

Fibre optic cable production line for 2.0 /3.0 outer sheath and FTTH cable <https://delgosha.com>

PLC+IPC control FTTH drop /control Simplex/duplex cable production line

item	All parts' name and specification	Brand	Qty	Picture(for reference)
1	2 heads fiber motorized pay-off rack	HK	1set	
	2heads FRP/steel wire pay off	HK	1set	
2	800 single head motorized pay-off rack with dancer	HK	1set	
3	Steel wire straightening platform	HK	1set	
4	10 heads aramid yarn pay-off rack(Passive)	HK	1set	

5	Mobile positioning mold support	HK	1set	
6	Φ50x25D Extrusion main motor (with two screws)	HK	1set	
	fine-adjustment	HK	1set	
7	50KG Dryer machine	TAIRI	1set	
	Automatic hopper	TAIRI	1set	
8	Electric apparatus, main temperature control cabinet (PLC+IPC)	HK	1set	
9	2.5m moving water trough with water tank and warm water tank	HK	1set	

10	8m single-layer U-type fixed type cooling water trough and water tank (with drying device)	HK	1set	
11	Air cooled chiller	Le Chang	1set	
12	Shanghai gongjiu laser diameter gauge	Shanghai gongjiu	1set	
13	ink-jet printer stand device without ink-jet printer(optional)	HK	1set	
14	Φ 640mm+ Φ 400mm double-wheel capstan	HK	1set	

15	9m horizontal tension wire accumulator with precisely linear slide rail	HK	1set	
16	∅ 400-630mm double-shaft take-up machine	HK	1set	
17	Stand-by parts	HK	1set	
18	Providing tools	HK	1set	
19	Providing data	HK	1lot	

II、Application: Applied in production of FTTH terminal optical fiber cable(drop cable), extrusion material is PVC/LSZH. The extruded sheath possesses the features of even diameter, smooth, fast speed. And low excess loss for optical fiber.

III、Main parts brand:

Motor: Siemens(China) Motor

Transducer: American Emerson transducer

Temperature controller: Japan RKC Brand PID Smart type

PLC and Control Module: Siemens

IPC:Taiwan ADANTECH

Screw and Barrel: Produced by JINHU Company.

IV、Main specification and performance:

1. Manufacture:FTTH drop cable
2. Structure speed:Max.150 m/min
3. Production speed:2.0*3.0mm Max.110m/min(LSZH);120m/min(PVC)
2.0*5.2mm Max.100m/min(LSZH);110m/min(PVC)
4. No of optical fiber pay-off reels: 2reels
5. Specification of optical fiber pay-off reels: 25km and 50km standard optical fiber reels
6. Pay-off tension of optical fiber: 0.4N-1.5N
7. Heads no of reinforcement pay-off rack: 2 heads
8. Specification of reinforcement pay-off reels: PN400 reels and PN300 steel wire reels
9. Reinforcement Specification: ∅0.45mm

10. Pay-off tension of reinforcement: 5N-30N
11. Extruder $\Phi 50 \times 25D$ Extrusion machine
12. Take-up tension: 5-20N
13. Take-up reels Specification: 400 reel and 630 reel (central shaft hole diameter $\phi 56$)
14. Center height of machine: 1000mm from background
15. Color: customized; Cabinet color: RAL7032 GREY
16. Total Power: About 53KW

VI、 Main technical parameter and configuration

1. 2heads optical fiber motorized pay off rack and 2heads FRP/steel wire pay off rack.....1set

A. 2heads optical fiber motorized pay-off rack

- a-1. Cabinet structure , the horizontal cylinder
- a-2. Pay-off reels: 25km and 50 km standard optical fiber reels
- a-3. 4sets 400w gear motor + Danfoss transducer control
- a-4. Swing arm type tension controller

b. 2heads FRP/steel wire pay off rack

- b-1. Cabinet structure , the horizontal cylinder
- b-2. Pay-off reels: 400 reels
- b-3. 2sets 400W gear motor + Danfoss transducer control
- b-4. Swing arm type tension controller

2. 800 single head motorized pay-off rack.....1set

- 2-1. Mechanical type: manually push tight without axis
- 2-2. Wire drum: suitable for the use of $\Phi 630$ — $\Phi 800$ mm wire shaft
- 2-3. Tension: adopts 3.7KW AC motor
- 2-4. Unloading and downloading of shaft: Electric lift
- 2-5. Wire-broken: auto-stop brake

