting equipment or buying hashpower:

Field	What to record	Typical mistake
Chain / Coin	Explicitly Bitcoin Purity	Accidentally selecting ordinary BTC
Reward Method	Solo / SmartPool PPLNS / Other	Mistaking cross-chain PPLNS for single-chain Solo
Stratum Host	Correct operator host name	Entering a web dashboard URL
Port / TLS	Port and TCP/TLS type	Wrong port or protocol
Username	Address / address.worker / account.worker	Invalid identity or payout attribution
Password	`x` or pool-specific credential	Using `x` where authentication is required
Fee & Payout	Per-coin fee; direct coinbase or other method	Equating a share with spendable rewards
Pool Stats	Separate worker-statistics page	Mistaking Connected for a paid reward
Support	Official site, forum thread, contact	No support channel in case of errors

Before paying a third party, ask: Is this a Purity-only pool or a multi-chain router like SmartPool? Does it accept mining rental platforms? Are there minimum and maximum share-difficulty restrictions? Are rewards paid in coinbase or handled by a custodian pool balance? What are each chain's fees, address mappings, maturity rules, and possible payout thresholds?

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5. Path A: Mine with Your Own ASIC at the Official Experimental Solo Pool

Suitable for: First-time miners, Bitaxe/NerdOCTaxe, Antminer/Whatsminer/Avalon.
Node required: No.
Rewards: Solo. Your individual work must find a valid Purity block to qualify for a reward under the published pool rules.

Step 1: Power the miner and connect to your network

1. Confirm that the device supports **SHA256d**. ASICs dedicated to another algorithm (such as Scrypt) cannot mine Purity.

2. Connect the manufacturer-specified power supply, cooling, and Ethernet/Wi-Fi. Industrial ASICs impose substantial power, wiring, noise, and ventilation requirements; follow equipment and electrical regulations.
3. On a computer or phone on the same LAN, locate the miner's IP address: first check its display, then your router's connected-device list, or use the manufacturer's discovery tool.
4. In your browser visit http://MINER_LAN_IP (for example, http://192.168.1.120—**an illustrative address only**) to open the management page. Do not attempt to access someone else's public IP.
5. Log in according to your device instructions and immediately change the default administration password.

Step 2: Open pool settings

Depending on the firmware, look for Miner Configuration, Settings → Mining, Pool, or Pool Settings. Find the fields labeled **Pool URL, Worker, Password**.



Figure 3. Three essential miner fields

Step 3: Choose a suitable share-difficulty port

Small or low-hashrate devices: Try pool.bitcoinpurity.org on port 4444 first.
Larger SHA256 ASICs: Try pool.bitcoinpurity.org on port 3333 first.

These ports differ in **share-difficulty policy**. It does **not** mean one port generates more coins per unit of hashrate. Finding a valid block still depends on your actual work and the network difficulty.

Step 4: Enter Pool, Worker, and Password

For ASIC firmware accepting a **full URL**:

Pool URL: stratum+tcp://pool.bitcoinpurity.org:3333
Worker: YOUR_OWN_PURITY_ADDRESS.worker01
Password: x

For Bitaxe/AxeOS-style interfaces requesting **Host and Port separately**:

Stratum Host: pool.bitcoinpurity.org
Stratum Port: 4444
User: YOUR_OWN_PURITY_ADDRESS.bitaxe01
Password: x

Replace YOUR_OWN_PURITY_ADDRESS with your **real personally controlled payout address** from Chapter 3. worker01 and bitaxe01 are device labels.

The address.worker and x formats above are common for registration-free Solo services, **not a verbatim authentication contract published for every listed pool**. If authorization fails, check the operator's exact username/password documentation. If permitted, try the full payout address alone. Do not repeatedly guess passwords or send private keys to a purported support person.

Step 5: Save and wait for the first share

1. Choose Save or Save & Apply; if prompted, Restart.
2. Wait for the miner to reconnect to Wi-Fi/Ethernet, reach the pool, authorize, and receive a mining Job.
3. In Dashboard or Miner Status, check Pool: Alive/Connected, Hashrate, Accepted, and Rejected.
4. Visit the official pool statistics page (Full URL: https://pool.bitcoinpurity.org/) to review worker, hashrate, share, and block data. Statistics may lag; do not declare a problem after a five-second glance.
5. If an address-based lookup is available, paste your own payout address. Sitewide rankings are not a personal wallet balance.

Success means: Connected, authorized, non-zero hashrate, then at least some **accepted shares**. You do not have to find a block during your first test.

Step 6: Check backup pool entries

If your firmware supports three pools, you can configure backup entries. Confirm that backups also mine **Purity**, not ordinary BTC, and verify their accounting and username rules. Never assume that different pools with different reward schemes can be switched as if they shared one seamless balance.

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6. Path B: Third-Party Solo Pools

Configuring a third-party Solo pool follows the same general process as Chapter 5: **replace the Stratum host, port, and username/password with the specific operator's values**. These pools are not operated by the official Purity project; review their own terms first.

6.1 MolePool: step-by-step connection

1. Open MolePool's Purity page (Full URL: https://btc1.molepool.com/). Confirm that it describes Bitcoin Purity, not BTC, BCH, or another SHA256 chain.

2. Read How to connect, SOLO terms, Pool Fee, and the payout policy. At the time researched, the Purity-specific page stated **SOLO** and a **2% Pool Fee**; terms can change.
3. Select one of the regional endpoints: stratum+tcp://eu.molepool.com:5021 or stratum+tcp://ru.molepool.com:5021. Use the one with better real-world connectivity.
4. Enter Username according to MolePool's current instructions (usually a payout address; confirm whether .worker is accepted), and Password (use x only if a placeholder is permitted).
5. Save pool settings and confirm that Accepted Shares increases.
6. Find MolePool's wallet-address statistics lookup. Paste **your own Purity address** and look for your Worker, Best Share, and Blocks Found.
7. If you find a block, review the displayed hash, credit attribution, fee, and payment status. If shown as paid, confirm the actual Purity transaction in the Purity block explorer (Full URL: https://mempool.bitcoinpurity.org/).

6.2 Competitiously: step-by-step connection

1. Follow the Competitiously pool link from the official Purity For Miners page (Full URL: https://bitcoinpurity.org/miners.html) and confirm it still offers Purity Solo mining.
2. Record the listed stratum+tcp://stratum.competitiously.com:4444 endpoint.
3. Check **the operator's own website** for Username, Password, fees, payouts, and block attribution. Do not reuse connection details from an unrelated coin page.
4. Set the endpoint in Pool #1 on your ASIC, enter the verified credentials, and save.
5. Check whether the ASIC receives Jobs and submits accepted shares, then find your Worker on the operator's statistics page.

Caution: If a third-party service cannot clearly explain its payment responsibility, fees, or accounting for valid work, a beginner should choose a more transparent operator rather than risking significant hashrate.

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7. Path C: SmartPool PPLNS Multipool (No Registration Required)

For whom: Beginners who want to share a pool's block rewards using an ordinary SHA256 ASIC or rented hashpower without managing switching among different chains themselves.

