C350 pro

GSM/GRPS Control Unit

The C350 pro is designed for a broad range of advanced wireless monitoring, control and remote access applications. Based on the well proven X32-architecture, the C350 shares the same powerful features as the other members of "M2M Control Pro" family, adding unique features such as: Multiple RS485 ports with full Modbus support, Transparent support for Modbus based I/O module extension and a Graphical display with keys.

The C350 has been designed ground up for professional wireless industrial applications with its strong on-board I/O capabilities and multiple communication interfaces such as: CAN bus, 1-Wire, USB, RS232 and dual RS485 channels. The on-board I/O system can be expanded almost indefinitely and completely transparent by adding external Modbus compatible I/O modules! This unique I/O expansion capability, combined with the possibility to operate as a Modbus master and slave simultaneously, positions the C350 as the perfect product for SCADA-like applications.

The C350 offers many other features such as: A 512kbyte internal flash drive and a SD-CARD reader with a FAT32 compatible file-system for easy sharing of files locally and remotely with a PC/Server. There is optional support for Bluetooth, Ethernet, Wi-Fi, Camera module and a Mobile Data Terminal for user interaction.

The C350 is based on the well proven X32-architecture sharing features such as: IVR (Interactive Voice Response) implementation using Voice/DTMF, SMS/PDU messages, optimized host implemented TCP/IP stack with full support the our GPRS Gateway concept. Using the VSMS (Virtual SMS) technology SMS, GPRS and CSD (Datacall) merges together allowing any application that uses the VSMS-messages paradigm to transparently send / receive messages using either SMS, GPRS or CSD (Datacall) without any changes to the software already developed.

The C350 pro is of course fully programmable using the user-friendly Integrated Development Environment (RTCU IDE) running under Windows. In the environment the complete application is developed, simulated and finally transferred to the unit via a standard serial port or remotely using GPRS or CSD (Datacall).

The unit has full SMTP support for sending e-mails with attachments and file transfer with FTP for easy exchange of information with external sources.

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Some of the application areas includes:

- ❖ Surveillance and control of industrial equipment.
- ❖ Datalogging applications.
- ❖ Alarm / Security systems
- ❖ Process monitoring and reporting application.
- ❖ SCADA-like applications.
- ❖ Your applications...

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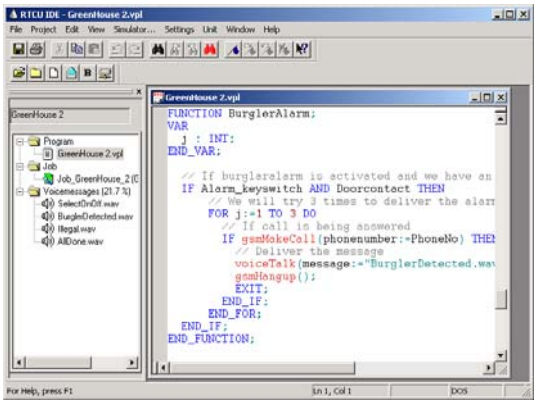

The Integrated Development Environment (IDE) for the Control Units, is an easy-to-use program for all aspects in the development of applications for the C350. The IDE contains a broad range of features, such as project control, comprehensive online help, built-in syntax highlighting editor, code generating wizard, voice recorder etc. A built-in simulator enables complete simulation of all features on the Control Unit: GSM, GPRS, SMS messaging, GPS, Analog / Digital I/O etc. A remote update feature allows the application developer to download new versions of a program, firmware or voice messages to a remote Control Unit, via a modem connection or over GPRS. Together, all of these features enables the user to cut development time to a minimum.

C350

GSM/GRPS Control Unit

High Performance 32-bit Processor with Large Memory Capacity

- Powerful industry leading dedicated 32-bit ARM7 Processor
- 1088 KByte RAM (Prepared for upto 2088 Kbyte RAM)
- 2304 KByte Flash for application, database and voice messages (Prepared for up to 8 MByte)
- 512 Kbyte Dataflash for datalogging / parameters.
  - Support for additional 8 MByte DataFlash.
- 512 Kbyte internal flash drive with FAT compatible file-system, for easy sharing of files with a PC.
- 8 KByte FRAM for fast access memory without any write endurance limitations
- Standard SD-CARD reader with FAT file-system support for standard PC-compatibility. Up to 2 GByte capacity

Extensive Range of Standard Features

- 8 digital solid state outputs, 8 digital inputs, 4 analog outputs and 4 analog inputs.
- Digital input 1-4 can individually be configured to operate as IEC62053-31 Class B compliant inputs.
- All analog inputs and outputs can be configured individually to either 0-10V or 0-20mA range.
- Two-part pluggable connectors for easy installation and maintenance.
- Primary RS232 serial port. Can be used as service port with special cable or as a standard RS232 port.
- Secondary RS232 serial port with all control signals present.
- RS485 multidrop communication port with support for Modbus slave/master and IO extension modules.
- Full CAN 2.0B Controller with hardware filtering and multi speed support.
- Basic support for industrial CAN bus protocols.
- 1-Wire support for connecting a range of accessories, such as ID-Button reader, Temperature sensors, etc.
- Piezo buzzer for audible notification.
- Graphical 144x32 pixels white-on-blue back-lit LCD display for presentation of graphics and text.
- 8 fully user programmable keys next to the LCD display.
- Two user available bi-color LED-Indicators with 3 colors: Green, Red and Yellow.
- Three user accessible DIP-switches and one reset and system recovery switch.
- On-board temperature sensor.

