Detailed Log Structure Tree
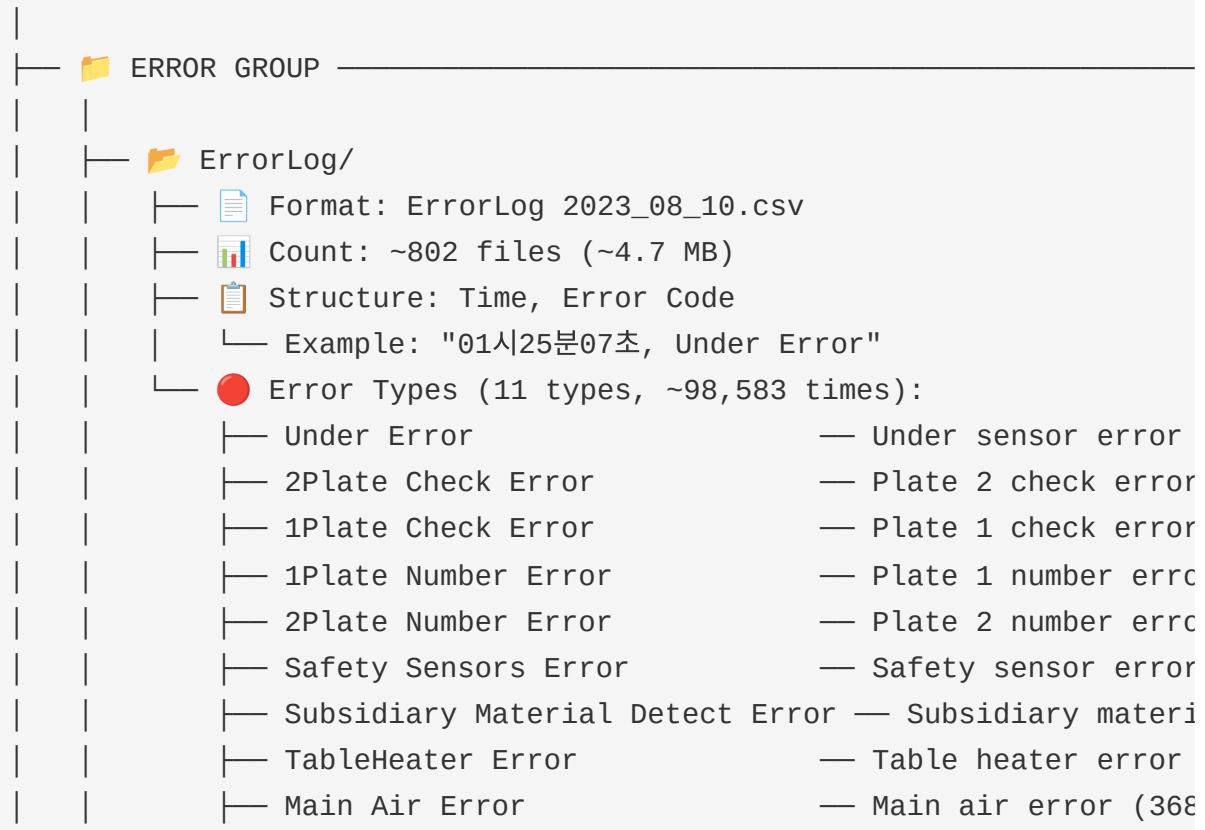
FPCB Manufacturing Machine Systems

> [!NOTE]
> This document describes the detailed directory structure and log types of two machine models: **Dawon HST** and **Woori-200G**.

