

## Main applications

- Small lab extruders
- Extruders for production of compounds
- Extrusion lines for tubes and profiles

## Main features

- Graphics pages dedicated to machines and extrusion lines
- Dynamic configurability of temperature control zones and motors
- Control of temperature, current, pressure alarms
- Melt pressure closed loop
- Control of motors in synchronism
- Work parameter and machine parameter recipes
- Configurable trends for process variables
- Exportable historical files
- Weekly programmer for programmed on/off
- Scalability of application on many hardware architectures
- Tested solutions based on Gefran Hardware/Software

## PROFILE

GF\_PACK EXTRUSION is Gefran's complete product for the automation of extruders and extrusion lines.

It consists of standard hardware and software modules:

- operator interface with Gefran "DIGI-STAR II" Industrial PCs with 10", 12" and 15" color monitor, touch screen and 10 membrane function keys.
- Gefran "GILOGIK II" I/O modules with digital and analog inputs and outputs, temperature inputs, fast count inputs.
- temperature control unit, Gefran "Geflex" intelligent single loop and multi-loop series with on-board solid-state relays.
- software applications preconfigured and preloaded in operator interface.
- A simple code defines all of the devices needed to automate the entire machine.
- The software applications are sized according to the complexity of the machine to be controlled:
- EXTRULABO is designed for small lab extruders.
- EXTRUCOMP is designed for medium extruders for granulate production.
- EXTRUPIPE performs typical functions of complete extrusion lines for tubes and profiles.
- In addition to the specific functions of

each application, every packet offers:

- immediate and intuitive graphic interface to control temperatures and motors.
- management of recipes and of best work values (exportable via USB port).
- trends for temperatures and fundamental production values.
- exportable process value reports.
- configurable printing of parameters and pages.
- counters for scheduled maintenance.
- programmed auto-ON of system.
- videocamera via Ethernet (netcam) for real-time remote control of system "hot points."
- remote service via modem and internet.
- complete diagnostics of hardware (plc) including short circuits of signals and actuators.
- choice of language (including Chinese ideograms, Russian letters).
- various password levels at page and single data level.
- easy local and remote access to system via Ethernet (centralization, diagnostics, upgrade).

## TECHNICAL DATA

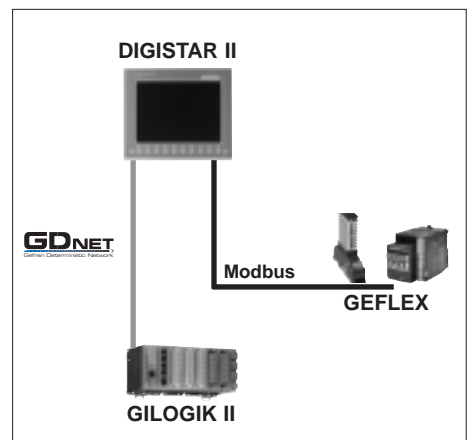
The automation architecture provides:

- Digistar II Industrial PC
- Gilogik II remote I/O module connected in GDNET (Ethernet) to Digistar II
- Geflex modules for distributed control of temperature controlled zones (option), connected in Modbus RTU to Digistar II


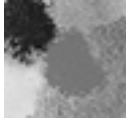
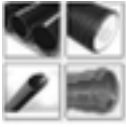



Note:

Motor drive control, provided in the packets, is performed via the analog signals of the Gilogik II module.



GF\_PACK EXTRUSION architecture scheme











## General characteristics of packet

Packet types	 <b>EXTRULABO</b>	 <b>EXTRUCOMP</b>	 <b>EXTRUPIPE</b>
	 <b>Digistar II</b>	 <b>Digistar II</b>	 <b>Digistar II</b>
Application	Complete packet for small lab extruders	Pacchetto completo per estrusori che producono granulo, polimeri o composti	Pacchetto completo per linee di estrusione di tubi e di profili
Operator interface	Industrial PC	Industrial PC	Industrial PC
TFT color monitor	10", 12"	10", 12", 15"	12", 15"
Touch Screen	YES	YES	YES
Tasti funzione	12 (12")	12 (12", 15")	12
Temperature control zones (heat/cool) (no.)	16 (max.)	24 (max.)	48 (max.)
Motor control (no.)	3	10 (max.)	16 (max.)
Melt pressure (no.)	1 (open/closed loop)	1 (open/closed loop)	4 (open/closed loop)
Current and interrupted load alarms monitor	YES	YES	YES
Main functions	Termoregolazione, controllo velocità estrusore, dosatore, taglierina (in sincronismo), pressione di melt	Extrulabo functions with control of filter change, vacuum pump, grain cyclone, cut, additional meters, feeders, temp. control units, aux. motors	Extrucomp function with control of drag, calibration group, cooling tanks, linear cutter, flippers, aux. motors