SmartPool is a **PPLNS (Pay Per Last N Shares) multipool**. It dynamically allocates mining hashrate according to **estimates of current profitability** among the following four SHA256-related chains. **Estimated-profit optimization is not a guaranteed profit or a guaranteed payment in a particular asset.**

SmartPool route label	Blockchain	Chain receiving the reward	Pool fee
BTC	Bitcoin Purity	Purity chain	Current coin-specific rate; consult live pool

SmartPool route label	Blockchain	Chain receiving the reward	Pool fee
			information
BCC	Bitcoin Core	Core chain	Current coin-specific rate; consult live pool information
BCH	Bitcoin Cash	BCH chain	Current coin-specific rate; consult live pool information
NMC	Namecoin	NMC chain	Current coin-specific rate; consult live pool information

Label clarification: BTC and BCC in this table identify Purity and Core chain histories **within this pool's terminology**. They are not a claim about any project's official ticker or exchange symbol.
How are rewards paid? When SmartPool finds a valid block on a chain, it calculates eligible miners' portions under its PPLNS rules and that chain's fees, then **distributes the eligible payouts directly in the block's coinbase transaction outputs**. This is different from paying everything into a custodial pool wallet and transferring payouts to miners later. A coinbase output cannot be spent immediately; it must satisfy the relevant chain's coinbase maturity and reorganization requirements.

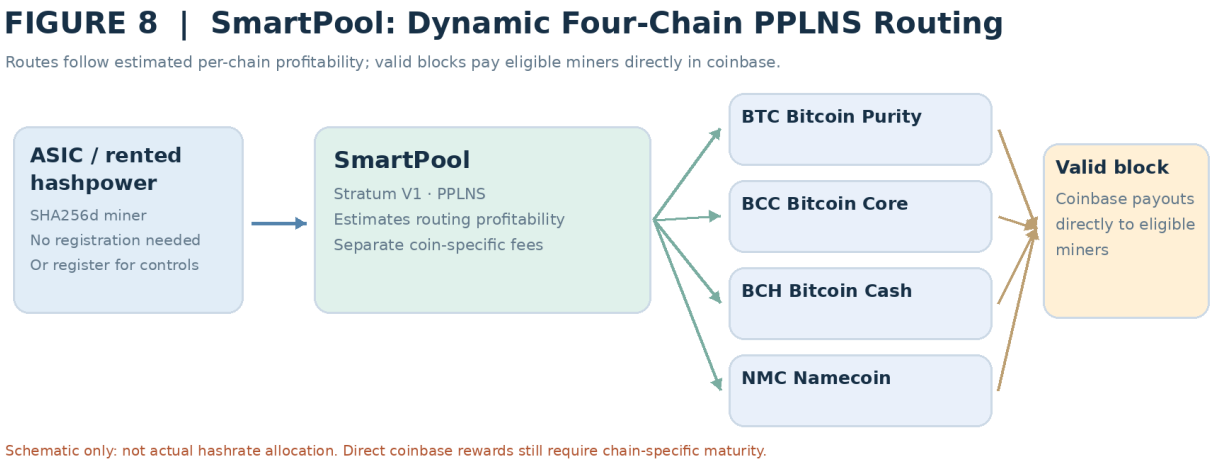


Figure 8. SmartPool routing and coinbase payouts

7.1 Step 1: Start mining without registering

Registering a SmartPool account is neither a prerequisite for mining nor a requirement for earning eligible PPLNS rewards. You can connect with your BTC/BCC payout address through ordinary Stratum without creating an account. This is the recommended initial route.

- **Unregistered (recommended for newcomers):** Set the miner's Username to <BTC/BCC payout address>.worker; the .worker suffix is an optional device label. Leave Password empty or set it to x. Save the configuration and begin mining. No account approval is needed.

- **Registered (entirely optional):** Use `account.worker` as the mining Username and gain more granular controls for Workers, payout addresses, automatic/manual routing, and private statistics. **The web-login password is not the miner's Stratum Password**; the latter may still be blank or `x`.

These formats are documented on SmartPool's public **Pool Info** page; see the Pool Info frontend source (Full URL: https://github.com/BitcoinPurity/sha256pool/blob/main/subprojects/web/src/App.tsx) and localized rule strings (Full URL: https://github.com/BitcoinPurity/sha256pool/blob/main/subprojects/web/src/i18n/zh-CN.ts).

Cross-chain payout addresses: Pool Info explicitly says **BTC (Purity) and BCC (Core) use exactly the same payout address**; they do not need separate configuration. Unregistered miners use this address as their identity. The pool can route work to another participating chain only if the address is also valid and usable there under the pool's rules. Check balances, address support, and coinbase maturity on each chain independently. **Do not assume one exchange deposit address safely accepts rewards on all four chains.**

7.2 Step 2: Copy the three Stratum connection addresses

Visit the official Purity For Miners page (Full URL: https://bitcoinpurity.org/miners.html) and find SmartPool, or navigate to Pool Info on the SmartPool website. The endpoints are:

Miner slot	Purpose	Pool URL
Pool #1	Primary gateway	stratum+tcp://smartpool-a.bitcoinpurity.org:3333
Pool #2	Backup gateway	stratum+tcp://smartpool-b.bitcoinpurity.org:3333
Pool #3	Emergency gateway	stratum+tcp://smartpool-a.bitcoinpurity.org:3433

These are **failover gateways for the same SmartPool service**, not separate coins or payout models. SmartPool handles internal profit comparisons and four-chain work routing; a miner does not need to edit Pool URLs whenever profitability changes.

7.3 Step 3: Configure one ASIC as an unregistered miner

1. Have a **personally controlled BTC/BCC payout address** ready. The BTC/Purity and BCC/Core routing contexts use the same address. Avoid an exchange deposit address that cannot handle rewards from the relevant chain.
2. Confirm that your miner uses SHA256/SHA256d. Connect it to the network and open Mining / Pool Configuration in its web UI.
3. Paste the full **primary** Pool URL into Pool #1. If the firmware has separate Host and Port fields, enter smartpool-a.bitcoinpurity.org and 3333.
4. Set Worker / Username to **YOUR_BTC_BCC_PAYOUT_ADDRESS.rig01**. The .rig01 part is an optional device label; you can use the address alone. This is the **published unregistered format on Pool Info**.

5. Leave Password **blank or set it to x**. If the firmware requires a value, use x. Do not enter your website account password.
6. Set Pool #2 and Pool #3 to their respective endpoints with the **same Username and Password**, then save/apply.
7. Look for Connected, Authorized, New Job, and increasing Accepted Shares. An unregistered miner **does not have to sign in** to begin mining. Aggregate data is public; private Worker and payout details require account login.