🏭 DAWON HST (Hot Stamping Tool)

```
Dawon HST
│
├── 📁  ERROR GROUP ──────────────────────────────────────────────
│   │
│   ├── 📁  ErrorLog/
│   │   ├── 📄  Format: ErrorLog 2023_08_10.csv
│   │   ├── 📊  Count: ~802 files (~4.7 MB)
│   │   ├── 📋  Structure: Time, Error Code
│   │   │   └── Example: "01시25분07초, Under Error"
│   │   ├── 🔴  Error Types (11 types, ~98,583 times):
│   │       ├── Under Error                    — Under sensor error
│   │       ├── 2Plate Check Error             — Plate 2 check error
│   │       ├── 1Plate Check Error             — Plate 1 check error
│   │       ├── 1Plate Number Error            — Plate 1 number erro
│   │       ├── 2Plate Number Error            — Plate 2 number erro
│   │       ├── Safety Sensors Error           — Safety sensor error
│   │       ├── Subsidiary Material Detect Error — Subsidiary materi
│   │       ├── TableHeater Error              — Table heater error
│   │       ├── Main Air Error                 — Main air error (368
```

```
│   │       ├── Ringblow Inverter Error        — Ringblow inverter e
│   │       └── Door Error                      — Door error (168 tim
│   │
│   └── 📂 MotionOnLog/
│       ├── 📄 Format: MotionOnLog [Date].csv
│       ├── 📊 Count: ~629 files (~2.5 MB)
│       ├── 📋 Structure: Time, Error Code
│       │   └── Example: "03시27분07초, AreaAlarm : 1, bIsMainAirAlam
│       └── 🚨 Alarm Types (2 types, ~2,857 times):
│           ├── AreaAlarm : 1        — Safety zone alarm ON (1,534 ti
│           ├── AreaAlarm : 0        — Safety zone alarm OFF (1,323 t
│           ├── bIsMainAirAlam       — Main air alarm (0=OK, 1=Alarm)
│           └── EStopStatus          — Emergency Stop status
│
├── 📂 PRODUCTION GROUP ─────────────────────────────────────────
│   │
│   ├── 📂 ProductionLog/
│   │   ├── 📄 Format: ProductionLog [Date].csv
│   │   ├── 📊 Count: ~804 files (~13 MB, ~201,081 entries)
│   │   ├── 📋 Structure: Group, Model Name, Bonding Time, Production
│   │   │   └── Example: "DAWON HST, B4 FPCB, 00시21분47초, 00:11:08:5
│   │   └── 📈 Recorded Information:
│   │       ├── Group                — Machine group name (DAWON HST)
│   │       ├── Model Name           — Product model name (B4 FPCB)
│   │       ├── Bonding Time         — Bonding timestamp
│   │       ├── Production Time      — Production duration (HH:MM:SS:m
│   │       ├── Point Count          — Points processed (108-216/cycle
│   │       └── Alarm Count          — Accumulated alarm count
│   │
│   └── 📂 OperationLog/
│       ├── 📄 Format: OperationLog [Date].csv
│       ├── 📊 Count: ~804 files (~13 MB)
│       ├── 📋 Structure: Time, Operation List
│       │   └── Example: "00시10분05초, OP_AUTO_START"
│       └── 🔄 Operation States:
│           ├── OP_AUTO_START        — Start automatic cycle
│           ├── OP_AUTO_END          — End automatic cycle
│           └── OP_PAUSE_STOP        — Pause/interrupt
│
├── 📂 PARAMETER GROUP ──────────────────────────────────────────
│   │
│   └── 📂 ParameterLog/
```

```
|       ├── 📄 Format: ParameterLog 2023_08_10.csv
|       ├── 📊 Count: ~799 files (~3.9 MB)
|       ├── 📋 Structure: Time, Parameter Type, Before Data, New Data
|       │   └── Example: "02:04:20, 0 Array Base Mark Target, 80, 75"
|       └── ⚙️ Common Parameters:
|           ├── Array Base Mark Target   — Array base mark target (
|           ├── Plate Mark Target         — Plate mark target (80-95
|           ├── Plate1 옵셋 (Offset)      — Plate 1 offset (-20 to 8)
|           └── Point X Offset            — Point X offset (-14 to 0
|
└── 📁 CONFIG GROUP ─────────────────────────────────────────
    │
    ├── 📄 .ini (Main Configuration File)
    │   └── Contains sections:
    │       ├── [Plate Info]    — Plate information (Target, Angl
    │       ├── [Supply Info]   — Supply information (Heater, Spe
    │       ├── [Align Info]    — Alignment information (Step, Va
    │       ├── [Attach Info]   — Attachment information (Time, M
    │       └── [Light Info]    — Light information (Under/Upper
    │
    ├── 📄 Note.ini
    │   └── Operation notes
    │
    └── 📂 VISION FILES
        ├── 🖼️ BaseMark_0.bmp   — Base Mark reference image (~10 KB
        └── 📐 BaseMark_0.pat   — Pattern file for recognition (~2.
```

