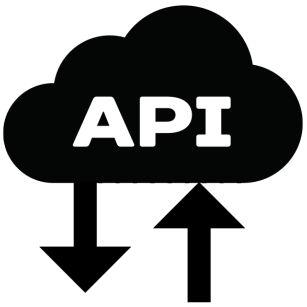
SAPIR 2

A professional enabled controller for single irrigation head

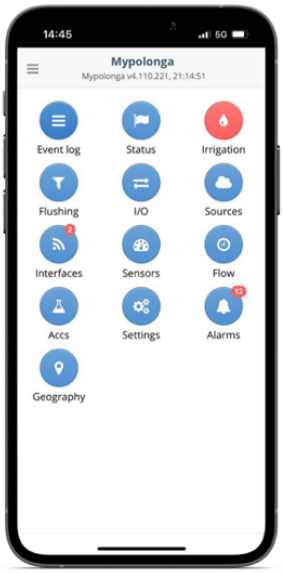
GOLDTEC CONTROL SYSTEMS



The **SAPIR 2** is the next generation of central control systems. It allows combining various technologies to suit each project specific needs. It is an **internet enabled controller** so the user can control everything from his **PC or Smartphone.**

The **SAPIR 2** is the perfect solution for small to large irrigation projects with a single irrigation head, suitable for both simple and demanding applications.

Remote access via PC or smartphone/ tablet



SPOT APP with direct WIFI connection [when internet is not available]

Sapir 2 General Features

Modular & Flexible Hardware:

- **Maximum 32 outputs –** Can be divided between local and radio RTU
- **Local on-board:**
    - **Modular 4 / 8 / 12 / 16 Outputs** – 12V DC Latch or 24V AC
    - **8 Digital inputs** – Water meter, fertilizer meters, DP, water level float and etc.
    - **4 Analog inputs** – Pressure sensor, ultrasonic water meter, tensiometer and etc.
- **Radio RTU** – License free, up to 3 km (30 km with repeaters)
- **Weather station** – Supplying data for irrigation by ET, Frost protection and Rain shutdown
- **Analog inputs** – Directly from the controller or remotely though Radio RTU (SDI-12 / 4-20ma / 0-5v)

Irrigation:

- Up to 16 irrigation programs
- Water dosage by Time, Volume, Volume per area and ET
- Irrigation by days of the week or cycle of days
- Single cycle or pulse irrigation
- Start: by time, by condition, manually
- Flexible programming – Valve by valve, groups by group or combination of both
- Main valve operation delayed, advanced, or together with the irrigation valves

Fertilization:

- Up to 4 fertilizers injectors and a booster
- Fertilization modes: Time (h:m:s), Volume (Litres), Concentration L/m³, Proportional volume and pH & EC level
- Three stage fertigation: pre- watering, injection, post watering

Backflush:

- Flushing by time, by PD or by both
- Definable parameters: Flushing interval, Pre-dwell time, Dwell time, Flushing time, PD delay
- Endless looping detection and prevention
- Accumulation of flushing cycles by time and by PD

Alarms:

- High flow, Low flow, Water leakage, Low pressure
- Fertilizer leakage, No pulses from fertilizer injector
- PD sensor failure
- Low battery, No AC
- More alarm notifications avaliable by condition

Communication:

- PC software, Java based - **CONSOLE**. Simple to use, powerful and modern
- Smartphone application – **SPOT**. From any device on any operating system
- Possible communication channels: **Wi-Fi**, 4G modem
- Push alarm notifications to user phone
- Remote firmware upgrade (OTA)

General:

- Multi language controller
- Local programming via Wi-Fi direct from smartphone / Tablet (No internet required)
- Dealer definitions allows tailor fitting each controller to each user specific application
- Flexible condition systems allows starting, stopping, waiting and continuing of irrigation programs
- Detailed event log for all system events
- Controller configuration and irrigation programs are saved on non-volatile memory
- Modern power efficient charging mechanism, prolongs battery life and lowers consumption

Energizing options:

- 12V DC from a solar panel and a rechargeable battery
  220V / 110V AC

HARDWARE

The SAPIR 2 can work with several interfaces

TALGIL CLOUD

API

THIRD-PARTY CLOUD

Data Collection Device

Interface RF G3, G4, G5

Weather Sensors

Interface Analogue 2 input or 4 input

Interface pH/EC Fertmaster

Interface pH/EC Monitor

Interface THD Temperature - Humidity -Dewpoint

Radio RTU system (decoder)

G5 Radio RTU – the next generation: The G5 RADIO RTU system was launched in 2018, it is based on all the accumulated experience in TALGIL of thousands of wireless systems installed and supported during about 20 years.