Example for an unregistered SmartPool miner (replace the placeholder address):

Pool #1: stratum+tcp://smartpool-a.bitcoinpurity.org:3333
Pool #2: stratum+tcp://smartpool-b.bitcoinpurity.org:3333
Pool #3: stratum+tcp://smartpool-a.bitcoinpurity.org:3433
Username: YOUR_BTC_BCC_PAYOUT_ADDRESS.rig01
Password: x
Algorithm: SHA256 / SHA256d
You **must replace** YOUR_BTC_BCC_PAYOUT_ADDRESS with a real address; do not enter the placeholder literally. .rig01 can be omitted or renamed. **Registration is unnecessary.**

Optional Password-based share-difficulty controls (Pool Info):

Syntax	Meaning
x or blank	Default variable difficulty (VarDiff)
d=<value>	Fixed share difficulty; disables VarDiff
sd=<value>	Starting share difficulty; keeps VarDiff enabled
ld=<value>	Lower VarDiff bound, not below pool-wide minimum
hd=<value>	Upper VarDiff bound, not above pool-wide maximum

Multiple controls can be separated by ; or ,, for example x;sd=16;ld=1;hd=64. **Beginners do not need these controls**; simply use x. Users renting substantial MRR hashrate should adjust only within the difficulty ranges supported by the pool and the hired equipment.

7.4 Step 4: Optional registered-account personalization

You may skip this section entirely. If all you want is to mine and receive eligible coinbase rewards, continue with the unregistered setup in § 7.3.

1. Only if you want personalized management, click Register from the official pool interface, create an account, and complete the required website verification. Do not log in through unsolicited direct-message links.
2. After signing in, find the account name. Change the miner's Username to **account.worker**, e.g. myaccount.rig01. A valid Worker name can be created on connection if it does not already exist.

3. Password on the miner **may still be left blank or set to x. Do not put the website login password in this field.**
4. In Settings, manage verified payout addresses and automatic/manual routing as needed (consult the current web interface). Miner Stats shows your personal Workers and routing data.
5. Leave the three gateway URLs unchanged. Save, reconnect, confirm that accepted shares increase, and check the Worker under your registered account.

7.5 Step 5: Understand four-chain PPLNS and different fees

SmartPool **does not mean every miner earns four coins every minute**. Keep four things separate: **(1)** how much hashrate the pool routes to each chain; **(2)** whether that chain actually produces an accepted block; **(3)** your eligible historical contribution within the relevant PPLNS window; and **(4)** the coin-specific fee and final coinbase allocation.

Suppose that for one BTC (Purity) block, a miner accounts for **2% of eligible work** in the applicable difficulty-weighted PPLNS window. The miner might receive a corresponding share in the block's coinbase **only after** the Purity-specific pool fee and applicable output rules. **Two percent is a mathematical illustration, not an actual current payout ratio.** If SmartPool later routes work to BCH, BCC, or NMC, the asset and fee basis may change.
Operational details still to be confirmed: Numerical fee rates for each coin; PPLNS window length and exact accounting; handling of tiny coinbase outputs and rounding; eligibility of addresses on other chains; and the live registration deployment. **Username and Password syntax is already confirmed by Pool Info and is not an open question.**

7.6 Step 6: Failover and verification

1. Check Connected / Alive on the primary gateway, non-zero hashrate, and a rising Accepted count.
2. If the primary gateway disconnects, firmware normally tries Pool #1 → Pool #2 → Pool #3 in priority order. Watch Active Pool; seeing "Pool #2 Alive" alone does not show which endpoint is actually active.
3. Unregistered miners can view public aggregate statistics and shares on their device. If you voluntarily registered, you can check Workers, real routing, and payout details in your account. **An empty wallet immediately after starting does not imply mining has failed**—the pool must first find eligible blocks.
4. When a valid block appears, identify **which chain** it belongs to: BTC/Purity, BCC/Core, BCH, or NMC. Check the **corresponding chain's block explorer** for the coinbase payout address and value.
5. Verify the coinbase maturity state. Do not attempt to spend an immature output.

PPLNS shares across gateways: All three gateways belong to the same SmartPool service, but treatment of sessions, contribution history, and PPLNS-window continuity must follow the operator's policy and observed accounting. Gateway failover is not an on-chain transfer and does not cause rewards to arrive immediately.

8. Path D: General Instructions for Other PPLNS Pools

Intended audience: Miners who want to reduce Solo payout variance and can accept pool accounting and operator risk.

Confirmed PPLNS option: SmartPool in Chapter 7 is a PPLNS multipool. To find a **Purity-only PPLNS service** or another operator, independently confirm its chain, fees, and reward terms. No complete connection profile for an additional PPLNS operator was confirmed for this edition. This chapter is a **general third-party template** and must not replace SmartPool's documented Stratum settings.

Step 1: Find an actual PPLNS operator with documented rules

1. Visit the Purity BBS (Full URL: https://bbs.bitcoinpurity.org/). If you need to post, create a forum account. Navigate to Mining → Pool & Solo Mining.
2. Locate List of known mining pools and recent PPLNS operator posts, then open the **pool's own website**.
3. Confirm it explicitly offers PPLNS or another shared-reward scheme and determine whether it is a **Purity-only** pool or a **cross-chain multipool** such as SmartPool.
4. Require documented Stratum host/port, Username format, Password rules, fees, share-window N (or equivalent), reward confirmations, payment threshold, payout mechanism, and searchable worker statistics.
5. If these are not clear, do not rush into a large-rig rental or significant hashrate commitment.

Step 2: Register only if the particular pool requires it

1. On the operator's genuine registration site, click Sign Up / Register.
2. Use a unique strong password and enable 2FA if provided.
3. Under Wallet / Payout Address, enter your personal Purity address created in Chapter 3.
4. Under Workers / Create Worker (if present), name a device, e.g. rig01.
5. Copy the **full Worker username** prescribed by the operator. If the pool uses account.rig01, do not substitute bc1...rig01.

Step 3: Enter the verified pool settings

This is a generic field template for other PPLNS pools, not a SmartPool connection and not a claim that a specific third-party endpoint exists:

Pool URL: <Copy full Stratum URL from verified pool documentation>
Username: <Purity address or account.worker as the pool requires>
Password: <Pool-specific credential; use x only if allowed>
Algorithm: SHA256 / SHA256d
Fill the ASIC's Pool fields, click Save / Apply, and wait for Connected → Authorized → Accepted.
Bookmark the pool's live statistics URL.

Step 4: Why PPLNS payouts do not arrive immediately

Imagine an eligible window with 10,000 difficulty-weighted share units, of which one miner contributed 1,000. That miner's **illustrative window contribution** is 10%. This does not guarantee 10% of a block reward **every day**: the pool must first find a valid block, and fees, share weights, window definitions, rejected work, maturity, and payment rules still apply.

Joining late or stopping early can affect rewards. In a rolling "last N shares" window, your new shares gradually enter the window; after you stop, your earlier shares may gradually be displaced. Do not calculate your wallet balance simply from "number of shares submitted today."

Step 5: Check three distinct numbers

1. **Miner Hashrate:** The device's instant or averaged work rate.
2. **Pool Credited Work:** Eligible contribution counted by the pool under its rules—critical for reward allocation.
3. **Pending / Immature / Paid:** Accrued but not yet mature, mature but not paid, and paid rewards, as defined by the operator.