3. steel wire straightening platform.....1set

4. 10heads aramid yarn passive pay off machine.....1set

4. Mobile positioning mold support.....1set

5. $\Phi 50 \times 25D$ Extrusion main motor.....1set

- 5-1. Machine frame: it is assembled and welded with A3 steel plate and channel steel.
- 5-2. Deceleration box: it is Putuo 146-12.5 type
 - a. The square gearbox is cast formed with annealing, the material is *HT200* ~ 300
 - b. The gear material: high chrome alloy steel
 - c. The tooth surface of gear is high-frequency quenched and polished accurately, the index of noise is less than 75db, the gears are lubricated with the oil forcedly.
- 5-3. PVC screw:
 - a. Features: Suitable for the extrusion of PVC, PE and other plastic material, the plasticization 100%
 - b. Material: *38CrMnAl*, hardness: above *HRC60* ~ 63, the Nitrogenization : 0.4~0.7mm, the surface is plated chromium.
 - c. Diameter: $\phi 45$ mm (1 piece of screw stem), L/D=25:1, extrusion output(max.): 90kg/h, the machine head is open (PVC material)
- 5-4. Screw cylinder:
 - a. Screw barrel inner diameter: $\phi 50$ mm, it is one piece type from gearbox junction to the

machine head.

b. Material: 38CrMoAl, hardness: above HRC60~63, the nitrogenization: 0.4~0.7mm

5-5. Electric heating: the screw stem is heated by 4 sections by aluminum clarifier with voltage AC380V 2.2KW/section. Japan RKC brand PID smart type temperature-controller plus contactor control. 4 points temperature measuring, the precision of screw cylinder wall is ± 2

5-6. Cooling: 180W high-pressure centrifugal air blower work with temperature-controller to cool automatically.

5-7. Main motor drive: AC380V 18.5KW Siemens AC frequency Motor is equipped with AC 380V 18.5KW American Emerson transducer control.

5-8. Add a special low smoke halogen free screw, the plasticization 100%

5-9. Automatic hopper

6. hopper dryer and automatic sucking machine.....1set

6-1. 50kg Hopper dryer + auto material loader for auto loading and preheating, there is auto alarm without material.

6-2. The drying machine for material loading is equipped with the hot air electrothermal dryer. The temperature of hopper and heating time can be customized, Electric heating: 3.9kw, Blowing: 100W

6-3. The auto-feeder is the vacuum brute force suction type, the suction bucket is laid above the machine platform, the horsepower of exhauster is not lower than 1.0HP, feeding height is 4m.

7. Electric apparatus, main temperature control cabinet.....1set

7-1. Whole machine adopts the control technology between industry controller and program controller (PC + PLC way), Siemens S7 series products as PLC, Taiwan ADVANTECH computer control as Upper computer, with 17" Liquid crystal display, keyboard and mouse.

7-2. PLC as main control system to realize linkage control system of full production line, operators can choose stop, low speed, fast speed running status by interface. The production line can automatically switch in 3 kinds of status according to operation order and machine all status signal. speed can change according to settable lifting speed time and no sudden change. Can automatically respond to all defaults signal and be with accurate defaults indication. Both production speed and meter-counting data have obvious display. Can pre-set meter-counting length.

7-3. Industrial controller can make a record of human machine data exchange and production data. The industrial controller provide human machine interface including:

a. Production Interface: provide all operation function buttons and parameters settable window of production line including production line speed display, production line speed set, extrusion machine revolution speed and electric current display, extruder revolution speed set, haul-off and extruder start-stop button and products length, etc. and also can display all the status of production line.

b. Alarm interface: Displays and records the momentary and historical alarm signals of production line all parts to be convenient for operators to inquire.

c. Curve interface: the historical curve and alarm of production line speed, main machine revolution speed, machine head pressure, extruder electric current, products outer diameter, be convenient for operators to inquire historical data.

d. Formula interface: operators can set formula according to workart parameter, and take it out for usage while use.

e. Other interface and function shall change and increase according to client's requirement.

7-4. Temperature controller adopts Japan RKC or OMRON brand.

7-5. Industrial Controller adopts Taiwan ADVANTECH products with operation system, PLC choose Siemens S7 series products;

7-6. AC motor adopts Siemens (China) Motor;

7-7. AC motor driver adopts American Emerson transducer;

7-8. Require the Total Air Switch on the side of electric control cabinet (According to clients' requirement);

8. 2.5m moving water trough with water tank and warm water tank.....1set

8-1. Material: stainless-steel

8-2. Length :2.5m, movable amount is 0.5m.

