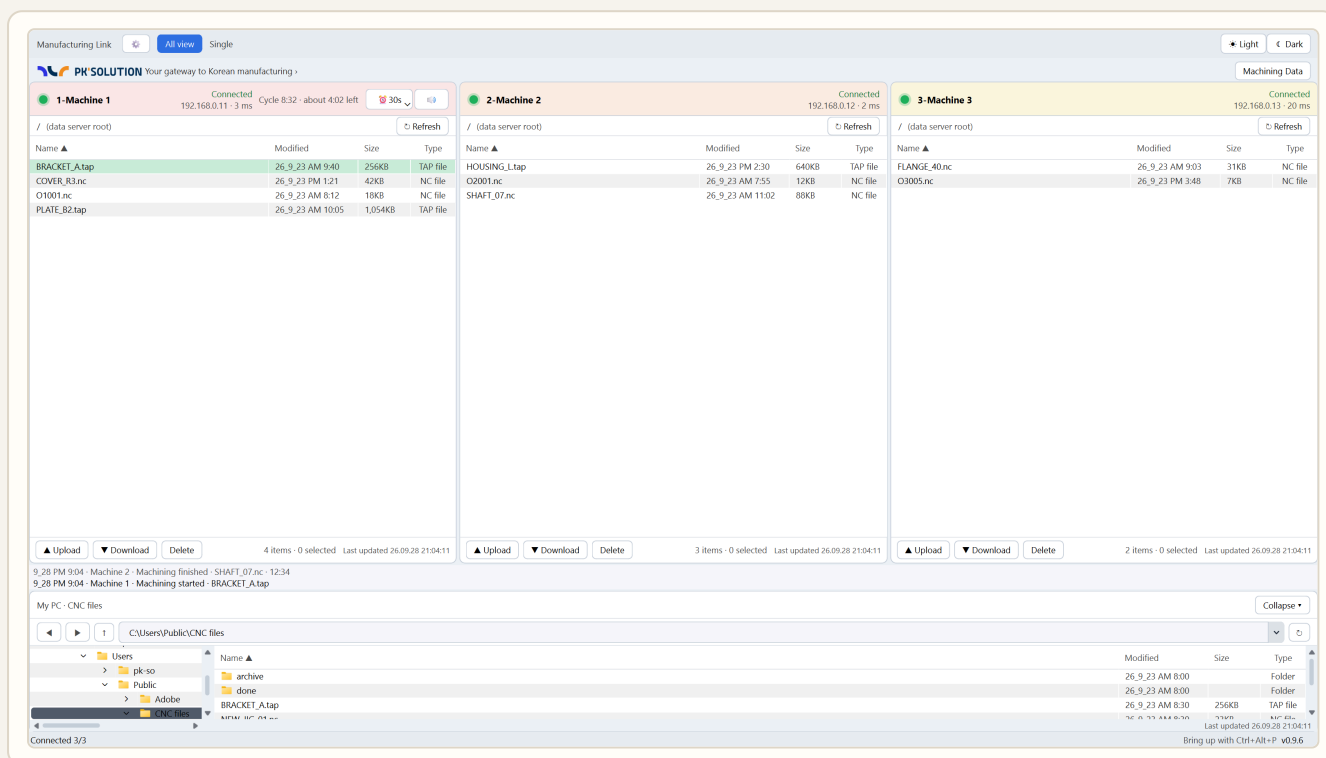




MANUFACTURING LINK

PROGRAM

M-Link

File transfer program for CNC machines FANUC Data Server · FTP · FOCAS2

MACHINES

Up to 10 at once

LANGUAGES

12 languages

WINDOWS

10 · 11 64-bit

LICENSE

Free edition

Files from many machines in one window

DESIGNED & DEVELOPED

BY P.K. SOLUTION

User Manual

English · v0.9.6

WELCOME

Transfer files for many machines in one window

Manufacturing Link

M-Link transfers machining program files between the CNC machines in your factory and a PC. Instead of opening one window per machine, you **keep several machines open side by side in one window** and upload or download by simple drag and drop.

If you already exchange files with your machines using an FTP program (e.g. ALFTP), M-Link connects right away with **the same machine address, ID and password**. M-Link is made for FANUC machines that use the Data Server.

What it does

- ◆ Connects **up to 10 machines** at once in one window. Use “All view” to see them all, or “Single” to show one machine large.
- ◆ Upload and download by **drag and drop, double-click or right-click**.
- ◆ If a file with the same name is on the machine, M-Link **tells you instead of overwriting it**. Choose “Upload with an auto number” in Settings to add a number such as _01 to the name and upload. If you drop the same file again while it is still uploading, it is **not sent twice**.
- ◆ **Only reads** the FANUC machine status to show the remaining machining time, alerts you before the end with a sound you choose (32 sounds), and colors the running program's row **green** (machining timer).
- ◆ **Machine updates** such as connection, machining start, finish and alerts scroll by in two lines on screen. See the full history in Settings and export it for Excel.
- ◆ 12 screen languages · light or dark · adjustable display size and row spacing.

READ ME

This manual has 8 steps in the order **install → connect machines → daily use**. Follow them in order and even first-time users will not miss anything. Machine names, addresses and file names in the pictures are **examples only**.

INDEX

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SETUP · DAILY USE · 8 STEPS

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At a glance



TIP Only transferring files? Steps **01–05** are enough. For the time left and finish alert, also do **06 · 07**.

SECTION A

Program specifications

Specifications

Item	Details
Program name	M-Link (Manufacturing Link) · version 0.9.6
Purpose	Transfers machining program files between CNC machines and a PC · connects several machines at once
Connection	Ethernet (LAN cable) · FTP (FANUC Data Server) · address, ID and password per machine
Machines at once	Up to 10 machines
Machining timer	FANUC FOCAS2 · Ethernet port 8193 · read only (never changes machine values or moves the machine) · on or off per machine (on at first)
Finish alert sound	32 sounds (short Bell 13 · music Sound 19) · ring for 5–60 s · 5 volume levels · chosen per machine · 3 sets
Screen languages	12 · Korean · English · Vietnamese · Chinese (Simplified) · Mongolian · Urdu · Nepali · Indonesian · Thai · Khmer · Burmese · Uzbek
PC required	Windows 10 · 11 (64-bit)
Install location	Installs to your own account, no administrator rights needed (AppData\Local\Programs\M-Link)
Settings location	Documents\M-Link Data folder · kept when you install a new version or uninstall the program
Price	Free · you may pass it on to others unchanged (redistribution)
Made by	P.K. SOLUTION

NOTE File transfer works as soon as the machine's FTP (Data Server) works. The **machining timer** also needs “FOCAS2” to be open on the machine; **STEP 07** shows how, with pictures.

SECTION B

What installation adds

Installer · Shortcuts · Settings Folder

You receive **one installer file: M-Link_Setup_v0.9.6.exe**. Its version number must match this manual.