Payout implementations vary. **SmartPool pays directly in coinbase**, whereas other PPLNS pools may maintain a custodial ledger and batch withdrawal transactions later. Both can be affected by coinbase maturity and chain reorganizations. A Pending label is not necessarily an ordinary transfer waiting to be sent.

---

9. Path E: Run Your Own Purity Node with Embedded DATUM Solo Mining

Suitable for: Miners willing to run, sync, and maintain a computer. The benefit is that you construct block templates yourself and control the local mining endpoint. The cost is ongoing node, storage, network, and security maintenance.

This chapter concerns the DATUM Gateway embedded in Bitcoin Purity. It is not equivalent to installing an external OCEAN DATUM Gateway and connecting that to a BTC pool. Purity's current embedded implementation is primarily **Solo + Stratum V1**, and should not be represented as automatically offering DATUM Prime pooled payouts.

9.1 Hardware and network topology

```
SHA256 ASIC miner
    | LAN: Stratum V1, TCP 23334
    v
Purity node + embedded DATUM
    | Local RPC: getblocktemplate / submitblock
    v
Bitcoin Purity P2P network (default TCP 8333)
```

You need a Linux, Windows, or macOS computer able to run a full Purity node, adequate storage, a reliable connection, and one or more SHA256 ASICs with configurable Stratum endpoints. Keeping node and miners on a trusted LAN is recommended. **Do not configure router port forwarding for ordinary LAN mining.**

9.2 Configure via the graphical interface (recommended)

1. Download a build with embedded DATUM support from the official Run a Node page (Full URL: https://bitcoinpurity.org/run.html).
2. Start bitcoin-qt, choose a dedicated directory, and wait for Purity headers and blocks to finish syncing. Do not use an unsynchronized node that cannot produce a current GBT as a production mining source.
3. Create or open your personal Purity wallet, copy a receiving address from Receive, and back up the wallet.
4. Under Settings, find the **DATUM** tab (requires a binary built with BUILD_DATUM=ON).
5. Enable DATUM, enter **your** Payout Address, select the node's LAN IP (e.g. 192.168.1.50) as the listening address, and use TCP port 23334.
6. Enable Stratum Authentication, and choose a dedicated username and strong password. Do not reuse the wallet encryption passphrase or RPC password.
7. Choose Share difficulty appropriate for the ASIC's hashrate. Smaller machines may need a lower starting value; large ASICs need a higher value to avoid excessive share traffic. Adjust based on observed shares per minute.
8. Save the settings. Some options, including listener and authentication configuration, **still require a node restart**; do not assume every DATUM setting is hot-reloadable.
9. Open the main Qt **Mining** page to check status, connected clients, and shares. This page is present only in DATUM-capable builds; older clients may have a different interface.

FIGURE 5 | Embedded Purity DATUM Configuration

Illustrative fields based on documented node options, not a screenshot of the Qt interface.

`datum=1`	Enable the embedded DATUM gateway
`datumaddress=YOUR_PURITY_ADDRESS`	Payout address for mined blocks
`datumlisten=192.168.1.50`	Your own node LAN IP (illustrative)
`datumport=23334`	Stratum listener TCP port
`datumauth=1; datumuser=miner`	Require miner authentication
`datumpassword=STRONG_PASSWORD`	A dedicated Stratum secret
`datumdiff=65536`	Pool share difficulty (example)

Use different secrets for RPC, Stratum, and wallet encryption. Never publish your configuration file.

Figure 5. Embedded DATUM settings

9.3 Complete Linux command-line example

Assume the **node is installed and fully synchronized**. This is a template for LAN Solo mining. Replace every placeholder.

Step 1: Create a private configuration directory

```
mkdir -p "$HOME/purity-data"
chmod 700 "$HOME/purity-data"
```

Step 2: Edit your own bitcoin.conf

```
nano "$HOME/purity-data/bitcoin.conf"
```

Example configuration:

```
server=1

# Node RPC credentials for local DATUM use only
rpcuser=localdatum
rpcpassword=REPLACE_WITH_LONG_RANDOM_RPC_PASSWORD

# Embedded Bitcoin Purity DATUM Solo
datum=1
datumaddress=REPLACE_WITH_YOUR_PURITY_RECEIVE_ADDRESS
datumlisten=192.168.1.50
datumport=23334
datumupnp=0

# Require authentication on Stratum
datumauth=1
datumuser=miner
datumpassword=REPLACE_WITH_DISTINCT_STRATUM_PASSWORD

# Illustrative initial share difficulty for larger ASICs
datumdiff=65536
```

The 192.168.1.50 value is **only an example**; use your node's real LAN IP. datumaddress must be your own Purity address. Keep RPC credentials and Stratum credentials **different**; never post them publicly or attach them to logs.

Step 3: Secure the file

```
chmod 600 "$HOME/purity-data/bitcoin.conf"
```

Step 4: Start the Purity daemon

```
# If the binary is available on PATH:
bitcoind -datadir="$HOME/purity-data" -daemon

# If using a source build, use its actual build/bin/bitcoind path.
```

If a systemd service is already managing the node, do not start a second daemon. Update the service's configuration and restart it through systemd instead. The -datadir argument must match your dedicated directory.

Step 5: Verify synchronization

```
bitcoin-cli -datadir="$HOME/purity-data" getblockchaininfo
```

Confirm `initialblockdownload: false` and a height close to the Purity explorer (Full URL: https://mempool.bitcoinpurity.org/). A `chain` field of `main` **alone does not prove** you are connected to Purity rather than ordinary BTC; verify the build, version, and known Purity activation block hash as well.

Step 6: Inspect DATUM status

```
bitcoin-cli -datadir="$HOME/purity-data" getdatuminfo
```

Watch `running: true`, `status: Running`, `listen`, `port`, `authorized_clients`, `accepted_shares`, `rejected_shares`, `current_job`, and `block_submission`. If the RPC is missing, verify that your binary was built with `BUILD_DATUM`; if not running, inspect sync, listen address, port availability, RPC access, and logs.

Step 7: Point the ASIC to this node

```
Pool URL:  stratum+tcp://192.168.1.50:23334
Worker:    miner.rig01
Password:  YOUR_DISTINCT_STRATUM_PASSWORD
```

Here `miner.rig01` is **not a payout address**. When `datumauth=1` and `datumuser=miner`, the gateway accepts `miner` or `miner.<nonempty worker name>`. **`datumaddress` in the node config determines the reward address**; changing the ASIC Worker field to a different address does not redirect rewards.

Step 8: Check runtime status again

```
bitcoin-cli -datadir="$HOME/purity-data" getdatuminfo
```

Check `clients`, `authorized_clients`, `accepted_shares`, and `block_submission.candidates` / `accepted` / `rejected`. More ordinary shares means that mining is operational. A new reward is possible only when a candidate satisfies the **network target** and is accepted as a valid block.

Step 9: Optionally hot-update share difficulty

```
bitcoin-cli -datadir="$HOME/purity-data" setdatumdiff 65536
```

This changes **runtime share difficulty**, **not Purity's network mining difficulty**. After restart, the value from `datumdiff` in `bitcoin.conf` takes effect again; save a stable, tested value to the file.

