

Diagram illustrating the control and power circuits for a system, likely a motor drive or automation setup.

The diagram is divided into two main sections: **MẠCH ĐIỀU KHIỂN** (Control Circuit) and **MẠCH ĐỘNG LỰC** (Power Circuit).

**MẠCH ĐIỀU KHIỂN (Control Circuit):**

- Power Source:** L (Line) and N (Neutral) lines are connected to the system.
- MCB (Miniature Circuit Breaker):** Protects the control circuit.
- CÔNG TẮC NGUỒN (Power Switch):** Manually controls the power to the control circuit.
- BỘ CHUYỂN ĐỔI NGUỒN AC-DC (AC-DC Converter):** Converts AC to DC, providing 0V and 24V rails.
- HMI (Human Machine Interface):** Connected to the PLC via RS422.
- PLC (Programmable Logic Controller):** Consists of two modules: **FX3U-16MT/ES-A** (Main Unit) and **FX3U-3A-ADP** (Power Supply Unit).
- Inputs:** X0, X1, X2, X3, X4, X5, X6, X7, X8, X9, X10, X11, X12, X13, X14, X15, X16, X17, X18, X19, X20, X21, X22, X23, X24, X25, X26, X27, X28, X29, X30, X31, X32, X33, X34, X35, X36, X37, X38, X39, X40, X41, X42, X43, X44, X45, X46, X47, X48, X49, X50, X51, X52, X53, X54, X55, X56, X57, X58, X59, X60, X61, X62, X63, X64, X65, X66, X67, X68, X69, X70, X71, X72, X73, X74, X75, X76, X77, X78, X79, X80, X81, X82, X83, X84, X85, X86, X87, X88, X89, X90, X91, X92, X93, X94, X95, X96, X97, X98, X99, X100, X101, X102, X103, X104, X105, X106, X107, X108, X109, X110, X111, X112, X113, X114, X115, X116, X117, X118, X119, X120, X121, X122, X123, X124, X125, X126, X127, X128, X129, X130, X131, X132, X133, X134, X135, X136, X137, X138, X139, X140, X141, X142, X143, X144, X145, X146, X147, X148, X149, X150, X151, X152, X153, X154, X155, X156, X157, X158, X159, X160, X161, X162, X163, X164, X165, X166, X167, X168, X169, X170, X171, X172, X173, X174, X175, X176, X177, X178, X179, X180, X181, X182, X183, X184, X185, X186, X187, X188, X189, X190, X191, X192, X193, X194, X195, X196, X197, X198, X199, X200, X201, X202, X203, X204, X205, X206, X207, X208, X209, X210, X211, X212, X213, X214, X215, X216, X217, X218, X219, X220, X221, X222, X223, X224, X225, X226, X227, X228, X229, X230, X231, X232, X233, X234, X235, X236, X237, X238, X239, X240, X241, X242, X243, X244, X245, X246, X247, X248, X249, X250, X251, X252, X253, X254, X255, X256, X257, X258, X259, X260, X261, X262, X263, X264, X265, X266, X267, X268, X269, X270, X271, X272, X273, X274, X275, X276, X277, X278, X279, X280, X281, X282, X283, X284, X285, X286, X287, X288, X289, X290, X291, X292, X293, X294, X295, X296, X297, X298, X299, X300, X301, X302, X303, X304, X305, X306, X307, X308, X309, X310, X311, X312, X313, X314, X315, X316, X317, X318, X319, X320, X321, X322, X323, X324, X325, X326, X327, X328, X329, X330, X331, X332, X333, X334, X335, X336, X337, X338, X339, X340, X341, X342, X343, X344, X345, X346, X347, X348, X349, X350, X351, X352, X353, X354, X355, X356, X357, X358, X359, X360, X361, X362, X363, X364, X365, X366, X367, X368, X369, X370, X371, X372, X373, X374, X375, X376, X377, X378, X379, X380, X381, X382, X383, X384, X385, X386, X387, X388, X389, X390, X391, X392, X393, X394, X395, X396, X397, X398, X399, X400, X401, X402, X403, X404, X405, X406, X407, X408, X409, X410, X411, X412, X413, X414, X415, X416, X417, X418, X419, X420, X421, X422, X423, X424, X425, X426, X427, X428, X429, X430, X431, X432, X433, X434, X435, X436, X437, X438, X439, X440, X441, X442, X443, X444, X445, X446, X447, X448, X449, X450, X451, X452, X453, X454, X455, X456, X457, X458, X459, X460, X461, X462, X463, X464, X465, X466, X467, X468, X469, X470, X471, X472, X473, X474, X475, X476, X477, X478, X479, X480, X481, X482, X483, X484, X485, X486, X487, X488, X489, X490, X491, X492, X493, X494, X495, X496, X497, X498, X499, X500, X501, X502, X503, X504, X505, X506, X507, X508, X509, X510, X511, X512, X513, X514, X515, X516, X517, X518, X519, X520, X521, X522, X523, X524, X525, X526, X527, X528, X529, X530, X531, X532, X533, X534, X535, X536, X537, X538, X539, X540, X541, X542, X543, X544, X545, X546, X547, X548, X549, X550, X551, X552, X553, X554, X555, X556, X557, X558, X559, X560, X561, X562, X563, X564, X565, X566, X567, X568, X569, X570, X571, X572, X573, X574, X575, X576, X577, X578, X579, X580, X581, X582, X583, X584, X585, X586, X587, X588, X589, X590, X591, X592, X593, X594, X595, X596, X597, X598, X599, X600, X601, X602, X603, X604, X605, X606, X607, X608, X609, X610, X611, X612, X613, X614, X615, X616, X617, X618, X619, X620, X621, X622, X623, X624, X625, X626, X627, X628, X629, X630, X631, X632, X633, X634, X635, X636, X637, X638, X639, X640, X641, X642, X643, X644, X645, X646, X647, X648, X649, X650, X651, X652, X653, X654, X655, X656, X657, X658, X659, X660, X661, X662, X663, X664, X665, X666, X667, X668, X669, X670, X671, X672, X673, X674, X675, X676, X677, X678, X679, X680, X681, X682, X683, X684, X685, X686, X687, X688, X689, X690, X691, X692, X693, X694, X695, X696, X697, X698, X699, X700, X701, X702, X703, X704, X705, X706, X707, X708, X709, X710, X711, X712, X713, X714, X715, X716, X717, X718, X719, X720, X721, X722, X723, X724, X725, X726, X727, X728, X729, X730, X731, X732, X733, X734, X735, X736, X737, X738, X739, X740, X741, X742, X743, X744, X745, X746, X747, X748, X749, X750, X751, X752, X753, X754, X755, X756, X757, X758, X759, X760, X761, X762, X763, X764, X765, X766, X767, X768, X769, X770, X771, X772, X773