Item	Where · what
Start menu “M-Link”	Appears in the list shown when you click the Windows Start button.
Desktop shortcut	Created if “Create a desktop shortcut” is ticked during installation (ticked at first).
Notification area icon	Bottom right of the screen, next to the clock. Even when the window is hidden, you can open it again here.
Documents\M-Link Data folder	Holds the machine list, passwords (encrypted), Machining Data, cycle-time memory and logs. Do not delete it.

Check after installing

☒ M-Link is in the Start menu☒ Version v0.9.6 shows at the bottom right of the M-Link window☒ An M-Link Data folder is in Documents☒ The M-Link icon is in the notification area

TIP When a new version comes out, **just run its installer**. You do not need to enter the machine list or passwords again; they stay in Documents\M-Link Data.

SECTION C

Before you start

What to Prepare · Safety

What to prepare

- ◆ **Machine address (IP)** · one per machine, e.g. 192.168.0.11. If you do not know it, check the Ethernet “COMMON” screen on the machine's operator panel (picture in STEP 07).
- ◆ **FTP ID · password** · the account for the machine's Data Server. The same one saved in the FTP program you use now.
- ◆ The PC and machines must be on the **same factory network** (LAN cable · hub).
- ◆ A PC with Windows 10 or 11 (64-bit).

Safety

MUST READ Deleted files **cannot be restored**. Read the confirmation window once more before deleting. The program the machine is running now is shown as a green row (when the machining timer is on).

KEY POINT The remaining time and finish alert of the machining timer are **only a helper**, not a safety device. Before opening the door, always check **on the machine that the spindle has stopped**.

TIP Start by connecting one machine; when it works, add the rest. You can edit the machine list in Settings at any time (STEP 05).

01

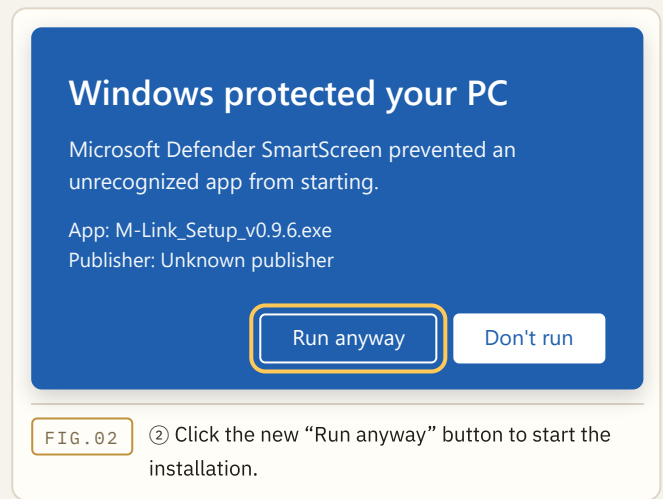
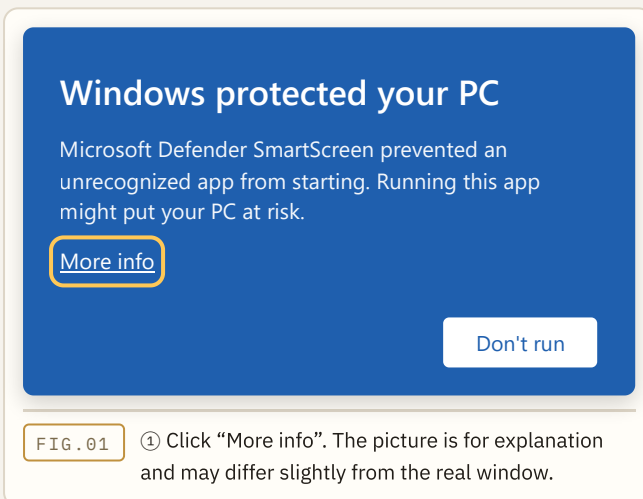
STEP 01 / 08

Install · if “Windows protected your PC” appears

Install · Windows SmartScreen

STEP 01 / 08

- ① Double-click the **M-Link_Setup_v0.9.6.exe** you received.
- ② If the blue window “Windows protected your PC” appears, click **“More info”** below the text (the wording may differ by Windows version).
- ③ Click the **“Run anyway”** button that appears with the Publisher line.
- ④ “Select Setup Language” → notice → tick “Create a desktop shortcut” · “Run after install” → **“Install”** → **“Finish”**. It does not ask for an administrator password.



Why it appears · why you need not worry

- ◆ When you open a **program file downloaded from the internet**, Windows checks how many people have downloaded it (its reputation). The M-Link installer has no paid signing certificate and is a new file for each version, so Windows calls it an **“unrecognized app”** (Microsoft's explanation). **It does not mean a virus was found.**
- ◆ This message appears **only when you open a downloaded installer**, not when you start the installed M-Link. It may appear again for a new version's installer.
- ◆ Open only installers **from the P.K. SOLUTION website (pksolution.co.kr) or from your company.**

IF BLOCKED On Windows 11 PCs with “Smart App Control” turned on, the installer may be blocked with no “Run anyway” button. Do not force a settings change; tell your company's IT staff or the contact at the back of this manual.

02

STEP 02 / 08

Connect machines with the first-run helper

First Run Wizard · 3 Pages

STEP 02 / 08

On first start (or when there is no machine to connect), the “M-Link first-run helper” opens. Just fill in three pages.

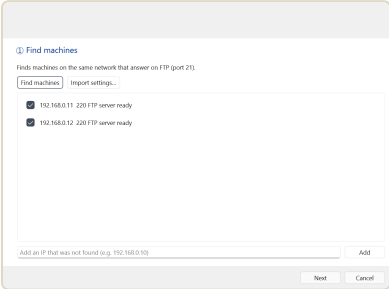


FIG . 03 ① Find machines

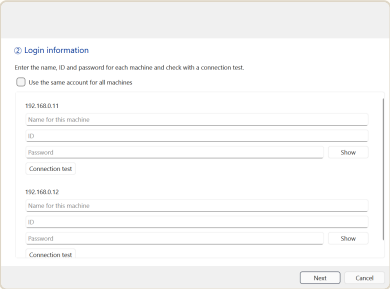


FIG . 04 ② Login information

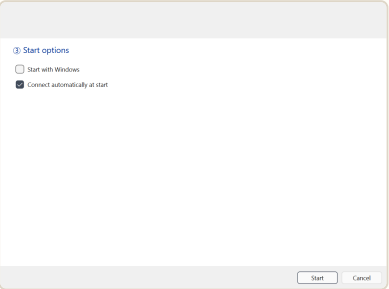


FIG . 05 ③ Start options

Page	What to do
① Find machines	Click “ Find machines ” to search the factory network for machines that answer on FTP (port 21) and list them. Keep ticks only on the machines you use. If one is not found, type its IP in the box below and click “Add” . If your company gave you a settings file, fill in the list with “Import settings...” (passwords are not included).
② Login information	Enter a name, ID and password for each machine and click “ Connection test ”. If all machines use the same account, turn on “Use the same account for all machines”.
③ Start options	Choose “Start with Windows” · “Connect automatically at start”, then click “ Start ”.

NOTE If a “**Windows Security Alert**” (**firewall**) window appears on first start, click “**Allow access**”. It lets M-Link learn at once when another PC changes the file list. If you click “Cancel”, file transfer still works.