8-3. Air-pressure is adjustable, with one unit of switch

8-4. Heating power:6KW

8-5. Water tank volume:0.3m³

8-6. Circulating water capacity:1.8m³/h

9. 8m single-layer U-type fixed type cooling water trough and water tank (with drying device).....1set

9-1. Material: stainless steel

9-2. Length: 8m

9-3. Water tank volume: 0.3m³

9-4. Circulating water capacity: 1.8m³/h

9-5. Water tank: the material is stainless steel and bucket installed the sponge or other sound insulation layer, after chip syringe, use a group of guide roller limit cable jitters and keep flat state, facilitate gauge measuring

9-6. Drying device: one set

10. Shanghai gongjiu laser diameter gauge (single type).....1set

10-1. Origin: Shanghai

10-2. Precision: ±0.003mm

10-3. Range of wire diameter: 0.1-20mm

10-4. Control: automatically feedback-control main motor speed to ensure the setting range of wire diameter

11. ~~Φ 640mm+Φ 400mm double wheel capstan~~ ^{Φ 640mm+Φ 400mm}.....1set

11-1. machine rack: it is assembled and welded with A3 steel plate and channel steel.

11-2. capstan wheel: material: casting aluminum

11-3. water-tank: stainless steel sealed water tank, with a set of windows and water wipers

11-4. Wheel set made of ABS, tank bottom width 8 mm flat section, match line pressing device, automatic wire; Set stop button.

11-5. Reserved a installation site for Printer synchronizer on the main traction motor

11-6. traction above-100N

11-7. dragging: 3.7kw frequency motor+ Makishinko Worm Reducer +SERVO

11-8. line speed: $v \leq 150m/min$, it is coordinated action control with main motor

12. 9m horizontal tension wire accumulator with linear slide.....1set

12-1. Support rack: 125mm × 125mm × 3mm . assembled and welded with steel plate

12-2. Track: 80mm × 160mm, horizontal length: 9m with linear slide

- 12-3. Drive: **1HP** Deceleration motor
- 12-4. Tension: with 5kg magnetic powder clutch
- 12-5. Wire-accumulating length: 10m ~ 160m
- 12-6. Wire-accumulating wheel: $\Phi 400\text{mm}$, 8+7 wheel
- 12-7. Tension adjustment: tension can be adjusted by tension control-cabinet DC-24V power. The vehicle can be controlled in both ways. The meter indicates tension. Synchronous device can automatically control the take-up speed to avoid overstretch or breaking on the wire.
- 12-8. Safe device: the limit switch are laid at the front and back end. the machine stops at the same time when wire breaking.
- 12-9. Anticollision: compression spring

13. $\phi 400 \sim 630\text{mm}$ double-shaft take-up machine.....1set

- 13-1. Suitable: Suitable for wire spool: $\phi 400 \sim 630\text{mm}$
- 13-2. Cantilever take-up disc shaft, Adopted quick sleeve positioning;
- 13-3. A fixed length light alarm, manual switch;
- 13-4. Exhaust line adopting AC motor drive
- 13-5. Exhaust line wheel can be adjust the height, can make the exhaust line wheel as close as possible to the wire spool, in order to improve the wire quality. Exhaust line wheel tank bottom width 6 mm.
- 13-6. Drive: 2 sets **AC 380V 3HP** Taiwan CPG CHENGBANG deceleration motor , with AC380V3HP American Emerson transducer and tension deflection detector can automatically control take-up speed.
- 13-7. Meter-counting: 6 digit electronic meter-counting, with the feature of auto-stop.
- 13-8. Traversing: screw type control traversing, 400W servo motor + Drive Control+6.7 inch Taiwan WEILUN interface+ Siemens PLC program, the pitch and range of traversing can be adjustable, it is coordinated with take-up speed.

14. ink-jet printer stand device without ink-jet printer(optional)..... 1set

VII. Supplied accessories

A: Tools:

- Tools box-----1piece
- Scissors-----1piece
- Inner hexagon wrench-----1set
- “1” screwdriver-----1piece
- Cross screwdriver -----1piece
- Active wrench-----1piece
- Special wrench for machine head-clip-----1piece

B: Stand-by parts:

- PVC water-pipe (used in the inside of machine) -----1lot
- Air-pipe(used in the inside of machine)-----1lot
- Mould (client provides the specification) -----1set
- Basic screws and fixed screw-----1unit
- Operation specification and electric control drawing-----1copy

C: Easily damaged parts:

- Machine head clip heating plate-----5pieces
- Machine neck heating ring-----4pieces

Thermal couple-----4pieces
Multiturn potentiometer-----4pieces

D: Providing data:

One set of machine installation drawing, usage instruction (manual), circuit diagram, etc.