It has several major advantages over previous generations:

- Self-healing network – If an RTU loses communication to the master antenna, it will find an alternative route automatically.
- Automatic frequency selection – In case the frequency used by the system becomes too noisy due to interferences, the system will switch automatically to a different frequency.
- Communication retries – In case interference occurred exactly at a time an RTU was trying to communicate, the system will retry to send the message up to 3 times more.

The system is built from three main parts:

- Interface RF + Master antenna – Communicates with the controller unit on one side and with the G5 RTUs on the other side.
- RF RTU – The RF RTU (**R**emote **T**erminal **U**nit) is basically a small simple controller that performs whatever the Interface RF tells it to.

Each RF RTU is capable of:

Controlling:

- Pumps
- Valves
- Fertilizer injectors
- Filters

Monitoring:

- Water meters
- Fertilizer meters
- Water floats (Reservoirs and tanks)
- Pressure sensor
- Differential pressure sensor
- Analog sensor – Temperature, humidity, tensiometers, radiation, CO2, water level and etc..

The maximum range between the controller and the furthest RTU is 3km (with line of sight). The G5 is capable of 10 levels of repetition, which means a single RF Interface can control & monitor elements in a 30km radius!

Each Interface RF is capable of communicating with up to 500 RF RTUs, although in the case of the SAPIR2 is limited by the number outputs, digital inputs and analogue inputs allowed. The communication with all the RTUs by default is updated every 10 seconds, this can be depending on the number of RTUs.

Energy options:

- Modular RTUs: 4 X "D" type alkaline batteries [6vDC] OR 3.2Am/hr rechargeable battery [12vDC] and 5W solar panel.
- ECONOMICAL RTUs: 4 X "C" type alkaline batteries [6vDC] OR 1.3Am/hr rechargeable battery [12vDC] and 5W solar panel
- 240vAC-12vDC are available.

The RF system uses one out of eight channels in the band of 915-928MHz. It is a LICENSE FREE SYSTEM.
The outputs can control 12V DC latch solenoids.

There are several RTU RF models:

G5 RTU Radio- Economical

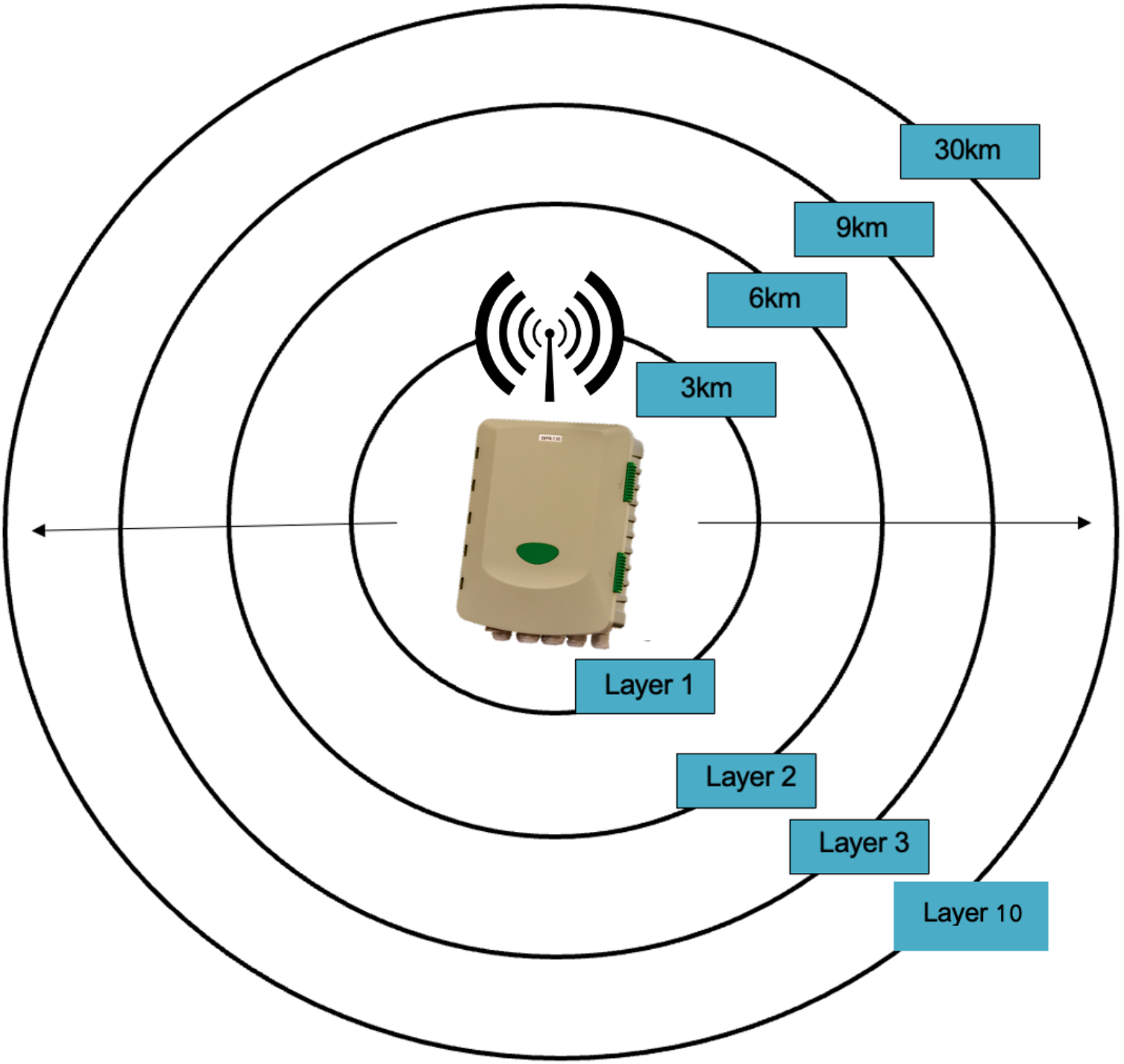
- An Economical non-modular solution, is to be used where devices in the field are far away one from another and future expansion in not likely.