TIP Closed the helper? No problem. Reopen it with “**Open the first-run helper again**” at the bottom of the Settings “Common” page (🔍 on the title bar), or add machines directly in the machine list (STEP 05).

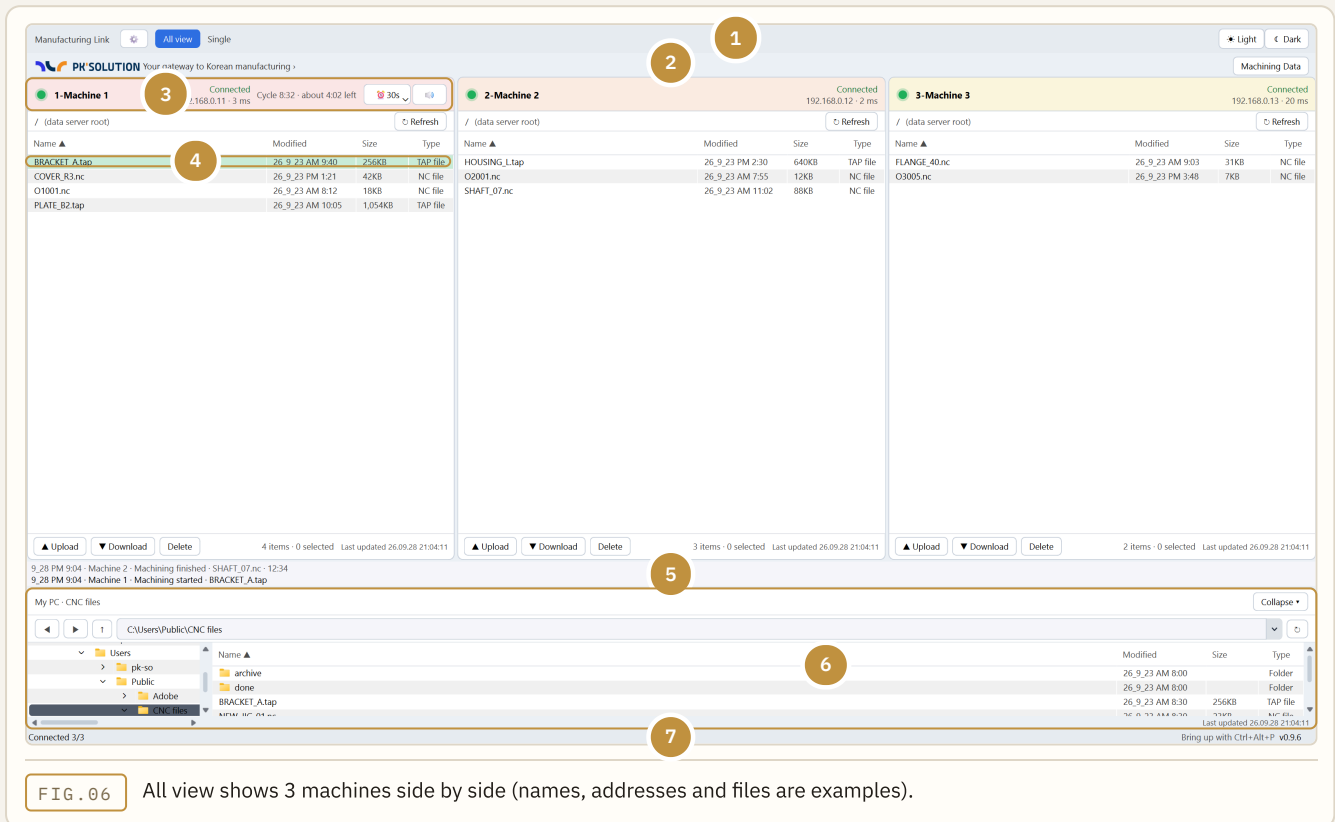
03

STEP 03 / 08

The screen at a glance

Main Window · All View

STEP 03 / 08



- 1 **Title bar** · ⚙ Settings (also machine settings, STEP 05) · “All view” and “Single” · “☀ Light” and “🌙 Dark”
- 2 **Second row** · company banner (opens “About us”) · “Machining Data” at the right end (opens a panel, STEP 04)
- 3 **Panel header** · status light · no.-name · “Connected” · address · ms · machining time · 🔔 alert · 🔊 sound
- 4 **Green row** · the program the machine is running now (only machines with the machining timer on)
- 5 **Machine updates** · latest 2 of connection, start, finish, alerts (view only). History: Settings (STEP 08)
- 6 **My PC panel** · address box (▼ lists the parent folders) · ◀ ▶ ↑ · folder tree · file list · “Collapse”
- 7 **Status bar** · machines connected · one-line notice · bring-up shortcut (Ctrl+Alt+P) · version number

Status light

Meaning

● Green	Connected. You can transfer files.
● Yellow	Briefly disconnected and reconnecting (fades in and out). It usually turns green again if you wait.
● Red	The machine refused the login. Check the ID and password.
● Gray	Connecting, turned off, or a panel not set up yet.

03

STEP 03 / 08

Single view · dark screen · sorting

Single View · Dark Theme · Sorting

STEP 03 / 08

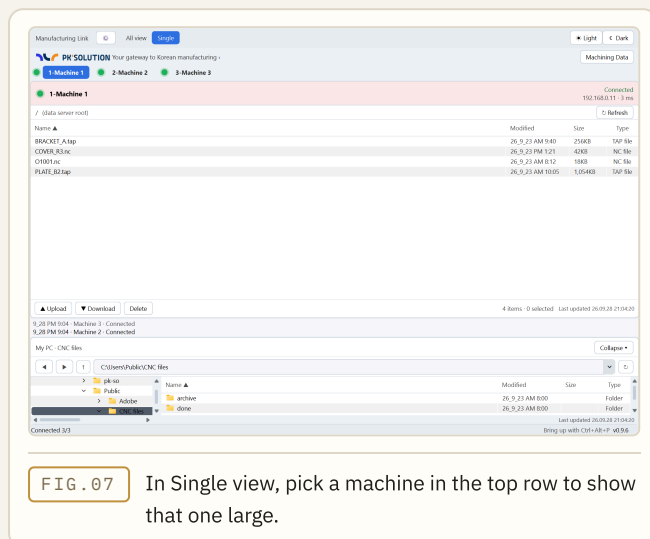


FIG. 07 In Single view, pick a machine in the top row to show that one large.

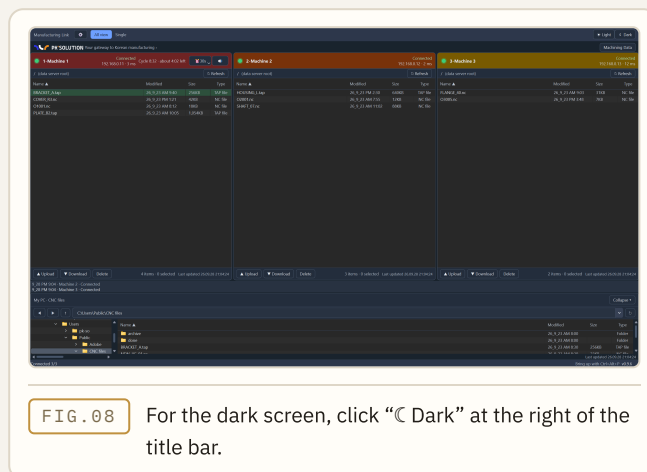


FIG. 08 For the dark screen, click “Dark” at the right of the title bar.