## Geflex temperature controllers

	 <b>GFX</b>	 <b>GFX4</b>
PID controllers for distributed temperature control	1 runner (heat/cool) with incorporated solid state relay; mounts on DIN rail	4 runner (heat/cool) with incorporated solid state relay; mounts on DIN rail

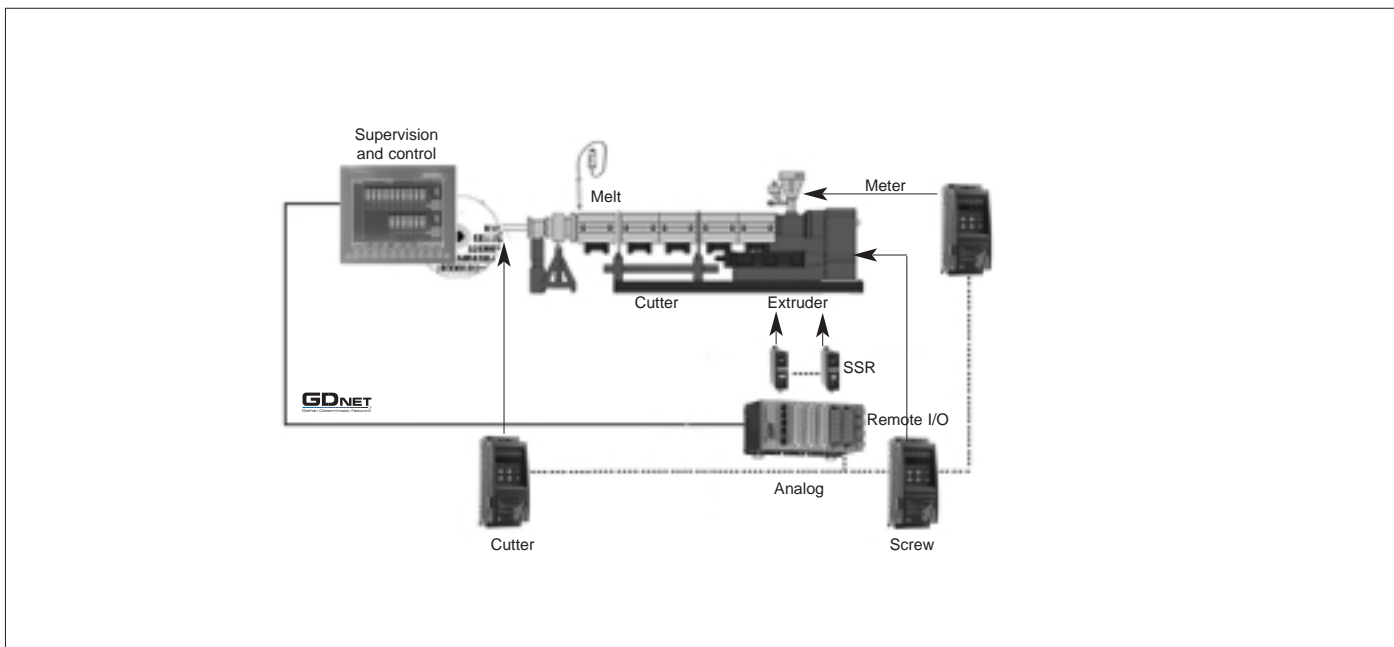
## I/O modules for Gilogik II

								
Code	R-E16	R-U16	R-EU16	R-A/D8	R-D/A4 R-D/A8	R-MA6	R-TC8	R-C3
<b>Characteristics, number of runners</b>								
Digital inputs PNP 24 Vdc	16		8					
Digital outputs PNP 24Vdc 2A							16	
Digital outputs PNP 24Vdc 2A		16	8					
Analog inputs mA, V, potentiometer, strain-gauge (16 bit)				8		6		
Analog outputs mA, V (16 bit)					4 - 8	6		
Temperature inputs (18 bit) (J, K)							8	
Count inputs							1 (5KHz)	3 (250KHz)