9.4 Choosing share difficulty

Approximate average share interval: `share difficulty × 2^32 ÷ miner hashrate (H/s)`. For a **100 TH/s** ASIC with `datumdiff=65536`, this is about **2.8 seconds per share** on average. At **1 TH/s**, the same difficulty yields approximately **281 seconds** per share. These are statistical averages, not regular timers. This explains why a tiny miner on a high-difficulty endpoint may appear not to submit any shares for quite a while.

9.5 DATUM network security: essential reading

- On a LAN, prefer `datumlisten=YOUR_REAL_LAN_IP`, keep `datumupnp=0`, and enable `datumauth=1`.
- **Never forward the node's RPC port 8332 directly to the public internet.** Do not blindly use `datumlisten=0.0.0.0` and `datumupnp=1` to troubleshoot a connection problem.
- Stratum V1 is plaintext. Even with username and password, it should not be sent directly across an untrusted internet path. For remote mining, evaluate VPNs, encrypted tunnels, and narrowly scoped firewall rules.
- Making your own DATUM listener public to MRR/NiceHash is **a separate, higher-risk deployment** requiring a reachable and protected endpoint, authentication, protocol compatibility, and more complex failure handling. It is **not** recommended as a beginner's first setup.

---

10. Path F: Rent Hashpower on MiningRigRentals (MRR)

Suitable for: People without any mining hardware who want to experience real mining.
Core idea: On MRR, you pay to rent SHA256 hashpower provided by another person's hardware. The equipment remains theirs, but you can direct the rented work to a chosen Purity Stratum pool. Renting hashrate **does not guarantee a block or a profit**.

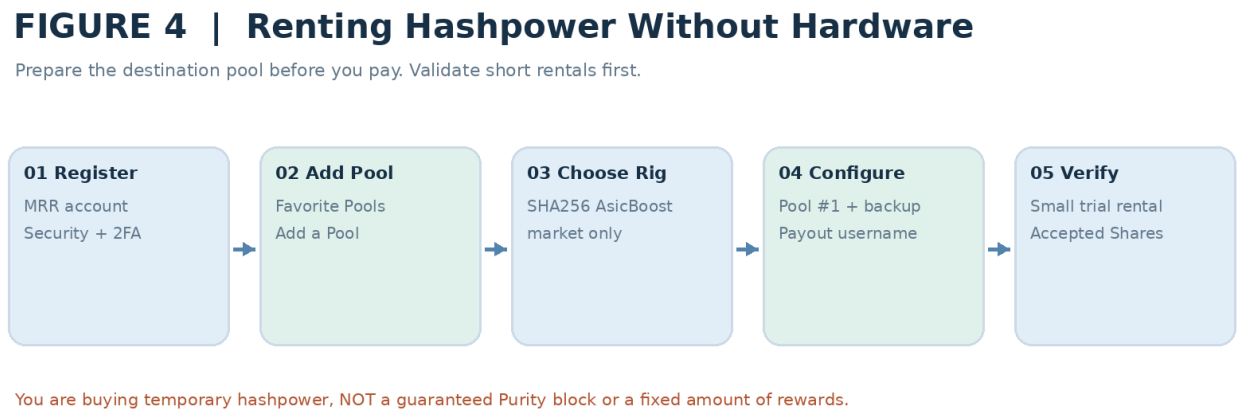


Figure 4. End-to-end MRR rental process

Step 1: Create your MRR account

1. Open the official MiningRigRentals website (Full URL: https://www.miningrigrentals.com/).
2. Click Sign Up / Register, complete its current registration flow, and secure your login details.
3. Complete any applicable account verification and enable two-factor authentication (2FA).
4. Read the For Renters help center (Full URL: https://www.miningrigrentals.com/helpcenter/For-Renters), especially fees, payment methods, rental duration, and refund rules.
5. **Do not deposit a large balance yet.** First confirm that the Purity pool you plan to use accepts MRR connections.

Step 2: Create a Favorite Pool first

1. Sign in and open the menu under your username near the upper-right corner.
2. Choose Favorite Pools, then Add a Pool.
3. For the algorithm/market, select **SHA256 AsicBoost** (possibly spelled SHA256 Asicboost)—**not plain SHA256**. You can open the MRR SHA256 AsicBoost market (Full URL: https://www.miningrigrentals.com/rigs/sha256ab) first to verify the category.
4. Set the Pool Host to a verified Purity endpoint, e.g. stratum+tcp://pool.bitcoinpurity.org:3333. If the site separates host and port, enter them individually and **do not include the port twice**.
5. Use the pool's prescribed Username format. For **unregistered SmartPool**, enter YOUR_BTC_BCC_ADDRESS.mrr01 (the .mrr01 label is optional), with an empty Password or x. If your rental requires special share difficulty, use the controls explained in § 7.3. For another pool, check that operator's rules separately.
6. Name the entry clearly: for Solo, perhaps Purity Solo High; for SmartPool, SmartPool PPLNS. Click Save.
7. Add another **verified, same-algorithm endpoint** as a backup that will still credit work to you. If the backup is a different operator, confirm its different reward and username rules.
8. Optionally group Favorite Pools into a Pool Profile for the same algorithm. This is convenient but **not required** to purchase hashpower.

MRR's official instructions describe Favorite Pools supporting stratum+tcp:// connections. A Favorite Pool is one connection configuration; a Pool Profile is a group of configurations for a particular algorithm.

Step 3: Find rental equipment in the SHA256 AsicBoost market

1. Navigate to the MRR SHA256 AsicBoost market (Full URL: https://www.miningrigrentals.com/rigs/sha256ab). Confirm the heading resembles SHA256 Asicboost Mining Rigs. Do **not** accidentally select the ordinary SHA256, Scrypt, X11, or Kaspa market.
2. Compare each Rig's historical average hashrate, uptime, rental history, RPI/reputation indicators, available rental period, and minimum duration.
3. Check **units** carefully. GH/s, TH/s, and PH/s are very different; pricing may be quoted by both time and rate. Do not compare only the displayed number.
4. Prefer an active Rig with steady historic performance and acceptable network reachability to your pool. Look for share-difficulty advice.
5. Make a **short, low-budget trial rental** first. High rented hashrate can use your budget quickly, while Purity's network difficulty adjusts as blocks are mined.

Step 4: Configure destination pools before paying

1. Select a Rig and choose the number of rental hours using the site's checkout flow.
2. In the rental confirmation, set Pool #1 to the Favorite Pool you saved as Purity Solo High or a verified SmartPool PPLNS entry.

3. Choose a verified backup for Pool #2. With SmartPool, prefer its backup/emergency gateways rather than unintentionally failing over to a pool with different reward accounting. Configure any other slots as required.
4. Check that Username correctly identifies **your payout identity at the destination pool**. Purity Solo services usually use a Purity address. SmartPool is a four-chain multipool and requires attention to cross-chain address validity or payout configuration under an optional account. Verify the **MRR market is SHA256 AsicBoost**, the pool is for SHA256d work, and ports/TLS modes match.
5. Review the **total price**, pool and marketplace fees, duration, and refund rules. Ensure the account has enough funds.
6. Only then complete payment according to the MRR UI; its help articles describe Rent → Instant Pay in the relevant checkout process.