🏭 WOORI-200G (FSB - Flexible Substrate Bonding)

```
Woori-200G (FSB Ver.2.3.1_190517)
|
├── 📁 ERROR GROUP ──────────────────────────────────────────
|   |
|   └── 📂 Alarm/
|       ├── 📄 Format: log/Alarm/[YYYY]/[MM]/[MM-DD].txt
```

```
│          ├── 📊 Size: ~104 MB
│          ├── 📋 Structure: [Timestamp] Alarm Code:Sensor Description
│          │    ├── Occurrence: "[2026-01-05 02:36:53(100)] 034.알람 발생(3
│          │    └── Release: "[2026-01-05 02:35:57(450)] 035.알람 해제(39):
│          ├── 🔢 Alarm Codes:
│          │    ├── 034 (알람 발생)   ── Alarm occurrence
│          │    └── 035 (알람 해제)   ── Alarm release
│          └── 📍 Sensor Types:
│               ├── Sensor 39 (에어리어 센서 감지 - 전면)   ── Front area sens
│               └── Sensor 40 (에어리어 센서 감지 - 좌측)   ── Left area sens
│
├── 📁 PRODUCTION GROUP ─────────────────────────────────────
│    │
│    ├── 📂 stauts/ (Status Log)
│    │    ├── 📄 Format: [MM-DD].txt
│    │    ├── 📊 Size: ~6.6 MB
│    │    ├── 📋 Structure: Model | Start Time | End Time | Plan | Bond
│    │    │    └── Example: "TK M1 MFC EPX [06:24:57] [06:25:05] 1 1 0 [
│    │    └── 📈 Recorded Information:
│    │         ├── Model              ── Product model name
│    │         ├── Start Time         ── Batch start time
│    │         ├── End Time           ── Batch end time
│    │         ├── Plan               ── Planned point count
│    │         ├── Bonding            ── Actual bonding point count
│    │         ├── Error              ── Error count in batch
│    │         ├── Cycle Time         ── Total cycle duration
│    │         └── Tact Time          ── Average time per point (2-3s)
│    │
│    └── 📂 main/ (Main Log)
│         ├── 📄 Format: log/main/[YYYY]/[MM]/[MM-DD].txt
│         ├── 📊 Size: ~389 MB
│         ├── 📋 Structure: [Timestamp] Event Description
│         │    └── Example: "[2026-01-05 05:30:58(086)] Model Change : T
│         └── 📝 Main Events:
│              ├── Program Started/Exited       ── Program start/exit
│              ├── Model Change                  ── Product model chang
│              ├── Sheet Count                   ── Current sheet count
│              ├── Heater On/Off                 ── Heater toggle
│              ├── 원점복귀 시작/완료              ── Homing start/complete
│              ├── SetTorqueLimit                ── Set torque limit
│              └── [DISK_FULL] Auto remove log   ── Auto-delete old log
│
```

```
├── 📂 PARAMETER GROUP ──────────────────────────────────────────
│   │
│   └── 📂 parameter/
│       ├── 📄 Format: log/parameter/[YYYY]/[MM]/[MM-DD].txt
│       ├── 📊 Size: ~2.7 MB
│       ├── 📋 Structure: [Timestamp] Parameter Type Group[n] Axis [o
│       │   └── Example: "[2026-01-05 05:49:59(526)] 상부 부착 위치 오프섹
│       └── ⚙️ Parameter Types:
│           ├── 상부 부착 위치 오프셋 (Upper attachment position offset)
│           │   ├── 그룹[1], 그룹[2]    ── Group 1, Group 2
│           │   ├── 좌_X, 좌_Y, 좌_R    ── Left X, Y, R
│           │   └── 우_X, 우_Y, 우_R    ── Right X, Y, R
│           └── 측정 부착 위치 오프셋 (Measurement attachment offset)
│               └── X, Y axes
│
├── 📂 DEBUG GROUP ──────────────────────────────────────────────
│   │
│   └── 📂 debug/
│       ├── 📄 Format: log/Debug/[YYYY]/[MM]/[MM-DD].txt
│       ├── 📊 Size: ~6.9 GB (LARGEST)
│       ├── 📋 Structure: [Timestamp] Message (SourceFile/Method/Line
│       │   └── Example: "[2026-01-05 00:25:07(600)] ●[SetSequenceCle
│       ├── 💻 Source Code References:
│       │   ├── Mcs.cs              ── Motion Control System
│       │   ├── MainFrm.cs          ── Main Form UI
│       │   └── [Other .cs files]   ── Other modules
│       └── 🗑️ Auto Cleanup:
│           └── Auto-delete when disk > 80%: "Removed => [file path]"
│
└── 📂 CALIBRATION GROUP ────────────────────────────────────────
    │
    └── 📂 Compensation/
        ├── 📊 Size: ~144 KB
        ├── 📅 Data from: 2018-02-13
        │
        ├── 📂 TableOffset/
        │   ├── 📂 HeadX/
        │   │   └── Compensation data for Head X axis
        │   │       ├── Position compensation by X coordinate
        │   │       └── Offset values for each point
        │   │
        │   └── 📂 Upper/
```

```
|          └── Compensation data for Upper unit
|                ├── Offset by axes
|                └── Calibration values
|
├── 📄 CompensationAll_[Date].txt
|    └── Summary of all compensation values
|
└── 📄 CompensationError_[Date].txt
     └── Records calibration errors
```

