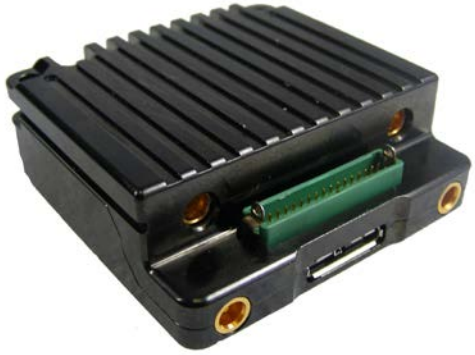
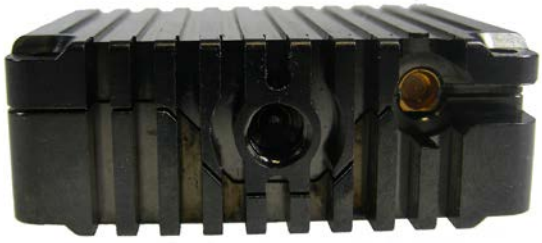
SOLO8 Software Defined Radio (Concealment)

COFDM – Video, Audio Telemetry and IP Products

March 2016 Data Sheet





The SOLO8 Software Defined Radio (SOL8SDR) is an ultra-miniature COFDM digital video transceiver, designed specifically for Point-of-View (PoV), body-worn and concealment applications.

Three enclosure variants are available. Robust (-R) provides a passively cooled IP66 rated enclosure ideal for outdoor, or body worn applications. Concealment (-C) is an ultra-miniature package for integration into concealment solutions. Plain (-P) provides a compact higher power solution (2x500mW) for increased range and enhanced connectivity with native RJ45 and USB as standard.

With proven DTC COFDM and H.264 encoder technology at its core, the exceptionally small size and ultra-low power consumption (5 to 10W mode dependant, higher for 2x500mW plain enclosure variant) enables stunning high quality high definition images from the heart of the action, in situations never previously possible due to equipment size and battery run-time constraints.

Built-in motion detection can be used to further expand battery life, or storage capacity, with event triggered transmission and/or recording.

The DTC SOL8SDR is derived from the successful SOLO7 HD Nano Transmitter range. It uses the same high performance video codec on a more flexible yet compact hardware platform. The SOLO8 supports dual High Definition HD-SDI inputs. In addition the SOL8SDR integrates 128GB of internal video storage on Flash memory. An integral battery backed-up real time clock provides a time and date stamp. The SOL8SDR also provides both USB and Ethernet I/O interfaces. The Ethernet interface supports IP streaming of video via both 'RTSP' and multicast streaming compliant to ONVIF Profile S. This one unit can effectively be either an IP encoder, front end recorder, a COFDM TX, or an IP Mesh NETNode in one box.

The small size and ultra-low power consumption make the SOLO8 Software Defined Radio ideal for concealments and hidden point of view applications. Optional lightweight, low power consumption amplifiers are also available for even greater range capability.

The SOLO8 Software Defined Radio employs ultra-low latency High Profile H.264 (MPEG-4 AVC) encoding for excellent image quality retention over the wireless link or contested IP network.

The transmitter integrates an ISM band telemetry modem, which currently supports 433MHz and 915MHz. This telemetry receiver allows return command and control information to be sent to the SOL8SDR unit. The command information can be used to control the inbuilt recording and to power on and off the unit. The return data link has sufficient capacity to support PTZ commands for a connected PTZ camera – VISCA and PELCO-D protocols can be supported.

Software Defined Radio App available options are as a COFDM Transmitter (SDRAPP-TX), an IP Encoder (SDRAPP-ENC) and IP MIMO Mesh (SDRAPP-MESH) supported by software updates.