Step 5: Monitor the rental after purchase

1. Open My Rentals or Go To Rental for the individual rental.
2. Allow time for the rented rig to switch pools. MRR's guidance says some rentals may take **up to approximately 10 minutes** before work reaches the new pool.
3. Inspect rental-side hashrate, connection state, downtime, and accepted/rejected work information.
4. Simultaneously open **the destination pool's** status page. Verify that accepted shares and hashrate are actually being credited under your address or account. For SmartPool, reconcile **each reward chain**, not just the Purity explorer.
5. If MRR reports an active rental while the destination pool credits **zero valid shares**, investigate your Pool Profile, payout identity, algorithm, difficulty, and pool health rather than waiting without end.
6. For outages, first contact the rig owner and save evidence; escalate to MRR support according to its documented process and deadlines.

Costs and risk: MRR's renter documentation listed a 3% renter service fee at the time researched; fees can change, so check the final checkout. No fixed number of mined coins is guaranteed. MRR warns that pool-side failures can prevent accounting and are not necessarily grounds for refunds.

Example fields (illustrative, not a ready-to-pay order):

MRR Market: SHA256 AsicBoost
Pool Host: stratum+tcp://pool.bitcoinpurity.org:3333
Worker: YOUR_OWN_PURITY_ADDRESS.mrr01
Password: x (only if the target pool permits it)
Fallback: Another verified Purity endpoint for the same algorithm

Do not enter your MRR payment address or MRR account ID as a Purity payout destination. MRR collects the rental payment; **the pool's Worker/Payout settings determine who is credited for mining**. If you instead connect to SmartPool, use the confirmed **BTC/BCC payout address.worker / x** format in Chapter 7. **Registration is not required.**

---

11. Path G: Buy SHA256 Hashpower on NiceHash

Unlike MRR rentals of individual Rigs, the NiceHash hashpower marketplace generally offers purchased work from multiple providers based on an algorithm, price, and budget. Buyers must still specify a destination Stratum pool.

Step 1: Sign up and prepare funds

1. Log in or register at the official NiceHash website (Full URL: https://www.nicehash.com/).
2. Complete any required KYC/identity checks and account-security settings under the platform's current policies.
3. Before ordering, check funding methods, available balance, budget limits, and **current fees**. Do not assume the same payment options are available in every jurisdiction or account.
4. Be clear about the target: **Bitcoin Purity** using the **SHA256** algorithm, with a pool that explicitly supports Purity.

Step 2: Add a pool and use the pool verifier first

1. Open the relevant NiceHash Hashpower Marketplace interface and find My Pools / Add New Pool (menu names may vary by site release).
2. Enter a name such as Purity Solo Test or SmartPool PPLNS Test, Algorithm SHA256, Stratum Host, Port, Worker, and Password. You may try SmartPool's primary gateway using Chapter 7's account and payout syntax.
3. NiceHash may enforce a **minimum pool difficulty** and other compatibility requirements. The official Purity experimental Solo ports 3333 and 4444 use different share-difficulty settings; they might not both satisfy a particular marketplace validator.
4. Click Test Pool / Verify Pool and wait for the result. **Do not place a hashpower order when verification fails.** First switch to a compatible Purity port or ask the pool operator about NiceHash support.
5. Save the pool **only after** it passes the relevant checks.

Step 3: Place a very small test order

1. In the marketplace, choose SHA256 and examine available speed and current pricing.
2. Choose the verified Purity Solo Test or SmartPool PPLNS Test pool and set a **clear maximum price, total budget, and sensible speed limit**.
3. Confirm total fees and any non-refundable order fee.
4. Place a small trial and monitor whether work really arrives at the destination pool; watch its rejected share rate and credited accepted shares.
5. If the pool consistently rejects work, stops supplying jobs, or has an algorithm mismatch, stop or adjust the order within the platform's rules rather than continuing to pay for unusable work.

Conditional route: NiceHash's buyer documentation describes the generic workflow, but this edition did **not** test a specific Purity endpoint against NiceHash's live pool validator. Compatibility **must be demonstrated before purchase**. Do not assume every Purity pool is order-ready.

12. Hardware-Specific Steps: Menu Names Vary by Model

12.1 Antminer (for example, S19 / S21 families)

1. Connect power, LAN, ducting, and ventilation following the manufacturer requirements.
2. Find the miner's IP with your router's DHCP list or the manufacturer's IP Reporter.
3. On the same LAN, visit the miner's IP in a browser. Log in using the documented method and **immediately replace the default password**.
4. Under Miner Configuration or Settings, find the pool settings.
5. Enter Purity's full stratum+tcp://...:PORT in Pool #1's Mining Address / URL. Use **separately verified** Purity backup gateways for Pool #2 and #3.
6. Fill Name / Worker with the target pool's required address or account and device label. Follow the operator's Password rules.
7. Click Save & Apply and wait for work to reinitialize.
8. In Miner Status, check the active pool, actual hashrate, and Accepted/Rejected counts. Then check **your own** records on the pool website.

Some Antminer manuals support three descending-priority pools; after primary failure, lower-priority ones may be tried. Menus differ by firmware/model. Consult original S19j Pro+ and official support documentation instead of copying settings from an ASIC for another algorithm.

12.2 Whatsminer / Avalon and other industrial ASICs

The logic is the same: power + network → discover IP → open admin UI → Pool Settings → Stratum URL/Username/Password → Save → inspect hashrate and accepted shares. Exact interface names and login procedures depend on the vendor, firmware, and model. Confirm SHA256d support and configurable custom pools. Back up current settings before firmware upgrades or bulk configuration changes.

12.3 Bitaxe / AxeOS

1. Connect the manufacturer-approved power supply. At first setup, the device commonly starts a temporary Wi-Fi AP, often named something like Bitaxe_XXXX. If no setup page opens automatically, consult **your firmware's instructions**; http://192.168.4.1 is one common initial setup address.
2. Enter your home **2.4 GHz Wi-Fi** network name and password, save, and reboot.
3. Once connected to your home network, find the AxeOS dashboard via the screen, router, or http://bitaxe.local. If .local fails, use the displayed LAN IP directly.
4. Open Pool. Enter pool.bitcoinpurity.org in Stratum Host and 4444 in Stratum Port.
5. Enter your Purity address in User (append .bitaxe01 only if confirmed supported by the pool). Set Password according to the pool rules.

6. Keep the protocol in Stratum V1/TCP mode compatible with this endpoint; do not select an unsupported alternative protocol.
7. Click Save and Restart. Look for hashrate in the device dashboard and verify accepted shares with the pool.