- ◆ **Sorting** · click a list heading (Name · Modified · Size · Type) to sort by it; ▲ (ascending) or ▼ (descending) appears next to it. Click again to reverse.
- ◆ **Display size · Row spacing** · in ⚙ on the title bar → Settings “Common” page, “Display”, use [–] [+] to change the text size and the space between rows (previewed at once, kept with “Save”). When there are more machines than “Machines shown at once in All view”, machine panels keep a minimum width and a horizontal scroll bar appears below.
- ◆ **In narrow panels** · the machine name is never cut; the address is hidden from the front.
- ◆ **If the window is not visible** · press **Ctrl** + **Alt** + **P** or click the notification area icon to bring it to the front. If another program uses this key, **Ctrl** + **Alt** + **M** is set instead and the status bar tells you.
- ◆ **Last updated** · Shown small at the bottom right of the machine, My PC and Machining Data panels. As it narrows, the year, then month.day, then the label drop in that order; the time always stays.
- ◆ **Machining status text** · A machine with the machining timer on shows a large status word next to its name (Machining · Paused · Waiting · E-STOP · Alarm · MDI · Measuring). It is hidden if the run status cannot be read or the panel is too narrow. The running program's row is light green; a program selected while stopped is beacon yellow.

TIP On the Settings “Common” page, set “When the close (X) button is clicked” to “Hide to tray”, and closing the window only hides it in the notification area (at first: “Exit the program”). To quit completely, right-click the notification area icon and click “Exit”.

04

STEP 04 / 08

Upload · download · delete files

Upload · Download · Delete · Rename

STEP 04 / 08

Task	How
Upload My PC → machine	Drag and drop a file from the My PC panel onto a machine panel · in the My PC panel, right-click a file → choose the machine · “▲ Upload” under a machine panel → choose files. Folders are not uploaded.
Download Machine → My PC	Drag a file from a machine panel to the My PC panel, or double-click it → goes to the folder open in the My PC panel. Right-click “Download” · “▼ Download” → goes to that machine's download folder (if not set, the PC's “Downloads” folder).
Delete	Select files and press Delete · right-click “Delete” · the “Delete” button. A confirmation window always appears before deleting. Deleted files cannot be restored .
Rename	Select a file and press F2 · right-click “Rename”.
Refresh	Machine panel: “↻ Refresh” · My PC panel: F5 .

1 Machine 1

2 Machine 2

3 Machine 3

FIG. 09 My PC panel right-click · choose the machine to send to. Disconnected machines are dimmed.

Download

Delete

Rename

Refresh

FIG. 10 Right-click in a machine panel to choose Download, Delete, Rename or Refresh.

Several files · drag and drop

- ◆ To select several files, hold Ctrl or Shift, or **press and drag from an empty spot in the list (also the empty space right of a name)** to select every row inside the box. Then send them all at once.
- ◆ If you drop files where they cannot go, nothing happens; the panel that can take them flashes blue twice and a one-line hint tells you where to drop.
- ◆ What you see while uploading, same names and long names are on the next two pages.

04

STEP 04 / 08

While uploading · double-upload guard · renamed files

Progress · Double Upload Guard · Renamed Files

STEP 04 / 08

While uploading · the line under the panel


 Uploading 1.2 MB / 3.1 MB · 1 left

FIG. 11 While uploading, a blue bar shows amount sent / total and files left (example numbers).


 Verifying 3.1 MB / 3.1 MB · 1 left

FIG. 12 After sending, M-Link reads the file back from the machine to compare (“Verifying”).

- ◆ While sending, “▲ Upload” turns to “Uploading...” and the line under the panel shows a **blue progress bar**, amount sent / total and files left (“Downloading” for downloads). Then the button briefly shows “✓ Done” (or “X Failed”).
- ◆ Large files take a few more seconds after sending, because M-Link downloads them again from the machine to check. “Verifying” shows meanwhile; just wait.

Same file dropped again · double-upload guard



Not uploaded because a file with the same name is being uploaded to this machine right now: PLATE_B2.tap — Upload it again after the current upload finishes

OK

FIG. 13 If the same name is still uploading, M-Link blocks it and tells you why. Read it and click “OK” to close.

- ◆ If a file with the **same name** (upper and lower case alike) is still uploading to the same machine, the one dropped again is **not sent**, and a window says “Not uploaded because a file with the same name is being uploaded to this machine right now”. It is blocked even if the folder or content differs. Upload it again after the current upload finishes.
- ◆ Files with other names upload as usual. Sending to other machines is not blocked either.

Files uploaded under a new name

- ◆ A file **renamed on upload** (auto number or shortening) shows in *italics* in the machine list, with the tooltip “Renamed when uploaded: original → uploaded”. The status bar also shows “Uploaded under a new name: original → uploaded”.
- ◆ The mark lasts only until M-Link is closed; after a restart the name looks normal. Naming rules: next page.

04

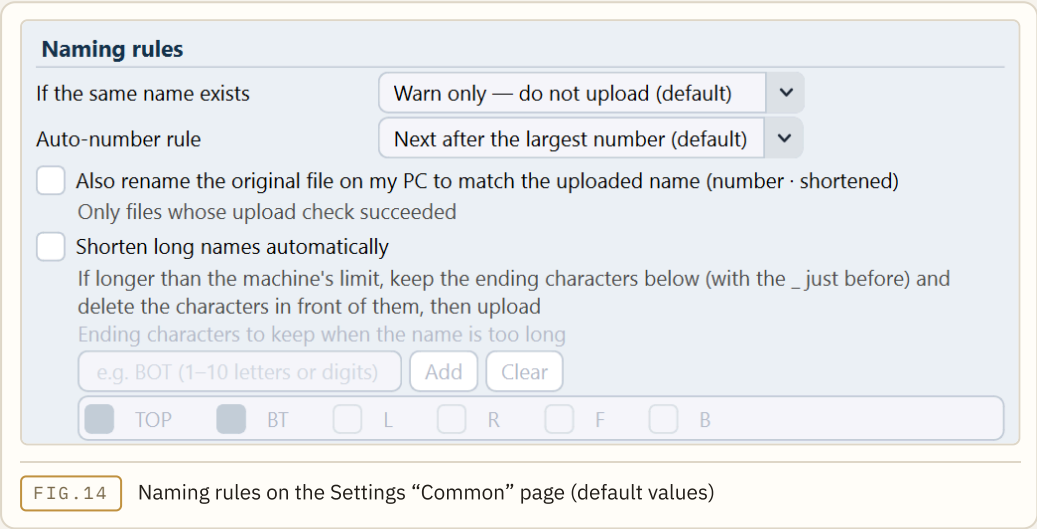
STEP 04 / 08

Same name · long name · naming rules

Settings · Name Rules

STEP 04 / 08

How same and long names are uploaded is set in ⚙️ → Settings “Common” → “Naming rules”. It applies to all machines after “Save”.