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Specification:

IO

RF COFDM Output 1	SMP (male 50ohm)
RF COFDM Output 2	SMP (male 50ohm)
RF Telemetry Input	SMP (male 50ohm)
Video SD/HD-SDI 1	MCX (female 75ohm)
Video SD/HD-SDI 2	MCX (female 75ohm)
USB Control and Download	USB 3.0 Micro-B
Power Input	Harwin Gecko or JST (4 pins)
Power Output	Harwin Gecko or JST (2 pins)
PA Control	Harwin Gecko or JST (4 pins)
Microphone/Line Input 1	Harwin Gecko or JST (3 pins)
Microphone/Line Input 2	Harwin Gecko or JST (3 pins)
Headphone Output	Harwin Gecko or JST (2 pins)
PTZ Control or Data IO	Harwin Gecko or JST (7 pins)
Gigabit Ethernet	Harwin Gecko or JST (10 pins + Magnetics)

COFDM Output

Power	100mW, 0.25dB incremental control
Tuning Range	Frequency variant dependant
Tuning Step	125kHz

Telemetry Transceiver

Tuning Range	Frequency variant dependant
Code reference 43	433.05-434.79MHz
Code reference 91	902-928MHz
Receiver Sensitivity	-114dBm

DVB-T Modulation

DVB-T Bandwidth	8MHz, 7MHz, 6MHz modes
DVB-T FEC	1/2, 2/3, 3/4, 5/6, 7/8
DVB-T Constellation	QPSK, 16QAM, 64QAM
DVB-T Guard Interval	1/4, 1/8, 1/16, 1/32
DVB-T Bitrates	1.555Mbps to 31.668Mbps

Narrowband/UMVL Modulation

NB Bandwidth	2.5MHz, 1.25MHz and 625kHz modes
UMVL Bandwidth	8MHz, 7MHz and 6MHz modes
NB/UMVL FEC	1/3, 2/3
NB/UMVL Constellation	QPSK, 16QAM, BPSK, 8PSK
NB/UMVL Guard Interval	1/8, 1/16
NB Bitrates	144kbps to 4.879Mbps
UMVL Bitrates	1.317kbps to 14.869Mbps

Mesh Modulation

Mesh Bandwidth	10MHz, 8MHz, 7MHz, 6MHz, 5MHz, 3.5MHz, 3.0MHz and 2.5MHz modes
Mesh FEC	1/2, 2/3 (adaptive)
Mesh Constellation	BPSK, QPSK, 16QAM (adaptive)
Mesh Capacity	Maximum 14.6Mbps (TX/RX)
MIMO Mesh Capacity	Maximum 25.0Mbps (TX) Maximum 12.4Mbps (RX)

Video

Video Input	2 video streams Max total throughput of 1920x1080p30 2 HD inputs at half resolution or frame rate
Input Format	1920x1080i 60/59.94/50Hz 1920x1080p 30/29.97/25/24/23.97Hz 1920x1080psf 30/29.97/25/24/23.97Hz 1280x720p 60/59.94/50Hz 720x576i 50Hz or 720x480i 59.94Hz
H.264 Compression	AVC / H.264 / MPEG-4 Part 10 High profile level 4.0
Coding Options	Horizontal scaling of 3/4, 2/3, 1/2, 1/4 Vertical scaling of 1/2, 1/4 Sub-frame rate of 1/2, 1/4, 1/8, 1/24
Encoder Delay	1s to 10ms (mode dependant)
Encoder Bitrates	0.25Mbps to 32Mbps

Audio

Analogue Audio Input	High gain microphone stereo pair
Digital Audio Input	SD/HD-SDI 2 digital stereo pairs
Sample Rate	32kHz 48kHz
Coding Modes	4 channels stereo or mono MPEG Audio Layer 1 64-448kbps MPEG Audio Layer 2 32-384kbps

Data Interface

PTZ Control	Formats including VISCA and PELCO-D over Telemetry or Ethernet
Data Input	1k2 to 115k2, 7/8 bit, no/odd/even parity RS232 or RS485

Encryption

Type	ABS 32bit as standard with SDRAPP-TX AES128/256 (optional) DES as standard with SDRAPP-MESH

Streaming

Format	UDP Multicast/Unicast RTSP Multicast/Unicast ONVIF profile S
MJPEG	TCP

Recording

Medium	Internal microSD 128GB (>8 hours recording at max DVB-T bitrate) (>29 hours recording at max NB bitrate)
Encryption	As per transmission

Control

USB	PC Application control and file download
Ethernet	Web GUI control and file download
Access	User, Super User and Admin accounts