📊 COMPARISON SUMMARY TABLE

Log Group	Dawon HST	Woori-200G	Notes
ERROR GROUP	2 folders (ErrorLog, MotionOnLog)	1 folder (Alarm)	Dawon separates Motion Alarm
PRODUCTION GROUP	2 folders (ProductionLog, OperationLog)	2 folders (stauts, main)	Equivalent
PARAMETER GROUP	1 folder (ParameterLog)	1 folder (parameter)	Equivalent
DEBUG GROUP	❌ None	1 folder (debug) ~6.9GB	Woori only
CONFIG GROUP	3 files (.ini, .bmp, .pat)	❌ None	Dawon only
CALIBRATION GROUP	❌ None	1 folder (Compensation)	Woori only

🔧 TECHNICAL SPECIFICATIONS

Criteria	Dawon HST	Woori-200G
Timestamp Format	`01시25분07초` (Korean)	`[2026-01-05 05:30:58(086)]` (ISO)
File Encoding	UTF-8/Mixed	UTF-16LE
File Format	CSV	Text structured
File Naming	`[Type]_[Year]년[Month]월[Day]일.csv`	`log/[category]/[YYYY]/[MM]/[MM-DD].txt`
Directory Structure	Flat	Hierarchical (Year/Month)
Language	Korean only	Korean + English
Total Size	~37 MB	~7.3 GB
Total Files	~3,841 files	~1,578 files
Disk Management	Manual	Auto (>80% cleanup)

🔴 COMPLETE LIST OF ERROR/ALARM TYPES (From Actual Data)

DAWON HST - ErrorLog (11 Error Types)

#	Error Code	Description	Count	Severity
1	**Under Error**	Under sensor error	80,809	🔴 Very Frequent
2	**2Plate Check Error**	Plate 2 check error	4,105	🟠 Frequent
3	**1Plate Check Error**	Plate 1 check error	3,905	🟠 Frequent
4	**1Plate Number Error**	Plate 1 number error	2,951	🟠 Frequent
5	**2Plate Number Error**	Plate 2 number error	2,488	🟠 Frequent
6	**Safety Sensors Error**	Safety sensor error	1,534	🔴 Critical
7	**Subsidiary Material Detect Error**	Subsidiary material detection error	1,023	🟡 Medium
8	**TableHeater Error**	Table heater error	942	🟡 Medium
9	**Main Air Error**	Main air error	368	🟡 Medium
10	**Ringblow Inverter Error**	Ringblow inverter error	290	🟡 Medium
11	**Door Error**	Door error	168	🟢 Infrequent

Total: ~98,583 errors | MotionOnLog: AreaAlarm 0/1 (~2,857 times)

WOORI-200G - Alarm Log (57+ Alarm Types, 11 Groups)