If the device comes preconfigured with a different BTC pool or sample payout address, **replace it with your own Purity payout address**. See the illustrated Bitaxe/AxeOS setup guide (Full URL: https://bitaxe.de/en/bitaxe-setup-guide) for actual UI screenshots; Chapter 5 of this manual provides the Purity-specific values.

12.4 NerdOCTaxe / NerdOS and other open-source small miners

The typical path is Wi-Fi connection → Web UI → Pool/Mining Settings → Purity Host/Port/Username/Password → Save/Restart → confirm accepted shares. Firmware interfaces differ from AxeOS; do not assume a NerdOS hotspot has the name Bitaxe_XXXX. If the actual access point or default UI is uncertain, use the specific manufacturer documentation rather than copying Bitaxe's setup instructions.

12.5 Multi-miner operations

Use distinct Worker tags such as farm01-a01 and farm01-a02. With address-based pools, several devices may share **one payout address you control**, but each should have a unique Worker label. Change one miner first, observe it for **15–30 minutes**, and then roll out in batches. Keep a record of IP, firmware, expected hashrate, active pool, reject rate, and administrators. Never leave identical vendor-default passwords across a fleet.

---

13. Verify Mining and Check Rewards



Figure 6. Five levels of mining verification

13.1 Five-level verification

Level 1—Connection: The miner shows an active pool and stable TCP connection rather than looping reconnects.

Level 2—Authorization: The logs do not repeatedly report `unauthorized`, `invalid user`, or `authentication failed`.

Level 3—Work received: Status shows `new job` or `mining.notify`, and hashrate rises toward the device's normal level.

Level 4—Work accepted: `Accepted Shares` or `Accepted Work` keeps increasing. Occasional rejects may be normal; consistently high rejection requires investigation.

Level 5—Block and reward: In Solo mining, **your own work** must find a valid block. Under PPLNS, the **pool** must find a valid block and allocate rewards according to eligible shares. **With SmartPool**, also identify whether the reward is on Purity, Core, BCH, or NMC, and whether your address appears in that chain's coinbase outputs. Finally check the block hash, amount, address, and maturity.

13.2 Common pool statistics

Metric	Meaning	How to interpret it
Hashrate	Mining speed	Short-period estimates fluctuate; not precisely the nameplate rate
Accepted Shares	Valid credited work	Consistent growth is the basic success signal
Rejected Shares	Shares not counted	High ratios warrant checking difficulty, networking, and hardware
Stale Shares	Outdated work	Old jobs after a new block/job; latency often matters
Best Share / Best Diff	Highest share difficulty achieved	Must satisfy the **current network target** to become a block candidate
Pool Effort	Work spent relative to statistical expectation	May greatly exceed 100%; it is **not** a completion meter
Pending / Immature	Rewards not yet settled or coinbase outputs not mature	With SmartPool, check maturity on the relevant chain
Paid	Reward marked paid by the operator	SmartPool: inspect actual coinbase outputs; other pools: inspect transfer transaction

13.3 Why a found block may not yet be spendable

Purity retains Bitcoin's **100-block coinbase maturity requirement**. When rewards are mined on another chain, check that chain's corresponding rules. **SmartPool pays in coinbase**; this does not

mean a newly mined reward is immediately spendable. Other, custodial pool arrangements may additionally require settlement cycles or minimum payout amounts.

13.4 Verify the block yourself

1. Visit the Purity block explorer (Full URL: https://mempool.bitcoinpurity.org/).
2. Enter a **block hash** from the pool or a payment transaction hash that has been confirmed to belong to Purity.
3. Inspect height, coinbase/reward transaction, output address, and amount. With **SmartPool**, identify the reward's correct chain and find your coinbase output **on that chain**. For BCC, BCH, or NMC, use the **appropriate different chain explorer**. For traditional custodial payout pools, reconcile the pool's payment transaction and records instead.
4. Confirm the wallet is synchronized with the **Purity** network. A wallet accidentally connected to a regular BTC Electrum server can misrepresent your apparent balance.

---

14. Troubleshooting: Start With the Symptom

Symptom	Likely cause	First action
Cannot connect to pool	Wrong URL/port, firewall, DNS, or pool outage	Copy full URL again from official source and verify the port
`Unauthorized`	Bad Worker format or authentication password	Re-enter exact pool-specific Username/Password
Nonzero hashrate, Accepted=0	Share difficulty too high, connection fault, just started	Wait an appropriate interval; inspect assigned difficulty and logs
Many `Low Difficulty` errors	Miner shares below required pool difficulty or protocol incompatibility	Use correct port; verify difficulty configuration
Many `Stale` / `Obsolete` shares	Latency, rapid job changes, reconnections	Stabilize connection; check node and miner clock/network
Many `Duplicate Share` messages	Proxy/device resubmitting identical work	Inspect proxy setup and miner logs
Frequent reconnects/reboots	Network, power, overheating, faulty firmware	Check PSU, temperatures, airflow, and link stability
MRR shows active rental; no shares at pool	Redirect failure, rejected credentials, incompatible difficulty	Inspect Favorite Pool and save screenshots for rig owner
NiceHash pool verification fails	Pool protocol/difficulty incompatibility	Try compatible Purity endpoint; **do not order yet**
DATUM `getdatuminfo` absent	Embedded DATUM not compiled	Confirm `BUILD_DATUM=ON`
DATUM `running=false`	Unsynced node, bad address,	Inspect `getblockchaininfo` and

Symptom	Likely cause	First action
	RPC or listener conflict	node logs
ASIC can reach node but cannot authorize	Wrong credentials with `datumauth=1`	Use `datumuser.worker` + dedicated Stratum password
Candidate block found but node rejects it	Stale template, tip change, consensus failure	Check `block_submission.last_result` and logs
Pool says Paid, wallet shows nothing	Wrong chain, wallet unsynced, unpublished tx, other payment path	Find actual transaction and payout address on the correct chain

What to send when requesting support on the forum

Include miner model and firmware, pool URL and port, whether the hashrate is rented, observed hashrate, changes in Accepted/Rejected/Stale over the last **10–30 minutes**, verbatim error text, timestamp **with timezone**, and a brief network diagram. **Remove** wallet seeds/private keys, RPC credentials, Stratum passwords, session cookies, and other secrets. If you prefer not to publish your whole address, share only the non-sensitive details the operator needs for diagnosis.

---

15. Costs, Probabilities, and Safety Checklist

15.1 Estimating the chance of a Solo block

Let actual miner hashrate be h (H/s) and current Purity mining difficulty be D. If difficulty stayed constant, average block discovery time is approximately:

Expected time to find one block (seconds) ≈ D × 2^32 ÷ h
This is an **expectation, not a promise**. Block discovery is random; a long losing streak does not mean the next second is "your turn." Network hashrate and ASERT difficulty also change over time.

15.2 Budgeting a hashpower rental

Total cost ≈ rental price × duration + marketplace fees + funding/withdrawal/exchange costs (if any).