Physical

Dimensions	L 50mm, W 50mm, H 18mm
Weight	70g

Power

DC Input	8V to 18V reverse polarity protected
DC Output	1A pass-through (switchable)
Camera/Adapter Power	5V over video input (switchable)
Typical Power Consumption	7.5W (SD), 8.5W (HD), 9.5W (Dual)

Environment

Temperature Range	-20 to +60 °C with additional cooling
Humidity	Less than 85% Non-Condensing
Cooling	External heat sink or fan required
Sealing	IP40
EMC Conformance	None guaranteed, not CE marked

Product Codes:

Please see configurator table on the following page.

* Future development

Products are available to security users in licensed frequency bands. Encryption licences are subject to export control. These products are not approved for use by unlicensed users. Commercial products are available if used in appropriate licensed frequency bands.

SOL08 Software Defined Radio (Concealment)

COFDM – Video, Audio Telemetry and IP Products

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Please enter required codes

Family: SOL08 Product: SDR

Export of Encrypted Products is Subject to United Kingdom Regulatory Export Controls

DTC Sales Code

Please enter required codes

SOL8SDR-C _ [ ][ ][ ][ ][ ][ ] [ ] [ ]

Code	Frequency
132043	1.14-1.50GHz + 433MHz
201043	1.67-2.35GHz + 433MHz
204091	1.78-2.30GHz + 915MHz
470091	4.40-5.00GHz + 915MHz
Other options may be available on request.	

Code	Encryption
* ABS32 included as standard for SDRAPP-TX *DES included as standard for SDRAPP-MESH	
AES128	AES128 Encryption
AES256	AES256 Encryption

Code	BCrypt * Restrictions apply
BC	BCrypt

SDRAPP _ [ ] [ ]

Code	Description
ENC	IP Encoder
TX	100mW COFDM Transmitter
MESH	100mW IP Mesh NETNode

Software License Codes *(Silver / base level included in BOM)*	
Silver	*SDRAPP-ENC includes* Audio, Data, Recording, Streaming
Gold	***Silver plus*** MPEG4 H.264 (SD)
Platinum	***Gold plus*** MPEG4 H.264 (HD)
Silver	*SDRAPP-TX includes* DVB-T, Telemetry
Gold	***Silver plus*** Narrowbands 1.25MHz & 2.5MHz
Platinum	***Gold plus*** Ultra Extreme Narrowband 625kHz, Ultra Mobile Video Link (UMVL)
Silver	*SDRAPP-MESH includes* MIMO IP Mesh (2x2)

Product Code Includes	
D1804	Gecko Breakout PCB
D918	Ethernet Magnetics PCB
CA2856	Ethernet JST cable
CA3043	DC Power Lead
SA3774	USB stick containing User Guide, DTC Device Controller and Integration Documentation

Compatible Products (sold separately)	
SOL5RX	SD Receiver
SOL7NNV	Handheld SD Receiver
SOL4MIV2	Tactical SD Receiver
PRORXB	HD Receiver
PRORXD	Dual HD Receiver
SOL7NNVHD	Handheld HD Receiver
SOL7MIVHD	Tactical HD Receiever
NETNode2W-3R	Phase 3, 2W Robust IP Mesh Radio
NETNode2W-3P	Phase 3, 2W Plain IP Mesh Radio
NETNode-MIMOR	MIMO, 2W Robust IP Mesh Radio

Related Accessories (sold separately)	
SOL8SDR-CK	SOL8SDR Concealment Kit, incl CAMuPHDK (HD SDI Pin-hole camera & 3 lenses), Microphone, ANT, Battery, Heatsink, Pelicase, excl SOL8SDR-C
SOL8KF-043	Three button key fob (433.05-434.79MHz)
SOL8KF-091	Three button key fob (902-928MHz)
SOL8SDI	HDMI / Composite to SDI converter
CAMuPHDK	Pin-hole HD camera kit
AP000908	820-960MHz SMA dipole antenna
AP002075	1.65-1.95GHz SMA 1dBi dipole antenna
AP001901	2.0-2.5GHz SMA 2dBi dipole antenna
Wide range of antennas available on request	

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