Economical (4-20mA / 0-5V) 1x 12v DC latch output 1x Digital input 2x Analog input	
Economical (4-20mA / 0-5V) 2x 12vDC latch output 2x Digital input 2x Analog input	
4ANA	4x Analog input
SDI	SDI-12 input

G5 RTU – Modular

– A modular solution, to be used where devices are grouped together, or a future expansion is possible.

2,4,6,8	12v DC latch output 24v AC
4,8	Digital input
4+1	4x Digital input 1x Analog input
LIN Expansion	4x Analog input
LIN Expansion	SDI-12 input
LIN Expansion	EC/pH monitor
THD [temperature, humidity, dewpoint]	Built in sensor



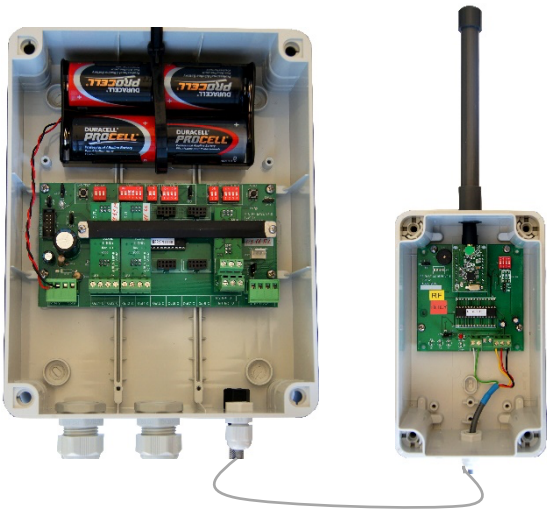
G5 Radio: Layers of Signal Repetitions

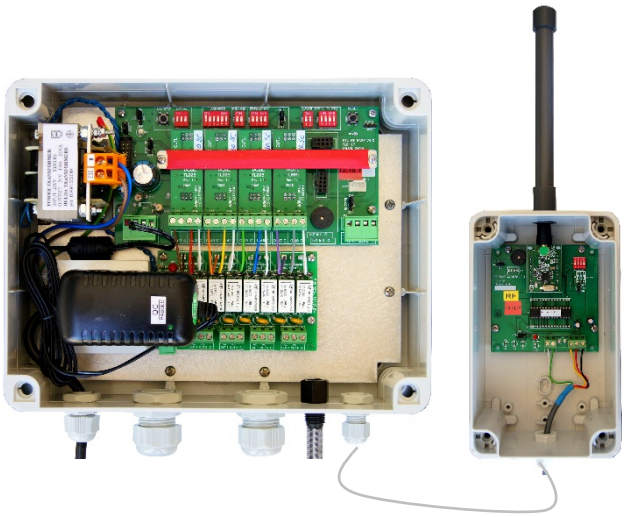
The generation G3, G4, G4.5 RTU RF these models will continue to be available as spare parts

These generations are offered in the following configurations, will offer 3km line of site and can repeat a further 3km for 6km in total.

- **RTU RF ECO** – An Economical non-modular solution, to be used where devices in the field are far away one from another and future expansion in not likely.
  - 1 Output / 1 Input
  - 2 Outputs / 2 Inputs

- **RTU RF MODULAR** – A modular solution, to be used where devices are grouped together, or a future expansion is possible.
  - 2/4/6/8 outputs (12v Latch or 24vAC)
  - 0/4/8 digital input
  - 0/2/4 analogue inputs (4-20mA/ 0-5V, SDI–12)





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