Expected number of Solo blocks (rough approximation) ≈ h × rented seconds / (D × 2^32). Then consider actual block rewards, transaction fees, pool fees, shifting difficulty, chain risks, and market liquidity. Even when an expectation appears attractive, one short rental can still find **zero** blocks. **PPLNS earnings** depend on valid blocks actually found by the pool, your weighted historic shares, the other miners' participation, fees, and payout-window rules. They are **not** "hashrate × 24 hours = guaranteed income." For SmartPool, assess **BTC/Purity, BCC/Core, BCH, and NMC separately**, including actual routing, estimated-versus-realized exchange values, and different chain fees. Higher **estimated** profitability does not guarantee higher actual proceeds.

15.3 Non-negotiable safety points

- Never submit seed phrases, private keys, or wallet encryption passphrases to a pool, forum, MRR, NiceHash, or anyone claiming to be support.
- Use payout addresses you control. For SmartPool, verify cross-chain address mapping and wallet support rather than treating an exchange deposit address as universally compatible simply because formats appear similar.
- Verify pool URL, payment terms, and payout address **before** switching substantial hashrate.
- Test small first: prove work is accepted **before** committing significant rental costs.
- Do not expose node RPC to the public internet. Public Stratum connections require stricter authentication, isolation, and protective controls.
- Distinguish **Solo block rewards, SmartPool PPLNS direct coinbase allocation, traditional PPLNS pool accounting balances, coinbase maturity, and genuinely spendable on-chain balance**.
- Check current announcements from the official website and BBS. Community posts, screenshots, and direct messages are not guarantees from the operator.
- For significant holdings or payments, follow Purity's warnings about low/variable hashrate, reorgs, and replay between fork histories.

15.4 Final preflight checklist

- ☐ My miner or rented device uses SHA256d.
- ☐ I control and have backed up the wallet corresponding to my Purity payout address.
- ☐ My selected pool explicitly mines Bitcoin Purity.
- ☐ I know whether I am using Solo or PPLNS; if SmartPool, I understand that work can be routed across four chains.
- ☐ I copied the Stratum URL and username format from the operator's current source.
- ☐ I know whether my Username is `address.worker` or `account.worker`, and which Password rules apply.
- ☐ I configured a backup that mines the intended chain, or I understand the risk of having none.
- ☐ I checked the pool fee, payout mechanism, and maturity. For SmartPool, I checked all relevant coin fees and address mapping.
- ☐ I can verify accepted shares **on both** the device and pool sides.
- ☐ Before renting, I fixed a budget and understand that rewards are never guaranteed.
- ☐ For self-hosted DATUM, synchronization is complete and I have not unnecessarily exposed RPC/Stratum to the internet.

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16. Official and Third-Party References

Verified project facts in this manual derive from the public Bitcoin Purity website and project source documentation. **Platform workflows** are based mainly on the relevant operators' own help centers.

For model-specific miner menus, defer to the vendor's firmware documentation. Preserve complete URLs for references. **In the PDF edition, any abbreviated clickable link in the body is accompanied by its full copyable URL.** Published pool endpoints and third-party fees should always retain a verification date.

1. Bitcoin Purity home — https://bitcoinpurity.org/
2. Bitcoin Purity / For Miners (official Solo and SmartPool gateways) — https://bitcoinpurity.org/miners.html
3. Bitcoin Purity / Run a Node — https://bitcoinpurity.org/run.html
4. Bitcoin Purity / Safety (fork, reorganization, and replay risks) — https://bitcoinpurity.org/safety.html
5. Bitcoin Purity BBS (Mining / Pool & Solo Mining) — https://bbs.bitcoinpurity.org/
6. Embedded DATUM configuration and RPC contract — https://github.com/saltduck/bitcoinpurity/blob/master/docs/api/datum.md
7. Embedded DATUM architecture — https://github.com/saltduck/bitcoinpurity/blob/master/docs/architecture/embedded-datum.md
8. Purity node source — https://github.com/saltduck/bitcoinpurity
9. Official experimental Solo statistics — https://pool.bitcoinpurity.org/
10. Purity block explorer — https://mempool.bitcoinpurity.org/
11. MolePool's Purity page — https://btc1.molepool.com/
12. MiningRigRentals: For Renters — https://www.miningrigrentals.com/helpcenter/For-Renters
13. MiningRigRentals: Pool Management tutorial — https://www.miningrigrentals.com/helpcenter/Tutorials/83
14. MiningRigRentals: rental checkout — https://www.miningrigrentals.com/helpcenter/For-Renters/31
15. MiningRigRentals: rental monitoring — https://www.miningrigrentals.com/helpcenter/For-Renters/43
16. NiceHash: hashpower buyer guide — https://www.nicehash.com/support/hash-power-marketplace/general-help/how-to-start-as-a-buyer-of-hash-power?lang=zh
17. NiceHash: before placing an order — https://www.nicehash.com/support/hash-power-marketplace/orders/what-else-do-you-need-to-know-before-placing-an-order
18. BITMAIN: official pool configuration tutorial — https://support.bitmain.com/hc/en-us/articles/360002287334-Connect-ANTMINER-S9-T9-S7-to-Antpool
19. Bitaxe/AxeOS illustrated setup — https://bitaxe.de/en/bitaxe-setup-guide
20. Bitcoin Developer Guide: Mining — https://developer.bitcoin.org/devguide/mining.html
21. SmartPool Pool Info implementation (Username, Password, difficulty) — https://github.com/BitcoinPurity/sha256pool/blob/main/subprojects/web/src/App.tsx
22. SmartPool Chinese UI and rule texts — https://github.com/BitcoinPurity/sha256pool/blob/main/subprojects/web/src/i18n/zh-CN.ts
23. MRR SHA256 AsicBoost rig market — https://www.miningrigrentals.com/rigs/sha256ab

Content to Be Added Later

Actual step-by-step screenshots are still needed: Purity-Qt first launch, Receive page, DATUM settings and Mining status; Antminer Miner Configuration and Miner Status; real Bitaxe/NerdOCTaxe Wi-Fi onboarding and Pool pages; MRR SHA256 AsicBoost marketplace, Favorite Pools, Pool #1, checkout, and rental monitoring; NiceHash Add Pool, Test Pool, and order-budget pages; SmartPool registration-free connection, registered personalization, Workers/Shares, four-chain reward/coin lists, and actual coinbase output display. Screenshots should use **safe redacted demo values** and show software/firmware version and capture date.

Operator information still to be confirmed: SmartPool’s **numerical fees per chain, historical PPLNS window, minimum eligible coinbase output, eligibility rules for non-BTC/BCC addresses, and authentic registration UI**; other PPLNS pool names and endpoints; exact third-party Solo fees/reward credit rules; and confirmation of which operators permit MRR/NiceHash proxy connections. **Registration-free Username/Password syntax was confirmed in this edition and is not an outstanding item.**

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*This is the English review edition of Bitcoin Purity Mining Manual **v0.9.2**, preserving the content and version of the corresponding Chinese edition. It can serve as a PDF, website manual, or editable publishing source. The SmartPool material reflects the operator-provided PPLNS, four-chain dynamic routing, and direct coinbase payout model. All diagrams and parameter panels are explanatory illustrations, not screenshots of live services.*