All the input/output signals are optically isolated

GF\_PACK EXTRUSION solutions are offered with various system architectures:

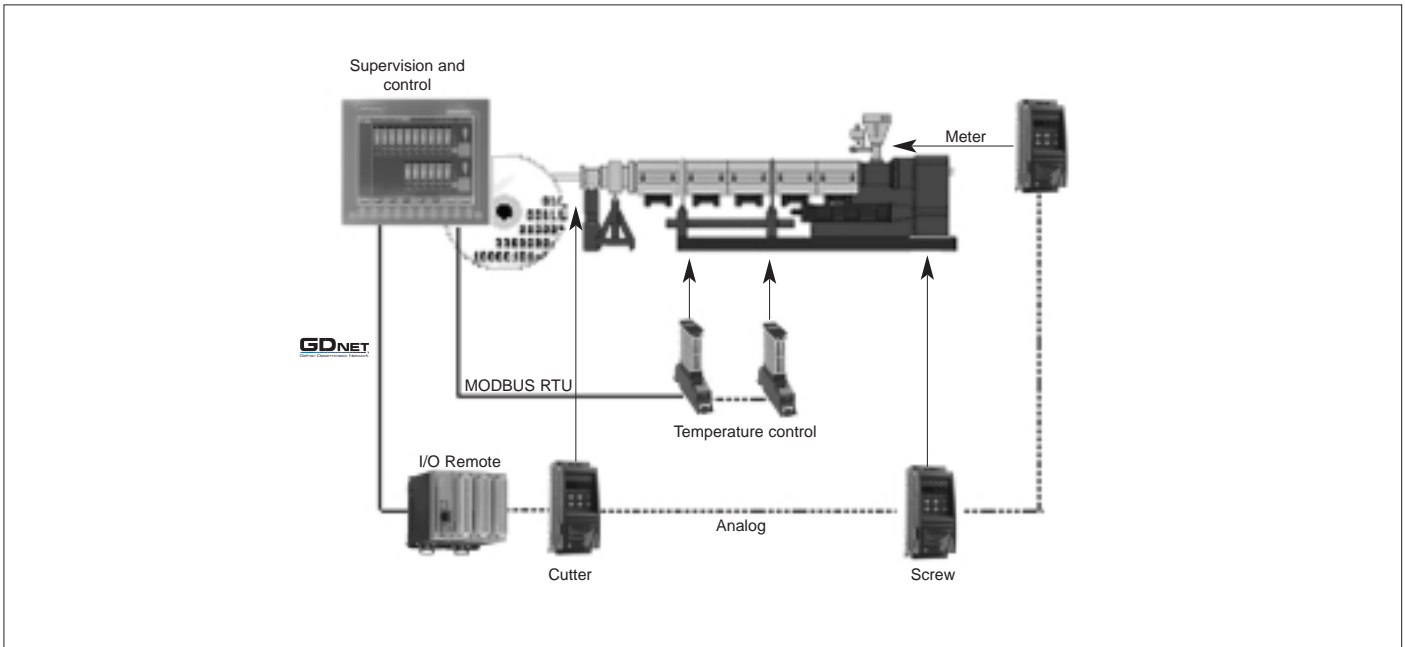
- “Centralized” solution (“C8”) with temperature control loops in the Gilogik II I/O block, with GTS series external solid-state relays.



The packet includes:

- 1 Digistar II industrial PC in the size selected, preloaded with the selected operating system and application packet.
- 1 Gilogik II I/O node with digital and analog I/O modules and the GDnet “bridge” module.
- Nr. x Power solid state relays with heat-sink, series GTS: rated voltage 480VAC, rated current of size selected, corresponding to number of zones selected.