Field	Choices · meaning
If the same name exists	Warn only (do not upload · default) · tells you which files were skipped Upload with an auto number (_01–_99) · adds _01 to _99 before the dot (after _99, warns only) Ask, then overwrite · asks for each file (default button: Cancel) Overwrite · for several files, asks once, then overwrites (default button: Cancel)
Auto-number rule	Fill empty numbers · Next after the largest number (default)
Also rename the original file on my PC	Off at first. When on, the PC original is renamed to the uploaded name (number · shortened), only after the upload check (read back from the machine) passed.
Shorten long names automatically	Off at first. When on, a too-long name keeps its ending characters from the list below (with the _ before) and loses the letters in front. When off, M-Link only tells you the refused length.
Ending characters to keep when the name is too long	At first TOP · BT on, L · R · F · B off. Use “Add” · “Clear” for 1 to 10 letters or digits.

PC NAME KEPT If the PC already has that name, another program is using the file, the uploaded names differ by machine, the file changed during upload, or a machine was not uploaded, the PC name is **left as is** and one line says why (e.g. “Upload finished, but the PC already has the same name (BRACKET_A_01.tap), so the name was left as is: BRACKET_A.tap”). The status bar line is soon replaced, so it is also kept in the app log (Logs).

04

STEP 04 / 08

Machining Data panel · keep frequently used files

Machining Data Panel

STEP 04 / 08

Click **“Machining Data”** at the right end of the second row to open a dedicated panel at the far right of the machine panel row (click again to close it). Keep programs you use often in folders, independent of any machine.

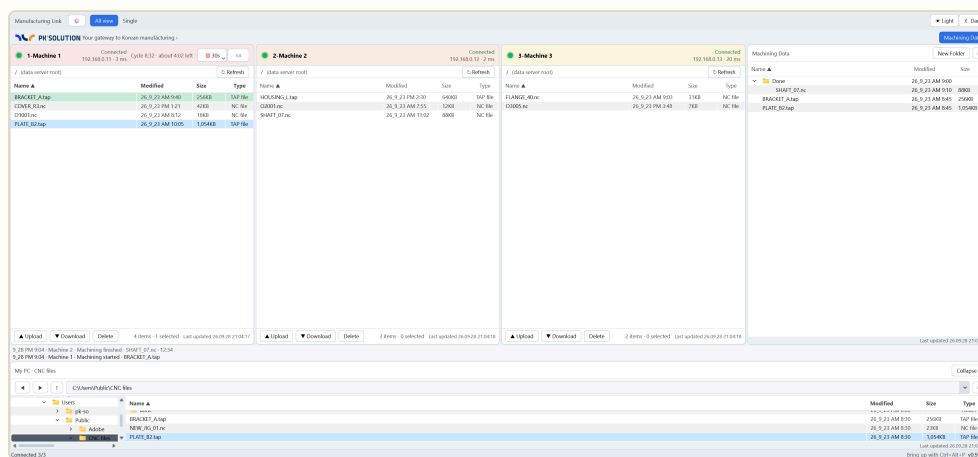


FIG. 15 Machining Data panel opened on the right (folders and files are examples)

Task

How

Create folder

“New Folder” on the panel header. It is made inside the selected folder (at the top if none is selected) and you type its name right away. Folders can be nested; all are saved as they are in Documents\M-Link Data\Machining Data.

Rename · delete

F2 to rename, **Delete** or right-click to delete (sent to the Recycle Bin after a confirmation window).

Add

Outside → Machining Data

Dragging from File Explorer, the My PC panel and so on **always copies, even on the same disk** (the original stays). While you drag, the target folder row turns blue.

Upload · Download

Machining Data ↔ machine

Machining Data → machine is upload; **machine → Machining Data** is download.

Refresh

Files added from outside also appear on their own soon; the panel header's **↻** re-reads it too.

Open

Double-click a file to open it in its Windows default program (e.g. a PDF viewer for PDFs). Program files (.exe etc.) are not opened here.

TIP

If the name and size match, M-Link treats it as the same program, so the alert works from the very first run on **any machine** (STEP 06). Folder location and moving to another PC: STEP 05 “Move your data”.

05

STEP 05 / 08

Edit the machine list (Settings)

Settings · Machines

STEP 05 / 08

Click  on the title bar to open Settings. The list on the left shows  **Common** (view · start · menu), the machines (no.-name) and **Machine history**, in that order. Click a machine row to see **that machine's** settings on the right.

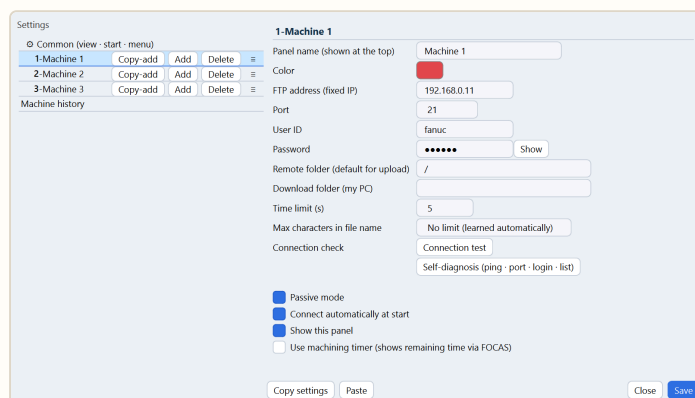


FIG. 16 Settings: the machine list on the left, the selected machine's settings on the right.

Button	What it does
Copy-add	Copies this machine into a new one right below (“copy” after the name, last address part blank).
Add	Adds a new, empty machine right below.
Delete	Removes this machine from the list. At least one machine is required.
≡ Drag	Drag up or down to reorder. It drops where released; the numbers stay with the positions.
Connection check	“Connection test” tries to connect with the values entered now. “Self-diagnosis (ping · port · login · list)” checks ping → port → login → list in order and stops at the step that fails.
Machine name	Up to 14 characters , and only as wide as still shows in full in the machine panel at the narrowest window. Wide characters (e.g. Korean, Chinese) are cut off sooner.
Copy settings · Paste	Copy this machine's values (except the name), then paste them on another machine's page.
Color	Name row background (also the finish-alert blink). A new machine gets the color after the latest one in use (red · orange · yellow · green · blue · indigo · violet · yellow-green · teal · magenta) and keeps it. Click “Color” to change it.

MUST READ Changes apply only after “**Save**”. Saving shows **added or removed machines and new order or names** at once, without a restart. Closing without saving asks “Save your changes?”. Up to **10 machines**.

05

STEP 05 / 08

Move your data · export · import

M-Link Data Folder · Export & Import

STEP 05 / 08

Everything M-Link uses (**settings, connection info, Machining Data, cycle-time memory and logs**) is kept in one **Documents\M-Link Data** folder. It stays in place through updates and reinstalls.