🔴 **Group 1: Area Sensor - ~747,881 times**

Code	Description	Count
039	에어리어 센서 감지(전면) - Area Sensor Front	563,004
040	에어리어 센서 감지(좌측) - Area Sensor Left	184,877

🟠 Group 2: Material Handling - ~47,580 times

Code	Description	Count
096	보조테이블 부자재 감지 실패 - Sub-table material detection failed	18,965
043	헤드 부자재 픽업 실패 - Head material pickup failed	14,754
046	헤드의 부자재 제거 요망 - Material removal from head required	7,422
045	부자재 흐뜨러짐 발생 - Material scatter occurred	3,881
042	헤드 부자재 부착 실패 - Head material attachment failed	1,438
093	분리부 부자재 감지 실패 - Separator material detection failed	1,098

🟡 Group 3: Head & Dual Attachment - ~12,880 times

Code	Description	Count
037	좌측 헤드 이중 부착 감지 - Left head dual attachment detected	7,334
038	우측 헤드 이중 부착 감지 - Right head dual attachment detected	4,812
027	이중부착 오류 - Dual attachment error	726

🔵 Group 4: Camera & Vision - ~14,391 times

Code	Description	Count
030	상부 카메라 패턴 감지 실패 - Upper camera pattern detection failed	12,948

Code	Description	Count
050	카메라 연결 이상 - Camera connection error	635
049	티칭 데이터 이상 - Teaching data error	468
036	부착마크 찾기 실패 - Attachment mark find failed (skip)	174
058	우측 헤드 마크 찾기 실패 - Right head mark find failed	86
057	좌측 헤드 마크 찾기 실패 - Left head mark find failed	70

⚡ Group 5: Motion & Axis - ~12,982 times

Code	Description	Count
077	이동범위 초과 - Movement range exceeded	9,855
028	Home 안됨 - Homing failed	1,013
032	모션 상태 알람 - Motion status alarm	870
033	모터 파워 꺼짐 - Motor power off	754
081	상부 카메라 X축 이동 시간 초과 - Upper camera X axis timeout	266
084/083	헤드 R축 이동 시간 초과 - Head R axis timeout	106
080/079	헤드 Z축 이동 시간 초과 - Head Z axis timeout	44

🚪 Group 6: Door - ~1,928 times

Code	Description	Count
017	문 열림(좌측) - Door open (Left)	741
018	문 열림(우측) - Door open (Right)	476
016	문 열림(후면) - Door open (Rear)	407

Code	Description	Count
015	문 열림(전면) - Door open (Front)	304

🔥 Group 7: Heater - ~1,097 times

Code	Description	Count
053	분리테이블 히터 파워 꺼짐 - Separator table heater power off	798
009	분리테이블 히터 과부하 - Separator table heater overload	148
003	메인테이블 히터 유닛 알람 - Main table heater overheat	61
008	메인테이블 히터 과부하 - Main table heater overload	49
004	분리테이블 히터 유닛 알람 - Separator table heater overheat	41

🌬️ Group 8: Air & Vacuum - ~750 times

Code	Description	Count
000	공압 이상 - Air pressure error	332
025	메인테이블 흡착 알람 - Main table vacuum alarm	270
002	메인테이블 흡착 인버터 알람 - Main table vacuum inverter alarm	122
090	메인테이블 흡착 안됨 - Main table vacuum failed	26

🛑 Group 9: Safety & Emergency - ~147 times

Code	Description	Count
007	긴급 정지 스위치 눌림 - Emergency stop switch pressed	141
089	헤드와 카메라 간 충돌 위험 - Head-camera collision risk	6

📦 Group 10: Material Rewind - ~291 times

Code	Description	Count
014	부자재 REWIND 알람 - Subsidiary material rewind alarm	147
013	이형지 REWIND 알람 - Release paper rewind alarm	144

📋 Group 11: Other - ~44 times

Code	Description	Count
088	제품 없음 - No product detected	30
051	선택된 가접 위치 없음 - No tack position selected	14

📊 SUMMARY STATISTICS

Machine	Error Types	Total Count
Dawon HST	13 types (11 Error + 2 Motion)	~101,440
Woori-200G	57+ types (11 groups)	~839,971
TOTAL	**70+ types**	**~941,411**

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