State of The Art Communication Technology

- Quad Band (850/900/1800/1900 Mhz) GSM based on industry leading Texas Instruments Chipset solution
  - Voice. Digitized (145 seconds)
  - SMS (Text and PDU)
  - GPRS. Multislot class 10. Support for simultaneous Voice and GPRS (suspended)
  - CSD (Datacall)
- Support for optional Gemalto M2M chip solution instead of a removable SIM card (factory mounted)
- Digitized voice and DTMF decoding. User spoken dictionary for implementation of voice response systems

Advanced Power Management

- High-capacity (1900 mAh) Li-Ion battery pack. Advanced charging circuit is implemented.
- Supervision of supply voltage and supply type.
- Several power-saving modes: Power-down, 'Wait for Event' and 5 Processor execution steps
- Wakeup from Power-down using Ignition (Digital Input 5) and optional timer
- Wakeup from 'Wait for Event' using: Digital input, Timeout, GSM-, CAN- or UART activity




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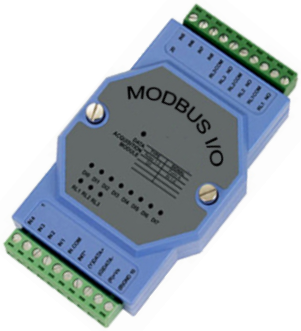
M2M Control

...ready to meet ALL your requirements...

Highly Expandable

- Additional RS485 port (for a total of 2 ports).
- Additional 8 MBytes of DataFlash for datalogging / parameters.
- VGA CMOS Camera for intelligent remote surveillance.
- Bluetooth for wireless connection to Headset, PDA, PC, etc.
- Ethernet (cable) or Wi-Fi connection.
- Modbus based I/O extension modules.
- EGPRS (EDGE) available for bandwidth demanding applications.



Development Tools for Rapid Application Development

- Programmable using the FREE IDE full-feature development environment.
- Easy to learn VPL high-level programming language based on EIC 1131-3 industrial standard.
- More than 500+ standard functions and 700 pages of on-line documentation suits every application.
- Many example programs available to "kick-start" application development.
- Full feature Microsoft Windows Simulator allowing test of complete application without use of physical unit.
- VSMS technology seamlessly supports SMS, GPRS, CSD, Ethernet, Wi-Fi without application/server changes.
- Seamless upgrade to future technologies.
- 100% backward compatible with previous generation products.

Industry Leading Deployment Features

- Full GPRS Gateway Professional / Upgrade & Deployment server compatible.
- Upgrade of application, firmware and parameters over CSD, GPRS and Cable.
- Upgrade can occur during full unit operation minimizing the impact on the customer.
- Unattended and fully automatic upgrade and deployment.
- Automatic "bootstrap" of un-programmed unit on first time installation.

Innovative Design

- Encapsulated in a 9 module M36 DIN-rail house.
- All interfaces externally accessible, except SIM holder.
- Produced in EU.

Proven Technology

- Practical experience from more than 40+ GSM networks.
- Network of Partners around the globe.
- More than 25.000 units in operation worldwide.

- M2M Control is a Brand of Infranet Technologies GmbH

...and beyond!

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M2M Control

Technical Data

Power supply		Min	Typ	Max		
Operating Voltage		8	-	36	VDC	Protected against wrong polarity.
Unit Active Unit Active with GSM On Unit Active while Charging Unit in Power-down Unit in "Wait for Event" Unit in "Wait for Event" Unit in "Wait for Event" Unit in "Wait for Event", GSM On			45 55 650 0.4 0.4 10 8 15		mA mA mA mA mA mA mA mA	GSM idle @ -63 dBm Restart on: DI5 and RTC Resume on: DI, RTC Resume on: CAN Resume on: RS232 Resume on: GSM *Typical measurements @ 12 VDC Supply.*
Digital Outputs		- -	- -	36 1.5	VDC A	Outputs protected against: Short circuit, ESD and inductive (Relay) kickback up to 20mH.
Digital Inputs	Logic "High" Logic "Low"	5.5 -5	- -	40 3	VDC VDC	Inputs are protected against transients and low-pass filtered.
Analog Outputs		0 0	- -	10 20	VDC mA	Resolution is 10 bits. All inputs are protected against transients and low-pass filtered.
Analog Inputs		0 0	- -	10 20	VDC mA	

• GSM Radio Frequency	850 / 900 / 1800 / 1900 MHz
• GSM Transmit Power	Class 4 (2W@800/900 MHz) Class 1 (1W@1800/1900 MHz)
• GPRS Packet Mode	Class B, Multislot 10

Storage temperature:	-30	-	+65	°C	External interfaces:
Operating temperature (According to GSM 11.10 specification)	-25	-	+55	°C	• 5.08mm two-part pluggable screw terminals for: ▪ Power, Digital I/O, Analog I/O ▪ CAN, RS485 and 1-Wire
Restricted operation (deviations from the GSM specification may occur)	-30	-	+65	°C	• TYCO Mate'n'Lock for RS232 port 1 and DCOUT.
Charging Temperature (*Low temperature charging available*)	0	-	+45	°C	• RJ45 for RS232 port 2 (EIA-561 compliant) • Three bi-color LED and one yellow status LED. • Three DIP-Switches and 8 navigation keys. • SD-CARD reader. • Mini USB-B (slave) • SMA-Female connector for GSM antenna. • Graphical 144x32 pixels LCD.
Humidity (non condensing)	5	-	90	%	
Weight		0.300		Kg	All interfaces, are externally accessible
External dimensions	W 157 x H 86 x D 58 mm				without SMA connectors
Ingress Protection (IP)					9 Module M36 DIN-rail enclosure
Approvals	EN 61000-6-2 EN 61000-6-3				CE **EU EMC Directive 2004/108/EU**

Technical data subject to change

For more information:
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ARM

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