Situation	What to do
Move to another PC	Just copy the whole M-Link Data folder into Documents on the new PC, and even passwords carry over. No separate export needed.
“Export data...”	At the bottom of the Settings “Common” page. Choose where to save; settings, Machining Data, cycle-time memory and the alert sound folder (Sounds, if any) go into one folder. Set a passphrase to include passwords too; leave it blank and passwords are left out.
“Import data...”	Choose a folder, and a warning that this PC's settings will be overwritten appears first. Nothing changes until you confirm. On confirming, the current data (Sounds included) is kept in Backups first, then replaced; restart to apply. Machining Data and Sounds are merged (same names take the imported file); cycle-time memory is replaced as a whole.
Settings “Data folder”	Below the path line, three buttons: “Open” · “Use another folder...” (a USB drive, another drive or any location) · “Back to default location” (undo).

TIP If several PCs in the factory connect to the same machines, finish the settings on one PC, save them with **“Export data...”**, then use **“Import data...”** on the other PCs to give them the same settings quickly (alert sets included).

NOTE Click **Cancel** in the import warning and nothing changes. Because a backup is kept before overwriting, a mistaken import can be undone from the **Backups** folder. Upgrading from 0.9.4 or earlier, passwords are re-saved once in the new format on first start, so moving just the folder carries them too.

06

STEP 06 / 08

Turn on the machining timer and alerts (M-Link side)

Remaining Time · Finish Alert · Running Program

STEP 06 / 08

The machining timer **only reads** the machine status to show the time left, alert before the end and mark the running program green. M-Link tells programs apart by name, size and time (**Machining Data** ignores time). **“FOCAS2” must be open on the machine** (STEP 07). Set per machine; on at first.

- 01 Click  on the title bar, then select **that machine** in the list on the left of Settings.
- 02 Tick **“Use machining timer (shows remaining time via FOCAS)”** and click **“Save”**.
- 03 Run a program; the time shows in the panel header.
Alert timing and sound:  (next page).

110 s before

115 s before

120 s before

Alarm settings...

FIG. 17

Click “Alarm settings...” at the bottom of the  menu to open the Alarm settings window.

**1-Machine 1**

Connected

192.168.0.11 · 3 ms

Cycle 8:32 · about 4:02 left

 30s ▾

FIG. 18

Machine panel header · machining time ·  alert timing (30 s before) ·  this machine's sound

On screen

Meaning

Cycle m:ss

Run time from the machine; if unavailable, M-Link's own **“Elapsed m:ss”**. Over 1 h: h:mm:ss.

· about m:ss left

Shown once the same program has run to the end. Feed override can't be read, so always “about”.

· done

When machining ends, the time taken stays until the next run starts.

 30sAlert time before the end (just  when off). Click for Off, 5–120 s, **“Alarm settings...”** (next page).

When the alert rings

The area **under the name row** flashes in that machine's color (STEP 05) while the sound plays. Click anywhere in the window to stop both (alerts again next run).



Turns only this machine's alert sound off or on. The screen display stays.

Green row

The program the machine is running now. The color clears when machining ends.

KEY POINT

The time left and alerts are **only a helper**, not a safety device. Pauses and M00/M01 waits stop the time, which then continues. Runs with a feed hold, runs stopped by reset or alarm, MDI work and measuring are not used as reference.

06

STEP 06 / 08

Alarm settings window · sounds · sets

Alert Settings · 32 Sounds · 3 Presets

STEP 06 / 08

Click  on the panel header → “Alarm settings...” to open the window for **that machine** (number and name in the title). Changes apply at once and are saved on closing. The M-Link screen stays visible.

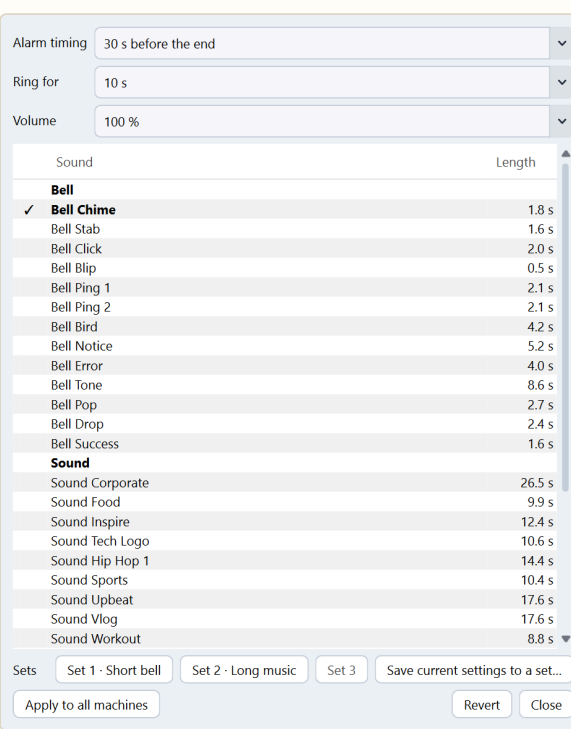


FIG. 19 In the Alarm settings window, ✓ marks the sound chosen now (set names are examples).

Item	What it does
Alarm timing	Off · 5–120 s before the end, 5 s steps (same as  menu)
Ring for	5–60 s (5 s steps, 10 s first). Repeats, then stops; long music is cut
Volume	20 · 40 · 60 · 80 · 100 % (100 % first)
Sound list	Click a row: that sound (✓), played once
Set 1 · 2 · 3	Click to apply it here. Empty sets dimmed
Save current settings	Pick a set, name it (≤ 16 characters), save to a set...
Apply to all machines	Copies these values to all others (after confirming)
Revert	Back to the values when opened
Close	Closes the window and saves

32 sounds

- ◆ Two groups: **Bell** (13 short alert sounds) and **Sound** (19 music pieces). Sound names are the same in every screen language. The “Length” column is the length of one play (0.5 to 33.1 s).
- ◆ Preview (click a row) plays up to **6 s**, and **not while any alert is ringing** (so the real alert is not cut off).
- ◆ A machine with no chosen sound gets a **short alert sound** by panel order (No. 1 Bell Chime, No. 2 Bell Stab ...) when first saved and keeps it after reordering. Older-version sounds are gone, so those machines get their first sound; choose again here.

SETS · APPLY TO ALL Sets and “Apply to all machines” change only **alarm timing, sound, ring time and volume**; timer on/off and  mute stay. “Apply to all machines” copies once; later changes are not followed.

07

STEP 07 / 08

Machine side · set 3 fields on the FANUC panel

FOCAS2 Port · Data Server Ethernet Board

STEP 07 / 08

Why is this needed?