This diagram illustrates the electrical control system for a fan, divided into two main sections: the Control Circuit (MẠCH ĐIỀU KHIỂN) and the Power Circuit (MẠCH ĐỘNG LỰC).

**MẠCH ĐIỀU KHIỂN (Control Circuit):**

- Power Source:** The system is powered by a 24V AC source (G4) and a 0V source (G4).
- MCB (Main Circuit Breaker):** Protects the main power supply.
- Control Switch (CÔNG TẮC NGUỒN):** Manually controls the power to the control circuit.
- AC-DC Converter (BỘ CHUYỂN ĐỔI NGUỒN AC-DC):** Converts the 24V AC to a 24V DC supply.
- Limit Switches (CẢM BIẾN TIỆM CẬN TRÊN and CẢM BIẾN TIỆM CẬN DƯỚI):** Detect the fan's position (top and bottom limits).
- Emergency Stop (NÚT DỪNG KHẨN CẤP):** A normally closed button that stops the fan in an emergency.
- HMI (Human Machine Interface):** Provides manual control via buttons (GO UP, GO DOWN, PULSE) and a pulse input (PULSE).
- PLC (Programmable Logic Controller):** The core control unit, consisting of the CPU (FX3U-16MT/ES-A) and the Power Supply (FX3U-3A-ADP).
- Connections:** The PLC is connected to the 24V DC supply and the 0V ground. The HMI is connected to the PLC's RS422 port. The limit switches and emergency stop are connected to the PLC's digital input terminals (X0, X1, X2, X3, X4, X5, X6, X7).

**MẠCH ĐỘNG LỰC (Power Circuit):**

- Power Source:** The system is powered by a 24V AC source (G4) and a 0V source (G4).
- MCB (Main Circuit Breaker):** Protects the main power supply.
- Control Switch (CÔNG TẮC NGUỒN):** Manually controls the power to the power circuit.
- Variable Frequency Drive (VFD):** The VFD (FR150A-2S-15B-H) controls the motor's speed and direction.
- Motor (M):** The 3-phase motor that drives the fan.
- Connections:** The VFD is connected to the 24V AC supply and the 0V ground. The motor is connected to the VFD's output terminals (U, V, W). The VFD's digital input terminals (DI1, DI2, DI7) are connected to the PLC's digital output terminals (Y0, Y1, Y2).

# LOADCELL

The diagram illustrates the connection between a **LOADCELL MK-SPB** and a **BỘ KHUẾCH ĐẠI KM02** (Amplifier Module).

**LOADCELL MK-SPB Connections:**

- +Excitation (Blue) → E+
- +Signal (White) → SIG+
- Excitation (Black) → SIG-
- Signal (Red) → EXC-
- SHIELD → GND

**BỘ KHUẾCH ĐẠI KM02 Connections:**

- GND → 0V < G4
- V0 → V1+ > H12
- IO → COM1 > H13
- 24V → 24V < G4

# LOADCELL

The diagram illustrates the connection between a **LOADCELL MK-SPB** and a **BỘ KHUẾCH ĐẠI KM02** (Amplifier Module).

**LOADCELL MK-SPB Connections:**

- Excitation:** Blue wire to EXC+, Black wire to EXC-.
- Signal:** White wire to SIG+, Red wire to SIG-.

**BỘ KHUẾCH ĐẠI KM02 Connections:**

- Excitation:** E+ (Blue), E- (Black).
- Signal:** SIG+ (White), SIG- (Red).
- Grounding:** GND to the common ground of the power supply.
- Shield:** Connected to the shield of the signal cable.

**Power Supply Connections (24V):**

- 24V:** Connected to the 24V input of the amplifier.
- GND:** Connected to the GND input of the amplifier.
- Output:** The amplifier outputs a 0V signal to G4 and a 24V signal to G4.

# LOADCELL

The diagram illustrates the electrical connection between a **LOADCELL MK-SPB** and a **BỘ KHUẾCH ĐẠI KM02** (Amplifier Module).

**LOADCELL MK-SPB Connections:**

- Excitation:** Blue wire to **EXC+**, Black wire to **EXC-**.
- Signal:** White wire to **SIG+**, Red wire to **SIG-**.

**BỘ KHUẾCH ĐẠI KM02 Connections:**

- Excitation:** **E+** to **EXC+**, **E-** to **EXC-**.
- Signal:** **SIG+** to **SIG+**, **SIG-** to **SIG-**.
- Grounding:** **GND** to **GND**, **SHLD** to **SHLD**.

**Output and Power Section:**

- Power:** **V0** to **0V** (G4), **24V** to **24V** (G4).
- Signal Output:** **IO** to **COM1** (H13), **V1+** to **H12**.