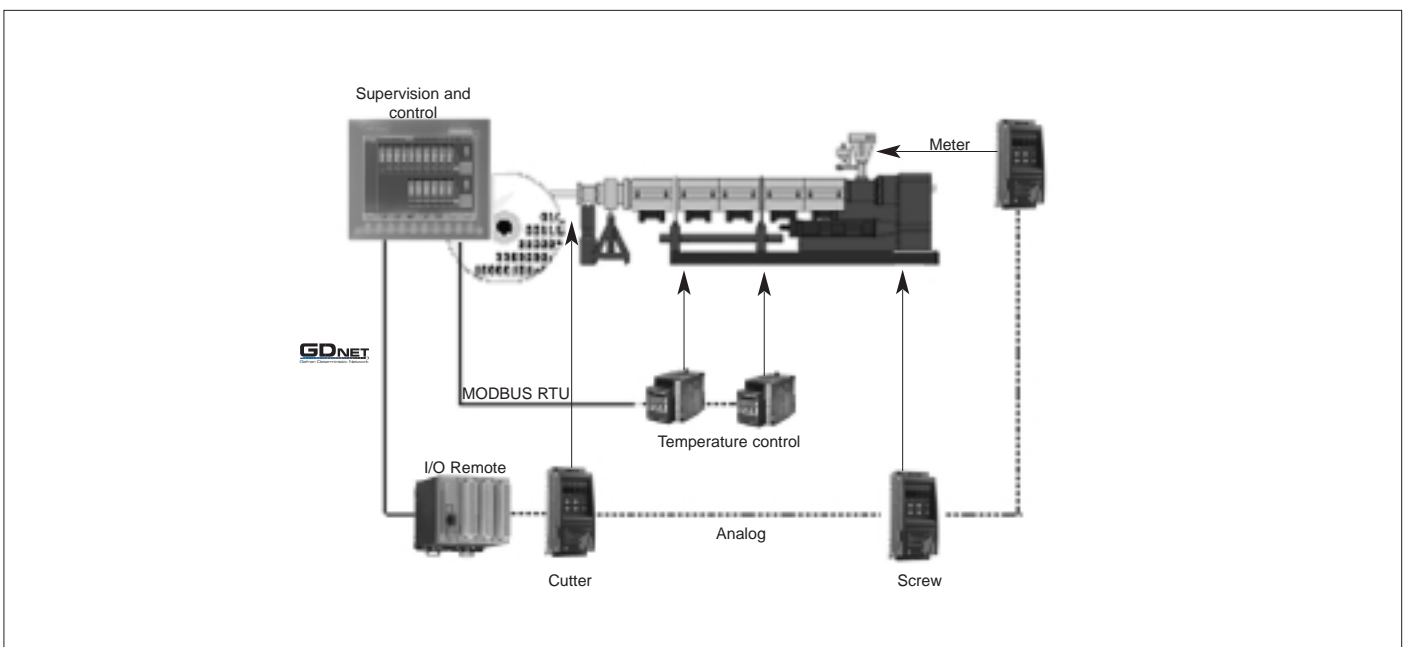
- “Distributed” solution (“D1”) with temperature control loops via “Geflex” controllers (single loop).



The packet includes:

- 1 Digistar II industrial PC in the size selected, preloaded with the selected operating system and application packet.
- 1 Gilogik II I/O node with digital and analog I/O modules and the GDnet “bridge” module.
- Nr. x Geflex temperature controllers (based on the number of zones in the selected packet), with power solid state relays with on-board heat-sink: rated voltage 480VAC, rated current of size selected.

- “Distributed” solution (“D4”) with temperature control loops via “GFX” controllers (4 loops)



The packet includes:

- 1 Digistar II industrial PC in the size selected, preloaded with the selected operating system and application packet.
- 1 Gilogik II I/O node with digital and analog I/O modules and the GDnet “bridge” module.
- Nr x GFX4 temperature controllers (based on the number of zones in the selected packet), with power solid state relays with on-board heat-sink: rated voltage 480VAC, rated current of size selected.

## ORDERING CODE

### EXTRULABO

Software application package for small/medium extruders.

Dynamic pages that can be configured to include up to 16 temperature controlling areas, up to 3 in synchrony, and a fast closed adjustment loop.

### EXTRUCOMP

Software application package for extruders.

Dynamic pages that can be configured to include up to 24 temperature controlling areas, up to 10 motors in synchrony, and a fast closed adjustment loop.

### EXTRUPIPE

Software application package for extrusion lines.

Dynamic pages that can be configured to include up to 48 temperature controlling areas, up to 16 motors in synchrony, and up to 4 fast closed adjustment loops.

#### Note:

EXTRULABO, EXTRUCOMP and EXTRUPIPE packages must be ordered together with Industrial PCs in the Digistar II Control series with VxWorks operating system.

The selected industrial PC is supplied with the selected operating system and application package already installed and ready for use.

**GEFRAN** spareserves the right to make any kind of design or functional modification at any moment without prior notice



In conformity to 89/336/CEE and 2006/95/CE with reference to standards: **CEI-EN 61000-6-2**(immunity in industrial environment) - **EN 50081-1**emissions in residential environments) - **EN 61010-1** (safety).

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