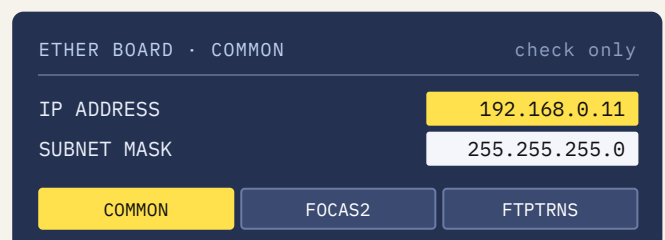
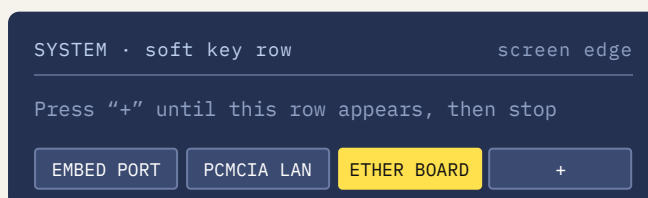
- ◆ File transfer uses the **FTP (port 21)** of the machine's Data Server. It is already open, so there is nothing to do.
- ◆ The time left, finish alert and green row need to read the machine's **run status**. FANUC calls this reading channel **FOCAS2** and opens it on Ethernet port **8193**.
- ◆ On a newly delivered machine this port is **often closed**. Then files work but the machining timer does not. So open it once on the operator panel.
- ◆ M-Link **only reads** through this port. It never changes machine values or moves the machine.

MUST READ Do this **when nothing is being machined**. Before changing anything, **take a photo** of the screen with your phone (to restore later). **Do not change the IP** on the “COMMON” screen (file transfer may stop).

How to get there · which screen

MDI mode → SYSTEM → + → ETHER BOARD → COMMON check IP → FOCAS2 3 fields

- 01 Set the operator panel mode switch to **MDI**.
- 02 Press the **SYSTEM** key on the MDI keyboard.
- 03 Press **+** (next menu) at the end of the soft key row until the row with “**EMBED PORT · PCMCIA LAN · ETHER BOARD**” appears.
- 04 Press **ETHER BOARD**, not “**EMBED PORT**”. That port has the same fields but an address outside the factory network.
- 05 On **COMMON**, check that the **IP ADDRESS** matches this machine's address in M-Link (then it is the right board). Take a photo.



Drawn for explanation. Text, layout and soft key position (bottom or right) vary by machine and control version.

07

STEP 07 / 08

Enter 3 numbers on the “FOCAS2” screen

TCP 8193 · UDP 8192 · Interval 10

STEP 07 / 08

- 06 On the same Ethernet screen, press **FOCAS2**. **Take a photo** of the current values.
- 07 Move the yellow cursor with the arrow keys, type each number below and press **INPUT**. If it is refused, press **(OPRT)** and retry.

The screenshot shows the 'ETHER BOARD · FOCAS2' screen with a 'BASIC' tab. It contains three input fields: 'PORT NUMBER (TCP)' with value 8193, 'PORT NUMBER (UDP)' with value 8192, and 'TIME INTERVAL' with value 10. At the bottom are four buttons: 'COMMON', 'FOCAS2' (highlighted in yellow), 'FTPTRNS', and '(OPRT)'.

Field	Value	Meaning
PORT NUMBER (TCP)	8193	M-Link reads status here. Use exactly this
PORT NUMBER (UDP)	8192	Number for the status broadcast
TIME INTERVAL	10	Broadcast interval

TIP M-Link uses only **TCP 8193**. If UDP and TIME INTERVAL already hold other values, you may keep them (FANUC advises 0 when unused).

If told to turn the power off and on

- After **INPUT**, a PW alarm (power off/on needed) may appear. **Recheck that nothing is being machined** and cycle the power **as the machine manual says**. A reference position return may be needed afterwards.
- In practice, one machine asked for each field (**3 power cycles**); another was already open (**no change needed**). Whether one cycle after all three fields is enough is not yet confirmed, so cycle **each time it asks**.

Check · restore

- Turn on this machine's timer in M-Link (STEP 06) and run a short program. When “Cycle” (or “Elapsed”) time appears in the machine panel header, you are done.
- To restore, re-enter the numbers from your photo and press **INPUT**. Or turn off the timer in M-Link: the PC then stops using 8193 (file transfer still works).

OTHER MACHINES Screens may differ by maker and control version. If so, stop and ask the **machine maker's service center**: “We want to open **FOCAS2 port 8193** on the Data Server (Ethernet) so a PC program can **only read** the run status. On which screen, and how many power cycles are needed?”

08

STEP 08 / 08

Machine updates · history · Excel

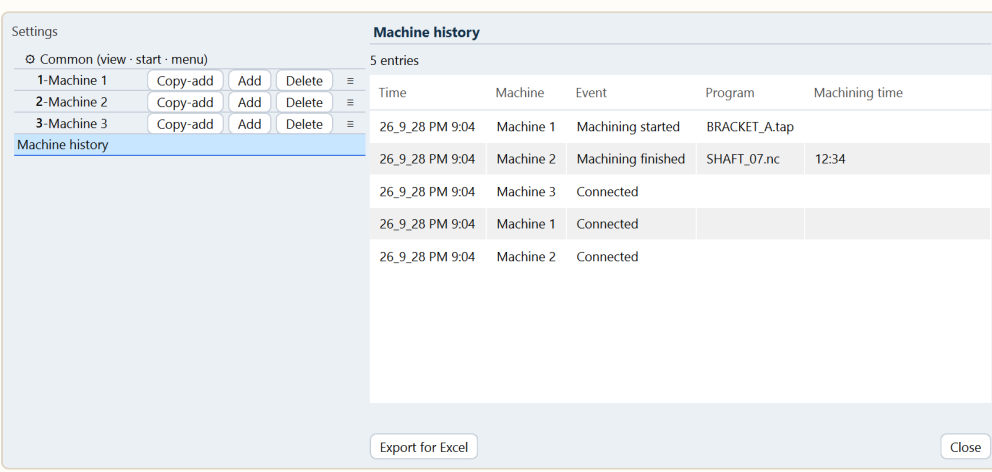
Status Strip · Machine History · Export

STEP 08 / 08

The two latest machine updates scroll by in the **two lines** below the machine panels (the bottom line is the newest). Updates include **Connected · Disconnected · Machining started · Machining finished (time taken) · Paused · Resumed · Finish alert**; a run stopped by reset or alarm is kept as “Machining stopped (not completed)”. Machining updates come only from machines with the machining timer on.

9_28 PM 9:04 · Machine 2 · Machining finished · SHAFT_07.nc · 12:34
9_28 PM 9:04 · Machine 1 · Machining started · BRACKET_A.tap

FIG. 20 The two update lines are for viewing only. See the full history in Settings.



Settings

Machine history

5 entries

Time	Machine	Event	Program	Machining time
26_9_28 PM 9:04	Machine 1	Machining started	BRACKET_A.tap	
26_9_28 PM 9:04	Machine 2	Machining finished	SHAFT_07.nc	12:34
26_9_28 PM 9:04	Machine 3	Connected		
26_9_28 PM 9:04	Machine 1	Connected		
26_9_28 PM 9:04	Machine 2	Connected		

Export for Excel Close

FIG. 21 Settings › Machine history shows Time · Machine · Event · Program · Machining time.

- ◆ Click  on the title bar → **“Machine history”** at the bottom of the list on the left of Settings to see the whole history in a table, newest first. Scroll inside the table to see older entries.
- ◆ Click **“Export for Excel”**, choose where to save, and M-Link saves a file (CSV) that opens directly in Excel.
- ◆ The history is saved automatically in **Documents\M-Link Data\Logs**. When the file gets large, a new file is started automatically.

REFERENCE

Checklist · troubleshooting

Checklist · Troubleshooting

- ✓ Installed version is v0.9.6 (STEP 01)
- ✓ Machine status lights are green (STEP 02 · 03)
- ✓ Tried one upload and one download (STEP 04)
- ✓ Machine list saved · shown on screen (STEP 05)
- ✓ Machining timer ticked ·  alarm settings (STEP 06)
- ✓ 3 FOCAS2 fields · power message handled (STEP 07)
- ✓ Opened machine updates · Machine history (STEP 08)
- ✓ Checked the contact details (last page)

Problem	What to do
Status light is red	The machine refused the login. Check the ID and password, then click that machine's “Self-diagnosis (ping · port · login · list)” in Settings (ⓘ on the title bar).
Yellow for a long time, or gray	Check power → LAN lights → IP typos. “Self-diagnosis” shows where ping · port · login · list fails.
Helper does not find the machine	Check that it is on the same factory network and the machine's Data Server (FTP) is on. If you know the address, type it in the box below and click “Add” .
Not uploaded: same name	On the Settings “Common” page, set “If the same name exists” to “Upload with an auto number (_01–_99)”, or rename or delete the old file on the machine.
“Not uploaded” window (still uploading)	That name is still uploading there. Retry when “Uploading · Verifying” is gone.
Machine refuses a long name	Shorten the name, or turn on Settings “Shorten long names automatically”.
No time left is shown	Tick “Use machining timer” for that machine (STEP 06) · FOCAS2 8193 on the machine (STEP 07). A program's first run shows only “Cycle” (or “Elapsed”), with no time left.
Window is not visible	Ctrl + Alt + P or the M-Link icon in the notification area. If that key is used by another program: Ctrl + Alt + M (shown in the status bar).
Firewall “Security Alert” window	“Allow access” : gets changes from other PCs at once. Files still transfer if you cancel.
Stop the alert sound	Click anywhere in the M-Link window. To always mute one machine, use  on its panel header. Sound, ring time and volume:  → “Alarm settings...”.
Window is off the screen	Restart M-Link. If the title bar is out of reach, the window comes back on screen.
Screen language did not change	It changes when you restart M-Link.

CONTACT Still not solved? Do not force setting changes. Contact **pksolution337@gmail.com** or **010-4455-2942**.
Photos of the screen and of what you clicked help us answer faster.

REFERENCE

Glossary · coming later

Glossary · Coming Later

FTP

File Transfer

A way of sending and receiving files. The machine's Data Server receives files this way (usually port 21).

Data Server

Data Server

The file storage and Ethernet board of a FANUC machine. The “ETHER BOARD” screens on the operator panel hold its settings.

FOCAS2

FANUC Open CNC API

The way a PC reads a FANUC machine's run status. It uses Ethernet port 8193.

IP address

IP Address

The address used to find machines and PCs on the factory network. E.g. 192.168.0.11.

Port (channel number)

Port

A door number for each purpose at one address. 21 is for files, 8193 for reading status.

MDI · SYSTEM · INPUT

Operator Panel

Manual input mode of the operator panel · key that opens the setting screens · key that enters a typed value.

Soft key

Soft Key

Buttons in a row along the screen edge. Their names change with each screen; “+” shows the next row.

PW alarm

Power Off Alarm

The message FANUC shows when you change a value that takes effect only after the power is turned off and on.

Cycle

Cycle

One run of a program from start to end. The machining timer counts the time left from the last cycle time.

Notification area

Tray

The icon area at the right end of the taskbar, next to the clock.

Coming later

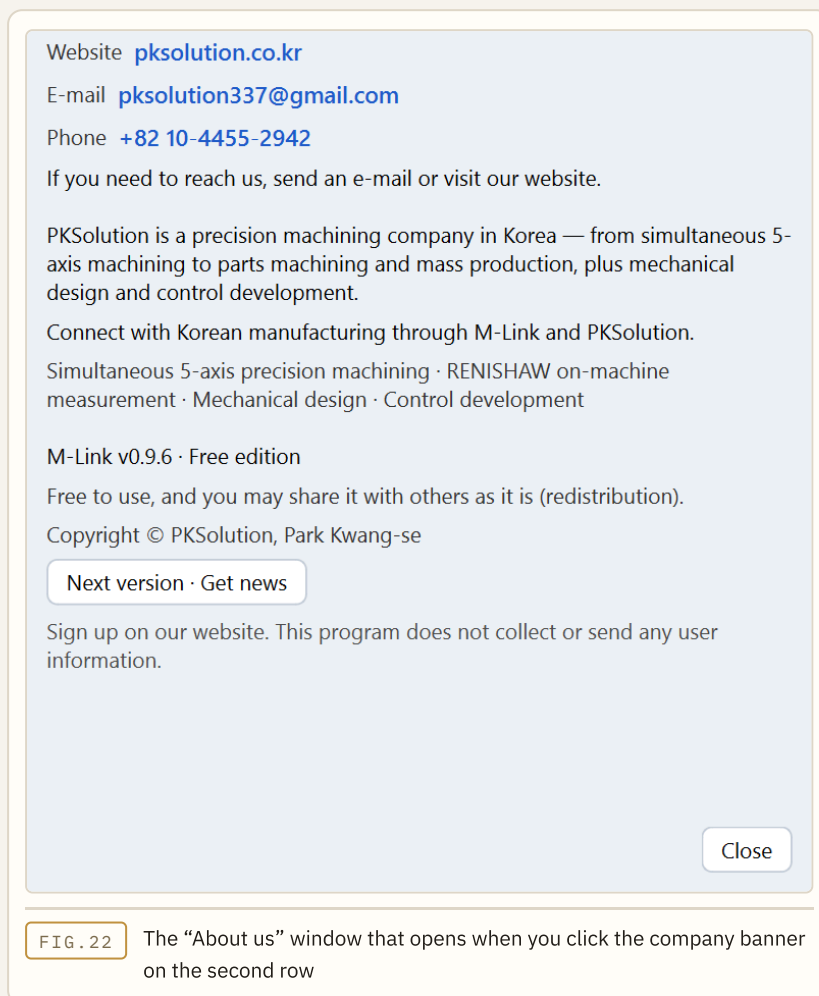
The feature below already has its place in M-Link and is **planned for a later version** of this free edition. It does not appear on screen now.

◆ **Machine takes files from the PC** · the PC works as a file server and the machine loads files from it

IN CLOSING

A tool to save time on the shop floor

Thank you for using M-Link



M-Link was made to cut the time spent walking between machines to move files. If something is inconvenient or you would like a feature, please let us know. We will reflect it in the next version. This program does not collect or send any user information.

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